



**FINAL**

**Programmatic Environmental Assessment  
for the  
Nationwide Operation of Counter Unmanned Aircraft Systems (C-UAS)**

**DEPARTMENT OF HOMELAND SECURITY  
September 2025**



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**Acronyms and Abbreviations**

2D	Two-Dimensional
3D	Three-Dimensional
ACHP	Advisory Council on Historic Preservation
AIRFA	American Indian Religious Freedom Act
ANSI	American National Standards Institute
AOI	Area of Interest
AOR	Area of Responsibility
BCC	Birds of Conservation Concern
BGEPA	Bald and Golden Eagle Protection Act
BMP	Best Management Practice
C-UAS	Counter Unmanned Aircraft System
CATEX	Categorical Exclusion
CBP	U.S. Customs and Border Protection
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulation
COA	Certification of Authorization
DHS	Department of Homeland Security
DIMT-M	Detect, Identify, Monitor, Track, and Mitigate
EO	Executive Order
EO/IR	Electro-Optical/Infrared
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FDA	Food and Drug Administration
FEMA	Federal Emergency Management Agency
FLETC	Federal Law Enforcement Training Centers
FPS	Federal Protective Service
GCS	Ground-based Control Station
GHz	Gigahertz
GNSS	Global Navigation System Satellite
GPS	Global Positioning System

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HERF	Hazard of Electromagnetic Radiation to Fuel
HERO	Hazard of Electromagnetic Radiation to Ordnance
HERP	Hazard of Electromagnetic Radiation to Personnel
HPD	Historic Preservation Division
Hz	Hertz
ICE	U.S. Immigration and Customs Enforcement
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
IPaC	Information for Planning and Consultation
kHz	Kilohertz
LAANC	Low Altitude Authorization and Notification Capability
MBTA	Migratory Bird Treaty Act
MHz	Megahertz
MMPA	Marine Mammal Protection Act
MPE	Maximum Permissible Exposure
mW/cm <sup>2</sup>	milliwatt per square centimeter
NAGPRA	Native American Graves Protection and Repatriation Act
NATHPO	National Association of Tribal Historic Preservation Officers
NCRP	National Council on Radiation Protection and Measurements
NCSHPO	National Conference of State Historic Preservation Officers
NEPA	National Environmental Policy Act
NHO	Native Hawaiian Organization
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NOA	Notice of Availability
NOAA	National Oceanic and Atmospheric Administration
NOTAM	Notice to Airmen
NPA	National Programmatic Agreement
NSSE	National Special Security Event
OSHA	Occupational Safety and Health Administration
PEA	Programmatic Environmental Assessment
PL	Public Law

RADHAZ	Radiation Hazards
RDT&E	Research, Development, Testing, and Evaluation
RF	Radiofrequency
S&T	Science and Technology Directorate
SAR	Specific Absorption Rate
SEAR	Special Event Assessment Rating
SHPO	State Historic Preservation Officer
SSD	Surface Shaded Display
sUAS	Small Unmanned Aircraft System
T&E	Threatened and Endangered
TFR	Temporary Flight Restriction
THPO	Tribal Historic Preservation Officer
TSA	Transportation Security Administration
UAS	Unmanned Aerial System
UAV	Unmanned Aerial Vehicle
U.S.	United States
U.S.C.	U.S. Code
USCG	U.S. Coast Guard
USCIS	U.S. Citizenship and Immigration Services
USSS	U.S. Secret Service
W/kg	watts per kilogram

## 1.0 Purpose of and Need for the Proposed Action

### 1.1 Introduction

This Programmatic Environmental Assessment (PEA) evaluates the United States (U.S.) Department of Homeland Security's (DHS) ongoing and proposed use of counter unmanned aircraft systems (C-UAS). DHS proposes to perform research, development, testing and evaluation (RDT&E) of C-UAS, and conduct operational and training activities to support existing and emerging DHS mission requirements nationwide (Proposed Action). Pursuant to 49 United States Code (U.S.C.) § 44801, a C-UAS is "a system or device capable of lawfully and safely tracking, disabling, disrupting, or seizing control of an unmanned aircraft or unmanned aircraft system."

The assessment of environmental impacts is an important and integral part of DHS's decision-making process. As such, DHS prepared this PEA to assess at a national scale the environmental impacts that may occur because of the Proposed Action and establish standard Best Management Practices (BMPs) by which DHS can reduce such impacts. This PEA complies with the National Environmental Policy Act of 1969, as amended (NEPA; 42 U.S.C. §§ 4321 et seq.); DHS Management Directive 023-01, rev. 01 *Implementation of the NEPA*; and DHS Instruction Manual 023-01-001-01, rev. 01, *Implementation of the NEPA*.

Finally, DHS has prepared this PEA in digital form as well. The "Digital PEA" can be accessed at <https://us.planengage.com/cuas>.

### 1.2 Background

DHS was created in 2002 with a mission to safeguard the U.S. from any threats facing the nation (DHS, 2022b). These threats, and therefore the duties of DHS, are wide-ranging, including missions ranging from border security to emergency response to transportation security. The creation of DHS reflects this variation: it integrated 22 pre-existing federal agencies and departments into a single, consolidated Cabinet-level department (DHS, 2022b). These integrated agencies, many of which have further consolidated, are known as Components, and include, among others, U.S. Customs and Border Protection (CBP), U.S. Immigration and Customs Enforcement (ICE), the Federal Emergency Management Agency (FEMA), the Federal Law Enforcement Training Centers (FLETC), Federal Protective Services (FPS), U.S. Coast Guard (USCG), U.S. Citizenship and Immigration Services (USCIS), the Science and Technology Directorate (S&T), the Transportation Security Administration (TSA), and U.S. Secret Service (USSS).

Unmanned aircraft systems (UAS) are defined by the Federal Aviation Administration (FAA) as an aircraft that is operated without the possibility of direct human intervention from within or on the aircraft, and which consists of the aircraft itself and the equipment necessary for its safe and efficient operation (14 CFR Part 107). C-UAS are a system or device capable of tracking, disabling, disrupting, or seizing control of an unmanned aircraft of UAS. UAS have

become a security concern due to the ease with which they can aid in intelligence gathering against public, federal, and state entities; be used to conduct crimes or thwart law enforcement efforts; and/or act as a malicious platform for delivering harmful substances, contraband, or weapons (DHS, 2024). As UAS technology advances, so too will the threats that UAS pose when used by malicious actors.

C-UAS technologies employ a variety of sensors and processes that account for or exploit the physical components of a UAS and the communications between the unmanned aerial vehicle (UAV) and the ground-based control station (GCS) (DHS, 2019).

In 2018, Congress passed the *Preventing Emerging Threats Act of 2018* (Public Law [PL] 115-254), granting DHS statutory authority to counter credible threats from UAS to the safety or security of a covered facility or asset. Only facilities and assets that are 1) located in the U.S., 2) directly related to certain DHS missions, and 3) identified as high-risk and potential targets for unlawful UAS activity defined as a “credible threat,” may qualify for C-UAS protection. Covered facilities or assets may be designated by DHS based on their importance to the protection and security missions of CBP, FPS, USCG, and USSS. DHS defines a “credible threat” as the likelihood that a UAS would inflict or otherwise cause physical harm or damage to people, assets, facilities, or systems; interfere with operational missions; facilitate unlawful activity; conduct unauthorized surveillance or reconnaissance; or result in unauthorized access to, or disclosure of, classified, sensitive, or otherwise protected information. Actions that DHS is authorized to take to protect against credible threats from UAS include the following:

- Detecting, identifying, monitoring, and tracking UAS to distinguish between lawful UAS activity and UAS threats; and
- Using non-kinetic force (such as electronic means to warn operators, disrupt, exercise control of, or disable) and reasonable kinetic force (physical force or actions that result in direct physical impact or destruction) to mitigate UAS threats.

Within DHS and its Components, C-UAS are used for a variety of purposes to support operational missions and protect DHS facilities and assets (see **Section 2.1.2**). In addition to protecting the safety and security of DHS missions, facilities, and assets, DHS may also provide C-UAS support for mass gatherings defined as National Special Security Events (NSSE) and to State, Local, Territorial, or Tribal governments for certain Special Event Assessment Rating (SEAR) events, upon request.

When an unknown UAS is encountered, DHS implements a C-UAS processing chain to evaluate and respond to potential threats posed by the UAS. The processing chain includes five stages: Detect, Identify, Monitor, Track, and Mitigate (DIMIT-M). **Table 1** defines the terms in the processing chain that are analyzed in this PEA. Although not all C-UAS may be able to address all processing chain stages, or in the same manner, this can be used as a general reference to understand how C-UAS technologies operate.



**Table 1. C-UAS Processing Chain Stages**

<b>Process Chain Stage</b>	<b>Description</b>
<b>Detect</b>	A <b>detection</b> is a declaration that a UAS is in the presence of a sensor. Some systems, depending on how thresholds are configured, may report any object in view as a detection (i.e., birds, commercial planes, etc.) or they may attempt to only alert the operator of objects deemed to be UAS, based on system capabilities and configuration.
<b>Classify/Identify</b>	<b>Classification</b> is the assignment by the C-UAS technology (either autonomously or by an operator) of a potential target UAS to a high-level category such as UAS type, group, manufacturer, and/or specific communication protocol. <b>Identification</b> is the assignment by the C-UAS technology (either autonomously or by an operator) of a UAS to a more specific name or category, such as physical address of its modem, or the exact make/model of the UAS.
<b>Locate/Monitor</b>	A <b>location</b> is a static estimated report or display of where a UAS is located at a given moment. The display to the operator of the C-UAS technology can take on many forms (e.g., a heat map display, quadrant alert, or circle to indicate estimated center and location error or line of bearing). <b>Monitoring</b> is the activity of observing or maintaining surveillance on a UAS that has been located.
<b>Track</b>	<b>Tracking</b> is a compilation of location reports over a period of time.
<b>Mitigate</b>	<b>Mitigate</b> is often used interchangeably with negate, interdict, or neutralize. It describes the methods used to remove or reduce the threat posed by a UAS. These methods include technical means, such as radiofrequency (RF) or global positioning system (GPS) jamming, spoofing/hijacking, and kinetic attack; however, these technical methods are not legal to conduct for any entity other than DHS and its Components, Department of Justice, Department of Defense, or Department of Energy as of the date of publication of this PEA. Mitigation may also include any capability or action associated with finding the UAS operator and having that person safely land the UAS, which would likely be permissible if the underlying detection system can be lawfully operated with federal surveillance laws, as well as Federal Communications Commission (FCC) and FAA regulatory standards and requirements.

Source: (DHS, 2022a)

As discussed further in **Section 2.0**, DHS utilizes C-UAS on a recurring basis to meet many mission needs. Pursuant to DHS Instruction Manual 023-01-001-01, Rev. 01, *Implementation of the NEPA*, DHS currently reviews the use of C-UAS on a project-specific basis. Components have utilized several categorical exclusions (CATEXs) for these activities depending on the project-specific considerations:

- CATEX B3: Proposed activities and operations to be conducted in an existing structure that would be compatible with and similar in scope to its ongoing functional uses and would be consistent with previously established safety levels

- and in compliance with applicable Federal, Tribal, State, or local requirements to protect the environment.
- CATEX B7 (used for movable, mobile, and portable C-UAS): Initial assignment or realignment of mobile assets, including vehicles, vessels and aircraft, to existing operational facilities that have the capacity to accommodate such assets or where supporting infrastructure changes will be minor in nature to perform as new homeports or for repair and overhaul.
  - Asterisked CATEX B9: Acquisition, installation, operation, or evaluation of physical security devices, or controls to enhance the physical security of existing critical assets and the eventual removal and disposal of that equipment in compliance with applicable requirements to protect the environment.
  - CATEX B11: Routine monitoring and surveillance activities that support law enforcement or homeland security and defense operations, such as patrols, investigations, and intelligence gathering, but not including any construction activities.
  - CATEX E1 (used for fixed C-UAS): Construction, installation, operation, maintenance, and removal of utility and communication systems (such as mobile antennas, data processing cable, and similar electronic equipment) that use existing rights-of-way, easements, utility distribution systems, and/or facilities. This is limited to activities with towers where the resulting total height does not exceed 200 feet and where the FCC would not require an EA or EIS for the acquisition, installation, operation or maintenance.

Typically, DHS and its Components prepare environmental assessments on a project-by-project basis. While past reviews of C-UAS activities complied with NEPA, DHS is using this PEA to streamline the process and avoid duplicative, lengthy reviews for repetitive actions that may be broadly analyzed given their similar scopes. This type of analysis can also ensure consistent and accurate environmental evaluation of federal actions and consistent use of BMPs.

### **1.3 Purpose and Need**

The purpose of the Proposed Action is to support ongoing and proposed RDT&E of C-UAS technologies and to deploy C-UAS in operational and training settings to detect, identify, monitor, track, and mitigate (passively and actively) threats posed by UAS, including across the radiofrequency spectrum, using a streamlined approach to environmental analysis and documentation. UAS have become a security concern due to the ease with which they can aid in intelligence gathering and be used for malicious activities.

The Proposed Action is needed to enhance DHS' ability to use C-UAS technologies, monitor emerging threats, protect DHS' missions, and defend the Nation from UAS threats and malicious activity effectively and reliably. The use of C-UAS would support existing and

emerging mission requirements of the various Components within DHS and facilitate their services and strategies essential to the Nation's security, safety, and emergency response.

#### 1.4 Scope of the PEA

This PEA analyzes the potential environmental, cultural, and socioeconomic consequences associated with DHS's use of C-UAS on a programmatic level. It considers the types and frequency of C-UAS activities that DHS and its Components utilize nationwide to achieve mission goals. The purpose of this PEA is to:

1. Streamline the NEPA process for multiple repetitive actions by broadly analyzing impacts that may occur as a result of the Proposed Action; and
2. Provide programmatic-level recommendations for BMPs to continue avoidance of significant impacts, if necessary.

As discussed in **Section 2.1.3**, the programmatic BMPs, if followed, would ensure activities comply with the requirements of NEPA, but may still require additional review under other environmental and historic preservation statutes, regulations, and Executive Orders (EO). Should these BMPs not be feasible for future related DHS and Component proposed actions, project-specific tiering of appropriate NEPA documentation would be required.

The general study area evaluated for potential impacts to the human and natural environment from C-UAS is defined as the area surrounding C-UAS activities on the ground, and the airspace in which UAS posing a credible threat are targeted. As this PEA evaluates potential impacts from C-UAS activities nationwide, no specific geographic study area is identified, and potential environmental impacts are considered on a national scope by the Proposed Action's potential to interact with specific resources in the environment.

Resource areas determined by DHS to require evaluation in this PEA are identified in **Section 2.3** and described in **Section 3.0**. Resource areas not expected to experience meaningful effects, and which are therefore not evaluated in this PEA, are also identified in **Section 2.3** along with DHS's rationale for dismissing them from further consideration.

#### 1.5 Public Involvement

Public participation opportunities with respect to this NEPA process are guided by DHS NEPA implementing procedures and the requirements of NEPA. In addition to public participation, interagency and intergovernmental coordination is a federally mandated process for informing and coordinating with other governmental agencies regarding federal proposed actions. This coordination also fulfills requirements under EO 12416, *Intergovernmental Review of Federal Programs* (subsequently supplemented by EO 13132, *Federalism*), which requires federal agencies to cooperate with and consider state and local views in implementing a federal proposal.

EO 13175, *Consultation and Coordination with Indian Tribal Governments*, requires federal agencies to ensure timely and meaningful input from tribal officials for actions that may have tribal implications. To ensure such input, DHS invites Tribal Nations to participate in the NEPA and National Historic Preservation Act of 1966 (NHPA) Section 106 processes as Sovereign Nations based on their potential ancestral ties to the Proposed Action area. Due to the nationwide nature of this PEA, on March 6, 2025, DHS notified every Tribal Nation and Native Hawaiian Organization (NHO) of its intent to consult on this Proposed Action. In response to this notification, and by the time of publication of the Draft PEA, DHS received comments from 11 Tribal Nations: Pascua Yaqui Tribe, Pueblo of Pojoaque, Fort Independence Indian Reservation, Ho-Chunk Nation of Wisconsin, Catawba Indian Nation, White Mountain Apache Tribe, Passamaquoddy Tribe, Quapaw Nation, Lac Vieux Desert Band of Lake Superior Chippewa Indians, Osage Nation, and San Carlos Apache Tribe. A summary of tribal responses is included in **Appendix A**.

On May 5, 2025, DHS formally initiated tribal consultation and announced the availability of the *Draft Nationwide Programmatic Agreement for Department of Homeland Security Counter Unmanned Aircraft Systems Undertakings*, in accordance with Section 106 of the NHPA. DHS notified all Tribal Nations, NHOs, the Advisory Council on Historic Preservation (ACHP), the National Conference of State Historic Preservation Officers (NCSHPO), and the National Trust for Historic Preservation. In response to this notification, DHS received comments from one Tribal Nation, the Habematolel Pomo of Upper Lake, the Georgia Historic Preservation Division (HPD), and the Virginia State Historic Preservation Office (SHPO). A revised version of the Nationwide Programmatic Agreement (NPA) was provided to the NCSHPO, ACHP, and the National Association of Tribal Historic Preservation Officers (NATHPO) on July 16, 2025. DHS received responses from the Georgia HPD, Minnesota SHPO, and Virginia SHPO. A summary of these responses is included in **Appendix A**. DHS held two consultation meetings in May 2025.

Following coordination with stakeholders, DHS commenced a 30-day early scoping period for the Proposed Action on March 7, 2025, with an announcement in the Federal Register. Comments were requested from the public on specific concerns about the Proposed Action or environmental issues that should be considered in preparation of the environmental analysis of this PEA. Public comments were provided by two interested parties. Comments received during this early scoping period, including copies of all public, agency, and Tribal comments, are consolidated in a Scoping Report that includes DHS's responses to the comments (**Appendix B**).

DHS published a Notice of Availability (NOA) for the *Draft PEA for the Nationwide Operation of Counter Unmanned Aircraft Systems* in the Federal Register on August 4, 2025 (see **Appendix B**). A copy of the NOA and a link to access the Draft PEA was also posted on DHS's public-facing website and distributed to interested stakeholders, including federal, state, and local agencies; Tribal Nations; NHOs; and other interested parties. A list of agencies

contacted is provided in **Section 6.0**. The PEA was made available for a 30-day review and comment period from August 4, 2025, to September 3, 2025. The Draft PEA was published on the DHS website for public comment at <https://www.dhs.gov/ocrso/eed/epb/nepa/public-comment>.

Three public comments were received during this period (see **Appendix B**). One comment noted a concern over the viability of implementing proposed human health and safety BMPs if an aerial threat occurred at a large public event. Additional information about the applicability of BMPs in emergency situations has been added to **Section 3.1.2.1**. The other two comments were generally unrelated to the analysis in this PEA; DHS has considered them, but no changes to the PEA were made.

A complete list of agencies and individuals consulted during preparation of this PEA is included in **Section 6.0**; copies of relevant correspondence with these stakeholders are included in **Appendix B**. A record of consultation with Tribal Nations and NHOs is included in **Appendix A**. A record of informal consultation under Section 7 of the Endangered Species Act and a Final Programmatic Biological Assessment is included in **Appendix C**.

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## 2.0 Description of the Proposed Action and Alternatives

### 2.1 Proposed Action

Within DHS, the use and application of C-UAS are actively being researched and tested to better understand C-UAS capabilities to support DIMIT-M activities. DHS conducts C-UAS activities nationwide, with some recurring in certain locations based on testing and demonstration needs. Additionally, authorized Components may use C-UAS technologies for operational use, trainings, and demonstrations nationwide, including along the southwest and northern borders.

The Proposed Action evaluated in this PEA includes the continuation of RDT&E activities, but on a nationwide scale. The Proposed Action also includes the nationwide use and operation of C-UAS, outside of a testing environment, to conduct training, demonstrations, and operational activities, such as law enforcement and security. The Proposed Action includes all elements, including C-UAS technologies related to the training, operation, maintenance, and use of C-UAS, including mitigation. This would allow DHS to continue its current testing of C-UAS while also enabling DHS and its Components to use C-UAS in an operational setting to support mission requirements.

#### 2.1.1 Operation of C-UAS

As described in **Section 1.2**, DHS may use C-UAS to counter credible threats posed by UAS to covered facilities and assets and would follow a specific framework for identifying and addressing such threats. Only authorized personnel may operate C-UAS and undertake C-UAS actions in accordance with the DIMIT-M framework. C-UAS operation activities may be performed at any time of day or night to respond quickly and effectively to any credible threats. Depending on the response, the duration of C-UAS operation can vary and may last between one hour up to several hours. If, after detecting, identifying, monitoring, and tracking the UAS, it is determined not to be a credible threat, DHS may not take any actions to counter the UAS. If a UAS is violating applicable laws or FAA regulations, but does not pose a credible threat, DHS would notify the appropriate FAA Regional Operations Center. If a UAS is determined to pose a credible threat to covered facilities or assets, DHS may mitigate the threat.

Various C-UAS technologies exist to counter such threats that use a variety of sensors and processes (DHS, 2019). C-UAS systems are primarily ground-based but may be either stationary or mobile. Stationary systems may be mounted on a tripod or affixed to a stationary location (e.g., mounted on a building or the ground), while mobile systems may be handheld or vehicle-mounted for portability, depending on the overall size and configuration of the system being used (DHS, 2022a).

##### 2.1.1.1 C-UAS Sensor Technologies

The first four steps in the C-UAS processing chain (i.e., Detect, Identify, Track, and Monitor) are performed by receiving and analyzing data from C-UAS sensors. C-UAS systems, whether



stationary or mobile, generally have a detection range of up to 1.2 miles, and rely on one of four types of sensor capabilities to detect UAS: radar, passive RF, electro-optical/infrared (EO/IR), or acoustic (DHS, 2022a).

**Radar:** Radars are active sensors that operate by transmitting a radio signal of known frequency and power in a focused direction and then detecting the reflected signal that is bounced back from the target (see **Figure 1**) (DHS, 2019). Doppler radars are the most common type of radar used in C-UAS, which differentiate the returned signal based on a frequency shift from the original transmitted frequency, allowing the radar to dismiss stationary objects that are detected (DHS, 2019). Radars may be either two-dimensional (2D) or three-dimensional (3D); 2D radars provide the direction and distance to the object, while 3D radars also provide the object's altitude. The 2D radars typically use a single rotating antenna that provides the UAV's distance from the radar and its bearing. The 3D radars use phased array stationary antenna panels with multiple internal antennas, and can change the direction of the RF signal they emit, allowing the radar to provide the UAV's elevation angle. The detection range of radars varies, but generally only measures the straight-line distance from the radar to the UAV; to scan a wide area, radar antennas must be rotated (DHS, 2019).



**Figure 1. 3D Radar Antennas**

**Passive Radiofrequency:** Passive RF sensors rely on antennas to receive, and computers to analyze, RF signals associated with communications between the UAV and GCS (see **Figure 2**) (DHS, 2019). Passive RF sensors analyze the radio signatures and modulations specific to UAS signals and are capable of identifying certain UAS models and manufacturers; most C-UAS relying on passive RF sensors use libraries of known UAS radio signatures to compare the detected signals. Passive RF sensors employ different signal processing methods to locate the source of a UAS signal. The more common methods include direction finding, received signal strength indicator, time difference of arrival, and frequency difference of arrival (DHS, 2019).



**Figure 2. Passive RF Detection Sensor**



**Electro-Optical/Infrared:** EO/IR sensors are digital video cameras that collect environmental information in the visible and infrared light spectrum (see **Figure 3**) (DHS, 2019). EO/IR sensors may be tuned to look at short-wavelength infrared, mid-wavelength infrared, long-wavelength infrared, or a combination. When EO/IR sensors are placed on a rotating support and paired with analysis software, the system can provide wide-area coverage by acquiring and processing real-time panoramic images. Some of these systems may automatically detect and monitor UAS, although they are typically used as secondary sensors, which are cued by location reports from another sensor (DHS, 2019). EO/IR sensors are passive and do not emit RF signals.



**Figure 3. Rotating EO/IR Camera Mounted on a Tripod**

**Acoustic:** Acoustic sensors are passive and use high sensitivity microphone arrays with audio analysis applications to detect, identify, monitor, and track sounds produced by UAV motors and propellers (see **Figure 4**) (DHS, 2019). UAV propellers produce unique acoustic patterns while spinning, allowing for the creation of a library of acoustic signatures to identify different types of UAVs and the general direction of the sound. A microphone array with multiple spatially separated microphone stations can be used to triangulate the approximate location of a UAV. These sensors generally work the best in quiet, remote locations where background noise levels are low and there is little noise pollution (DHS, 2019).



**Figure 4. C-UAS Microphone Array**

#### **2.1.1.2 C-UAS Mitigation Technologies**

The last step in the C-UAS processing chain (i.e., Mitigate) can be taken to remove or reduce the threat posed by the UAS. Once a UAS has been detected and has been determined to pose a credible threat to covered assets or facilities, DHS would employ one of two broad types of mitigation techniques, electronic or kinetic, to complete the C-UAS processing chain (DHS, 2019). Additionally, while C-UAS mitigation techniques generally fall into the two categories of electronic and kinetic technologies, mitigation may also be achieved by locating the UAV's operator and having that person cease operation (DHS, 2019). DHS may use multiple detection and mitigation techniques to increase the likelihood of finding and countering the threat.

**Electronic:** Electronic mitigation technologies include those that emit RF signals to jam, interfere with, or masquerade as legitimate UAS signals. The use of RF signals is generally referred to as “active RF technology.” These C-UAS signals interfere with signals between the UAV and its GCS, preventing the UAV from receiving signal communication from the operator (see **Figure 5**) (DHS, 2019). There are three types of jamming technology: RF, Global Navigation System Satellite (GNSS), and Spoofing.



**Figure 5. Active RF Mitigation System**

### *RF Jamming*

RF jamming is when a C-UAS technology aims to neutralize or mitigate a threat UAS by disrupting the RF communication link between the GCS and UAV. UAS frequencies are emitted from an RF jamming antenna at greater power levels, flooding that frequency bandwidth and preventing actual UAS signals from being received. When a UAS communication connection is severed or jammed, UAVs often respond according to their pre-programming by:

- Hovering in place
- Attempting to land in place
- Attempting to return to its original launch location
- Moving to a user-specified location (DHS, 2019).

### *GNSS Jamming*

GNSS jammers interfere with the communication between the UAV and the GNSS, which disrupts the UAV’s ability to receive spatial and temporal information from satellite systems. UAVs that lose their satellite link often respond by:

- Hovering in place
- Landing in place at the moment of signal loss
- Attempting to return to their original launch location, if they have other means of orienting themselves in space (DHS, 2019).

Both RF jammers and GNSS jammers can come in two variants: directional and omni-directional. Directional jammers radiate RF signals in a more focused manner such that the operator can point the jammer in the direction of their intended target. Omni-directional jammers are less discriminate and radiate RF signals in all directions (DHS, 2019).

### *Spoofing*

Finally, spoofing is a third electronic mitigation technology, which is the exploitation of a weakness or bug in the communication system between the UAV and GCS. This technique

may allow DHS to take control of a target UAV and interfere with its ability to function (DHS, 2019).

There are two methods of spoofing: a man-in-the middle spoofing attack and a GNSS spoofing attack. A man-in-the-middle spoofing attack operates so that a C-UAS technology is able to receive and/or transmit information that was intended for a UAV or controller by masquerading itself as a legitimate UAS source. A GNSS spoofing attack attempts to mislead the UAV's GNSS receiver by broadcasting fake GNSS signals while pretending to be a legitimate GNSS signal sent by satellites. To achieve this, the C-UAS technology overpowers the GNSS satellite's RF signals. By injecting fake location signals, the C-UAS is able to mislead the UAV off course (DHS, 2019).

**Kinetic:** Kinetic mitigation techniques commonly involve physical action toward the UAV for removing or reducing the risk posed. Nets, deployed either with net guns or by other UAVs, may be used to entangle the propellers and bring down or capture the UAV. Alternatively, laser weapons and microwaves may be directed at the UAV to physically damage or destroy the UAV or its electronic circuits. These methods use close-proximity, low-power, focused energy that is aimed directly at the targeted UAV and do not use wide beams that may disseminate the energy to a larger area (DHS, 2019). In most situations, however, bursts of energy directed at a UAV would not cause physical damage. Though DHS is not currently approved to use directed energy operationally, RDT&E of this method would be conducted to explore operational use cases, as well as environmental, health, and safety considerations to determine appropriate capabilities for Component missions. DHS would explore the use of nets both during RDT&E and operationally.

### 2.1.2 DHS C-UAS Uses

The utilization of C-UAS supports DHS in detecting, identifying, tracking, and monitoring UAS to determine if UAS activity is unlawful or poses a credible threat to the Nation's security. If a threat is detected, C-UAS then enable DHS to take actions to mitigate and protect against the threat. The Components that are likely to use C-UAS have identified scenarios where they may require threat detection and mitigation. These identified uses generally narrow the circumstances in which a specific Component would anticipate using C-UAS, although they are not all-inclusive and may change in the future to achieve evolving mission requirements. The Components that have identified a need to test, use, and/or operate C-UAS are identified below, along with their current expected uses.

- **CBP:** CBP may use C-UAS to support border surveillance and to predict, detect, identify, classify, track, deter, and interdict border traffic that may threaten border security.
- **FPS:** FPS may use C-UAS when UAS are detected flying in the vicinity of, or have landed or crashed onto, federal property.

- **S&T:** S&T may use C-UAS to continue advancing RDT&E in both laboratory and real-world environments, and to evaluate the effectiveness of C-UAS against UAS-based threats in a variety of terrains and environments.
- **TSA:** TSA may use C-UAS when UAS threats are identified in aviation domains, such as airports.
- **USCG:** USCG may use C-UAS when conducting coastal missions, in and around USCG bases and other Component facilities.
- **USSS:** USSS may use C-UAS to develop and implement aerial systems detection and mitigation plans for sites selected for visit by the President and/or Vice President of the U.S., and to support other National Special Security Events.

### 2.1.3 Standard Best Management Practices

To avoid or minimize adverse environmental impacts to the extent practicable that may result from the Proposed Action, DHS and its Components adopt the BMPs listed in **Table 2** as standard procedure for its C-UAS RDT&E and operational mission use. These BMPs are considered to be part of the Proposed Action; the impact analysis in **Section 3.0** assumes implementation of these BMPs. Should these BMPs not be feasible for future related DHS and Component proposed actions, including both RDT&E and operational mission use, project-specific tiering of appropriate NEPA documentation would be required. DHS has developed a BMP Implementation Checklist (**Appendix D**) to assist DHS and Component operators with ensuring that they comply with these BMPs during C-UAS activities.

**Table 2. Standard Best Management Practices**

Resource Area	Best Management Practices
Health and Safety	<p><b>General:</b></p> <ol style="list-style-type: none"> <li>1. The C-UAS RF levels would be below the following maximum permissible exposure limits:               <ol style="list-style-type: none"> <li>a. Occupational/controlled exposures described by the Occupational Safety and Health Administration (OSHA) under 29 CFR 1910.97.</li> <li>b. Public exposure described by the FCC under 47 CFR 1.1307(b).</li> </ol> </li> <li>2. Radar frequencies would be below the following recommended maximum exposures:               <ol style="list-style-type: none"> <li>a. Institute of Electrical and Electronics Engineers Standards Associates C95.7-214, Recommended Practice for Radio Frequency Safety Programs, 3 Kilohertz to 300 Gigahertz.</li> <li>b. International Commission of Non-Ionizing Radiation Protection RF Electromagnetic Field Guidelines 2020.</li> </ol> </li> <li>3. Prior to undertaking any operational activities using active radar in a public setting, cordon off sites and post signage to limit public proximity to the active radar.</li> <li>4. The radiation hazard from the radar and RF systems would not exceed the following permissible exposure limit guidelines (defined in Army Regulation 385-10):</li> </ol>

Resource Area	Best Management Practices
Health and Safety	<ul style="list-style-type: none"> <li>a. Hazards of Electromagnetic Radiation to Personnel (HERP).</li> <li>b. Hazards of Electromagnetic Radiation to Ordnance (HERO).</li> <li>c. Hazards of Electromagnetic Radiation to Fuel (HERF).</li> </ul> <ul style="list-style-type: none"> <li>5. No active radar will be powered and emitted while personnel are standing nearby. Test and operational personnel must be familiar with the radar specifications and advised of minimum safe distance. If radar specifications are not available, a safe distance of 1 meter from the radar will be enforced.</li> <li>6. All test participants who remain outdoors during testing will wear laser-rated protective eyewear and long-sleeved clothing, pants, close-toed shoes, and other coverings that protect exposed skin and will be positioned to the rear of any laser equipment prior to activation.</li> <li>7. Proposed C-UAS activities would not require the use of hazardous materials and would not generate hazardous or toxic waste.</li> </ul> <p><b>Radar-Specific:</b></p> <ul style="list-style-type: none"> <li>1. No active radar will be powered and emitting while personnel are standing nearby. Radar signal strength varies depending on equipment make and model. Test personnel shall be familiar with the radar specification and advised of minimum safe distance. If radar specifications are not available, a safe distance of 3.3 feet (1 meter) from the radar will be enforced. Additional guidelines in item 2 below will be referenced.</li> <li>2. The following is general safety information for active RF equipment as it pertains to Radiation Hazards (RADHAZ): <ul style="list-style-type: none"> <li>a. HERO safe ordnance with a minimum Surface Shaded Display (SSD) of 10 feet (3 meters).</li> <li>b. HERF minimum safe distance is 5.6 inches (14.2 centimeters).</li> <li>c. HERP minimum safe distance is 1.6 feet (0.5 meter).</li> </ul> </li> </ul> <p><b>Laser-Specific:</b></p> <ul style="list-style-type: none"> <li>1. For RDT&amp;E, all test participants who remain outdoors during testing are required to wear laser-rated protective eyewear and long-sleeved clothing, pants, close-toed shoes, and other coverings that protect exposed skin as well as be positioned to the rear of any laser equipment prior to activation.</li> </ul>
Visual Resources and Aesthetics	<ul style="list-style-type: none"> <li>1. Small unmanned aircraft system (sUAS) flights conducted for C-UAS RDT&amp;E purposes would not exceed 400 feet (121.9 meters) in altitude, unless prior approval is given by the FAA.</li> <li>2. DHS would adhere to applicable regulations regarding visual quality near historic sites or other protected land uses.</li> </ul>

Resource Area	Best Management Practices
Airspace	<ol style="list-style-type: none"> <li>1. DHS requests Temporary Flight Restrictions (TFRs), Notice to Airmen (NOTAMs), files Certificates of Authorization (COAs), and Low Altitude Authorization and Notification Capability (LAANC) notifications for all RDT&amp;E activity and, as applicable, to all operational missions.</li> <li>2. DHS files FAA Form 7140-1 prior to conducting any outdoor RDT&amp;E of directed energy mitigation technologies.</li> </ol>
Biological Resources	<ol style="list-style-type: none"> <li>1. Generate a list of species and critical habitat within the project area no earlier than 90 days before the planned operation.</li> <li>2. Coordinate with appropriate land managers to identify potential wildlife concerns and avoidance or minimization measures if C-UAS activities will occur on or over a unit of the National Wildlife Refuge System (NWRS), National Fish Hatchery, National Park Service (NPS) lands, or other federal lands.</li> <li>3. Locate C-UAS RDT&amp;E activities at DHS facilities on roads, trails, paved surfaces, or developed areas where no direct impacts on critical habitat, listed species, or migratory birds are anticipated. For species under the National Marine Fisheries Service (NMFS) jurisdiction, this includes avoiding activities that may result in debris or recovery efforts occurring in riparian, estuarine, or coastal nearshore locations within species' habitats.</li> <li>4. Locate C-UAS ground-based equipment on roads, trails, paved surfaces, and/or otherwise previously disturbed or developed areas if they are within terrestrial critical habitat or the range of a listed species (as indicated by the Information for Planning and Consultation [IPaC] species and critical habitat list).</li> <li>5. Avoid operating C-UAS within 200 feet (vertically and horizontally) of a known breeding or roosting colony, or other known high density nesting area, of federally listed or proposed birds, or migratory birds.</li> <li>6. Maintain a 330-foot buffer around any known bald eagle nests during the breeding season. Extend the buffer distance to 660 feet in open areas where the nest may have increased visibility and exposure to C-UAS operations.</li> <li>7. When possible, conduct C-UAS activities and RDT&amp;E during seasons when federally listed, proposed, or migratory birds are not present or nesting in the operational area.</li> <li>8. Conduct a visual check for migratory birds and federally listed species immediately prior to operating C-UAS.</li> <li>9. If personnel observe federally listed animals or migratory bird including federally listed bird nests during the visual check, delay activities until either the animal has moved away from the area of operation, or the C-UAS RDT&amp;E or operation area will be relocated to an area where the animal or nests will not be disturbed (at least 200 feet away both horizontally and vertically).</li> <li>10. If personnel encounter wildlife during C-UAS RDT&amp;E, training, demonstrations, or operations, operators will ensure all personnel and UAS maintain a safe distance (at least 200 feet is recommended) and will avoid buzzing, animal-directed</li> </ol>



Resource Area	Best Management Practices
Biological Resources	<p>movements, hovering, landing, taking off, lingering, or taxiing near the observed wildlife.</p> <ol style="list-style-type: none"> <li>11. If, despite the measures above, wildlife, including migratory birds, listed animal species, and bald and golden eagles exhibit signs of distress (e.g. wing flapping, crouching, fleeing, or flushing), the C-UAS activity will be immediately moved beyond the 200-foot recommended distance from the animal.</li> <li>12. To minimize impacts to federally listed or proposed insect species, sUAS deployed during RDT&amp;E of C-UAS activities will maintain a minimum altitude of 65 feet above the ground.</li> <li>13. If U.S. Fish and Wildlife Service (USFWS) IPaC results include federally listed or proposed bat species, operate C-UAS during daylight hours (one hour after sunrise to one hour before sunset) and avoid operating C-UAS in close proximity to known hibernacula, whenever practicable. In addition, for nighttime use of C-UAS involving use of a sUAS, maintain a minimum altitude of 98 feet above vegetation, tree canopy, or open water (including rivers, streams, lakes, reservoirs, etc.).</li> <li>14. Document and report to the USFWS and/or NMFS, in a timely manner, any C-UAS RDT&amp;E or operation involving a collision with or harassment of a federally listed species (if species is clearly identifiable).</li> <li>15. Avoid operating C-UAS from/on beaches that support nesting sea turtles during their breeding season.</li> <li>16. Avoid flying UAVs within 500 feet of known haul-out locations, sea turtles, and marine mammals at the water's surface (unless prior authorization was received from NOAA or USFWS).</li> <li>17. To the maximum extent feasible, recover any debris resulting from C-UAS mitigation operations. Make effort to minimize disturbance if recovery activities must take place in riverine, estuarine, or coastal nearshore habitats.</li> </ol>

Resource Area	Best Management Practices
Cultural Resources	<ol style="list-style-type: none"> <li>1. Provide letters of notification to SHPOs, Tribal Historic Preservation Offices (THPO), and/or Federal Preservation Officers at least 30 days prior to applicable C-UAS undertakings.</li> <li>2. Coordinate with Tribal Nations to the maximum extent feasible when proposed operations would include flying over or deploying from Tribal sensitive areas, above-ground historic properties, or culturally significant areas. Reference the Bureau of Indian Affairs Sacred Sites Best Practice Guide for additional information if sacred sites or traditional cultural properties are present at a C-UAS undertaking.</li> <li>3. Avoid operations within 100 feet vertically and/or horizontally from Tribal sensitive areas or historically or culturally significant areas unless: <ol style="list-style-type: none"> <li>a. Necessitated by an emergency facility inspection or condition assessment, or</li> <li>b. Prior notification to the NPS for National Historic Landmarks and appropriate SHPO or THPO has been completed.</li> </ol> </li> <li>4. Apply and adhere to the conditions of the Nationwide Programmatic Agreement Among the DHS, the NCSHPO, and the ACHP Regarding DHS C-UAS Systems Undertakings for Section 106 compliance if the criteria for C-UAS undertakings are met.</li> </ol>

## 2.2 Alternatives Considered

NEPA requires all reasonable alternatives to be explored and objectively evaluated. Alternatives that are eliminated from detailed study must be identified along with a brief summary of the reasons for their dismissal. For the purpose of this analysis, an alternative is considered “reasonable” if it is technically and economically feasible and would meet the Proposed Action’s purpose and need. “Unreasonable” alternatives that would not meet the Proposed Action’s purpose and need were dismissed from further consideration and evaluation in this PEA.

### 2.2.1 Alternatives Development

To be carried forward for analysis, a “reasonable” alternative must meet specific screening criteria set forth by DHS:

1. Ensure no net loss in the capacity of DHS or its Components to support mission requirements.
2. Maximize concurrent testing and operation of C-UAS technologies at DHS and its Components to optimize available resources and avoid excessive costs.
3. Be able to support DHS’s existing framework for approaching potential threats (i.e., DIMIT-M) posed by UAS in an efficient and quick manner, and without unnecessary use of force.



4. Minimize health and safety risks to DHS personnel and assets during mission activities by providing safer operational conditions.

DHS determined only one reasonable alternative (i.e., use of C-UAS) would be capable of meeting these screening criteria and the Proposed Action's purpose and need. At this time, DHS is unaware of any other alternatives besides C-UAS that would meet the purpose and need. The No Action Alternative is also evaluated. Therefore, this PEA carries forward two alternatives for further analysis.

### 2.2.2 Alternative 1: Proposed Action Alternative

Under the Proposed Action Alternative, DHS and its Components would continue ongoing RDT&E activities for, and would subsequently use, C-UAS systems for training and operational activities, including the detection and mitigation of credible threats on a nationwide scale. DHS would test and use the C-UAS sensors and mitigation techniques, described in **Sections 2.1.1.1** and **2.1.1.2** as necessary and appropriate, to achieve its missions. The Proposed Action Alternative covers broad agency actions to continue current use and implement future use and operation of C-UAS systems.

The Proposed Action Alternative best meets the screening criteria (see **Section 2.2.1**) and effectively provides the best option to enable DHS to meet mission requirements related to UAS threat mitigation. This alternative provides many advantages, including but not limited to:

- Compatible with current DHS operations and would not require substantial reconfiguration of existing resources;
- Complies with DHS requirements, in addition to federal and state regulations;
- Results in minimal or no impacts on sensitive environmental resources and surrounding communities;
- Implements a safer and more efficient option for conducting the DIMT-M process, as opposed to sending personnel to locate and address the threat; and
- Provides novel technological solutions for addressing and responding to UAS, better positioning DHS to respond to credible threats as UAS capabilities become more sophisticated and widespread.

In order to conduct RDT&E activities and test the C-UAS capabilities and mitigation techniques as part of the Proposed Action, DHS may need to operate sUAS. DHS's use and operation of sUAS nationwide was previously assessed in the 2022 *Final Programmatic Environmental Assessment for the Nationwide Operation of Small Unmanned Aircraft Systems* (hereinafter referred to as the "2022 sUAS PEA") (DHS, 2022c). That PEA allowed DHS to conduct sUAS activities nationwide to meet a variety of existing DHS mission requirements and also allowed DHS to use sUAS to implement any future uses given evolving mission requirements. The 2022 sUAS PEA included a comprehensive BMP Implementation Checklist

with standard measures to be implemented in order to ensure that any sUAS operation minimized adverse environmental effects to the extent practicable. Elements of the 2022 sUAS PEA related to the types of sUAS used, potential environmental effects from sUAS operation, and impact minimization measures and standard BMPs are incorporated by reference into this PEA. A copy of the 2022 sUAS PEA is available online at: [https://www.dhs.gov/sites/default/files/2022-12/20221213\\_DHS%20sUAS%20PEA\\_fPEA%2BAppendices\\_508\\_0.pdf](https://www.dhs.gov/sites/default/files/2022-12/20221213_DHS%20sUAS%20PEA_fPEA%2BAppendices_508_0.pdf).

### 2.2.3 Alternative 2: No Action Alternative

Under the No Action Alternative, DHS would continue to utilize C-UAS to counter threats as authorized under the *Preventing Emerging Threats Act of 2018* on a project-by-project basis, applying the appropriate environmental analysis. The No Action Alternative would limit the ability of DHS and its Components in carrying out critical mission objectives and responding to potential threats to support national security in a streamlined, efficient manner. The No Action Alternative would result in duplicative reviews and limit Components from using C-UAS in the ways described in **Section 2.1.2**.

The No Action Alternative is carried forward for analysis in this PEA to provide a comparison of baseline conditions to the Proposed Action. The No Action Alternative reflects the status quo and serves as a benchmark against which effects of the Proposed Action can be evaluated.

## 2.3 Level of Environmental Analysis

In compliance with NEPA, this PEA focuses on the resource areas that the Proposed Action could potentially impact. **Table 3** presents each resource area, its corresponding area of interest (AOI), and the rationale for whether the resource area has been retained for detailed analysis or dismissed from further consideration, based upon the determination of a qualified DHS subject matter expert for each resource area.

Potential impacts for this Proposed Action would be associated with the testing, operation, and use of C-UAS, including supporting systems, and mobilization to a needed location, if applicable. All C-UAS currently in use by DHS are either ground-, vehicle-, or building-mounted. C-UAS maintenance would occur in existing DHS facilities using standard tools and materials, and in accordance with standard operating procedures for equipment maintenance. Aspects of C-UAS RDT&E or training activities, including sensor installation, testing, and maintenance, would consist of standard personnel operations, would have no potential to result in significant impacts, and would be covered under CATExs for standard DHS operations.

**Table 3. Resource Areas Considered in this PEA**

<b>Resource Area</b>	<b>Area of Interest</b>	<b>Thresholds of Significance</b>	<b>Further Analysis?</b>	<b>Rationale for Level of Assessment</b>
Air Quality	Areas within and adjacent to C-UAS activities, and Intrastate Air Quality Control Regions.	Significant impacts would occur if there is a change in the attainment status with the National Ambient Air Quality Standards (NAAQS); or if emissions exceed regulatory thresholds.	No	The proposed C-UAS technologies would primarily be powered by batteries, shore-power, or small portable gasoline-fueled generators. Emissions from vehicles traveling to and from testing or use sites would occur; however, these would be minimal and typical of other roadway emissions. The use of C-UAS would not generate emissions of criteria pollutants that could exceed the NAAQS. Therefore, this resource was dismissed from further analysis.

Resource Area	Area of Interest	Thresholds of Significance	Further Analysis?	Rationale for Level of Assessment
Water Resources	Surface waters, wetlands, watersheds, groundwater, and coastal zones within or near proposed C-UAS activities.	Significant impacts would occur if proposed activities result in an exceedance of established water quality thresholds; impede navigability of surface waters; substantially increase the amount of stormwater entering surface waters; do not comply with wetland protection regulations and permits; substantially affect groundwater quantity or quality; induce flooding in occupied areas; or are inconsistent with applicable enforceable coastal zone policies.	No	Current and future proposed activities have the potential to occur in areas adjacent to or directly over water resources. However, the use of C-UAS would not result in the discharge, fill, or dredging of surface waters or wetlands, and no in-water activities would occur. No activities with the potential to alter the floodplain or impact coastal zone resources would occur. Therefore, this resource was dismissed from further analysis.

Resource Area	Area of Interest	Thresholds of Significance	Further Analysis?	Rationale for Level of Assessment
Infrastructure	Buildings, utilities, or other developments within or adjacent to C-UAS activities.	Significant impacts would occur if there are substantial impacts to existing facilities; permanent disruption of traffic patterns and congestion; or permanent impairment or loss of utility service.	No	<p>The Proposed Action would not require any new construction, demolition, or renovation of existing facilities. No additional traffic would be added to the roadways and existing traffic patterns would not be modified. No utilities would be installed or replaced, and no substantial utility use would occur. Therefore, this resource was dismissed from further analysis.</p> <p>If infrastructure to support C-UAS is used in the future (e.g., new utilities), project-specific tiering of NEPA documentation would be required.</p>

Resource Area	Area of Interest	Thresholds of Significance	Further Analysis?	Rationale for Level of Assessment
Solid and Hazardous Waste	Solid or hazardous waste sites within or near C-UAS activities.	Significant impacts would occur if the total amount of hazardous or toxic materials and waste or solid waste exceed regulatory thresholds; there is a permanent increased risk of contamination; or creation of new or substantial human or environmental health risks.	No	<p>Batteries used in C-UAS devices would generally be rechargeable and would not be disposed of following RDT&amp;E activities. Batteries which have reached their end-of-life would be recycled or disposed of as hazardous waste in accordance with applicable rules and regulations.</p> <p>Otherwise, the Proposed Action would not require the use of hazardous materials and would not generate hazardous or toxic waste.</p> <p>Any UASs that may be brought down because of C-UAS mitigation would be recovered and handled in accordance with appropriate DHS law enforcement requirements; DHS would not dispose of these UASs. Therefore, this resource was dismissed from further analysis.</p>

Resource Area	Area of Interest	Thresholds of Significance	Further Analysis?	Rationale for Level of Assessment
Land Use	Ground areas from where C-UAS testing or operation would occur, or where C-UAS equipment would be maintained.	Significant impacts would occur if C-UAS operations lead to permanent incompatible alteration of the characteristics of specific properties; or if existing land uses would be converted beyond minor changes.	No	<p>Proposed C-UAS testing would occur at designated DHS facilities and in the field near the southwestern and northern borders. Similarly, C-UAS operation would occur predominately around facilities and assets nationwide and within five miles of the border. Neither activity would cause a change or conversion of land use. Therefore, this resource was dismissed from further analysis.</p> <p>However, it is possible that C-UAS activities may be prohibited in certain federal wilderness areas. If C-UAS activities would occur over wilderness areas, project-specific NEPA analysis would be completed.</p>

Resource Area	Area of Interest	Thresholds of Significance	Further Analysis?	Rationale for Level of Assessment
Health and Safety	Areas in which C-UAS activities would be conducted, including surrounding adjacent environments.	Significant impacts would occur if C-UAS operations have the potential to cause serious injury to DHS personnel or the general public, or if proposed activities could disproportionately affect children's health and safety.	Yes	The proposed testing and operation of C-UAS would use technologies that are capable of affecting public health and safety, such as RF and kinetic techniques to address threats. However, no negative health outcomes associated with air pollution, water pollution, noise pollution, or exposure to hazardous materials would be expected as C-UAS activities have no mechanism to impact these resources. This resource is evaluated further in <b>Section 3.1.</b>
Visual Resources and Aesthetics	Areas within and adjacent to C-UAS activities, from which they would be visible.	Significant impacts would occur if there is a permanent adverse alteration of the existing viewshed.	Yes	The continued testing of C-UAS systems may result in visual impacts from the temporary placement of C-UAS equipment at designated test points. Additionally, sUAS flights that would occur in order to facilitate C-UAS testing may generate temporary visual impacts from the presence of aerial objects. The permanent establishment of C-UAS systems for use at covered facilities or assets may also present visual changes. This resource is evaluated further in <b>Section 3.2.</b>



Resource Area	Area of Interest	Thresholds of Significance	Further Analysis?	Rationale for Level of Assessment
Airspace	Airspace above and surrounding areas in which C-UAS activities are conducted.	Significant impacts would occur if there is a violation of FAA safety regulations or an infringement on existing flight activity and corridors.	Yes	Proposed C-UAS activities, in particular the use of mitigation techniques, would target UAVs flying in the airspace and could have the potential to interfere with other flight activity. This resource is evaluated further in <b>Section 3.3</b> .
Noise	Areas within and adjacent to C-UAS activities, from which they could be heard.	Significant impacts would occur if generated noise is permanently intrusive to nearby sensitive receptors; if it exceeds applicable noise limit thresholds; or if it causes harm or injury to people or communities.	No	The Proposed Action would not significantly change existing noise levels in areas where C-UAS testing or operation may occur. Some noise may occur if larger UAVs are sent to capture smaller UAVs; however, any noise produced from this operation would be minor and would cease following the mitigation activity. Motor vehicles that may be used to transport C-UAS systems would be standard commercial trucks, with sound levels similar to other vehicles. Therefore, this resource was dismissed from further analysis.

Resource Area	Area of Interest	Thresholds of Significance	Further Analysis?	Rationale for Level of Assessment
Biological Resources	Vegetation, federally and state-listed threatened and endangered species, migratory birds, fisheries, and associated habitat within or near proposed activities.	Significant impacts would occur if proposed activities result in substantial permanent loss or degradation of terrestrial or aquatic habitat; result in unpermitted “take” of federally listed species; or violate regulations concerning special status species.	Yes	The Proposed Action has limited potential to result in ground disturbance or vegetation removal. Although unlikely, C-UAS activities could affect terrestrial or aquatic species due to increased human presence, site access, use of active radar or directed energy systems, or collisions involving UAVs or nets. This resource is evaluated further in <b>Section 3.4</b> .
Cultural Resources	Historic places, landscapes, archaeological sites, or tribal equities within or near proposed activities.	Significant impacts would occur if the integrity of a historic property is diminished such that it would no longer be eligible for listing in the National Register of Historic Places; if historic viewsheds would be substantially altered; or if significant tribal resources are permanently compromised.	Yes	Current and future proposed activities have the potential to occur on, adjacent to, or directly overhead of historic resources. Further, C-UAS testing and mitigation may impact or intrude upon tribal sites or traditional or cultural practices. This resource is evaluated further in <b>Section 3.5</b> .

Resource Area	Area of Interest	Thresholds of Significance	Further Analysis?	Rationale for Level of Assessment
Socioeconomics	Communities located near proposed activities, or in which proposed activities would occur.	Significant impacts would occur if there were substantial changes to the employment, population, housing availability, or income of nearby communities.	No	The Proposed Action would not alter the socioeconomic conditions of nearby communities. C-UAS activities would not affect local employment, housing availability, or household income, nor would they affect population growth or composition. Therefore, this resource was dismissed from further analysis.

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### 3.0 Affected Environment and Environmental Consequences

This section describes the natural and human environment that exists within the AOI and the potential impacts (environmental consequences) associated with implementing the Proposed Action.

The specific criteria for evaluating the potential environmental impacts of the Proposed Action Alternative and No Action Alternative are described in the following sections. In accordance with the NEPA statute, impacts should be reasonably foreseeable. The significance of an action is also measured in terms of its context and intensity. The context and intensity of potential environmental impacts are described in terms of their duration, magnitude, and whether they are adverse or beneficial, as summarized in the following paragraphs:

- **Short-term or long-term.** In general, short-term impacts are those that would occur only for a limited, finite time with respect to a particular activity of the Proposed Action. Long-term impacts are those that would be more likely to be persistent and chronic throughout the life of the Proposed Action or would last years after an impact-producing activity occurred.
- **Less-than-significant (negligible, minor, moderate).** These relative terms are used to characterize the magnitude or intensity of an impact. Negligible impacts would generally be non-detectable, but if detected, would have slight and localized effects. A minor impact would be slight, but detectable. A moderate impact would be readily apparent, measurable, and would have localized or regional impacts.
- **Significant.** This relative term describes changes to the resource that would be readily measurable and would be those that have a context and intensity that meets the thresholds for significance (see **Table 3**). These impacts warrant heightened attention and mitigation measures to offset adverse effects would be required to reduce impacts, although long-term changes to the resource would still be expected.
- **Adverse or beneficial.** An adverse impact would cause unfavorable or undesirable outcomes on the human-made or natural environment. A beneficial impact would cause positive outcomes on the human-made or natural environment.

The Proposed Action has no mechanism to impact several of the environmental resources discussed in **Table 3**; therefore, these resources are not carried forward for further analysis.

#### 3.1 Health and Safety

##### 3.1.1 Affected Environment

Human health and safety analysis considers potential impacts to people living in the surrounding environment and the ways in which they may be affected. It addresses the possibilities of adverse health outcomes, including illness and injury, that could result from the Proposed Action. Any potential safety risks posed to the public or DHS personnel from the operation of sUAS as part of C-UAS RDT&E, such as collisions, crashes, or disposal of end-

of-life batteries, would be addressed in accordance with the minimization measures included in Section 3.6 the 2022 sUAS PEA and are incorporated here by reference (DHS, 2022c). Additionally, C-UAS mitigation using net capture may cause a targeted UAS to fall out of the sky, posing a novel safety hazard. However, DHS personnel would only utilize this technique operationally after confirming that no individuals are present in the vicinity who could be harmed by such an event. DHS is conducting testing on this potential risk and impacts from uncontrolled descent, including collateral damage, and preliminary data shows this to be a low probability event. Therefore, potential risks to human populations addressed in this PEA center around health and safety risks that may result from RF radiation and directed energy.

The C-UAS technologies evaluated in this PEA include radar with RF (active radar), passive RF detectors, EO/IR, acoustic (passive listening devices), and directed energy (e.g., lasers) methods. Active radar and directed energy are the only technologies with the potential to emit energies that could potentially impact living organisms; the remaining technologies are passive sensors intended to detect and translate energies, rather than emit. Active radar is used to detect, identify, monitor, and track sUAS, while directed energy may be used for mitigation purposes. Under the Proposed Action, active radar would be used for both RDT&E and operation and training, but directed energy would only be used during RDT&E.

#### **3.1.1.1 Radiofrequency Radiation**

Radars emit signals in the form of electromagnetic radiation, which consists of waves of electric and magnetic energy. Electromagnetic energy from radars is typically referred to as RF radiation, which is further characterized based on the wavelength and the frequency of the transmitted signal. The frequency of RF signals is measured in hertz (Hz), and electromagnetic waves typically have frequencies ranging between 3 kilohertz (kHz) and 300 gigahertz (GHz) (FCC, 2023).

People located in the vicinity of radars may be exposed to RF radiation; however, all humans are generally exposed to low levels of RF radiation on a daily basis. Artificial sources of these signals include the use of communication technology, such as mobile phones, radio, and television broadcasting, as well as non-communication technology, such as traffic speed radar, microwave ovens, and medical imaging (FCC, 2023). The FCC regulates the use of these devices and restricts the RF radiation that is emitted to certain levels to ensure that human exposure is maintained at safe levels. RF radiation may also come from natural sources, such as the sun (American Cancer Society, 2022).

Exposure standards are generally expressed as maximum permissible exposure (MPE) limits that indicate the maximum duration humans can safely be exposed to specified frequencies. These measurements are based on maximum values of the specific absorption rate (SAR), which measures the rate at which RF energy is absorbed by a human body. Human absorption varies based on how much of the body is exposed (e.g., whole body versus just the head like when talking on a cell phone), and the most restrictive MPE limits are for frequencies in the range of 100 to 300 megahertz (MHz), since the human body most efficiently absorbs RF

energy occurring within that range (FCC, 2023). The basis for these MPE limits is a whole-body averaged SAR level of 4 watts per kilogram (W/kg) (Cleveland, Jr., Sylvar, & Ulcek, 1997). FCC guidelines for human exposure limits are based on criteria developed by expert organizations, including the National Council on Radiation Protection and Measurements (NCRP), the American National Standards Institute (ANSI), and the Institute of Electrical and Electronics Engineers (IEEE) (FCC, 2023). FCC's guidelines for MPE are based on known thresholds for adverse effects and incorporate margins of safety (see **Table 4**).

**Table 4. Limits for Maximum Permissible Exposure**

Frequency Range (MHz)	Occupational Exposure		Uncontrolled Exposure	
	Power Density (mW/cm <sup>2</sup> )	Average Time (minutes)	Power Density (mW/cm <sup>2</sup> )	Average Time (minutes)
0.3-3.0	*(100)	≤6	*(100)	<30
3.0-30	*(900/f <sup>2</sup> )	<6	*(180/f <sup>2</sup> )	<30
30-300	1.0	<6	0.2	<30
300-1,500	f/300	<6	f/1500	<30
1,500-100,000 (1.5-100 GHz)	5	<6	1.0	<30

Source: 47 CFR 1.1310(e)(1)

Notes: f = frequency in MHz; \* = Plane-wave equivalent power density

The MPE limits vary based on the type of exposure, and who is exposed. It is also important to note that these limits represent the most conservative exposure estimates. For example, power density, which measures the intensity of exposure, decreases with distance from an RF source. Ground-level RF exposures tend to be lower than the MPE limits given distance from the source (FCC, 2023). The average time for exposure provided is associated with a source emitting at the given power density. Therefore, it is possible for time of exposure to exceed the limits presented in **Table 4**, provided that the power density is also lower.

Occupational exposure limits apply where persons are exposed as part of their employment. FCC regulations require that those who are occupationally exposed be informed of the potential for RF exposure and that they are able to control or reduce their exposure with use of safe work practices or personal protective equipment (FCC, 2023). The Occupational Safety and Health Administration (OSHA) also has published regulations that include occupational and construction exposure limits for nonionizing radiation, which are set at 10 milliwatts per square centimeter (mW/cm<sup>2</sup>). These limits, however, are considered unenforceable standards (OSHA, 2023). Uncontrolled exposure limits apply where the general public may be exposed to RF radiation. These guidelines are time-averaged and are only relevant to locations that are accessible to members of the public (Cleveland, Jr., Sylvar, & Ulcek, 1997).

Depending on the frequency, intensity of the RF radiation, and time of exposure, human injury or adverse biological effects may occur. Environmental background levels of RF energy have been determined to be safe for the public and will not result in health or safety concerns (FCC, 2023). The primary effect that can occur to humans from prolonged exposure is thermal heating, which can occur at frequencies emitted between 2 and 4 GHz, and which increases the overall body temperature. Generally, even at higher levels of exposure than the identified MPE limits, thermoregulation performed by the human body is able to offset thermal effects (IEEE, 2019). However, continual exposure to very high levels of RF radiation can be harmful if the body is unable to cope with or dissipate excessive heat. Significant internal temperature increase can result in tissue damage, particularly to the eyes (FCC, 2023). Various other health impacts have been studied, such as changes to digestive function, cognitive function, sleep disturbances, headaches and fatigue, and increased blood pressure, but no consistent evidence has been produced that suggests these impacts are correlated to RF exposure. In addition, the potential link between RF exposure and cancer has been studied, and experimental data have not provided evidence of a causal link (IEEE, 2019).

#### **3.1.1.2 Radiation Hazards**

In the military, RADHAZ is used to describe the hazards of electromagnetic radiation to fuels, electronic hardware, ordnance, and personnel. These include HERP, HERO, and HERF (DHS, 2022a).

HERP is the danger to personnel from the absorption of electromagnetic energy by the human body. Personnel hazards are associated with MPE exceedances as well as from the high voltage of some radar and communication systems. Personnel should avoid touching or lingering within 1.6 feet (0.5 meter) of any energized, high frequency antenna (DHS, 2022a).

HERO is defined as the danger of accidentally triggering an unexpected explosion because of RF interactions with unknown ordnances. The unintended interference could have safety or reliability consequences such as dudding. It is recommended that safe separation distances of 10 feet (3 meters) for HERO susceptible ordnance and 25 feet (7.6 meters) for HERO unsafe ordnance be maintained from active radars (DHS, 2022a).

HERF is the hazard associated with the possibility of igniting fuel or other volatile materials through RF energy-induced arcs or sparks. It is recommended that all transmitter antennas be silenced within 5.6 inches (14.2 centimeters) of fuel-handling operations (DHS, 2022a).

#### **3.1.1.3 Directed Energy**

Directed energy (e.g., lasers) is a C-UAS mitigation technique that is only approved by DHS for RDT&E. Lasers, which stand for Light Amplification by the Stimulated Emission of Radiation, are a product that release energy as visible light, invisible ultraviolet, or infrared radiation. Laser light is released with a specific wavelength and amplification, resulting in a narrow, focused beam of light that is concentrated in one area, as opposed to light emitted from sources such as lightbulbs, where light is diffused around an area (FDA, 2024). Although lasers



emit radiation, it is nonionizing and is not considered to be harmful to humans, as laser radiation behaves and interacts with the human body the same way that visible light does (FDA, 2018).

The federal Food and Drug Administration (FDA) is responsible for regulating laser use and safety. The FDA regulations have identified four major classes of lasers based on the hazard posed by the laser; the hazard level is determined based on the energy output from the laser and the potential for that laser to produce injury to humans (University of Wisconsin-Milwaukee, 2016). The International Electrotechnical Commission (IEC) has also developed its own laser classifications for international laser product labels (FDA, 2018). The laser hazard classifications established by the FDA, and equivalent IEC classifications, are presented in **Table 5**. DHS would likely use lasers under FDA Class IIIb or IV to support the directed energy technique.

**Table 5. Laser Hazard Classifications**

FDA Class	IEC Class	Power and Risk Level	Laser Product Hazard	Product Examples
I	1, 1M	No risk	Considered non-hazardous. Hazard increases if viewed with optical aids, including magnifiers, binoculars, or telescopes.	Laser printers, CD players, DVD players
IIa, II	2, 2M	Low power, low risk	Hazard increases when viewed directly for long periods of time. Hazard increases if viewed with optical aids.	Bar code scanners
IIIa	3R	Moderate power, moderate risk	Depending on power and beam area, can be momentarily hazardous when directly viewed or when staring directly at the beam with an unaided eye. Risk of injury increases when viewed with optical aids.	Laser pointers
IIIb	3B	Moderate power, moderate risk	Immediate skin hazard from direct beam and immediate eye hazard when viewed directly.	Laser light show projectors, industrial lasers, research lasers
IV	4	High power, high risk	Immediate skin hazard and eye hazard from exposure to either the direct or reflected beam; may also present a fire hazard.	Laser light show projectors, industrial lasers, research lasers, lasers used to perform LASIK eye surgery

Source: 21 CFR Part 1040; (FDA, 2024; University of Wisconsin-Milwaukee, 2016)

These laser hazard classifications are also correlated with laser hazard distances, which measure how far from a laser certain hazards exist, such as physical injury or hazards to aircraft and pilots (see **Section 3.3.2.1**). Higher laser classes are associated with stronger power outputs, which increase hazard distances. FDA Class II lasers may have hazard distances as low as 1.6 feet (0.5 meter), while Class IV lasers may have hazard distances that extend 173,391 feet (52,849.6 meters) (Laser Pointer Safety, 2025).

When used properly, lasers are generally designed to be safe, although improper use can pose serious danger to skin and eyes. The hazards of lasers generally come with direct interaction with the laser light beam, as opposed to any indirect effects from radiation (FDA, 2018). Direct exposure to or interaction with laser beams can result in injury to the skin or eyes. Similar to how exposure to the sun, which is diffused light, can damage eyes and skin, exposure to concentrated light from lasers can also cause injury (Laser Pointer Safety, 2025). Skin injuries are primarily limited to burns. Eye injuries could include damage to the cornea, loss of fine vision, loss of color perception, and the appearance of floaters (Weill Cornell Medicine, 2025).

In order to protect the public and workers from the general and occupational hazards posed by laser exposure, various federal agencies and expert organizations have issued regulations and standards regarding safety performance, protection, guidance on safe use, and exposure. In particular, the FDA has published regulations on laser performance standards (21 CFR 1040), OSHA has regulations on personal protective equipment (29 CFR 1910), and the ANSI has developed voluntary safety consensus standards (OSHA, 2025).

#### **3.1.1.4 Protection of Children**

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, directs federal agencies to consider the potential adverse impacts of their activities on children. Due to the nationwide scale of the Proposed Action, there is no site-specific area in which to analyze communities for populations with substantial numbers of children. However, because C-UAS activities could occur throughout the country, it is assumed that large populations of children may be encountered, particularly if mitigation is needed around schools. No children would be present at secured DHS facilities where RDT&E activities would occur. Across the U.S., the portion of the population under 18 years of age is 21.7 percent (US Census Bureau, 2024).

### **3.1.2 Environmental Consequences**

A significant adverse effect to human health and safety would occur if the use of active radars and directed energy resulted in serious injury to DHS personnel or the general public; disproportionately affected health and safety of children; or overwhelmed safety-related plans, procedures, or facilities.

#### **3.1.2.1 Proposed Action Alternative**

Under the Proposed Action, the use of active radar for both RDT&E and operational purposes, as well as the use of lasers for RDT&E, could result in *long-term, less-than-significant adverse effects* to health and safety from the exposure to RF radiation and lasers. DHS would adhere to all BMPs to protect human health and remain under professional exposure limits (see **Table 2**). The applicable MPE for occupational exposure to RF radiation would be less than 6 minutes at the associated power density (see **Table 4**), and the applicable MPE uncontrolled exposure would be less than 30 minutes at the associated power density. Active radar use in public areas could cause uncontrolled compliance issues if RDT&E or mitigation activities cause exposure at the high power density for longer than 30 minutes; however, these radars are not expected

to produce the high power densities that would necessitate a 30 minute limit, and this use would be below the MPE limits for public exposure. Use would comply with FCC regulatory standards as well as IEEE Standard C95.7 and standards issued by the International Commission of Non-Ionizing Radiation Protection in 2020. Further, prior to any RDT&E or operational activities using active radar that would occur in public places, DHS would cordon off sites and post signage to limit proximity to the active radar and warn the public about potential radiation hazards. However, if there is a credible threat to the public that requires C-UAS mitigation, under no circumstances should emergency response actions be delayed in order to implement these BMPs.

DHS personnel using active radars may experience occupational hazards related to RF radiation. Occupational use of active radar would comply with the same regulations and standards used to address public exposure. Personnel exposure would likely be more frequent and for longer durations than any potential public exposure, given the need to conduct repeated RDT&E and the exposure of the same groups of C-UAS operators when mitigation action is required. Any exposure exceeding the MPE limits may have the potential to result in adverse health effects to DHS personnel, such as internal heating, although this would not be significant. Personnel involved with C-UAS testing and operation would adhere to HERP procedures to reduce potential exposure hazards, including avoiding touching or lingering within 1.6 feet (0.5 meter) from an energized, high frequency antenna, ensuring adherence to posted warnings and zones, ensuring that all personnel with access to equipment are properly trained on safety protocols and limiting exposure, and not allowing unauthorized personnel to use active radar. Additionally, personnel may wear RF protective clothing, such as a suit with a hood, overshoes, and gloves, to further reduce exposure to RF radiation. Adherence to other HERO and HERF safety procedures would further ensure that personnel do not face additional hazards from the interaction of RF radiation with ordnance or fuel. Occupational exposure within the MPE limits would not have the potential to affect human health.

Use of directed energy (lasers) during RDT&E would also pose occupational hazards to DHS personnel from exposure to the light beam. Personnel would, at a minimum, adhere to OSHA standards for eye and face protection (29 CFR 1910.133). Additionally, personnel would be required to wear laser-rated protective eyewear, long-sleeved clothing, pants, close-toed shoes, and other coverings to protect skin and eyes. Personnel would be positioned behind any laser equipment prior to activation to avoid direct interaction with the light beam. RDT&E of directed energy would be limited to DHS facilities and their surrounding areas, so no personnel external to DHS would be exposed. Any C-UAS that uses active RF or directed energy would be secured in DHS facilities when not in use, and DHS would implement strict procedures to prevent unauthorized use and access of these technologies.

### **Protection of Children**

The Proposed Action is *not expected to result in disproportionate health and safety risks to children* from the use of active radar during RDT&E and operation, or from the use of directed

energy during RDT&E. Any public exposure to active radar and RF radiation during operational use would be the same for children as for adults. The use of active radar during RDT&E would not be focused near any schools, daycares, or other areas where there is a large or concentrated population of children. Directed energy would only be used for RDT&E purposes, which would be limited to DHS facilities or pre-established test sites, which are not accessible to children.

### **3.1.2.2 No Action Alternative**

Under the No Action Alternative, DHS would continue to utilize C-UAS to counter threats as currently authorized, including the use of active radar and directed energy for RDT&E, using project-by-project environmental analysis. Any RF radiation emitted from active radars or exposure to lasers under current uses would remain and may result in *long-term, less-than-significant adverse impacts* to the health and safety of DHS personnel. No C-UAS technologies would be tested or used publicly and, thus, there would be *no impact* to public health and safety or the protection of children.

However, if DHS were limited in their ability to advance C-UAS RDT&E or operational functions, DHS would not be able to address credible threats posed by unauthorized UAVs. Operators of these UAVs may be able to conduct malicious activity within the U.S. and would pose continued threats to human health and safety, as well as overall national security. The inability of DHS to address these threats could result in *long-term, significant adverse impacts* to health and safety.

## **3.2 Visual Resources and Aesthetics**

### **3.2.1 Affected Environment**

Visual resources and aesthetics are defined as the visible areas, points, or objects in a landscape, including features that are both manmade and natural, and moving and stationary. Visual resources can vary and are influenced by land uses, making visual quality subjective. However, characteristics such as clashing or incoherent architectural elements, permanent or temporary features that are anomalous with land uses, presence of litter, and dead vegetation may all be considered to render an area less attractive.

There are no federal laws or regulations that explicitly govern visual resources and aesthetics; however, some laws and federal protections for other resources inherently include visual considerations. For instance, under the NHPA, the potential visual impacts to the significance and integrity of historic properties, both above- and below-ground resources, including historic landscapes, are required to be assessed as part of a federal undertaking. Additionally, designated wilderness areas, national parks, National Scenic Areas, scenic byways, and other land uses also have protections related to visual quality that may require consideration.

Given the nationwide scope of this Proposed Action, visual resources and aesthetics are expected to vary widely across areas where DHS is conducting RDT&E and operational C-

UAS activities. Additionally, receptors (i.e., those who perceive changes to visual resources) would also vary depending on the location and associated land uses.

### 3.2.2 Environmental Consequences

A significant adverse impact to visual resources and aesthetics would occur if there were a permanent adverse alteration of the existing viewshed that eliminated the ability of a site to continue providing its existing value or role in the community.

#### 3.2.2.1 Proposed Action Alternative

DHS's proposed RDT&E and operational use of C-UAS would result in *short-term and long-term, negligible adverse impacts* to visual resources and aesthetics. In addition to any C-UAS equipment that would be needed, sUAS flights conducted by DHS either as part of RDT&E and training, or in response to a security threat that requires operational use of C-UAS (i.e., kinetic mitigation), would be visible from the ground.

C-UAS equipment ranges in size and configuration, from small setups (e.g., handheld devices, antennas, radio boxes, cameras, monitors and microphones), to large masts reaching up to 140 feet (42.7 meters) tall that may either be affixed to a trailer or permanently installed on the ground. Other equipment includes small poles and associated equipment mounted within a truck or trailer bed, tripods that are typically under 10 feet (3 meters) tall and can be placed on the ground or building rooftops, and small masts that are under 30 feet (9.1 meters) tall. The presence of C-UAS systems mounted on buildings or the ground installation of tall C-UAS masts with equipment fixtures could result in temporary and permanent changes to the viewscape. Although C-UAS equipment may be installed within and outside of DHS facilities, any addition (temporary or permanent) of C-UAS to DHS facilities would occur within secured properties that are typically not readily accessible or fully visible by the public. Any C-UAS equipment that may be visible would be similar in appearance to other common types of security equipment or infrastructure, such as cameras, satellite receptors, or cell towers. Therefore, if C-UAS equipment was visible from these sites, or if sUAS flights associated with RDT&E and training were visible, the public would likely already be familiar with these types of activities and equipment.

Mobile C-UAS systems, such as those mounted to a tripod or vehicle, or handheld, would also be used for RDT&E and training activities, and may also be deployed operationally to address credible threats. These systems would be transported to test at operational locations by vehicle. For testing and operational use of mobile C-UAS systems that occurs in developed, urban and suburban areas, the population in these areas would likely be accustomed to law enforcement personnel and equipment, and the presence of sUAS test flights, and the use of C-UAS would not constitute unfamiliar visual elements on the landscape. The presence of sUAS test flights and the use of mobile C-UAS equipment in rural areas or lightly developed border communities would be more incongruous with existing visual resources than in highly developed areas; however, these visual changes would be temporary and would only last the

duration needed to conduct RDT&E, training, or operation. Multiple repeated occurrences of mobile C-UAS use are not expected in the same area in a short timeframe, as DHS would perform testing in varying conditions, and it is unlikely that credible threats requiring C-UAS operation would occur repeatedly in the same area.

Although impacts are generally expected to be temporary and minimal, DHS would still adhere to BMPs as applicable to minimize impacts to visual resources. During testing, and in accordance with the requirements discussed in Section 3.1 of the 2022 sUAS PEA, which are incorporated here by reference, sUAS flights conducted in support of C-UAS RDT&E would not exceed 400 feet (121.9 meters) above ground level, unless higher elevations are approved by the FAA (DHS, 2022c). DHS would adhere to applicable regulations regarding visual quality near historic sites or other protected land uses during RDT&E and training activities. Lastly, DHS would also adhere to the process outlined in the NPA developed in accordance with Section 106 of the NHPA to address potential visual impacts to historic properties from C-UAS undertakings (see **Section 3.5**).

#### **3.2.2.2 No Action Alternative**

Under the No Action Alternative, DHS would continue to utilize C-UAS to counter threats as currently authorized using project-by-project environmental analysis, and *short-term, negligible adverse impacts* on visual resources and aesthetics would occur as a result of permitted C-UAS activities.

### **3.3 Airspace**

#### **3.3.1 Affected Environment**

Airspace management is defined as the coordination, integration, and regulation of the use of airspace. Airspace management procedures assist in preventing potential conflicts or aircraft accidents associated with aircraft using designated airspace in the U.S., including restricted military airspace. The objective of airspace management is to meet DHS operational requirements through the safe and efficient use of available navigable airspace, while minimizing the impact on other aviation users and the public. Navigable airspace is defined as the airspace at or above the minimum altitudes of flight that includes the airspace needed to ensure safety in the takeoff and landing of aircraft. FAA administers this airspace in the public interest as necessary to ensure the safety of aircraft and its efficient use.

FAA laws and regulations allow UAS to be lawfully operated. 49 U.S.C. § 40103 grants the public the right to travel through navigable airspace and gives the FAA the authority to regulate airspace for safety and efficiency (FAA, 2020). This includes ensuring that properly authorized aircraft, including UAS, can operate without undue interference. C-UAS detection systems can identify both authorized airspace users and illegal activities; therefore, FAA advises undertaking further analysis to determine whether a detected operation violates FAA regulations before taking any action. The *Preventing Emerging Threats Act of 2018*, codified



in 6 U.S.C § 124n, authorizes DHS to take protective measures that are necessary to mitigate a credible threat that a UAS may pose to the safety or security of an authorized DHS mission.

Under 49 U.S.C. § 44718 and 14 CFR Part 77, entities planning to build or modify structures near airports (e.g., affixing an antenna to a structure) must notify the FAA. FAA Order 7400.2 outlines procedures for evaluating potential hazards to air navigation, including risks from structures and electromagnetic signals associated with C-UAS detection devices (FAA, 2020). Installing stationary C-UAS detection systems near airports may also require advance notice to the FAA under Part 77.

Generally, UAS operations, including those performed by DHS as part of C-UAS operations, are regulated by the FAA under 14 CFR Part 107, *Small Unmanned Aircraft System (sUAS) Regulations*. Requirements for sUAS pilots, sUAS registration, limits for sUAS usage, and state and local restrictions pertaining to UAVs are discussed in the 2022 sUAS PEA and incorporated here by reference (DHS, 2022c).

### 3.3.2 Environmental Consequences

A significant adverse impact to airspace would occur if there were a violation of FAA safety regulations or an infringement on existing flight activity and corridors.

#### 3.3.2.1 Proposed Action Alternative

With adherence to internal SOPs and other applicable federal regulations concerning UAS operation and navigable airspace, the Proposed Action Alternative would have a *beneficial effect* on airspace. DHS would coordinate with FAA when any C-UAS action might affect aviation safety, civilian aviation, airspace use, aerospace operations, or aircraft airworthiness. If a UAS is violating applicable laws or FAA regulations, such as those outlined in Part 107, but does not pose a credible threat, DHS would notify the appropriate FAA Regional Operations Center of the suspected violation. However, if after detecting, identifying, monitoring, and tracking a UAS, the UAS is found to pose a credible threat to covered facilities or assets, DHS would mitigate the threat in accordance with 6 U.S.C. § 124n. Mitigating such threats would help maintain the safety of navigable airspace by preventing potential disruptions or hazards to authorized aircraft operations.

RDT&E events would be evaluated using the DHS BMP Implementation Checklist (Checklist) (see **Appendix D**). Use of the Checklist would ensure compliance with all FAA regulations by incorporating questions related to required approvals, coordination, and communication with the FAA. The Checklist would be completed at least one month before each C-UAS testing event, allowing sufficient time to address any potential airspace concerns and minimize risks to airspace. DHS would coordinate, as appropriate, with other federal, state, local, territorial, tribal, and private stakeholders whose activities could be affected by a Component's proposed C-UAS activities.

C-UAS mitigation using net capture or RF may cause the targeted UAV to fall to the ground, potentially creating a safety hazard in the airspace. However, an uncontrolled or hostile UAV already poses a risk to airspace safety, making DHS intervention beneficial in mitigating that threat. DHS personnel would only use a mitigation technique that involves disabling a UAV after first notifying the FAA of the intended action.

Since both C-UAS sensor and mitigation technologies utilize RF, there is the potential for RF interference with aircraft and aircraft communications, which could result in *short-term, less-than-significant adverse impacts*. The majority of critical aeronautical navigation systems, for civilian, commercial, and military aircraft, operate within the 960-1164 MHz frequency band, which has traditionally been reserved for those purposes. The FCC has identified potential concerns with allowing UAS to operate within this band and use of this band by UAS is currently not permitted (FCC, 2020). Testing of the directed energy mitigation technique may also pose safety hazards to aircraft and flight crews. Laser light that is emitted in navigable airspace (i.e., a minimum safe altitude of 1,000 feet [304.8 meters] above the highest obstacle in congested areas and 500 feet [152.4 meters] in non-congested areas [14 CFR 91.119]) can result in visual interference with the aircraft. Pilots may experience glare, temporary flash blindness, disorientation, or eye pain, potentially resulting in accidents or disrupted flights (FAA, 2022). Any C-UAS using RF or directed energy would be stored within a DHS-secured facility when not in use, with strict procedures in place to ensure that these technologies are protected against unauthorized access or misuse.

Components that have identified a need to test, use, and/or operate C-UAS near airports would ensure full compliance with all applicable laws and regulations, including not using frequency bands that are critical for aeronautical safety. The Component would follow FAA Order 7400.2 procedures to assess and mitigate potential hazards to air navigation, including interference from C-UAS detection systems. In order to address potential safety hazards from outdoor testing of directed energy (i.e., lasers) for C-UAS mitigation, Components would be required to file FAA Form 7140-1, Notice of Proposed Outdoor Laser Operations, at least 30 days prior to conducting any such RDT&E activity.

If installing stationary C-UAS detection equipment near an airport, the Component would evaluate whether notification to the FAA of any planned construction or modification of structures near airports is required under 14 CFR Part 77 to ensure regulatory compliance. Before any member of DHS can take C-UAS action, Components would implement a C-UAS training and qualification process to ensure that DHS personnel have a thorough understanding of the legal requirements and restrictions on C-UAS actions. DHS training and qualifications for C-UAS operations would include equipment-specific training and techniques to minimize potential interference with airspace.

In some cases, testing and mitigation would involve DHS use of sUAS. BMPs established in the 2022 sUAS PEA ensure that UAS operators and mission personnel work within established regulations and coordinate with the FAA and other federal, state, and local aviation partners as



necessary to deconflict operations in navigable airspace (DHS, 2022c). DHS and Components would comply with BMPs identified in Section 3.1 of the 2022 sUAS PEA, which are incorporated here by reference (DHS, 2022c), as well as the BMPs listed in **Table 2**.

### **3.3.2.2 No Action Alternative**

Under the No Action Alternative, DHS would continue to utilize C-UAS to counter threats in accordance with FAA regulations as currently authorized using project-by-project environmental analysis; however, without expanded and streamlined C-UAS capabilities, there could be increased risks to airspace due to non-compliant UAV use in unauthorized airspace that DHS may be more limited in addressing. Therefore, the No Action Alternative would have a *long-term, less-than-significant adverse impact* on airspace.

## **3.4 Biological Resources**

### **3.4.1 Affected Environment**

Biological resources include vegetation, fish, wildlife, and the habitats in which they occur. The proposed use of C-UAS has minimal potential to result in ground disturbance or vegetation removal due to the small equipment footprint and functionality of the systems. C-UAS may be operated from developed areas (i.e., roads, disturbed lands, maintained rights-of-ways), vegetated open areas, and/or DHS vessels in open water. Additionally, while C-UAS may be operated from existing DHS vessels, the Proposed Action would not occur under water.

#### **Wildlife**

The U.S. supports thousands of species of wildlife (birds, mammals, fish, reptiles, amphibians, and invertebrates), including both resident species and migratory species. Many of these species use a variety of riparian and upland habitats. Common mammals within the U.S. could include deer, coyote, bobcat, and variety of bats and rodents. Reptiles and amphibians, such as lizards, snakes, toads, and frogs, are present in upland and riparian habitats.

#### **Vegetation**

Vegetation in the U.S. varies widely across regions and includes both native and introduced trees, flowers, shrubs, and grasses. Common land cover types include forest, shrublands, grasslands, and wetlands, which may be comprised of both water and vegetated cover. Willows, dogwoods, and a variety of herbaceous plants are commonly found in riparian areas, while upland areas typically support oaks, pines, and native grasses.

#### **Special Status Species and Critical Habitat**

Special status species are those species for which state or federal agencies provide an additional level of protection by law, regulation, or policy. Included in this category are federally listed species that are protected under the Endangered Species Act of 1973 (ESA), as amended, species considered as candidates for such listing by the USFWS, and those species that are state-listed by a state wildlife or environmental agency as threatened, endangered, or of special

concern, or otherwise protected by federal or state laws. Special status species are broadly distributed throughout the U.S. and its territories. Critical habitat designations are specific areas within a species' range that contain the physical or biological features that are essential to the conservation and recovery of federally listed threatened and endangered species. For example, physical and biological features present in critical habitat may include vegetation, water, substrate, and aquatic invertebrate fauna, among others.

The ESA establishes a federal mandate to conserve, protect, and restore federally listed threatened and endangered (T&E) plants and animals and their habitats. Section 7 of the ESA mandates all federal agencies to consult with the USFWS and/or the NOAA National Marine Fisheries Service (NMFS) for proposed actions with the potential to affect T&E species. In accordance with Section 7 of the ESA, DHS, in coordination with USFWS and NMFS, must ensure that any federal action authorized, funded, or carried out by the agency does not jeopardize the continued existence of federally listed T&E species or result in an adverse modification of designated critical habitat of federally listed species. There are approximately 1,700 federally listed T&E species in the U.S. (USFWS, 2025).

### **Marine Mammals**

The Marine Mammal Protection Act of 1972 (MMPA), as amended, protects all marine mammals and polar bears within U.S. waters. Under the MMPA, it is illegal to “take” (i.e., hunt, harass, capture, or kill) marine mammals and import or export marine mammals and their parts or products without a permit except under specific circumstances. NMFS and the USFWS are jointly responsible for implementing the MMPA, and coordination with these agencies is required for actions with the potential to result in a “take.” NMFS is responsible for whales, dolphins, porpoises, seals, and sea lions, and USFWS is responsible for walrus, manatees, sea otters, and polar bears (NOAA Fisheries, 2022).

### **Migratory Birds and Bald Eagles**

The Migratory Bird Treaty Act of 1918 (MBTA), as amended, protects over 800 migratory birds from capture, pursuit, hunting, or removal from natural habitat. Migratory birds are species that nest in the U.S. and Canada during the summer and then migrate to and from the tropical regions of Mexico, Central and South America, and the Caribbean for the non-breeding season. The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird species, including feathers or other parts, nests, eggs, or products, without prior authorization by the USFWS. Disturbance that causes nest abandonment and/or loss of reproductive effort (e.g., killing or abandoning eggs or young) may also be considered a “take.” EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, was issued in 2001 to ensure that federal agencies take certain actions to further implement the MBTA.

In addition to protections for birds provided by the ESA and MBTA, the USFWS identifies birds of conservation concern (BCC), which are migratory and non-migratory bird species not already listed under the ESA that represent the highest avian conservation priorities. A total of

269 individual bird taxa were listed in the BCC 2021 report, and USFWS recommends this list be consulted in accordance with migratory bird regulations in order to protect these taxa from proposed actions (USFWS, 2021).

The Bald and Golden Eagle Protection Act of 1940 (BGEPA), as amended, prohibits taking or harming bald and golden eagles, their eggs, nests (both active and inactive), or young without a permit. Any actions that are likely to cause injury to an eagle, decrease its productivity, or cause nest abandonment are prohibited under the BGEPA. Additional guidance from USFWS, such as the National Bald Eagle Management Guidelines (USFWS, 2007), identifies measures to protect eagles and their nests, such as use-specific buffers around nests. Bald eagles can be found throughout the U.S., except for Hawaii, usually near large bodies of water, while golden eagles are typically found in western states and nest in cliffs (Cornell Lab of Ornithology, 2019; Wildlife Informer, 2021).

### 3.4.2 Environmental Consequences

A significant adverse effect to biological resources would occur if proposed activities result in substantial permanent loss or degradation of terrestrial or aquatic habitat; result in unpermitted “take” of listed species; or violate regulations concerning special status species.

#### 3.4.2.1 Proposed Action Alternative

##### Wildlife

Aspects of the Proposed Action that have the potential to impact wildlife include increased human activity from surface-level disturbance and site access, use of active radar systems, exposure to directed energy, and collisions with UAVs or nets.

As described in **Section 3.1.1**, C-UAS sensor technologies that detect passive RF, EO/IR, and acoustic signals only receive and digitally analyze signals from the environment. They do not emit energy, noise, or disturbance that could affect species or habitat. Therefore, non-radar sensors would have no impacts on wildlife. Operation and testing of the C-UAS active radar systems and RDT&E of directed energy would have no impacts on ground-based mammals, vertebrates, reptiles, and amphibians (i.e., species without the ability to fly) since these systems would be directed toward the airspace where UAVs are flying. Operation and testing of the C-UAS active radar systems and RDT&E of directed energy would have no impact on aquatic species, however, unrecoverable debris resulting from collisions involving UAVs and nets could have a *short-term, negligible adverse impact* on aquatic species. Unrecoverable debris resulting from collisions involving UAVs and nets could also have a *short-term, negligible adverse impact* on ground-based mammals, invertebrates, reptiles, and amphibians. Operation and testing of the C-UAS active radar systems could have a *short-term, negligible adverse impact* on birds, bats, and flying insects from the potential exposure to RF radiation. Similarly, RDT&E of directed energy and collisions involving UAVs or nets would have a *short-term, negligible adverse impact* on birds, bats, and flying insects.

In the case of C-UAS operations, DHS would be responding to a credible threat that may have already disturbed wildlife in the area; therefore, the DHS response would have a marginal *short-term, negligible adverse impact* on wildlife beyond that caused by the unauthorized UAV. Any potential risks posed to wildlife from the operation of sUAS as part of C-UAS operations, such as operations at launch and landing sites and disturbances from flying UAVs would be addressed in accordance with the minimization measures included in the 2022 sUAS PEA. Programmatic informal consultation with USFWS identified BMPs for DHS personnel to follow when flying UAVs to minimize disturbances. These BMPs, included in Appendix C of the 2022 sUAS PEA, are incorporated by reference into this PEA (DHS, 2022c). As previously concluded in the 2022 sUAS PEA, noise from UAVs used in C-UAS operations would be minimal, brief, and occur at distances over 200 feet from any species, and impacts would be negligible.

Active radar technologies utilized by DHS to conduct C-UAS mitigation would not result in human exposure that exceeds the MPE limits (see **Section 3.1**). Similar exposure limits have not been established for wildlife. However, based on these limits, a human target would need to be within approximately 8.5 feet (2.6 meters) from the front or side of an active radar operating at the power density identified in **Table 4** over a 6-minute period to exceed the MPE limit. During a C-UAS test event or C-UAS operation utilizing active radar, the nearest wildlife species would be expected to be much farther than 8.5 feet away from the equipment due to their avoidance of the disruptive presence of humans, vehicles, and equipment. While species could experience internal heating and possible behavioral changes as a result of continuous direct exposure to RF radiation (IEEE, 2019), birds and bats are often moving and would not remain in a radar beam for more than a few seconds; adverse effects from RF exposure generally require sustained exposure periods on the order of minutes. As such, it is unlikely that birds or bats would be exposed to a radar beam for a sufficient length of time to cause internal heating or behavioral changes because the beam is narrow and pulses rapidly. The risk of harm to bats is further reduced because the Proposed Action would primarily occur during daylight hours when bats are not active. While RDT&E of active radar would have repeated occurrences in the same location to test the technology, DHS would adhere to the standard BMPs identified in **Table 2** and **Appendix D** to minimize adverse effects to wildlife.

DHS would use directed energy (e.g., lasers or microwaves) only in an RDT&E setting, which involves more control and planning than the use of C-UAS in an operational setting. Although exposure to or contact with laser beams can cause injuries to the skin and eyes, directed energy emitted from C-UAS would be aimed directly at the targeted UAV and would not use wide beams that could disperse energy over a larger area. Further, if personnel observe birds or bats before or during any directed energy test event, DHS would adhere to standard BMPs (see **Table 2**) and would delay the test until either the species has moved away from the testing area, or the test can be relocated to an area where the species would not be disturbed.

The potential for wildlife collisions, such as avian or bat strikes, or net entanglements (e.g., during kinetic mitigation) when taking control of a target UAV is highly unlikely. Similar to conducting radiation or directed energy activities, DHS would adhere to the standard BMPs to check for wildlife prior to conducting RDT&E or mitigation using nets. Potential harm to birds or bats through direct collision with UAVs or entanglement in nets could occur; however, it is likely that birds and bats could easily maneuver and avoid an approaching UAV, thus minimizing potential collisions. C-UAS mitigation rarely generates debris during operations or RDT&E. UAVs are typically small, constructed of lightweight materials, and fragment minimally upon impact. Nets are designed for retrieval and often include tethers to facilitate recovery of both the net and any captured UAV. Therefore, the potential for debris ingestion or net entanglement is extremely low, and DHS personnel would attempt to promptly recover any debris resulting from C-UAS mitigation operations in rare cases where debris is produced.

Human presence at C-UAS operation sites could also disturb nearby wildlife, although this disruption would be minimal since most C-UAS operations involve few personnel and would last between one and up to several hours. Vehicles or vessels used to access these locations would generally be restricted to existing developed areas or properties where human presence already occurs. Mobile species disturbed by these activities would be expected to leave the area and return once the disruption ends. Less mobile species would likely take shelter while personnel are on-site. Any debris produced from C-UAS mitigation, such as downed UAVs or nets, would be recovered by DHS as part of the investigation into the incident. These disturbances would be temporary and sporadic, and operations would not be frequently repeated in the same location. RDT&E would primarily occur within designated testing environments that have been previously disturbed; therefore, wildlife are less likely to be present. The Proposed Action would not result in any permanent displacement of species. The use of vessels for C-UAS operations over water carries a potential risk of unintended contact with marine mammals near the surface. However, these vessels are currently used to conduct DHS missions, and no additional vessels would be deployed for C-UAS operations. Additional information on potential impacts to marine mammals is discussed below.

### **Vegetation**

Activities associated with the Proposed Action that could affect vegetation include surface-level disturbance and site access, which would have a *short-term, negligible adverse impact* on vegetation. C-UAS may be operated from roads, trails, paved surfaces, otherwise previously disturbed or developed areas, or DHS vessels in open water. Although C-UAS equipment has a small footprint, transporting systems to new operational locations on foot or with vehicles, and affixing them to the ground may cause extremely minor ground disturbance such as from stakes or ground-anchored guy wires. Additionally, while C-UAS operations that produce debris are extremely rare, any debris from C-UAS mitigation, such as downed UAVs or nets, would be recovered by DHS as part of the incident investigation. Recovery operations may

require DHS personnel to hike into more natural vegetated areas, and the falling debris itself has the potential to land on vegetation, though this is extremely unlikely.

### **Special Status Species and Critical Habitat**

Potential impacts on special status species, including federally listed and state-listed T&E species, would be the same as those for general wildlife. To minimize adverse impacts to the extent practicable that may result from the Proposed Action, DHS and its Components would implement the BMPs in **Table 2** as a requirement for its C-UAS RDT&E and operational mission use. The Proposed *Action may affect, but is not likely to adversely affect*, critical habitat and federally listed plants and lichens; ground-based mammals, invertebrates, reptiles, and amphibians; bats; birds; flying insects; marine mammals and sea turtles; and other marine and freshwater aquatic species. As with general wildlife discussed above, non-radar sensors would have *no effect* on critical habitat and listed plants and lichens; ground-based mammals, invertebrates, reptiles, and amphibians; bats; birds; flying insects; or marine and freshwater aquatic species. The components of the Proposed Action with the potential to affect threatened and endangered species and critical habitat are discussed below. DHS submitted a Final Programmatic Biological Assessment (see **Appendix C**) with these effect determinations to the USFWS and NOAA Fisheries in July 2025, pursuant to Section 7 of the ESA. NOAA Fisheries and USFWS provided their concurrences with the effect determinations in the Programmatic Biological Assessment on August 28 and August 29, 2025, respectively (see **Appendix C**).

**Designated Critical Habitat and Listed Plants and Lichens:** Surface-level disturbance and site access that occurs because of C-UAS RDT&E and operations would have a *short-term, negligible adverse impact* on designated critical habitat and listed plants and lichens, as discussed above with regard to vegetation. RDT&E would primarily occur within previously disturbed, designated locations that have been determined ahead of time not to contain critical habitat or federally listed plants and lichens through IPaC review in accordance with the BMPs in **Table 2**.

Operations that require DHS personnel to hike into more natural vegetated areas or emergency C-UAS operations that occur within areas not previously disturbed have the potential to disturb critical habitat or federally listed plants and lichens. However, the vast majority of C-UAS operations occur in previously disturbed or developed areas where DHS covered assets or facilities are present. Of these operations, the vast majority also do not require kinetic mitigation, as most target UAVs are intercepted and landed in a controlled manner using electronic mitigation or by locating the operator and directing them to land the UAV. When kinetic mitigation is required because other mitigation options are inadequate to address the threat, it very rarely produces debris. In practice, debris generation is an unfortunate accident, as it is DHS's goal to land or recover UAVs intact, which allows them to maintain craft integrity for further security investigation. DHS also avoids bringing UAVs down in uncontrolled



areas where retrieval would be more difficult for the same reason. Therefore, it is extremely unlikely that personnel would be required to enter more natural areas where critical habitat or listed plant or lichen species may occur. As such, exposure of listed plants, lichens, and critical habitat to this disturbance is anticipated to be insignificant. Consequently, surface-level disturbance and site access *may affect, but are not likely to adversely affect*, designated critical habitat and listed plants and lichens. Operation and testing of the C-UAS active radar systems, RDT&E of directed energy, and C-UAS operations and collision risks would not affect designated critical habitat and listed plants and lichens. These activities occur in the airspace, with no ground disturbance or direct contact with vegetation. While prolonged ground-level exposure to directed energy could harm vegetation, C-UAS systems are focused on airborne targets and do not linger over areas where designated critical habitat or listed plants and lichens may occur.

**Ground-based Mammals, Invertebrates, Reptiles, and Amphibians:**<sup>1</sup> Human presence at C-UAS operation sites, including UAV/net recovery activities, would have a *short-term, negligible adverse impact* on ground-based mammals, invertebrates, reptiles, and amphibians. As noted above regarding general wildlife, disruptions would be minimal since most operations involve only a few personnel and last several hours at most. Vehicles or vessels used to access these locations would be limited to existing roads, trails, paved surfaces or areas where human activity is already present on occasion in accordance with the BMPs in **Table 2**. Mobile species disturbed by these activities would likely leave the area and return once the disruption ends, while less mobile species would likely take shelter while personnel are on-site. Except for RDT&E, which would occur in the same locations, these disturbances would be temporary and sporadic, with operations rarely repeated in the same place.

In addition to potential disturbance from human proximity, there is a risk of trampling or crushing small insects and invertebrates that are unable to avoid foot traffic or equipment placement. However, several factors substantially reduce the likelihood and severity of such effects. First, as noted above with regard to designated critical habitat and listed plants and lichens, C-UAS operations would primarily occur on roads, trails, paved surfaces, or other previously disturbed or developed areas where small, ground-dwelling insects are less likely to be present. Second, although fallen debris or the act of recovering debris could also result in physical impact, such situations are extremely rare. Only kinetic mitigation has the potential to produce debris, and even then, debris generation is uncommon under typical operational conditions. Third, the spatial footprint of C-UAS activities is very small, and, as discussed above, the duration of

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<sup>1</sup> DHS considers ground-based mammals in this analysis to include terrestrial mammals, excluding bats as this taxon is analyzed separately. Terrestrial amphibian phases are analyzed in conjunction with ground-based mammals, invertebrates, and reptiles. Aquatic amphibian phases are analyzed with all other marine and freshwater aquatic species.

ground-based activity is brief. Overall, implementation of BMPs, including limiting ground-based activities to roads, trails, paved surfaces, or other previously developed or disturbed areas, the infrequency of debris-related activities, the small area affected, and the short duration of exposure indicate that interactions with federally listed ground-based species would be highly unlikely. As such, potential impacts from surface-level disturbance and site access are considered discountable.

In accordance with the findings in the 2022 sUAS PEA, noise generated by UAVs used in C-UAS operations is expected to be minimal and short in duration, with UAVs remaining in motion at a distance greater than 200 feet away from any species. As such, noise levels would not result in behavioral disturbance or injury to ground-based species. Overall, the Proposed Action *may affect, but is not likely to adversely affect*, federally listed ground-based mammals, invertebrates, reptiles, and amphibians. Operation and testing of the C-UAS active radar systems and RDT&E of directed energy would not affect federally listed ground-based mammals, invertebrates, reptiles, and amphibians. As noted above, the nearest wildlife species would be expected to be much farther than 8.5 feet away from the equipment during the use of active radar and directed energy would not be aimed towards ground level.

**Flying Insects:** Surface-level disturbance and site access, operation and testing of the C-UAS active radar systems, RDT&E of directed energy, and C-UAS operations and collision risks would have a *short-term, negligible adverse impact* on flying insects. Although flying insects are generally mobile and would likely leave the area and return once the disruption ends, there is some potential for impacts to flying insect species that are less mobile. Site access and equipment setup could result in the trampling or crushing of flying insects that are resting on low vegetation or the ground. However, given the low likelihood of species presence in operational areas, the brief and localized nature of activity, and the unlikelihood that suitable habitat would be disturbed, the potential for effects to listed species is so low as to be discountable.

Although unlikely, insects in flight may encounter active radar, directed energy, or nets and/or UAVs deployed for C-UAS mitigation. However, flying insects are unlikely to be affected by these C-UAS measures due to their low flight altitude, small size, and mobility. First, in the event that insects in flight encounter active radar, they would typically be in motion and would only pass through the radar beam for a few seconds at most. This brief exposure is not sufficient to cause internal heating or other adverse effects, which generally require sustained, close-range exposure to high-power RF radiation. Second, exposure of insects in flight to directed energy is highly unlikely because the energy beams used in directed energy RDT&E are narrowly focused and typically aimed at higher altitudes, above the typical flight range of most insects. Third, while flying insects may respond behaviorally to nearby UAVs or nets, the risk of collisions or entanglements is considered discountable given the limited duration,



limited frequency, and altitude of C-UAS mitigation operations. As such, any exposure of flying insects to active radar, directed energy, or nets and/or UAVs deployed for C-UAS mitigation would be so minimal as to be discountable. Therefore, the Proposed Action *may affect, but is not likely to adversely affect*, federally listed insect species.

**Bats:** Surface-level disturbance and site access, the operation and testing of C-UAS active radar systems, RDT&E of directed energy, and collisions involving UAVs and nets would have a *short-term, negligible adverse impact* on bats. The very limited ground disturbance that may occur under the Proposed Action would not affect bat species because tree clearing, vegetation clearing, and C-UAS operation from bat hibernacula would not occur. However, because the Proposed Action would occur nationwide, suitable habitat for federally listed bat species may be present near C-UAS operational sites where human activity is occurring. DHS personnel would avoid known occupied maternity roost trees to the greatest extent practicable. It is highly unlikely that C-UAS operations would occur close enough to bat hibernacula (e.g., caves) to impact hibernating bats; however, C-UAS operations may occur within 0.25 mile of a known federally listed species hibernacula unknowingly. Although no C-UAS operations would occur in caves or abandoned mines, complete avoidance of adjacent caves or existing forested areas where bats roost may not be practicable.

C-UAS test events and operations would predominantly occur during daylight hours, however, there is the potential for nighttime operations. Therefore, bats could be exposed to active radar during flight. As described above regarding general wildlife, bats could experience internal heating and possible behavioral changes as a result of continuous direct exposure to RF radiation (IEEE, 2019). However, bats in flight are often moving over large areas and would not remain in a radar beam, which is narrow and pulses rapidly, for more than a few seconds. As such, it is unlikely that bats would be exposed to a radar beam for a sufficient length of time to cause internal heating or behavioral changes. Adverse effects from RF exposure generally require sustained exposure periods on the order of minutes; because bats would only intersect the beam briefly in flight, the exposure duration would not be sufficient to result in adverse biological effects. Therefore, any impacts to bats would be insignificant. Similarly, while it is possible a bat could enter the airspace during a directed energy test event, such occurrences are expected to be extremely rare, as DHS would only use directed energy in an RDT&E setting, which involves considerable control and planning. Although direct exposure to laser beams can cause injuries to the skin and eyes of living organisms, the directed energy used in C-UAS RDT&E would be focused on test targets in flight, not dispersed over a wide area. This concentrated beam significantly reduces the likelihood of unintended exposure. Given the controlled nature of RDT&E, narrow beam focus, low probability of bat presence, and implementation of BMPs, any potential exposure to directed energy is extremely unlikely and is considered discountable.

The potential for wildlife collisions or net entanglements when taking control of a target UAV is highly unlikely; kinetic mitigation techniques that involve physical action toward the UAV only represent one of several mitigation strategies that DHS may employ to eliminate the risk posed by a target UAV and are used infrequently. In scenarios where DHS deploys a pursuing UAV or launches a net, the target UAV would likely have already caused sufficient disturbance to prompt bats to vacate the area. In the very rare case that a C-UAS operation involves a DHS UAV to counter the target UAV, and the operation occurs at a time when bats are active in the airspace, and the bat remains nearby, biological and operational factors further reduce collision risk. Bats possess highly developed echolocation and agile flight capabilities, allowing them to detect and evade moving objects, including UAVs generally traveling at speeds between 15 and 30 miles per hour. Therefore, although potential harm to bats through direct collision with UAVs or entanglement in nets could occur, it is likely bats could easily maneuver and avoid an approaching UAV, thus minimizing potential collisions. As a result of the infrequent use of kinetic mitigation, the avoidance behavior of bats, and adherence to BMPs, any potential for collisions or entanglement with bats is extremely unlikely. Therefore, such impacts are considered discountable. Overall, the Proposed Action *may affect, but is not likely to adversely affect*, federally listed bat species.

**Birds:** Like bats, surface-level disturbance and site access, the operation and testing of C-UAS active radar systems, RDT&E of directed energy, and collisions involving UAVs and nets would have a *short-term, negligible adverse impact* on birds. Since no vegetation or tree clearing would occur, habitat disturbance is not anticipated. While birds may temporarily leave the area due to human presence or equipment, these disturbances would be brief and unlikely to result in nest abandonment. Exposure to active radar or directed energy is highly unlikely to cause harm due to the narrow beam width, brief exposure duration, and the altitude at which these systems operate. Similarly, the potential for collisions or entanglements with UAVs or nets is extremely low, as birds are agile and such mitigation methods are rarely used. C-UAS operators would adhere to the BMPs in **Table 2**, such as conducting pre-operations checks, to avoid and minimize impacts on airborne wildlife until airspace is clear at the moment of deployment. Additionally, C-UAS operators would maintain 200-foot buffers from birds, to avoid and minimize impacts on birds. Given the temporary, localized, and infrequent nature of operations, the likelihood of adverse impacts to federally listed bird species is discountable. Therefore, the Proposed Action *may affect, but is not likely to adversely affect*, federally listed bird species.

**Marine Mammals and Sea Turtles:** Surface-level disturbance and site access and collisions involving UAVs and nets would have a *short-term, negligible adverse impact* on marine mammals and sea turtles. The 2022 sUAS PEA evaluated the potential effects of sUAS flights on federally listed marine mammals, including the risk of

accidental contact with vessels, and concluded that the Proposed Action would have no effect on these species (DHS, 2022c). Similar to other wildlife, marine mammals are unlikely to experience exposure to active radar or directed energy that could lead to injury; marine mammals and sea turtles occur in water or at haul-out locations on beaches, and would not be exposed to radiation beams or directed energy aimed at UAVs in the air. Because C-UAS operations and RDT&E would not occur in-water, they would not result in underwater vibrations or disturbances to marine mammals. C-UAS mitigation operations requiring the use of UAVs may produce noise within the generalized hearing range of most federally listed marine mammals and sea turtles. However, the threshold of noise produced is below the behavioral and injury thresholds for those species (Accomando, et al., 2025; NMFS, 2024).

The potential for C-UAS activities to affect marine mammals and sea turtles exists in both terrestrial and marine environments, but is minimal due to the brief, localized, and infrequent nature of operations. Terrestrial activities would be restricted to previously disturbed areas, avoiding beaches that support nesting sea turtles or haul-out sites for pinnipeds. Marine vessel use is not part of the Proposed Action and DHS would rely on existing vessels with appropriate permits. It would be the responsibility of DHS to determine whether vessel operations utilized for specific C-UAS activities have existing ESA coverage. As such, any effects due to surface-level disturbance or site access are expected to be discountable.

As described above with regard to ground-based mammals, invertebrates, reptiles, and amphibians, the presence of debris or nets may result in entanglement or may be ingested causing injury. However, C-UAS mitigation that could potentially produce debris would rarely occur over water, and DHS personnel would recover any debris to the maximum extent feasible. Given the limited likelihood of operations occurring in marine settings, the infrequency and design of kinetic mitigation activities that could result in debris, the built-in recovery measures, and the relatively uncommon occurrence of federally listed marine mammals and sea turtles, the potential for these marine species to encounter unrecoverable debris or nets is extremely unlikely and therefore discountable. As such, the Proposed Action *may affect, but is not likely to adversely affect*, federally listed marine mammals and sea turtles pursuant to the ESA. The operation and testing of C-UAS active radar systems and RDT&E of directed energy would not affect marine mammals and sea turtles. These species would be much farther than 8.5 feet from the front or side of an operating active radar for any continuous six-minute period and directed energy would be aimed away from these animals (which occur at ground/water surface) and toward the airspace. Pursuant to the MMPA, the Proposed Action is not likely to result in the take of marine mammals.

**All Other Marine and Freshwater Aquatic Species:** Like marine mammals and sea turtles, surface-level disturbance and site access and collisions involving UAVs and

nets would have a *short-term, negligible adverse impact* on other federally listed marine and freshwater aquatic species. Surface-level disturbance and site access would occasionally occur near marine and freshwater environments, as described above with regard to the impacts on marine mammals and sea turtles. Activities such as equipment deployment or the recovery of debris or nets could result in personnel entering riparian zones or coastal haul out areas. While it is extremely unlikely that these activities would encounter a listed species in any given marine or freshwater habitat, they could theoretically introduce temporary disturbances to species. However, DHS would implement BMPs (see **Table 2**) to avoid or minimize these impacts. For example, DHS will make efforts to minimize disturbance if recovery activities must take place in riverine, estuarine, or coastal nearshore critical habitats. Should debris or a net be unrecoverable, it is extremely unlikely a federally listed marine or freshwater aquatic species would happen to ingest or become entangled in it, especially given the relatively uncommon occurrence of these species. This potential effect pathway is extremely unlikely and therefore discountable. Similar to marine mammals and sea turtles, the minor noise produced by C-UAS operations would be insignificant to underwater species, if it is perceptible at all (FHWG, 2008). As such, the Proposed Action *may affect, but is not likely to adversely affect*, other federally listed aquatic species such as freshwater and saltwater fish. As with marine mammals and sea turtles, the operation and testing of C-UAS active radar systems and RDT&E of directed energy would not affect other federally listed marine and freshwater aquatic species.

### **Migratory Birds and Bald Eagles**

Impacts on bald eagles and migratory birds would be similar to impacts discussed above for general wildlife and ESA-listed birds. Although the presence of humans and C-UAS equipment may temporarily disturb birds, there is an abundance of adjacent habitat, and some species may become acclimated. If a bald eagle is encountered, DHS would conduct test activities in compliance with the USFWS National Bald Eagle Management Guidelines and personnel will be stationed to observe the current conditions of the evaluation area and will inform operators of potential interactions. DHS would also abide by certain buffers for known bald eagle nests such as a 330-foot buffer around nest sites during the breeding season. In open areas, where the nest may have increased visibility and exposure to C-UAS operations, the buffer distance would be extended to 660 feet. DHS and Components would avoid flying or deploying mitigation measures near eagles, eagle nests, and migratory bird nests when possible. In the event operations would take place near migratory bird nests, DHS would consult with USFWS at the project level as necessary. Due to the temporary and sporadic nature of the Proposed Action, nest abandonment would not be anticipated.

Although there is potential to impact avian species, such as migratory birds and/or bald eagles, DHS concludes the Proposed Action would not significantly impact these species given the likelihood of birds returning immediately following temporary disruption, and that DHS

personnel would follow established guidelines when conducting C-UAS operations in the presence of bald eagles.

Similarly, given the likelihood of birds returning immediately following completion of C-UAS activities, the lack of tree clearing and minimal ground disturbance associated with the Proposed Action, and human activity associated with operation of C-UAS being localized in nature and consistent with other standard law enforcement activities, DHS concludes that the Proposed Action would not have population level impacts on migratory birds and would not significantly impact migratory bird populations.

#### **3.4.2.2 No Action Alternative**

Under the No Action Alternative, DHS would continue to utilize C-UAS to counter threats as currently authorized, including the use of sUAS, active radar, and the RDT&E of directed energy, using project-by-project environmental analysis, which may result in *short-term negligible adverse impacts* to critical habitat, vegetation, ground-based mammals, invertebrates, reptiles, and amphibians due to ground disturbance and site access. The No Action Alternative may result in *short-term, negligible adverse impacts* to bats, birds, and flying insects due to ground disturbance and site access, active radar and directed energy exposure, or collisions with UAVs or net capture. Unrecoverable debris resulting from collisions between UAVs or unrecoverable nets may also result in *short-term, negligible adverse impacts* to marine and freshwater species, including marine mammals and sea turtles.

### **3.5 Cultural Resources**

#### **3.5.1 Affected Environment**

NEPA requires consideration of cultural resources, an inclusive term that encompasses a broad range of resources including prehistoric or historic structures, buildings, objects, sites, districts, landscapes, natural features, and cemeteries. These are typically grouped into two categories: archaeological resources and above-ground historic resources.

Archaeological resources are defined as physical remnants of human occupation and can include sites, structures, artifacts, middens, and other evidence of past human activity. Archaeological resources on federal lands are governed by many laws including the Antiquities Act of 1906, Archaeological Resources Protection Act (ARPA), and Archaeological and Historic Preservation Act (AHPA). These laws generally direct federal agencies to grant permits to remove archaeological resources on federal or tribal lands, and to protect and preserve significant archaeological materials that might be discovered. C-UAS systems are primarily ground-based but may be either stationary (e.g., mounted on a building or the ground) or mobile (e.g., handheld or vehicle-mounted for portability).

The NHPA defines historic properties as those prehistoric or historic districts, sites, buildings, structures, or objects, that are eligible for or listed in the National Register of Historic Places (NRHP) based on fulfillment of one or more significance criteria established by the National

Park Service (NPS). The NPS maintains an online National Register Database which allows users to research whether a known historic property is present within a certain area (exceptions include sensitive archaeological site locations). Section 106 of the NHPA requires federal agencies to consider the effect of an undertaking on historic properties and to consult with interested parties, such as SHPO, THPOs, tribes, NHOs, and ACHP, in order to avoid, minimize, or mitigate potential adverse effects. DHS has determined that C-UAS operational and training activities, as well as C-UAS RDT&E, constitute undertakings pursuant to Section 106 of the NHPA. Due to the number of undertakings anticipated and the broad nature of the Proposed Action, DHS has prepared an NPA with the NCSHPO and the ACHP to comply with Section 106 of the NHPA, as well as develop efficiencies for reviews of activities that would have no potential to affect historic properties. In the NPA, DHS has proposed alternate procedures for undertakings that result in a finding of No Adverse Effect, and similar procedures for undertakings that result in a finding of Adverse Effect to facilitate more efficient and timely coordination and consultation, similar to DHS's existing program alternative for activities on DHS-owned facilities.

Due to the nationwide nature of the Proposed Action, tribal resources would be included within the overall Proposed Action area. Tribal and indigenous resources may be prehistoric, historic, or contemporary and may include sacred sites as defined in EO 13007, *Indian Sacred Sites*, traditional cultural properties, or sites of traditional and cultural significance. These resources may be located on tribal reservation lands and/or ancestral lands. These lands have unique resources and cultural components significant to tribes, and tribal resources are protected under the Native American Graves Protection and Repatriation Act (NAGPRA) and the American Indian Religious Freedom Act (AIRFA) on federal lands. NAGPRA directs federal agencies to provide written summaries, initiate tribal consultation, and either repatriate or dispose through other measures any discovered Native American human remains or funerary objects from federal lands or utilizing federal funds to Tribal Nations. AIRFA directs federal agencies to protect tribal rights of religious freedom, including access to and use of sites and sacred objects on federal lands. While tribal consultation is included under Section 106 of the NHPA, EO 13175 further specifies that federal agencies must consult with Tribal Nations during decision-making processes that have the potential to impact tribal communities. There are 574 Tribal Nations nationwide.

### **3.5.2 Environmental Consequences**

A significant adverse effect to cultural resources would occur if the integrity of a historic property is diminished such that it would no longer be eligible for listing in the NRHP; if historic viewsheds would be substantially altered; or if significant tribal resources are permanently compromised.

#### **3.5.2.1 Proposed Action Alternative**

Under NEPA, the Proposed Action is anticipated to result in *long-term, less-than-significant adverse impacts* during C-UAS testing and operations to above-ground historic properties or



historic districts, viewsheds, and cultural landscapes from UAV crashes and permanent installation and use of C-UAS equipment. The Proposed Action may also result in *long-term, less-than-significant adverse impacts* to archaeological resources as a result of site access or ground disturbance associated with C-UAS operations. There is potential for collision of DHS-operated UAVs or target UAVs, resulting in a UAV crashing near or on above-ground historic properties, which could cause permanent, albeit minor, damages to the physical structure of a historic property. However, collisions would be highly unlikely, as UAV pilots are extensively trained in how to operate safely and avoid structures and other hazards and typically have visual line of sight to UAVs. Further, kinetic mitigation techniques (e.g., deployment of nets) that involve physical action toward a UAV only represent one of the mitigation techniques available to DHS. Electronic mitigation techniques would typically cause a target UAV to hover in place, land, or return to its original launch location and would not pose a risk to above-ground historic properties. Further, any potential impacts posed to above-ground structures from the operation of sUAS, such as collisions or crashes, would be addressed in accordance with the minimization measures included in Section 3.4 of the 2022 sUAS PEA and incorporated here by reference.

Permanent impacts to above-ground historic properties or historic districts, viewsheds, and cultural landscapes may arise from small equipment, tripods, or masts that would be affixed to a building. For the deployment of C-UAS equipment on historic properties, DHS would consider incorporating the following elements in project planning, as applicable and feasible:

- Deploying C-UAS technologies on secondary elevations;
- Utilizing C-UAS technologies that are similar in color to the existing historic building or structure elements to minimize the visual impact;
- Avoiding using penetrative methods to anchor C-UAS technologies on historic properties, such as by using concrete or water-weighted measures, or, if not feasible, anchoring to mortar or non-historic building materials to avoid damage to historic materials;
- Committing to returning the area to its original state if the C-UAS technology is removed in the future, with any repair work following the Secretary of the Interior's Standards, and utilizing compatible materials;
- Keeping C-UAS technologies at or below the maximum height of the building elevation, if it does not impair the functionality of the C-UAS technology;
- Recessing C-UAS technologies from the historic property's elevation(s) to avoid protrusion; and/or
- Establishing that it is not feasible or prudent to site the C-UAS technology on a non-historic property.

Temporary impacts, such as a change to ambient noise levels, could occur to the surrounding historic properties or historic districts, viewsheds, and cultural landscapes from the testing and operation of mobile C-UAS detection equipment and sUAS. In accordance with the BMPs in

**Table 2**, DHS would avoid conducting controlled landings or flying within 100 feet vertically and/or horizontally from Tribal or NHO sensitive areas or historically or culturally significant areas (i.e., known historic properties, National Historic Landmarks, cultural landscapes, monuments, or cemeteries), unless necessitated by an emergency or if prior notification to the NPS for National Historic Landmarks and appropriate SHPO or THPO has been completed. Given the temporary nature of these impacts, they are anticipated to be minor.

Although most C-UAS operations would not involve ground disturbance, there is a possibility that archaeological resources or tribal artifacts could be affected during activities that require access to previously undisturbed areas or involve ground-mounted equipment. The installation of any ground-mounted equipment would be reviewed in accordance with the stipulations of the NPA. In the event of an inadvertent archaeological discovery during a C-UAS operation, such as while accessing a remote site, DHS would follow the streamlined post-review discoveries process identified in 36 CFR 800.13 and the NPA.

For NHPA Section 106 compliance, DHS engaged cultural resource stakeholders (see **Section 6.0**) with initial scoping letters on March 7, 2025, to gather information on potential impacts to cultural resources. No responses were received from non-Tribal stakeholders regarding the PEA.

C-UAS undertakings do not require further Section 106 review when they are reviewed and documented by a DHS Qualified Professional and meet the criteria outlined in the NPA. These include the installation and use of temporary, non-invasive C-UAS technologies that involve no excavation or permanent affixation, such as vehicle-mounted systems, temporary ground-mounted units with minimal ground penetration, and non-permanent installations on existing structures or vessels, which have no potential to affect historic properties. Additionally, permanent C-UAS installations on vessels under 50 years of age or within previously reviewed communications tower lease areas may proceed without further review, provided they meet additional criteria provided in Appendix C of the NPA. Ground-mounted C-UAS installations may also be excluded from further Section 106 review if they are under 35 feet tall, located in previously disturbed areas with low archaeological sensitivity, and not within view or vicinity of historic or culturally significant sites. Similarly, installations on structures may qualify if they are located in areas previously evaluated, follow preservation standards, and do not impact historic properties and sacred sites. All qualified undertakings must be documented and coordinated with the appropriate SHPO/THPO, Tribal Nations, or NHOs in accordance with the procedures outlined in the NPA.

Under NEPA, the Proposed Action is anticipated to result in *long-term, less-than-significant adverse impacts* during C-UAS testing and operations from the potential to intrude upon tribal sites or traditional or cultural practices. As described above for historic properties, the C-UAS operations could constitute a temporary disturbance to tribal sites, especially to those sites with religious or cultural importance, but would not interfere with the ability of tribes to use or access those resources. A DHS Qualified Professional would coordinate with Tribal Nations



and NHOs to the maximum extent feasible when proposed operations would include flying over, deploying from, or conducting controlled landings on tribal or NHO sensitive areas, above-ground historic properties, cultural landscapes, or culturally significant areas (e.g., to identify appropriate launch sites or sensitive resources to avoid). Any information provided to DHS would be kept confidential. Operation of C-UAS would be temporary and would not diminish or physically remove culturally important artifacts from tribal lands.

On March 6, 2025, DHS initiated scoping with Tribal Nations and NHOs in accordance with Section 106 and EO 13175 in order to identify potential concerns utilizing the Bureau of Indian Affairs Tribal Leader List, the NPS THPO List, and the Department of Interior's List of NHOs. At the time of publication of the Draft PEA, responses had been received from the Pascua Yaqui Tribe, Pueblo of Pojoaque, Fort Independence Indian Reservation, Ho-Chunk Nation of Wisconsin, Catawba Indian Nation, White Mountain Apache Tribe, Passamaquoddy Tribe, Quapaw Nation, Lac Vieux Desert Band of Lake Superior Chippewa Indians, Osage Nation, and San Carlos Apache Tribe and were used to develop this PEA.

On May 5, 2025, DHS initiated formal Tribal consultation based on the aforementioned lists with a Dear Tribal Leader Letter, inviting Tribal Nations and NHOs to review and comment on the Draft Nationwide Programmatic Agreement for Department of Homeland Security Counter Unmanned Aircraft Systems Undertakings. Tribal Nations and NHOs were invited to Tribal consultation meetings that were held on May 20, 2025, and May 22, 2025. No comments from Tribal Nations on the NPA were received during the Draft NPA comment period. However, the NATHPO provided comments during a subsequent meeting with DHS. A summary of those comments is included in **Appendix A**. Following these meetings, DHS revised the NPA and provided an additional two versions of the NPA to the NATHPO on June 27, 2025, and July 16, 2025. No further comments were received from the NATHPO.

A record of tribal consultation conducted for this PEA is included in **Appendix A**.

### 3.5.2.2 No Action Alternative

Under the No Action Alternative, DHS would continue to utilize C-UAS to counter threats as currently authorized using project-by-project environmental analysis, and *long-term, negligible adverse impacts* on cultural resources would occur as a result of permitted C-UAS activities.

## 3.6 Environmental Trends and Reasonably Foreseeable Actions

An assessment of environmental trends and reasonably foreseeable actions takes into consideration the potential effects that future projects may have on the natural and human environment. These potential effects are considered in conjunction with effects resulting from the Proposed Action to identify any additive impacts or future trends that could influence potential impacts from implementation of the Proposed Action. Future impacts would be considered significant if they rise to the level of significance as defined by the resource-specific thresholds of significance (see **Table 3**).

Reasonably foreseeable actions that could occur include continued urban development, infrastructure expansion, increased airspace usage (including recreational and commercial UAV operations), and increased usage of unauthorized UAVs by malicious actors. The impacts on the environment that would result from the Proposed Action, when added to these reasonably foreseeable actions, have been considered. No significant effects were identified on the resources discussed in **Section 3.0**. Proposed C-UAS RDT&E and operational activities would generally occur in short durations in dispersed and varied locations. Most effects would be temporary, although there may be negligible permanent effects from the installation of C-UAS equipment, and human health effects could occur if the public or DHS personnel are improperly exposed to RF radiation or directed energy. Neither of these impacts would be expected to result in significant impacts in conjunction with reasonably foreseeable actions given that radiation would remain below MPE limits and RDT&E of directed energy would largely remain confined to DHS facilities (including all sites for which DHS has a property use agreement) and personnel. Adherence to BMPs would minimize effects on the public. Given the location and duration of the proposed project activities and based on the information presented in this PEA, there is no potential for reasonably foreseeable actions to have impacts that would be collectively significant in combination with the effects of the Proposed Action.

The Proposed Action may increase pressure on wildlife and habitat resources that already exists from urban development through the presence and use of personnel, vehicles, and equipment that disturb wildlife and vegetation. Additionally, wildlife species may be exposed to RF radiation and directed energy that could result in internal heating and behavioral changes; however, wildlife is not expected to have long-term exposures to RF radiation or directed energy as these activities would be sporadic and temporary. The Proposed Action would not result in development or loss of habitat. Accordingly, neither the Proposed Action nor the No Action Alternative would reasonably contribute to adverse impacts on biological resources in conjunction with any reasonably foreseeable actions.

Under the No Action Alternative, DHS would continue to utilize C-UAS to counter threats as currently authorized using project-by-project environmental analysis, and there would be no significant impacts to visual resources and aesthetics, biological resources, or cultural resources in conjunction with any reasonably foreseeable actions. However, given the potential for less-than-significant adverse impacts to airspace from the continued unauthorized use of UAVs, and the potential for significant adverse impacts to human health and safety from the limited ability of DHS to address credible threats posed by unauthorized UAVs, adverse impacts to these resources may occur. The foreseeable continued operation of unauthorized UAVs would generally result in discrete impacts in singular locations, although malicious actors would have the ability to cause large-scale, severe effects if threats are not mitigated. Additionally, the inability for DHS to mitigate credible threats in a streamlined, efficient manner may enable an increase in such threats. Therefore, the No Action Alternative could have the potential to cause reasonably foreseeable *significant adverse effects* to airspace and human health and safety.

## 4.0 Conclusions

Pursuant to NEPA, the analysis presented in this PEA finds that no significant adverse impact on the environment is anticipated from the Proposed Action. Implementation of the Proposed Action would allow DHS to conduct current and future C-UAS RDT&E and operational activities nationwide to conduct testing and training, and to mitigate credible threats in order to meet DHS mission requirements. Permanent activities would be limited to the installation of C-UAS equipment either within or outside of DHS facilities, and the Proposed Action would not involve any new facility construction.

As no potentially significant adverse environmental impacts were identified, no mitigation measures would be required for the Proposed Action. DHS would, however, adhere to BMPs and satisfy all applicable regulatory requirements associated with the Proposed Action. Implementation of such BMPs and adherence to regulatory requirements would further ensure that potential adverse impacts resulting from the Proposed Action would be minimized or avoided to the maximum extent practicable.

Selection of the No Action Alternative would not allow DHS to continue to use or expand its use of C-UAS in the U.S. on a nationwide scale. Therefore, the No Action Alternative would limit the capability of DHS and its Components to carry out mission requirements and would require DHS to utilize other methods.

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[PHILIP.A.SHANNIN@USACE.ARMY.MIL](mailto:PHILIP.A.SHANNIN@USACE.ARMY.MIL)

**U.S. Army Corps of Engineers**

Southwestern Division

POC: Jamie Hyslop, Regulatory Appeal  
Review Officer

Email: [Jamie.R.Hyslop@usace.army.mil](mailto:Jamie.R.Hyslop@usace.army.mil)

**U.S. Army Corps of Engineers**

South Pacific Division

450 Golden Gate Avenue, Suite 6500

San Francisco, CA 94102

POC: Travis Morse, Administrative  
Appeal Review Officer

Email: [w.travis.morse@usace.army.mil](mailto:w.travis.morse@usace.army.mil)

**Non-Governmental Organizations****National Association of Tribal Historic  
Preservation Officers**

1255 22nd Street NW

PO Box 19189

Washington, DC 20036

POC: Valerie J. Grussing, Executive  
Director

Email: [Valerie@nathpo.org](mailto:Valerie@nathpo.org)

**National Conference of State Historic Preservation Officers**

444 N. Capitol Street NW, Suite 342

Washington, DC 20001

POC: Erik M. Hein, Executive Director

Email: [hein@ncshpo.org](mailto:hein@ncshpo.org)

**National Trust for Historic Preservation**

POC: Betsy Merritt

Email: [info@savingplaces.org](mailto:info@savingplaces.org)

## 7.0 List of Preparers

### 7.1 Department of Homeland Security

Name	Role
Sarah Koepfel	Senior Environmental Protection Specialist, Deputy Federal Preservation Officer
Kimberly Poli	Senior Environmental Protection Specialist
Sarah Larkin	Environmental Protection Specialist
Christine Crumpton	Environmental Protection Specialist
Gabrielle Fernandez	Environmental Protection Specialist

### 7.2 AECOM

Name	Role	Degree	Years of Experience
Michael Busam	Project Manager	B.S. in Environmental Science and Policy	10
Jennifer Warf	Quality Assurance/Quality Control	M.S. in Environmental Studies B.A. in Zoology	22
Natalie Dalvin (Kisak)	EA Preparation	M.A. in Environmental Resource Policy B.A. in Environmental Studies and Public Policy	6
Allison Carr	EA Preparation	Master of City Planning B.A. in Geography	5
Tara Boyd	EA Preparation	B.A. in Environmental Science and Sustainability	3

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**Appendix A:**  
**Section 106 and Tribal Nation Consultation**

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To support this PEA, DHS initiated consultation on a government-to-government basis with all Tribal Nations and NHOs on March 6, 2025. The list of tribes that responded and a summary of their responses is provided in **Table A-1**. DHS will continue to consult with these tribes throughout the NEPA process. Copies of all correspondence are included in the project Administrative Record.

**Table A-1. Record of Tribal Responses**

<b>Tribe</b>	<b>Date Received</b>	<b>Topic(s)</b>	<b>Summary</b>
Pascua Yaqui Tribe	03/06/25	Cultural Resources	Concern about ensuring that program activities do not damage archaeological sites or culturally important natural resources, including keeping ground vehicles on established roadways and preventing fires from C-UAS activities.
Pueblo of Pojoaque	03/06/25	Consultation	Acknowledgment of the project and request to participate in the consultation.
Fort Independence Indian Reservation	03/10/25	Cultural Resources	Request to discuss the development of airfields or support locations, especially in California, which may affect ancestral homelands and require additional consultation. Concern about development affecting ancestral lands.
Ho-Chunk Nation of Wisconsin	03/10/25	Cultural Resources	No questions or concerns at this time. Requests to be informed about any inadvertent discoveries of archaeological or cultural materials during implementation.
Catawba Indian Nation	03/12/25	Consultation	Request for a hard copy of the correspondence.
White Mountain Apache Tribe	03/15/25	Cultural Resources	Determined Proposed Action will have no adverse effect to the tribe's cultural heritage resources and/or Traditional Cultural Properties.
Passamaquoddy Tribe	03/18/25	Cultural Resources	Determined Proposed Action will not have an impact with Passamaquoddy cultural concerns. Requests to be notified if any artifacts or human remains are uncovered.
Quapaw Nation	03/25/25	Consultation	No further comments or consultation needed at this time.
Lac Vieux Desert Band of Lake Superior Chippewa Indians	03/26/25	Consultation	Questions about notification, data protection, regulation, and environmental impact mitigation.
Osage Nation	04/14/25	General	Interested in reviewing and commenting on draft PEA.

Habematolel Pomo of Upper Lake	05/14/25	Consultation	No comments at this time. Requested project updates be sent to administrative assistants and provided an identification number for correspondence.
San Carlos Apache Tribe	05/30/25	Consultation	Asked about ability to set up a consultation meeting with DHS.

DHS Programmatic Environmental Assessment (PEA) for the Nationwide Operation of Counter Unmanned Aircraft Systems (C UAS) Tribal Scoping Comments Scoping Period 03/07/2025 - 04/07/2025								
Comment ID	Commenter ID #	Name	Tribes	Comment	DHS Response/Follow Up Action	Topic(s)	Date Received	Method
T1	0001	Karl Hoerig	Pascua Yaqui Tribe	As THPO, my concern is that ancestor places and culturally important natural resources not be subject to adverse effects due to the program's activities. Concerns include, but are not limited to ensuring that ground vehicles do not damage archaeological sites (e.g., all vehicles must remain on established roadways) and that C-UAS vehicles and intercepted UAS do not damage sites or cause fires that might damage sites or other culturally important natural resources.  Please continue to provide planning documents and other consultation materials as this PEA is developed.	Comment acknowledged. DHS would implement BMPs as part of the Proposed Action to minimize impacts to cultural resources to the maximum extent feasible. These BMPs will be discussed in the Draft PEA. DHS has begun drafting a nationwide Programmatic Agreement (PA) for Section 106 which will include considerations of ground disturbing activities. DHS will continue to provide planning documents and other consultation materials as the PEA is developed.	Cultural Resources	03/06/25	Email
T2	0002	Fermin Lopez	Pueblo of Pojoaque	Good afternoon, I am in receipt of your email request regarding the above-mentioned project. We would like to participate in the consultation, and I will keep an eye out for the invitation. Would you please send the invitation via email as well as the letter to the Governor's office so I can receive the invitation earlier than by mail.	DHS will make sure to send the consultation letter via email as well.	Consultation	03/06/25	Email
T3	0003	Sean Scruggs	Fort Independence Indian Reservation	I would like to discuss this further. I have questions regarding the development of airfields or support locations and where those locations may be or the extent of development. If anything is constructed in California, the potential construction will be on ancestral homelands of some tribe and will require consultation, the same is true for all states.  I am the Pacific Region representative for the National Association of THPOs and am concerned about any development that might affect ancestral lands. I am available on 27,28 and 31 March from 11am to 4pm. Please let me know if you have availability on those days and we can schedule a meeting.	DHS is happy to discuss further but does not anticipate constructing or modifying any airfields. DHS has begun drafting a nationwide Programmatic Agreement (PA) for Section 106 which will include considerations of ground disturbing activities. These activities may include placing a pole or guy wires in the ground (temporarily or permanently) for a freestanding tower (under 150 ft). DHS anticipates sharing the PA draft with the Dear Tribal Leader Letter in April and welcomes feedback in writing or during the virtual consultation meeting. Any additional calls can be arranged, as needed.	Cultural Resources	03/10/25	Email
T4	0004	Bill Quackenbush	Ho-Chunk Nation of Wisconsin	Thank you for the correspondence regarding the early scoping work concerning the, "Department of Homeland Securities' C-UAS PEA research/study. In response, the Ho-Chunk Nation of Wisconsin does not have any questions or concerns with the federal undertaking at this time. Additionally, and although we do have known archaeological and/or cultural resources that does require a clearer understanding on how these will be affected by the development and initiation of such a program, we will wait until we hear from you folks in the ensuing correspondence on the matter.  If any inadvertent discoveries of archaeological and/or cultural materials, and/or effects to such happens to be discovered during areas of implementation this undertaking encompasses, please consider the Ho-Chunk Nation of Wisconsin as an interested party in this regard.	DHS has begun drafting a nationwide Programmatic Agreement (PA) for Section 106 which will include considerations of ground disturbing activities and inadvertent discoveries. DHS anticipates sharing the PA draft with the Dear Tribal Leader Letter in April and welcomes feedback in writing or during the virtual consultation meeting.	Cultural Resources	03/10/25	Email
T5	0005	Wenonah Haire	Catawba Indian Nation	Please send a hard copy in care of Caitlin Rogers at 1536 Tom Steven Road, Rock Hill, SC 29730.	We will provide a paper copy of the programmatic environmental assessment to the below address when it is ready.	Consultation	03/12/025	Email
T6	0006	Mark Altaha	White Mountain Apache Tribe	Please be advised, we have reviewed the information provided, and we have determined the proposed PEA development will have a "No Adverse Effect" to the tribe's cultural heritage resources and/or Traditional Cultural Properties.	Comment acknowledged.	Cultural Resources	03/15/25	Email
T7	0007	Donald Soctomah	Passamaquoddy Tribe	The Passamaquoddy THPO has reviewed the following list regarding the historic properties and significant religious and cultural properties in accordance with NHPA, NEPA, AIRFA, NAGPRA, ARPA, Executive Order 13007 Indian Sacred Sites, Executive Order 13175 Consultation and Coordination with Indian Tribal Governments, and Executive Order 12898 Environmental Justice.  The items listed above will not have an impact with Passamaquoddy cultural concerns, if any artifacts are uncovered or human remains please contact this office.	Comment acknowledged.	Cultural Resources	03/18/25	Email

T8	0008	Jamie McNeely	Quapaw Nation	<p>The Quapaw Nation Historic Preservation Office has received and reviewed the information you have provided for the proposed project Early Scoping for Department of Homeland Security's C-UAS PEA and does not wish to comment or consult further in accordance with 36 CFR 800 on this project at this time.</p> <p>In accordance with the National Historic Preservation Act, (NHPA) [16 U.S.C. 470 §§ 470-470w-6] 1966, undertakings subject to the review process are referred to in §101 (d) (6)(A), which clarifies that historic properties may have religious and cultural significance to Indian tribes. Additionally, Section 106 of NHPA requires Federal agencies to consider the effects of their actions on historic properties (36 CFR Part 800) as does the National Environmental Policy Act (43 U.S.C. 4321 and 4331-35 and 40 CFR 1501.7(a) of 1969).</p> <p>Should you have any questions or need any additional information, please feel free to contact Jamie McNeely at jamie.lynn.mcneely@quapawnation.com, please copy section106@quapawnation.com to ensure additional information requests are reviewed in a timely manner.</p>	Comment acknowledged.	Consultation	03/25/25	Email
T9	0009	Alina Shively	Lac Vieux Desert Band of Lake Superior Chippewa Indians	<p>Regarding the above-mentioned scoping letter, the Lac Vieux Desert Band of Lake Superior Chippewa Indians' Tribal Historic Preservation Office (THPO) has the following questions:</p> <p>How will Tribes be notified of and consulted upon unmanned aircraft systems use over Tribal lands?</p>	DHS is developing a Programmatic Agreement (PA) with tribal nations that will address ground disturbance. DHS will continue to keep the Lac Vieux Desert Band of Lake Superior Indians informed via email throughout the development of this PA.	Consultation	03/26/25	Email
T10	0009	Alina Shively	Lac Vieux Desert Band of Lake Superior Chippewa Indians	Will data that is incidentally recovered from Tribal lands be protected by law?	DHS would not be using C-UAS to collect data, including from Tribal lands.	Cultural Resources	03/26/25	Email
T11	0009	Alina Shively	Lac Vieux Desert Band of Lake Superior Chippewa Indians	Who will regulate research information obtained under the PEA?	The only research information that will be collected by DHS under the Proposed Action is information relevant to C-UAS operation and functionality. All of this data would be sensitive and would be protected by DHS.	Cultural Resources	03/26/25	Email
T12	0009	Alina Shively	Lac Vieux Desert Band of Lake Superior Chippewa Indians	Will impacts to the environment be mitigated?	Environmental impacts would be minimized to the maximum extent feasible. DHS has identified BMPs to implement as standard procedure for the Proposed Action, listed in Table 2 of the Draft PEA. DHS does not anticipate that the Proposed Action would have significant environmental effects.	Mitigation	03/26/25	Email
T13	0010	Michaela Conway	Osage Nation	The Osage Nation looks forward to reviewing and commenting on the above referenced draft PEA. Feel free to reach out if you have any updates or additional questions.	Comment acknowledged. DHS will continue to provide planning documents and other consultation materials as the PEA is developed.	General	04/14/25	Email
T14	0011	Robert Geary	Habematoilel Pomo of Upper Lake	<p>Thank you for your email dated May 5, 2025. We appreciate your effort to contact us and wish to respond.</p> <p>The Habematoilel Pomo Cultural Resources Department has reviewed the project and, at this time, we have no comments. We kindly request that you continue to send project updates to the following individuals:</p> <p>Jaclyn Ley, Administrative Assistant PO Box 516, Upper Lake, CA 95485 Office: (707) 900-6931 Email: jley@hpultribe-nsn.gov</p> <p>Lisa Deas, Administrative Assistant PO Box 516, Upper Lake, CA 95485 Office: (707) 900-6913 ldeas@hpultribe-nsn.gov</p> <p>Please refer to identification number HP -20250505-01 in any correspondence concerning this project. Thank you for providing us with this notice and the opportunity to comment.</p>	Comment acknowledged. DHS will continue to provide project updates to the individuals identified.	Consultation	05/14/25	Email

T15	0012	Vernelda Grant	San Carlos Apache Tribe	<p>Under Section 106 and 110 of the National Historic Preservation Act, we are replying to the above referenced project. Please see the appropriate marked circle, including the signatures of Vernelda Grant, Tribal Historic Preservation Officer (THPO), and the concurrence of the Chairman of the San Carlos Apache Tribe:</p> <p><b>CONCURRENCE WITH REPORT FINDINGS &amp; THANK YOU</b></p> <p><b>REQUEST ADDITIONAL INFORMATION:</b> Are we still able to conduct a consultation (mtg, zoom) between DHS &amp; the Tribe?</p> <p>We were taught traditionally not to disturb the natural world in a significant way, and that to do so may cause harm to oneself or one's family. Apache resources can be best protected by managing the land to be as natural as it was in pre-1870s settlement times. Please contact the THPO, if there is a change in any portion of the project, especially if Apache cultural resources are found at any phase of planning and construction. Thank you for contacting the San Carlos Apache Tribe, your time and effort is greatly appreciated.</p>	<p>Comment acknowledged. DHS will continue to provide consultation materials as the PEA is developed, and would be happy to discuss the Proposed Action with the Tribe.</p>	Consultation	05/30/25	Email
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Homeland  
Security

March 5, 2025

Subject: Scoping for the Programmatic Environmental Assessment of the Nationwide Operation of Counter Unmanned Aircraft Systems by the Department of Homeland Security

Dear Tribal partner:

It is vital DHS continue to foster meaningful outreach and consultation with our Tribal partners for the DHS mission to be successfully executed. I am writing today to initiate early coordination on the Department of Homeland Security's (DHS) intent to prepare a Programmatic Environmental Assessment (PEA) to evaluate the potential impacts associated with the research, development, testing, and evaluation (RDT&E) of counter unmanned aircraft systems (C-UAS) and use during operational and training activities to support existing and emerging DHS mission requirements nationwide. This letter is part of DHS's scoping process for compliance with the National Environmental Policy Act of 1969 (NEPA; 42 USC §§ 4321 et seq.); DHS Management Directive 023-01, rev. 01 *Implementation of the NEPA*; and DHS Instruction Manual 023-01-001-01, rev. 01, *Implementation of the NEPA*.

The preparation of the draft PEA could result in three separate outreach and consultation efforts from DHS, causing undue burden on your Nation. Therefore, in the spirit of Executive Order (EO) 13175, "Consultation and Coordination with Indian Tribal Governments," and Presidential Memorandum "Memorandum on Tribal Consultation and Strengthening Nation-to-Nation Relationships" of January 26, 2021, Section 106 of the National Historic Preservation Act (NHPA), and the NEPA, we will be inviting your leadership to engage in one consultation effort later next month pursuant to NEPA, NHPA, and EO 13175. We will send a Dear Tribal Leader Letter with additional information and details in the coming weeks.

### Background

An unmanned aircraft system (UAS) is defined by the Federal Aviation Administration (FAA) as an aircraft that is operated without the possibility of direct human intervention from within or on the aircraft, and which consists of the aircraft itself and the equipment necessary for its safe and efficient operation (14 CFR Part 107). C-UAS are a system or device capable of tracking, disabling, disrupting, or seizing control of an unmanned aircraft or UAS. UAS have become a security concern due to the ease with which they can aid in intelligence gathering against public, federal, and state entities; be used to conduct crimes or thwart law enforcement efforts; and/or as a malicious platform for delivering harmful substances, contraband, or weapons. As UAS technology advances, so too will the threats that UAS pose when used by malicious actors.

C-UAS technologies employ a variety of sensors and processes that account for or exploit the physical components of a UAS and the communications between the unmanned aerial vehicle (UAV) and the ground-based control station (GCS). C-UAS systems are primarily ground-based but may be either stationary or mobile. Stationary systems may be mounted on a tripod or affixed to a stationary location (e.g., mounted on a building), while mobile systems may be handheld or vehicle-mounted for portability, depending on the overall size and configuration of the system.

Within DHS and its Components, C-UAS are used for a variety of purposes to support operational missions and protect DHS facilities and assets. In addition to protecting the safety and security of DHS missions, facilities, and assets, DHS may also provide C-UAS support for mass gatherings defined as National Special Security Events (NSSE) and to State, Local, Territorial, or Tribal governments for certain Special Event Assessment Rating (SEAR) events, upon request.

When an unknown UAS is identified, DHS implements a C-UAS processing chain to evaluate and respond to potential threats posed by the UAS. The processing chain generally includes five stages: Detect, Identify, Monitor, Track, and Mitigate (DIMIT-M). Only authorized personnel may operate C-UAS and undertake C-UAS actions in accordance with the DIMIT-M framework. C-UAS activities may be performed at any time of day or night to respond quickly and effectively to any credible threats. If, after detecting, identifying, monitoring, and tracking the UAS, it is determined not to be a credible threat, DHS may not take any actions to counter the UAS. If a UAS is violating applicable laws or FAA regulations, but does not pose a credible threat, DHS would notify the appropriate FAA Regional Operations Center. If a UAS is determined to pose a credible threat to facilities or assets, DHS may mitigate the threat.

The first four steps in the C-UAS processing chain (i.e., Detect, Identify, Monitor, and Track) are performed by receiving and analyzing data from C-UAS sensors. C-UAS, whether stationary or mobile, generally have a detection range of up to 1.2 miles and rely on one of four types of sensors to detect UAS: radar, passive radiofrequency (RF), electro-optical/infrared (EO/IR), or acoustic. Once a UAS has been detected and has been determined to pose a credible threat to assets or facilities, DHS would employ one of two broad types of mitigation techniques, electronic or kinetic (i.e., physical force or actions that result in direct physical impact or destruction), to complete the C-UAS processing chain. Though DHS is not currently approved to use kinetic mitigation techniques operationally, RDT&E of kinetic mitigation would be conducted to explore operational use cases, as well as environmental, health, and safety considerations to determine appropriate kinetic capabilities for Component missions. Additionally, while C-UAS mitigation techniques generally fall into the two categories of electronic and kinetic technologies, mitigation may also be achieved by locating the UAV's operator and having that person cease operation.

### Proposed Action

DHS proposes to perform research, development, testing, and evaluation (RDT&E) of counter unmanned aircraft systems (C-UAS) and conduct operational and training activities to support existing and emerging DHS mission requirements nationwide (Proposed Action). The purpose of

the Proposed Action is to support RDT&E of C-UAS technologies and to deploy C-UAS in operational settings to detect, identify, monitor, track, and mitigate (DIMIT-M) (passively and actively) threats posed by UAS, including across the radio frequency spectrum. The Proposed Action is needed to enhance DHS's ability to use C-UAS technologies, monitor emerging threats, protect DHS's missions, and defend the Nation from UAS threats and malicious activity effectively and reliably. The use of C-UAS would support existing and emerging mission requirements of the various Components within DHS and facilitate their services and strategies essential to the Nation's security, safety, and emergency response.

Within DHS, the use and application of C-UAS are actively being researched and tested to better understand C-UAS capabilities to support DIMIT-M activities. DHS conducts C-UAS activities nationwide, with some recurring in certain locations based on testing and demonstration needs: Additionally, authorized Components may use C-UAS technologies for operational use, trainings, and demonstrations nationwide, including along the southwest and northern borders.

Under the Proposed Action, DHS and its Components would continue ongoing RDT&E activities, but on a nationwide scale. The Proposed Action also includes the nationwide use and operation of C-UAS, outside of a testing environment, to conduct training and operational activities, such as law enforcement and security. The Proposed Action includes all elements related to the training, operation, maintenance, and use of C-UAS, including mitigation. This would allow DHS to continue its current testing of C-UAS while also enabling DHS and its Components to use C-UAS in an operational setting to support mission requirements.

Potential impacts for this Proposed Action would be associated with the testing, operation, and use of C-UAS, including supporting systems, and mobilization to a needed location, if applicable. All C-UAS currently in use by DHS are either ground- or vehicle-mounted. C-UAS maintenance would occur in existing DHS facilities using standard tools and materials, and in accordance with standard operating procedures for equipment maintenance.

Please provide any comments, concerns, information, studies, or other data you may have regarding the Proposed Action within **thirty (30) days** of receipt of this letter to enable us to complete this phase of the project within the scheduled timeframe. All responses will be considered for incorporation in the PEA and will be discussed during Tribal consultation. We look forward to and welcome your participation in this analysis. If you have comments or information relevant to the development of the PEA, please direct your correspondence to [SEP-EPHP@hq.dhs.gov](mailto:SEP-EPHP@hq.dhs.gov).

Sincerely,  
SARAH N  
KOEPPEL

 Digitally signed by SARAH N  
KOEPPEL  
Date: 2025.03.05 10:53:06 -05'00'

Sarah Koepfel  
(Acting) Director, Environmental Planning  
Office of the Chief Readiness Support Officer  
Department of Homeland Security



## **Summary of Tribal Consultations and Comments on the Draft Programmatic Environmental Assessment of the Nationwide Operation of Counter Unmanned Aircraft Systems, Draft Finding of No Significant Impact, and the Draft Nationwide Programmatic Agreement for Counter Unmanned Aircraft Systems Undertakings**

On May 20<sup>th</sup> and May 22<sup>nd</sup>, 2025, the Department of Homeland Security (Department or DHS) hosted two tribal consultation meetings related to the Department's draft Nationwide Programmatic Agreement (NPA) for Counter Unmanned Aircraft Systems Undertakings and the Programmatic Environmental Assessment (PEA) for the Nationwide Operation of Counter Unmanned Aircraft Systems. The comment period for tribal consultation on the pre-decisional draft PEA and draft NPA was May 5-June 20, 2025. Tribes were also invited to comment on the draft PEA and draft Finding of No Significant Impact (FONSI) which was publicly available for comment between August 4 and September 3, 2025.

### **May 20, 2025, Tribal Consultation**

DHS commenced the first tribal consultation meeting on May 20, 2025; however, the only non-DHS attendee was the Advisory Council on Historic Preservation (ACHP). No Tribes, Native Hawaiian Organizations (NHOs), or tribal organization were in attendance.

### **May 22, 2025, Tribal Consultation**

DHS commenced the second tribal consultation meeting on May 22, 2025. The second consultation began with opening remarks from the Energy and Environment Division (EED) Acting Executive Director, Jennifer Hass. DHS remarked that the goal of the session was to receive feedback from Tribal Nations and NHOs on how the proposed NPA and draft PEA may impact their communities and cultural and environmental resources. Following opening remarks, Gabrielle Fernandez of EED provided attendees a summary of potential PEA and NPA actions/undertakings, as well as anticipated impacts from the Proposed Action and subsequent undertakings subject to Section 106.

No comments from Tribal Nations, NHOs, or tribal organizations were received during the consultation meeting. DHS completed the presentation and provided attendees the opportunity to provide written comments through June 20, 2025.

Attendees at this tribal consultation meeting included: EED, Customs and Border Protection, the ACHP, and Fireflies.ai Notetaker Amber.

### **Summary of Letters:**

DHS did not receive any written comments on the draft NPA or pre-decisional draft PEA from Tribal Nations, NHOs, Tribal Historic Preservation Officers, Alaska Native Corporations, or the National Association of Tribal Historic Preservation Officers (NATHPO) during the May 5-June 20, 2025, tribal comment period, nor on the draft PEA and FONSI during the August 4-September 3, 2025, comment period.

### **Summary of Comment Matrix Meeting Discussions and DHS Response:**

After the consultation period on the proposed NPA, DHS engaged the ACHP, National Conference of State Historic Preservation Officers (NCSHPO), and members of NATHPO to discuss comments received on the NPA during the comment period. At this meeting, DHS discussed how there was minimal comments from consulting parties and tribes during the comment period. NATHPO stated that a lack of comments by Tribal Nations and NHOs did not equate to a lack of concerns regarding the undertakings covered by the NPA, but a lack of funding and staffing to support THPO offices and the scope of undertakings they review. DHS expressed their understanding of NATHPOs comments and expressed their appreciation for NATHPOs continued participation and expertise.

The meeting proceeded to discussions on the comment matrix, and NATHPO expressed their appreciation of DHS's inclusion of protections for sacred sites and traditional cultural properties within the document, and the clear steps for tribal consultation throughout the agreement document. NATHPO recommended referencing the Bureau of Indian Affairs Sacred Sites Best Practices Guide in the appropriate sections of Appendix D as a source practitioners could utilize when or if there were sacred sites or traditional cultural properties present during the course of a C-UAS undertaking. DHS concurred with NATHPOs recommendation and added the Best Practices Guide as a resource for DHS practitioners.

During the meeting, NATHPO requested adding their organization throughout the annual reporting consultation process, rather than just the ACHP and NCSHPO. DHS concurred with this recommendation and added NATHPO as a recipient to the annual report, a participant in the annual report meeting, and recipient of the annual meeting report.

DHS stated they appreciated all parties review of the comment matrix and addressed the recommended edits in the revised NPA. DHS submitted the revised comment matrix and DHS' resolution in the NPA for all parties to review. No further comments or recommendations were provided by NATHPO, Tribes, or NHOs.

## Summary of State Historic Preservation Office Comments on the Draft Nationwide Programmatic Agreement for Counter Unmanned Aircraft Systems Undertakings

Alongside this PEA, DHS has developed a Nationwide Programmatic Agreement (NPA) for Department of Homeland Security Counter Unmanned Aircraft Systems Undertakings, in accordance with Section 106 of the National Historic Preservation Act. This NPA is intended to detail DHS's responsibilities for addressing potential impacts to cultural resources as a result of C-UAS activities. DHS initiated consultation and announced the availability of the Draft NPA on May 5, 2025, by notifying all Tribal Nations, the National Association of Tribal Historic Preservation Officers (NATHPO), Native Hawaiian Organizations (NHOs), the Advisory Council on Historic Preservation (ACHP), the National Conference of State Historic Preservation Officers (NCSHPO), and the National Trust for Historic Preservation. Revised versions of the Draft NPA were also sent to the NATHPO, ACHP, and NCSHPO on June 27, 2025, and July 16, 2025. The list of SHPOs that responded during the NPA review and a summary of responses to the Draft NPA are provided in **Table A-2**. DHS will continue to consult with these stakeholders throughout the NEPA process and concurrent development of the NPA. Copies of all correspondence are included in the project Administrative Record.

**Table A-2. Record of SHPO Responses**

Stakeholder	Date Received	Topic(s)	Summary
Georgia Historic Preservation Division	06/04/25	Draft NPA	Provided numerous comments on the Draft NPA to improve clarity and consistency, and asked questions regarding applicable C-UAS undertakings and different types of notification.
Virginia Department of Historic Resources	06/18/2025	Draft NPA	No comments regarding the stipulations as they related to historic properties.
Georgia Historic Preservation Division	8/13/2025	Revised Draft NPA	Provided numerous comments on using consistent terminology, adding notes and reorganizing some sections for clarity, and asked questions about the proposed meetings.
Minnesota State Historic Preservation Office	8/14/2025	Revised Draft NPA	Provided numerous comments on improving language clarity, using consistent terminology, determining eligibility, and asked questions about some of the stipulations.
Virginia Department of Historic Resources	8/15/2025	Revised Draft NPA	No comments.

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## **Appendix B:**

### **Public Involvement and Stakeholder Consultation**

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**Meeting Format:** Virtual Meeting.  
**Contact Person:** Alfredo Jose Guerra,  
 Scientific Review Officer, Center for  
 Scientific Review, National Institutes of  
 Health, 6701 Rockledge Drive, Bethesda, MD  
 20892, (301) 480-2569, [alfredo.guerra@nih.gov](mailto:alfredo.guerra@nih.gov).

**Name of Committee:** Infectious Diseases  
 and Immunology B Integrated Review Group;  
 HIV Coinfections and HIV Associated  
 Cancers Study Section.

**Date:** March 25–26, 2025.

**Time:** 9:30 a.m. to 6:00 p.m.

**Agenda:** To review and evaluate grant applications.

**Address:** National Institutes of Health,  
 Rockledge II, 6701 Rockledge Drive,  
 Bethesda, MD 20892.

**Meeting Format:** Virtual Meeting.  
**Contact Person:** Joshua D. Powell, Ph.D.,  
 Scientific Review Officer, Center for  
 Scientific Review, National Institutes of  
 Health, 6701 Rockledge Drive, Bethesda, MD  
 20892, (301) 594-5370, [josh.powell@nih.gov](mailto:josh.powell@nih.gov).

**Name of Committee:** Infectious Diseases  
 and Immunology B Integrated Review Group;  
 HIV Comorbidities and Clinical Studies  
 Study Section.

**Date:** March 27–28, 2025.

**Time:** 9:00 a.m. to 6:00 p.m.

**Agenda:** To review and evaluate grant applications.

**Address:** National Institutes of Health,  
 Rockledge II, 6701 Rockledge Drive,  
 Bethesda, MD 20892.

**Meeting Format:** Virtual Meeting.  
**Contact Person:** Shannon J. Sherman,  
 Ph.D., Scientific Review Officer, Center for  
 Scientific Review, National Institutes of  
 Health, 6701 Rockledge Drive, Bethesda, MD  
 20892, (301) 594-0715, [shannon.sherman@nih.gov](mailto:shannon.sherman@nih.gov).

**Name of Committee:** Infectious Diseases  
 and Immunology B Integrated Review Group;  
 HIV Immunopathogenesis and Vaccine  
 Development Study Section.

**Date:** March 27–28, 2025.

**Time:** 10:00 a.m. to 6:00 p.m.

**Agenda:** To review and evaluate grant applications.

**Address:** National Institutes of Health,  
 Rockledge II, 6701 Rockledge Drive,  
 Bethesda, MD 20892.

**Meeting Format:** Virtual Meeting.  
**Contact Person:** Philip Owens, Ph.D.,  
 Scientific Review Officer, Center for  
 Scientific Review, National Institutes of  
 Health, 6701 Rockledge Drive, Bethesda, MD  
 20892, (301) 594-7394, [owensp2@csr.nih.gov](mailto:owensp2@csr.nih.gov).  
 (Catalogue of Federal Domestic Assistance  
 Program Nos. 93.306, Comparative Medicine;  
 93.333, Clinical Research, 93.306, 93.333,  
 93.337, 93.393–93.396, 93.837–93.844,  
 93.846–93.878, 93.892, 93.893, National  
 Institutes of Health, HHS)

**Dated:** March 4, 2025.

**Lauren A. Fleck,**  
*Program Analyst, Office of Federal Advisory  
 Committee Policy.*

[FR Doc. 2025-03719 Filed 3-6-25; 8:45 am]

**BILLING CODE 4140-01-P**

## DEPARTMENT OF HOMELAND SECURITY

[Docket No.: DHS-2025-0009]

### Notice of Intent To Prepare a Programmatic Environmental Assessment for the Nationwide Operation of Counter-Unmanned Aircraft Systems

**AGENCY:** Department of Homeland Security.

**ACTION:** Notice of intent; request for comments and interagency coordination.

**SUMMARY:** The Department of Homeland Security (DHS) intends to prepare a programmatic environmental assessment (PEA) to consider the potential environmental impacts associated with the research, development, testing and evaluation (RDT&E) of counter-unmanned aircraft systems (C-UAS), and nationwide C-UAS operational and training activities (Proposed Action). DHS is seeking public input regarding important environmental issues that should be considered in the PEA. The PEA will be used to assess at a national scale the environmental impacts that may occur from the Proposed Action and establish standard Best Management Practices (BMPs) by which DHS can reduce such impacts. DHS invites federal agencies with jurisdiction by law and/or special expertise with respect to any potential environmental impact associated with the Proposed Action to formally cooperate with DHS in the preparation of the PEA.

**DATES:** Comments are due by April 7, 2025.

**ADDRESSES:** Comments may be submitted by either of the following methods:

- **Regulations.gov web portal:** Navigate to <https://www.regulations.gov> and search for Docket No. DHS-2025-0009 to submit public comments. Follow the online instructions for submitting comments. All public comments received are subject to the Freedom of Information Act and will be posted in their entirety at this site and available for public viewing. Do not include any information you would not like to be made publicly available.
- **By email:** Emailed comments should be sent to: Jennifer Hass, Director, Environmental Planning and Historic Preservation, at [sep-ehp@hq.dhs.gov](mailto:sep-ehp@hq.dhs.gov).

All comments received may be made publicly available without change,

including any personal information provided.

#### FOR FURTHER INFORMATION CONTACT:

Jennifer Hass, Director, Environmental Planning and Historic Preservation Program, Department of Homeland Security at (202) 580-5763 or [sep-ehp@hq.dhs.gov](mailto:sep-ehp@hq.dhs.gov).

#### SUPPLEMENTARY INFORMATION:

**Proposed Action:** DHS proposes to perform RDT&E of C-UAS and conduct operational and training activities to support existing and emerging DHS mission requirements nationwide. C-UAS are a system or device capable of tracking, disabling, disrupting, or seizing control of an unmanned aircraft or unmanned aircraft system (UAS). UAS have become a security concern in recent years due to the ease with which they can aid in intelligence gathering and be used for malicious activities. DHS has statutory authority under the Preventing Emerging Threats Act of 2018 to counter credible threats from UAS to the safety or security of certain facilities or assets, which are designated based on their importance to the security missions of DHS and Components.

The purpose of the Proposed Action is to support RDT&E of C-UAS technologies and to deploy C-UAS in operational settings to detect, identify, monitor, track, and mitigate (DIMIT-M) (passively and actively) threats posed by UAS, including across the radio frequency spectrum. The Proposed Action is needed to enhance DHS's ability to use C-UAS technologies, monitor emerging threats, protect DHS's missions, and defend the Nation from UAS threats and malicious activity effectively and reliably. The use of C-UAS would support existing and emerging mission requirements of the various Components within DHS and facilitate their services and strategies essential to the Nation's security, safety, and emergency response.

Within DHS, the use and application of C-UAS are actively being researched and tested to better understand C-UAS capabilities to support DIMIT-M activities. DHS conducts C-UAS activities nationwide, with some recurring in certain locations based on testing and demonstration needs. Additionally, authorized Components may use C-UAS technologies for operational use, trainings, and demonstrations nationwide, including along the southwest and northern borders.



Under the Proposed Action, DHS and its Components would continue ongoing RDT&E activities, but on a nationwide scale. The Proposed Action also includes the nationwide use and operation of C-UAS, outside of a testing environment, to conduct training and operational activities, such as law enforcement and security. The Proposed Action includes all elements related to the training, operation, maintenance, and use of C-UAS, including mitigation. This would allow DHS to continue its current testing of C-UAS while also enabling DHS and its Components to use C-UAS in an operational setting to support mission requirements.

Potential impacts for this Proposed Action would be associated with the testing, operation, and use of C-UAS, including supporting systems, and mobilization to a needed location, if applicable. All C-UAS currently in use by DHS are either ground- or vehicle-mounted. C-UAS maintenance would occur in existing DHS facilities using standard tools and materials, and in accordance with standard operating procedures for equipment maintenance.

DHS has decided to prepare a PEA for this Proposed Action to assist agency planning, decision making, and establish standard best management practices. This notice starts the scoping process for the PEA and solicits information regarding important environmental issues and alternatives that should be considered in the PEA. Additionally, DHS will use the scoping process to identify and eliminate from detailed analysis issues that are not significant or that have been analyzed by prior environmental review. DHS also invites agencies with jurisdiction by law and/or special expertise with respect to environmental issues of this Proposed Action to formally cooperate with DHS in preparation of the PEA.

The PEA analyses will also support compliance with other environmental statutes (e.g., National Historic Preservation Act, Endangered Species Act, Clean Air Act, etc.).

**Request for Comments:** Federal agencies; Tribal, state, and local governments; the public; and other interested parties are requested to comment on the important issues to be considered in the PEA. Comments must be provided by April 7, 2025. For information on how to submit, see the **ADDRESSES** section above. A mailing address to submit hardcopy comments can be provided upon request.

(Authority: National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321 *et seq.*), DHS Management Directive 023–01, rev. 01 (Implementation of NEPA), and DHS

Instruction Manual 023–01–001–01, rev. 01 (Implementation of the NEPA).)

**Jennifer Hass,**

*Director, Environmental Planning and Historic Preservation Program, Office of the Chief Readiness Support Officer, Department of Homeland Security.*

[FR Doc. 2025–03532 Filed 3–6–25; 8:45 am]

**BILLING CODE 9112–FF–P**

## INTER-AMERICAN FOUNDATION

### Sunshine Act Meetings

**TIME AND DATE:** Friday, February 28, 2025 4:26–4:45 p.m.

**PLACE:** Inter-American Foundation Office, 1331 Pennsylvania Avenue NW, Suite 300 South, Washington, DC 20004.

**STATUS:** Meeting of the Board of Directors, closed to the public.

#### MATTERS TO BE CONSIDERED:

- Board vote on waiver of public notice requirement
- Board vote on closing meeting
- Personnel Issue
- Appointment of President and Chief Executive Officer
- Adjournment

**CONTACT PERSON FOR MORE INFORMATION:** Peter Marocco, Acting Chairman, (202) 549–6317, [pmarocco@iaf.gov](mailto:pmarocco@iaf.gov).

The Inter-American Foundation held an emergency closed session of the board of directors on February 28, 2025 to discuss personnel issues. The record of votes as well as other documents required by the Sunshine Act and IAF's regulations can be found at <https://drive.google.com/file/d/1gL9V0oJkyQhLBjDA7aTLV1A3KKHFdyiU/view?usp=sharing> and <https://drive.google.com/file/d/1opNCP4BHPx1oqFl1i8jbnMV4HinyYVvt/view?usp=sharing>.

**Nichole Skoyles,**

*General Counsel.*

[FR Doc. 2025–03731 Filed 3–5–25; 11:15 am]

**BILLING CODE P**

## INTERNATIONAL TRADE COMMISSION

[Investigation No. 731–TA–1424 (Review)]

### Mattresses From China; Scheduling of an Expedited Five-Year Review

**AGENCY:** United States International Trade Commission.

**ACTION:** Notice.

**SUMMARY:** The Commission hereby gives notice of the scheduling of an expedited review pursuant to the Tariff Act of 1930 (“the Act”) to determine whether

revocation of the antidumping duty order on mattresses from China would be likely to lead to continuation or recurrence of material injury within a reasonably foreseeable time.

**DATES:** February 4, 2025.

#### FOR FURTHER INFORMATION CONTACT:

Rachel Devenney (202–205–3172), Office of Investigations, U.S. International Trade Commission, 500 E Street SW, Washington, DC 20436. Hearing-impaired persons can obtain information on this matter by contacting the Commission's TDD terminal on 202–205–1810. Persons with mobility impairments who will need special assistance in gaining access to the Commission should contact the Office of the Secretary at 202–205–2000. General information concerning the Commission may also be obtained by accessing its internet server (<https://www.usitc.gov>). The public record for this proceeding may be viewed on the Commission's electronic docket (EDIS) at <https://edis.usitc.gov>.

#### SUPPLEMENTARY INFORMATION:

**Background.**—On February 4, 2025, the Commission determined that the domestic interested party group response to its notice of institution (89 FR 87404, November 1, 2024) of the subject five-year review was adequate and that the respondent interested party group response was inadequate. The Commission did not find any other circumstances that would warrant conducting a full review.<sup>1</sup> Accordingly, the Commission determined that it would conduct an expedited review pursuant to section 751(c)(3) of the Act (19 U.S.C. 1675(c)(3)).

For further information concerning the conduct of this review and rules of general application, consult the Commission's Rules of Practice and Procedure, part 201, subparts A and B (19 CFR part 201), and part 207, subparts A, D, E, and F (19 CFR part 207).

**Staff report.**—A staff report containing information concerning the subject matter of the review has been placed in the nonpublic record, and will be made available to persons on the Administrative Protective Order service list for this review on April 9, 2025. A public version will be issued thereafter, pursuant to § 207.62(d)(4) of the Commission's rules.

**Written submissions.**—As provided in § 207.62(d) of the Commission's rules, interested parties that are parties to the

<sup>1</sup> A record of the Commissioners' votes, the Commission's statement on adequacy, and any individual Commissioner's statements will be available from the Office of the Secretary and at the Commission's website.



DHS Programmatic Environmental Assessment (PEA) for the Nationwide Operation of Counter Unmanned Aircraft Systems (C-UAS) Public Comments on the Notice of Intent Scoping Period 03/07/2025 - 04/07/2025 <a href="https://www.regulations.gov/docket/DHS-2025-0009">https://www.regulations.gov/docket/DHS-2025-0009</a>								
Comment ID	Commenter ID #	Comment	DHS Response	Topic(s)	Name	Organization	Date Received	Method
P1	0001	I am in full support of a programmatic environmental assessment for the nationwide operation of Counter-Unmanned Aircraft Systems.	Comment acknowledged.	General	Anonymous	N/a	03/11/25	Federal Register
P2	0002	Clueless, careless, and criminal unmanned aircraft systems (UAS) pose a significant threat to the safe and secure operation of commercial aircraft nationwide. ALPA is supportive of DHS research, development, testing, and evaluation (RTD&E) of C-UAS technologies and the deployment of those systems to detect, identify, monitor, track, and mitigate (DIMIT-M) threats posed by UAS. ALPA is appreciative of DHS efforts to maintain the safety and security of the National Airspace System (NAS) in which ALPA members are constantly operating in.	Comment acknowledged.	General	Wolfgang Koch	Air Line Pilots Association, International	04/07/25	Federal Register
P3	0002	To ensure the safe operation of C-UAS, DHS must ensure the authorities in place to DIMIT-M are well defined, understood, and implemented. When it comes to safety of the NAS, the Federal Aviation Administration (FAA) holds a majority of the responsibility, but there are areas in which DHS and the Transportation Security Administration (TSA) have oversight and are expected to respond. To develop an effective system, all agencies involved must work together. ALPA emphasizes the need for the proactive and regular coordination between DHS and the FAA as C-UAS operations are expanded nationally and outside of testing environments as indicated within the notice of intent. It is important for DHS to establish regular information sharing with the FAA. In the past the industry has seen lapses in communication that implicated effective and efficient C-UAS response. Specifically, DHS and FAA did not previously share Low Altitude Authorization and Notification Capability (LAANC) authorization information, and it negatively impacted DHS' mission to respond to potentially unauthorized UAS use within the NAS.	Comment acknowledged. DHS complies with FAA regulations when operating sUAS, as noted in the sUAS EA. DHS would notify FAA before disabling a UAV, refer unauthorized UAS to FAA if they do not pose a credible threat to a covered asset, and coordinate with FAA for other C-UAS activities as required.	Interagency Coordination	Wolfgang Koch	Air Line Pilots Association, International	04/07/25	Federal Register
P4	0002	ALPA emphasizes the importance of standards development bodies as the industry expands the footprint of new systems like C-UAS. Prior to expansion of C-UAS systems nationwide and outside of testing environments, DHS must work with organizations such as RTCA to ensure all potential impacts to safety and security to the NAS are accounted for.	Comment acknowledged. DHS would adhere to airspace safety requirements and update procedures, as needed, as new standards are established. Health and Safety is analyzed in Section 3.1 of the EA, and Airspace is analyzed in Section 3.3.	Safety	Wolfgang Koch	Air Line Pilots Association, International	04/07/25	Federal Register
P5	0002	C-UAS systems are powerful military-grade weapons and they should be labeled, treated, and protected as such. Any improper or nefarious use of C-UAS could lead to catastrophic aviation incidents within the NAS. As DHS operations are expanded nationwide and outside of testing environments, ALPA calls for DHS to ensure all C-UAS systems are physically secure to prevent unauthorized access. Further, DHS must take all measures necessary to prevent insider threat. Should DHS have the authority to expand DIMIT-M capabilities to local law enforcement, DHS must ensure all necessary measures and resources are available to guarantee the systems are physically protected from unauthorized access and those using the equipment are vetted and trained to prevent any unnecessary and unintentional safety and security impacts. DHS must have clear and enforceable oversight over any agency they delegate DIMIT-M capabilities to; with emphasis on compliance in maintaining and protecting the systems.	DHS recognizes the importance of treating C-UAS as powerful, military-grade tools and is committed to ensuring their secure handling. DHS will implement strict measures to prevent unauthorized access and mitigate insider threats as operations expand nationwide. Local law enforcement is not authorized to use C-UAS. DHS may work with local law enforcement to address credible threats, but DHS will remain responsible for C-UAS operation.	Security	Wolfgang Koch	Air Line Pilots Association, International	04/07/25	Federal Register
P6	0002	With the proposed expansion of C-UAS systems nationwide and outside of testing environments, ALPA anticipates the noise from those systems could affect local wildlife and neighboring communities. ALPA recommends DHS work alongside the FAA and RTCA on noise considerations.	DHS analyzed potential noise impacts from small UAS (sUAS), which may be used to support C-UAS testing, in a Final Nationwide Programmatic Environmental Assessment in 2022. That impact analysis, and minimization measures, will be incorporated by reference into this PEA. There would be no additional noise impacts associated with the C-UAS technology.	Noise	Wolfgang Koch	Air Line Pilots Association, International	04/07/25	Federal Register

[Back to Document Comments \(/document/DHS-2025-0009-0001/comment\)](#)

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 **PUBLIC SUBMISSION**

# Comment Submitted by Anonymous

Posted by the **Department of Homeland Security** on Mar 11, 2025

[Docket \(/docket/DHS-2025-0009\)](#) / [Document \(DHS-2025-0009-0001\) \(/document/DHS-2025-0009-0001\)](#)  
/ [Comment](#)

Comment

I am in full support of a programmatic environmental assessment for the nationwide operation of Counter-Unmanned Aircraft Systems.

**Comment ID**

DHS-2025-0009-0002



**Tracking Number**

m84-wevy-o1cz

**Comment Details**

**Received Date**

Mar 11, 2025

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# AIR LINE PILOTS ASSOCIATION, INTERNATIONAL

7950 Jones Branch Drive, Suite 400S | McLean, VA 22102 | 703-689-2270 | 888-FLY-ALPA

THE WORLD'S LARGEST PILOTS UNION | [WWW.ALPA.ORG](http://WWW.ALPA.ORG)

April 7, 2025

Jennifer Hass  
Director, Environmental Planning and Historic Preservation  
United States Department of Homeland Security

## **Electronic delivery**

### **Subject:**

Docket No.: DHS-2025-0009 - Notice of Intent To Prepare a Programmatic Environmental Assessment for the Nationwide Operation of Counter-Unmanned Aircraft Systems

### **In support, with comments.**

Dear Ms. Hass,

The Air Line Pilots Association, International (ALPA), representing the safety and security interests of over 79,000 professional airline pilots flying for 42 airlines in the United States and Canada, appreciates the opportunity to provide comments on the Department of Homeland Security (DHS) Notice of Intent To Prepare a Programmatic Environmental Assessment for the Nationwide Operation of Counter-Unmanned Aircraft Systems (C-UAS). Within this letter, ALPA has provided comments on environmental impact, safety, security, and recommendations for interagency coordination for this notice of intent.

### **Interagency Collaboration**

Clueless, careless, and criminal unmanned aircraft systems (UAS) pose a significant threat to the safe and secure operation of commercial aircraft nationwide. ALPA is supportive of DHS research, development, testing, and evaluation (RTD&E) of C-UAS technologies and the deployment of those systems to detect, identify, monitor, track, and mitigate (DIMIT-M) threats posed by UAS. ALPA is appreciative of DHS efforts to maintain the safety and security of the National Airspace System (NAS) in which ALPA members are constantly operating in.

To ensure the safe operation of C-UAS, DHS must ensure the authorities in place to DIMIT-M are well defined, understood, and implemented. When it comes to safety of the NAS, the Federal Aviation Administration (FAA) holds a majority of the responsibility, but there are areas in which DHS and the Transportation Security Administration (TSA) have oversight and are expected to respond. To develop an effective system, all agencies involved must work together. ALPA emphasizes the need for the proactive and regular coordination between DHS and the FAA as C-UAS operations are expanded nationally and outside of testing environments as indicated within the notice of intent.

It is important for DHS to establish regular information sharing with the FAA. In the past the industry has seen lapses in communication that implicated effective and efficient C-UAS response. Specifically, DHS and FAA did not previously share Low Altitude Authorization and Notification Capability (LAANC)

authorization information, and it negatively impacted DHS' mission to respond to potentially unauthorized UAS use within the NAS.

### **Safety**

ALPA emphasizes the importance of standards development bodies as the industry expands the footprint of new systems like C-UAS. Prior to expansion of C-UAS systems nationwide and outside of testing environments, DHS must work with organizations such as RTCA to ensure all potential impacts to safety and security to the NAS are accounted for.

### **Security**

C-UAS systems are powerful military-grade weapons and they should be labeled, treated, and protected as such. Any improper or nefarious use of C-UAS could lead to catastrophic aviation incidents within the NAS. As DHS operations are expanded nationwide and outside of testing environments, ALPA calls for DHS to ensure all C-UAS systems are physically secure to prevent unauthorized access. Further, DHS must take all measures necessary to prevent insider threat.

Should DHS have the authority to expand DIMIT-M capabilities to local law enforcement, DHS must ensure all necessary measures and resources are available to guarantee the systems are physically protected from unauthorized access and those using the equipment are vetted and trained to prevent any unnecessary and unintentional safety and security impacts. DHS must have clear and enforceable oversight over any agency they delegate DIMIT-M capabilities to; with emphasis on compliance in maintaining and protecting the systems.

### **Environmental Impacts**

With the proposed expansion of C-UAS systems nationwide and outside of testing environments, ALPA anticipates the noise from those systems could affect local wildlife and neighboring communities. ALPA recommends DHS work alongside the FAA and RTCA on noise considerations.

### **Conclusion**

The expansion of DHS C-UAS operations is necessary and well received, however, DHS must ensure their work prioritizes the safety and security of the NAS to meet or exceed current levels.

DHS must be in lockstep with the FAA and the industry as they expand these operations and further once these expansion programs are implemented.

ALPA is proud to collaborate with DHS to ensure the pilot perspective, as users of the NAS, is always included. ALPA appreciates the opportunity to comment on this notice and, as ALPA has for more than 93 years, stands willing and able to assist in advancing aviation safety and security.

Sincerely,

A handwritten signature in black ink, reading "Wolfgang Koch". The signature is fluid and cursive, with the first name "Wolfgang" being more prominent than the last name "Koch".

Captain Wolfgang Koch  
Aviation Security Chair  
Air Line Pilots Association, International

**Kisak, Natalie**

---

**From:** SEP-EPHP <sep-ephp@hq.dhs.gov>  
**Sent:** Friday, March 7, 2025 8:12 AM  
**Cc:** SEP-EPHP  
**Subject:** Scoping for Department of Homeland Security's Counter-Unmanned Aircraft Systems PEA (Federal Agencies)  
**Attachments:** DHS cUAS PEA\_ScopingLetter\_03062025.pdf

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RE: Scoping Letter for the Programmatic Environmental Assessment of the Nationwide Operation of Counter Unmanned Aircraft Systems (C-UAS) by the Department of Homeland Security

Docket Number: **DHS-2025-0009**

The Department of Homeland Security (DHS) intends to prepare a programmatic environmental assessment (PEA) to consider the potential environmental impacts associated with the research, development, testing and evaluation (RDT&E) of counter-unmanned aircraft systems (C-UAS), and nationwide C-UAS operational and training activities (Proposed Action). DHS is seeking public input regarding important environmental issues that should be considered in the PEA. The PEA will be used to assess at a national scale the environmental impacts that may occur from the Proposed Action and establish standard Best Management Practices (BMPs) by which DHS can reduce such impacts. DHS invites federal agencies with jurisdiction by law and/or special expertise with respect to any potential environmental impact associated with the Proposed Action to formally cooperate with DHS in the preparation of the PEA. Agencies that would like to request cooperating agency status should follow the instructions for submitting comments provided below.

Please provide any comments, concerns, information, studies, or other data you may have regarding the Proposed Action by **April 6<sup>th</sup>, 2025**. If you have comments or information relevant to the development of the PEA, please direct your correspondence to Natalie Kisak at [Natalie.kisak@aecom.com](mailto:Natalie.kisak@aecom.com) or to DHS Energy and Environment Division (formerly Sustainability and Environmental Programs) at [sep-ephp@hq.dhs.gov](mailto:sep-ephp@hq.dhs.gov).

The scoping notice was published in the Federal Register today and can be found at: [Federal Register :: Notice of Intent To Prepare a Programmatic Environmental Assessment for the Nationwide Operation of Counter-Unmanned Aircraft Systems](#). Additionally, the scoping notice is available for review and comment at Regulations.gov under Docket No. **DHS-2025-0009**.

Best Regards,  
Kim

**Kimberly Poli**  
Senior Environmental Protection Specialist, Energy and Environment Division

Office of the Chief Readiness Support Officer  
Department of Homeland Security  
Cell: 202-316-8050



Homeland  
Security

March 6, 2025

Subject: Scoping Letter for the Programmatic Environmental Assessment of the Nationwide Operation of Counter Unmanned Aircraft Systems (C-UAS) by the Department of Homeland Security

Dear Stakeholder:

The Department of Homeland Security (DHS) proposes to perform research, development, testing, and evaluation (RDT&E) of counter unmanned aircraft systems (C-UAS), and conduct operational and training activities to support existing and emerging DHS mission requirements nationwide. DHS is preparing a Programmatic Environmental Assessment (PEA) to evaluate the potential impacts associated with the Proposed Action pursuant to the National Environmental Policy Act of 1969 (NEPA; 42 USC §§ 4321 et seq.); DHS Management Directive 023-01, rev. 01 *Implementation of the NEPA*; and DHS Instruction Manual 023-01-001-01, rev. 01, *Implementation of the NEPA*.

### Background

An unmanned aircraft system (UAS) is defined by the Federal Aviation Administration (FAA) as an aircraft that is operated without the possibility of direct human intervention from within or on the aircraft, and which consists of the aircraft itself and the equipment necessary for its safe and efficient operation (14 CFR Part 107). C-UAS are a system or device capable of tracking, disabling, disrupting, or seizing control of an unmanned aircraft or UAS. UAS have become a security concern due to the ease with which they can aid in intelligence gathering against public, federal, and state entities; be used to conduct crimes or thwart law enforcement efforts; and/or act as a malicious platform for delivering harmful substances, contraband, or weapons. As UAS technology advances, so too will the threats that UAS pose when used by malicious actors.

C-UAS technologies employ a variety of sensors and processes that account for or exploit the physical components of a UAS and the communications between the unmanned aerial vehicle (UAV) and the ground-based control station (GCS). C-UAS systems are primarily ground-based but may be either stationary or mobile. Stationary systems may be mounted on a tripod or affixed to a stationary location (e.g., mounted on a building), while mobile systems may be handheld or vehicle-mounted for portability, depending on the overall size and configuration of the system being used.

Within DHS and its Components, C-UAS are used for a variety of purposes to support operational missions and protect DHS facilities and assets. In addition to protecting the safety and security of



DHS missions, facilities, and assets, DHS may also provide C-UAS support for mass gatherings defined as National Special Security Events (NSSE) and to State, Local, Territorial, or Tribal governments for certain Special Event Assessment Rating (SEAR) events, upon request.

When an unknown UAS is identified, DHS implements a C-UAS processing chain to evaluate and respond to potential threats posed by the UAS. The processing chain generally includes five stages: Detect, Identify, Monitor, Track, and Mitigate (DIMIT-M). Only authorized personnel may operate C-UAS and undertake C-UAS actions in accordance with the DIMIT-M framework. C-UAS activities may be performed at any time of day or night to respond quickly and effectively to any credible threats. If, after detecting, identifying, monitoring, and tracking the UAS, it is determined not to be a credible threat, DHS may not take any actions to counter the UAS. If a UAS is violating applicable laws or FAA regulations, but does not pose a credible threat, DHS would notify the appropriate FAA Regional Operations Center. If a UAS is determined to pose a credible threat to facilities or assets, DHS may mitigate the threat.

The first four steps in the C-UAS processing chain (i.e., Detect, Identify, Monitor, and Track) are performed by receiving and analyzing data from C-UAS sensors. C-UAS, whether stationary or mobile, generally have a detection range of up to 1.2 miles, and rely on one of four types of sensors to detect UAS: radar, passive radiofrequency (RF), electro-optical/infrared (EO/IR), or acoustic. Once a UAS has been detected and has been determined to pose a credible threat to assets or facilities, DHS would employ one of two broad types of mitigation techniques, electronic or kinetic (i.e., physical force or actions that result in direct physical impact or destruction), to complete the C-UAS processing chain. Though DHS is not currently approved to use kinetic mitigation techniques operationally, RDT&E of kinetic mitigation would be conducted to explore operational use cases, as well as environmental, health, and safety considerations to determine appropriate kinetic capabilities for Component missions. Additionally, while C-UAS mitigation techniques generally fall into the two categories of electronic and kinetic technologies, mitigation may also be achieved by locating the UAV's operator and having that person cease operation.

### Proposed Action

DHS proposes to perform research, development, testing, and evaluation (RDT&E) of counter unmanned aircraft systems (C-UAS), and conduct operational and training activities to support existing and emerging DHS mission requirements nationwide (Proposed Action). The purpose of the Proposed Action is to support RDT&E of C-UAS technologies and to deploy C-UAS in operational settings to detect, identify, monitor, track, and mitigate (DIMIT-M) (passively and actively) threats posed by UAS, including across the radio frequency spectrum. The Proposed Action is needed to enhance DHS's ability to use C-UAS technologies, monitor emerging threats, protect DHS's missions, and defend the Nation from UAS threats and malicious activity effectively and reliably. The use of C-UAS would support existing and emerging mission requirements of the various Components within DHS and facilitate their services and strategies essential to the Nation's security, safety, and emergency response.

Within DHS, the use and application of C-UAS are actively being researched and tested to better understand C-UAS capabilities to support DIMIT-M activities. DHS conducts C-UAS activities nationwide, with some recurring in certain locations based on testing and demonstration needs: Additionally, authorized Components may use C-UAS technologies for operational use, trainings, and demonstrations nationwide, including along the southwest and northern borders.

Under the Proposed Action, DHS and its Components would continue ongoing RDT&E activities, but on a nationwide scale. The Proposed Action also includes the nationwide use and operation of C-UAS, outside of a testing environment, to conduct training and operational activities, such as law enforcement and security. The Proposed Action includes all elements related to the training, operation, maintenance, and use of C-UAS, including mitigation. This would allow DHS to continue its current testing of C-UAS while also enabling DHS and its Components to use C-UAS in an operational setting to support mission requirements.

Potential impacts for this Proposed Action would be associated with the testing, operation, and use of C-UAS, including supporting systems, and mobilization to a needed location, if applicable. All C-UAS currently in use by DHS are either ground- or vehicle-mounted. C-UAS maintenance would occur in existing DHS facilities using standard tools and materials, and in accordance with standard operating procedures for equipment maintenance.

#### Public Participation and Interagency Coordination

DHS is seeking stakeholder input regarding any information or potential environmental concerns associated with the Proposed Action. Additionally, DHS invite agencies with jurisdiction by law and/or special expertise with respect to the environmental issues of this Proposed Action to formally cooperate with DHS in the preparation of the PEA. Agencies that would like to request cooperating agency status should follow the instructions for submitting comments provided below. Please provide any comments, concerns, information, studies, or other data you may have regarding the Proposed Action within **thirty (30) days** of receipt of this letter to enable us to complete this phase of the project within the scheduled timeframe. All responses will be considered for incorporation in the PEA. We look forward to and welcome your participation in this analysis. DHS has contracted AECOM to facilitate the NEPA process. If you have comments or information relevant to the development of the PEA, please direct your correspondence to Natalie Kisak at [natalie.kisak@aecom.com](mailto:natalie.kisak@aecom.com).

Sincerely,

SARAH N  
KOEPPPEL

Digitally signed by  
SARAH N KOEPPPEL  
Date: 2025.03.06  
16:05:40 -05'00'

Sarah Koeppele  
(Acting) Director, Environmental Planning  
Office of the Chief Readiness Support Officer  
Department of Homeland Security

DHS Programmatic Environmental Assessment (PEA) for the Nationwide Operation of Counter Unmanned Aircraft Systems (C-UAS) Agency Scoping Comments Scoping Period 03/07/2025 - 04/07/2025										
Comment ID	Commenter ID #	Name	Agency	Comment	DHS Response/Follow-Up Action	Topic(s)	Email	Address	Date Received	Method
A1	0001	Quinn German	USACE	The Corps of Engineers (Corps) Regulatory Division does not have any specific comments regarding a prepared programmatic environmental assessment (PEA) to consider the potential environmental impacts associated with the research, development, testing and evaluation (RDTE) of counter-unmanned aircraft systems (C-UAS), and nationwide C-UAS operational and training activities.	Comment acknowledged.	General	<a href="mailto:quinn.h.germann@usace.army.mil">quinn.h.germann@usace.army.mil</a>	N/a	03/10/25	Email
A2	0001	Quinn German	USACE	Department of the Army authorization is required if anyone proposes to place dredged and/or fill material into waters of the U.S., including wetlands and/or perform work in navigable waters of the U.S.  Section 404 of the Clean Water Act requires that a DA permit be obtained for the placement or discharge of dredged and/or fill material into waters of the U.S., including jurisdictional wetlands (33 U.S.C. 1344). The Corps defines wetlands as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.	Comment acknowledged. As DHS does not plan to place dredged or fill material in WOUS as part of this Proposed Action, we do not anticipate that a Section 404 permit would be required.	Water Resources	<a href="mailto:quinn.h.germann@usace.army.mil">quinn.h.germann@usace.army.mil</a>	N/a	03/10/25	Email
A3	0001	Quinn German	USACE	Section 10 of the Rivers and Harbors Act of 1899 requires that a DA permit be obtained for structures or work in or affecting navigable waters of the U.S. (33 U.S.C. 403). Section 10 waters are those waters subject to the ebb and flow of the tide shoreward to the mean high water mark, and/or other waters identified by the Alaska District. Aquaculture structures and work would require Section 10 Authorization.	Comment acknowledged. As the Proposed Action does not involve structures or work in navigable WOUS, DHS does not anticipate that a Section 10 permit would be required.	Water Resources	<a href="mailto:quinn.h.germann@usace.army.mil">quinn.h.germann@usace.army.mil</a>	N/a	03/10/25	Email
A4	0001	Quinn German	USACE	You are welcome to submit a preapplication meeting request, a jurisdictional determination request, or a permit application directly to our general mailbox ( <a href="mailto:regpagemaster@usace.army.mil">regpagemaster@usace.army.mil</a> ) and you will be assigned a project manager to assist you. Please feel free to contact our main line if you have any questions or concerns at 907-753-2712.	Comment acknowledged.	General	<a href="mailto:quinn.h.germann@usace.army.mil">quinn.h.germann@usace.army.mil</a>	N/a	03/10/25	Email
A5	0002	Janesse Colón-Ruiz	USEPA	Thank you for the opportunity to review the scoping materials for the Programmatic Environmental Assessment of the Nationwide Operation of Counter Unmanned Aircraft Systems (C-UAS) by the Department of Homeland Security. At this time, the EPA doesn't have any comments, but we welcome the offer to be a cooperating agency for this proposed action. If you have any questions, please contact Casey Johnson at <a href="mailto:johnson.casey@epa.gov">johnson.casey@epa.gov</a> and me at <a href="mailto:colonruiz.janesse@epa.gov">colonruiz.janesse@epa.gov</a> . We will be your contacts at the EPA for this cooperating effort.	Comment acknowledged. DHS will continue to provide planning documents and other consultation materials as the PEA is developed.	General	<a href="mailto:colonruiz.janesse@epa.gov">colonruiz.janesse@epa.gov</a> <a href="mailto:johnson.casey@epa.gov">johnson.casey@epa.gov</a>	N/a	03/11/25	Email
A6	0003	Megan Gilbert	BLM	One key area of focus is the proposed "ground-based control station" for C-UAS, which may be either stationary or mobile:  -Stationary Control Station: If planned on public land, a right-of-way (43 CFR 2801.2) permit from BLM may be necessary, and the placement must conform to the applicable BLM land use plan. This ensures compliance with best management practices and minimizes potential environmental impacts.  -Mobile Control Station: Mobile C-UAS systems can be handheld or vehicle-mounted. It is important that vehicle-mounted systems comply with route designations for the type of vehicle used, including restrictions on access or areas closed to motorized vehicles on BLM-managed public lands, as applicable.	Comment acknowledged. The Proposed Action would not involve the installation of stationary systems outside of DHS property. DHS will ensure that vehicle-mounted systems will comply with route designations and restrictions on access or areas closed to motorized vehicles on BLM-managed public lands, to the extent practicable.	Permitting/BMPs	<a href="mailto:magilbert@blm.gov">magilbert@blm.gov</a>	N/a	04/04/25	Email
A7	0003	Megan Gilbert	BLM	At this time, it is challenging to provide more specific resource concerns without indication of where these sites might be located. BLM would encourage you to consider whether the identification of certain areas as restricted from testing would be feasible in the proposed action. For example, the analysis might consider whether this type of testing would be incompatible with high density flight areas or during active wildfires where aviation operations are taking place.	Since the Proposed Action involves law enforcement and national security issues, DHS is not able to categorically exclude any areas from C-UAS activities. However, C-UAS testing would occur in more limited areas (e.g., at and around DHS facilities, near the border) than general C-UAS operations to address credible threats. DHS will follow all air use restrictions, continue to work with federal partners, and coordinate with land management agencies as needed.	Proposed Action	<a href="mailto:magilbert@blm.gov">magilbert@blm.gov</a>	N/a	04/04/25	Email
A8	0003	Megan Gilbert	BLM	Thank you for the opportunity to comment. We look forward to further engagement as the project progresses. At this time, BLM does not believe it is necessary to participate as a cooperating agency but would appreciate further opportunities for input as Programmatic Environmental Assessment is developed.	Comment acknowledged.	General	<a href="mailto:magilbert@blm.gov">magilbert@blm.gov</a>	N/a	04/04/25	Email

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**From:** Germann, Quinn H CIV USARMY CEPOA (USA) <Quinn.H.Germann@usace.army.mil>  
**Sent:** Monday, March 10, 2025 5:55 PM  
**To:** Kisak, Natalie <natalie.kisak@aecom.com>  
**Subject:** Scoping for Department of Homeland Security's Counter-Unmanned Aircraft Systems PEA (Federal Agencies) Docket Number:DHS-2025-0009

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Good afternoon Ms. Kisak,

The Corps of Engineers (Corps) Regulatory Division does not have any specific comments regarding a prepared programmatic environmental assessment (PEA) to consider the potential environmental impacts associated with the research, development, testing and evaluation (RDT&E) of counter-unmanned aircraft systems (C-UAS), and nationwide C-UAS operational and training activities.

Department of the Army authorization is required if anyone proposes to place dredged and/or fill material into waters of the U.S., including wetlands and/or perform work in navigable waters of the U.S.

A copy of the DA permit application can be found online at

[www.poa.usace.army.mil/Missions/Regulatory](http://www.poa.usace.army.mil/Missions/Regulatory).

Sample drawings can also be found on our website at

[www.poa.usace.army.mil/Portals/34/docs/regulatory/guidetodrawings2012.pdf](http://www.poa.usace.army.mil/Portals/34/docs/regulatory/guidetodrawings2012.pdf).

Section 404 of the Clean Water Act requires that a DA permit be obtained for the placement or discharge of dredged and/or fill material into waters of the U.S., including jurisdictional wetlands (33 U.S.C. 1344). The Corps defines wetlands as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

Section 10 of the Rivers and Harbors Act of 1899 requires that a DA permit be obtained for structures or work in or affecting navigable waters of the U.S. (33 U.S.C. 403). Section 10 waters are those waters subject to the ebb and flow of the tide shoreward to the mean high water mark, and/or other waters identified by the Alaska District. Aquaculture structures and work would require Section 10 Authorization.

You are welcome to submit a preapplication meeting request, a jurisdictional determination request, or a permit application directly to our general mailbox ([regpagemaster@usace.army.mil](mailto:regpagemaster@usace.army.mil)) and you will be assigned a project manager to assist you. Please feel free to contact our main line if you have any questions or concerns at 907-753-2712.

Sincerely,



**US Army Corps  
of Engineers®**

Quinn H.A. Germann  
Regulatory Specialist – North Section  
U.S. Army Corps of Engineers | Alaska District  
Desk Phone 907-753-2773 Work Cell 907-371-5132  
Email [quinn.h.germann@usace.army.mil](mailto:quinn.h.germann@usace.army.mil)



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**From:** [Kisak, Natalie](#)  
**To:** [Boyd, Tara](#)  
**Subject:** Fw: Scoping Letter for the PEA of the Nationwide Operation of Counter Unmanned Aircraft Systems (C-UAS) by the DHS  
**Date:** Tuesday, March 11, 2025 1:07:41 PM

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**Natalie A. Kisak**  
Environmental Planner  
D +1-301-944-1516  
[natalie.kisak@aecom.com](mailto:natalie.kisak@aecom.com)

---

**From:** Colon-Ruiz, Janesse <ColonRuiz.Janesse@epa.gov>  
**Sent:** Tuesday, March 11, 2025 10:29 AM  
**To:** sep-ephp@hq.dhs.gov <sep-ephp@hq.dhs.gov>; Kisak, Natalie <natalie.kisak@aecom.com>  
**Cc:** Johnson, Casey <Johnson.Casey@epa.gov>; Austin, Mark <Austin.Mark@epa.gov>; Abrams, Nancy <Abrams.Nancy@epa.gov>  
**Subject:** Scoping Letter for the PEA of the Nationwide Operation of Counter Unmanned Aircraft Systems (C-UAS) by the DHS

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Ms. Hass,

Thank you for the opportunity to review the scoping materials for the Programmatic Environmental Assessment of the Nationwide Operation of Counter Unmanned Aircraft Systems (C-UAS) by the Department of Homeland Security. At this time, the EPA doesn't have any comments, but we welcome the offer to be a cooperating agency for this proposed action. If you have any questions, please contact Casey Johnson at [johnson.casey@epa.gov](mailto:johnson.casey@epa.gov) and me at [colonruiz.janesse@epa.gov](mailto:colonruiz.janesse@epa.gov). We will be your contacts at the EPA for this cooperating effort. Thank you.

Sincerely,  
*Janesse S. Colón-Ruiz*  
*Biologist, NEPA Compliance Division,*  
*Office of Federal Activities, U.S. Environmental Protection Agency*  
*Washington, D.C.*

Office: 202-564-0078; [colonruiz.janesse@epa.gov](mailto:colonruiz.janesse@epa.gov)

**From:** [Kisak, Natalie](#)  
**To:** [Boyd, Tara](#)  
**Subject:** Fw: Scoping comments for the Programmatic Environmental Assessment of the Nationwide Operation of Counter Unmanned Aircraft Systems (C-UAS) by the Department of Homeland Security.  
**Date:** Friday, April 4, 2025 1:54:59 PM

---

**Natalie A. Kisak**  
Environmental Planner  
D +1-301-944-1516  
[natalie.kisak@aecom.com](mailto:natalie.kisak@aecom.com)

---

**From:** Gilbert, Megan A <magilbert@blm.gov>  
**Sent:** Friday, April 4, 2025 10:36 AM  
**To:** sep-ephp@hq.dhs.gov <sep-ephp@hq.dhs.gov>; Kisak, Natalie <natalie.kisak@aecom.com>  
**Cc:** Bernier, Heather A <hbernier@blm.gov>  
**Subject:** Scoping comments for the Programmatic Environmental Assessment of the Nationwide Operation of Counter Unmanned Aircraft Systems (C-UAS) by the Department of Homeland Security.

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The Bureau of Land Management (BLM) has reviewed the scoping letter for the Programmatic Environmental Assessment of the Nationwide Operation of Counter Unmanned Aircraft Systems (C-UAS) by the Department of Homeland Security.

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BLM is providing these comments for your consideration in developing project design features and alternatives.

One key area of focus is the proposed "ground-based control station" for C-UAS, which may be either stationary or mobile:

- **Stationary Control Station:** If planned on public land, a right-of-way (43 CFR 2801.2) permit from BLM may be necessary, and the placement must conform to the applicable BLM land use plan. This ensures compliance with best management practices and minimizes potential environmental impacts.
- **Mobile Control Station:** Mobile C-UAS systems can be handheld or vehicle-mounted. It is important that vehicle-mounted systems comply with route designations for the type of vehicle used, including restrictions on access or areas closed to motorized vehicles on BLM-managed public lands, as applicable.

By addressing these considerations in your planning, we can help create a more effective project that aligns with land management policies and community interests.

At this time, it is challenging to provide more specific resource concerns without indication of where these sites might be located. BLM would encourage you to consider whether the



identification of certain areas as restricted from testing would be feasible in the proposed action. For example, the analysis might consider whether this type of testing would be incompatible with high density flight areas or during active wildfires where aviation operations are taking place.

Thank you for the opportunity to comment. We look forward to further engagement as the project progresses. At this time, BLM does not believe it is necessary to participate as a cooperating agency but would appreciate further opportunities for input as Programmatic Environmental Assessment is developed.

If you have any questions concerning BLM's comments, please contact Megan Gilbert, BLM Senior NEPA Lead, at (303) 912-5023 or at [magilbert@blm.gov](mailto:magilbert@blm.gov).

***Megan Gilbert***

Senior NEPA Lead

Bureau of Land Management - HQ

303-912-5023 (mobile)

303-239-3634 (desk)

## DEPARTMENT OF HOMELAND SECURITY

[Docket No: DHS–2025–0027]

### Notice of Availability of a Draft Programmatic Environmental Assessment for the Nationwide Operation of Counter Unmanned Aircraft Systems

**AGENCY:** Department of Homeland Security.

**ACTION:** Notice of availability; request for comments.

**SUMMARY:** The Department of Homeland Security (DHS) announces the availability of a draft programmatic environmental assessment (PEA) and its draft finding that the research, development, testing, and evaluation (RDT&E) of counter unmanned aircraft systems (C–UAS), and nationwide C–UAS operational and training activities will not significantly impact the environment. The draft PEA will inform DHS’s decision whether to perform such activities with C–UAS nationwide.

**DATES:** Comments must be submitted on or before September 3, 2025.

**ADDRESSES:** The draft PEA and draft Finding of No Significant Impact (FONSI) are available on DHS’s website at: <https://www.dhs.gov/ocrso/eed/epb/nepa>.

Comments may be submitted by either of the following methods:

- *Regulations.gov web portal:* Navigate to <https://www.regulations.gov> and search for Docket No. DHS–2025–0027 to submit public comments. Follow the online instructions for submitting comments. All public comments received are subject to the Freedom of Information Act and will be posted in their entirety at this site and available for public viewing. Do not include any information you would not like to be made publicly available.

- *By email:* Emailed comments should be sent to: Jennifer Hass, Acting Executive Director, Energy and Environment Division, at [EED-EP@hq.dhs.gov](mailto:EED-EP@hq.dhs.gov).

All comments received may be made publicly available without change, including any personal information provided.

#### FOR FURTHER INFORMATION CONTACT:

Jennifer Hass, Acting Executive Director, Energy and Environment Division, Department of Homeland Security at [EED-EP@hq.dhs.gov](mailto:EED-EP@hq.dhs.gov) or by phone at 202–834–4346.

#### SUPPLEMENTARY INFORMATION:

*Proposed Action:* DHS proposes to perform RDT&E of C–UAS, and conduct operational and training activities to

support existing and emerging DHS mission requirements nationwide. C–UAS are a system or device capable of tracking, disabling, disrupting, or seizing control of an unmanned aircraft or unmanned aircraft system (UAS). UAS have become a security concern in recent years due to the ease with which they can aid in intelligence gathering and be used for malicious activities. DHS has been granted statutory authority under the Preventing Emerging Threats Act of 2018 to counter credible threats from UAS to the safety or security of a covered facility or asset, which are designated based on their importance to the security missions of DHS and Components. DHS prepared the subject Draft PEA to streamline the review process and review duplicative, lengthy reviews for repetitive C–UAS actions that may be broadly analyzed given their similar scopes.

The purpose of the Proposed Action is to support ongoing and proposed RDT&E of C–UAS technologies and to deploy C–UAS in operational and training settings to detect, identify, monitor, track, and mitigate (passively and actively) threats posed by UAS, including across the radio-frequency spectrum, using a streamlined approach to environmental analysis and documentation. The Proposed Action is needed to enhance DHS’s ability to use C–UAS technologies, monitor emerging threats, protect DHS’s missions, and defend the Nation from UAS threats and malicious activity. The use of C–UAS would support existing and emerging mission requirements of the various Components within DHS and facilitate their services and strategies essential to the Nation’s security, safety, and emergency response.

The Draft PEA evaluates the potential environmental, cultural, socioeconomic, and physical impacts associated with DHS’s Proposed Action.

*Alternatives:* In addition to the Proposed Action Alternative, which would implement the Proposed Action, DHS considered a No Action Alternative. Under the No Action Alternative, DHS would continue to use C–UAS to counter threats as authorized under the Preventing Emerging Threats Act of 2018 on a project-by-project basis. However, DHS would be limited in its ability to carry out critical mission objectives and respond to potential threats in a streamlined, efficient manner.

*Draft Finding of No Significant Impact:* The evaluation performed within this draft PEA concludes that no significant adverse impact to the environmental or quality of life is anticipated as a result of implementing

the Proposed Action, provided that routine best management practices specified in the draft PEA are implemented.

*Request for Public Review:* Federal agencies; Tribal, state, and local governments, the public; and other interested parties are requested to provide input or comments on the draft PEA, which will be available for a 30-day public comment period. Comments must be submitted on or before September 3, 2025. For information on how to submit, see the **ADDRESSES** section above. A mailing address to submit hardcopy comments can be provided upon request.

*Availability of the Draft PEA:* The draft PEA and draft FONSI are available on DHS’s website at: <https://www.dhs.gov/ocrso/eed/epb/nepa/public-comment>.

(Authority: National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321 *et seq.*), DHS Management Directive 023–01, rev. 01 (Implementation of NEPA), and DHS Instruction Manual 023–01–001–01, rev. 01 (Implementation of the NEPA).)

**Jennifer Hass,**

*Acting Executive Director, Energy and Environment Division, Office of the Chief Readiness Support Officer, Department of Homeland Security.*

[FR Doc. 2025–14658 Filed 8–1–25; 8:45 am]

**BILLING CODE 9112–FF–P**

## DEPARTMENT OF HOMELAND SECURITY

### Transportation Security Administration

#### Intent To Request Revision From OMB of One Current Public Collection of Information: Critical Facility Information From the Top 100 Most Critical Pipeline Operators

**AGENCY:** Transportation Security Administration, DHS.

**ACTION:** 60-Day Notice.

**SUMMARY:** The Transportation Security Administration (TSA) invites public comment on one currently approved Information Collection Request (ICR), Office of Management and Budget (OMB) control number 1652–0050, abstracted below that we will submit to OMB for a revision in compliance with the Paperwork Reduction Act (PRA). The ICR describes the nature of the information collection and its expected burden. The collection involves critical facility security information.

**DATES:** Send your comments by October 3, 2025.

**ADDRESSES:** Comments may be emailed to [TSAPRA@dhs.gov](mailto:TSAPRA@dhs.gov) or delivered to the

DHS Programmatic Environmental Assessment (PEA) for the Nationwide Operation of Counter Unmanned Aircraft Systems (C-UAS)  
Public Comments on the Draft PEA  
Comment Period 08/04/2025 - 09/03/2025  
<https://www.regulations.gov/docket/DHS-2025-0027>

Comment ID	Commenter ID #	Comment	DHS Response	Topic(s)	Name	Organization	Email	Address	Date Received	Method
P1	0001	Fortem Technologies is grateful for the opportunity to provide comment on the Department's draft programmatic environmental assessment (PEA) related to the continued research and operational use of counter-unmanned aerial systems (C-UAS). Fortem is a global leader in C-UAS technology, specializing in advanced radar detection and kinetic defeat systems that can mitigate adversarial drones with autonomous net-capture. Fortem's kinetic system is currently in operational use by several Department of Homeland Security (DHS) entities and is deployed at Department of Defense facilities around the world. Fortem also has extensive experience in special event security, including the 2020 Olympic Games, the 2022 World Cup, and the 2025 Presidential Inauguration.	DHS acknowledges the comment.	Proposed Action	Jon Gruen	Fortem Technologies	N/A	N/A	08/20/25	FR
P2	0001	The stated purpose of the Proposed Action includes the "the nationwide use and operation of C-UAS, outside of a testing environment," and briefly mentions Special Event Assessment Rating (SEAR) events as an operational domain the Proposed Action aims to address. We believe SEAR events, and large public gatherings more generally, are incredibly vulnerable to malevolent UAS activity, and are therefore supportive of any effort the Department undertakes to streamline the deployment of appropriate detection and mitigation systems needed to secure these venues.	DHS acknowledges the comment.	Proposed Action	Jon Gruen	Fortem Technologies	N/A	N/A	08/21/25	FR
P3	0001	With this specific security need in mind, we would like to note that the PEA's analysis of the impacts of electronic and direct energy mitigation, and the Best Management Practices (BMPs) they rely upon for safe use, are inconsistent with the practical conditions often encountered at large events. Aerial threats at a large public event, such as a drone flying into a stadium crowd, must be mitigated with maximum precision to avoid bystander harm. In a situation such as this, the suggested BMPs for electronic mitigation, such as personal protective equipment, minimum safe distances, or the removal of down-range bystanders, may not be practical when an agent must act quickly to neutralize a threat in a public setting. Likewise for a future scenario in which DHS is authorized to use directed energy systems in an operational context.	DHS recognizes that BMPs related to electronic mitigation measures may be difficult to implement should a credible threat occur. In the event of a credible threat requiring immediate action, DHS will make efforts to protect public health and safety; however, in a true emergency situation, response actions should not be delayed in order to implement BMPs.	Proposed Action	Jon Gruen	Fortem Technologies	N/A	N/A	08/22/25	FR
P4	0001	Therefore, it is our contention that the Department should use the Proposed Action to continue to extensively test, approve, and deploy low-collateral effect interceptors (LCEI) in preparation for expanded operational use at special events and large gatherings. LCEI platforms are kinetic systems that can neutralize a drone threat via highly targeted methods that in most cases have zero impact on surrounding environments and a very minimal impact otherwise. In the case of Fortem Technologies, our autonomous UAS platform seizes a drone via net capture then tows it to a pre-determined safe location and safely places it on the ground for inspection, retrieval, and investigation. In this scenario, there is very little risk of adverse crowd impact. Electronic mitigation techniques cannot currently be carried out with the same level of precision, making them sub-optimal for operational use within public settings.	DHS will continue to evaluate a range of mitigation technologies to ensure safe and effective C-UAS operations.	Proposed Action	Jon Gruen	Fortem Technologies	N/A	N/A	08/23/25	FR
P5	0001	The UAS threat is growing increasingly complex and will require an evermore diverse array of systems and capabilities to ensure adequate protection of all operational settings that are endangered by drones today. Special events are perhaps the most complex setting to secure from drone threats and are presently the most vulnerable to a mass casualty security incident. We believe streamlining environmental reviews for C-UAS operations is an essential step to more effectively combat the drone threat and are grateful for the Department's work so far. However, we encourage the Department to implement the Proposed Action with the unique challenges of special events in mind, and to prioritize the rapid testing and deployment of low-collateral effect technologies that best reduce risks to bystander safety. Thank you for the opportunity to provide feedback, and we look forward to continuing our work with the Department.	DHS acknowledges the comment.	Proposed Action	Jon Gruen	Fortem Technologies	N/A	N/A	08/24/25	FR
P6	0002	My only concern is that it's not clear how counter unmanned aircraft systems can provide cosplay photo ops for ICE Barbie.	DHS acknowledges the comment.	Proposed Action	Anonymous	N/A	N/A	N/A	09/02/25	FR
P7	0003	the proposed Programmatic Environmental Assessment Plan is needed for preventing malicious activity or potential environmental harm and should apply to all regions of high risk areas. This will help to detect, identify and monitor aircrafts or other types of unmanned aircrafts from possible threats or targets that may cause harm to the public safety and security.	DHS acknowledges the comment.	Proposed Action	Anonymous	N/A	N/A	N/A	09/03/25	FR

DHS Programmatic Environmental Assessment (PEA) for the Nationwide Operation of Counter Unmanned Aircraft Systems (C-UAS)  
 Agency Comments on the Draft PEA  
 Comment Period 08/04/2025 - 09/03/2025

Comment ID	Commenter ID #	Name	Agency	Comment	DHS Response/Follow-Up Action	Topic(s)	Email	Address	Date Received	Method
A1	N/A	Ryan DeWitt	NMFS	<p>BMP 12. Generate a list of species and critical habitat within the project area no earlier than 90 days before the planned operation.<sup>1</sup></p> <p><sup>1</sup> For species under jurisdiction of USFWS use Information for Planning and Consultation (IPaC) tool (<a href="https://ipac.ecosphere.fws.gov/">https://ipac.ecosphere.fws.gov/</a>). USFWS IPaC reports are valid for 90 days following its date of creation. If past 90 days, please complete a new IPaC report online. For species under jurisdiction of NMFS use the National ESA Critical Habitat Mapper <u>and/or regional spatial data applications</u> (<a href="https://www.fisheries.noaa.gov/resource/map/national-esa-critical-habitat-mapper">https://www.fisheries.noaa.gov/resource/map/national-esa-critical-habitat-mapper</a>). NMFS will notify DHS once a nationwide range mapper is available for species under jurisdiction of NMFS.</p> <p>BMP 14. Locate C-UAS RDT&amp;E activities at DHS facilities on roads, trails, paved surfaces, or otherwise previously disturbed or developed areas where no direct impacts on critical habitat, federally listed species, or migratory birds are anticipated. For species under NMFS's jurisdiction this includes avoiding activities that may result in debris or recovery efforts occurring in riparian, estuarine, or coastal nearshore locations within species' <del>designated-critical</del> habitats (as determined in #12);</p> <p>BMP 28. To the maximum extent feasible, recover any debris resulting from C-UAS mitigation operations. Make effort to minimize disturbance if recovery activities must take place in riverine, estuarine, or coastal nearshore <del>critical</del> habitats.</p>	DHS revised the BMPs to reflect these minor changes.	BMPs	<a href="mailto:ryan.dewitt@noaa.gov">ryan.dewitt@noaa.gov</a>	N/A	08/08/25	Email
A2	N/A	Ryan DeWitt	NMFS	<p>From section 2.2 of the BA:</p> <p>When deployed in marine environments, DHS would not introduce new vessels specifically for C-UAS activities; instead, existing DHS marine vessels already in operation under current regulatory permits or authorities would be used to support these activities as needed. <u>It is the responsibility of DHS to determine whether vessel operations utilized for specific C-UAS activities have existing ESA coverage.</u></p>	DHS revised Section 3.4.2.1 of the Final PEA to include this additional point of clarification.	Biological Resources	<a href="mailto:ryan.dewitt@noaa.gov">ryan.dewitt@noaa.gov</a>	N/A	08/08/25	Email

Department of Homeland Security  
Energy and Environment Division  
ATTN: Acting Executive Director Jennifer Hass

RE: Docket No: DHS-2025-0027; Notice of Availability of a Draft Programmatic Environmental Assessment for the Nationwide Operation of Counter Unmanned Aircraft Systems

Dear Ms. Hass,

Fortem Technologies is grateful for the opportunity to provide comment on the Department's draft programmatic environmental assessment (PEA) related to the continued research and operational use of counter-unmanned aerial systems (C-UAS). Fortem is a global leader in C-UAS technology, specializing in advanced radar detection and kinetic defeat systems that can mitigate adversarial drones with autonomous net-capture. Fortem's kinetic system is currently in operational use by several Department of Homeland Security (DHS) entities and is deployed at Department of Defense facilities around the world. Fortem also has extensive experience in special event security, including the 2020 Olympic Games, the 2022 World Cup, and the 2025 Presidential Inauguration.

The stated purpose of the Proposed Action includes the "the nationwide use and operation of C-UAS, outside of a testing environment," and briefly mentions Special Event Assessment Rating (SEAR) events as an operational domain the Proposed Action aims to address. We believe SEAR events, and large public gatherings more generally, are incredibly vulnerable to malevolent UAS activity, and are therefore supportive of any effort the Department undertakes to streamline the deployment of appropriate detection and mitigation systems needed to secure these venues.

With this specific security need in mind, we would like to note that the PEA's analysis of the impacts of electronic and direct energy mitigation, and the Best Management Practices (BMPs) they rely upon for safe use, are inconsistent with the practical conditions often encountered at large events. Aerial threats at a large public event, such as a drone flying into a stadium crowd, must be mitigated with maximum precision to avoid bystander harm. In a situation such as this, the suggested BMPs for electronic mitigation, such as personal protective equipment, minimum safe distances, or the removal of down-range bystanders, may not be practical when an agent must act quickly to neutralize a threat in a public setting. Likewise for a future scenario in which DHS is authorized to use directed energy systems in an operational context.

Therefore, it is our contention that the Department should use the Proposed Action to continue to extensively test, approve, and deploy low-collateral effect interceptors (LCEI) in preparation for expanded operational use at special events and large gatherings. LCEI platforms are kinetic systems that can neutralize a drone threat via highly targeted methods that in most cases have zero impact on surrounding environments and a very minimal impact otherwise. In the case of Fortem Technologies,

our autonomous UAS platform seizes a drone via net capture then tows it to a pre-determined safe location and safely places it on the ground for inspection, retrieval, and investigation. In this scenario, there is very little risk of adverse crowd impact. Electronic mitigation techniques cannot currently be carried out with the same level of precision, making them sub-optimal for operational use within public settings.

The UAS threat is growing increasingly complex and will require an evermore diverse array of systems and capabilities to ensure adequate protection of all operational settings that are endangered by drones today. Special events are perhaps the most complex setting to secure from drone threats and are presently the most vulnerable to a mass casualty security incident. We believe streamlining environmental reviews for C-UAS operations is an essential step to more effectively combat the drone threat and are grateful for the Department's work so far. However, we encourage the Department to implement the Proposed Action with the unique challenges of special events in mind, and to prioritize the rapid testing and deployment of low-collateral effect technologies that best reduce risks to bystander safety.

Thank you for the opportunity to provide feedback, and we look forward to continuing our work with the Department

Sincerely,

Jon Gruen  
CEO, Fortem Technologies

.

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 **PUBLIC SUBMISSION**

# Unrelated Comment Submitted by Anonymous


Posted by the **Department of Homeland Security** on Sep 2, 2025

[Docket \(/docket/DHS-2025-0027\)](/docket/DHS-2025-0027) / [Document \(DHS-2025-0027-0001\) \(/document/DHS-2025-0027-0001\)](/document/DHS-2025-0027-0001)  
/ [Comment](#)

Comment

My only concern is that it's not clear how counter unmanned aircraft systems can provide cosplay photo ops for ICE Barbie.

**Comment ID**  
DHS-2025-0027-0003

 **Tracking Number**  
mex-qfm3-v353

**Comment Details**

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**Received Date**  
Aug 29, 2025

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# Comment Submitted by Anonymous

Posted by the **Department of Homeland Security** on Sep 4, 2025

[Docket \(/docket/DHS-2025-0027\)](/docket/DHS-2025-0027) / [Document \(DHS-2025-0027-0001\) \(/document/DHS-2025-0027-0001\)](/document/DHS-2025-0027-0001)  
/ [Comment](#)

Comment

PROPIN CONFIDENTIAL

DHS-2025-0027-0001

the proposed Programmatic Environmental Assessment Plan is needed for preventing malicious activity or potential environmental harm and should apply to all regions of high risk areas. This will help to detect, identify and monitor aircrafts or other types of unmanned aircrafts from possible threats or targets that may cause harm to the public safety and security.

**Comment ID**

DHS-2025-0027-0004



**Tracking Number**

mf4-j730-5n2j

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**Comment Details**

**Received Date**

Sep 3, 2025



**Appendix C:**  
**Section 7 Consultation and Programmatic Biological Assessment**

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**FINAL**  
**Programmatic Biological Assessment**  
**for the**  
**Nationwide Operation of Counter Unmanned Aircraft Systems (C-UAS)**

**DEPARTMENT OF HOMELAND SECURITY**  
**June 2025**

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**Acronyms and Abbreviations**

BA	Biological Assessment
BMP	Best Management Practice
C-UAS	Counter Unmanned Aircraft System
CFR	Code of Federal Regulations
DHS	Department of Homeland Security
DIMT-M	Detect, Identify, Monitor, Track, and Mitigate
EO/IR	Electro-Optical/Infrared
ESA	Endangered Species Act of 1973
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
GCS	Ground Control Station
GHz	Gigahertz
IPaC	Information for Planning and Consultation
kHz	Kilohertz
MPE	Maximum Permissible Exposure
NMFS	National Marine Fisheries Service
NWRS	National Wildlife Refuge System
PEA	Programmatic Environmental Assessment
RDT&E	Research, Development, Testing, and Evaluation
RF	Radio Frequency
sUAS	Small Unmanned Aircraft System
UAS	Unmanned Aircraft System
UAV	Unmanned Aerial Vehicle
USFWS	United States Fish and Wildlife Service

## 1.0 Introduction

This biological assessment supports the Department of Homeland Security (DHS) in the research, development, testing, and evaluation (RDT&E), and operation of counter-unmanned aircraft systems (C-UAS) nationwide, including U.S. territories and marine waters within the contiguous zone (24 nautical miles from the coastline). It assesses the potential impacts of C-UAS operations and RDT&E on species and critical habitats protected under the Endangered Species Act (ESA) within the jurisdiction of the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS), together referred to as the Services. As a program-level Programmatic Biological Assessment, it evaluates the potential effects on all ESA-listed species and designated critical habitats. Under Section 7 of the ESA, federal agencies must consult with USFWS and NMFS to ensure their actions are not likely to jeopardize the continued existence of any threatened, endangered, or proposed species or result in the destruction or adverse modification of designated critical habitat.

## 2.0 Proposed Action

DHS proposes to perform RDT&E of C-UAS and conduct operational and training activities to support existing and emerging DHS mission requirements nationwide. C-UAS are a system or device capable of tracking, disabling, disrupting, or seizing control of an unmanned aircraft or unmanned aircraft system (UAS). UAS have become a security concern in recent years due to the ease with which they can aid in intelligence gathering and be used for malicious activities. DHS has statutory authority under the Preventing Emerging Threats Act of 2018 to counter credible threats from UAS to the safety or security of certain facilities or assets, which are designated based on their importance to the security missions of DHS and Components.

The purpose of the Proposed Action is to support RDT&E of C-UAS technologies and to deploy C-UAS in operational settings to detect, identify, monitor, track, and mitigate (DIMIT-M) (passively and actively) threats posed by UAS, including across the radio frequency spectrum. The Proposed Action is needed to enhance DHS's ability to use C-UAS technologies, monitor emerging threats, protect DHS's missions, and defend the Nation from UAS threats and malicious activity effectively and reliably. The use of C-UAS would support existing and emerging mission requirements of the various Components within DHS and facilitate their services and strategies essential to the Nation's security, safety, and emergency response.

Under the Proposed Action, DHS and its Components would continue ongoing RDT&E activities, but on a nationwide scale. The Proposed Action also includes the nationwide use and operation of C-UAS, outside of a testing environment, to conduct training and operational activities, such as law enforcement and security. The Proposed Action includes all elements related to the training, operation, maintenance, and use of C-UAS. This would allow DHS to continue its current testing of C-UAS while also enabling DHS and its Components to use C-UAS in an operational setting to support mission requirements.

## 2.1 Overview of C-UAS Technologies

When an unknown UAS is identified, DHS implements a C-UAS processing chain to evaluate and respond to potential threats posed by the UAS. The processing chain includes five stages: Detect, Identify, Monitor, Track, and Mitigate (DIMIT-M). DHS may use C-UAS to counter credible threats posed by UAS to covered facilities and assets and would follow this framework for identifying and addressing such threats. Only authorized personnel may operate C-UAS and undertake C-UAS actions in accordance with the DIMIT-M framework. C-UAS activities may be performed at any time of day or night to respond quickly and effectively to any credible threats. Depending on the response, the duration of C-UAS operation can vary and may last between one hour up to several hours. The location of C-UAS operations can also vary, as covered facilities and assets are located nationwide, including broad operational areas such as the U.S. border; however, these operations would occur at a given covered facility or asset as often as it experiences a potential UAS threat. If, after detecting, identifying, monitoring, and tracking the UAS, it is determined not to be a credible threat, DHS may not take any actions to counter the UAS. If a UAS is violating applicable laws or Federal Aviation Administration (FAA) regulations, but does not pose a credible threat, DHS would notify the appropriate FAA Regional Operations Center. If a UAS is determined to pose a credible threat to covered facilities or assets, DHS may mitigate the threat.

Various C-UAS technologies exist to counter such threats that use a variety of sensors and processes (DHS, 2019). C-UAS systems are primarily ground-based but may be either stationary or mobile. Mobile and temporary systems (e.g., handheld devices, vehicle-mounted equipment, and compact tripods) are typically deployed for short-term operations and in response to emergency situations, as these systems are designed for rapid set-up and portability. Stationary systems used for long-term, routine operations may be mounted on buildings, existing structures, or the ground.

Shore power is typically required for operation, so equipment is generally placed in proximity to existing infrastructure. Temporary equipment, such as tripods, are secured with stakes driven a few inches into the ground. More permanent systems, such as guyed masts, may require the use of screws or anchor rods that are cemented into the ground. The largest C-UAS equipment consists of towable masts, which may be mounted on trailers or directly affixed to the ground. These masts can reach heights up to 140 feet. The smallest equipment includes handheld devices and compact tripods generally no more than 10 feet tall.

The frequency and location of C-UAS operations are difficult to predict, as they depend on the nature and timing of evolving threats. Operational activities may occur anywhere a covered facility or asset experiences a UAS threat. In many cases, C-UAS systems are deployed in response to emergent or short-term events using handheld mobile solutions. However, operations may be planned in advance for high-profile or high-priority events where the likelihood of a threat is elevated. In such cases, equipment may remain in place for longer



durations. RDT&E activities, on the other hand, are generally conducted at designated sites and are expected to occur repeatedly in those locations.

### C-UAS Sensor Technologies

The first four steps in the C-UAS processing chain (i.e., Detect, Identify, Track, and Monitor) are performed by receiving and analyzing data from C-UAS sensors (see **Figure 1**). C-UAS sensors, whether stationary or mobile, generally have a detection range of up to 1.2 miles, and rely on one of four types of sensor capabilities to detect UAS: radar, passive radiofrequency (RF), electro-optical/infrared (EO/IR), or acoustic (DHS, 2022a). DHS is approved to use these sensor technologies in both operational and RDT&E settings.

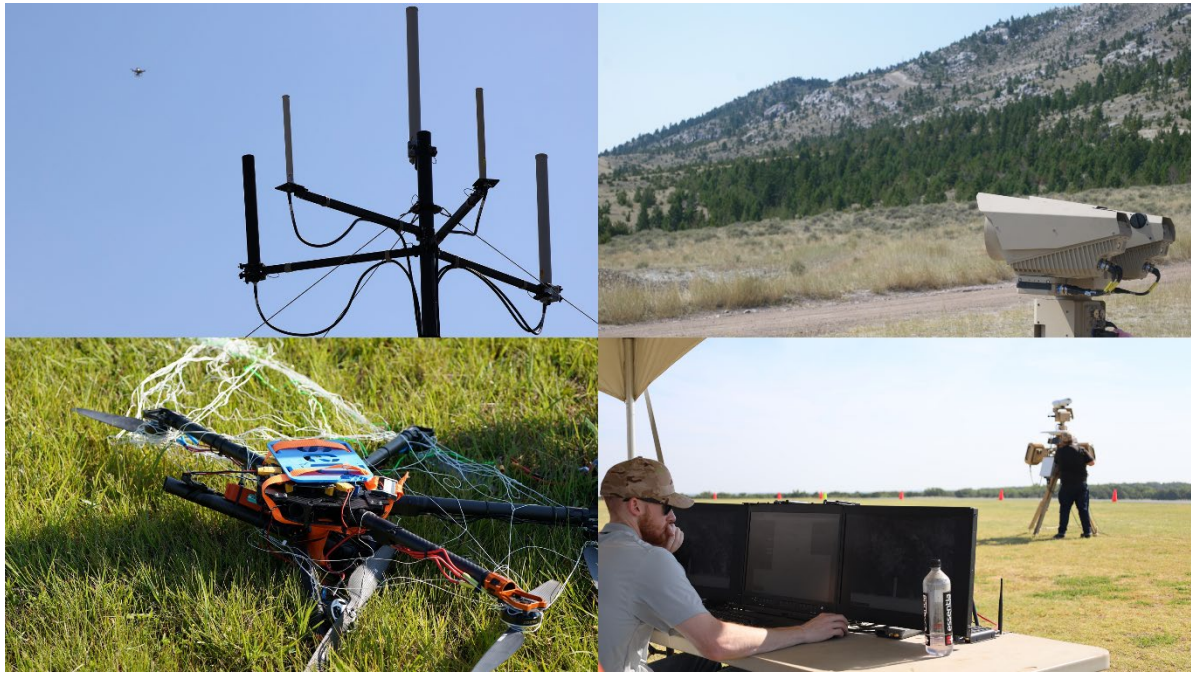
- **Radars** are active sensors that operate by transmitting a radio signal of known frequency and power in a focused direction and then detecting the reflected signal that is bounced back from the target. Active radar, which gives off electromagnetic energy, is used to detect, identify, monitor, and track UAS. Electromagnetic energy from radars is typically referred to as RF radiation, which is further characterized based on the wavelength and the frequency of the transmitted signal. Electromagnetic waves typically have frequencies ranging between 3 kilohertz (kHz) and 300 gigahertz (GHz) (FCC, 2023). Artificial sources of these signals include communication technology, such as mobile phones, radio, and television broadcasting, as well as non-communication technology, such as traffic speed radar, microwave ovens, and medical imaging (FCC, 2023). The Federal Communications Commission (FCC) regulates the use of these devices and restricts the RF radiation that is emitted to certain levels to ensure that human exposure is maintained at safe levels. Depending on the frequency, intensity of the RF radiation, and time of exposure, adverse biological effects may occur. The primary effect that can occur to humans from prolonged exposure is thermal heating, which can occur at frequencies emitted between 2 and 4 GHz, and which increases the overall body temperature. Continual exposure to very high levels of RF radiation can be harmful if the body is unable to cope with or dissipate excessive heat. Research into the effects of RF radiation on plants and animals is ongoing, so human data is the best available for analysis in this context.
- **Passive RF sensors** rely on antennas to receive, and computers to analyze, RF signals associated with communications between the unmanned aerial vehicle (UAV) and its ground-based control station.
- **EO/IR sensors** are digital video cameras that collect environmental information in the visible and infrared light spectrum.
- **Acoustic sensors** are passive and use high sensitivity microphone arrays with audio analysis applications to detect, identify, monitor, and track sounds produced by UAV motors and propellers.

### C-UAS Mitigation Technologies

The last step in the C-UAS processing chain (i.e., Mitigate) can be taken to remove or reduce the threat posed by the UAS. Once a UAS has been detected and has been determined to pose a credible threat to covered assets or facilities, DHS would employ one of two broad types of mitigation techniques, electronic or kinetic, to complete the C-UAS processing chain (DHS, 2019). Mitigation may also include any capability or action associated with finding the UAS operator and having that person safely land the UAS in accordance with federal surveillance laws, as well as FCC and FAA regulatory standards and requirements.

- **Electronic mitigation** technologies include those that emit RF signals to jam, interfere with, or masquerade as legitimate UAS signals. The use of RF signals is generally referred to as “active RF technology.” These C-UAS signals interfere with signals between the UAV and its GCS, preventing the UAV from receiving signal communication from the operator, causing the UAV to land or return to its launch location.
- **Kinetic mitigation** techniques commonly involve physical action toward the UAV for removing or reducing the risk posed. Nets, deployed either with net guns or by other UAVs, may be used to entangle the propellers and bring down or capture the UAV (see **Figure 1**). Alternatively, laser weapons and microwaves may be directed at the UAV to physically damage or destroy the UAV or its electronic circuits. Referred to as “directed energy,” these methods use close-proximity, low-power, focused energy that is aimed directly at the targeted UAV and do not use wide beams that may disseminate the energy to a larger area. Direct exposure to or interaction with laser beams can result in injury to the skin or eyes. Similar to how exposure to the sun, which is diffused light, can damage eyes and skin, exposure to concentrated light from lasers can also cause injury (Laser Pointer Safety, 2025). DHS is only approved to use laser technology and microwaves in an RDT&E setting.

**Figure 1: C-UAS Sensor Technologies (clockwise from top left: passive RF detection sensor, sensor mounted on a tripod, detection equipment, drone captured with net)**



## 2.2 DHS C-UAS Activities and Operational Area

Within DHS, the use and application of C-UAS are actively being researched and tested to better understand C-UAS capabilities to support DIMIT-M activities. DHS conducts C-UAS activities nationwide, with some recurring in certain locations based on testing and demonstration needs. Additionally, authorized Components may use C-UAS technologies for operational use, trainings, and demonstrations nationwide, including territories and marine waters within the contiguous zone.

Potential impacts for this Proposed Action would be associated with the RDT&E and operation of C-UAS, including supporting systems, and mobilization to a needed location, if applicable. All C-UAS currently in use by DHS are either ground-, vehicle-, or building-mounted. When deployed in marine environments, DHS would not introduce new vessels specifically for C-UAS activities; instead, existing DHS marine vessels already in operation under current regulatory permits or authorities would be used to support these activities as needed. C-UAS maintenance would occur in existing DHS facilities using standard tools and materials, and in accordance with standard operating procedures for equipment maintenance.

## 2.3 Best Management Practices

To avoid or minimize adverse environmental impacts to the extent practicable that may result from the Proposed Action, DHS and its Components will adopt the best management practices (BMPs) listed below as a requirement for its C-UAS RDT&E and operational mission use. DHS has also developed a BMP Implementation Checklist (**Appendix A**) to assist DHS and

Component operators with ensuring that they comply with these BMPs during C-UAS activities.

In order to conduct RDT&E and the training and operational activities described as part of the Proposed Action, DHS may need to operate small unmanned aircraft systems (sUAS) (i.e., UAVs that weigh less than 55 pounds on takeoff). DHS's use and operation of sUAS nationwide was previously assessed in the 2022 Final Programmatic Environmental Assessment for the Nationwide Operation of Small Unmanned Aircraft Systems (hereinafter referred to as the "2022 sUAS PEA") (DHS, 2022b). That PEA allowed DHS to conduct sUAS activities nationwide to meet a variety of existing DHS mission requirements and also allowed DHS to use sUAS to implement any future uses given evolving mission requirements. The 2022 sUAS PEA included a comprehensive BMP checklist with standard required measures to be implemented in order to ensure that any sUAS operation minimizes adverse environmental effects. A copy of the 2022 sUAS PEA is available online at: <https://www.dhs.gov/publication/final-programmatic-environmental-assessment-nationwide-operation-small-unmanned>. A record of informal Section 7 consultation conducted as part of the 2022 sUAS PEA to develop the sUAS BMP checklist is available at: [https://www.dhs.gov/sites/default/files/2024-04/24\\_0416\\_cao\\_sec-7-%20and%20suas-be-5312023.pdf](https://www.dhs.gov/sites/default/files/2024-04/24_0416_cao_sec-7-%20and%20suas-be-5312023.pdf).

Each DHS Component is responsible for ensuring the BMP Implementation Checklist is completed for its activities. Completion of the checklist is required for planned C-UAS operations and will be overseen by the facility or team conducting the operation. Components will complete the checklist on an event-by-event basis to confirm adherence to applicable BMPs and document any site-specific considerations. BMPs are required and should be followed; however, C-UAS are predominately utilized to respond to potential threats to support national security. Under no circumstances would emergency response actions be delayed in order to implement the BMPs. However, as indicated in the 2022 sUAS PEA, BMPs would be followed during an emergency or national security scenario as the situation allows. If the BMPs cannot be implemented during an emergency response, operators would prioritize emergency response actions and follow established procedures for emergency situations including compliance under the ESA. Section 7 regulations recognize that an emergency (imminent loss of human life or property) may require expedited consultation. As soon as practicable after the emergency is under control, if listed species or critical habitat were affected by the emergency response and it was not possible to implement the BMPs, the USFWS and/or NMFS would be contacted for discussion of potential after the fact consultation.

### **BMPs**

The Proposed Action includes RDT&E and the nationwide use and operation of C-UAS, outside of a testing environment, to conduct training, demonstrations, and operational activities. These BMPs are applicable to RDT&E, testing, demonstrations, and would be applicable, except in emergency situations that preclude implementation, to operational

activities, which include law enforcement, mission, and security. Note that this list of BMPs begins with #12, as items #1 through #11 in the BMP Implementation Checklist apply to other resource areas.

12. Generate a list of species and critical habitat within the project area no earlier than 90 days before the planned operation.<sup>1</sup>
13. Coordinate with appropriate land managers to identify potential wildlife concerns and avoidance or minimization measures if C-UAS activities will occur on or over a unit of the National Wildlife Refuge System (NWRS), National Fish Hatchery, National Park Service lands or other federal lands.<sup>2</sup>
14. Locate C-UAS RDT&E activities at DHS facilities on roads, trails, paved surfaces, or otherwise previously disturbed or developed areas where no direct impacts on critical habitat, listed species, or migratory birds are anticipated. For species under NMFS's jurisdiction this includes avoiding activities that may result in debris or recovery efforts occurring in riparian, estuarine, or coastal nearshore locations within species' designated critical habitats (as determined in #12).
15. Locate C-UAS ground-based equipment on roads, trails, paved surfaces, and/or otherwise previously disturbed or developed areas if they are within terrestrial critical habitat or the range of a listed species (as indicated by your IPaC species and critical habitat list).<sup>3</sup>
16. Avoid operating C-UAS within 200 feet (vertically and horizontally) of a known breeding or roosting colony, or other known high density nesting area, of federally listed or proposed birds, or migratory birds, as indicated by one or more bird species appearing on your IPaC generated species list.<sup>4</sup>
17. Maintain a 330-foot buffer around any known bald eagle nests during the breeding season. Extend the buffer distance to 660 feet in open areas where the nest may have increased visibility and exposure to C-UAS activities.
18. When possible, conduct C-UAS activities and RDT&E during seasons when federally listed, proposed, or migratory birds are not present or nesting in the operational area (e.g., the bird species on your IPaC list are migratory and will not be present during a particular season).
19. Conduct a visual check for migratory birds and federally listed species (use your list generated through IPaC and the National ESA Critical Habitat Mapper) immediately prior to operating C-UAS.<sup>5</sup>
20. If personnel observe a federally listed animal or migratory birds including federally listed bird nests during the visual check, delay activities until either the animal has moved away from the area of operation, or the C-UAS RDT&E or operation area will be relocated to an area where the animal or nests will not be disturbed (at least 200 feet away both horizontally and vertically).<sup>6</sup>
21. If personnel encounter wildlife during C-UAS RDT&E, training, demonstrations, or operations, operators will ensure all personnel and UAS maintain a safe distance (at least 200 feet is recommended) and will avoid buzzing, animal-directed movements, hovering, landing, taking off, lingering, or taxiing near the observed wildlife.
22. If, despite the measures above, wildlife, including migratory birds, listed animal species, and bald and golden eagles exhibit signs of distress (e.g. wing flapping, crouching, fleeing, or flushing), the C-UAS activity will be immediately moved beyond the 200-foot recommended distance from the animal.
23. To minimize impacts to federally listed or proposed insect species, sUAS deployed during



- RDT&E of C-UAS activities will maintain a minimum altitude of 65 feet above the ground.
24. If IPaC results include federally listed or proposed bat species, operate C-UAS during daylight hours (one hour after sunrise to one hour before sunset) and avoid operating C-UAS in close proximity to known hibernacula, whenever practicable. In addition, for nighttime use of C-UAS involving sUAS, maintain a minimum altitude of 98 feet above vegetation, tree canopy, or open water (including rivers, streams, lakes, reservoirs, etc.).
  25. Document and report to the USFWS and/or NMFS, in a timely manner, any C-UAS RDT&E or operation involving a collision with or harassment of a federally listed species (if species is clearly identifiable). To contact NMFS, send an email detailing the incident to [nmfs.hq.esa.consultations@naa.gov](mailto:nmfs.hq.esa.consultations@naa.gov) with the Eco Record ID in the subject line.
  26. Avoid operating C-UAS from/on beaches that support nesting sea turtles during their breeding season.
  27. Avoid flying UAVs within 500 feet of known haul-out locations, sea turtles, and marine mammals at the water's surface (unless prior authorization was received from NOAA or USFWS).
  28. To the maximum extent feasible, recover any debris resulting from C-UAS mitigation operations. Make effort to minimize disturbance if recovery activities must take place in riverine, estuarine, or coastal nearshore critical habitats.

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<sup>1</sup> For species under jurisdiction of USFWS use Information for Planning and Consultation (IPaC) tool (<https://ipac.ecosphere.fws.gov/>). USFWS IPaC reports are valid for 90 days following its date of creation. If past 90 days, please complete a new IPaC report online. For species under jurisdiction of NMFS use the National ESA Critical Habitat Mapper (<https://www.fisheries.noaa.gov/resource/map/national-esa-critical-habitat-mapper>)

<sup>2</sup> To minimize impacts to wildlife, units of the NWRS and other federal lands and waters managed for wildlife (e.g., national parks) should be identified before any C-UAS operation. Visit U.S. Fish & Wildlife Service website to determine locations of NWRS. Refuge Managers or other land/water managers should be contacted to identify site-specific wildlife use, potential responses to disturbance, and other information regarding cultural or sensitive sites, wildlife aggregation sites, and public use areas. For coordination efforts or activities (non-emergency) that occur on USFWS owned or managed lands contact the local USFWS site manager (such as a Refuge or Hatchery Manager). In emergency situations (imminent loss of life or property), if pre-planning or early coordination is not practicable, operators should proceed with emergency response actions.

<sup>3</sup> If it is necessary to utilize operations sites within naturally vegetated areas of terrestrial critical habitat or the range of federally listed plant or lichen species, DHS will coordinate with the appropriate USFWS Field Office to identify if alternate launch or landing sites are necessary or sensitive resources need avoidance.

<sup>4</sup> In areas that are known to contain migratory and federally listed bird nesting colonies, or areas that are known to contain listed avian species during their breeding season, as identified in the USFWS IPaC migratory bird frequency charts (using IPaC results obtained at least 90 days prior to a test event), implement seasonal restrictions, such as changing flight area or seasonally restricting flights, to reduce any potential impact to migratory and federally listed bird species. If IPaC does not indicate breeding season timeframes for non-migratory identified federally listed bird species, DHS environmental would utilize best available information to identify federally listed bird breeding season timeframe for its Project area and implement recommended seasonal restrictions. DHS commits to conducting testing activities outside of the migratory and federally listed bird nesting season or breeding season areas,

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unless in the event of imminent loss of life or property (i.e., an emergency situation). In the event that unforeseen schedule changes result in testing to occur during the migratory and listed bird nesting season, DHS commits to consulting with USFWS on a project level (as necessary) and conducting a pedestrian nest survey of the project area to avoid and minimize potential impacts. If pedestrian nest surveys are required, surveys would be conducted by qualified environmental professionals in conformance with USFWS Regional Office methodologies or state-specific guidelines.

<sup>5</sup> Conduct a visual pre-operation check for migratory birds, including bald and golden eagles, and any listed species in the IPaC species report, in the operation area immediately before launch. Should a DHS professional observe a migratory bird or bald or golden eagle or any listed species including federally listed bird nesting colonies within approximately 100 feet of the C-UAS operation site or sUAS launch/flight area, the C-UAS operation should be delayed or relocated to another location until the animal leaves the area on its own accord. If the animal does not leave, and a different launch site cannot be utilized, the USFWS local Field Office should be contacted for advice. In emergency situations (imminent loss of life or property), if pre-planning or early coordination is not practicable, operators should prioritize emergency response actions.

<sup>6</sup> In areas that are known to contain bird nesting colonies, or areas that are known to contain listed avian species during their breeding season, as identified in the USFWS IPaC migratory bird frequency charts (using IPaC results obtained at least 90 days prior to a test event), implement seasonal restrictions, such as changing flight area or seasonally restricting flights, to reduce any potential impact to the listed species. DHS commits to conducting testing activities outside of the migratory bird nesting season (April 15 through August 1) in these colony or breeding season areas. In the event that unforeseen schedule changes result in testing to occur during the migratory bird nesting season, DHS commits to consulting with USFWS on a project level (as necessary) and conducting a pedestrian nest survey of the project area to avoid and minimize potential impacts on migratory birds.

## 2.4 Adaptive Management for ESA

This section discusses monitoring, reviews, and the process by which future modifications to the C-UAS program can be coordinated with the Services without triggering the need for a reinitiated consultation.

### Program Monitoring

This program includes two main types of monitoring:

- **BMP Implementation Checklist:** As described in **Appendix A**, the BMP Implementation Checklist is to be completed prior to C-UAS use, unless the nature of the particular emergency precludes it. For activities that regularly occur within a specified geographic location (e.g., RDT&E), a single Checklist may suffice. The completion of the Checklist includes recording the date(s), location(s), and other details regarding the C-UAS activities.
- **Reporting of incidents involving listed species:** BMP #25 specifies that DHS must document and report to the Services, in a timely manner, any operation involving a collision with or harassment of a federally listed species (if species is clearly identifiable). For reporting incidents to NMFS, send an email detailing the incident to [nmfs.hq.esa.consultations@noaa.gov](mailto:nmfs.hq.esa.consultations@noaa.gov) with the Eco Record ID in the subject line. For reporting incidents to USFWS, contact the local USFWS Ecological Services Field Office.

The BMP checklists and any incidents should be collected and periodically summarized for the Services as part of the programmatic review as described below.

### Programmatic Review

As a requirement of the programmatic action, an annual (or other frequency agreed upon by DHS and the Services) comprehensive review meeting will be held to discuss the action agency's activities in the previous year, and to compile material for a program report. The report is meant to be a brief summary describing the action agencies' activities carried out under the programmatic BA for that year and should include summaries of any program monitoring data. The program review also provides an opportunity to discuss the effectiveness of the programmatic consultation processes and any areas for improvement. Participants would include representatives from the Services and DHS. Other parties may be invited to attend at the action agency's discretion. Subsequent to the meeting DHS will be responsible for compiling any information exchanged, along with brief meeting minutes, into a single report to be submitted back to the Services. At the time of the first check-in (i.e., one year after signature of this letter), DHS and the Services will determine the necessity, frequency, and timing of future annual coordination efforts on this programmatic consultation.



### Consistency Review and Reinitiation

Project-specific ESA consultation may be required when proposed C-UAS activities are not aligned with those in the description of the action or are unable to meet all BMP requirements. In these cases, DHS may proceed in one of several ways:

- Minor departures; clarifications, corrections and other minor edits to language regarding BMPs, reporting requirements or other elements to the program. These types of edits can be resolved without consultation. Records (e.g., letters, emails) of these types of changes should be retained.
- Moderate departures; changes to the action that DHS believes may affect, but are not Likely to Adversely Affect ESA-listed species (e.g., an additional kinetic mitigation technique). In these situations, DHS and the Services will determine whether it is necessary to conduct a “step-down” consultation. This type of consultation can make use of much of the program framework but may require some additional analysis.
- Major departures; changes that may warrant formal consultation. In these cases, DHS may work with the Services to modify the programmatic BA to include formal consultation procedures. Alternatively, DHS may choose to consult on individual actions, rather than pursue amendments to the programmatic framework.

To contact NMFS, send an email to [nmfs.hq.esa.consultations@noaa.gov](mailto:nmfs.hq.esa.consultations@noaa.gov) with subject line *DHS C-UAS Operations – Annual Check-in*.

## **3.0 Effects Analysis**

There are approximately 1,600 federally listed threatened and endangered species in the United States. The country supports thousands of resident and migratory wildlife species, including birds, mammals, fish, reptiles, amphibians, and invertebrates. The components of the Proposed Action with the potential to affect threatened and endangered species and critical habitat are analyzed below, and a summary of effect determinations is provided in **Section 4.0**.

### **3.1 Surface-level Disturbance and Site Access**

#### Designated Critical Habitat and Listed Plants and Lichens

C-UAS may be operated from roads, trails, paved surfaces, otherwise previously disturbed or developed areas, or DHS vessels in open water. RDT&E would occur within previously disturbed, designated locations that have been determined ahead of time not to contain critical habitat or federally listed plant or lichen species through IPaC and National ESA Critical Habitat Mapper review (BMP #14). Should C-UAS activities occur on or over a unit of the National Wildlife Refuge System (NWRS), National Fish Hatchery, National Park Service lands or other federal lands, DHS will coordinate with appropriate land managers to identify potential wildlife concerns and avoidance or minimization measures (BMP #13).

Although C-UAS equipment has a small footprint, transporting systems to new operational locations on foot or with vehicles, and affixing them to the ground may cause extremely minor ground disturbance such as from stakes or ground-anchored guy wires. Such disturbance would be highly unlikely to occur on the location of a listed plant or lichen given BMP #14 and #15, which require C-UAS RDT&E and ground-based equipment to be located in previously disturbed areas. C-UAS ground-based equipment for planned (i.e., non-emergency) operations and transportation to such locations (via vehicle, on foot, etc.) will be located on roads, trails, paved surfaces, and/or otherwise previously disturbed or developed areas if they are within terrestrial critical habitat or the range of a listed plant or lichen species (as indicated by a plant or lichen species or critical habitat appearing on an IPaC species list, see BMPs #12 and #15), and thus would be unlikely to affect listed plants or lichens.

The vast majority of C-UAS operations occur in previously disturbed or developed areas where DHS covered assets or facilities are present. Of these operations, the vast majority also do not require kinetic mitigation, as most target UAVs are intercepted and landed in a controlled manner using electronic mitigation or by locating the operator and directing them to land the UAV (see **Section 2.1**). When kinetic mitigation is required because other mitigation options are inadequate to address a threat, it very rarely produces debris. In practice, debris generation is an unfortunate accident, as it is DHS's goal to land or recover UAVs intact, which allows them to maintain craft integrity for further security investigation. DHS also avoids bringing UAVs down in uncontrolled areas where retrieval would be more difficult for the same reason. Therefore, given that kinetic mitigation is only used when all other less invasive C-UAS operations have been exhausted, coupled with the fact it is the DHS's goal to be able to readily recover UAVs intact and operations resulting in debris are exceedingly rare in general, it is extremely unlikely that personnel would be required to enter more natural areas where critical habitat or listed plant or lichen species may occur. As such, exposure of listed plants, lichens, and critical habitat to this disturbance is anticipated to be insignificant.

Overall, surface-level disturbance and site access *may affect, but is not likely to adversely affect*, designated critical habitat and listed plant and lichen species.

#### Ground-based Mammals, Invertebrates, Reptiles, and Amphibians<sup>1</sup>

DHS considers ground-based mammals in this analysis to include terrestrial mammals, excluding bats as this taxon is analyzed separately. Human and vehicle presence at C-UAS operation sites, including during UAV/net recovery activities, are expected to cause insignificant exposure of nearby wildlife to the disturbance generated by these activities due to several factors, including the implementation of BMPs. First, vehicles or vessels used to access these locations would be limited to existing roads, trails, paved surfaces or areas where human activity is already present on the landscape (BMP #15). Mobile species disturbed by

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<sup>1</sup> Terrestrial amphibian phases are analyzed in conjunction with ground-based mammals, invertebrates, and reptiles. Aquatic amphibian phases are analyzed with all other marine and freshwater aquatic species.

these activities would likely leave the area and return once the disruption ends, while less mobile species would likely take shelter while personnel are on-site. Except for RDT&E, which would occur in the same locations, these disturbances would be temporary and sporadic, with operations rarely repeated in the same place. Second, if personnel encounter wildlife during C-UAS RDT&E, training, demonstrations, or operations, operators will ensure all personnel and UAS maintain a safe distance (at least 200 feet is recommended) and avoid buzzing, animal-directed movements, hovering, landing, taking off, lingering, or taxiing near the observed wildlife (BMP #21). Furthermore, it is anticipated that many mobile mammal, reptile, amphibian, and invertebrate species will leave the area for the short duration of the operation (not more than 2-3 hours) and may return after personnel depart. Given it is unlikely that an operation will occur in the same location more than once, it is anticipated that effects from these disturbances, as modified by the BMPs, will be discountable for more mobile species in these taxa groups.

For terrestrial insects and other invertebrates (such as land snails) that are less mobile and thus less likely to be able to avoid foot traffic or equipment placement, implementation of BMP #15 as described above is anticipated to minimize the chance of crushing or harming these listed species as they are unlikely to occur in the disturbed or developed locations described. Second, although fallen debris or the act of recovering debris could also result in physical impact, such situations are extremely rare. As described above with regards to designated critical habitat and federally listed plants and lichens, only kinetic mitigation has the potential to produce debris, and even then, debris generation is uncommon under typical operational conditions. Third, the spatial footprint of C-UAS activities is very small, and, as discussed above, the duration of ground-based activity is brief.

Overall, implementation of BMPs, including limiting ground-based activities to roads, trails, paved surfaces, or other previously developed or disturbed areas, the infrequency of debris-related activities, the small area affected, and the short duration of exposure indicate that interactions with federally listed ground-based species would be highly unlikely. Therefore, potential impacts are considered discountable. Should any C-UAS operation result in the harassment of a federally listed species, the incident would be documented and reported to USFWS (BMP #25).

Overall, increased human activity from site access and surface-level disturbances *may affect, but is not likely to adversely affect*, federally listed ground-based mammals, invertebrates, reptiles, and amphibians.

### Bats

The very limited ground disturbance that may occur under the Proposed Action would not affect bat species because tree clearing, vegetation clearing, and C-UAS operation in close proximity to known bat hibernacula would not occur (BMP #24). However, because the Proposed Action would occur nationwide, suitable habitat for federally listed bat species may be present near C-UAS operational sites where human activity is occurring. DHS personnel

would avoid known occupied maternity roost trees to the greatest extent practicable. It is highly unlikely that C-UAS operations would occur close enough to bat hibernacula (e.g., caves) to impact hibernating bats; however, C-UAS operations may occur within 0.25 mile of a known federally listed species hibernacula unknowingly. Although no C-UAS operations would occur in caves or abandoned mines, complete avoidance of adjacent caves or existing forested areas where bats roost may not be practicable.

If IPaC results include federally listed or proposed bat species, C-UAS will be operated during daylight hours (one hour after sunrise to one hour before sunset) whenever practicable to avoid periods of peak bat activity (BMP #24). Additionally, the duration and footprint of C-UAS activity would be brief and localized, with operations primarily occurring on already disturbed surfaces such as roads, trails, or developed areas. Even when operations must occur at dusk or nighttime, bats in flight are not likely to be adversely affected by human activity at ground level, as this component of the Proposed Action involves only surface-level disturbance similar to other routine human activities that bats regularly encounter. Furthermore, such activity would only have the potential to impact bats in relatively open areas, whereas many bats forage in open woodlands or over waterbodies where C-UAS operations would not occur. Given the adherence to BMPs, the avoidance of critical habitat, and the likelihood that bats would not be present during operations, any impacts to bats would be insignificant. As such, increased human activity from site access *may affect, but is not likely to adversely affect*, federally listed bat species.

### Birds

As noted above with regard to bats, the limited ground disturbance that may occur under the Proposed Action would not affect bird species because tree clearing and vegetation clearing would not occur. Although the presence of humans and C-UAS equipment could temporarily disturb birds, DHS would conduct a visual pre-operation check for listed birds, other migratory birds, and bird colonies, and ensure at least 200 feet of separation is maintained between such birds and planned C-UAS activities (BMP #20).<sup>2</sup> When possible, C-UAS activities will be conducted during seasons when federally listed, proposed, or migratory birds and their nests are not present in the operational area (BMP #18). As such, disturbance of bird species would be minimal, although some birds may take shelter or leave the area temporarily. Should any federally listed bird species exhibit signs of distress (e.g. wing flapping, crouching, fleeing, or flushing) during a C-UAS operation, the C-UAS activity will be immediately moved beyond the recommended 200-foot distance from the animal (BMP #22). DHS and Components would avoid flying or deploying mitigation measures near bird nests as outlined in the BMPs. Due to the temporary and sporadic nature of the operational aspects of the Proposed Action, nest abandonment would not be anticipated and any impacts to birds would be insignificant.

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<sup>2</sup> A 330-foot buffer would be used around any known bald eagle nests during the breeding season. In open areas where the nest may have increased visibility and exposure to C-UAS activities, the buffer would be extended to 660 feet (BMP #17).

Therefore, increased human activity from site access *may affect, but is not likely to adversely affect*, federally listed bird species.

### Flying Insects

Although flying insects are generally mobile and would likely leave the area and return once the disruption ends, there is some potential for impacts to flying insect species that are less mobile. Site access and equipment setup could result in the trampling or crushing of flying insects that are resting on low vegetation or the ground. However, several factors significantly reduce the likelihood of this occurring. First, C-UAS activities would predominantly occur on roads, trails, paved surfaces, or previously disturbed or developed areas where federally listed insect species are less likely to occur. Second, the footprint of these activities is typically very small, and their duration is brief. Third, C-UAS operations are infrequent in more natural or vegetated areas where sensitive insect species might be present. Therefore, given the low likelihood of species presence in operational areas, the brief and localized nature of activity, and the unlikelihood that suitable habitat would be disturbed, the potential for effects to listed species is so low as to be discountable. As such, increased human activity from site access *may affect, but is not likely to adversely affect*, federally listed flying insect species.

### Marine Mammals and Sea Turtles

The potential for interactions between C-UAS activities and federally listed marine mammals and sea turtles exists in both terrestrial and marine environments. However, the proposed action, including the BMPs listed in **Appendix A**, restrict activities in order to minimize the potential for effects.

In terrestrial environments, the transport and staging of C-UAS may result in harassment of animals on beaches or haul out areas. To mitigate these potential effects, BMPs #14, #26, and #27 direct DHS personnel to locate C-UAS RDT&E activities at DHS facilities on previously disturbed land where no direct impacts on critical habitat or listed species are anticipated. Personnel are directed to avoid operating C-UAS from/on beaches that support nesting sea turtles during their breeding season, and to avoid flying UAVs within 500 feet of known haul-out locations of pinnipeds.

In marine environments, the operation of marine vessels may result in a variety of effects, for example ship strikes, or elevated noise levels. However, the operation of the vessels are not part of the Proposed Action. Instead, DHS will utilize existing marine vessels with existing regulatory permits or authorities for use and operation.

The expected frequency of C-UAS activities further reduces the likelihood of potential effects; except for RDT&E, which would occur in the same locations, C-UAS activities will be temporary and sporadic, with operations rarely repeated in the same place.

Therefore, given the avoidance of critical habitat and listed species and the brief and localized nature of activity, any anticipated effects from surface-level disturbance and site access are

discountable and, therefore, these activities *may affect, but are not likely to adversely affect* federally listed marine mammals and sea turtles.

### All Other Marine and Freshwater Aquatic Species

Surface-level disturbance and site access would occasionally occur near marine and freshwater environments, as described above with regards to the impacts on marine mammals and sea turtles. Activities such as equipment deployment or the recovery of debris or nets could result in personnel entering riparian zones or coastal haul out areas. While it is highly unlikely that these activities would encounter a listed species in any given marine or freshwater habitat, they could theoretically introduce temporary disturbances to species. However, DHS would implement BMPs (see **Section 2.3**) to avoid or minimize these impacts. For example, in accordance with BMP #28, DHS will make efforts to minimize disturbance if recovery activities must take place in riverine, estuarine, or coastal nearshore critical habitats. Because C-UAS activities will be temporary and sporadic, with operations rarely repeated in the same place, and BMPs are in place to prevent the disturbance of federally listed marine and freshwater aquatic species, the potential for adverse impacts to federally listed marine and freshwater aquatic species is extremely unlikely and therefore discountable. As such, surface-level disturbance and site access associated with C-UAS activities *may affect, but are not likely to adversely affect*, other federally listed marine and freshwater aquatic species.

## **3.2 Non-Radar Sensors**

C-UAS sensors technologies that detect passive RF, EO/IR, and acoustic signals only receive and digitally analyze signals from the environment. They do not emit energy, noise, or disturbance that could affect species or habitat. Therefore, non-radar sensors would have *no effect* on critical habitat and listed plants and lichens; ground-based mammals, invertebrates, reptiles, and amphibians; bats; birds; flying insects; or marine and freshwater aquatic species.

## **3.3 Radar and Active RF Mitigation**

### Designated Critical Habitat and Listed Plants and Lichens

Active radar technologies do not disturb the ground or produce stressors, such as internal heating, with the potential to adversely modify the physical or biological features of designated critical habitat. Additionally, electronic mitigation activities are temporary, and the radiation is directed into the airspace. Therefore, active radar would have *no effect* on designated critical habitat and listed plant and lichen species.

### Ground-based Mammals, Invertebrates, Reptiles, and Amphibians

Active radar would have *no effect* on federally listed mammals, invertebrates, reptiles, and amphibians that do not fly. Active radar utilized by DHS to conduct C-UAS mitigation would not result in human exposure that exceeds maximum permissible exposure (MPE) limits established by the FCC in 47 Code of Federal Regulations (CFR) 1.1310(e)(1). FCC's guidelines for MPE are based on known thresholds for adverse effects and incorporate margins



of safety (FCC, 2023). Adverse effects that may result from exposures in exceedance of the MPE limit include thermal effects such as tissue heating, which can lead to burns or heat-related stress. However, such effects are only expected to occur under conditions of sustained, close-range exposure that would not occur during typical C-UAS operations. Exposure limits have not been established for wildlife; however, based on the best available information regarding human exposure limits, a human target would generally need to be within approximately 8.5 feet (2.6 meters) from the front or side of an active radar over a 6-minute period to exceed the MPE limit. During a C-UAS test event or C-UAS operation utilizing active radar, the nearest wildlife species would be expected to be much farther than 8.5 feet away from the equipment due to their avoidance of the disruptive presence of humans, vehicles, and equipment. Species would not remain stationary in front of an active radar for more than a moment, which is much shorter than the duration of exposure required for any biological effects to occur. Further, these systems would not be aimed at ground level targets, but at UAVs in the airspace.

### Bats

Bats could be exposed to active radar during flight. While bats could experience internal heating and possible behavioral changes as a result of continuous direct exposure to RF radiation (IEEE, 2019), bats in flight are often moving over large areas and would not remain in a radar beam, which is narrow and pulses rapidly, for more than a few seconds. As such, it is unlikely that bats would be exposed to a radar beam for a sufficient length of time to cause internal heating or behavioral changes. Adverse effects from RF exposure generally require sustained exposure periods on the order of minutes; because bats would only intersect the beam briefly in flight, the exposure duration would not be sufficient to result in adverse biological effects. The risk of harm to bats is further reduced because the Proposed Action would primarily occur during daylight hours when bats are not active. Overall, any impacts to bats would be insignificant. Therefore, active radar *may affect, but is not likely to adversely affect*, federally listed bat species.

### Birds

Birds may also be exposed to active radar during flight. As discussed above with regard to bats, it is unlikely that birds would be harmed by active radar utilized for C-UAS mitigation due to the narrow and intermittent nature of the radiation beam. Birds would only fly into the radar beam for a few seconds at most, which is not a sufficient length of exposure to result in internal heating or other adverse effects. C-UAS operators would adhere to the BMPs in **Section 2.3**, such as conducting visual pre-operations checks (BMP #19) and ensuring at least 200 feet of separation between birds and non-emergency C-UAS activities (BMP #20), to avoid and minimize impacts on airborne wildlife until airspace is clear. As a result, any impacts to birds would be insignificant. Therefore, active radar *may affect, but is not likely to adversely affect*, federally listed bird species.

### Flying Insects

When in flight, most insects remain relatively close to the ground and the vegetation they inhabit. Thus, they are much less likely to fly through a radar beam that is directed from the ground into the sky toward UAVs. However, in the event that insects in flight do encounter active radar, similar to birds and bats, flying insects are typically in motion and would only pass through the radar beam for a few seconds at most. This brief exposure is not sufficient to cause internal heating or other adverse effects, which generally require sustained, close-range exposure to high-power RF radiation. Active radar systems used for C-UAS mitigation are not designed to concentrate energy on small airborne targets like insects; any impacts to insects would be undetectable and, therefore, insignificant. As such, active radar *may affect, but is not likely to adversely affect*, federally listed flying insect species.

### Marine Mammals and Sea Turtles

Active radar would have *no effect* on federally listed marine mammals and sea turtles. These marine species would not be exposed to active radar that could lead to harm or injury. Through implementation of the BMPs #19 and #26, these species would be much farther than 8.5 feet from the front or side of an operating active radar for any continuous six-minute period, thereby avoiding exposure above the FCC MPE limit. Additionally, marine mammals and sea turtles occur in water or at haul-out locations on beaches, and would not be exposed to radiation beams aimed at UAVs in the air.

### All Other Marine and Freshwater Aquatic Species

Active radar would have *no effect* on all other federally listed aquatic species and their habitats, as active radar cannot effectively penetrate water and active radar would not be directed towards water.

## **3.4 C-UAS Operations and Collision Risks**

### Designated Critical Habitat and Listed Plants and Lichens

Collisions involving UAVs or nets would have *no effect* on critical habitat or listed plants and lichens. Given that UAVs operate in the airspace and nets are deployed in a controlled manner, no direct contact with critical habitat or vegetation would occur. Any noise associated with C-UAS operations would have no impact on critical habitat and listed plants and lichens.

### Ground-based Mammals, Invertebrates, Reptiles, and Amphibians

Collisions involving UAVs or nets would have *no effect* on federally listed ground-based mammals, invertebrates, reptiles, and amphibians. These species primarily inhabit ground-level environments, while UAV mitigation operations would occur in the airspace. C-UAS mitigation is not expected to generate significant debris during operations or RDT&E. UAVs used in mitigation are typically small, constructed of lightweight materials, and fragment minimally upon impact. Nets are designed for retrieval and often include tethers to facilitate



recovery of both the net and any captured UAV. Therefore, the potential for debris ingestion or net entanglement is extremely low, and DHS personnel would follow BMP #28 to promptly recover any debris resulting from C-UAS mitigation operations. Given the infrequency of debris-generating operations and adherence to BMPs, it is unlikely that ground-based species would encounter any debris or nets, so any potential impacts from debris would be discountable.

Noise generated by UAVs used in C-UAS operations is expected to be minimal and short in duration, with UAVs remaining in motion at a distance greater than 200 feet away from any species in accordance with BMP #20. As such, noise levels would not result in behavioral disturbance or injury to ground-based species. Noise effects from UAVS have also been analyzed under the 2022 sUAS PEA, which concluded that such impacts are negligible. Therefore, noise associated with C-UAS operations and collision risks *may affect, but are not likely to adversely affect*, federally listed ground-based mammals, invertebrates, reptiles and amphibians.

### Bats

The potential for wildlife collisions or net entanglements when taking control of a target UAV is highly unlikely; kinetic mitigation techniques that involve physical action toward the UAV only represent one of several mitigation strategies (see **Section 2.2**) that DHS may employ to eliminate the risk posed by a target UAV and are used infrequently. In scenarios where DHS deploys a pursuing UAV or launches a net, the target UAV would likely have already caused sufficient disturbance to prompt bats to vacate the area.

In the very rare case that a C-UAS operation involves a DHS UAV to counter the target UAV, and the operation occurs at a time when bats are active in the airspace, and the bat remains nearby, biological and operational factors further reduce collision risk. Bats possess highly developed echolocation and agile flight capabilities, allowing them to detect and evade moving objects, including UAVs generally traveling at speeds between 15 and 30 miles per hour. Therefore, although potential harm to bats through direct collision with UAVs or entanglement in nets could occur, it is likely bats could easily maneuver and avoid an approaching UAV, thus minimizing potential collisions. DHS would adhere to BMPs, including conducting pre-operation checks for wildlife prior to RDT&E activities and mitigation operations involving nets (BMP #19), to further minimize risks. Although C-UAS test events and operations would predominantly occur during daylight hours, there is the potential for nighttime operations. For nighttime RDT&E of C-UAS involving sUAS, operators will maintain a minimum altitude of 98 feet above vegetation, tree canopy, or open water (including rivers, streams, lakes, reservoirs, etc.) (BMP #24).

The 2022 sUAS PEA concluded that although UAV noise could interfere with some low-frequency bat call and cause avoidance behavior, overall noise impacts would be negligible due to short flight durations (less than 2 hours) and continuous movement of the UAV. Therefore, any noise that occurs as a result of the C-UAS mitigation would be discountable.

Overall, due to the infrequent use of kinetic mitigation, the avoidance behavior of bats, and adherence to BMPs, any potential for collisions or entanglement with bats is extremely unlikely. Therefore, such impacts are considered discountable. If a collision with a federally listed bat species should occur, the incident would be documented and USFWS would be contacted. Collisions with UAVs or nets *may affect, but are not likely to adversely affect*, federally listed bat species.

### Birds

Birds are also at risk of collisions or entanglements with UAVs or nets in the airspace; however, similar to bats, birds have sufficient flight skills to easily maneuver and avoid an approaching UAV, thus minimizing potential collisions. Nets would not be deployed in the direction of any birds and it would be very unlikely that a bird would approach close enough to UAVs in flight such that it could inadvertently get caught in a net. Additionally, birds may have already vacated the area as a result of disturbance by a target UAV. As previously noted, kinetic mitigation using nets or a pursuing UAV is extremely rare and only used when necessary to address a confirmed threat that cannot be mitigated through other means (e.g., electronic mitigation). This limited use further reduces the likelihood of bird interactions. Further, C-UAS operators would adhere to the BMPs in **Section 2.3**, such as conducting pre-operations checks (BMP #19) and maintaining 200-foot buffers from birds (BMP #20), to avoid and minimize impacts on birds. Given the avoidance behavior of birds, the limited use of kinetic mitigation, and adherence to BMPs, potential collisions or entanglements are extremely unlikely and therefore discountable. Any disturbances from noise would be insignificant, as noise from C-UAS operations would be minimal (not meaningfully different from ambient levels) and birds are likely to have vacated the area following disturbance by the target UAV. Therefore, collisions with UAVs or nets *may affect, but are not likely to adversely affect*, federally listed bird species.

### Flying Insects

Insects in flight may be disturbed by UAVs or nets deployed for C-UAS mitigation, though UAV or net strikes to flying insects are not anticipated. If a UAV were to fly near or over an insect, the insect may react to the physical movement or noise generated by changing direction, taking cover under vegetation, or otherwise changing its behavior. UAVs used during C-UAS RDT&E would maintain an altitude of 65 feet above the ground, vegetation, and tree canopy if IPaC results indicate federally listed or proposed insect species are present (BMP#23). Due to the typical altitude of C-UAS mitigation operations, the small size and mobility of flying insects, and the limited duration of C-UAS mitigation operations, any potential for collisions or entanglements is considered discountable. Therefore, collisions with UAVs or nets *may affect, but are not likely to adversely affect*, federally listed flying insect species.

### Marine Mammals and Sea Turtles

As described above with regards to ground-based mammals, invertebrates, reptiles, and amphibians, the presence of debris or nets may result in entanglement or may be ingested causing injury. However, C-UAS mitigation that could potentially produce debris would rarely occur over water, and DHS personnel would follow BMP #28 to recover any debris to the maximum extent feasible.

C-UAS mitigation operations requiring the use of UAVs may also produce noise within the generalized hearing range of most federally listed marine mammals and sea turtles. However, the threshold of noise produced is below the behavioral and injury thresholds for those species (Accomando, et al., 2025; NMFS, 2024). To mitigate any potential effects BMPs #27 and #28 direct DHS personnel to avoid flying UAVs within 500 feet of sea turtles, or marine mammals at the water's surface, and, to the maximum extent feasible, recover any debris resulting from C-UAS mitigation operations.

Given the limited likelihood of operations occurring in marine settings, the infrequency and design of kinetic mitigation activities that could result in debris, the built-in recovery measures, and the relatively uncommon occurrence of federally listed marine mammals and sea turtles, the potential for these marine species to encounter unrecoverable debris or nets is extremely unlikely and therefore discountable. As such, unrecoverable debris resulting from collisions between UAVs or unrecoverable nets *may affect, but is not likely to adversely affect*, federally listed marine mammals and sea turtles.

### All Other Marine and Freshwater Aquatic Species

As discussed above with regards to marine mammals and sea turtles, DHS would attempt to recover debris from C-UAS mitigation in the very rare cases where debris is produced as a result of C-UAS mitigation operations that occur over or near water. Should debris or a net be unrecoverable, it is extremely unlikely a federally listed marine or freshwater aquatic species would happen to ingest or become entangled in it, especially given the relatively uncommon occurrence of these species. This potential effect pathway is extremely unlikely and therefore discountable. Similar to marine mammals and sea turtles, the minor noise produced by C-UAS operations would be insignificant to underwater species, if it is perceptible at all (FHWG, 2008). Unrecoverable debris resulting from collisions between UAVs or unrecoverable nets *may affect, but is not likely to adversely affect*, other aquatic species.

## **3.5 Directed Energy Exposure**

### Designated Critical Habitat and Listed Plants and Lichens

DHS would use directed energy (e.g., lasers or microwaves) only in an RDT&E setting, which involves more control and planning than the use of C-UAS in an operational setting. Prior to each test event, DHS will adhere to the BMPs listed in **Section 2.3**. In accordance with the BMPs, RDT&E of C-UAS will not be planned in areas where listed species or critical habitat

are present (BMP #14). While directed energy aimed at a static point on the ground could potentially cause burns to vegetation over time, the systems used for C-UAS are focused on airspace where UAVs are operating, and would not linger on ground-level areas where designated critical habitat or federally listed plants and lichens may occur. Therefore, directed energy would have *no effect* on critical habitat and vegetation.

#### Ground-based Mammals, Invertebrates, Reptiles, and Amphibians

Directed energy would have *no effect* on federally listed ground-based mammals, invertebrates, reptiles, and amphibians. As discussed above regarding critical habitat and vegetation, directed energy emitted from C-UAS would not be aimed towards ground level, where these species may be present, for longer than incidental exposure, thus there is no potential for direct exposure that could result in burns or eye injuries. Furthermore, the controlled nature of RDT&E would further prevent direct exposure to ground-based species, as DHS will adhere to the BMPs in **Section 2.3** such as maintaining a safe distance from observed wildlife.

#### Bats

As discussed above, DHS would only use directed energy in an RDT&E setting, which involves considerable control and planning. While it is possible a bat could enter the airspace during a test event, such occurrences are expected to be extremely rare. Although direct exposure to laser beams can cause injuries to the skin and eyes of living organisms, the directed energy used in C-UAS RDT&E would be focused on test targets in flight, not dispersed over a wide area. This concentrated beam significantly reduces the likelihood of unintended exposure. Most RDT&E would take place during daylight hours when bats are typically inactive, further reducing the likelihood of exposure. If personnel observe bats before or during a directed energy test event, DHS would adhere to the BMPs in **Section 2.3** and would delay RDT&E until either the species has moved away from the area, or RDT&E can be relocated to an area where the species would not be disturbed (BMP #20). Given the controlled nature of RDT&E, narrow beam focus, low probability of bat presence, and implementation of BMPs, any potential exposure to directed energy is extremely unlikely and is considered discountable. As such, directed energy *may affect, but is not likely to adversely affect*, federally listed bat species.

#### Birds

Similar to bats, birds in flight could be exposed to directed energy used in RDT&E activities should they fly into the directed energy beam while RDT&E activities are underway. However, this is very unlikely. Directed energy used during RDT&E would be focused on test targets and dispersed widely, limiting the potential for incidental exposure. Additionally, most RDT&E activities would occur in controlled environments where pre-test observations are conducted to identify nearby wildlife. If birds are observed within the test area, DHS will follow the BMPs outlined in **Section 2.3**, including delaying or relocating testing to avoid impacts (BMP #20). Given the low likelihood of birds entering the beam path during test

events, narrow beam width, and implementation of BMPs, any exposure would be extremely unlikely and considered discountable. Therefore, directed energy *may affect, but is not likely to adversely affect*, federally listed bird species.

#### Flying Insects

Insects in flight may be exposed to directed energy during directed energy RDT&E. However, exposure of insects in flight to directed energy is highly unlikely because the energy beams used in directed energy RDT&E are narrowly focused and typically aimed at higher altitudes, above the typical flight range of most insects. In accordance with BMP #14, RDT&E of C-UAS will not be planned in areas where federally listed flying insects or critical habitat are present. As such, federally listed flying insects are unlikely to be in the area during directed energy RDT&E, and any exposure of insects to directed energy would be so minimal as to be undetectable. Therefore, the impacts of direct exposure are discountable; as a result, directed energy *may affect, but is not likely to adversely affect*, federally listed flying insect species.

#### Marine Mammals and Sea Turtles

Directed energy would have *no effect* on federally listed marine mammals and sea turtles. Similar to ground-based wildlife, marine mammals and sea turtles will not experience exposure to directed energy as directed energy would be directed away from these animals (which occur at ground/water surface) and toward the airspace. Additionally, marine mammals and sea turtles occur in water or at haul-out locations on beaches, neither of which would be utilized as RDT&E sites for directed energy technologies.

#### All Other Marine and Freshwater Aquatic Species

Directed energy would have *no effect* on other aquatic species, as RDT&E of directed energy would not occur in aquatic habitats.

## **4.0 Conclusion**

Based on the evaluation of potential effects in **Section 3.0**, the Proposed Action *may affect, but is not likely to adversely affect*, critical habitat and federally listed vegetation; ground-based mammals, invertebrates, reptiles and amphibians; bats; birds; flying insects; marine mammals and sea turtles; and other marine and freshwater species. The specific components of the Proposed Action that could impact each of these categories of species are summarized in **Table 1**. DHS respectfully requests that USFWS and NMFS provide concurrence with these effects determinations.

**Table 1. Summary of Activities with Potential to Affect Each Species Group**

<b>Species Group</b>	<b>Potential Effects</b>
Designated Critical Habitat and Listed Plants and Lichens	Surface-level Disturbance and Site Access ( <i>may affect, but not likely to adversely affect</i> )
Ground-based Mammals, Invertebrates, Reptiles, and Amphibians	Surface-level Disturbance and Site Access ( <i>may affect, but not likely to adversely affect</i> ) C-UAS Operations and Collision Risks ( <i>may affect, but not likely to adversely affect</i> )
Bats	Surface-level Disturbance and Site Access ( <i>may affect, but not likely to adversely affect</i> ) Radar and Active RF Mitigation ( <i>may affect, but not likely to adversely affect</i> ) C-UAS Operations and Collision Risks ( <i>may affect, but not likely to adversely affect</i> ) Directed Energy Exposure ( <i>may affect, but not likely to adversely affect</i> )
Birds	Surface-level Disturbance and Site Access ( <i>may affect, but not likely to adversely affect</i> ) Radar and Active RF Mitigation ( <i>may affect, but not likely to adversely affect</i> ) C-UAS Operations and Collision Risks ( <i>may affect, but not likely to adversely affect</i> ) Directed Energy Exposure ( <i>may affect, but not likely to adversely affect</i> )
Flying Insects	Surface-level Disturbance and Site Access ( <i>may affect, but not likely to adversely affect</i> ) Radar and Active RF Mitigation ( <i>may affect, but not likely to adversely affect</i> ) C-UAS Operations and Collision Risks ( <i>may affect, but not likely to adversely affect</i> ) Directed Energy Exposure ( <i>may affect, but not likely to adversely affect</i> )
Marine Mammals and Sea Turtles	Surface-level Disturbance and Site Access ( <i>may affect, but not likely to adversely affect</i> ) C-UAS Operations and Collision Risks ( <i>may affect, but not likely to adversely affect</i> )
All Other Marine and Freshwater Aquatic Species	Surface-level Disturbance and Site Access ( <i>may affect, but not likely to adversely affect</i> ) C-UAS Operations and Collision Risks ( <i>may affect, but not likely to adversely affect</i> )



## 5.0 References

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## **Appendix A: BMP Checklist**



DEPARTMENT OF HOMELAND SECURITY PROGRAMMATIC ENVIRONMENTAL  
ASSESSMENT FOR THE NATIONWIDE OPERATION OF COUNTER UNMANNED  
AIRCRAFT SYSTEMS (C-UAS)

Best Management Practices (BMP) Implementation Checklist

The following checklist is to be utilized for confirming the proposed action is covered under the scope and review of the 2025 Programmatic Environmental Assessment (PEA) and that project-specific analysis is not necessary. With these best management practices in place, DHS continues to ensure that no significant adverse impacts to the environment or the public would occur as a result of counter unmanned aircraft system (C-UAS) activities. Specific measures for environmental resource topics analyzed in the 2025 PEA are incorporated into this checklist, which is to be completed prior to C-UAS use, to the maximum extent practicable. This checklist also incorporates by reference the BMP Implementation Checklist that was prepared as part of the *Final Programmatic Environmental Assessment for the Nationwide Operation of Small Unmanned Aircraft Systems (sUAS)*, published in December 2022. For situations where DHS plans to launch sUAS to conduct research, development, testing, and evaluation (RDT&E) of C-UAS systems, DHS would also adhere to the BMPs included in the 2022 PEA. If Components have listed species or critical habitat<sup>1</sup> in their project area and cannot implement the Biological Resources BMPs below, the Component should contact the local USFWS Ecological Services Field Office and/or the NMFS Office of Protected Resources ([nmfs.hq.esa.consultations@noaa.gov](mailto:nmfs.hq.esa.consultations@noaa.gov) with the Eco Record ID in the subject line) to determine if site-specific Endangered Species Act (ESA) consultation is necessary.

BMPs are required and should be followed; however, C-UAS are predominately utilized to respond to potential threats to support national security. Under no circumstances would emergency response actions be delayed in order to implement the BMPs. However, as indicated in the 2022 sUAS PEA, BMPs would be followed during an emergency or national security scenario as the situation allows. If the BMPs cannot be implemented during an emergency response, operators would prioritize emergency response actions and follow established procedures for emergency situations including compliance under ESA. Section 7 regulations recognize that an emergency (imminent loss of human life or property) may require expedited consultation. As soon as practicable after the emergency is under control, if listed species or critical habitat were affected by the emergency response and it was not possible to implement the BMPs, the USFWS and/or NMFS would be contacted for discussion of potential after-the-fact consultation.

This checklist is to be completed prior to C-UAS use, unless the nature of the particular emergency precludes it. For activities that regularly occur within a specified geographic location (e.g. RDT&E), a single checklist may suffice. Checklists should be saved as part of the National Environmental Policy Act, National Historic Preservation Act, and Endangered Species Act administrative record for the proposed action.

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<sup>1</sup> As determined by the U.S. Fish and Wildlife Service (USFWS) species list obtained through the Information for Planning and Consultation (IPaC) tool and by referencing the National Marine Fisheries Service (NMFS) ESA Critical Habitat Mapper.

<b>Date(s) of Use</b>	
<b>Location of Event</b>	
<b>Point of Contact (POC) Completing this Checklist (name, phone number and email, organization)</b>	
<b>C-UAS Project Manager (name, phone number and email, organization)</b>	
<b>Provide a short summary of the Proposed Action.</b>	

Human Health and Safety	A) Response to Question (Click the appropriate box)	B) Are there any extenuating circumstances? If so, explain here.
1. Ensure that active radar is not operated at power densities for a length of time beyond the established occupational and public time limits (less than 30 minutes and less than 6 minutes, respectively) that could result in radiofrequency (RF) exposures in exceedance of the maximum permissible exposure limits established by the FCC under 47 CFR 1.1307(b).	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
2. Use of active radar will comply with the following standards: a. Institute of Electrical and Electronics Engineers Standards Associates C95.7-214, Recommended Practice for Radio Frequency Safety Programs, 3 KiloHertz to 300 Gigahertz. b. International Commission of Non-Ionizing Radiation Protection RF Electromagnetic Field Guidelines 2020.	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
3. Prior to undertaking any operational activities using active radar in a public setting, cordon off sites and post signage to limit public proximity to the active radar.	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	

<p>4. Radiation hazard from the radar and RF systems will not exceed the following permissible radar exposure limit guidelines as defined in Army Regulation 385-10:</p> <ul style="list-style-type: none"> <li>a. Hazards of Electromagnetic Radiation to Personnel.</li> <li>b. Hazards of Electromagnetic Radiation to Ordnance.</li> <li>c. Hazards of Electromagnetic Radiation to Fuel.</li> </ul> <p><b>(See note [a] below).</b></p>	<p><input type="checkbox"/> <b>Yes</b> – Go to next practice</p> <p><input type="checkbox"/> <b>No</b> – Explain in B)</p>	
<p>5. No active radar will be powered and emitting while personnel are standing nearby. Radar signal strength varies depending on equipment make and model. Test and operational personnel must be familiar with the radar specifications and advised of minimum safe distance. If radar specifications are not available, a safe distance of 1 meter from the radar will be enforced.</p>	<p><input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice</p> <p><input type="checkbox"/> <b>No</b> – Explain in B)</p>	
<p>6. All test participants who remain outdoors during testing will wear laser-rated protective eyewear and long-sleeved clothing, pants, close-toed shoes, and other coverings that protect exposed skin as will be positioned to the rear of any laser equipment prior to activation.</p>	<p><input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice</p> <p><input type="checkbox"/> <b>No</b> – Explain in B)</p>	
<b>Visual Resources and Aesthetics</b>	<b>Response to Question (Click the appropriate box)</b>	<b>B) Are there any extenuating circumstances? If so, explain here.</b>
<p>7. sUAS flights conducted for RDT&amp;E purposes will not exceed 400 feet in altitude, unless prior approval is given by the FAA.</p>	<p><input type="checkbox"/> <b>Yes</b> – Go to next practice</p> <p><input type="checkbox"/> <b>No</b> – Explain in B)</p>	
<p>8. Adhere to applicable regulations regarding visual quality near historic sites or other protected land uses.</p>	<p><input type="checkbox"/> <b>Yes</b> – Go to next practice</p> <p><input type="checkbox"/> <b>No</b> – Explain in B)</p>	

Airspace	A) Response to Question (Click the appropriate box)	B) Are there any extenuating circumstances? If so, explain here.
9. Request Temporary Flight Restrictions (TFRs) and Notices to Airmen (NOTAMs), as applicable.	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
10. File FAA Certificates of Authorization (COAs) and Notification Capability (LAANC) notifications for all RDT&E activity and, as applicable, to all operational missions.	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
11. File FAA Form 7140-1 at least 30 days prior to conducting any outdoor RDT&E activity using directed energy (i.e., lasers).	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
Biological Resources	A) Response to Question (Click the appropriate box)	B) Are there any extenuating circumstances? If so, explain here.
12. Generate a list of species and critical habitat within the project area no earlier than 90 days before the planned operation. <b>(See note [b]).</b>	<input checked="" type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
13. Coordinate with appropriate land managers to identify potential wildlife concern and avoidance or minimization measures if C-UAS activities will occur on or over a unit of the National Wildlife Refuge System (NWRS), National Fish Hatchery, National Park Service lands or other Federal lands. <b>(See note [c]).</b>	<input checked="" type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	

14. Locate C-UAS RDT&E activities at DHS facilities on roads, trails, paved surfaces, or otherwise previously disturbed or developed areas where no direct impacts on critical habitat, listed species, or migratory birds are anticipated. For species under NMFS's jurisdiction this includes avoiding activities that may result in debris or recovery efforts occurring in riparian, estuarine, or coastal nearshore locations within species designated critical habitats (as determined in #12).	<input checked="" type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
15. Locate C-UAS ground-based equipment on roads, trails, paved surfaces, and/or otherwise previously disturbed or developed areas if they are within terrestrial critical habitat or the range of a listed species (as indicated by your IPaC species and critical habitat list). <b>(See note [d]).</b>	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
16. Avoid operating C-UAS within 200 feet (vertically and horizontally) of a known breeding or roosting colony, or other known high density nesting area, of federally listed or proposed birds or migratory birds (as indicated by one or more bird species appearing on your IPaC generated species list). <b>(See note [e] for specific instructions).</b>	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
17. Maintain a 330-foot buffer around any known bald eagle nests during the breeding season. Extend the buffer distance would to 660 feet in open areas where the nest may have increased visibility and exposure to C-UAS activities.	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	

18. When possible, conduct C-UAS activities and RDT&E during seasons when federally listed, proposed, or migratory birds are not present or nesting in the operational area (e.g., the bird species on your IPaC list is migratory and will not be present during a particular season). <b>(See note [e]).</b>	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
19. Conduct a visual check for migratory birds and federally listed species (use your list generated through IPaC and the National ESA Critical Habitat Mapper) immediately prior to operating C-UAS. <b>(See note [f]).</b>	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
20. If personnel observe a federally listed animal or migratory bird including federally listed bird nests during the visual check, delay activities until either the animal has moved away from the area of operation, or the C-UAS RDT&E or operation area will be relocated to an area where the animal or nests will not be disturbed (at least 200 feet away both horizontally and vertically). <b>(See note [g] below).</b>	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
21. If personnel encounter wildlife during C-UAS RDT&E, training, demonstrations, or operations, operators will ensure all personnel and UAS maintain a safe distance (at least 200 feet is recommended) and will avoid buzzing, animal-directed movements, hovering, landing, taking off, lingering, or taxiing near the observed wildlife.	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	

22. If, despite the measures in #21, wildlife, including migratory birds, listed animal species, and bald and golden eagles exhibit signs of distress (e.g. wing flapping, crouching, fleeing, or flushing), the C-UAS activity will be immediately moved beyond the 200-foot recommended distance from the animal.	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
23. To minimize impacts to federally listed or proposed insect species, sUAS deployed during RDT&E of C-UAS activities will maintain a minimum altitude of 65 feet above the ground.	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
24. If IPaC results include federally listed or proposed bat species, operate C-UAS during daylight hours (one hour after sunrise to one hour before sunset) and avoid operating C-UAS in close proximity to known hibernacula whenever practicable. In addition, for nighttime use of C-UAS involving sUAS, maintain a minimum altitude of 98 feet above vegetation, tree canopy, or open water (including rivers, streams, lakes, reservoirs, etc.).	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
25. Document and report to the USFWS and/or NMFS, in a timely manner, any operation involving a collision with or harassment of a federally listed species (if species is clearly identifiable). To contact NMFS, send an email detailing the incident to <a href="mailto:nmfs.hq.esa.consultations@noaa.gov">nmfs.hq.esa.consultations@noaa.gov</a> with the Eco Record ID in the subject line.	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
26. Avoid operating C-UAS from/on beaches that support nesting sea turtles during their breeding season.	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	



27. Avoid flying UAVs within 500 feet of known haul-out locations, sea turtles, and marine mammals at the water's surface (unless prior authorization was received from NOAA or USFWS).	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
28. To the maximum extent feasible, recover any debris resulting from C-UAS mitigation operations. Make effort to minimize disturbance if recovery activities must take place in riverine, estuarine, or coastal nearshore critical habitats.	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
<b>Cultural and Historic Resources</b>	<b>A) Response to Question (Click the appropriate box)</b>	<b>B) Are there any extenuating circumstances? If so, explain here.</b>
29. Provide letters of notification to State Historic Preservation Offices (SHPO), Tribal Historic Preservation Offices (THPO), and/or Federal Preservation Officers at least 30 days prior to applicable C-UAS undertakings. Coordinate with Tribal Nations to the maximum extent feasible when proposed operations would include flying over or deploying from tribal sensitive areas, above-ground historic properties, or culturally significant areas (e.g. to identify appropriate launch sites or sensitive resources to avoid). Consult, as necessary, with applicable State Historic Preservation Office (SHPO), Tribal Historic Preservation Officer (THPO), and/or Certified Local Governments.	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
30. Coordinate with Tribal Nations to the maximum extent feasible when proposed operations would include flying over or deploying from Tribal sensitive areas, above-ground historic properties, or culturally significant areas.	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	

31. Avoid operations within 100 feet vertically and/or horizontally from Tribal sensitive areas or historically or culturally significant areas (i.e. known historic properties, National Historic Landmarks, monuments, or cemeteries), unless necessitated by an emergency facility inspection or condition assessment, or prior notification to the NPS for National Historic Landmarks and appropriate SHPO or THPO has been completed. <b>(See note [h]).</b>	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
32. Apply and adhere to the conditions of the Nationwide Programmatic Agreement (NPA) Among the DHS, the National Conference of Historic Preservation Officers (NCSHPO), and the Advisory Council for Historic Preservation (ACHP) Regarding DHS C-UAS Systems Undertakings for Section 106 compliance if the criteria for C-UAS undertakings are met.	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
<b>Other Coordination</b>	<b>A) Response to Question (Click the appropriate box)</b>	<b>B) Are there any extenuating circumstances? If so, explain here.</b>
33. Obtain all applicable permits, permissions, and authorizations from applicable landowners and federal, state, and local regulatory authorities prior to initiating operation of C-UAS.	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	

**To be completed by the Environmental Reviewer.**

**Name:**

**Date:**

☐ **The proposed action is covered by the scope of the 2025 C-UAS PEA and no further environmental analysis is required.**

☐ **The proposed action is outside of the C-UAS PEA scope; therefore, additional analysis for compliance with the National Environmental Policy Act, National Historic Preservation**

**Act, Endangered Species Act, or other environmental statute, regulation or Executive Order is necessary.**

**Notes:**

### **Health and Safety**

**[a] Question 4:** The following is general safety information for active RF equipment as it pertains to Radiation Hazards (RADHAZ):

- a. Hazard of Electromagnetic Radiation to Ordnance (HERO) safe ordnance with a minimum Surface Shaded Display (SSD) of 10 feet.
- b. Hazard of Electromagnetic Radiation to Fuel (HERF) minimum safe distance is 14.2 centimeters.
- c. Hazard of Electromagnetic Radiation to Personnel (HERP) minimum safe distance is 0.5 meters.

### **Biological Resources**

**[b] Question 12:** For species under jurisdiction of USFWS use Information for Planning and Consultation (IPaC) tool (<https://ipac.ecosphere.fws.gov/>). USFWS IPaC reports are valid for 90 days following its date of creation. If past 90 days, please complete a new IPaC report online. For species under jurisdiction of NMFS use the National ESA Critical Habitat Mapper (<https://www.fisheries.noaa.gov/resource/map/national-esa-critical-habitat-mapper>).

**[c] Question 13:** To minimize impacts to wildlife, units of the NWRS and other federal lands and waters managed for wildlife (e.g., national parks) should be identified before any C-UAS operation. Visit U.S. Fish & Wildlife Service website to determine locations of NWRS. Refuge Managers or other land/water managers should be contacted to identify site-specific wildlife use, potential responses to disturbance, and other information regarding cultural or sensitive sites, wildlife aggregation sites, and public use areas. For coordination efforts or activities (non-emergency) that occur on USFWS owned or managed lands contact the local USFWS site manager (such as a Refuge or Hatchery Manager). In emergency situations (imminent loss of life or property), if pre-planning or early coordination is not practicable, operators should proceed with emergency response actions.

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recommended seasonal restrictions. DHS commits to conducting testing activities outside of the migratory and federally listed bird nesting season or breeding season areas, unless in the event of imminent loss of life or property (i.e., an emergency situation). In the event that unforeseen schedule changes result in testing to occur during the migratory and listed bird nesting season, DHS commits to consulting with USFWS on a project level (as necessary) and conducting a pedestrian nest survey of the project area to avoid and minimize potential impacts. If pedestrian nest surveys are required, surveys would be conducted by qualified environmental professionals in conformance with USFWS Regional Office methodologies or state-specific guidelines.

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### **Cultural Resources**

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DEPARTMENT OF HOMELAND SECURITY PROGRAMMATIC ENVIRONMENTAL  
ASSESSMENT FOR THE NATIONWIDE OPERATION OF COUNTER UNMANNED  
AIRCRAFT SYSTEMS (C-UAS)

Best Management Practices (BMP) Implementation Checklist

The following checklist is to be utilized for confirming the proposed action is covered under the scope and review of the 2025 Programmatic Environmental Assessment (PEA) and that project-specific analysis is not necessary. With these best management practices in place, DHS continues to ensure that no significant adverse impacts to the environment or the public would occur as a result of counter unmanned aircraft system (C-UAS) activities. Specific measures for environmental resource topics analyzed in the 2025 PEA are incorporated into this checklist, which is to be completed prior to C-UAS use, to the maximum extent practicable. This checklist also incorporates by reference the BMP Implementation Checklist that was prepared as part of the *Final Programmatic Environmental Assessment for the Nationwide Operation of Small Unmanned Aircraft Systems (sUAS)*, published in December 2022. For situations where DHS plans to launch sUAS to conduct research, development, testing, and evaluation (RDT&E) of C-UAS systems, DHS would also adhere to the BMPs included in the 2022 PEA. If Components have listed species or critical habitat<sup>1</sup> in their project area and cannot implement the Biological Resources BMPs below, the Component should contact the local USFWS Ecological Services Field Office and/or the NMFS Office of Protected Resources ([nmfs.hq.esa.consultations@noaa.gov](mailto:nmfs.hq.esa.consultations@noaa.gov) with the Eco Record ID in the subject line) to determine if site-specific Endangered Species Act (ESA) consultation is necessary.

BMPs are required and should be followed; however, C-UAS are predominately utilized to respond to potential threats to support national security. Under no circumstances would emergency response actions be delayed in order to implement the BMPs. However, as indicated in the 2022 sUAS PEA, BMPs would be followed during an emergency or national security scenario as the situation allows. If the BMPs cannot be implemented during an emergency response, operators would prioritize emergency response actions and follow established procedures for emergency situations including compliance under ESA. Section 7 regulations recognize that an emergency (imminent loss of human life or property) may require expedited consultation. As soon as practicable after the emergency is under control, if listed species or critical habitat were affected by the emergency response and it was not possible to implement the BMPs, the USFWS and/or NMFS would be contacted for discussion of potential after-the-fact consultation.

This checklist is to be completed prior to C-UAS use, unless the nature of the particular emergency precludes it. For activities that regularly occur within a specified geographic location (e.g. RDT&E), a single checklist may suffice. Checklists should be saved as part of the National Environmental Policy Act, National Historic Preservation Act, and Endangered Species Act administrative record for the proposed action.

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<sup>1</sup> As determined by the U.S. Fish and Wildlife Service (USFWS) species list obtained through the Information for Planning and Consultation (IPaC) tool and by referencing the National Marine Fisheries Service (NMFS) ESA Critical Habitat Mapper.

<b>Date(s) of Use</b>	
<b>Location of Event</b>	
<b>Point of Contact (POC) Completing this Checklist (name, phone number and email, organization)</b>	
<b>C-UAS Project Manager (name, phone number and email, organization)</b>	
<b>Provide a short summary of the Proposed Action.</b>	

<b>Human Health and Safety</b>	<b>A) Response to Question (Click the appropriate box)</b>	<b>B) Are there any extenuating circumstances? If so, explain here.</b>
1. Ensure that active radar is not operated at power densities for a length of time beyond the established occupational and public time limits (less than 30 minutes and less than 6 minutes, respectively) that could result in radiofrequency (RF) exposures in exceedance of the maximum permissible exposure limits established by the FCC under 47 CFR 1.1307(b).	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
2. Use of active radar will comply with the following standards: a. Institute of Electrical and Electronics Engineers Standards Associates C95.7-214, Recommended Practice for Radio Frequency Safety Programs, 3 Kilohertz to 300 Gigahertz. b. International Commission of Non-Ionizing Radiation Protection RF Electromagnetic Field Guidelines 2020.	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
3. Prior to undertaking any operational activities using active radar in a public setting, cordon off sites and post signage to limit public proximity to the active radar.	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	

<p>4. Radiation hazard from the radar and RF systems will not exceed the following permissible radar exposure limit guidelines as defined in Army Regulation 385-10:</p> <ul style="list-style-type: none"> <li>a. Hazards of Electromagnetic Radiation to Personnel.</li> <li>b. Hazards of Electromagnetic Radiation to Ordnance.</li> <li>c. Hazards of Electromagnetic Radiation to Fuel.</li> </ul> <p><b>(See note [a] below).</b></p>	<p><input type="checkbox"/> <b>Yes</b> – Go to next practice</p> <p><input type="checkbox"/> <b>No</b> – Explain in B)</p>	
<p>5. No active radar will be powered and emitting while personnel are standing nearby. Radar signal strength varies depending on equipment make and model. Test and operational personnel must be familiar with the radar specifications and advised of minimum safe distance. If radar specifications are not available, a safe distance of 1 meter from the radar will be enforced.</p>	<p><input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice</p> <p><input type="checkbox"/> <b>No</b> – Explain in B)</p>	
<p>6. All test participants who remain outdoors during testing will wear laser-rated protective eyewear and long-sleeved clothing, pants, close-toed shoes, and other coverings that protect exposed skin as will be positioned to the rear of any laser equipment prior to activation.</p>	<p><input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice</p> <p><input type="checkbox"/> <b>No</b> – Explain in B)</p>	
<b>Visual Resources and Aesthetics</b>	<b>Response to Question (Click the appropriate box)</b>	<b>B) Are there any extenuating circumstances? If so, explain here.</b>
<p>7. sUAS flights conducted for RDT&amp;E purposes will not exceed 400 feet in altitude, unless prior approval is given by the FAA.</p>	<p><input type="checkbox"/> <b>Yes</b> – Go to next practice</p> <p><input type="checkbox"/> <b>No</b> – Explain in B)</p>	
<p>8. Adhere to applicable regulations regarding visual quality near historic sites or other protected land uses.</p>	<p><input type="checkbox"/> <b>Yes</b> – Go to next practice</p> <p><input type="checkbox"/> <b>No</b> – Explain in B)</p>	



<b>Airspace</b>	<b>A) Response to Question (Click the appropriate box)</b>	<b>B) Are there any extenuating circumstances? If so, explain here.</b>
9. Request Temporary Flight Restrictions (TFRs) and Notices to Airmen (NOTAMs), as applicable.	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
10. File FAA Certificates of Authorization (COAs) and Notification Capability (LAANC) notifications for all RDT&E activity and, as applicable, to all operational missions.	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
11. File FAA Form 7140-1 at least 30 days prior to conducting any outdoor RDT&E activity using directed energy (i.e., lasers).	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
<b>Biological Resources</b>	<b>A) Response to Question (Click the appropriate box)</b>	<b>B) Are there any extenuating circumstances? If so, explain here.</b>
12. Generate a list of species and critical habitat within the project area no earlier than 90 days before the planned operation. <b>(See note [b]).</b>	<input checked="" type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
13. Coordinate with appropriate land managers to identify potential wildlife concern and avoidance or minimization measures if C-UAS activities will occur on or over a unit of the National Wildlife Refuge System (NWRS), National Fish Hatchery, National Park Service lands or other Federal lands. <b>(See note [c]).</b>	<input checked="" type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	

14. Locate C-UAS RDT&E activities at DHS facilities on roads, trails, paved surfaces, or otherwise previously disturbed or developed areas where no direct impacts on critical habitat, listed species, or migratory birds are anticipated. For species under NMFS's jurisdiction this includes avoiding activities that may result in debris or recovery efforts occurring in riparian, estuarine, or coastal nearshore locations within species designated critical habitats (as determined in #12).	<input checked="" type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
15. Locate C-UAS ground-based equipment on roads, trails, paved surfaces, and/or otherwise previously disturbed or developed areas if they are within terrestrial critical habitat or the range of a listed species (as indicated by your IPaC species and critical habitat list). <b>(See note [d]).</b>	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
16. Avoid operating C-UAS within 200 feet (vertically and horizontally) of a known breeding or roosting colony, or other known high density nesting area, of federally listed or proposed birds or migratory birds (as indicated by one or more bird species appearing on your IPaC generated species list). <b>(See note [e] for specific instructions).</b>	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
17. Maintain a 330-foot buffer around any known bald eagle nests during the breeding season. Extend the buffer distance would to 660 feet in open areas where the nest may have increased visibility and exposure to C-UAS activities.	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	

18. When possible, conduct C-UAS activities and RDT&E during seasons when federally listed, proposed, or migratory birds are not present or nesting in the operational area (e.g., the bird species on your IPaC list is migratory and will not be present during a particular season). <b>(See note [e]).</b>	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
19. Conduct a visual check for migratory birds and federally listed species (use your list generated through IPaC and the National ESA Critical Habitat Mapper) immediately prior to operating C-UAS. <b>(See note [f]).</b>	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
20. If personnel observe a federally listed animal or migratory bird including federally listed bird nests during the visual check, delay activities until either the animal has moved away from the area of operation, or the C-UAS RDT&E or operation area will be relocated to an area where the animal or nests will not be disturbed (at least 200 feet away both horizontally and vertically). <b>(See note [g] below).</b>	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
21. If personnel encounter wildlife during C-UAS RDT&E, training, demonstrations, or operations, operators will ensure all personnel and UAS maintain a safe distance (at least 200 feet is recommended) and will avoid buzzing, animal-directed movements, hovering, landing, taking off, lingering, or taxiing near the observed wildlife.	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	

22. If, despite the measures in #21, wildlife, including migratory birds, listed animal species, and bald and golden eagles exhibit signs of distress (e.g. wing flapping, crouching, fleeing, or flushing), the C-UAS activity will be immediately moved beyond the 200-foot recommended distance from the animal.	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
23. To minimize impacts to federally listed or proposed insect species, sUAS deployed during RDT&E of C-UAS activities will maintain a minimum altitude of 65 feet above the ground.	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
24. If IPaC results include federally listed or proposed bat species, operate C-UAS during daylight hours (one hour after sunrise to one hour before sunset) and avoid operating C-UAS in close proximity to known hibernacula whenever practicable. In addition, for nighttime use of C-UAS involving sUAS, maintain a minimum altitude of 98 feet above vegetation, tree canopy, or open water (including rivers, streams, lakes, reservoirs, etc.).	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
25. Document and report to the USFWS and/or NMFS, in a timely manner, any operation involving a collision with or harassment of a federally listed species (if species is clearly identifiable). To contact NMFS, send an email detailing the incident to <a href="mailto:nmfs.hq.esa.consultations@noaa.gov">nmfs.hq.esa.consultations@noaa.gov</a> with the Eco Record ID in the subject line.	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
26. Avoid operating C-UAS from/on beaches that support nesting sea turtles during their breeding season.	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	

27. Avoid flying UAVs within 500 feet of known haul-out locations, sea turtles, and marine mammals at the water's surface (unless prior authorization was received from NOAA or USFWS).	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
28. To the maximum extent feasible, recover any debris resulting from C-UAS mitigation operations. Make effort to minimize disturbance if recovery activities must take place in riverine, estuarine, or coastal nearshore critical habitats.	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
<b>Cultural and Historic Resources</b>	<b>A) Response to Question (Click the appropriate box)</b>	<b>B) Are there any extenuating circumstances? If so, explain here.</b>
29. Provide letters of notification to State Historic Preservation Offices (SHPO), Tribal Historic Preservation Offices (THPO), and/or Federal Preservation Officers at least 30 days prior to applicable C-UAS undertakings. Coordinate with Tribal Nations to the maximum extent feasible when proposed operations would include flying over or deploying from tribal sensitive areas, above-ground historic properties, or culturally significant areas (e.g. to identify appropriate launch sites or sensitive resources to avoid). Consult, as necessary, with applicable State Historic Preservation Office (SHPO), Tribal Historic Preservation Officer (THPO), and/or Certified Local Governments.	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
30. Coordinate with Tribal Nations to the maximum extent feasible when proposed operations would include flying over or deploying from Tribal sensitive areas, above-ground historic properties, or culturally significant areas.	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	

31. Avoid operations within 100 feet vertically and/or horizontally from Tribal sensitive areas or historically or culturally significant areas (i.e. known historic properties, National Historic Landmarks, monuments, or cemeteries), unless necessitated by an emergency facility inspection or condition assessment, or prior notification to the NPS for National Historic Landmarks and appropriate SHPO or THPO has been completed. <b>(See note [h]).</b>	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
32. Apply and adhere to the conditions of the Nationwide Programmatic Agreement (NPA) Among the DHS, the National Conference of Historic Preservation Officers (NCSHPO), and the Advisory Council for Historic Preservation (ACHP) Regarding DHS C-UAS Systems Undertakings for Section 106 compliance if the criteria for C-UAS undertakings are met.	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
<b>Other Coordination</b>	<b>A) Response to Question (Click the appropriate box)</b>	<b>B) Are there any extenuating circumstances? If so, explain here.</b>
33. Obtain all applicable permits, permissions, and authorizations from applicable landowners and federal, state, and local regulatory authorities prior to initiating operation of C-UAS.	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	

**To be completed by the Environmental Reviewer.**

**Name:**

**Date:**

☐ **The proposed action is covered by the scope of the 2025 C-UAS PEA and no further environmental analysis is required.**

☐ **The proposed action is outside of the C-UAS PEA scope; therefore, additional analysis for compliance with the National Environmental Policy Act, National Historic Preservation**

**Act, Endangered Species Act, or other environmental statute, regulation or Executive Order is necessary.**

**Notes:**

### **Health and Safety**

**[a] Question 4:** The following is general safety information for active RF equipment as it pertains to Radiation Hazards (RADHAZ):

- a. Hazard of Electromagnetic Radiation to Ordnance (HERO) safe ordnance with a minimum Surface Shaded Display (SSD) of 10 feet.
- b. Hazard of Electromagnetic Radiation to Fuel (HERF) minimum safe distance is 14.2 centimeters.
- c. Hazard of Electromagnetic Radiation to Personnel (HERP) minimum safe distance is 0.5 meters.

### **Biological Resources**

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Homeland  
Security

July 7, 2025

Mr. Ryan DeWitt  
National Marine Fisheries Service  
Office of Protected Resources  
1315 East-West Highway  
Silver Spring, MD 20910

**Subject: Informal Consultation Request, Programmatic Biological Assessment for the Nationwide Operation of Counter-Unmanned Aircraft Systems  
DHS Office of the Chief Readiness Support Officer**

Dear Mr. DeWitt:

The Department of Homeland Security (DHS) proposes to perform research, development, testing, and evaluation (RDT&E) of counter unmanned aircraft systems (C-UAS), and conduct operational and training activities with C-UAS to support existing and emerging DHS mission requirements nationwide (herein referred to as the Proposed Action). This is a request for review and concurrence from your office regarding our effect determinations for listed species and critical habitat designated by the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries) under Section 7 of the Endangered Species Act (ESA).

Our Programmatic Biological Assessment is provided in **Attachment 1**, which includes a description of the Proposed Action; description of the Action Area; description of listed species and critical habitat that may be affected by the action; and an analysis of potential effects on listed species and critical habitat. Based on our analysis of project impacts, we have determined that the Proposed Action ***may affect, but is not likely to adversely affect***, federally listed marine mammals and sea turtles, or any other federally listed marine and freshwater aquatic species.


DHS respectfully requests your review and concurrence by **August 29, 2025**, so that we may complete our environmental review in a timely manner.

Additionally, DHS has prepared a Draft Programmatic Environmental Assessment (PEA) in accordance with the National Environmental Policy Act (NEPA) to evaluate the potential environmental impacts from the Proposed Action. DHS welcomes your input regarding any information or potential environmental concerns associated with the Proposed Action, including any additional information pertaining to federally protected species that may be present in the

Action Area. A copy of the Draft PEA is available on DHS's website at:  
<https://www.dhs.gov/ocrso/eed/epb/nepa/public-comment>.

Please direct your response or requests for additional information to Jennifer Hass at DHS via email at [jennifer.hass@hq.dhs.gov](mailto:jennifer.hass@hq.dhs.gov), or by mail to Office of the Chief Readiness Support Officer, MS 0440 Department of Homeland Security, 2707 Martin Luther King Jr. Ave. SE, Washington, DC 20528-0440.

Sincerely,

**JENNIFER D  
HASS**  Digitally signed by  
JENNIFER D HASS  
Date: 2025.07.07  
14:50:28 -04'00'

Jennifer Hass  
Director, Environmental Planning Branch  
Office of the Chief Readiness Support Officer  
Department of Homeland Security

Attachments:

1. Biological Assessment



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL MARINE FISHERIES SERVICE  
Silver Spring, MD 20910

Refer to NMFS No: OPR-2025-01956

Jennifer Hass  
Director, Environmental Planning Branch  
Office of the Chief Readiness Support Officer  
Department of Homeland Security  
2707 Martin Luther King Jr. Ave. SE  
Washington, DC 20528-0440

RE: Letter of Concurrence for the Nationwide Operation of Counter Unmanned Aircraft Systems (C-UAS)

Dear Ms. Hass:

On July 8, 2025, the National Marine Fisheries Service (NMFS) received your request for a written concurrence that the Department of Homeland Security's (DHS) nationwide operation of counter unmanned aircraft systems is not likely to adversely affect species listed as threatened or endangered or critical habitats designated under the Endangered Species Act of 1973, as amended (ESA; 16 U.S.C. 1531 et seq.). This response to your request was prepared by NMFS pursuant to section 7(a)(2) of the ESA, implementing regulations at (50 CFR §402), and agency guidance for the preparation of letters of concurrence.

This letter underwent pre-dissemination review using standards for utility, integrity, and objectivity in compliance with agency guidelines issued under section 515 of the Treasury and General Government Appropriations Act of 2001 (Data Quality Act; 44 U.S.C. 3504(d)(1) and 3516). A complete record of this informal consultation is on file electronically with the NMFS Office of Protected Resources in Silver Spring, Maryland.

#### **Action Agency's Effect Determinations**

According to DHS' biological assessment (BA), the proposed action may affect, but is not likely to adversely affect (NLAA), "critical habitat and federally listed vegetation; ground-based mammals, invertebrates, reptiles and amphibians; bats; birds; flying insects; marine mammals and sea turtles; and other marine and freshwater species." DHS identified two activity types in particular that may affect marine and freshwater species: 1) surface-level disturbance and site access; and 2) C-UAS operations and collision risks. The BA concluded, relevant to NMFS, this action is NLAA for all ESA-listed and proposed species as well as designated or proposed critical habitats under NMFS's jurisdiction and within U.S. waters (see Table 1 in Appendix A).

#### **Proposed Action and Action Area**

DHS proposes to carry out the research, development, testing, and evaluation (RDT&E), and operation of C-UAS nationwide, including in U.S. territories and marine waters within the contiguous zone (24 nautical miles from the coastline). C-UAS are a system or device capable of tracking, disabling, disrupting, or seizing control of an unmanned aircraft or unmanned aircraft system (UAS). UAS have become a security concern in recent years due to the ease with which



they can aid in intelligence gathering and be used for malicious activities. DHS has statutory authority under the Preventing Emerging Threats Act of 2018 to counter credible threats from UAS to the safety or security of covered facilities or assets, which are designated based on their importance to the security missions of DHS and Components. Covered facilities or assets are those that directly relate to an authorized DHS mission or joint-DHS mission, including certain protection and security missions of the U.S. Coast Guard, U.S. Customs and Border Protection, U.S. Secret Service, Federal Protective Service, and the Department of Justice.

Operational activities may occur anywhere a covered facility or asset experiences a UAS threat, including in open water. The frequency and location of C-UAS operations are difficult to predict. UAS, also referred to as unmanned aerial vehicle (UAV), are an evolving and emerging threat, and the nature and scale of past incidents are not reliable indicators of future activity. Further, detailed data on past incidents is generally law enforcement sensitive and cannot be shared widely. To date, most C-UAS activities have been restricted to research, development, testing, and evaluation. In many cases, C-UAS systems are deployed in response to emergent or short-term events using handheld mobile solutions. However, operations may be planned in advance for high-profile or high-priority events where the likelihood of a threat is elevated. In such cases, equipment may remain in place for longer durations. RDT&E activities, on the other hand, are generally conducted at designated sites and are expected to occur repeatedly in those locations. Existing sites for RDT&E activities are located in Niagara Falls and Buffalo, NY; the greater Philadelphia area, PA; northeastern West Virginia; Washington DC; and Richmond, VA.

When an unknown UAS is identified, DHS implements a C-UAS processing chain to evaluate and respond to potential threats posed by the UAS. The processing chain includes five stages: Detect, Identify, Monitor, Track, and Mitigate (DIMIT-M). The first four steps in the C-UAS processing chain (i.e., Detect, Identify, Monitor, and Track) are performed by receiving and analyzing data from C-UAS sensors (radar, passive radiofrequency (RF), electro-optical/infrared (EO/IR), or acoustic). The last step in the C-UAS processing chain (i.e., Mitigate) can employ one of two broad types of mitigation techniques, electronic or kinetic. Electronic mitigation technologies include those that emit RF signals to jam, interfere with, or masquerade as legitimate UAS signals, causing the UAV to land or return to its launch location. Kinetic mitigation techniques involve physical action toward the UAV for removing or reducing the risk posed. Nets, deployed either with net guns or by other UAVs, may be used to entangle the propellers and bring down or capture the UAV. Alternatively, laser weapons and microwaves may be directed at the UAV to physically damage or destroy the UAV or its electronic circuits. All five of these steps are likely to require site access and equipment setup procedures, for example, the temporary installation of tripods. Any debris from C-UAS mitigation, such as downed UAVs or nets, would be recovered by DHS as part of the incident investigation. Any UAV operated by DHS for these purposes would be small UASs i.e., UAVs that weigh less than 55 pounds on takeoff.

The proposed action will be ongoing and is analyzed through programmatic consultation. Thus, DHS has proposed an adaptive management approach for ESA resources that includes monitoring, periodic programmatic reviews, and consistency reviews, the details of which can be found in the BA (DHS, 2025). The final component of the adaptive management approach is the required implementation of best management practices (BMPs). DHS has developed a BMP Implementation Checklist to assist DHS staff and Component operators with BMP compliance during C-UAS activities. The checklist is to be completed prior to C-UAS use, unless the nature

of the particular emergency precludes it. Of the 33 BMPs in the checklist, the following seven are most relevant to listed species under NMFS's jurisdiction:

- **BMP 12.** Generate a list of species and critical habitat within the project area no earlier than 90 days before the planned operation. For species under USFWS jurisdiction, use the Information for Planning and Consultation (IPaC) tool. For species under NMFS jurisdiction, use the National ESA Critical Habitat Mapper;
- **BMP 14.** Locate C-UAS RDT&E activities at DHS facilities on roads, trails, paved surfaces, or otherwise previously disturbed or developed areas where no direct impacts on critical habitat, federally listed species, or migratory birds are anticipated. For species under NMFS's jurisdiction this includes avoiding activities that may result in debris or recovery efforts occurring in riparian, estuarine, or coastal nearshore locations within species' habitats (as determined in #12);
- **BMP 19.** Conduct a visual check for migratory birds and federally listed species (use your list generated through IPaC and the National ESA Critical Habitat Mapper) immediately prior to operating C-UAS;
- **BMP 20.** If personnel observe a federally listed animal or migratory bird including federally listed bird nests during the visual check, delay activities until either the animal has moved away from the area of operation, or the C-UAS RDT&E or operation area will be relocated to an area where the animal or nests will not be disturbed (at least 200 feet away both horizontally and vertically);
- **BMP 26.** Avoid operating C-UAS from/on beaches that support nesting sea turtles during their breeding season;
- **BMP 27.** Avoid flying UAVs within 500 feet of known haul-out locations, sea turtles, and marine mammals at the water's surface (unless prior authorization was received from NOAA or USFWS); and
- **BMP 28.** To the maximum extent feasible, recover any debris resulting from C-UAS mitigation operations. Make effort to minimize disturbance if recovery activities must take place in riverine, estuarine, or coastal nearshore habitats.

#### *Action Area*

The action area is all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR §402.02). As described above, the frequency and location of C-UAS operations could happen anywhere, as they depend on the nature and timing of evolving threats. For this reason, the action area encompasses the entire U.S., including the territories and marine waters within the contiguous zone (24 nautical miles from the coastline).

#### **Consultation History**

- On May 5, 2025, DHS began technical assistance with NMFS. DHS provided a draft BA and draft BMP checklist for review.
- On June 5<sup>th</sup>, 6<sup>th</sup> and 26<sup>th</sup>, NMFS met with DHS to discuss potential changes to the action, edits to the BA and BMP checklist, as well as procedures and timelines for ESA consultation. USFWS also attended the meetings on the 6<sup>th</sup> and 26<sup>th</sup>.
- On June 10<sup>th</sup>, 11<sup>th</sup>, and 25<sup>th</sup> NMFS provided written comments and/or proposed edits to the draft BA and BMP checklist.

- On July 8, 2025, DHS initiated informal consultation with NMFS via the transmittal of an initiation letter and final BA. In the letter, DHS requested NMFS's review and concurrence by August 29, 2025.

### **Analysis of Effects**

All actions that may affect ESA-listed species or designated critical habitat must satisfy the requirements of section 7(a)(2) of the ESA. There is an exception to the formal consultation process when an action and all of its resulting stressors may affect, but are not likely to adversely affect (NLAA), ESA-listed species or designated critical habitat in the action area (50 CFR §402.14(b)). An action warrants a finding of not likely to adversely affect ESA-listed species or designated critical habitat when all its effects are expected to be discountable, insignificant, or wholly beneficial. Wholly beneficial effects are usually discussed when the project has a clear link to the ESA-listed species or its specific habitat needs, and consultation is required because the species may be affected by the action, albeit positively. Discountable effects are those that could occur but, because of the intensity, magnitude, frequency, duration, or timing of the stressor, exposure of an ESA-listed species or physical and biological features of critical habitat to the stressor is extremely unlikely to occur. Insignificant effects relate to the response of exposed individuals of critical habitat where the response, in terms of an individual's growth, survival, or reproduction, or an impact to the conservation value of a physical or biological feature of critical habitat, will be immeasurable or undetectable. For stressors that meet these criteria for wholly beneficial, discountable, or insignificant, the appropriate conclusion is not likely to adversely affect.

The endangered and threatened species and designated critical habitats that may be affected by the action are listed in Table 1 of Appendix A. The table includes links to the listing documents, five-year reviews, and recovery plans that provide the information on the biology and ecology of the ESA-listed species, the status of the species and critical habitat in the action area, and relevant citations supporting our analysis of effects.

#### *Activities that will have No Effect*

Several of the activities associated with the action will have no effect on ESA-listed species or designated critical habitat under NMFS's jurisdiction. For example, the use of sensor technologies (detection of passive RF, EO/IR, and acoustic signals), which only receive and digitally analyze signals from the environment, will have no effect on ESA-listed species because they do not emit energy, noise, or disturbance that could affect ESA-listed species or critical habitat. In addition, active radar and directed energy have the ability to cause adverse biological effects (e.g., burns), however these technologies will be focused on airspace where UAVs are operating, and away from ESA-listed species and habitats under NMFS jurisdiction. Finally, any C-UAS maintenance would occur in existing DHS facilities using standard tools and materials, and would not result in any interactions with or effects to species or critical habitats.

#### *Activities that May Affect, but are Not Likely to Adversely Affect*

The following activities may affect all ESA-listed and proposed species as well as designated or proposed critical habitats under NMFS's jurisdiction and within U.S. waters. However, as described below, the BMPs and other components of the proposed action will minimize the likelihood or magnitude of these effects such that they will be either insignificant or discountable and thus are NLAA for these ESA-listed species and habitats.

*Surface-level Disturbance and Site Access.* In terrestrial environments, the transport and staging of C-UAS may result in disturbances to species and habitats when those activities occur in close proximity to riverine, estuarine, or coastal environments. For example, the installation of equipment, such as tripods or guyed masts, require stakes driven a few inches into the ground, or may require the use of screws or anchor rods that are cemented into the ground. These activities may result in harassment of pinnipeds, if conducted near haul out areas, or fish, if conducted near aquatic habitats. However, the potential for adverse effects resulting from these activities is extremely unlikely. This is due to several factors. First, BMPs 12 and 28 require personnel to be knowledgeable of, and minimize disturbance to, these habitats. In addition, BMPs 19 and 20 require personnel to conduct a visual check for species and, if observed, relocate the C-UAS operations at least 200 feet away from the species. Finally, BMPs 26 and 27 require personnel to avoid operating C-UAS from/on beaches that support nesting sea turtles during their breeding season, and to avoid flying UAVs within 500 feet of known haul-out locations of pinnipeds.

In marine environments, the operation of vessels may result in a variety of effects, for example, ship strikes or elevated noise levels. However, DHS has chosen not to include the operation of marine vessels as part of this proposed action and programmatic framework. According to DHS, the impacts of the vessels used for this action were previously analyzed in a separate consultation, have existing regulatory permits or authorities for use and operation, and DHS would not use any additional vessels specifically for C-UAS activities (DHS, 2025 section 2.2). For example, the Vessel Environmental Manual (USCG Command Instruction M16455.1A), which applies to all waterborne USCG assets, establishes policies and procedures, including pollution prevention, waste management, and the protection of marine wildlife, in compliance with applicable environmental laws and regulations, to minimize environmental impacts from vessel operations. Additionally, previously completed ESA Section 7 consultations may include project design criteria associated with particular operations. For example, in 2023 the USCG consulted with NMFS on their proposal to design, build and operate up to 25 offshore patrol cutters with planned 30-year service lives (NMFS 2023). This LOC assumes that the vessel operations used for C-UAS were analyzed in a previous ESA consultation. It is the responsibility of DHS to ensure that the particular vessel operations utilized in C-UAS operations have existing ESA coverage, because not all DHS vessel operations have undergone ESA consultation.

*C-UAS Operations and Collision Risks.* In both terrestrial and marine environments, kinetic mitigation i.e. those that involve physical action, may result in impacts to species and habitats. Nets, deployed either with net guns or by other UAVs, may be used to entangle the propellers and bring down or capture the UAV. Alternatively, laser weapons and microwaves may be directed at the UAV to physically damage or destroy the UAV or its electronic circuits. The resulting presence of debris or nets may result in entanglement (e.g., of marine mammals, fish, or coral) or may be ingested, causing injury. In addition, the operation of UAVs may disturb species due to their presence and noise levels. However, the potential for adverse effects resulting from UAV debris or net usage is extremely unlikely. This is due to several factors. Kinetic mitigation is extremely rare and would only occur after all other mitigation steps have failed. First, DHS would detect, identify, and track the UAS. The operator would then be warned, and DHS would attempt to disrupt control of the UAS, which usually causes it to land or return to its launch point. If that is not possible, DHS may try to locate the operator or override the UAS controls. Only if those steps are unsuccessful would kinetic mitigation, such as using a net or another UAV, be considered. This would happen only in an emergency situation when a credible threat is

present. If kinetic mitigation is used, it is not intended to result in debris. Any debris that is produced is small and lightweight. As noted in the BA, UAVs used in mitigation are typically small, constructed of lightweight materials, and fragment minimally upon impact. Nets are designed to recover the UAS with minimal damage and avoid debris. DHS will avoid bringing UAVs down in uncontrolled areas where retrieval would be more difficult for the same reason.

The required BMPs further reduce the likelihood of adverse effects. As described above, the BMPs require personnel to be aware of species and critical habitat that may be present and maintain minimum distances away from certain areas. BMP 27 requires personnel to avoid flying UAVs within 500 feet of sea turtles, and marine mammals at the water's surface. When paired with the FAA-mandated maximum altitude of 400 feet for UAVs this creates a de facto restriction against any flights above marine species. Finally, BMP 28 requires personnel to recover any debris resulting from C-UAS mitigation operations (to the maximum extent feasible), and to minimize disturbance if recovery activities must take place in riverine, estuarine, or coastal nearshore habitats. The operation of UASs in the context of C-UAS is expected to produce an in-air, continuous, non-impulsive sound level of 80 dB within the frequency range of 60 to 150 Hz (DHS, 2022). This frequency range is within the generalized hearing range of most ESA-listed marine mammals, sea turtles, and fishes. However, the dB level is below all behavioral and injury thresholds for those species (Accomando et al. 2025; NMFS, 2024).

In addition to the mitigating factors above, the short duration of these activities, and the low probability of an ESA-listed species being present at the time of the activity, reduce the likelihood of potential effects. Taken together, the potential for adverse effects resulting from UAV debris or net use is extremely unlikely and thus insignificant.

### **Conclusion**

Based on this analysis, NMFS concurs with DHS that all effects of the proposed action are not likely to adversely affect the subject ESA-listed and proposed species as well as designated or proposed critical habitats listed in Table 1 (Appendix A).

### **Reinitiation of Consultation**

Reinitiation of consultation is required and shall be requested by the federal agency where discretionary federal involvement or control over the action has been retained or is authorized by law and (1) new information reveals effects of the action that may affect an ESA-listed species or designated critical habitat in a manner or to an extent not previously considered; (2) the identified action is subsequently modified in a manner that causes an effect to the ESA-listed species or designated critical habitat that was not considered in this concurrence letter; or if (3) a new species is listed or critical habitat designated that may be affected by the identified action (50 CFR §402.16).

### **Conservation Recommendations**

Conservation recommendations are “suggestions ... regarding discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information” (50 CFR §402.02). It is recommended that DHS do the following: 1) take into consideration the ranges and critical habitats of species under NMFS's jurisdiction when making decisions regarding the locations of future RDT&E sites; 2) engage in advanced coordination with NMFS and USFWS in regards to procedures to follow during and after emergency C-UAS activities; and 3) ensure ESA compliance on vessel operations.



Please direct questions regarding this letter to Ryan DeWitt, Consulting Biologist, at (202) 940-6701, or by email at [ryan.dewitt@noaa.gov](mailto:ryan.dewitt@noaa.gov) or me at (240) 723-6321, or by email at [tanya.dobrzynski@noaa.gov](mailto:tanya.dobrzynski@noaa.gov).

Sincerely,

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## **References Cited**

Accomando, A., and coauthors. 2025. Criteria and Thresholds for U.S. Navy Acoustic and Explosive Effects Analysis (Phase 4) Revision. NIWC Pacific, San Diego, CA.

DHS. 2022. Final Programmatic Environmental Assessment for the Nationwide Operation of Small Unmanned Aircraft Systems. December, 2022.

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NMFS 2024. Update to: Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 3.0): Underwater and In Air Criteria for Onset of Auditory and Temporal Threshold Shifts. U.S. Dept. of Commerce.

USCG Command Instruction. 2015. The Vessel Environmental Manual, COMDTINST M16455.1A. U.S. Department of Homeland Security, Commandant, United States Coast Guard, Washington, DC.

## Appendix A

**Table 1. ESA listed and proposed species, as well as designated or proposed critical habitats, under NMFS’s jurisdiction and within US waters.**

Species	Species ESA Listing	Critical Habitat Listing	Recent 5 Year Review	Recovery Plan
<b>Marine Mammals – Cetaceans</b>				
Beluga Whale ( <i>Delphinapterus leucas</i> ) – Cook Inlet DPS	<a href="#">E – 73 FR 62919</a>	<a href="#">76 FR 20179</a>	<a href="#">NMFS, 2022</a>	<a href="#">82 FR 1325</a>
Blue Whale ( <i>Balaenoptera musculus</i> )	<a href="#">E – 35 FR 18319</a>	-- --	<a href="#">NMFS, 2020</a>	<a href="#">11/2020</a>
Bowhead Whale ( <i>Balaena mysticetus</i> )	<a href="#">E – 35 FR 18319</a>	-- --	-- --	-- --
False Killer Whale ( <i>Pseudorca crassidens</i> ) – Main Hawaiian Islands Insular DPS	<a href="#">E – 77 FR 70915</a>	<a href="#">88 FR 47453</a>	<a href="#">NMFS, 2022</a>	<a href="#">86 FR 60615 10/2021</a>
Fin Whale ( <i>Balaenoptera physalus</i> )	<a href="#">E – 35 FR 18319</a>	-- --	<a href="#">NMFS, 2019</a>	<a href="#">75 FR 47538 07/2010</a>
Rice’s Whale ( <i>Balaenoptera ricei</i> )	<a href="#">E – 84 FR 15446 and 86 FR 47022</a>	<a href="#">88 FR 47453 (Proposed)</a>	-- --	<a href="#">09/2020 (Outline)</a>
Humpback Whale ( <i>Megaptera novaeangliae</i> ) – Central America DPS	<a href="#">E – 81 FR 62259</a>	<a href="#">86 FR 21082</a>	<a href="#">88 FR 15377</a>	<a href="#">11/1991 06/2022 (Outline)</a>
Humpback Whale ( <i>Megaptera novaeangliae</i> ) – Mexico DPS	<a href="#">T – 81 FR 62259</a>	<a href="#">86 FR 21082</a>	<a href="#">88 FR 15377</a>	<a href="#">11/1991 06/2022 (Outline)</a>
Humpback Whale ( <i>Megaptera novaeangliae</i> ) – Western North Pacific DPS	<a href="#">E – 81 FR 62259</a>	<a href="#">86 FR 21082</a>	<a href="#">88 FR 15377</a>	<a href="#">11/1991 06/2022 (Outline)</a>

Species	Species ESA Listing	Critical Habitat Listing	Recent 5 Year Review	Recovery Plan
Killer Whale ( <i>Orcinus orca</i> ) – Southern Resident DPS	<a href="#">E – 70 FR 69903 Amendment 80 FR 7380</a>	<a href="#">71 FR 69054</a> <a href="#">86 FR 41668</a>	<a href="#">NMFS, 2022</a>	<a href="#">73 FR 4176</a> <a href="#">01/2008</a>
North Atlantic Right Whale ( <i>Eubalaena glacialis</i> )	<a href="#">E – 73 FR 12024</a>	<a href="#">81 FR 4837</a>	<a href="#">NMFS, 2022</a>	<a href="#">70 FR 32293</a> <a href="#">08/2004</a>
North Pacific Right Whale ( <i>Eubalaena japonica</i> )	<a href="#">E – 73 FR 12024</a>	<a href="#">73 FR 19000</a>	<a href="#">NMFS, 2024</a>	<a href="#">78 FR 34347</a> <a href="#">06/2013</a>
Sei Whale ( <i>Balaenoptera borealis</i> )	<a href="#">E – 35 FR 18319</a>	-- --	<a href="#">NMFS, 2021</a>	<a href="#">12/2011</a>
Sperm Whale ( <i>Physeter macrocephalus</i> )	<a href="#">E – 35 FR 18319</a>	-- --	<a href="#">NMFS, 2015</a>	<a href="#">75 FR 81584</a> <a href="#">12/2010</a>
<b>Marine Mammals – Pinnipeds</b>				
Bearded Seal ( <i>Erignathus barbatus nauticus</i> ) – Beringia DPS	<a href="#">T – 77 FR 76739</a>	<a href="#">87 FR 19180</a>	<a href="#">86 FR 15203</a>	-- --
Guadalupe Fur Seal ( <i>Arctocephalus townsendi</i> )	<a href="#">T – 50 FR 51252</a>	-- --	-- --	-- --
Hawaiian Monk Seal ( <i>Neomonachus schauinslandi</i> )	<a href="#">E – 41 FR 51611</a>	<a href="#">80 FR 50925</a>	<a href="#">NMFS, 2007</a>	<a href="#">72 FR 46966</a> <a href="#">2007</a>
Ringed Seal ( <i>Phoca hispida hispida</i> ) – Arctic subspecies	<a href="#">T – 77 FR 76706</a>	<a href="#">87 FR 19232</a>	<a href="#">NMFS, 2024</a>	-- --
Steller Sea Lion ( <i>Eumetopias jubatus</i> ) – Western DPS	<a href="#">E – 55 FR 49204</a>	<a href="#">58 FR 45269</a>	<a href="#">NMFS, 2020</a>	<a href="#">73 FR 11872</a> <a href="#">2008</a>

Species		Species ESA Listing	Critical Habitat Listing	Recent 5 Year Review	Recovery Plan
<b>Marine Reptiles</b>					
Green Turtle ( <i>Chelonia mydas</i> ) – Central North Pacific DPS		<a href="#">T – 81 FR 20057</a>	<a href="#">88 FR 46572</a> (Proposed)	<a href="#">NMFS, 2015</a>	<a href="#">63 FR 28359</a> <a href="#">01/1998</a>
Green Turtle ( <i>Chelonia mydas</i> ) – Central South Pacific DPS		<a href="#">E – 81 FR 20057</a>	<a href="#">88 FR 46572</a> (Proposed)	<a href="#">NMFS, 2015</a>	<a href="#">63 FR 28359</a> <a href="#">01/1998</a>
Green Turtle ( <i>Chelonia mydas</i> ) – Central West Pacific DPS		<a href="#">E – 81 FR 20057</a>	<a href="#">88 FR 46572</a> (Proposed)	<a href="#">NMFS, 2015</a>	<a href="#">63 FR 28359</a> <a href="#">01/1998</a>
Green Turtle ( <i>Chelonia mydas</i> ) – East Pacific DPS		<a href="#">T – 81 FR 20057</a>	<a href="#">88 FR 46572</a> (Proposed)	<a href="#">NMFS, 2015</a>	<a href="#">63 FR 28359</a> <a href="#">01/1998</a>
Green Turtle ( <i>Chelonia mydas</i> ) – North Atlantic DPS		<a href="#">T – 81 FR 20057</a>	<a href="#">63 FR 46693</a> <a href="#">88 FR 46572</a> (Proposed)	<a href="#">NMFS, 2015</a>	<a href="#">10/1991 – U.S. Atlantic</a>
Green Turtle ( <i>Chelonia mydas</i> ) – South Atlantic DPS		<a href="#">T – 81 FR 20057</a>	<a href="#">88 FR 46572</a> (Proposed)	<a href="#">NMFS, 2015</a>	-- --
Hawksbill Turtle ( <i>Eretmochelys imbricata</i> )		<a href="#">E – 35 FR 8491</a>	<a href="#">63 FR 46693</a>	<a href="#">NMFS, 2013</a>	<a href="#">57 FR 38818</a> <a href="#">08/1992</a> – U.S. Caribbean, Atlantic, and Gulf of Mexico <a href="#">63 FR 28359</a> <a href="#">05/1998</a> – U.S. Pacific

Species	Species ESA Listing	Critical Habitat Listing	Recent 5 Year Review	Recovery Plan
Kemp's Ridley Turtle ( <i>Lepidochelys kempii</i> )	<a href="#">E – 35 FR 18319</a>	-- --	<a href="#">NMFS, 2015</a>	<a href="#">03/2010</a> – U.S. Caribbean, Atlantic, and Gulf of Mexico <a href="#">09/2011</a>
Leatherback Turtle ( <i>Dermochelys coriacea</i> )	<a href="#">E – 35 FR 8491</a>	<a href="#">44 FR 17710</a> <a href="#">77 FR 4170</a>	<a href="#">NMFS, 2013</a>	<a href="#">10/1991</a> – U.S. Caribbean, Atlantic, and Gulf of Mexico <a href="#">63 FR 28359</a> <a href="#">05/1998</a> – U.S. Pacific
Loggerhead Turtle ( <i>Caretta caretta</i> ) – North Pacific Ocean DPS	<a href="#">E – 76 FR 58868</a>	-- --	<a href="#">NMFS, 2020</a>	<a href="#">63 FR 28359</a>
Loggerhead Turtle ( <i>Caretta caretta</i> ) – Northwest Atlantic Ocean DPS	<a href="#">T – 76 FR 58868</a>	<a href="#">79 FR 39855</a>	<a href="#">NMFS, 2023</a>	<a href="#">74 FR 2995</a> <a href="#">10/1991</a> – U.S. Caribbean, Atlantic, and Gulf of Mexico <a href="#">05/1998</a> – U.S. Pacific <a href="#">01/2009</a> – Northwest Atlantic
Olive Ridley Turtle ( <i>Lepidochelys olivacea</i> ) – All Other Areas/Not Mexico's Pacific Coast Breeding Colonies	<a href="#">T – 43 FR 32800</a>	-- --	<a href="#">NMFS, 2014</a>	-- --

Species	Species ESA Listing	Critical Habitat Listing	Recent 5 Year Review	Recovery Plan
Olive Ridley Turtle ( <i>Lepidochelys olivacea</i> ) – Mexico's Pacific Coast Breeding Colonies	<a href="#">E – 43 FR 32800</a>	-- --	<a href="#">NMFS, 2014</a>	<a href="#">63 FR 28359</a>
<b>Fishes</b>				
Atlantic Salmon ( <i>Salmo salar</i> ) – Gulf of Maine DPS	<a href="#">E – 65 FR 69459 and 74 FR 29344</a>	<a href="#">74 FR 39903</a>	<a href="#">NMFS, 2020</a>	<a href="#">2/2019</a>
Atlantic Sturgeon ( <i>Acipenser oxyrinchus oxyrinchus</i> ) – Carolina DPS	<a href="#">E – 77 FR 5913</a>	<a href="#">82 FR 39160</a>	<a href="#">NMFS, 2023</a>	<a href="#">02/2012 (Outline)</a>
Atlantic Sturgeon ( <i>Acipenser oxyrinchus oxyrinchus</i> ) – Chesapeake DPS	<a href="#">E – 77 FR 5879</a>	<a href="#">82 FR 39160</a>	<a href="#">NMFS, 2022</a>	<a href="#">02/2012 (Outline)</a>
Atlantic Sturgeon ( <i>Acipenser oxyrinchus oxyrinchus</i> ) – Gulf of Maine DPS	<a href="#">T – 77 FR 5879</a>	<a href="#">82 FR 39160</a>	<a href="#">NMFS, 2022</a>	<a href="#">02/2012 (Outline)</a>
Atlantic Sturgeon ( <i>Acipenser oxyrinchus oxyrinchus</i> ) – New York Bight DPS	<a href="#">E – 77 FR 5879</a>	<a href="#">82 FR 39160</a>	<a href="#">NMFS, 2022</a>	<a href="#">02/2012 (Outline)</a>
Atlantic Sturgeon ( <i>Acipenser oxyrinchus oxyrinchus</i> ) – South Atlantic DPS	<a href="#">E – 77 FR 5913</a>	<a href="#">82 FR 39160</a>	<a href="#">NMFS, 2023</a>	<a href="#">02/2012 (Outline)</a>
Bocaccio ( <i>Sebastes paucispinis</i> ) – Puget Sound/Georgia Basin DPS	<a href="#">E – 75 FR 22276 and 82 FR 7711</a>	<a href="#">79 FR 68042 and 82 FR 7711</a>	<a href="#">NMFS, 2024</a>	<a href="#">10/2017</a>
Chinook Salmon ( <i>Oncorhynchus tshawytscha</i> ) – California Coastal ESU	<a href="#">T – 70 FR 37160</a>	<a href="#">70 FR 52488</a>	<a href="#">NMFS, 2024</a>	<a href="#">81 FR 70666</a>
Chinook Salmon ( <i>Oncorhynchus tshawytscha</i> ) – Central Valley Spring-Run ESU	<a href="#">T – 70 FR 37160</a>	<a href="#">70 FR 52488</a>	<a href="#">NMFS, 2016</a>	<a href="#">79 FR 42504</a>

Species	Species ESA Listing	Critical Habitat Listing	Recent 5 Year Review	Recovery Plan
Chinook Salmon ( <i>Oncorhynchus tshawytscha</i> ) – Lower Columbia River ESU	<a href="#">T – 70 FR 37160</a>	<a href="#">70 FR 52629</a>	<a href="#">NMFS, 2022</a>	<a href="#">78 FR 41911</a>
Chinook Salmon ( <i>Oncorhynchus tshawytscha</i> ) – Puget Sound ESU	<a href="#">T – 70 FR 37160</a>	<a href="#">70 FR 52629</a>	<a href="#">NMFS, 2017</a>	<a href="#">72 FR 2493</a>
Chinook Salmon ( <i>Oncorhynchus tshawytscha</i> ) – Sacramento River Winter-Run ESU	<a href="#">E – 70 FR 37160</a>	<a href="#">58 FR 33212</a>	<a href="#">NMFS, 2024</a>	<a href="#">79 FR 42504</a>
Chinook Salmon ( <i>Oncorhynchus tshawytscha</i> ) – Snake River Fall-Run ESU	<a href="#">T – 70 FR 37160</a>	<a href="#">58 FR 68543</a>	<a href="#">NMFS, 2022</a>	<a href="#">11/2017</a>
Chinook Salmon ( <i>Oncorhynchus tshawytscha</i> ) – Snake River Spring/Summer-Run ESU	<a href="#">T – 70 FR 37160</a>	<a href="#">64 FR 57399</a>	<a href="#">NMFS, 2022</a>	<a href="#">11/2017</a>
Chinook Salmon ( <i>Oncorhynchus tshawytscha</i> ) – Upper Columbia River Spring-Run ESU	<a href="#">E – 70 FR 37160</a>	<a href="#">70 FR 52629</a>	<a href="#">NMFS, 2022</a>	<a href="#">72 FR 57303</a>
Chinook Salmon ( <i>Oncorhynchus tshawytscha</i> ) – Upper Willamette River ESU	<a href="#">T – 70 FR 37160</a>	<a href="#">70 FR 52629</a>	<a href="#">NMFS, 2024</a>	<a href="#">76 FR 52317</a>
Chum Salmon ( <i>Oncorhynchus keta</i> ) – Columbia River ESU	<a href="#">T – 70 FR 37160</a>	<a href="#">70 FR 52629</a>	<a href="#">NMFS, 2022</a>	<a href="#">78 FR 41911</a>
Chum Salmon ( <i>Oncorhynchus keta</i> ) – Hood Canal Summer-Run ESU	<a href="#">T – 70 FR 37160</a>	<a href="#">70 FR 52629</a>	<a href="#">NMFS, 2017</a>	<a href="#">72 FR 29121</a>
Coho Salmon ( <i>Oncorhynchus kisutch</i> ) – Central California Coast ESU	<a href="#">E – 70 FR 37160</a>	<a href="#">64 FR 24049</a>	<a href="#">NMFS, 2023</a>	<a href="#">77 FR 54565</a>



Species	Species ESA Listing	Critical Habitat Listing	Recent 5 Year Review	Recovery Plan
Coho Salmon ( <i>Oncorhynchus kisutch</i> ) – Lower Columbia River ESU	<a href="#">T – 70 FR 37160</a>	<a href="#">81 FR 9251</a>	<a href="#">NMFS, 2022</a>	<a href="#">78 FR 41911</a>
Coho Salmon ( <i>Oncorhynchus kisutch</i> ) – Oregon Coast ESU	<a href="#">T – 73 FR 7816</a>	<a href="#">73 FR 7816</a>	<a href="#">NMFS, 2022</a>	<a href="#">81 FR 90780</a>
Coho Salmon ( <i>Oncorhynchus kisutch</i> ) – Southern Oregon and Northern California Coasts ESU	<a href="#">T – 70 FR 37160</a>	<a href="#">64 FR 24049</a>	<a href="#">NMFS, 2024</a>	<a href="#">79 FR 58750</a>
Eulachon ( <i>Thaleichthys pacificus</i> ) – Southern DPS	<a href="#">T – 75 FR 13012</a>	<a href="#">76 FR 65323</a>	<a href="#">NMFS, 2022</a>	<a href="#">9/2017</a>
Giant Manta Ray ( <i>Manta birostris</i> )	<a href="#">T – 83 FR 2916</a>	-- --	<a href="#">NMFS, 2024</a>	<a href="#">12/2019 (Outline)</a>
Green Sturgeon ( <i>Acipenser medirostris</i> ) – Southern DPS	<a href="#">T – 71 FR 17757</a>	<a href="#">74 FR 52300</a>	<a href="#">NMFS, 2021</a>	<a href="#">8/2018</a>
Gulf Sturgeon ( <i>Acipenser oxyrinchus desotoi</i> )	<a href="#">T – 56 FR 49653</a>	<a href="#">68 FR 13370</a>	<a href="#">NMFS, 2022</a>	<a href="#">09/1995</a>
Nassau Grouper ( <i>Epinephelus striatus</i> )	<a href="#">T – 81 FR 42268</a>	<a href="#">89 FR 126</a>	<a href="#">NMFS, 2013</a>	<a href="#">8/2018 (Outline)</a>
Oceanic Whitetip Shark ( <i>Carcharhinus longimanus</i> )	<a href="#">T – 83 FR 4153</a>	-- --	<a href="#">NMFS, 2025</a>	<a href="#">7/2024</a>
Scalloped Hammerhead Shark ( <i>Sphyrna lewini</i> ) – Central and Southwest Atlantic DPS	<a href="#">T – 79 FR 38213</a>	--- --	<a href="#">NMFS, 2020</a>	--- --
Scalloped Hammerhead Shark ( <i>Sphyrna lewini</i> ) – Eastern Pacific DPS	<a href="#">E – 79 FR 38213</a>	--- --	<a href="#">NMFS, 2020</a>	--- --
Scalloped Hammerhead Shark ( <i>Sphyrna lewini</i> ) – Indo-West Pacific DPS	<a href="#">T – 79 FR 38213</a>	--- --	<a href="#">NMFS, 2020</a>	--- --

Species	Species ESA Listing	Critical Habitat Listing	Recent 5 Year Review	Recovery Plan
Shortnose Sturgeon ( <i>Acipenser brevirostrum</i> )	<a href="#">E – 32 FR 4001</a>	-- --	<a href="#">NMFS, 2010</a>	<a href="#">63 FR 69613 12/1998</a>
Smalltooth Sawfish ( <i>Pristis pectinata</i> ) – U.S. portion of range DPS	<a href="#">E – 68 FR 15674</a>	<a href="#">74 FR 45353</a>	<a href="#">NMFS, 2018</a>	<a href="#">74 FR 3566 01/2009</a>
Sockeye Salmon ( <i>Oncorhynchus nerka</i> ) – Ozette Lake ESU	<a href="#">T – 70 FR 37160</a>	<a href="#">70 FR 52630</a>	<a href="#">NMFS, 2022</a>	<a href="#">74 FR 25706</a>
Sockeye Salmon ( <i>Oncorhynchus nerka</i> ) – Snake River ESU	<a href="#">E – 70 FR 37160</a>	<a href="#">58 FR 68543</a>	<a href="#">NMFS, 2022</a>	<a href="#">80 FR 32365</a>
Steelhead Trout ( <i>Oncorhynchus mykiss</i> ) – California Central Valley DPS	<a href="#">T – 71 FR 834</a>	<a href="#">70 FR 52487</a>	<a href="#">NMFS, 2024</a>	<a href="#">79 FR 42504</a>
Steelhead Trout ( <i>Oncorhynchus mykiss</i> ) – Central California Coast DPS	<a href="#">T – 71 FR 834</a>	<a href="#">70 FR 52487</a>	<a href="#">NMFS, 2024</a>	<a href="#">81 FR 70666</a>
Steelhead Trout ( <i>Oncorhynchus mykiss</i> ) – Lower Columbia River DPS	<a href="#">T – 71 FR 834</a>	<a href="#">70 FR 52629</a>	<a href="#">NMFS, 2022</a>	<a href="#">78 FR 41911</a>
Steelhead Trout ( <i>Oncorhynchus mykiss</i> ) – Middle Columbia River DPS	<a href="#">T – 71 FR 834</a>	<a href="#">70 FR 52629</a>	<a href="#">NMFS, 2022</a>	<a href="#">74 FR 50165</a>
Steelhead Trout ( <i>Oncorhynchus mykiss</i> ) – Northern California DPS	<a href="#">T – 71 FR 834</a>	<a href="#">70 FR 52487</a>	<a href="#">NMFS, 2024</a>	<a href="#">81 FR 70666</a>
Steelhead Trout ( <i>Oncorhynchus mykiss</i> ) – Puget Sound DPS	<a href="#">T – 72 FR 26722</a>	<a href="#">81 FR 9251</a>	<a href="#">NMFS, 2017</a>	<a href="#">84 FR 71379</a>
Steelhead Trout ( <i>Oncorhynchus mykiss</i> ) – Snake River Basin DPS	<a href="#">T – 71 FR 834</a>	<a href="#">70 FR 52629</a>	<a href="#">NMFS, 2022</a>	<a href="#">11/2017</a>
Steelhead Trout ( <i>Oncorhynchus mykiss</i> ) – South-Central California Coast DPS	<a href="#">T – 71 FR 834</a>	<a href="#">70 FR 52487</a>	<a href="#">NMFS, 2023</a>	<a href="#">78 FR 77430</a>

Species	Species ESA Listing	Critical Habitat Listing	Recent 5 Year Review	Recovery Plan
Steelhead Trout ( <i>Oncorhynchus mykiss</i> ) – Southern California DPS	<a href="#">E – 71 FR 834</a>	<a href="#">70 FR 52487</a>	<a href="#">NMFS, 2023</a>	<a href="#">77 FR 1669</a>
Steelhead Trout ( <i>Oncorhynchus mykiss</i> ) – Upper Columbia River DPS	<a href="#">T – 71 FR 834</a>	<a href="#">70 FR 52629</a>	<a href="#">NMFS, 2022</a>	<a href="#">72 FR 57303</a>
Steelhead Trout ( <i>Oncorhynchus mykiss</i> ) – Upper Willamette River DPS	<a href="#">T – 71 FR 834</a>	<a href="#">70 FR 52629</a>	<a href="#">NMFS, 2024</a>	<a href="#">76 FR 52317</a>
Yelloweye Rockfish ( <i>Sebastes ruberimus</i> ) – Puget Sound/Georgia Basin DPS	<a href="#">T – 75 FR 22276 and 82 FR 7711</a>	<a href="#">79 FR 68041</a>	<a href="#">NMFS, 2024</a>	<a href="#">10/2017</a>
<b>Marine Invertebrates</b>				
<i>Acropora globiceps</i> Coral	<a href="#">T – 79 FR 53851</a>	<a href="#">90 FR 31800</a>	<a href="#">NMFS, 2024</a>	-- --
<i>Acropora retusa</i> Coral	<a href="#">T – 79 FR 53851</a>	<a href="#">90 FR 31800</a>	<a href="#">NMFS, 2024</a>	-- --
<i>Acropora speciosa</i> Coral	<a href="#">T – 79 FR 53851</a>	<a href="#">90 FR 31800</a>	<a href="#">NMFS, 2024</a>	-- --
Black Abalone ( <i>Haliotis cracherodii</i> )	<a href="#">E – 74 FR 1937</a>	<a href="#">76 FR 66805</a>	<a href="#">NMFS, 2018</a>	<a href="#">85 FR 5396</a>
Boulder Star Coral ( <i>Orbicella franksi</i> )	<a href="#">T – 79 FR 53851</a>	<a href="#">88 FR 54026</a>	<a href="#">NMFS, 2022</a>	-- --
Chambered Nautilus ( <i>Nautilus pompilius</i> )	<a href="#">T – 83 FR 48976</a>	-- --	<a href="#">NMFS, 2022</a>	-- --
Elkhorn Coral ( <i>Acropora palmata</i> )	<a href="#">T – 79 FR 53851</a>	<a href="#">73 FR 72210</a>	<a href="#">NMFS, 2022</a>	<a href="#">80 FR 12146</a>
<i>Fimbriaphyllia paradivisa</i> Coral	<a href="#">T – 79 FR 53851</a>	<a href="#">90 FR 31800</a>	<a href="#">NMFS, 2024</a>	-- --
<i>Isopora crateriformis</i> Coral	<a href="#">T – 79 FR 53851</a>	<a href="#">90 FR 31800</a>	<a href="#">NMFS, 2024</a>	-- --
Lobed Star Coral ( <i>Orbicella annularis</i> )	<a href="#">T – 79 FR 53851</a>	<a href="#">88 FR 54026</a>	<a href="#">NMFS, 2022</a>	-- --
Mountainous Star Coral ( <i>Orbicella faveolata</i> )	<a href="#">T – 79 FR 53851</a>	<a href="#">88 FR 54026</a>	<a href="#">NMFS, 2022</a>	-- --
Pillar Coral ( <i>Dendrogyra cylindrus</i> )	<a href="#">E – 89 FR 101993</a>	<a href="#">88 FR 54026</a>	<a href="#">NMFS, 2022</a>	-- --

Species	Species ESA Listing	Critical Habitat Listing	Recent 5 Year Review	Recovery Plan
Rough Cactus Coral ( <i>Mycetophyllia ferox</i> )	<a href="#">T – 79 FR 53851</a>	<a href="#">88 FR 54026</a>	<a href="#">NMFS, 2022</a>	-- --
Queen conch ( <i>Aliger gigas</i> )	<a href="#">T – 89 FR 11208</a>	-- --	<a href="#">NMFS, 2022</a>	-- --
Staghorn Coral ( <i>Acropora cervicornis</i> )	<a href="#">T – 79 FR 53851</a>	<a href="#">73 FR 72210</a>	<a href="#">NMFS, 2022</a>	<a href="#">80 FR 12146</a>
Sunflower Sea Star ( <i>Pycnopodia helanthoides</i> )	<a href="#">T – 88 FR 16212 (Proposed)</a>	-- --	<a href="#">NMFS, 2023</a>	-- --
White Abalone ( <i>Haliotis sorenseni</i> )	<a href="#">E – 66 FR 29046</a>	<a href="#">66 FR 29046 (Not Prudent)</a>	<a href="#">NMFS, 2018</a>	<a href="#">73 FR 62257</a>



Homeland  
Security

July 7, 2025

Craig Aubrey  
Chief, Division of Environmental Review  
U.S. Fish and Wildlife Service Headquarters  
Ecological Services Program  
5275 Leesburg Pike  
Falls Church, VA 22041-3803

**Subject: Informal Consultation Request, Programmatic Biological Assessment for the  
Nationwide Operation of Counter-Unmanned Aircraft Systems  
DHS Office of the Chief Readiness Support Officer**

Dear Ms. Bissell:

The Department of Homeland Security (DHS) proposes to perform research, development, testing, and evaluation (RDT&E) of counter unmanned aircraft systems (C-UAS), and conduct operational and training activities with C-UAS to support existing and emerging DHS mission requirements nationwide (herein referred to as the Proposed Action). This is a request for review and concurrence from your office regarding our effect determinations for listed species and critical habitat designated by the United States Fish and Wildlife Service pursuant to Section 7 of the Endangered Species Act (ESA).

Our Programmatic Biological Assessment is provided in **Attachment 1**, which includes a description of the Proposed Action; description of the Action Area; description of listed species and critical habitat that may be affected by the action; and an analysis of potential effects on listed species and critical habitat. Based on our analysis of project impacts, we have determined that the Proposed Action *may affect, but is not likely to adversely affect*, critical habitat and listed plants and lichens; ground-based mammals, invertebrates, reptiles, and amphibians; bats, birds, and flying insects; and marine mammals, sea turtles, and other marine and freshwater aquatic species.

DHS respectfully requests your review and concurrence by **August 29, 2025**, so that we may complete our environmental review in a timely manner.

Additionally, DHS has prepared a Draft Programmatic Environmental Assessment (PEA) in accordance with the National Environmental Policy Act (NEPA) to evaluate the potential environmental impacts from the Proposed Action. DHS welcomes your input regarding any information or potential environmental concerns associated with the Proposed Action, including any additional information pertaining to federally protected species that may be present in the

Action Area. A copy of the Draft PEA is available on DHS's website at:  
<https://www.dhs.gov/ocrso/eed/epb/nepa/public-comment>.

Please direct your response or requests for additional information to Jennifer Hass at DHS via email at [jennifer.hass@hq.dhs.gov](mailto:jennifer.hass@hq.dhs.gov), or by mail to Office of the Chief Readiness Support Officer, MS 0440 Department of Homeland Security, 2707 Martin Luther King Jr. Ave. SE, Washington, DC 20528-0440.

Sincerely,

**JENNIFER D  
HASS** Digitally signed by  
JENNIFER D HASS  
Date: 2025.07.07  
14:48:09 -04'00'

Jennifer Hass  
Director, Environmental Planning Branch  
Office of the Chief Readiness Support Officer  
Department of Homeland Security

Attachments:

1. Biological Assessment

cc: Kate Bissell, Lauren Bailey, and Paul DiSalvo



# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

5275 Leesburg Pike  
MS-ES  
Falls Church, Virginia 22041



In Reply Refer To:  
FWS/AES/DER/BNC/083219  
2025-0141099-S7

Jennifer D. Hass  
Director, Environmental Planning & Historic Preservation Program  
Office of the Chief Readiness Support Officer  
Department of Homeland Security  
Washington, D.C, 20528

Dear Ms. Hass,

This letter is in response to the Department of Homeland Security's (DHS) July 8, 2025, request for concurrence on determinations of "*may affect, not likely to adversely affect*" (NLAA) federally listed species and designated critical habitats related to DHS's proposal to perform research, development, testing, and evaluation (RDT&E) of counter unmanned aircraft systems (C-UAS), and conduct operational and training activities with C-UAS to support existing and emerging DHS mission requirements nationwide (i.e., the Proposed Action). In their accompanying biological evaluation, "Final Programmatic Biological Assessment for the Nationwide Operation of Counter Unmanned Aircraft Systems (C-UAS)" (BA), DHS described their proposed C-UAS activities to include deploying C-UAS in operational settings to detect, identify, monitor, track, and mitigate (DIMIT-M) (passively and actively) threats posed by unmanned aircraft systems (UAS), which are composed of unmanned aerial vehicles (UAV) and ground-based control stations. Additional activities include ongoing research, development, testing and evaluation (RDT&E) on a nationwide scale, as well as operation of C-UAS to conduct training and operational activities, such as law enforcement and security. Activities may occur in any U.S. State or Territory, including marine waters within the contiguous zone (24 nautical miles from the coastline), and the airspace in which UAV are flown. The Service provides this response pursuant to section 7(a)(2) of the Endangered Species Act of 1973 (ESA), as amended.

DHS has determined that the Proposed Action "*may affect, but is not likely to adversely affect*" 1,593 threatened and endangered species and 817 designated critical habitats. These species include 43 amphibians, 94 birds, 94 insects, 79 mammals, 940 plants (conifers and cycads, ferns and allies, flowering plants, and lichens), and 37 reptiles. A complete list of these species and critical habitats can be found in Enclosure B.

## **Description of the Proposed Action and Action Area**

The Proposed Action includes DHS' implementation of RDT&E activities related to operation of C-UAS nationwide. In addition, DHS proposes to conduct operational and training activities of C-UAS to support existing and emerging DHS mission requirements nationwide.

C-UAS is a system or device capable of tracking, disabling, disrupting, or seizing control of an unmanned aircraft system (UAS). UAS have become a security concern in recent years due to the ease with which they can aid in intelligence gathering and be used for malicious activities. DHS has statutory authority under the Preventing Emerging Threats Act of 2018 to counter credible threats from UAS to the safety or security of certain facilities or assets, which are designated based on their importance to the security missions of DHS and its Components.

The purpose of the Proposed Action is to support RDT&E of C-UAS technologies and to deploy C-UAS in operational settings to detect, identify, monitor, track, and mitigate (DIMIT-M) (passively and actively) threats posed by UAS, including across the radio frequency spectrum. The Proposed Action is needed to enhance DHS's ability to use C-UAS technologies, monitor emerging threats, protect DHS's missions, and defend the Nation from UAS threats and malicious activity effectively and reliably. The use of C-UAS would support existing and emerging mission requirements of the various Components within DHS and facilitate their services and strategies essential to the Nation's security, safety, and emergency response.

The frequency and location of C-UAS operations are difficult to predict, as they depend on the nature and timing of evolving threats. Operational activities may occur anywhere a covered facility or asset experiences a UAS threat. In many cases, C-UAS systems are deployed in response to emergent or short-term events using handheld mobile solutions. However, operations may be planned in advance for high-profile or high-priority events where the likelihood of a threat is elevated. In such cases, equipment may remain in place for longer durations. RDT&E activities, on the other hand, are generally conducted at designated sites and are expected to occur repeatedly in those locations. DHS conducts C-UAS activities nationwide, with some recurring in certain locations based on testing and demonstration needs.

When an unknown UAS is identified, DHS implements a C-UAS processing chain to evaluate and respond to potential threats posed by the UAS. The processing chain includes five stages: Detect, Identify, Monitor, Track, and Mitigate (DIMIT-M). DHS may use C-UAS to counter credible threats posed by UAS to covered facilities and assets and would follow this framework for identifying and addressing such threats. Only authorized personnel may operate C-UAS and undertake C-UAS actions in accordance with the DIMIT-M framework.

The first four steps in the C-UAS processing chain (i.e., Detect, Identify, Track, and Monitor) are performed by receiving and analyzing data from C-UAS sensors. C-UAS sensors, whether stationary or mobile, generally have a detection range of up to 1.2 miles, and rely on one of four types of sensor capabilities to detect UAS:

1. Radar



- a. Active sensors that transmit a radio signal of known frequency and power in a focused direction and detect the reflected signal that is bounced back from the target
2. Passive radiofrequency (RF) sensors
  - a. Antennas to receive, and computers to analyze RF signals associated with communications between UAV and ground-based control station
3. Electro-optical/infrared (EO/IR) sensors
  - a. Digital video cameras that collect information in the visible and infrared light spectrum
4. Acoustic sensors
  - a. High sensitivity microphone arrays with audio analysis applications to detect, identify, monitor and track sounds produced by UAVs.

The last step in the DHS processing chain is mitigation, which is taken, as warranted, by removing or reducing the threat posed by the UAS. Mitigation can employ one of two broad types of mitigation techniques, electronic or kinetic. Electronic mitigation technologies are predominantly and preferably used by DHS and include those that emit RF signals to jam, interfere with, or masquerade as legitimate UAS signals, causing the UAV to land or return to its launch location in a controlled manner. In very rare instances, kinetic mitigation techniques are employed and involve physical action toward the UAV by removing or reducing the risk posed. Nets, deployed either with net guns or by other UAVs, may be used to entangle the propellers and bring down or capture the UAV. Alternatively, laser weapons and microwaves may be directed at the UAV to physically damage or destroy the UAV or its electronic circuits. Any debris from C-UAS mitigation, such as downed UAVs or nets, would be recovered by DHS as part of the incident investigation. Any UAV operated by DHS for these purposes would be small- unmanned aircraft systems (sUAS) i.e., UAVs that weigh less than 55 pounds on takeoff.

The proposed action is programmatic and ongoing. Thus, DHS has proposed an adaptive management approach for ESA resources. This approach includes monitoring, periodic programmatic reviews and consistency reviews, the details of which can be found in the BA. The final component of the adaptive management approach is the required implementation of best management practices (BMPs). DHS has developed a BMP Implementation Checklist to assist DHS and Component operators with ensuring that they comply with the BMPs during C-UAS activities. The checklist is to be completed prior to or during implementation of C-UAS operations unless precluded by the nature of the individual action, such as a national security event or other emergency situation. In such cases, emergency consultation procedures (ESA section 402.05) will be followed by DHS. Of the 33 BMPs in the checklist, those listed under the heading, "Biological Resources," BMP numbers 12-28, are most relevant to listed species and designated critical habitat under FWS' jurisdiction (see Enclosure A and discussion below).

#### *Best Management Practices (BMPs)*

DHS developed BMPs (Enclosure A), revised in coordination with the Service, to avoid or minimize adverse impacts to federally listed species and designated critical habitats. DHS and its Components will adopt the required BMPs as standard procedure for their C-UAS activities, unless precluded due to emergency or national security response needs. DHS and Components

will use the Service's Information for Planning and Consultation ([IPaC](#)) website to determine which listed species or designated critical habitats occur in the project area. As standard procedure, the checklist will be completed prior to initiating C-UAS flights, saved on file for use in reporting to the Services, and as part of the administrative record.

In general, the BMP checklist includes measures that direct DHS and its Components to use the Service's IPaC website to determine listed species, migratory birds, and designated critical habitats that occur within the project area, contact federal land managers to identify wildlife concerns or apply avoidance or minimization measures around sensitive areas and species, and avoid certain sensitive areas (listed species habitat, critical habitat areas) for ground-based activities, use of buffers or avoidance times for species or species' habitats (e.g., bird colonies, sea turtle nesting beaches), and conduct preflight checks for wildlife in the area of operations. For a complete list of BMPs, see Enclosure A.

### *Action Area*

The action area is all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR §402.02). As described above, the frequency and location of C-UAS operations are difficult to predict, as they depend on the nature and timing of evolving threats. For this reason, the action area encompasses the entire U.S., including the territories and marine waters within the contiguous zone (24 nautical miles from the coastline).

### **Consultation History**

- On March 4, 2025, DHS began technical assistance with FWS;
- On May 5, 2025, DHS provided a draft BA and draft BMP checklist for review;
- On May 19, 2025 FWS provided initial written comments and/or proposed edits to the draft BA and BMP checklist;
- On June 6<sup>th</sup> and 26<sup>th</sup>, FWS met with DHS to discuss written comments and potential changes to the action, edits to the BA and BMP checklist, as well as procedures and timelines for ESA consultation. NMFS also attended the meetings on the 6<sup>th</sup> and 26<sup>th</sup>; and
- On July 8, DHS initiated informal consultation with FWS via the transmittal of an initiation letter and final BA. In the letter, DHS requested FWS' review and concurrence by August 29, 2025.

### **Analysis of Effects**

All actions that may affect ESA-listed species or designated critical habitat must satisfy the requirements of section 7(a)(2) of the ESA. There is an exception to the formal consultation process when an action and all of its resulting stressors may affect, but are not likely to adversely affect ESA-listed species or designated critical habitat in the action area (50 CFR §402.14(b)). An action warrants a finding of not likely to adversely affect ESA-listed species or designated

critical habitat when all its effects are expected to be discountable, insignificant, or wholly beneficial. Wholly beneficial effects are usually discussed when the project has a clear link to the ESA-listed species or its specific habitat needs and consultation is required because the species may be affected by the action, albeit positively. Discountable effects are those that could occur but, because of the intensity, magnitude, frequency, duration, or timing of the stressor, exposure of an ESA-listed species or physical and biological features of critical habitat to the stressor is extremely unlikely to occur. Insignificant effects relate to the response of exposed individuals or critical habitat where the response, in terms of an individual's growth, survival, or reproduction, or an impact to the conservation value of a physical or biological feature of critical habitat, will be immeasurable or undetectable. For stressors that meet these criteria for wholly beneficial, discountable, or insignificant, the appropriate conclusion is not likely to adversely affect.

While DHS determined that some components (activities) of their action would result in "No Effect" to certain listed species and designated critical habitat, other components of their action were determined to be "Not Likely to Adversely Affect" (NLAA) those same species and critical habitat. As a result, overall, DHS determined the action is NLAA for all listed species and designated critical habitat.

### ***Components of the Action (Activities) that will have No Effect***

DHS determined several of the activities associated with the action will have no effect on certain taxa of ESA-listed species or designated critical habitat under FWS' jurisdiction:

1. The use of non-radar sensor technologies (passive radiofrequency (RF) sensors, electro-optical/infrared (EO/IR) sensors, and acoustic sensors) only receive and digitally analyze signals from the environment. They do not emit energy, noise, or disturbance that could affect species or habitat, and therefore have no effect on critical habitat and listed species.
2. Radar sensor and active mitigation technologies: the electromagnetic energy emitted by radar sensors and active mitigation technologies (to disrupt UAV determined to be a threat) are directed into the airspace where UAVs are operating, away from most terrestrial and aquatic habitats, including critical habitat, and would not result in interactions with or effects to species or habitats. Exceptions are listed species that have the potential to occupy the airspace, including bats, birds, and flying insects.
3. C-UAS operations and mid-air collision risks: UAV mitigation is rare, occurs in air space, and nets are deployed in a controlled manner. Additionally, UAVs used in mitigation are typically small, constructed from lightweight materials, and fragment minimally upon impact, so the potential for debris is negligible. Therefore, there is no effect to critical habitat and listed species, with the exception of bats, birds and flying insects.
4. Directed energy (e.g., lasers or microwaves) is only used in an RDT&E setting, which involves more control and planning than an operational setting. Directed energy systems for C-UAS are focused on airspace where UAVs are operating and would not linger on ground-level areas where designated critical habitat or federally listed species would occur. Exceptions to this include bats, birds and flying insects.

### ***Components of the Action (Activities) that May Affect, but are Not Likely to Adversely Affect***

The following activities may affect all ESA-listed species as well as designated critical habitats under FWS' jurisdiction (see Enclosure B). However, as described below, the BMPs (and other components of the proposed action) will minimize the likelihood or magnitude of these effects such that they will be either insignificant or discountable and thus are NLAA for ESA-listed species and critical habitats.

#### *Surface-level Disturbance and Site Access.*

The transport and staging of C-UAS may result in disturbances to ground-based species and habitats when those activities occur within occupied habitat or designated critical habitat, or in close proximity to various ecosystems (e.g., forests, prairies, shrub-scrub, desert, riverine, estuarine, coastal environments, etc.) where species or critical habitat occur. For example, the installation of equipment, such as tripods or guyed masts, require stakes driven a few inches into the ground, or may require the use of screws or anchor rods that are cemented into the ground. In addition, vehicles may be used to transport C-UAS equipment into operational areas and foot traffic for equipment operation may occur in close proximity to operational areas. However, the potential for adverse effects resulting from these activities is extremely unlikely. This is due to several factors. First, C-UAS ground-based equipment occupies a very small footprint. Second, BMP 14 states DHS will locate all C-UAS RDT&E activities at DHS facilities on roads, trails, paved surfaces, or otherwise previously disturbed or developed areas. This measure ensures surface-level ground disturbing activities and site access from vehicles and foot traffic will be avoided or minimized in RDT&E situations. During regular C-UAS operations, BMP 15 applies. This BMP ensures ground-based equipment is located on roads, trails, paved surfaces, or otherwise previously disturbed or developed areas, thus greatly reducing the chance of disturbing species in occupied habitat or designated critical habitat. In addition, BMPs 19 and 20 require personnel to conduct a visual check for species and, if observed, relocate the C-UAS operations at least 200 feet away from the species. Finally, BMPs 21, 22, 26, and 27 require personnel to avoid operating C-UAS in close proximity to listed species, to include ensuring any UAS flown by DHS during operations maintain a minimum distance from the ground and vegetation within the ranges of certain listed taxa groups, and avoidance of beaches that support nesting sea turtles during their breeding season. Together, these operating procedures and BMPs result in the insignificant exposure of listed species and critical habitat to stressors caused by limited ground disturbance and site access activities.

#### *Radar and Active RF Mitigation*

Known effects of active radar utilized by DHS include tissue heating, which can lead to burns or heat-related stress. However, those effects are only possible from sustained exposures, which would not occur during typical C-UAS operations. Flying species such as bats, birds and flying insects would not remain stationary in front of an active radar for more than a moment, which is much shorter than the exposure time necessary for biological effects to occur. Additionally, BMP 19, which would ensure a 200 ft separation between the birds and the C-UAS, and BMP 20, which requires operators to avoid and minimize impacts to airborne wildlife, would further reduce any potential risk to flying species. The short duration of exposure experienced by flying species combined with the implementation of the BMPs will result in insignificant effects from this activity.

### *C-UAS Operations and Collision Risks.*

In both terrestrial and aquatic environments, collisions involving UAVs or nets (used rarely for kinetic mitigation purposes) may result in impacts to species and habitats. Nets, deployed either with net guns or by DHS Component UAVs, may be used to entangle the propellers and bring down or capture the UAV. Alternatively, in training situations, laser weapons and microwaves may be directed at the UAV to physically damage or destroy the UAV or its electronic circuits. The resulting presence of debris or nets may result in entanglement or may be ingested causing injury in both terrestrial and aquatic environments. In addition, the operation of UAVs may disturb species due to their presence and noise levels.

However, the potential for adverse effects resulting from collision, entanglement in debris or nets, or from operational noise is extremely unlikely to occur. This is due to several factors. First, noise generated by UAVs used in C-UAS operations is expected to be minimal and short in duration, with UAVs remaining in motion (not hovering) at a distance greater than 200 feet from any listed species in accordance with BMP 20. Given this separation, we do not expect noise to result in behavioral disturbance or injury to terrestrial species. We do not anticipate noise from UAV operation to be appreciably perceptible to listed aquatic species.

The vast majority of C-UAS actions do not require kinetic mitigation, as most target UAVs are intercepted and landed in a controlled manner using electronic mitigation or by locating the operator and directing them to land the UAV. When kinetic mitigation is required because other mitigation options are inadequate to address a threat, it very rarely produces debris. In practice, debris generation is an unfortunate accident, as it is DHS's goal to land or recover UAVs intact, which allows them to maintain craft integrity for further security investigation. DHS also avoids bringing UAVs down in uncontrolled areas where retrieval would be more difficult for the same reason. The required BMPs further reduce the likelihood of adverse effects. As described above, the BMPs require personnel to be aware of species and habitat that may be present and maintain minimum distances away from certain areas. BMP 16 prohibits operating a C-UAS 200 feet from a known breeding or roosting colony of listed and/or migratory birds, and BMP 17 requires operators maintain a 330-foot buffer around any known bald eagle nests during breeding season. BMPs 18-20 require further timing restrictions, visual checks and operation delays to adhere to the protection of listed and migratory bird species in the area of operation. BMPs 21-25 employ avoidance techniques, larger buffer areas, minimum altitudes, daylight restrictions, and incident reporting to reduce risks and impacts to listed species, including bats, birds and flying insects. BMP 26 prohibits operating C-UAS from/on beaches that support nesting sea turtles during their breeding season. BMP 27 requires personnel to avoid flying UAVs within 500 feet of sea turtles, and marine mammals at the water's surface. When paired with the FAA-mandated maximum altitude of 400 feet for UAVs this creates a de facto restriction against any flights above marine species. Finally, BMP 28 requires personnel to recover any debris resulting from C-UAS mitigation operations (to the maximum extent feasible), and to make efforts to minimize disturbance if recovery activities must take place in riverine, estuarine, or coastal nearshore critical habitats. UAVs may produce noise within the generalized hearing range of most federally listed marine mammals and sea turtles. However, noise produced is below all behavioral and injury thresholds for those species.

In addition to the mitigating factors above, the expected frequency of C-UAS activities, the short duration of these activities, and the relatively uncommon occurrence of ESA-listed species further reduces the likelihood of potential effects.

### *Directed Energy Exposure*

DHS would use directed energy only in an RDT&E setting, which involves more control and planning than the use of C-UAS in an operational setting. Directed energy systems are focused on airspace where UAVs are operating, however, the occurrence of a listed species in flight, such as a bat during a test event is expected to be extremely rare since tests are conducted primarily during daylight hours when bats are inactive. Further, BMP 20 requires operators to delay activities if a listed species is observed in the vicinity of operations. Given that RDT&E are under controlled settings, directed energy beams have a narrow beam width, activities take place during the day, and there are BMPs to maintain watch for species flying into the vicinity, the effects of this activity to bats are discountable. Similar to bats, the chance of birds being exposed to directed energy is very unlikely, as the beams are directed toward test targets and not dispersed widely, limiting the potential for incidental exposure. BMP 20 would also apply to birds to require visual checks prior to and during directed energy operations, with operations relocated to an area at least 200 feet away from the listed species. The nature of the activity and the BMPs employed to reduce risk result in discountable effects to birds. Similarly, directed energy activities are not expected to affect flying insects, as the controlled nature of the setting is such that flying insects are not likely to be in the area. The effects of direct exposure to flying insects are thereby discountable.

### **Conclusion**

Based on this analysis, FWS concurs with DHS that the proposed action, considered in its entirety, is not likely to adversely affect any ESA-listed species or designated critical habitat listed in Enclosure B.

### **Reinitiation of Consultation**

Reinitiation of consultation is required and shall be requested by the federal agency where discretionary federal involvement or control over the action has been retained or is authorized by law and (1) new information reveals effects of the action that may affect an ESA-listed species or designated critical habitat in a manner or to an extent not previously considered; (2) the identified action is subsequently modified in a manner that causes an effect to the ESA-listed species or designated critical habitat that was not considered in this concurrence letter; or if (3) a new species is listed or critical habitat designated that may be affected by the identified action (50 CFR §402.16).

### **Conservation Recommendations**

Conservation recommendations are “suggestions ... regarding discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development or information” (50 CFR §402.02). It is recommended that DHS take into consideration the locations of designated critical habitat for species under FWS’ jurisdiction when making decisions regarding the locations of future RDT&E sites.

Please direct questions regarding this letter to Kate Bissell, Acting Chief, Branch of National Consultations, at (703) 358-2409 or by email at [kathryn\\_bissell@fws.gov](mailto:kathryn_bissell@fws.gov).

Sincerely,

**KATHRYN  
BISSELL**

Digitally signed by  
KATHRYN BISSELL  
Date: 2025.08.29  
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Kathryn Bissell, Acting Chief  
Branch of National Consultations  
Ecological Services Program

Enclosures

Enclosure A: DHS C-UAS final BMPs\_08292025

Enclosure B: DHS C-UAS FWS final species list\_08292025

DEPARTMENT OF HOMELAND SECURITY PROGRAMMATIC ENVIRONMENTAL  
ASSESSMENT FOR THE NATIONWIDE OPERATION OF COUNTER UNMANNED  
AIRCRAFT SYSTEMS (C-UAS)

Best Management Practices (BMP) Implementation Checklist

The following checklist is to be utilized for confirming the proposed action is covered under the scope and review of the 2025 Programmatic Environmental Assessment (PEA) and that project-specific analysis is not necessary. With these best management practices in place, DHS continues to ensure that no significant adverse impacts to the environment or the public would occur as a result of counter unmanned aircraft system (C-UAS) activities. Specific measures for environmental resource topics analyzed in the 2025 PEA are incorporated into this checklist, which is to be completed prior to C-UAS use, to the maximum extent practicable. This checklist also incorporates by reference the BMP Implementation Checklist that was prepared as part of the *Final Programmatic Environmental Assessment for the Nationwide Operation of Small Unmanned Aircraft Systems (sUAS)*, published in December 2022. For situations where DHS plans to launch sUAS to conduct research, development, testing, and evaluation (RDT&E) of C-UAS systems, DHS would also adhere to the BMPs included in the 2022 PEA. If Components have listed species or critical habitat<sup>1</sup> in their project area and cannot implement the Biological Resources BMPs below, the Component should contact the local USFWS Ecological Services Field Office and/or the NMFS Office of Protected Resources ([nmfs.hq.esa.consultations@noaa.gov](mailto:nmfs.hq.esa.consultations@noaa.gov)) with subject line [PLACEHOLDER] to determine if site-specific Endangered Species Act (ESA) consultation is necessary.

BMPs are required and should be followed; however, C-UAS are predominately utilized to respond to potential threats to support national security. Under no circumstances should emergency response actions be delayed in order to implement the BMPs. However, as indicated in the 2022 sUAS PEA, BMPs would be followed during an emergency or national security scenario as the situation allows. If the BMPs cannot be implemented during an emergency response, operators would prioritize emergency response actions and follow established procedures for emergency situations including compliance under ESA. Section 7 regulations recognize that an emergency (imminent loss of human life or property) may require expedited consultation. As soon as practicable after the emergency is under control, if listed species or critical habitat were affected by the emergency response and it was not possible to implement the BMPs, the USFWS and/or NMFS would be contacted for discussion of potential after-the-fact consultation.

This checklist is to be completed prior to C-UAS use, unless the nature of the particular emergency precludes it. For activities that regularly occur within a specified geographic location (e.g. RDT&E), a single checklist may suffice. Checklists should be saved as part of the National Environmental Policy Act, National Historic Preservation Act, and Endangered Species Act administrative record for the proposed action.

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<sup>1</sup> As determined by the U.S. Fish and Wildlife Service (USFWS) species list obtained through the Information for Planning and Consultation (IPaC) tool and by referencing the National Marine Fisheries Service (NMFS) ESA Critical Habitat Mapper.



<b>Date(s) of Use</b>	
<b>Location of Event</b>	
<b>Point of Contact (POC) Completing this Checklist (name, phone number and email, organization)</b>	
<b>C-UAS Project Manager (name, phone number and email, organization)</b>	
<b>Provide a short summary of the Proposed Action.</b>	

<b>Human Health and Safety</b>	<b>A) Response to Question (Click the appropriate box)</b>	<b>B) Are there any extenuating circumstances? If so, explain here.</b>
1. Ensure that active radar is not operated at power densities for a length of time beyond the established occupational and public time limits (less than 30 minutes and less than 6 minutes, respectively) that could result in radiofrequency (RF) exposures in exceedance of the maximum permissible exposure limits established by the FCC under 47 CFR 1.1307(b).	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
2. Use of active radar will comply with the following standards: a. Institute of Electrical and Electronics Engineers Standards Associates C95.7-214, Recommended Practice for Radio Frequency Safety Programs, 3 KiloHertz to 300 Gigahertz. b. International Commission of Non-Ionizing Radiation Protection RF Electromagnetic Field Guidelines 2020.	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
3. Prior to undertaking any operational activities using active radar in a public setting, cordon off sites and post signage to limit public proximity to the active radar.	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	

<p>4. Radiation hazard from the radar and RF systems will not exceed the following permissible radar exposure limit guidelines as defined in Army Regulation 385-10:</p> <ul style="list-style-type: none"> <li>a. Hazards of Electromagnetic Radiation to Personnel.</li> <li>b. Hazards of Electromagnetic Radiation to Ordnance.</li> <li>c. Hazards of Electromagnetic Radiation to Fuel.</li> </ul> <p><b>(See note [a] below).</b></p>	<p><input type="checkbox"/> <b>Yes</b> – Go to next practice</p> <p><input type="checkbox"/> <b>No</b> – Explain in B)</p>	
<p>5. No active radar will be powered and emitting while personnel are standing nearby. Radar signal strength varies depending on equipment make and model. Test and operational personnel must be familiar with the radar specifications and advised of minimum safe distance. If radar specifications are not available, a safe distance of 1 meter from the radar will be enforced.</p>	<p><input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice</p> <p><input type="checkbox"/> <b>No</b> – Explain in B)</p>	
<p>6. All test participants who remain outdoors during testing will wear laser-rated protective eyewear and long-sleeved clothing, pants, close-toed shoes, and other coverings that protect exposed skin as will be positioned to the rear of any laser equipment prior to activation.</p>	<p><input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice</p> <p><input type="checkbox"/> <b>No</b> – Explain in B)</p>	
<b>Visual Resources and Aesthetics</b>	<b>Response to Question (Click the appropriate box)</b>	<b>B) Are there any extenuating circumstances? If so, explain here.</b>
<p>7. sUAS flights conducted for RDT&amp;E purposes will not exceed 400 feet in altitude, unless prior approval is given by the FAA.</p>	<p><input type="checkbox"/> <b>Yes</b> – Go to next practice</p> <p><input type="checkbox"/> <b>No</b> – Explain in B)</p>	
<p>8. Adhere to applicable regulations regarding visual quality near historic sites or other protected land uses.</p>	<p><input type="checkbox"/> <b>Yes</b> – Go to next practice</p> <p><input type="checkbox"/> <b>No</b> – Explain in B)</p>	

<b>Airspace</b>	<b>A) Response to Question (Click the appropriate box)</b>	<b>B) Are there any extenuating circumstances? If so, explain here.</b>
9. Request Temporary Flight Restrictions (TFRs) and Notices to Airmen (NOTAMs), as applicable.	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
10. File FAA Certificates of Authorization (COAs) and Notification Capability (LAANC) notifications for all RDT&E activity and, as applicable, to all operational missions.	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
11. File FAA Form 7140-1 at least 30 days prior to conducting any outdoor RDT&E activity using directed energy (i.e., lasers).	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
<b>Biological Resources</b>	<b>A) Response to Question (Click the appropriate box)</b>	<b>B) Are there any extenuating circumstances? If so, explain here.</b>
12. Generate a list of species and critical habitat within the project area no earlier than 90 days before the planned operation. <b>(See note [b]).</b>	<input checked="" type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
13. Coordinate with appropriate land managers to identify potential wildlife concern and avoidance or minimization measures if C-UAS activities will occur on or over a unit of the National Wildlife Refuge System (NWRS), National Fish Hatchery, National Park Service lands or other Federal lands. <b>(See note [c]).</b>	<input checked="" type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	

<p>14. Locate C-UAS RDT&amp;E activities at DHS facilities on roads, trails, paved surfaces, or otherwise previously disturbed or developed areas where no direct impacts on critical habitat, listed species, or migratory birds are anticipated. For species under NMFS's jurisdiction this includes avoiding activities that may result in debris or recovery efforts occurring in riparian, estuarine, or coastal nearshore locations within species designated critical habitats (as determined in #12).</p>	<p><input checked="" type="checkbox"/> <b>Yes or N/A</b> – Go to next practice  <input type="checkbox"/> <b>No</b> – Explain in B)</p>	
<p>15. Locate C-UAS ground-based equipment on roads, trails, paved surfaces, and/or otherwise previously disturbed or developed areas if they are within terrestrial critical habitat or the range of a listed plant or lichen species (as indicated by a plant or lichen species or critical habitat appearing on your IPaC species list). <b>(See note [d]).</b></p>	<p><input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice  <input type="checkbox"/> <b>No</b> – Explain in B)</p>	
<p>16. Avoid operating C-UAS within 200 feet (vertically and horizontally) of a known breeding or roosting colony, or other known high density nesting area, of federally listed or proposed birds or migratory birds (as indicated by one or more bird species appearing on your IPaC generated species list). <b>(See note [e] for specific instructions).</b></p>	<p><input type="checkbox"/> <b>Yes</b> – Go to next practice  <input type="checkbox"/> <b>No</b> – Explain in B)</p>	
<p>17. Maintain a 330-foot buffer around any known bald eagle nests during the breeding season. Extend the buffer distance would to 660 feet in open areas where the nest may have increased visibility and exposure to C-UAS activities.</p>	<p><input type="checkbox"/> <b>Yes</b> – Go to next practice  <input type="checkbox"/> <b>No</b> – Explain in B)</p>	

18. When possible, conduct C-UAS activities and RDT&E during seasons when federally listed, proposed, or migratory birds are not present or nesting in the operational area (e.g., the bird species on your IPaC list is migratory and will not be present during a particular season). <b>(See note [e]).</b>	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
19. Conduct a visual check for migratory birds and federally listed species (use your list generated through IPaC and the National ESA Critical Habitat Mapper) immediately prior to operating C-UAS. <b>(See note [f]).</b>	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
20. If personnel observe a federally listed animal or migratory bird including federally listed bird nests during the visual check, delay activities until either the animal has moved away from the area of operation, or the C-UAS RDT&E or operation area will be relocated to an area where the animal or nests will not be disturbed (at least 200 feet away both horizontally and vertically). <b>(See note [g] below).</b>	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
21. If personnel encounter wildlife during C-UAS RDT&E, training, demonstrations, or operations, operators will maintain a safe distance (at least 200 feet is recommended) and will avoid buzzing, animal-directed movements, hovering, landing, taking off, lingering, or taxiing near the observed wildlife.	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	

22. If, despite the measures in #21, wildlife, including migratory birds, listed animal species, and bald and golden eagles exhibit signs of distress (e.g. wing flapping, crouching, fleeing, or flushing), the C-UAS activity will be immediately moved beyond the 200-foot recommended distance from the animal.	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
23. To minimize impacts to federally listed or proposed insect species, sUAS deployed during RDT&E of C-UAS activities will maintain a minimum altitude of 65 feet above the ground.	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
24. If IPaC results include federally listed or proposed bat species, operate C-UAS during daylight hours (one hour after sunrise to one hour before sunset) whenever practicable. In addition, for nighttime use of C-UAS involving sUAS, maintain a minimum altitude of 98 feet above vegetation, tree canopy, or open water (including rivers, streams, lakes, reservoirs, etc.).	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
25. Document and report to the USFWS and/or NMFS, in a timely manner, any operation involving a collision with or harassment of a federally listed species (if species is clearly identifiable). To contact NMFS, send an email detailing the incident to <a href="mailto:nmfs.hq.esa.consultations@noaa.gov">nmfs.hq.esa.consultations@noaa.gov</a> with subject line [PLACEHOLDER].	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
26. Avoid operating C-UAS from/on beaches that support nesting sea turtles during their breeding season.	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
27. Avoid flying UAVs within 500 feet of known haul-out locations, sea turtles, and marine mammals at the water's surface (unless prior authorization was received from NOAA or USFWS).	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	

<p>28. To the maximum extent feasible, recover any debris resulting from C-UAS mitigation operations. Make effort to minimize disturbance if recovery activities must take place in riverine, estuarine, or coastal nearshore critical habitats.</p>	<p><input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice  <input type="checkbox"/> <b>No</b> – Explain in B)</p>	
<p><b>Cultural and Historic Resources</b></p>	<p><b>A) Response to Question (Click the appropriate box)</b></p>	<p><b>B) Are there any extenuating circumstances? If so, explain here.</b></p>
<p>29. Provide letters of notification to State Historic Preservation Offices (SHPO), Tribal Historic Preservation Offices (THPO), and/or Federal Preservation Officers at least 30 days prior to applicable C-UAS undertakings. Coordinate with Tribal Nations to the maximum extent feasible when proposed operations would include flying over or deploying from tribal sensitive areas, above-ground historic properties, or culturally significant areas (e.g. to identify appropriate launch sites or sensitive resources to avoid). Consult, as necessary, with applicable State Historic Preservation Office (SHPO), Tribal Historic Preservation Officer (THPO), and/or Certified Local Governments.</p>	<p><input type="checkbox"/> <b>Yes</b> – Go to next practice  <input type="checkbox"/> <b>No</b> – Explain in B)</p>	
<p>30. Coordinate with Tribal Nations to the maximum extent feasible when proposed operations would include flying over or deploying from Tribal sensitive areas, above-ground historic properties, or culturally significant areas.</p>	<p><input type="checkbox"/> <b>Yes</b> – Go to next practice  <input type="checkbox"/> <b>No</b> – Explain in B)</p>	



31. Avoid operations within 100 feet vertically and/or horizontally from Tribal sensitive areas or historically or culturally significant areas (i.e. known historic properties, National Historic Landmarks, monuments, or cemeteries), unless necessitated by an emergency facility inspection or condition assessment, or prior notification to the NPS for National Historic Landmarks and appropriate SHPO or THPO has been completed. <b>(See note [h]).</b>	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
32. Apply and adhere to the conditions of the Nationwide Programmatic Agreement (NPA) Among the DHS, the National Conference of Historic Preservation Officers (NCSHPO), and the Advisory Council for Historic Preservation (ACHP) Regarding DHS C-UAS Systems Undertakings for Section 106 compliance if the criteria for C-UAS undertakings are met.	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
<b>Other Coordination</b>	<b>A) Response to Question (Click the appropriate box)</b>	<b>B) Are there any extenuating circumstances? If so, explain here.</b>
33. Obtain all applicable permits, permissions, and authorizations from applicable landowners and federal, state, and local regulatory authorities prior to initiating operation of C-UAS.	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	

**To be completed by the Environmental Reviewer.**

**Name:**

**Date:**

☐ **The proposed action is covered by the scope of the 2025 C-UAS PEA and no further environmental analysis is required.**

☐ **The proposed action is outside of the C-UAS PEA scope; therefore, additional analysis for compliance with the National Environmental Policy Act, National Historic Preservation**

**Act, Endangered Species Act, or other environmental statute, regulation or Executive Order is necessary.**

**Notes:**

### **Health and Safety**

**[a] Question 4:** The following is general safety information for active RF equipment as it pertains to Radiation Hazards (RADHAZ):

- a. Hazard of Electromagnetic Radiation to Ordnance (HERO) safe ordnance with a minimum Surface Shaded Display (SSD) of 10 feet.
- b. Hazard of Electromagnetic Radiation to Fuel (HERF) minimum safe distance is 14.2 centimeters.
- c. Hazard of Electromagnetic Radiation to Personnel (HERP) minimum safe distance is 0.5 meters.

### **Biological Resources**

**[b] Question 12:** For species under jurisdiction of USFWS use Information for Planning and Consultation (IPaC) tool (<https://ipac.ecosphere.fws.gov/>). USFWS IPaC reports are valid for 90 days following its date of creation. If past 90 days, please complete a new IPaC report online. For species under jurisdiction of NMFS use the National ESA Critical Habitat Mapper (<https://www.fisheries.noaa.gov/resource/map/national-esa-critical-habitat-mapper>).

**[c] Question 13:** To minimize impacts to wildlife, units of the NWRS and other federal lands and waters managed for wildlife (e.g., national parks) should be identified before any C-UAS operation. Visit U.S. Fish & Wildlife Service website to determine locations of NWRS. Refuge Managers or other land/water managers should be contacted to identify site-specific wildlife use, potential responses to disturbance, and other information regarding cultural or sensitive sites, wildlife aggregation sites, and public use areas. For coordination efforts or activities (non-emergency) that occur on USFWS owned or managed lands contact the local USFWS site manager (such as a Refuge or Hatchery Manager). In emergency situations (imminent loss of life or property), if pre-planning or early coordination is not practicable, operators should proceed with emergency response actions.

**[d] Question 15:** If it is necessary to utilize operations sites within naturally vegetated areas of terrestrial critical habitat or the range of federally listed plant or lichen species, DHS will coordinate with the appropriate USFWS Field Office to identify if alternate launch or landing sites are necessary or sensitive resources need avoidance.

**[e] Question 18:** In areas that are known to contain migratory and federally listed bird nesting colonies, or areas that are known to contain listed avian species during their breeding season, as identified in the USFWS IPaC migratory bird frequency charts (using IPaC results obtained at least 90 days prior to a test event), implement seasonal restrictions, such as changing flight area or seasonally restricting flights, to reduce any potential impact to migratory and federally listed bird species. If IPaC does not indicate breeding season timeframes for non-migratory identified federally listed bird species, DHS environmental would utilize best available information to identify federally listed bird breeding season timeframe for its Project area and implement

recommended seasonal restrictions. DHS commits to conducting testing activities outside of the migratory and federally listed bird nesting season or breeding season areas, unless in the event of imminent loss of life or property (i.e., an emergency situation). In the event that unforeseen schedule changes result in testing to occur during the migratory and listed bird nesting season, DHS commits to consulting with USFWS on a project level (as necessary) and conducting a pedestrian nest survey of the project area to avoid and minimize potential impacts. If pedestrian nest surveys are required, surveys would be conducted by qualified environmental professionals in conformance with USFWS Regional Office methodologies or state-specific guidelines.

**[f] Question 19:** Conduct a visual pre-operation check for migratory birds, including bald and golden eagles, and any listed species in the IPaC species report, in the operation area immediately before launch. Should a DHS professional observe a migratory bird or bald or golden eagle or any listed species including federally listed bird nesting colonies within approximately 100 feet of the C-UAS operation site or sUAS launch/flight area, the C-UAS operation should be delayed or relocated to another location until the animal leaves the area on its own accord. If the animal does not leave, and a different launch site cannot be utilized, the USFWS local Field Office should be contacted for advice. In emergency situations (imminent loss of life or property), if pre-planning or early coordination is not practicable, operators should prioritize emergency response actions.

**[g] Questions 20:** In areas that are known to contain bird nesting colonies, or areas that are known to contain listed avian species during their breeding season, as identified in the USFWS IPaC migratory bird frequency charts (using IPaC results obtained at least 90 days prior to a test event), implement seasonal restrictions, such as changing flight area or seasonally restricting flights, to reduce any potential impact to the listed species. DHS commits to conducting testing activities outside of the migratory bird nesting season (April 15 through August 1) in these colony or breeding season areas. In the event that unforeseen schedule changes result in testing to occur during the migratory bird nesting season, DHS commits to consulting with USFWS on a project level (as necessary) and conducting a pedestrian nest survey of the project area to avoid and minimize potential impacts on migratory birds.

### **Cultural Resources**

**[h] Question 31:** This practice refers to Tribal sensitive areas, above-ground historic properties, and culturally significant areas including historic buildings, districts, cemeteries, parks, monuments, or any other culturally significant areas, historic properties, sacred sites, or traditional cultural properties.

## Enclosure A. Species and Critical Habitat List

Common Name	Scientific Name	ESA Listing Status	Critical Habitat	Species Group
Aboriginal Prickly-apple	Harrisia (=Cereus) aboriginum (=gracilis)	Endangered	Final	Flowering Plants
Acuña Cactus	Echinomastus erectocentrus var. acunensis	Endangered	Final	Flowering Plants
A`e	Zanthoxylum dipetalum var. tomentosum	Endangered	Final	Flowering Plants
A`e	Zanthoxylum hawaiiense	Endangered	Final	Flowering Plants
A`e	Zanthoxylum oahuense	Endangered	Final	Flowering Plants
`Ahinahina	Argyroxiphium sandwicense ssp. macrocephalum	Threatened	Final	Flowering Plants
`Ahinahina	Argyroxiphium sandwicense ssp. sandwicense	Endangered		Flowering Plants
`Aiakeakua, popolo	Solanum sandwicense	Endangered	Final	Flowering Plants
`Aiea	Nothocestrum breviflorum	Endangered	Final	Flowering Plants
`Aiea	Nothocestrum latifolium	Endangered		Flowering Plants
`Aiea	Nothocestrum peltatum	Endangered	Final	Flowering Plants
Akekee	Loxops caeruleirostris	Endangered	Final	Birds
akiapolaau	Hemignathus wilsoni	Endangered		Birds
Akikiki	Oreomystis bairdi	Endangered	Final	Birds
`Akohekohe (crested honeycreeper)	Palmeria dolei	Endangered	Final	Birds
`Akoko	Euphorbia celastroides var. kaenana	Endangered	Final	Flowering Plants
`Akoko	Euphorbia deppeana	Endangered	Final	Flowering Plants
`Akoko	Euphorbia eleanoriae	Endangered	Final	Flowering Plants
`Akoko	Euphorbia haeleeleana	Endangered	Final	Flowering Plants
`Akoko	Euphorbia herbstii	Endangered	Final	Flowering Plants
`Akoko	Euphorbia kuwaleana	Endangered	Final	Flowering Plants
`Akoko	Euphorbia remyi var. kauaiensis	Endangered	Final	Flowering Plants
`Akoko	Euphorbia remyi var. remyi	Endangered	Final	Flowering Plants
`Akoko	Euphorbia rockii	Endangered	Final	Flowering Plants
`Akoko	Euphorbia skottsbergii var. skottsbergii	Endangered	Final	Flowering Plants
'Akoko	Euphorbia halemanui	Endangered	Final	Flowering Plants
`aku	Cyanea tritomantha	Endangered	Final	Flowering Plants
`aku`aku	Cyanea platyphylla	Endangered	Final	Flowering Plants

`Ala `ala wai nui	<i>Peperomia subpetiolata</i>	Endangered	Final	Flowering Plants
Alabama beach mouse	<i>Peromyscus polionotus ammobates</i>	Endangered	Final	Mammals
Alabama Canebrake Pitcher Plant	<i>Sarracenia rubra</i> ssp. <i>alabamensis</i>	Endangered		Flowering Plants
Alabama cavefish	<i>Speoplatyrhinus poulsoni</i>	Endangered	Final	Fishes
Alabama cave shrimp	<i>Palaemonias alabamae</i>	Endangered		Crustaceans
Alabama lampmussel	<i>Lampsilis virescens</i>	Endangered		Clams
Alabama Leather Flower	<i>Clematis socialis</i>	Endangered		Flowering Plants
Alabama moccasinshell	<i>Medionidus acutissimus</i>	Threatened	Final	Clams
Alabama pearlshell	<i>Margaritifera marrianae</i>	Endangered	Final	Clams
Alabama red-bellied turtle	<i>Pseudemys alabamensis</i>	Endangered		Reptiles
Alabama streak-sorus fern	<i>Thelypteris pilosa</i> var. <i>alabamensis</i>	Threatened		Ferns and Allies
Alabama sturgeon	<i>Scaphirhynchus suttkusi</i>	Endangered	Final	Fishes
Alameda whipsnake (=striped racer)	<i>Masticophis lateralis euryxanthus</i>	Threatened	Final	Reptiles
Alamosa springsnail	<i>Tryonia alamosae</i>	Endangered		Snails
Alani	<i>Melicope adscendens</i>	Endangered	Final	Flowering Plants
Alani	<i>Melicope balloui</i>	Endangered	Final	Flowering Plants
Alani	<i>Melicope christophersenii</i>	Endangered	Final	Flowering Plants
Alani	<i>Melicope degeneri</i>	Endangered	Final	Flowering Plants
Alani	<i>Melicope haupuensis</i>	Endangered	Final	Flowering Plants
Alani	<i>Melicope hiiakae</i>	Endangered	Final	Flowering Plants
Alani	<i>Melicope knudsenii</i>	Endangered	Final	Flowering Plants
Alani	<i>Melicope lydgatei</i>	Endangered	Final	Flowering Plants
Alani	<i>Melicope makahae</i>	Endangered	Final	Flowering Plants
Alani	<i>Melicope mucronulata</i>	Endangered	Final	Flowering Plants
Alani	<i>Melicope munroi</i>	Endangered	Final	Flowering Plants
Alani	<i>Melicope ovalis</i>	Endangered	Final	Flowering Plants
Alani	<i>Melicope pallida</i>	Endangered	Final	Flowering Plants
Alani	<i>Melicope paniculata</i>	Endangered	Final	Flowering Plants
Alani	<i>Melicope puberula</i>	Endangered	Final	Flowering Plants
Alani	<i>Melicope quadrangularis</i>	Endangered	Not Prudent	Flowering Plants
Alani	<i>Melicope reflexa</i>	Endangered	Final	Flowering Plants

Alani	Melicope saint-johnii	Endangered	Final	Flowering Plants
Alani	Melicope zahlbruckneri	Endangered	Final	Flowering Plants
Aleutian shield fern	Polystichum aleuticum	Endangered		Ferns and Allies
Altamaha Spiny mussel	Elliptio spinosa	Endangered	Final	Clams
Amargosa niterwort	Nitrophila mohavensis	Endangered	Final	Flowering Plants
Amargosa vole	Microtus californicus scirpensis	Endangered	Final	Mammals
Amber darter	Percina antesella	Endangered	Final	Fishes
American burying beetle	Nicrophorus americanus	Threatened		Insects
American chaffseed	Schwalbea americana	Endangered		Flowering Plants
American crocodile	Crocodylus acutus	Threatened	Final	Reptiles
American hart's-tongue fern	Asplenium scolopendrium var. americanum	Threatened		Ferns and Allies
Anastasia Island beach mouse	Peromyscus polionotus phasma	Endangered		Mammals
`Anaunau	Lepidium arbuscula	Endangered	Final	Flowering Plants
Anchialine pool shrimp	Vetericaris chaceorum	Endangered	Not Prudent	Crustaceans
Anchialine pool Shrimp	Procaris hawaiiiana	Endangered		Crustaceans
Anthony's riversnail	Athearnia anthonyi	Endangered		Snails
Anthricinan yellow-faced bee	Hylaeus anthracinus	Endangered		Insects
Antioch Dunes evening-primrose	Oenothera deltoides ssp. howellii	Endangered	Final	Flowering Plants
`Anunu	Sicyos albus	Endangered	Final	Flowering Plants
`Anunu	Sicyos macrophyllus	Endangered		Flowering Plants
Apalachicola rosemary	Conradina glabra	Endangered		Flowering Plants
Aplokating-palaoan	Psychotria malaspinae	Endangered		Flowering Plants
Appalachian elktoe	Alasmidonta raveneliana	Endangered	Final	Clams
Appalachian monkeyface (pearly mussel)	Theliderma sparsa	Endangered		Clams
Applegate's milk-vetch	Astragalus applegatei	Endangered		Flowering Plants
Arizona Cliffrose	Purshia (=Cowania) subintegra	Endangered		Flowering Plants
Arizona eryngo	Eryngium sparganophyllum	Endangered	Final	Flowering Plants
Arizona hedgehog cactus	Echinocereus arizonicus ssp. arizonicus	Endangered		Flowering Plants
Arkansas fatmucket	Lampsilis powellii	Threatened		Clams
Arkansas River shiner	Notropis girardi	Threatened	Final	Fishes

Armored snail	Marstonia pachyta	Endangered		Snails
Arroyo (=arroyo southwestern) toad	Anaxyrus californicus	Endangered	Final	Amphibians
Ash-grey paintbrush	Castilleja cinerea	Threatened	Final	Flowering Plants
Ash Meadows Amargosa pupfish	Cyprinodon nevadensis mionectes	Endangered	Final	Fishes
Ash Meadows blazingstar	Mentzelia leucophylla	Threatened	Final	Flowering Plants
Ash Meadows gumplant	Grindelia fraxinipratensis	Threatened	Final	Flowering Plants
Ash Meadows ivesia	Ivesia kingii var. eremica	Threatened	Final	Flowering Plants
Ash meadows milk-vetch	Astragalus phoenix	Threatened	Final	Flowering Plants
Ash Meadows naucorid	Ambrysus amargosus	Threatened	Final	Insects
Ash Meadows speckled dace	Rhinichthys osculus nevadensis	Endangered	Final	Fishes
Ash Meadows sunray	Enceliopsis nudicaulis var. corrugata	Threatened	Final	Flowering Plants
Ashy dogweed	Thymophylla tephroleuca	Endangered		Flowering Plants
Assimulans yellow-faced bee	Hylaeus assimulans	Endangered		Insects
Atlantic pigtoe	Fusconaia masoni	Threatened	Final	Clams
Atlantic salt marsh snake	Nerodia clarkii taeniata	Threatened		Reptiles
Attwater's greater prairie-chicken	Tympanuchus cupido attwateri	Endangered		Birds
Aupaka	Isodendron hosakae	Endangered	Final	Flowering Plants
Aupaka	Isodendron laurifolium	Endangered	Final	Flowering Plants
Aupaka	Isodendron longifolium	Threatened	Final	Flowering Plants
Austin blind Salamander	Eurycea waterlooensis	Endangered	Final	Amphibians
Autumn Buttercup	Ranunculus aestivalis (=acriiformis)	Endangered		Flowering Plants
Avon Park harebells	Crotalaria avonensis	Endangered		Flowering Plants
`Awikiwiki	Canavalia molokaiensis	Endangered	Final	Flowering Plants
`Awikiwiki	Canavalia napaliensis	Endangered	Final	Flowering Plants
`Awikiwiki	Canavalia pubescens	Endangered	Final	Flowering Plants
Awiwi	Schenkia sebaeoides	Endangered	Final	Flowering Plants
'Awiwi	Kadua cookiana	Endangered	Final	Flowering Plants
Bakersfield cactus	Opuntia treleasei	Endangered		Flowering Plants
Baker's larkspur	Delphinium bakeri	Endangered	Final	Flowering Plants
Balcones spike	Fusconaia iheringi	Endangered	Final	Clams
Banbury Springs limpet	Idaholanx fresti	Endangered		Snails

Band-rumped Storm-petrel	Hydrobates castro	Endangered		Birds
Bariaco	Trichilia triacantha	Endangered		Flowering Plants
Barneby reed-mustard	Schoenocrambe barnebyi	Endangered		Flowering Plants
Barneby ridge-cress	Lepidium barnebyanum	Endangered		Flowering Plants
Barrens topminnow	Fundulus julisia	Endangered	Proposed	Fishes
Barton Springs salamander	Eurycea sosorum	Endangered		Amphibians
Bartram's hairstreak Butterfly	Strymon acis bartrami	Endangered	Final	Insects
Bartram's stonecrop	Graptopetalum bartramii	Threatened	Proposed	Flowering Plants
Bay checkerspot butterfly	Euphydryas editha bayensis	Threatened	Final	Insects
Bayou darter	Etheostoma rubrum	Threatened		Fishes
Beach jacquemontia	Jacquemontia reclinata	Endangered		Flowering Plants
Beach layia	Layia carnosa	Threatened		Flowering Plants
beardless chinchweed	Pectis imberbis	Endangered	Final	Flowering Plants
Bear Valley sandwort	Arenaria ursina	Threatened	Final	Flowering Plants
Beautiful goetzea	Goetzea elegans	Endangered		Flowering Plants
Beautiful pawpaw	Deeringothamnus pulchellus	Endangered		Flowering Plants
Beautiful shiner	Cyprinella formosa	Threatened	Final	Fishes
Bee Creek Cave harvestman	Texella reddelli	Endangered		Arachnids
Behren's silverspot butterfly	Speyeria zerene behrensii	Endangered		Insects
Ben Lomond spineflower	Chorizanthe pungens var. hartwegiana	Endangered		Flowering Plants
Ben Lomond wallflower	Erysimum teretifolium	Endangered		Flowering Plants
Benton County cave crayfish	Cambarus aculabrum	Endangered		Crustaceans
Berenghenas halomtano	Solanum guamense	Endangered		Flowering Plants
Bermuda petrel	Pterodroma cahow	Endangered		Birds
Big Bend gambusia	Gambusia gaigei	Endangered		Fishes
Big Creek Crayfish	Faxonius peruncus	Threatened	Final	Crustaceans
Big-leaved crownbeard	Verbesina dissita	Threatened		Flowering Plants
Big Pine partridge pea	Chamaecrista lineata keyensis	Endangered	Proposed	Flowering Plants
Big Sandy crayfish	Cambarus callainus	Threatened	Final	Crustaceans
Big Spring spinedace	Lepidomeda mollispinis pratensis	Threatened	Final	Fishes
Birdwing pearlymussel	Lemiox rimosus	Endangered		Clams



Blackburn's sphinx moth	<i>Manduca blackburni</i>	Endangered	Final	Insects
Black-capped Petrel	<i>Pterodroma hasitata</i>	Endangered	Not Prudent	Birds
Black clubshell	<i>Pleurobema curtum</i>	Endangered		Clams
Black-footed ferret	<i>Mustela nigripes</i>	Endangered		Mammals
Black lace cactus	<i>Echinocereus reichenbachii</i> var. <i>albertii</i>	Endangered		Flowering Plants
Blackline Hawaiian damselfly	<i>Megalagrion nigrohamatum nigrolineatum</i>	Endangered	Final	Insects
Black pinesnake	<i>Pituophis melanoleucus lodingi</i>	Threatened	Final	Reptiles
Blackside dace	<i>Phoxinus cumberlandensis</i>	Threatened		Fishes
Black spored quillwort	<i>Isoetes melanospora</i>	Endangered		Ferns and Allies
Black warrior (=Sipsey Fork) Waterdog	<i>Necturus alabamensis</i>	Endangered	Final	Amphibians
Bliss Rapids snail	<i>Taylorconcha serpenticola</i>	Threatened		Snails
Blodgett's silverbush	<i>Argythamnia blodgettii</i>	Threatened	Proposed	Flowering Plants
Blowout penstemon	<i>Penstemon haydenii</i>	Endangered		Flowering Plants
bluemask darter	<i>Etheostoma akatulo</i>	Endangered		Fishes
Blue Ridge goldenrod	<i>Solidago spithamaea</i>	Threatened		Flowering Plants
Blue shiner	<i>Cyprinella caerulea</i>	Threatened		Fishes
blue-tailed mole skink	<i>Eumeces egregius lividus</i>	Threatened		Reptiles
Blunt-nosed leopard lizard	<i>Gambelia silus</i>	Endangered		Reptiles
bog buck moth	<i>Hemileuca maia menyanthevora</i> (=H. <i>iroquois</i> )	Endangered		Insects
bog turtle	<i>Glyptemys muhlenbergii</i>	Threatened		Reptiles
Bolson tortoise	<i>Gopherus flavomarginatus</i>	Endangered		Reptiles
Bone Cave harvestman	<i>Texella reyesi</i>	Endangered		Arachnids
Bonytail	<i>Gila elegans</i>	Endangered	Final	Fishes
Boulder darter	<i>Etheostoma wapiti</i>	Endangered		Fishes
Bracted twistflower	<i>Streptanthus bracteatus</i>	Threatened	Final	Flowering Plants
Brady pincushion cactus	<i>Pediocactus bradyi</i>	Endangered		Flowering Plants
Braun's rock-cress	<i>Arabis perstellata</i>	Endangered	Final	Flowering Plants
Braunton's milk-vetch	<i>Astragalus brauntonii</i>	Endangered	Final	Flowering Plants
Britton's beargrass	<i>Nolina brittoniana</i>	Endangered		Flowering Plants
Brooksville bellflower	<i>Campanula robinsiae</i>	Endangered		Flowering Plants

Bruneau Hot springsnail	Pyrgulopsis bruneauensis	Endangered		Snails
Buena Vista Lake ornate Shrew	Sorex ornatus relictus	Endangered	Final	Mammals
Bull Trout	Salvelinus confluentus	Threatened	Final	Fishes
Bunched arrowhead	Sagittaria fasciculata	Endangered		Flowering Plants
Bunched cory cactus	Coryphantha ramillosa	Threatened		Flowering Plants
Burke's goldfields	Lasthenia burkei	Endangered		Flowering Plants
Butte County meadowfoam	Limnanthes floccosa ssp. californica	Endangered	Final	Flowering Plants
Cactus ferruginous pygmy-owl	Glaucidium brasilianum cactorum	Threatened	Proposed	Birds
Cactus ferruginous pygmy-owl	Glaucidium brasilianum cactorum	Threatened	Final	Birds
Cahaba shiner	Notropis cahabae	Endangered	Proposed	Fishes
California condor	Gymnogyps californianus	Endangered	Final	Birds
California freshwater shrimp	Syncaris pacifica	Endangered		Crustaceans
California jewelflower	Caulanthus californicus	Endangered		Flowering Plants
California least tern	Sternula antillarum browni	Endangered		Birds
California Orcutt grass	Orcuttia californica	Endangered		Flowering Plants
California red-legged frog	Rana draytonii	Threatened	Final	Amphibians
California Ridgway's rail	Rallus obsoletus obsoletus	Endangered		Birds
California seablite	Suaeda californica	Endangered		Flowering Plants
California taraxacum	Taraxacum californicum	Endangered	Final	Flowering Plants
California tiger Salamander	Ambystoma californiense	Threatened	Final	Amphibians
California tiger Salamander	Ambystoma californiense	Endangered	Final	Amphibians
California tiger Salamander	Ambystoma californiense	Endangered	Final	Amphibians
Calistoga allocarya	Plagiobothrys strictus	Endangered		Flowering Plants
Callippe silverspot butterfly	Speyeria callippe callippe	Endangered	Proposed	Insects
Canada Lynx	Lynx canadensis	Threatened	Final	Mammals
Canada Lynx	Lynx canadensis	Threatened	Proposed	Mammals
Canby's dropwort	Oxypolis canbyi	Endangered		Flowering Plants
Candy darter	Etheostoma osburni	Endangered	Final	Fishes
Canelo Hills ladies'-tresses	Spiranthes delitescens	Endangered		Flowering Plants
Canoe Creek Clubshell	Pleurobema athearni	Endangered	Final	Clams
Capa rosa	Callicarpa ampla	Endangered		Flowering Plants

Cape Fear shiner	<i>Notropis mekistocholas</i>	Endangered	Final	Fishes
Cape Sable seaside sparrow	<i>Ammospiza maritima mirabilis</i>	Endangered	Final	Birds
Cape Sable Thoroughwort	<i>Chromolaena frustrata</i>	Endangered	Final	Flowering Plants
Carolina heelsplitter	<i>Lasmigona decorata</i>	Endangered	Final	Clams
Carolina madtom	<i>Noturus furiosus</i>	Endangered	Final	Fishes
Carolina northern flying squirrel	<i>Glaucomys sabrinus coloratus</i>	Endangered		Mammals
Carson wandering skipper	<i>Pseudocopa eodes eunus obscurus</i>	Endangered		Insects
Carter's mustard	<i>Warea carteri</i>	Endangered		Flowering Plants
Carter's panicgrass	<i>Panicum fauriei</i> var. <i>carteri</i>	Endangered	Proposed	Flowering Plants
Carter's panicgrass	<i>Panicum fauriei</i> var. <i>carteri</i>	Endangered	Final	Flowering Plants
Carter's small-flowered flax	<i>Linum carteri</i> <i>carteri</i>	Endangered	Final	Flowering Plants
Casey's June Beetle	<i>Dinacoma caseyi</i>	Endangered	Final	Insects
Catalina Island mountain-mahogany	<i>Cercocarpus traskiae</i>	Endangered		Flowering Plants
Cebello halumtano	<i>Bulbophyllum guamense</i>	Threatened		Flowering Plants
Chapman rhododendron	<i>Rhododendron chapmanii</i>	Endangered		Flowering Plants
Cheat Mountain salamander	<i>Plethodon nettingi</i>	Threatened		Amphibians
Cherokee darter	<i>Etheostoma scotti</i>	Threatened		Fishes
Chihuahua chub	<i>Gila nigrescens</i>	Threatened	Proposed	Fishes
Chinese Camp brodiaea	<i>Brodiaea pallida</i>	Threatened		Flowering Plants
Chipola slabshell	<i>Elliptio chipolaensis</i>	Threatened	Final	Clams
Chiricahua leopard frog	<i>Rana chiricahuensis</i>	Threatened	Final	Amphibians
Chisos Mountain hedgehog Cactus	<i>Echinocereus chisoensis</i> var. <i>chisoensis</i>	Threatened		Flowering Plants
Chittenango ovate amber snail	<i>Novisuccinea chittenangoensis</i>	Threatened		Snails
Choctaw bean	<i>Obovaria choctawensis</i>	Endangered	Final	Clams
Choctawhatchee beach mouse	<i>Peromyscus polionotus allopkyrs</i>	Endangered	Final	Mammals
Chorro Creek bog thistle	<i>Cirsium fontinale</i> var. <i>obispoense</i>	Endangered		Flowering Plants
Chucky Madtom	<i>Noturus crypticus</i>	Endangered	Final	Fishes
Chupacallos	<i>Pleodendron macranthum</i>	Endangered		Flowering Plants
Chupadera springsnail	<i>Pyrgulopsis chupaderae</i>	Endangered	Final	Snails
Clara Hunt's milk-vetch	<i>Astragalus clarianus</i>	Endangered		Flowering Plants
Clay-Loving wild buckwheat	<i>Eriogonum pelinophilum</i>	Endangered	Final	Flowering Plants

Clay phacelia	Phacelia argillacea	Endangered		Flowering Plants
Clay reed-mustard	Schoenocrambe argillacea	Threatened		Flowering Plants
Clay's hibiscus	Hibiscus clayi	Endangered	Final	Flowering Plants
Clear Creek gambusia	Gambusia heterochir	Endangered		Fishes
Clover (Tidestrom's) lupine	Lupinus tidestromii	Endangered		Flowering Plants
Clover Valley speckled dace	Rhinichthys osculus oligoporus	Endangered		Fishes
Clubshell	Pleurobema clava	Endangered		Clams
Coachella Valley fringe-toed lizard	Uma inornata	Threatened	Final	Reptiles
Coachella Valley milk-vetch	Astragalus lentiginosus var. coachellae	Endangered	Final	Flowering Plants
Coastal California gnatcatcher	Polioptila californica californica	Threatened	Final	Birds
Coastal dunes milk-vetch	Astragalus tener var. titi	Endangered		Flowering Plants
Cobana negra	Stahlia monosperma	Threatened		Flowering Plants
Cochise pincushion cactus	Coryphantha robbinsorum	Threatened		Flowering Plants
Coffin Cave mold beetle	Batrisodes texanus	Endangered		Insects
Cokendolpher Cave Harvestman	Texella cokendolpheri	Endangered	Final	Arachnids
Colorado pikeminnow	Ptychocheilus lucius	Endangered	Final	Fishes
Columbian white-tailed deer	Odocoileus virginianus leucurus	Threatened		Mammals
Colusa grass	Neostapfia colusana	Threatened	Final	Flowering Plants
Comal Springs dryopid beetle	Stygoparnus comalensis	Endangered	Final	Insects
Comal Springs riffle beetle	Heterelmis comalensis	Endangered	Final	Insects
Comanche Springs pupfish	Cyprinodon elegans	Endangered		Fishes
Conasauga logperch	Percina jenkinsi	Endangered	Final	Fishes
Conejo dudleya	Dudleya abramsii ssp. parva	Threatened		Flowering Plants
Conservancy fairy shrimp	Branchinecta conservatio	Endangered	Final	Crustaceans
Contra Costa goldfields	Lasthenia conjugens	Endangered	Final	Flowering Plants
Contra Costa wallflower	Erysimum capitatum var. angustatum	Endangered	Final	Flowering Plants
Cook's holly	Ilex cookii	Endangered		Flowering Plants
Cook's lomatium	Lomatium cookii	Endangered	Final	Flowering Plants
Cooley's meadowrue	Thalictrum cooleyi	Endangered		Flowering Plants
Cooley's water-willow	Justicia cooleyi	Endangered		Flowering Plants
Coosa moccasinshell	Medionidus parvulus	Endangered	Final	Clams

Copperbelly water snake	Nerodia erythrogaster neglecta	Threatened		Reptiles
Coyote ceanothus	Ceanothus ferrisiae	Endangered		Flowering Plants
Cracking pearlymussel	Hemistena lata	Endangered		Clams
Crenulate lead-plant	Amorpha crenulata	Endangered		Flowering Plants
Crested caracara (Audubon's) [FL DPS]	Caracara plancus audubonii	Threatened		Birds
Crimson Hawaiian damselfly	Megalagrion leptodemas	Endangered	Final	Insects
Cui-ui	Chasmistes cujus	Endangered		Fishes
Culebra Island giant anole	Anolis roosevelti	Endangered	Final	Reptiles
Cumberland bean (pearlymussel)	Villosa trabalis	Endangered		Clams
Cumberland darter	Etheostoma susanae	Endangered	Final	Fishes
Cumberland elktoe	Alasmidonta atropurpurea	Endangered	Final	Clams
Cumberlandian combshell	Epioblasma brevidens	Endangered	Final	Clams
Cumberland monkeyface (pearlymussel)	Theliderma intermedia	Endangered		Clams
Cumberland pigtoe	Pleuroaia gibber	Endangered		Clams
Cumberland rosemary	Conradina verticillata	Threatened		Flowering Plants
Curtis Pearlymussel	Epioblasma curtisii	Endangered		Clams
Cushenbury buckwheat	Eriogonum ovalifolium var. vineum	Endangered	Final	Flowering Plants
Cushenbury milk-vetch	Astragalus albens	Endangered	Final	Flowering Plants
Cushenbury oxytheca	Oxytheca parishii var. goodmaniana	Endangered	Final	Flowering Plants
Cylindrical lioplax (snail)	Lioplax cyclostomaformis	Endangered		Snails
Dakota Skipper	Hesperia dacotae	Threatened	Final	Insects
Dark pigtoe	Pleurobema furvum	Endangered	Final	Clams
Davis' green pitaya	Echinocereus viridiflorus var. davisii	Endangered		Flowering Plants
DeBeque phacelia	Phacelia submutica	Threatened	Final	Flowering Plants
Decurrent false aster	Boltonia decurrens	Threatened		Flowering Plants
Delhi Sands flower-loving fly	Rhaphiomidas terminatus abdominalis	Endangered		Insects
Del Mar manzanita	Arctostaphylos glandulosa ssp. crassifolia	Endangered		Flowering Plants
Delta green ground beetle	Elaphrus viridis	Threatened	Final	Insects
Delta smelt	Hypomesus transpacificus	Threatened	Final	Fishes

Deltoid spurge	Chamaesyce deltoidea ssp. deltoidea	Endangered		Flowering Plants
Desert dace	Eremichthys acros	Threatened	Final	Fishes
Desert pupfish	Cyprinodon macularius	Endangered	Final	Fishes
Desert slender salamander	Batrachoseps aridus	Endangered		Amphibians
Desert tortoise	Gopherus agassizii	Threatened	Final	Reptiles
Desert yellowhead	Yermo xanthocephalus	Threatened	Final	Flowering Plants
Devils Hole pupfish	Cyprinodon diabolis	Endangered		Fishes
Devils River minnow	Dionda diaboli	Threatened	Final	Fishes
Diamond Darter	Crystallaria cincotta	Endangered	Final	Fishes
Diamond Head schiedea	Schiedea adamantis	Endangered		Flowering Plants
Diamond Tryonia	Pseudotryonia adamantina	Endangered	Final	Snails
Diminutive Amphipod	Gammarus hyalleloides	Endangered	Final	Crustaceans
Dixie Valley Toad	Anaxyrus williamsi	Endangered	Proposed	Amphibians
Dromedary pearlymussel	Dromus dromas	Endangered		Clams
Dudley Bluffs bladderpod	Lesquerella congesta	Threatened		Flowering Plants
Dudley Bluffs twinpod	Physaria obcordata	Threatened		Flowering Plants
Dunes sagebrush lizard	Sceloporus arenicolus	Endangered		Reptiles
dusky gopher frog	Rana sevosia	Endangered	Final	Amphibians
Duskytail darter	Etheostoma percnurum	Endangered		Fishes
Dwarf Bear-poppy	Arctomecon humilis	Endangered		Flowering Plants
Dwarf iliaui	Wilkesia hobbeyi	Endangered	Final	Flowering Plants
Dwarf lake iris	Iris lacustris	Threatened		Flowering Plants
Dwarf naupaka	Scaevola coriacea	Endangered		Flowering Plants
Dwarf wedgemussel	Alasmidonta heterodon	Endangered		Clams
Eastern Black rail	Laterallus jamaicensis ssp. jamaicensis	Threatened		Birds
Eastern Hellbender	Cryptobranchus alleganiensis alleganiensis	Endangered	Not Prudent	Amphibians
Eastern indigo snake	Drymarchon couperi	Threatened		Reptiles
Eastern Massasauga (=rattlesnake)	Sistrurus catenatus	Threatened	Not Prudent	Reptiles
Eastern prairie fringed orchid	Platanthera leucophaea	Threatened		Flowering Plants
Easy yellow-faced bee	Hylaeus facilis	Endangered		Insects
El Dorado bedstraw	Galium californicum ssp. sierrae	Endangered		Flowering Plants

Elfin tree fern	<i>Cyathea dryopteroides</i>	Endangered		Ferns and Allies
Elfin-woods warbler	<i>Setophaga angelae</i>	Threatened	Final	Birds
El Segundo blue butterfly	<i>Euphilotes battoides allyni</i>	Endangered	Proposed	Insects
`Ena`ena	<i>Pseudognaphalium sandwicense</i> var. <i>molokaiense</i>	Endangered		Flowering Plants
Encinitas baccharis	<i>Baccharis vanessae</i>	Threatened		Flowering Plants
Erubia	<i>Solanum drymophilum</i>	Endangered		Flowering Plants
Eskimo curlew	<i>Numenius borealis</i>	Endangered		Birds
Etonia rosemary	<i>Conradina etonia</i>	Endangered		Flowering Plants
Etowah darter	<i>Etheostoma etowahae</i>	Endangered		Fishes
Eureka Dune grass	<i>Swallenia alexandrae</i>	Threatened		Flowering Plants
Everglades bully	<i>Sideroxylon reclinatum</i> ssp. <i>austrofloridense</i>	Threatened	Proposed	Flowering Plants
Everglade snail kite	<i>Rostrhamus sociabilis plumbeus</i>	Endangered	Final	Birds
Fadang	<i>Cycas micronesica</i>	Threatened		Conifers and Cycads
false spike	<i>Fusconaia mitchelli</i>	Endangered	Final	Clams
Fanshell	<i>Cyprogenia stegaria</i>	Endangered		Clams
Fassett's locoweed	<i>Oxytropis campestris</i> var. <i>chartacea</i>	Threatened		Flowering Plants
Fat pocketbook	<i>Potamilus capax</i>	Endangered		Clams
Fat threeridge (mussel)	<i>Amblema neislerii</i>	Endangered	Final	Clams
Fender's blue butterfly	<i>Icaricia icarioides fenderi</i>	Threatened	Final	Insects
Few-flowered navarretia	<i>Navarretia leucocephala</i> ssp. <i>pauciflora</i> (=N. <i>pauciflora</i> )	Endangered		Flowering Plants
Fickeisen plains cactus	<i>Pediocactus peeblesianus</i> ssp. <i>fickeiseniae</i>	Endangered	Final	Flowering Plants
Finelined pocketbook	<i>Hamiota altilis</i>	Threatened	Final	Clams
Finerayed pigtoe	<i>Fusconaia cuneolus</i>	Endangered		Clams
Fisher	<i>Pekania pennanti</i>	Endangered	Proposed	Mammals
Fish Slough milk-vetch	<i>Astragalus lentiginosus</i> var. <i>piscinensis</i>	Threatened	Final	Flowering Plants
Flat pebblesnail	<i>Lepyrium showalteri</i>	Endangered		Snails
Flat-spired three-toothed Snail	<i>Triodopsis platysayoides</i>	Threatened		Snails
Flattened musk turtle	<i>Sternotherus depressus</i>	Threatened		Reptiles

Fleshy-fruit gladeceess	Leavenworthia crassa	Endangered	Final	Flowering Plants
Fleshy owl's-clover	Castilleja campestris ssp. succulenta	Threatened	Final	Flowering Plants
Florida bonamia	Bonamia grandiflora	Threatened		Flowering Plants
Florida bonneted bat	Eumops floridanus	Endangered	Final	Mammals
Florida brickell-bush	Brickellia mosieri	Endangered	Final	Flowering Plants
Florida bristle fern	Trichomanes punctatum ssp. floridanum	Endangered	Final	Ferns and Allies
Florida grasshopper sparrow	Ammodramus savannarum floridanus	Endangered		Birds
Florida leafwing Butterfly	Anaea troglodyta floridalis	Endangered	Final	Insects
Florida panther	Puma (=Felis) concolor coryi	Endangered		Mammals
Florida perforate cladonia	Cladonia perforata	Endangered		Lichens
Florida pineland crabgrass	Digitaria pauciflora	Threatened	Proposed	Flowering Plants
Florida prairie-clover	Dalea carthagenensis floridana	Endangered	Proposed	Flowering Plants
Florida salt marsh vole	Microtus pennsylvanicus dukecampbelli	Endangered		Mammals
Florida scrub-jay	Aphelocoma coerulescens	Threatened		Birds
Florida semaphore Cactus	Consolea corallicola	Endangered	Final	Flowering Plants
Florida skullcap	Scutellaria floridana	Threatened		Flowering Plants
Florida torreyia	Torreya taxifolia	Endangered		Conifers and Cycads
Florida ziziphus	Ziziphus celata	Endangered		Flowering Plants
Fluted kidneyshell	Ptychobranhus subtentus	Endangered	Final	Clams
Flying earwig Hawaiian damselfly	Megalagrion nesiotes	Endangered		Insects
Foothill yellow-legged frog	Rana boylei	Threatened	Proposed	Amphibians
Foothill yellow-legged frog	Rana boylei	Threatened	Proposed	Amphibians
Foothill yellow-legged frog	Rana boylei	Endangered	Proposed	Amphibians
Foothill yellow-legged frog	Rana boylei	Endangered	Proposed	Amphibians
Fosberg's love grass	Eragrostis fosbergii	Endangered	Final	Flowering Plants
Fountain darter	Etheostoma fonticola	Endangered	Final	Fishes
Fountain thistle	Cirsium fontinale var. fontinale	Endangered		Flowering Plants
Four-petal pawpaw	Asimina tetramera	Endangered		Flowering Plants
Fragile tree snail	Samoana fragilis	Endangered		Snails
Fragrant prickly-apple	Cereus eriophorus var. fragrans	Endangered		Flowering Plants



Franciscan manzanita	Arctostaphylos franciscana	Endangered	Final	Flowering Plants
Franklin's bumble bee	Bombus franklini	Endangered		Insects
Frecklebelly madtom	Noturus munitus	Threatened	Final	Fishes
Fresno kangaroo rat	Dipodomys nitratoides exilis	Endangered	Final	Mammals
Friendly Ground-Dove	Gallicolumba stairi	Endangered		Birds
Fringed campion	Silene polypetala	Endangered		Flowering Plants
Frosted Flatwoods salamander	Ambystoma cingulatum	Threatened	Final	Amphibians
Furbish lousewort	Pedicularis furbishiae	Threatened		Flowering Plants
Fuzzy pigtoe	Pleurobema strodeanum	Threatened	Final	Clams
Gambel's watercress	Rorippa gambellii	Endangered		Flowering Plants
Garber's spurge	Chamaesyce garberi	Threatened		Flowering Plants
Garrett's mint	Dicerandra christmanii	Endangered		Flowering Plants
Gaviota Tarplant	Deinandra increscens ssp. villosa	Endangered	Final	Flowering Plants
Gentian pinkroot	Spigelia gentianoides	Endangered		Flowering Plants
Gentner's Fritillary	Fritillaria gentneri	Endangered		Flowering Plants
Georgetown Salamander	Eurycea naufragia	Threatened	Final	Amphibians
Georgia pigtoe	Pleurobema hanleyianum	Endangered	Final	Clams
Georgia rockcress	Arabis georgiana	Threatened	Final	Flowering Plants
Giant garter snake	Thamnophis gigas	Threatened		Reptiles
Giant kangaroo rat	Dipodomys ingens	Endangered		Mammals
Gierisch mallow	Sphaeralcea gierischii	Endangered	Final	Flowering Plants
Gila chub	Gila intermedia	Endangered	Final	Fishes
Gila topminnow (incl. Yaqui)	Poeciliopsis occidentalis	Endangered		Fishes
Gila trout	Oncorhynchus gilae	Threatened		Fishes
Godfrey's butterwort	Pinguicula ionantha	Threatened		Flowering Plants
golden-cheeked warbler	Setophaga chrysoparia	Endangered		Birds
Golden coqui	Eleutherodactylus jasperii	Threatened	Final	Amphibians
Golden sedge	Carex lutea	Endangered	Final	Flowering Plants
Goldline darter	Percina aurolineata	Threatened	Proposed	Fishes
Gonzales tryonia	Tryonia circumstriata (=stocktonensis)	Endangered	Final	Snails
Gopher tortoise	Gopherus polyphemus	Threatened		Reptiles

Government Canyon Bat Cave meshweaver	<i>Cicurina vespera</i>	Endangered	Final	Arachnids
Government Canyon Bat Cave spider	<i>Tayshaneta microps</i>	Endangered	Final	Arachnids
Gowen cypress	<i>Cupressus goveniana</i> ssp. <i>goveniana</i>	Threatened		Conifers and Cycads
Gray bat	<i>Myotis grisescens</i>	Endangered		Mammals
Gray wolf	<i>Canis lupus</i>	Endangered	Final	Mammals
Gray wolf	<i>Canis lupus</i>	Threatened	Final	Mammals
Greenback Cutthroat trout	<i>Oncorhynchus clarkii stomias</i>	Threatened		Fishes
Greene's tuctoria	<i>Tuctoria greenei</i>	Endangered	Final	Flowering Plants
Green Pitcher Plant	<i>Sarracenia oreophila</i>	Endangered		Flowering Plants
Grizzly bear	<i>Ursus arctos horribilis</i>	Threatened	Proposed	Mammals
Grotto Sculpin	<i>Cottus specus</i>	Endangered	Final	Fishes
Guadalupe Fatmucket	<i>Lampsilis bergmanni</i>	Endangered	Final	Clams
Guadalupe fescue	<i>Festuca ligulata</i>	Endangered	Final	Flowering Plants
Guadalupe Orb	<i>Cyclonaias necki</i>	Endangered	Final	Clams
Guajon	<i>Eleutherodactylus cooki</i>	Threatened	Final	Amphibians
Guam kingfisher	<i>Todiramphus cinnamominus</i>	Endangered	Final	Birds
Guam rail	<i>Gallirallus owstoni</i>	Endangered		Birds
Guam tree snail	<i>Partula radiolata</i>	Endangered		Snails
Gulf Coast jaguarundi	<i>Puma yagouaroundi cacomitli</i>	Endangered		Mammals
Gulf moccasinshell	<i>Medionidus penicillatus</i>	Endangered	Final	Clams
Gunnison Sage-grouse	<i>Centrocercus minimus</i>	Threatened	Final	Birds
Guthrie's (=Pyne's) ground-plum	<i>Astragalus bibullatus</i>	Endangered		Flowering Plants
Guyandotte River crayfish	<i>Cambarus veteranus</i>	Endangered	Final	Crustaceans
Gypsum wild-buckwheat	<i>Eriogonum gypsophilum</i>	Threatened	Final	Flowering Plants
haha	<i>Cyanea crispa</i>	Endangered	Final	Flowering Plants
haha	<i>Cyanea dunbariae</i>	Endangered	Final	Flowering Plants
haha	<i>Cyanea duvalliorum</i>	Endangered	Final	Flowering Plants
haha	<i>Cyanea gibsonii</i>	Endangered	Final	Flowering Plants

haha	Cyanea magnicalyx	Endangered	Final	Flowering Plants
haha	Cyanea maritae	Endangered	Final	Flowering Plants
haha	Cyanea mauiensis	Endangered	Final	Flowering Plants
haha	Cyanea munroi	Endangered	Final	Flowering Plants
Haha	Cyanea acuminata	Endangered	Final	Flowering Plants
Haha	Cyanea asarifolia	Endangered	Final	Flowering Plants
Haha	Cyanea asplenifolia	Endangered	Final	Flowering Plants
Haha	Cyanea calycina	Endangered	Final	Flowering Plants
Haha	Cyanea copelandii ssp. copelandii	Endangered	Not Prudent	Flowering Plants
Haha	Cyanea copelandii ssp. haleakalaensis	Endangered	Final	Flowering Plants
Haha	Cyanea dolichopoda	Endangered	Final	Flowering Plants
Haha	Cyanea eleeleensis	Endangered	Final	Flowering Plants
Haha	Cyanea glabra	Endangered	Final	Flowering Plants
Haha	Cyanea grimesiana ssp. grimesiana	Endangered	Final	Flowering Plants
Haha	Cyanea grimesiana ssp. obatae	Endangered	Final	Flowering Plants
Haha	Cyanea hamatiflora ssp. carlsonii	Endangered	Final	Flowering Plants
Haha	Cyanea hamatiflora ssp. hamatiflora	Endangered	Final	Flowering Plants
Haha	Cyanea humboldtiana	Endangered	Final	Flowering Plants
Haha	Cyanea kolekoleensis	Endangered	Final	Flowering Plants
Haha	Cyanea koolauensis	Endangered	Final	Flowering Plants
Haha	Cyanea kuhihewa	Endangered	Final	Flowering Plants
Haha	Cyanea kunthiana	Endangered	Final	Flowering Plants
Haha	Cyanea lanceolata	Endangered	Final	Flowering Plants
Haha	Cyanea lobata	Endangered	Final	Flowering Plants
Haha	Cyanea longiflora	Endangered	Final	Flowering Plants
Haha	Cyanea mannii	Endangered	Final	Flowering Plants
Haha	Cyanea marksii	Endangered	Final	Flowering Plants
Haha	Cyanea mceldowneyi	Endangered	Final	Flowering Plants
Haha	Cyanea obtusa	Endangered	Final	Flowering Plants
Haha	Cyanea pinnatifida	Endangered	Final	Flowering Plants
Haha	Cyanea procera	Endangered	Final	Flowering Plants

Haha	Cyanea profuga	Endangered	Final	Flowering Plants
Haha	Cyanea purpurellifolia	Endangered	Final	Flowering Plants
Haha	Cyanea recta	Threatened	Final	Flowering Plants
Haha	Cyanea remyi	Endangered	Final	Flowering Plants
Haha	Cyanea rivularis	Endangered	Final	Flowering Plants
Haha	Cyanea shipmanii	Endangered	Final	Flowering Plants
Haha	Cyanea stictophylla	Endangered	Final	Flowering Plants
Haha	Cyanea st.-johnii	Endangered	Final	Flowering Plants
Haha	Cyanea superba	Endangered	Final	Flowering Plants
Haha	Cyanea truncata	Endangered	Final	Flowering Plants
Haha	Cyanea undulata	Endangered	Final	Flowering Plants
haha nui	Cyanea horrida	Endangered	Final	Flowering Plants
Hairy Orcutt grass	Orcuttia pilosa	Endangered	Final	Flowering Plants
Hairy rattleweed	Baptisia arachnifera	Endangered		Flowering Plants
haiwale	Cyrtandra ferripilosa	Endangered	Final	Flowering Plants
haiwale	Cyrtandra nanawaleensis	Endangered	Final	Flowering Plants
haiwale	Cyrtandra wagneri	Endangered	Final	Flowering Plants
Haiwale	Cyrtandra gracilis	Endangered	Final	Flowering Plants
Haiwale	Cyrtandra paliku	Endangered	Final	Flowering Plants
Haiwale	Cyrtandra waiolani	Endangered	Final	Flowering Plants
Ha`iwale	Cyrtandra crenata	Endangered	Not Prudent	Flowering Plants
Ha`iwale	Cyrtandra dentata	Endangered	Final	Flowering Plants
Ha`iwale	Cyrtandra filipes	Endangered	Final	Flowering Plants
Ha`iwale	Cyrtandra giffardii	Endangered	Final	Flowering Plants
Ha`iwale	Cyrtandra hematos	Endangered		Flowering Plants
Ha`iwale	Cyrtandra kaulantha	Endangered	Final	Flowering Plants
Ha`iwale	Cyrtandra limahuliensis	Threatened	Final	Flowering Plants
Ha`iwale	Cyrtandra munroi	Endangered	Final	Flowering Plants
Ha`iwale	Cyrtandra oenobarba	Endangered	Final	Flowering Plants
Ha`iwale	Cyrtandra oxybapha	Endangered	Final	Flowering Plants
Ha`iwale	Cyrtandra polyantha	Endangered	Final	Flowering Plants

Ha`iwale	Cyrtandra sessilis	Endangered	Final	Flowering Plants
Ha`iwale	Cyrtandra subumbellata	Endangered	Final	Flowering Plants
Ha`iwale	Cyrtandra tintinnabula	Endangered	Final	Flowering Plants
Ha`iwale	Cyrtandra viridiflora	Endangered	Final	Flowering Plants
Hala pepe	Dracaena fernaldii	Endangered	Final	Flowering Plants
Hala pepe	Dracaena forbesii	Endangered	Final	Flowering Plants
Hala pepe	Dracaena konaensis	Endangered	Final	Flowering Plants
Harperella	Ptilimnium nodosum	Endangered		Flowering Plants
Harper's beauty	Harperocallis flava	Endangered		Flowering Plants
Hartweg's golden sunburst	Pseudobahia bahiifolia	Endangered		Flowering Plants
Hau kuahiwi	Hibiscadelphus giffardianus	Endangered	Final	Flowering Plants
Hau kuahiwi	Hibiscadelphus hualalaiensis	Endangered	Final	Flowering Plants
Hau kuahiwi	Hibiscadelphus woodii	Endangered	Final	Flowering Plants
Hawaii akepa	Loxops coccineus	Endangered		Birds
Hawaiian bluegrass	Poa sandvicensis	Endangered	Final	Flowering Plants
Hawaiian common gallinule	Gallinula galeata sandvicensis	Endangered		Birds
Hawaiian coot (alae ke`oke`o)	Fulica alai	Endangered		Birds
Hawaiian crow	Corvus hawaiiensis	Endangered		Birds
Hawaiian duck	Anas wyvilliana	Endangered		Birds
Hawaiian gardenia	Gardenia brighamii	Endangered		Flowering Plants
Hawaiian goose	Branta (=Nesochen) sandvicensis	Threatened		Birds
Hawaiian hoary bat	Lasiurus cinereus semotus	Endangered		Mammals
Hawaiian petrel	Pterodroma sandwichensis	Endangered		Birds
Hawaiian picture-wing fly	Drosophila aglaia	Endangered	Final	Insects
Hawaiian picture-wing fly	Drosophila differens	Endangered	Final	Insects
Hawaiian picture-wing fly	Drosophila digressa	Endangered	Final	Insects
Hawaiian picture-wing fly	Drosophila hemipeza	Endangered	Final	Insects
Hawaiian picture-wing fly	Drosophila heteroneura	Endangered	Final	Insects
Hawaiian picture-wing fly	Drosophila montgomeryi	Endangered	Final	Insects
Hawaiian picture-wing fly	Drosophila mulli	Threatened	Final	Insects
Hawaiian picture-wing fly	Drosophila musaphilia	Endangered	Final	Insects

Hawaiian picture-wing fly	<i>Drosophila neoclavisetae</i>	Endangered	Final	Insects
Hawaiian picture-wing fly	<i>Drosophila obatai</i>	Endangered	Final	Insects
Hawaiian picture-wing fly	<i>Drosophila ochrobasis</i>	Endangered	Final	Insects
Hawaiian picture-wing fly	<i>Drosophila sharpi</i>	Endangered	Final	Insects
Hawaiian picture-wing fly	<i>Drosophila substenoptera</i>	Endangered	Final	Insects
Hawaiian picture-wing fly	<i>Drosophila tarphytrichia</i>	Endangered	Final	Insects
Hawaiian stilt	<i>Himantopus mexicanus knudseni</i>	Endangered		Birds
Hawaiian vetch	<i>Vicia menziesii</i>	Endangered		Flowering Plants
Hawaiian yellow-faced bee	<i>Hylaeus kuakea</i>	Endangered		Insects
Hawaiian yellow-faced bee	<i>Hylaeus longiceps</i>	Endangered		Insects
Hawaiian yellow-faced bee	<i>Hylaeus mana</i>	Endangered		Insects
Hawaii creeper	<i>Loxops mana</i>	Endangered		Birds
Hay's Spring amphipod	<i>Stygobromus hayi</i>	Endangered		Crustaceans
Hayun lagu (=Guam), Tronkon guafi (Rota))	<i>Serianthes nelsonii</i>	Endangered		Flowering Plants
Heau	<i>Exocarpos luteolus</i>	Endangered	Final	Flowering Plants
Heau	<i>Exocarpos menziesii</i>	Endangered		Flowering Plants
Heavy pigtoe	<i>Pleurobema taitianum</i>	Endangered		Clams
Heliotrope milk-vetch	<i>Astragalus montii</i>	Threatened	Final	Flowering Plants
Hell Creek Cave crayfish	<i>Cambarus zophonastes</i>	Endangered		Crustaceans
Heller's blazingstar	<i>Liatris helleri</i>	Threatened		Flowering Plants
Helotes mold beetle	<i>Batrisodes venyivi</i>	Endangered	Final	Insects
Hermes copper butterfly	<i>Lycaena hermes</i>	Threatened	Final	Insects
Hickman's potentilla	<i>Potentilla hickmanii</i>	Endangered		Flowering Plants
Higgins eye (pearlymussel)	<i>Lampsilis higginsii</i>	Endangered		Clams
Highlands scrub hypericum	<i>Hypericum cumulicola</i>	Endangered		Flowering Plants
Higo Chumbo	<i>Harrisia portoricensis</i>	Threatened		Flowering Plants
Higuero de sierra	<i>Crescentia portoricensis</i>	Endangered		Flowering Plants
Hiko White River springfish	<i>Crenichthys baileyi grandis</i>	Endangered	Final	Fishes
Hilaris yellow-faced bee	<i>Hylaeus hilaris</i>	Endangered		Insects
Hillebrand's reedgrass	<i>Calamagrostis hillebrandii</i>	Endangered	Final	Flowering Plants

Hilo ischaemum	Ischaemum byrone	Endangered	Final	Flowering Plants
Hinckley oak	Quercus hinckleyi	Threatened		Flowering Plants
Hine's emerald dragonfly	Somatochlora hineana	Endangered	Final	Insects
Hoawa	Pittosporum halophilum	Endangered	Final	Flowering Plants
Hoawa	Pittosporum hawaiiense	Endangered	Final	Flowering Plants
Ho`awa	Pittosporum napaliense	Endangered	Final	Flowering Plants
Hoffmann's rock-cress	Arabis hoffmannii	Endangered		Flowering Plants
Hoffmann's slender-flowered gilia	Gilia tenuiflora ssp. hoffmannii	Endangered		Flowering Plants
Hohiu	Dryopteris glabra var. pusilla	Endangered		Ferns and Allies
Holei	Ochrosia haleakalae	Endangered		Flowering Plants
Holei	Ochrosia kilaueaensis	Endangered	Not Prudent	Flowering Plants
Holmgren milk-vetch	Astragalus holmgreniorum	Endangered	Final	Flowering Plants
Holy Ghost ipomopsis	Ipomopsis sancti-spiritus	Endangered		Flowering Plants
Honohono	Haplostachys haplostachya	Endangered		Flowering Plants
Hoover's spurge	Chamaesyce hooveri	Threatened	Final	Flowering Plants
Houghton's goldenrod	Solidago houghtonii	Threatened		Flowering Plants
Houston toad	Bufo houstonensis	Endangered	Final	Amphibians
Howell's spectacular thelypody	Thelypodium howellii ssp. spectabilis	Threatened		Flowering Plants
Howell's spineflower	Chorizanthe howellii	Endangered		Flowering Plants
Huachuca water-umbel	Lilaeopsis schaffneriana var. recurva	Endangered	Final	Flowering Plants
Hulumoa	Korthalsella degeneri	Endangered	Final	Flowering Plants
Humpback chub	Gila cypha	Threatened	Final	Fishes
Humped tree snail	Partula gibba	Endangered		Snails
Hungerford's crawling water Beetle	Brychius hungerfordi	Endangered		Insects
Hutton tui chub	Gila bicolor ssp.	Threatened		Fishes
Ihi	Portulaca villosa	Endangered		Flowering Plants
Ihi`ihi	Marsilea villosa	Endangered	Final	Ferns and Allies
`I`iwi	Drepanis coccinea	Threatened	Proposed	Birds
Illinois cave amphipod	Gammarus acherondytes	Endangered		Crustaceans
Independence Valley speckled dace	Rhinichthys osculus lethoporus	Endangered		Fishes
Indiana bat	Myotis sodalis	Endangered	Final	Mammals

Indian Knob mountainbalm	<i>Eriodictyon altissimum</i>	Endangered		Flowering Plants
Inflated heelsplitter	<i>Potamilus inflatus</i>	Threatened		Clams
Interrupted (=Georgia) Rocksnail	<i>Leptoxis foremani</i>	Endangered	Final	Snails
Inyo California towhee	<i>Melospiza crissalis eremophilus</i>	Threatened	Final	Birds
lone (incl. Irish Hill) buckwheat	<i>Eriogonum apricum</i> (incl. var. <i>prostratum</i> )	Endangered		Flowering Plants
lone manzanita	<i>Arctostaphylos myrtifolia</i>	Threatened		Flowering Plants
Iowa Pleistocene snail	<i>Discus macclintocki</i>	Endangered		Snails
Island Barberry	<i>Berberis pinnata</i> ssp. <i>insularis</i>	Endangered		Flowering Plants
Island malacothrix	<i>Malacothrix squalida</i>	Endangered		Flowering Plants
Island marble Butterfly	<i>Euchloe ausonides insularis</i>	Endangered	Final	Insects
Island phacelia	<i>Phacelia insularis</i> ssp. <i>insularis</i>	Endangered		Flowering Plants
Island rush-rose	<i>Helianthemum greenei</i>	Threatened		Flowering Plants
Ivory-billed woodpecker	<i>Campephilus principalis</i>	Endangered		Birds
Jaguar	<i>Panthera onca</i>	Endangered	Final	Mammals
James spinymussel	<i>Parvaspina collina</i>	Endangered		Clams
Jemez Mountains salamander	<i>Plethodon neomexicanus</i>	Endangered	Final	Amphibians
Jesup's milk-vetch	<i>Astragalus robbinsii</i> var. <i>jesupii</i>	Endangered		Flowering Plants
Jollyville Plateau Salamander	<i>Eurycea tonkawae</i>	Threatened	Final	Amphibians
Jones Cycladenia	<i>Cycladenia humilis</i> var. <i>jonesii</i>	Threatened		Flowering Plants
June sucker	<i>Chasmistes liorus</i>	Threatened	Final	Fishes
Kamakahala	<i>Labordia cyrtandrae</i>	Endangered	Final	Flowering Plants
Kamakahala	<i>Labordia helleri</i>	Endangered	Final	Flowering Plants
Kamakahala	<i>Labordia lydgatei</i>	Endangered	Final	Flowering Plants
Kamakahala	<i>Labordia pumila</i>	Endangered	Final	Flowering Plants
Kamakahala	<i>Labordia tinifolia</i> var. <i>lanaiensis</i>	Endangered	Final	Flowering Plants
Kamakahala	<i>Labordia tinifolia</i> var. <i>wahiawaensis</i>	Endangered	Final	Flowering Plants
Kamakahala	<i>Labordia triflora</i>	Endangered	Final	Flowering Plants
Kamanomano	<i>Cenchrus agrimonioides</i>	Endangered	Final	Flowering Plants
Kamapua`a	<i>Kadua fluviatilis</i>	Endangered		Flowering Plants
Karner blue butterfly	<i>Lycaeides melissa samuelis</i>	Endangered	Proposed	Insects
Kauai cave amphipod	<i>Spelaeorchestia koloana</i>	Endangered	Final	Crustaceans



Kauai cave wolf or pe'e pe'e maka 'ole spider	Adelocosa anops	Endangered	Final	Arachnids
Kauai hau kuahiwi	Hibiscadelphus distans	Endangered		Flowering Plants
Kauila	Colubrina oppositifolia	Endangered	Final	Flowering Plants
Kaulu	Pteralyxia kauaiensis	Endangered	Final	Flowering Plants
Kaulu	Pteralyxia macrocarpa	Endangered	Final	Flowering Plants
Kearney's blue-star	Amsonia kearneyana	Endangered		Flowering Plants
Keck's Checker-mallow	Sidalcea keckii	Endangered	Final	Flowering Plants
Kendall Warm Springs dace	Rhinichthys osculus thermalis	Endangered		Fishes
Kentucky arrow darter	Etheostoma spilotum	Threatened	Final	Fishes
Kentucky cave shrimp	Palaemonias ganteri	Endangered	Final	Crustaceans
Kentucky glade cress	Leavenworthia exigua laciniata	Threatened	Final	Flowering Plants
Kenwood Marsh checker-mallow	Sidalcea oregana ssp. valida	Endangered		Flowering Plants
Kern mallow	Eremalche kernensis	Endangered		Flowering Plants
Kern primrose sphinx moth	Euproserpinus euterpe	Threatened	Proposed	Insects
Key deer	Odocoileus virginianus clavium	Endangered		Mammals
Key Largo cotton mouse	Peromyscus gossypinus allapaticola	Endangered	Proposed	Mammals
Key Largo woodrat	Neotoma floridana smalli	Endangered		Mammals
Key tree cactus	Pilosocereus robinii	Endangered		Flowering Plants
Kincaid's Lupine	Lupinus sulphureus ssp. kincaidii	Threatened	Final	Flowering Plants
Kio`ele	Kadua coriacea	Endangered	Final	Flowering Plants
Kiponapona	Phyllostegia racemosa	Endangered	Final	Flowering Plants
Kneeland Prairie penny-cress	Thlaspi californicum	Endangered	Final	Flowering Plants
Knieskern's Beaked-rush	Rhynchospora knieskernii	Threatened		Flowering Plants
Knowlton's cactus	Pediocactus knowltonii	Endangered		Flowering Plants
Kodachrome bladderpod	Lesquerella tumulosa	Endangered		Flowering Plants
Kohe malama malama o Kanaloa	Kanaloa kahoolawensis	Endangered	Final	Flowering Plants
Koholapehu	Dubautia latifolia	Endangered	Final	Flowering Plants
Koki`o	Kokia Cookei	Endangered	Final	Flowering Plants
Koki`o	Kokia drynarioides	Endangered	Final	Flowering Plants
Koki`o	Kokia kauaiensis	Endangered	Final	Flowering Plants

Koki`o ke`oke`o	Hibiscus arnottianus ssp. immaculatus	Endangered	Final	Flowering Plants
Koki`o ke`oke`o	Hibiscus waimeae ssp. hannerae	Endangered	Final	Flowering Plants
Kolea	Myrsine fosbergii	Endangered		Flowering Plants
Kolea	Myrsine juddii	Endangered	Final	Flowering Plants
Kolea	Myrsine knudsenii	Endangered	Final	Flowering Plants
Kolea	Myrsine linearifolia	Threatened	Final	Flowering Plants
Kolea	Myrsine mezii	Endangered	Final	Flowering Plants
Kolea	Myrsine vaccinioides	Endangered	Final	Flowering Plants
kookoolau	Bidens hillebrandiana ssp. hillebrandiana	Endangered	Final	Flowering Plants
Ko`oko`olau	Bidens amplexans	Endangered	Final	Flowering Plants
Ko`oko`olau	Bidens campylotheca ssp. pentamera	Endangered	Final	Flowering Plants
Ko`oko`olau	Bidens campylotheca ssp. waihoiensis	Endangered	Final	Flowering Plants
Ko`oko`olau	Bidens conjuncta	Endangered	Final	Flowering Plants
Ko`oko`olau	Bidens micrantha ssp. ctenophylla	Endangered	Final	Flowering Plants
Ko`oko`olau	Bidens micrantha ssp. kalealaha	Endangered	Final	Flowering Plants
Ko`oko`olau	Bidens wiebkei	Endangered	Final	Flowering Plants
Ko`oloa`ula	Abutilon menziesii	Endangered		Flowering Plants
kopa	Kadua cordata remyi	Endangered	Final	Flowering Plants
Kopiko	Psychotria grandiflora	Endangered	Final	Flowering Plants
Kopiko	Psychotria hexandra var. oahuensis	Endangered	Final	Flowering Plants
Kopiko	Psychotria hobbii	Endangered	Final	Flowering Plants
Koster's springsnail	Juturnia kosteri	Endangered	Final	Snails
Kral's water-plantain	Sagittaria secundifolia	Threatened		Flowering Plants
Kretschmarr Cave mold beetle	Texamaurops reddelli	Endangered		Insects
Kuahiwi laukahi	Plantago hawaiiensis	Endangered	Final	Flowering Plants
Kuahiwi laukahi	Plantago princeps	Endangered	Final	Flowering Plants
Kuawawaenohu	Schiedea lychnoides	Endangered	Final	Flowering Plants
Kuenzler hedgehog cactus	Echinocereus fendleri var. kuenzleri	Threatened		Flowering Plants
Kulu`i	Nototrichium humile	Endangered	Final	Flowering Plants
Kupukupu makali`i	Menisciopsis boydiae	Endangered		Ferns and Allies
Lacy elimia (snail)	Elimia crenatella	Threatened		Snails

La Graciosa thistle	Cirsium loncholepis	Endangered	Final	Flowering Plants
Laguna Beach liveforever	Dudleya stolonifera	Threatened		Flowering Plants
Laguna Mountains skipper	Pyrgus ruralis lagunae	Endangered	Final	Insects
Lahontan cutthroat trout	Oncorhynchus clarkii henshawi	Threatened		Fishes
Lake County stonecrop	Parvisedum leiocarpum	Endangered		Flowering Plants
Lakela's mint	Dicerandra immaculata	Endangered		Flowering Plants
Lakeside daisy	Hymenoxys herbacea	Threatened		Flowering Plants
Lanai sandalwood (= `iliahi)	Santalum haleakalae var. lanaiense	Endangered	Final	Flowering Plants
Lanai tree snail	Partulina semicarinata	Endangered	Final	Snails
Lanai tree snail	Partulina variabilis	Endangered	Final	Snails
Lane Mountain milk-vetch	Astragalus jaegerianus	Endangered	Final	Flowering Plants
Lange's metalmark butterfly	Apodemia mormo langei	Endangered	Proposed	Insects
Langford's tree snail	Partula langfordi	Endangered		Snails
Large-flowered fiddleneck	Amsinckia grandiflora	Endangered	Final	Flowering Plants
Large-flowered skullcap	Scutellaria montana	Threatened		Flowering Plants
Large-flowered woolly meadowfoam	Limnanthes pumila ssp. grandiflora	Endangered	Final	Flowering Plants
Large-fruited sand-verbena	Abronia macrocarpa	Endangered		Flowering Plants
Lassics lupine	Lupinus constancei	Endangered	Final	Flowering Plants
Last Chance townsendia	Townsendia aprica	Threatened		Flowering Plants
Lau `ehu	Panicum niihauense	Endangered	Final	Flowering Plants
Laulihilihi	Schiedea stellarioides	Endangered	Final	Flowering Plants
Laurel dace	Chrosomus saylori	Endangered	Final	Fishes
Layne's butterweed	Senecio layneae	Threatened		Flowering Plants
Laysan duck	Anas laysanensis	Endangered		Birds
Laysan finch	Telespiza cantans	Endangered		Birds
Leafy prairie-clover	Dalea foliosa	Endangered		Flowering Plants
Least Bell's vireo	Vireo bellii pusillus	Endangered	Final	Birds
Lee County cave isopod	Lirceus usdagalun	Endangered		Crustaceans
Leedy's roseroot	Rhodiola integrifolia ssp. leedyi	Threatened		Flowering Plants
Lee pincushion cactus	Coryphantha sneedii var. leei	Threatened		Flowering Plants
lehua makano	Lysimachia daphnoides	Endangered	Final	Flowering Plants

Leon Springs pupfish	Cyprinodon bovinus	Endangered	Final	Fishes
Leopard darter	Percina pantherina	Threatened	Final	Fishes
Lesser prairie-chicken	Tympanuchus pallidicinctus	Endangered		Birds
Lesser prairie-chicken	Tympanuchus pallidicinctus	Threatened		Birds
Lewton's polygala	Polygala lewtonii	Endangered		Flowering Plants
Light-footed Ridgway's rail	Rallus obsoletus levipes	Endangered		Birds
Liliwai	Acaena exigua	Endangered	Final	Flowering Plants
Little Aguja (=Creek) Pondweed	Potamogeton clystocarpus	Endangered		Flowering Plants
Little amphianthus	Amphianthus pusillus	Threatened		Flowering Plants
Little Colorado spinedace	Lepidomeda vittata	Threatened	Final	Fishes
Little Kern golden Trout	Oncorhynchus aguabonita whitei	Threatened	Final	Fishes
Littlewing pearlymussel	Pegias fabula	Endangered		Clams
Llanero Coqui	Eleutherodactylus juanariveroi	Endangered	Final	Amphibians
Lloyd's Mariposa cactus	Sclerocactus mariposensis	Threatened		Flowering Plants
Loach minnow	Tiaroga cobitis	Endangered	Final	Fishes
Loch Lomond coyote thistle	Eryngium constancei	Endangered		Flowering Plants
Lompoc yerba santa	Eriodictyon capitatum	Endangered	Final	Flowering Plants
Longfin Smelt	Spirinchus thaleichthys	Endangered	Proposed	Fishes
Longhorn fairy shrimp	Branchinecta longiantenna	Endangered	Final	Crustaceans
Longsolid	Fusconaia subrotunda	Threatened	Final	Clams
Longspurred mint	Dicerandra cornutissima	Endangered		Flowering Plants
Lost River sucker	Deltistes luxatus	Endangered	Final	Fishes
Lotis blue butterfly	Lycaeides argyrognomon lotis	Endangered	Proposed	Insects
Louisiana pearlshell	Margaritifera hembeli	Threatened		Clams
Louisiana pinesnake	Pituophis ruthveni	Threatened	Proposed	Reptiles
Louisiana quillwort	Isoetes louisianensis	Endangered		Ferns and Allies
loulou	Pritchardia aylmer-robinsonii	Endangered	Not Prudent	Flowering Plants
loulou	Pritchardia bakeri	Endangered		Flowering Plants
loulou	Pritchardia hardyi	Endangered		Flowering Plants
loulou	Pritchardia kaalae	Endangered	Not Prudent	Flowering Plants
loulou	Pritchardia lanigera	Endangered	Not Prudent	Flowering Plants

loulou	<i>Pritchardia maideniana</i>	Endangered	Not Prudent	Flowering Plants
loulou	<i>Pritchardia munroi</i>	Endangered	Not Prudent	Flowering Plants
loulou	<i>Pritchardia napaliensis</i>	Endangered	Final	Flowering Plants
loulou	<i>Pritchardia remota</i>	Endangered	Final	Flowering Plants
loulou	<i>Pritchardia schattaueri</i>	Endangered	Not Prudent	Flowering Plants
loulou	<i>Pritchardia viscosa</i>	Endangered	Final	Flowering Plants
Lower Keys marsh rabbit	<i>Sylvilagus palustris hefneri</i>	Endangered		Mammals
Lyon's pentachaeta	<i>Pentachaeta lyonii</i>	Endangered	Final	Flowering Plants
Lyrate bladderpod	<i>Lesquerella lyrata</i>	Threatened		Flowering Plants
MacFarlane's four-o'clock	<i>Mirabilis macfarlanei</i>	Threatened		Flowering Plants
Madison Cave isopod	<i>Antrolana lira</i>	Threatened		Crustaceans
Madla Cave Meshweaver	<i>Cicurina madla</i>	Endangered	Final	Arachnids
Magnificent ramshorn	<i>Planorbella magnifica</i>	Endangered	Final	Snails
Maguire primrose	<i>Primula maguirei</i>	Threatened		Flowering Plants
Mahoe	<i>Alectryon macrococcus</i>	Endangered	Final	Flowering Plants
Makou	<i>Peucedanum sandwicense</i>	Threatened	Final	Flowering Plants
Makou	<i>Ranunculus hawaiiensis</i>	Endangered		Flowering Plants
Makou	<i>Ranunculus mauianus</i>	Endangered		Flowering Plants
Malheur wire-lettuce	<i>Stephanomeria malheurensis</i>	Endangered	Final	Flowering Plants
Mancos milk-vetch	<i>Astragalus humillimus</i>	Endangered		Flowering Plants
Mann's bluegrass	<i>Poa mannii</i>	Endangered	Final	Flowering Plants
Many-flowered navarretia	<i>Navarretia leucocephala</i> ssp. <i>pliantha</i>	Endangered		Flowering Plants
Ma`oli`oli	<i>Schiedea apokremnos</i>	Endangered	Final	Flowering Plants
Ma`oli`oli	<i>Schiedea hawaiiensis</i>	Endangered	Final	Flowering Plants
Ma`oli`oli	<i>Schiedea kealiae</i>	Endangered	Final	Flowering Plants
Ma`oli`oli	<i>Schiedea pubescens</i>	Endangered		Flowering Plants
Mao (= maomao) (honeyeater)	<i>Gymnomyza samoensis</i>	Endangered		Birds
Mapele	<i>Cyrtandra cyaneoides</i>	Endangered	Final	Flowering Plants
Marbled Murrelet	<i>Brachyramphus marmoratus</i>	Threatened	Final	Birds
Marcuscent dudleya	<i>Dudleya cymosa</i> ssp. <i>marcescens</i>	Threatened		Flowering Plants
Mariana (=aga) Crow	<i>Corvus kubaryi</i>	Endangered	Final	Birds

Mariana common moorhen (pulattat)	<i>Gallinula chloropus guami</i>	Endangered		Birds
Mariana eight-spot butterfly	<i>Hypolimnias octocula marianensis</i>	Endangered		Insects
Mariana fruit Bat (=Mariana flying fox)	<i>Pteropus mariannus mariannus</i>	Threatened	Final	Mammals
Mariana swiftlet	<i>Aerodramus bartschi</i>	Endangered		Birds
Mariana wandering butterfly	<i>Vagrans egistina</i>	Endangered		Insects
Marin dwarf-flax	<i>Hesperolinon congestum</i>	Threatened		Flowering Plants
Mariposa pussypaws	<i>Calyptridium pulchellum</i>	Threatened		Flowering Plants
Marron bacora	<i>Solanum conocarpum</i>	Endangered	Final	Flowering Plants
Marsh Sandwort	<i>Arenaria paludicola</i>	Endangered		Flowering Plants
Maryland darter	<i>Etheostoma sellare</i>	Endangered	Final	Fishes
Masked bobwhite (quail)	<i>Colinus virginianus ridgwayi</i>	Endangered		Birds
Mat-forming quillwort	<i>Isoetes tegetiformans</i>	Endangered		Ferns and Allies
Maui parrotbill (Kiwikiu)	<i>Pseudonestor xanthophrys</i>	Endangered	Final	Birds
Maui reedgrass	<i>Calamagrostis expansa</i>	Endangered		Flowering Plants
Maui remya	<i>Remya mauiensis</i>	Endangered	Final	Flowering Plants
Mauna Loa (=Ka'u) silversword	<i>Argyroxiphium kauense</i>	Endangered	Final	Flowering Plants
McDonald's rock-cress	<i>Arabis mcdonaldiana</i>	Endangered		Flowering Plants
Mead's milkweed	<i>Asclepias meadii</i>	Threatened		Flowering Plants
Mehamehame	<i>Flueggea neowawraea</i>	Endangered	Final	Flowering Plants
Meltwater lednian stonefly	<i>Lednia tumana</i>	Threatened		Insects
Menzies' wallflower	<i>Erysimum menziesii</i>	Endangered		Flowering Plants
Mesa Verde cactus	<i>Sclerocactus mesae-verdae</i>	Threatened		Flowering Plants
Metcalf Canyon jewelflower	<i>Streptanthus albidus</i> ssp. <i>albidus</i>	Endangered		Flowering Plants
Mexican flannelbush	<i>Fremontodendron mexicanum</i>	Endangered	Final	Flowering Plants
Mexican long-nosed bat	<i>Leptonycteris nivalis</i>	Endangered		Mammals
Mexican spotted owl	<i>Strix occidentalis lucida</i>	Threatened	Final	Birds
Mexican wolf	<i>Canis lupus baileyi</i>	Endangered		Mammals
Miami Blue Butterfly	<i>Cyclargus thomasi bethunebakeri</i>	Endangered	Not Prudent	Insects
Miami tiger beetle	<i>Cicindelidia floridana</i>	Endangered	Final	Insects

Miccosukee gooseberry	Ribes echinellum	Threatened		Flowering Plants
Michaux's sumac	Rhus michauxii	Endangered		Flowering Plants
Michigan monkey-flower	Mimulus michiganensis	Endangered		Flowering Plants
Micronesian megapode	Megapodius laperouse	Endangered		Birds
Minnesota dwarf trout lily	Erythronium propullans	Endangered		Flowering Plants
Mission blue butterfly	Icaricia icarioides missionensis	Endangered	Proposed	Insects
Mississippi sandhill crane	Antigone canadensis pulla	Endangered	Final	Birds
Missouri bladderpod	Physaria filiformis	Threatened		Flowering Plants
Mitchell's satyr Butterfly	Neonympha mitchellii mitchellii	Endangered		Insects
Moapa dace	Moapa coriacea	Endangered		Fishes
Mohave tui chub	Gila bicolor ssp. mohavensis	Endangered		Fishes
Mohr's Barbara's buttons	Marshallia mohrii	Threatened		Flowering Plants
Molokai `oloma`o	Myadestes lanaiensis rutha	Endangered		Birds
Mona boa	Epicrates monensis monensis	Threatened	Final	Reptiles
Mona ground Iguana	Cyclura stejnegeri	Threatened	Final	Reptiles
Monterey clover	Trifolium trichocalyx	Endangered		Flowering Plants
Monterey gilia	Gilia tenuiflora ssp. arenaria	Endangered		Flowering Plants
Monterey spineflower	Chorizanthe pungens var. pungens	Threatened	Final	Flowering Plants
Morefield's Leather Flower	Clematis morefieldii	Endangered		Flowering Plants
Morro Bay kangaroo rat	Dipodomys heermanni morroensis	Endangered	Final	Mammals
Morro manzanita	Arctostaphylos morroensis	Threatened		Flowering Plants
Morro shoulderband (=Banded dune) snail	Helminthoglypta walkeriana	Threatened	Final	Snails
Mountain golden heather	Hudsonia montana	Threatened	Final	Flowering Plants
Mountain sweet pitcher-plant	Sarracenia rubra ssp. jonesii	Endangered		Flowering Plants
Mountain yellow-legged frog	Rana muscosa	Endangered	Final	Amphibians
Mountain yellow-legged frog	Rana muscosa	Endangered	Final	Amphibians
Mount Charleston blue butterfly	Icaricia (Plebejus) shasta charlestonensis	Endangered	Final	Insects
Mount Graham red squirrel	Tamiasciurus fremonti grahamensis	Endangered	Final	Mammals
Mount Hermon June beetle	Polyphylla barbata	Endangered		Insects
Mt. Rainier white-tailed ptarmigan	Lagopus leucura rainierensis	Threatened		Birds

Munz's onion	Allium munzii	Endangered	Final	Flowering Plants
Myrtle's silverspot butterfly	Speyeria zerene myrtleae	Endangered		Insects
Naenae	Dubautia kalalauensis	Endangered	Final	Flowering Plants
Naenae	Dubautia kenwoodii	Endangered	Final	Flowering Plants
Na`ena`e	Dubautia herbstobatae	Endangered	Final	Flowering Plants
Na`ena`e	Dubautia imbricata ssp. imbricata	Endangered	Final	Flowering Plants
Na`ena`e	Dubautia pauciflorula	Endangered	Final	Flowering Plants
Na`ena`e	Dubautia plantaginea ssp. humilis	Endangered	Final	Flowering Plants
Na`ena`e	Dubautia plantaginea ssp. magnifolia	Endangered	Final	Flowering Plants
Na`ena`e	Dubautia waialealae	Endangered	Final	Flowering Plants
Nani wai`ale`ale	Viola kauaiensis var. wahiawaensis	Endangered	Final	Flowering Plants
Nanu	Gardenia mannii	Endangered	Final	Flowering Plants
Nanu	Gardenia remyi	Endangered		Flowering Plants
Napa bluegrass	Poa napensis	Endangered		Flowering Plants
Narrow-headed gartersnake	Thamnophis rufipunctatus	Threatened	Final	Reptiles
Narrow pigtoe	Fusconaia escambia	Threatened	Final	Clams
Nashville crayfish	Orconectes shoupi	Endangered		Crustaceans
(=Native yellow hibiscus) ma`o hau hele	Hibiscus brackenridgei	Endangered	Final	Flowering Plants
Navajo sedge	Carex specuicola	Threatened	Final	Flowering Plants
Navasota ladies-tresses	Spiranthes parksii	Endangered		Flowering Plants
Neches River rose-mallow	Hibiscus dasycalyx	Threatened	Final	Flowering Plants
nehe	Lipochaeta fauriei	Endangered	Final	Flowering Plants
nehe	Lipochaeta lobata var. leptophylla	Endangered	Final	Flowering Plants
nehe	Lipochaeta micrantha	Endangered	Final	Flowering Plants
nehe	Lipochaeta venosa	Endangered		Flowering Plants
nehe	Lipochaeta waimeaensis	Endangered	Final	Flowering Plants
nehe	Melanthera kamolensis	Endangered	Final	Flowering Plants
nehe	Melanthera tenuifolia	Endangered	Final	Flowering Plants
Nellie's cory cactus	Escobaria minima	Endangered		Flowering Plants
Neosho madtom	Noturus placidus	Threatened		Fishes



Neosho Mucket	<i>Lampsilis rafinesqueana</i>	Endangered	Final	Clams
Neuse River waterdog	<i>Necturus lewisi</i>	Threatened	Final	Amphibians
Nevin's barberry	<i>Berberis nevinii</i>	Endangered	Final	Flowering Plants
Newcomb's snail	<i>Erinna newcombi</i>	Threatened	Final	Snails
Newcomb's Tree snail	<i>Newcombia cumingi</i>	Endangered	Final	Snails
Newell's shearwater	<i>Puffinus newelli</i>	Threatened		Birds
New Mexican ridge-nosed rattlesnake	<i>Crotalus willardi obscurus</i>	Threatened	Final	Reptiles
New Mexico meadow jumping mouse	<i>Zapus hudsonius luteus</i>	Endangered	Final	Mammals
Niangua darter	<i>Etheostoma nianguae</i>	Threatened	Final	Fishes
Nichol's Turk's head cactus	<i>Echinocactus horizonthalonius</i> var. <i>nicholii</i>	Endangered		Flowering Plants
Nightingale reed warbler (old world warbler)	<i>Acrocephalus luscini</i>	Endangered		Birds
Nihoa finch	<i>Telespiza ultima</i>	Endangered		Birds
Nihoa millerbird (old world warbler)	<i>Acrocephalus familiaris kingi</i>	Endangered		Birds
Nioi	<i>Eugenia koolauensis</i>	Endangered	Final	Flowering Plants
Nipomo Mesa lupine	<i>Lupinus nipomensis</i>	Endangered		Flowering Plants
No common name	<i>Abutilon eremitopetalum</i>	Endangered	Final	Flowering Plants
No common name	<i>Abutilon sandwicense</i>	Endangered	Final	Flowering Plants
No common name	<i>Achyranthes mutica</i>	Endangered	Final	Flowering Plants
No common name	<i>Agave eggersiana</i>	Endangered	Final	Flowering Plants
No common name	<i>Amaranthus brownii</i>	Endangered	Final	Flowering Plants
No common name	<i>Aristida chaseae</i>	Endangered		Flowering Plants
No common name	<i>Asplenium dielirectum</i>	Endangered	Final	Ferns and Allies
No common name	<i>Asplenium diellaciniatum</i>	Endangered		Ferns and Allies
No common name	<i>Asplenium</i> (=Diellia) <i>dielfalcatum</i> (=falcata)	Endangered	Final	Ferns and Allies
No common name	<i>Asplenium dielmannii</i>	Endangered	Final	Ferns and Allies
No common name	<i>Asplenium dielpallidum</i>	Endangered	Final	Ferns and Allies
No common name	<i>Asplenium peruvianum</i> var. <i>insulare</i>	Endangered	Final	Ferns and Allies
No common name	<i>Asplenium unisorum</i>	Endangered	Final	Ferns and Allies

No common name	Auerodendron pauciflorum	Endangered		Flowering Plants
No common name	Bonamia menziesii	Endangered	Final	Flowering Plants
No common name	Calyptranthes thomasiana	Endangered		Flowering Plants
No common name	Catesbaea melanocarpa	Endangered	Final	Flowering Plants
No common name	Chamaecrista glandulosa var. mirabilis	Endangered		Flowering Plants
No common name	Cordia bellonis	Endangered		Flowering Plants
No common name	Cranichis ricartii	Endangered		Flowering Plants
No common name	Cyanea kauaulaensis	Endangered		Flowering Plants
No common name	Cyperus fauriei	Endangered	Final	Flowering Plants
No common name	Cyperus neokunthianus	Endangered		Flowering Plants
No common name	Cyperus pennatiformis	Endangered	Final	Flowering Plants
No common name	Daphnopsis helleriana	Endangered		Flowering Plants
No common name	Delissea rhytidosperma	Endangered	Final	Flowering Plants
No common name	Delissea undulata	Endangered	Final	Flowering Plants
No common name	Dendrobium guamense	Threatened		Flowering Plants
No common name	Deparia kaalaana	Endangered		Ferns and Allies
No common name	Diplazium molokaiense	Endangered	Final	Ferns and Allies
No common name	Doryopteris angelica	Endangered	Final	Ferns and Allies
No common name	Doryopteris takeuchii	Endangered	Final	Ferns and Allies
No common name	Elaphoglossum serpens	Endangered		Ferns and Allies
No common name	Eugenia bryanii	Endangered		Flowering Plants
No common name	Eugenia woodburyana	Threatened		Flowering Plants
No common name	Festuca hawaiiensis	Endangered		Flowering Plants
No common name	Festuca molokaiensis	Endangered	Final	Flowering Plants
No common name	Geocarpon minimum	Threatened		Flowering Plants
No common name	Gesneria pauciflora	Threatened		Flowering Plants
No common name	Gonocalyx concolor	Endangered	Final	Flowering Plants
No common name	Gouania hillebrandii	Endangered	Final	Flowering Plants
No common name	Gouania meyenii	Endangered	Final	Flowering Plants
No common name	Gouania vitifolia	Endangered	Final	Flowering Plants
No common name	Hesperomannia arborescens	Endangered	Final	Flowering Plants

No common name	Hesperomannia arbuscula	Endangered	Final	Flowering Plants
No common name	Hesperomannia lydgatei	Endangered	Final	Flowering Plants
No common name	Ilex sintenisii	Endangered		Flowering Plants
No common name	Kadua degeneri	Endangered	Final	Flowering Plants
No common name	Kadua haupuensis	Endangered		Flowering Plants
No common name	Kadua parvula	Endangered	Final	Flowering Plants
No common name	Kadua st.-johnii	Endangered	Final	Flowering Plants
No common name	Keysseria (=Lagenifera) erici	Endangered	Final	Flowering Plants
No common name	Keysseria (=Lagenifera) helenae	Endangered	Final	Flowering Plants
No common name	Labordia lorenciana	Endangered		Flowering Plants
No common name	Lepidium orbiculare	Endangered		Flowering Plants
No common name	Leptocereus grantianus	Endangered		Flowering Plants
No common name	Lobelia koolauensis	Endangered	Final	Flowering Plants
No common name	Lobelia monostachya	Endangered	Final	Flowering Plants
No common name	Lobelia niihauensis	Endangered	Final	Flowering Plants
No common name	Lobelia oahuensis	Endangered	Final	Flowering Plants
No common name	Lyonia truncata var. proctorii	Endangered		Flowering Plants
No common name	Lysimachia filifolia	Endangered	Final	Flowering Plants
No common name	Lysimachia iniki	Endangered	Final	Flowering Plants
No common name	Lysimachia lydgatei	Endangered	Final	Flowering Plants
No common name	Lysimachia maxima	Endangered	Final	Flowering Plants
No common name	Lysimachia pendens	Endangered	Final	Flowering Plants
No common name	Lysimachia scopulensis	Endangered	Final	Flowering Plants
No common name	Lysimachia venosa	Endangered	Final	Flowering Plants
No common name	Maesa walkeri	Threatened		Flowering Plants
No common name	Melicope cornuta var. cornuta	Endangered	Final	Flowering Plants
No common name	Melicope cornuta var. decurrens	Endangered	Final	Flowering Plants
No common name	Melicope remyi	Endangered	Final	Flowering Plants
No common name	Microlepidia strigosa var. mauiensis	Endangered		Ferns and Allies
No common name	Mitracarpus maxwelliae	Endangered		Flowering Plants
No common name	Mitracarpus polycladus	Threatened		Flowering Plants

No common name	Myrcia paganii	Endangered		Flowering Plants
No common name	Neraudia angulata	Endangered	Final	Flowering Plants
No common name	Neraudia ovata	Endangered	Final	Flowering Plants
No common name	Neraudia sericea	Endangered	Final	Flowering Plants
No common name	Nervilia jacksoniae	Threatened		Flowering Plants
No common name	Nesogenes rotensis	Endangered		Flowering Plants
No common name	Osmoxylon mariannense	Endangered		Flowering Plants
No common name	Phlegmariurus stemmermanniae	Endangered		Ferns and Allies
No common name	Phyllanthus saffordii	Endangered		Flowering Plants
No common name	Phyllostegia bracteata	Endangered	Final	Flowering Plants
No common name	Phyllostegia brevidens	Endangered		Flowering Plants
No common name	Phyllostegia floribunda	Endangered	Final	Flowering Plants
No common name	Phyllostegia glabra var. lanaiensis	Endangered	Not Prudent	Flowering Plants
No common name	Phyllostegia haliakalae	Endangered	Final	Flowering Plants
No common name	Phyllostegia helleri	Endangered		Flowering Plants
No common name	Phyllostegia hirsuta	Endangered	Final	Flowering Plants
No common name	Phyllostegia hispida	Endangered	Final	Flowering Plants
No common name	Phyllostegia kaalaensis	Endangered	Final	Flowering Plants
No common name	Phyllostegia knudsenii	Endangered	Final	Flowering Plants
No common name	Phyllostegia mannii	Endangered	Final	Flowering Plants
No common name	Phyllostegia mollis	Endangered	Final	Flowering Plants
No common name	Phyllostegia parviflora	Endangered	Final	Flowering Plants
No common name	Phyllostegia pilosa	Endangered	Final	Flowering Plants
No common name	Phyllostegia renovans	Endangered	Final	Flowering Plants
No common name	Phyllostegia stachyoides	Endangered		Flowering Plants
No common name	Phyllostegia velutina	Endangered	Final	Flowering Plants
No common name	Phyllostegia waimeae	Endangered	Final	Flowering Plants
No common name	Phyllostegia warshaueri	Endangered	Final	Flowering Plants
No common name	Phyllostegia wawrana	Endangered	Final	Flowering Plants
No common name	Platanthera holochila	Endangered	Final	Flowering Plants
No common name	Poa siphonoglossa	Endangered	Final	Flowering Plants

No common name	<i>Polyscias bisattenuata</i>	Endangered	Final	Flowering Plants
No common name	<i>Polyscias flynnii</i>	Endangered	Final	Flowering Plants
No common name	<i>Polyscias lydgatei</i>	Endangered	Final	Flowering Plants
No common name	<i>Polyscias racemosa</i>	Endangered	Final	Flowering Plants
No common name	<i>Polystichum calderonense</i>	Endangered		Ferns and Allies
No common name	<i>Pteris lidgatei</i>	Endangered	Final	Ferns and Allies
No common name	<i>Remya kauaiensis</i>	Endangered	Final	Flowering Plants
No common name	<i>Remya montgomeryi</i>	Endangered	Final	Flowering Plants
No common name	<i>Sanicula mariversa</i>	Endangered	Final	Flowering Plants
No common name	<i>Sanicula purpurea</i>	Endangered	Final	Flowering Plants
No common name	<i>Sanicula sandwicensis</i>	Endangered		Flowering Plants
No common name	<i>Santalum involutum</i>	Endangered		Flowering Plants
No common name	<i>Schiedea attenuata</i>	Endangered	Final	Flowering Plants
No common name	<i>Schiedea diffusa</i> ssp. <i>macraei</i>	Endangered	Final	Flowering Plants
No common name	<i>Schiedea diffusa</i> subsp. <i>diffusa</i>	Endangered		Flowering Plants
No common name	<i>Schiedea haleakalensis</i>	Endangered	Final	Flowering Plants
No common name	<i>Schiedea helleri</i>	Endangered	Final	Flowering Plants
No common name	<i>Schiedea hookeri</i>	Endangered	Final	Flowering Plants
No common name	<i>Schiedea jacobii</i>	Endangered	Final	Flowering Plants
No common name	<i>Schiedea kaalae</i>	Endangered	Final	Flowering Plants
No common name	<i>Schiedea kauaiensis</i>	Endangered	Final	Flowering Plants
No common name	<i>Schiedea laui</i>	Endangered	Final	Flowering Plants
No common name	<i>Schiedea lydgatei</i>	Endangered	Final	Flowering Plants
No common name	<i>Schiedea membranacea</i>	Endangered	Final	Flowering Plants
No common name	<i>Schiedea nuttallii</i>	Endangered	Final	Flowering Plants
No common name	<i>Schiedea obovata</i>	Endangered	Final	Flowering Plants
No common name	<i>Schiedea salicaria</i>	Endangered	Final	Flowering Plants
No common name	<i>Schiedea sarmentosa</i>	Endangered	Final	Flowering Plants
No common name	<i>Schiedea spergulina</i> var. <i>leiopoda</i>	Endangered	Final	Flowering Plants
No common name	<i>Schiedea spergulina</i> var. <i>spergulina</i>	Threatened	Final	Flowering Plants
No common name	<i>Schiedea trinervis</i>	Endangered	Final	Flowering Plants

No common name	Schiedea verticillata	Endangered	Final	Flowering Plants
No common name	Schiedea viscosa	Endangered	Final	Flowering Plants
No common name	Schoepfia arenaria	Threatened		Flowering Plants
No common name	Sicyos lanceoloideus	Endangered		Flowering Plants
No common name	Silene alexandri	Endangered	Final	Flowering Plants
No common name	Silene hawaiiensis	Threatened	Final	Flowering Plants
No common name	Silene lanceolata	Endangered	Final	Flowering Plants
No common name	Silene perlmanii	Endangered	Final	Flowering Plants
No common name	Spermolepis hawaiiensis	Endangered	Final	Flowering Plants
No common name	Stenogyne angustifolia var. angustifolia	Endangered		Flowering Plants
No common name	Stenogyne bifida	Endangered	Final	Flowering Plants
No common name	Stenogyne campanulata	Endangered	Final	Flowering Plants
No common name	Stenogyne cranwelliae	Endangered	Final	Flowering Plants
No common name	Stenogyne kaalae ssp. sherffii	Endangered		Flowering Plants
No common name	Stenogyne kanehoana	Endangered	Final	Flowering Plants
No common name	Stenogyne kauaulaensis	Endangered	Final	Flowering Plants
No common name	Stenogyne kealiae	Endangered	Final	Flowering Plants
No common name	Tabernaemontana rotensis	Threatened		Flowering Plants
No common name	Tectaria estremarana	Endangered		Ferns and Allies
No common name	Ternstroemia subsessilis	Endangered		Flowering Plants
No common name	Tetramolopium arenarium	Endangered	Proposed	Flowering Plants
No common name	Tetramolopium filiforme	Endangered	Final	Flowering Plants
No common name	Tetramolopium lepidotum ssp. lepidotum	Endangered	Final	Flowering Plants
No common name	Tetramolopium remyi	Endangered	Final	Flowering Plants
No common name	Tetramolopium rockii	Threatened	Final	Flowering Plants
No common name	Thelypteris inabonensis	Endangered		Ferns and Allies
No common name	Thelypteris verecunda	Endangered		Ferns and Allies
No common name	Thelypteris yaucoensis	Endangered		Ferns and Allies
No common name	Tinospora homosepala	Endangered		Flowering Plants
No common name	Trematolobelia singularis	Endangered	Final	Flowering Plants
No common name	Tuberolabium guamense	Threatened		Flowering Plants

No common name	Varronia rupicola	Threatened	Final	Flowering Plants
No common name	Vernonia proctorii	Endangered		Flowering Plants
No common name	Vigna o-wahuensis	Endangered	Final	Flowering Plants
No common name	Viola helenae	Endangered	Final	Flowering Plants
No common name	Viola lanaiensis	Endangered	Final	Flowering Plants
No common name	Viola oahuensis	Endangered	Final	Flowering Plants
No common name	Wikstroemia skottsbergiana	Endangered		Flowering Plants
No common name	Wikstroemia villosa	Endangered	Final	Flowering Plants
No common name	Xylosma crenatum	Endangered	Final	Flowering Plants
[no common name] Beetle	Rhadine exilis	Endangered	Final	Insects
[no common name] Beetle	Rhadine infernalis	Endangered	Final	Insects
Noel's Amphipod	Gammarus desperatus	Endangered	Final	Crustaceans
Nohoanu	Geranium arboreum	Endangered	Final	Flowering Plants
Nohoanu	Geranium hanaense	Endangered	Final	Flowering Plants
Nohoanu	Geranium hillebrandii	Endangered	Final	Flowering Plants
Nohoanu	Geranium kauaiense	Endangered	Final	Flowering Plants
Nohoanu	Geranium multiflorum	Endangered	Final	Flowering Plants
noonday snail	Mesodon clarki nantahala	Threatened		Snails
North American wolverine	Gulo gulo luscus	Threatened		Mammals
Northeastern beach tiger beetle	Habroscelimorpha dorsalis dorsalis	Threatened		Insects
Northeastern bulrush	Scirpus ancistrochaetus	Endangered		Flowering Plants
Northern Aplomado Falcon	Falco femoralis septentrionalis	Endangered		Birds
Northern Idaho Ground Squirrel	Urocitellus brunneus	Threatened		Mammals
Northern Long-Eared Bat	Myotis septentrionalis	Endangered	Not Prudent	Mammals
Northern Mexican gartersnake	Thamnophis eques megalops	Threatened	Final	Reptiles
Northern riffleshell	Epioblasma rangiana	Endangered		Clams
Northern Sea Otter	Enhydra lutris kenyonii	Threatened	Final	Mammals
Northern spotted owl	Strix occidentalis caurina	Threatened	Final	Birds
Northern wild monkshood	Aconitum noveboracense	Threatened		Flowering Plants
North Park phacelia	Phacelia formosula	Endangered		Flowering Plants
O`ahu `alauahio	Paroreomyza maculata	Endangered		Birds

Oahu elepaio	Chasiempis ibidis	Endangered	Final	Birds
Oahu tree snails	Achatinella spp.	Endangered		Snails
Oceanic Hawaiian damselfly	Megalagrion oceanicum	Endangered	Final	Insects
Ocelot	Leopardus (=Felis) pardalis	Endangered		Mammals
Ochlockonee moccasinshell	Medionidus simpsonianus	Endangered	Final	Clams
Ocmulgee skullcap	Scutellaria ocmulgee	Endangered	Final	Flowering Plants
Oha	Delissea subcordata	Endangered	Final	Flowering Plants
Ohai	Sesbania tomentosa	Endangered	Final	Flowering Plants
`Oha wai	Clermontia drepanomorpha	Endangered	Final	Flowering Plants
`Oha wai	Clermontia lindseyana	Endangered	Final	Flowering Plants
`Oha wai	Clermontia oblongifolia ssp. brevipes	Endangered	Final	Flowering Plants
`Oha wai	Clermontia oblongifolia ssp. mauiensis	Endangered	Final	Flowering Plants
`Oha wai	Clermontia peleana	Endangered	Final	Flowering Plants
`Oha wai	Clermontia pyralaria	Endangered	Final	Flowering Plants
`Oha wai	Clermontia samuelii	Endangered	Final	Flowering Plants
`Ohe	Joinvillea ascendens ascendens	Endangered		Flowering Plants
`Ohe`ohe	Polyscias gymnocarpa	Endangered	Final	Flowering Plants
Ohlone tiger beetle	Cicindela ohlone	Endangered		Insects
Okeechobee gourd	Cucurbita okeechobeensis ssp. okeechobeensis	Endangered		Flowering Plants
olua	Hypolepis hawaiiensis var. mauiensis	Endangered		Ferns and Allies
Olulu	Brighamia insignis	Endangered	Final	Flowering Plants
Olympia pocket gopher	Thomomys mazama pugetensis	Threatened	Final	Mammals
Opuhe	Urera kaalae	Endangered	Final	Flowering Plants
Orangeblack Hawaiian damselfly	Megalagrion xanthomelas	Endangered		Insects
Orangefoot pimpleback (pearlymussel)	Plethobasus cooperianus	Endangered		Clams
Orangenacre mucket	Hamiota perovalis	Threatened	Final	Clams
Orcutt's spineflower	Chorizanthe orcuttiana	Endangered		Flowering Plants
Oregon silverspot butterfly	Speyeria zerene hippolyta	Threatened	Final	Insects
Oregon spotted frog	Rana pretiosa	Threatened	Final	Amphibians
Osterhout milkvetch	Astragalus osterhoutii	Endangered		Flowering Plants



Otay mesa-mint	Pogogyne nudiuscula	Endangered		Flowering Plants
Otay tarplant	Deinandra (=Hemizonia) conjugens	Threatened	Final	Flowering Plants
Ouachita fanshell	Cyprogenia sp. cf. aberti	Threatened	Final	Clams
Ouachita rock pocketbook	Arcidens wheeleri	Endangered		Clams
`O`u (honeycreeper)	Psittirostra psittacea	Endangered		Birds
Oval pigtoe	Pleurobema pyriforme	Endangered	Final	Clams
Ovate clubshell	Pleurobema perovatum	Endangered	Final	Clams
Owens pupfish	Cyprinodon radiosus	Endangered		Fishes
Owens Tui Chub	Gila bicolor ssp. snyderi	Endangered	Final	Fishes
Oyster mussel	Epioblasma capsaeformis	Endangered	Final	Clams
Ozark big-eared bat	Corynorhinus (=Plecotus) townsendii ingens	Endangered		Mammals
Ozark cavefish	Amblyopsis rosae	Threatened		Fishes
Ozark Hellbender	Cryptobranchus alleganiensis bishopi	Endangered		Amphibians
Pacific Hawaiian damselfly	Megalagrion pacificum	Endangered		Insects
Pacific Marten, Coastal Distinct Population Segment	Martes caurina	Threatened	Final	Mammals
Pacific pocket mouse	Perognathus longimembris pacificus	Endangered		Mammals
Pacific sheath-tailed Bat	Emballonura semicaudata rotensis	Endangered		Mammals
Pacific sheath-tailed Bat	Emballonura semicaudata semicaudata	Endangered		Mammals
Pagosa skyrocket	Ipomopsis polyantha	Endangered	Final	Flowering Plants
Pahrnagat roundtail chub	Gila robusta jordani	Endangered		Fishes
Pahrump poolfish	Empetrichthys latos	Endangered		Fishes
Pa`iniu	Astelia waialealae	Endangered	Final	Flowering Plants
Painted rocksnail	Leptoxis taeniata	Threatened		Snails
Painted snake coiled forest snail	Anguispira picta	Threatened		Snails
Paiute cutthroat trout	Oncorhynchus clarkii seleniris	Threatened		Fishes
Palai la`au	Adenophorus periens	Endangered	Final	Ferns and Allies
Palapalai aumakua	Dryopteris crinalis var. podosorus	Endangered	Final	Ferns and Allies
Pale lilliput (pearlymussel)	Toxolasma cylindrellus	Endangered		Clams
Palezone shiner	Notropis albizonatus	Endangered		Fishes
Palila (honeycreeper)	Loxioides bailleui	Endangered	Final	Birds

Pallid manzanita	<i>Arctostaphylos pallida</i>	Threatened		Flowering Plants
Pallid sturgeon	<i>Scaphirhynchus albus</i>	Endangered		Fishes
Palma de manaca	<i>Calyptronoma rivalis</i>	Threatened		Flowering Plants
Palmate-bracted bird's beak	<i>Cordylanthus palmatus</i>	Endangered		Flowering Plants
Palo colorado	<i>Ternstroemia luquillensis</i>	Endangered		Flowering Plants
Palo de jazmin	<i>Styrax portoricensis</i>	Endangered		Flowering Plants
Palo de nigua	<i>Cornutia obovata</i>	Endangered		Flowering Plants
Palo de ramon	<i>Banara vanderbiltii</i>	Endangered		Flowering Plants
Palo de rosa	<i>Ottoschulzia rhodoxylon</i>	Threatened		Flowering Plants
Palos Verdes blue butterfly	<i>Glaucopsyche lygdamus palosverdesensis</i>	Endangered	Final	Insects
Pamakani	<i>Tetramolopium capillare</i>	Endangered	Final	Flowering Plants
Pamakani	<i>Viola chamissoniana</i> ssp. <i>chamissoniana</i>	Endangered	Final	Flowering Plants
Panama City crayfish	<i>Procambarus econfinae</i>	Threatened	Final	Crustaceans
Papala	<i>Charpentiera densiflora</i>	Endangered	Final	Flowering Plants
Papery whitlow-wort	<i>Paronychia chartacea</i>	Threatened		Flowering Plants
Parachute beardtongue	<i>Penstemon debilis</i>	Threatened	Final	Flowering Plants
Pariette cactus	<i>Sclerocactus brevispinus</i>	Threatened		Flowering Plants
Parish's daisy	<i>Erigeron parishii</i>	Threatened	Final	Flowering Plants
Paudedo	<i>Hedyotis megalantha</i>	Endangered		Flowering Plants
Pauoa	<i>Ctenitis squamigera</i>	Endangered	Final	Ferns and Allies
Pawnee montane skipper	<i>Hesperia leonardus montana</i>	Threatened	Proposed	Insects
Pearl darter	<i>Percina aurora</i>	Threatened	Final	Fishes
Pearl River Map Turtle	<i>Graptemys pearlensis</i>	Threatened		Reptiles
Peck's cave amphipod	<i>Stygobromus</i> (= <i>Stygonectes</i> ) <i>pecki</i>	Endangered	Final	Crustaceans
Pecos amphipod	<i>Gammarus pecos</i>	Endangered	Final	Crustaceans
Pecos assiminea snail	<i>Assiminea pecos</i>	Endangered	Final	Snails
Pecos bluntnose shiner	<i>Notropis simus pecosensis</i>	Threatened	Final	Fishes
Pecos gambusia	<i>Gambusia nobilis</i>	Endangered		Fishes
Pecos (=puzzle, =paradox) sunflower	<i>Helianthus paradoxus</i>	Threatened	Final	Flowering Plants
Pedate checker-mallow	<i>Sidalcea pedata</i>	Endangered		Flowering Plants

Peebles Navajo cactus	<i>Pediocactus peeblesianus</i> ssp. <i>peeblesianus</i>	Endangered		Flowering Plants
Peirson's milk-vetch	<i>Astragalus magdalenae</i> var. <i>peirsonii</i>	Threatened	Final	Flowering Plants
Pelos del diablo	<i>Aristida portoricensis</i>	Endangered		Flowering Plants
Penasco least chipmunk	<i>Tamias minimus atristriatus</i>	Endangered	Final	Mammals
Peninsular bighorn sheep	<i>Ovis canadensis nelsoni</i>	Endangered	Final	Mammals
Penland alpine fen mustard	<i>Eutrema penlandii</i>	Threatened		Flowering Plants
Penland beardtongue	<i>Penstemon penlandii</i>	Endangered		Flowering Plants
Pennell's bird's-beak	<i>Cordylanthus tenuis</i> ssp. <i>capillaris</i>	Endangered		Flowering Plants
Peppered chub	<i>Macrhybopsis tetranema</i>	Endangered	Final	Fishes
Perdido Key beach mouse	<i>Peromyscus polionotus trissyllepsis</i>	Endangered	Final	Mammals
Persistent trillium	<i>Trillium persistens</i>	Endangered		Flowering Plants
Peter's Mountain mallow	<i>Iliamna corei</i>	Endangered		Flowering Plants
Phantom Springsnail	<i>Pyrgulopsis texana</i>	Endangered	Final	Snails
Phantom Tryonia	<i>Tryonia cheatumi</i>	Endangered	Final	Snails
Pigeon wings	<i>Clitoria fragrans</i>	Threatened		Flowering Plants
pilo	<i>Kadua laxiflora</i>	Endangered	Final	Flowering Plants
Pilo kea lau li`i	<i>Melicope rostrata</i>	Endangered	Final	Flowering Plants
Pima pineapple cactus	<i>Coryphantha scheeri</i> var. <i>robustispina</i>	Endangered		Flowering Plants
Pine Hill ceanothus	<i>Ceanothus roderickii</i>	Endangered		Flowering Plants
Pine Hill flannelbush	<i>Fremontodendron californicum</i> ssp. <i>decumbens</i>	Endangered		Flowering Plants
Pineland sandmat	<i>Chamaesyce deltoidea</i> <i>pinetorum</i>	Threatened	Proposed	Flowering Plants
Pink mucket (pearlymussel)	<i>Lampsilis abrupta</i>	Endangered		Clams
Piping Plover	<i>Charadrius melodus</i>	Endangered	Final	Birds
Piping Plover	<i>Charadrius melodus</i>	Threatened	Final	Birds
Pismo clarkia	<i>Clarkia speciosa</i> ssp. <i>immaculata</i>	Endangered		Flowering Plants
Pitcher's thistle	<i>Cirsium pitcheri</i>	Threatened		Flowering Plants
Pitkin Marsh lily	<i>Lilium pardalinum</i> ssp. <i>pitkinense</i>	Endangered		Flowering Plants
Plicate rocksnail	<i>Leptoxis plicata</i>	Endangered		Snails
Plymouth Redbelly Turtle = Plymouth Redbelly Cooter	<i>Pseudemys rubriventris bangsi</i>	Endangered	Final	Reptiles
Po`e	<i>Portulaca sclerocarpa</i>	Endangered	Final	Flowering Plants

Point Arena mountain beaver	<i>Aplodontia rufa nigra</i>	Endangered		Mammals
Polar bear	<i>Ursus maritimus</i>	Threatened	Final	Mammals
Pondberry	<i>Lindera melissifolia</i>	Endangered		Flowering Plants
Popolo	<i>Cyanea solanacea</i>	Endangered	Final	Flowering Plants
Popolo	<i>Solanum nelsonii</i>	Endangered		Flowering Plants
Popolo ku mai	<i>Solanum incompletum</i>	Endangered	Final	Flowering Plants
Poweshiek skipperling	<i>Oarisma poweshiek</i>	Endangered	Final	Insects
Prairie bush-clover	<i>Lespedeza leptostachya</i>	Threatened		Flowering Plants
Preble's meadow jumping mouse	<i>Zapus hudsonius preblei</i>	Threatened	Final	Mammals
Presidio clarkia	<i>Clarkia franciscana</i>	Endangered		Flowering Plants
Presidio Manzanita	<i>Arctostaphylos hookeri</i> var. <i>ravenii</i>	Endangered		Flowering Plants
Price's potato-bean	<i>Apios priceana</i>	Threatened		Flowering Plants
Prostrate milkweed	<i>Asclepias prostrata</i>	Endangered	Final	Flowering Plants
Pua `ala	<i>Brighamia rockii</i>	Endangered	Final	Flowering Plants
Puaiohi	<i>Myadestes palmeri</i>	Endangered		Birds
Puerto Rican boa	<i>Chilabothrus inornatus</i>	Endangered		Reptiles
Puerto Rican broad-winged hawk	<i>Buteo platypterus brunnescens</i>	Endangered		Birds
Puerto Rican crested toad	<i>Peltophryne lemur</i>	Threatened		Amphibians
Puerto Rican harlequin butterfly	<i>Atlantea tulita</i>	Threatened	Final	Insects
Puerto Rican nightjar	<i>Antrostomus noctitherus</i>	Endangered		Birds
Puerto Rican parrot	<i>Amazona vittata</i>	Endangered		Birds
Puerto Rican plain Pigeon	<i>Patagioenas inornata wetmorei</i>	Endangered		Birds
Puerto Rican sharp-shinned hawk	<i>Accipiter striatus venator</i>	Endangered		Birds
Puritan tiger beetle	<i>Ellipsoptera puritana</i>	Threatened		Insects
Purple amole	<i>Chlorogalum purpureum</i>	Threatened	Final	Flowering Plants
Purple bankclimber (mussel)	<i>Elliptoideus sloatianus</i>	Threatened	Final	Clams
Purple bean	<i>Villosa perpurpurea</i>	Endangered	Final	Clams
Purple Cat's paw (=Purple Cat's paw pearlymussel)	<i>Epioblasma obliquata</i>	Endangered		Clams
Pu `uka `a	<i>Cyperus trachysanthos</i>	Endangered	Final	Flowering Plants
Pygmy fringe-tree	<i>Chionanthus pygmaeus</i>	Endangered		Flowering Plants

Pygmy madtom	Noturus stanauli	Endangered		Fishes
Pygmy Rabbit	Brachylagus idahoensis	Endangered		Mammals
Pygmy Sculpin	Cottus paulus (=pygmaeus)	Threatened	Proposed	Fishes
Quino checkerspot butterfly	Euphydryas editha quino (=E. e. wrighti)	Endangered	Final	Insects
Rabbitsfoot	Quadrula cylindrica cylindrica	Threatened	Final	Clams
Railroad Valley springfish	Crenichthys nevadae	Threatened	Final	Fishes
Rayed Bean	Villosa fabalis	Endangered	Proposed	Clams
Razorback sucker	Xyrauchen texanus	Endangered	Final	Fishes
Red-cockaded woodpecker	Dryobates borealis	Threatened		Birds
Red Hills salamander	Phaeognathus hubrichti	Threatened		Amphibians
Red Hills vervain	Verbena californica	Threatened		Flowering Plants
Red wolf	Canis rufus	Endangered		Mammals
Relict darter	Etheostoma chienense	Threatened		Fishes
Relict trillium	Trillium reliquum	Endangered		Flowering Plants
Reticulated flatwoods salamander	Ambystoma bishopi	Endangered	Final	Amphibians
Ringed map turtle	Graptemys oculifera	Threatened		Reptiles
Ring Pink	Obovaria retusa	Endangered		Clams
Rio Grande Silvery Minnow	Hybognathus amarus	Endangered	Final	Fishes
Riparian brush rabbit	Sylvilagus bachmani riparius	Endangered		Mammals
Riparian woodrat (=San Joaquin Valley)	Neotoma fuscipes riparia	Endangered		Mammals
Riverside fairy shrimp	Streptocephalus woottoni	Endangered	Final	Crustaceans
Roan Mountain bluet	Hedyotis purpurea var. montana	Endangered		Flowering Plants
Roanoke logperch	Percina rex	Endangered		Fishes
Robber Baron Cave Meshweaver	Cicurina baronia	Endangered	Final	Arachnids
Robust spineflower	Chorizanthe robusta var. robusta	Endangered	Final	Flowering Plants
Rock gnome lichen	Gymnoderma lineare	Endangered	Not Prudent	Lichens
Roseate tern	Sterna dougallii dougallii	Endangered		Birds
Roseate tern	Sterna dougallii dougallii	Threatened		Birds
Roswell springsnail	Pyrgulopsis roswellensis	Endangered	Final	Snails
Rota blue damselfly	Ischnura luta	Endangered		Insects

Rota bridled white-eye	Zosterops rotensis	Endangered	Final	Birds
Rough hornsnail	Pleurocera foremani	Endangered	Final	Snails
Rough-leaved loosestrife	Lysimachia asperulaefolia	Endangered		Flowering Plants
Rough pigtoe	Pleurobema plenum	Endangered		Clams
rough popcornflower	Plagiobothrys hirtus	Endangered		Flowering Plants
Rough rabbitsfoot	Quadrula cylindrica strigillata	Endangered	Final	Clams
Round Ebonyshell	Reginaia rotulata	Endangered	Final	Clams
Round hickorynut	Obovaria subrotunda	Threatened	Final	Clams
Round-leaved chaff-flower	Achyranthes splendens var. rotundata	Endangered	Final	Flowering Plants
Round rocksnail	Leptoxis ampla	Threatened		Snails
Royal marstonia (snail)	Marstonia ogmorhaphes	Endangered		Snails
Roy Prairie pocket gopher	Thomomys mazama glacialis	Threatened	Final	Mammals
rufa red knot	Calidris canutus rufa	Threatened	Proposed	Birds
Rugel's pawpaw	Deeringothamnus rugelii	Endangered		Flowering Plants
Rush Darter	Etheostoma phytophilum	Endangered	Final	Fishes
Rusty patched bumble bee	Bombus affinis	Endangered	Proposed	Insects
Ruth's golden aster	Pityopsis ruthii	Endangered		Flowering Plants
Sacramento Mountains checkerspot Butterfly	Euphydryas anicia cloudcrofti	Endangered	Proposed	Insects
Sacramento Mountains thistle	Cirsium vinaceum	Threatened		Flowering Plants
Sacramento Orcutt grass	Orcuttia viscida	Endangered	Final	Flowering Plants
Sacramento prickly poppy	Argemone pleiacantha ssp. pinnatisecta	Endangered		Flowering Plants
Saint Francis' satyr butterfly	Neonympha mitchellii francisci	Endangered		Insects
Salado Salamander	Eurycea chisholmensis	Threatened	Final	Amphibians
Salt Creek Tiger beetle	Cicindela nevadica lincolniana	Endangered	Final	Insects
Salt marsh bird's-beak	Cordylanthus maritimus ssp. maritimus	Endangered		Flowering Plants
Salt marsh harvest mouse	Reithrodontomys raviventris	Endangered		Mammals
San Bernardino bluegrass	Poa atropurpurea	Endangered	Final	Flowering Plants
San Bernardino Merriam's kangaroo rat	Dipodomys merriami parvus	Endangered	Final	Mammals

San Bernardino Mountains bladderpod	<i>Lesquerella kingii</i> ssp. <i>bernardina</i>	Endangered	Final	Flowering Plants
San Bernardino springsnail	<i>Pyrgulopsis bernardina</i>	Threatened	Final	Snails
San Bruno elfin butterfly	<i>Callophrys mossii bayensis</i>	Endangered	Proposed	Insects
San Clemente Island woodland-star	<i>Lithophragma maximum</i>	Endangered		Flowering Plants
San Clemente loggerhead shrike	<i>Lanius ludovicianus mearnsi</i>	Endangered		Birds
Sand dune phacelia	<i>Phacelia argentea</i>	Threatened	Final	Flowering Plants
Sand flax	<i>Linum arenicola</i>	Endangered	Proposed	Flowering Plants
San Diego ambrosia	<i>Ambrosia pumila</i>	Endangered	Final	Flowering Plants
San Diego button-celery	<i>Eryngium aristulatum</i> var. <i>parishii</i>	Endangered		Flowering Plants
San Diego fairy shrimp	<i>Branchinecta sandiegonensis</i>	Endangered	Final	Crustaceans
San Diego mesa-mint	<i>Pogogyne abramsii</i>	Endangered		Flowering Plants
San Diego thornmint	<i>Acanthomintha ilicifolia</i>	Threatened	Final	Flowering Plants
Sandlace	<i>Polygonella myriophylla</i>	Endangered		Flowering Plants
Sandplain gerardia	<i>Agalinis acuta</i>	Endangered		Flowering Plants
Sand skink	<i>Neoseps reynoldsi</i>	Threatened		Reptiles
San Francisco garter snake	<i>Thamnophis sirtalis tetrataenia</i>	Endangered		Reptiles
San Francisco lessingia	<i>Lessingia germanorum</i> (=L.g. var. <i>germanorum</i> )	Endangered		Flowering Plants
San Francisco Peaks ragwort	<i>Packera franciscana</i>	Threatened	Final	Flowering Plants
San Jacinto Valley crownscale	<i>Atriplex coronata</i> var. <i>notatior</i>	Endangered	Final	Flowering Plants
San Joaquin adobe sunburst	<i>Pseudobahia peirsonii</i>	Threatened		Flowering Plants
San Joaquin kit fox	<i>Vulpes macrotis mutica</i>	Endangered		Mammals
San Joaquin Valley Orcutt grass	<i>Orcuttia inaequalis</i>	Threatened	Final	Flowering Plants
San Joaquin wooly-threads	<i>Monolopia</i> (=Lembertia) <i>congdonii</i>	Endangered		Flowering Plants
San Marcos salamander	<i>Eurycea nana</i>	Threatened	Final	Amphibians
San Mateo thornmint	<i>Acanthomintha obovata</i> ssp. <i>duttonii</i>	Endangered		Flowering Plants
San Mateo woolly sunflower	<i>Eriophyllum latilobum</i>	Endangered		Flowering Plants
San Rafael cactus	<i>Pediocactus despainii</i>	Endangered		Flowering Plants
Santa Ana River woolly-star	<i>Eriastrum densifolium</i> ssp. <i>sanctorum</i>	Endangered		Flowering Plants
Santa Ana sucker	<i>Catostomus santaanae</i>	Threatened	Final	Fishes
Santa Barbara Island liveforever	<i>Dudleya traskiae</i>	Endangered		Flowering Plants

Santa Catalina Island Fox	<i>Urocyon littoralis catalinae</i>	Threatened	Final	Mammals
Santa Clara Valley dudleya	<i>Dudleya setchellii</i>	Endangered		Flowering Plants
Santa Cruz cypress	<i>Cupressus abramsiana</i>	Threatened		Conifers and Cycads
Santa Cruz Island bush-mallow	<i>Malacothamnus fasciculatus</i> var. <i>nesioticus</i>	Endangered		Flowering Plants
Santa Cruz Island fringepod	<i>Thysanocarpus conchuliferus</i>	Endangered		Flowering Plants
Santa Cruz Island malacothrix	<i>Malacothrix indecora</i>	Endangered		Flowering Plants
Santa Cruz Island rockcress	<i>Sibara filifolia</i>	Endangered		Flowering Plants
Santa Cruz long-toed salamander	<i>Ambystoma macrodactylum croceum</i>	Endangered	Proposed	Amphibians
Santa Cruz tarplant	<i>Holocarpha macradenia</i>	Threatened	Final	Flowering Plants
Santa Monica Mountains dudleyea	<i>Dudleya cymosa</i> ssp. <i>ovatifolia</i>	Threatened		Flowering Plants
Santa Rosa Island manzanita	<i>Arctostaphylos confertiflora</i>	Endangered		Flowering Plants
Scaleshell mussel	<i>Leptodea leptodon</i>	Endangered		Clams
Schaus swallowtail butterfly	<i>Heraclides aristodemus ponceanus</i>	Endangered		Insects
Schweinitz's sunflower	<i>Helianthus schweinitzii</i>	Endangered		Flowering Plants
Scotts Valley Polygonum	<i>Polygonum hickmanii</i>	Endangered	Final	Flowering Plants
Scotts Valley spineflower	<i>Chorizanthe robusta</i> var. <i>hartwegii</i>	Endangered	Final	Flowering Plants
Scrub blazingstar	<i>Liatris ohlingerae</i>	Endangered		Flowering Plants
Scrub buckwheat	<i>Eriogonum longifolium</i> var. <i>gnaphalifolium</i>	Threatened		Flowering Plants
Scrub lupine	<i>Lupinus aridorum</i>	Endangered		Flowering Plants
Scrub mint	<i>Dicerandra frutescens</i>	Endangered		Flowering Plants
Scrub plum	<i>Prunus geniculata</i>	Endangered		Flowering Plants
Seabeach amaranth	<i>Amaranthus pumilus</i>	Threatened		Flowering Plants
sea bean	<i>Mucuna persericea</i>	Endangered	Final	Flowering Plants
Sebastopol meadowfoam	<i>Limnanthes vinculans</i>	Endangered		Flowering Plants
Sensitive joint-vetch	<i>Aeschynomene virginica</i>	Threatened		Flowering Plants
Sentry milk-vetch	<i>Astragalus cremnophylax</i> var. <i>cremnophylax</i>	Endangered		Flowering Plants
Shale barren rock cress	<i>Boechera serotina</i>	Endangered		Flowering Plants
Sharpnose Shiner	<i>Notropis oxyrhynchus</i>	Endangered	Final	Fishes
Shasta crayfish	<i>Pacifastacus fortis</i>	Endangered		Crustaceans
Sheepnose Mussel	<i>Plethobasus cyphus</i>	Endangered	Proposed	Clams



Shenandoah salamander	Plethodon shenandoah	Endangered		Amphibians
Shiny pigtoe	Fusconaia cor	Endangered		Clams
Shinyrayed pocketbook	Hamiota subangulata	Endangered	Final	Clams
Shivwits milk-vetch	Astragalus ampullarioides	Endangered	Final	Flowering Plants
Short-leaved rosemary	Conradina brevifolia	Endangered		Flowering Plants
Shortnose Sucker	Chasmistes brevirostris	Endangered	Final	Fishes
Short's bladderpod	Physaria globosa	Endangered	Final	Flowering Plants
Short's goldenrod	Solidago shortii	Endangered		Flowering Plants
Short-tailed albatross	Phoebastria (=Diomedea) albatrus	Endangered		Birds
Showy Indian clover	Trifolium amoenum	Endangered		Flowering Plants
Showy stickseed	Hackelia venusta	Endangered		Flowering Plants
Shrubby reed-mustard	Schoenocrambe suffrutescens	Endangered	Proposed	Flowering Plants
Sickle darter	Percina williamsi	Threatened	Proposed	Fishes
Sierra Nevada bighorn sheep	Ovis canadensis sierrae	Endangered	Final	Mammals
Sierra Nevada red fox	Vulpes vulpes necator	Endangered		Mammals
Sierra Nevada Yellow-legged Frog	Rana sierrae	Endangered	Final	Amphibians
Siler pincushion cactus	Pediocactus (=Echinocactus,=Utahia) sileri	Threatened		Flowering Plants
Silver rice rat	Oryzomys palustris natator	Endangered	Final	Mammals
Silverspot	Speyeria nokomis nokomis	Threatened	Not Prudent	Insects
Slabside Pearlymussel	Pleuronaia dolabelloides	Endangered	Final	Clams
Slackwater darter	Etheostoma boschungii	Threatened	Final	Fishes
Slender campeloma	Campeloma decampi	Endangered		Snails
Slender chub	Erimystax cahni	Threatened	Final	Fishes
Slenderclaw crayfish	Cambarus cracens	Endangered	Final	Crustaceans
Slender-horned spineflower	Dodecahema leptoceras	Endangered		Flowering Plants
Slender Orcutt grass	Orcuttia tenuis	Threatened	Final	Flowering Plants
Slender-petaled mustard	Thelypodium stenopetalum	Endangered		Flowering Plants
Slender rush-pea	Hoffmannseggia tenella	Endangered		Flowering Plants
Slevin's skink	Emoia slevini	Endangered		Reptiles
Slickspot peppergrass	Lepidium papilliferum	Threatened	Final	Flowering Plants
Small-anthered bittercress	Cardamine micranthera	Endangered		Flowering Plants

Smalleye Shiner	<i>Notropis buccula</i>	Endangered	Final	Fishes
Small's milkpea	<i>Galactia smallii</i>	Endangered		Flowering Plants
Small whorled pogonia	<i>Isotria medeoloides</i>	Threatened		Flowering Plants
Smith's blue butterfly	<i>Euphilotes enoptes smithi</i>	Endangered	Proposed	Insects
Smoky madtom	<i>Noturus baileyi</i>	Endangered	Final	Fishes
Smooth coneflower	<i>Echinacea laevigata</i>	Threatened		Flowering Plants
Snail [no common name]	<i>Eua zebrina</i>	Endangered		Snails
Snail [no common name]	<i>Ostodes strigatus</i>	Endangered		Snails
Snake River physa snail	<i>Physella natricina</i>	Endangered		Snails
Snakeroot	<i>Eryngium cuneifolium</i>	Endangered		Flowering Plants
Sneed pincushion cactus	<i>Coryphantha sneedii</i> var. <i>sneedii</i>	Endangered		Flowering Plants
Snuffbox mussel	<i>Epioblasma triquetra</i>	Endangered	Proposed	Clams
Socorro isopod	<i>Thermosphaeroma thermophilus</i>	Endangered		Crustaceans
Socorro springsnail	<i>Pyrgulopsis neomexicana</i>	Endangered		Snails
Soft bird's-beak	<i>Cordylanthus mollis</i> ssp. <i>mollis</i>	Endangered	Final	Flowering Plants
Soft-leaved paintbrush	<i>Castilleja mollis</i>	Endangered		Flowering Plants
Solano grass	<i>Tuctoria mucronata</i>	Endangered	Final	Flowering Plants
Sonoma alopecurus	<i>Alopecurus aequalis</i> var. <i>sonomensis</i>	Endangered		Flowering Plants
Sonoma spineflower	<i>Chorizanthe valida</i>	Endangered		Flowering Plants
Sonoma sunshine	<i>Blennosperma bakeri</i>	Endangered		Flowering Plants
Sonora chub	<i>Gila ditaenia</i>	Threatened	Final	Fishes
Sonoran pronghorn	<i>Antilocapra americana sonoriensis</i>	Endangered		Mammals
Sonoran tiger salamander	<i>Ambystoma mavortium stebbinsi</i>	Endangered		Amphibians
Sonoyta mud turtle	<i>Kinosternon sonoriense longifemorale</i>	Endangered	Final	Reptiles
Southeastern beach mouse	<i>Peromyscus polionotus niveiventris</i>	Threatened		Mammals
Southern clubshell	<i>Pleurobema decisum</i>	Endangered	Final	Clams
Southern combshell	<i>Epioblasma penita</i>	Endangered		Clams
Southern kidneyshell	<i>Ptychobranchus jonesi</i>	Endangered	Final	Clams
Southern Mountain Caribou DPS	<i>Rangifer tarandus</i> ssp. <i>caribou</i>	Endangered	Final	Mammals
Southern mountain wild-buckwheat	<i>Eriogonum kennedyi</i> var. <i>austromontanum</i>	Threatened	Final	Flowering Plants
Southern pigtoe	<i>Pleurobema georgianum</i>	Endangered	Final	Clams

Southern Sandshell	<i>Hamiota australis</i>	Threatened	Final	Clams
Southern sea otter	<i>Enhydra lutris nereis</i>	Threatened		Mammals
South Llano Springs moss	<i>Donrichardsia macroneuron</i>	Endangered	Final	Lichens
South Texas ambrosia	<i>Ambrosia cheiranthifolia</i>	Endangered		Flowering Plants
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	Endangered	Final	Birds
Spalding's Catchfly	<i>Silene spaldingii</i>	Threatened	Proposed	Flowering Plants
Speckled pocketbook	<i>Lampsilis streckeri</i>	Endangered		Clams
Spectaclecase (mussel)	<i>Cumberlandia monodonta</i>	Endangered	Proposed	Clams
Spectacled eider	<i>Somateria fischeri</i>	Threatened	Final	Birds
Spikedace	<i>Meda fulgida</i>	Endangered	Final	Fishes
Spotfin Chub	<i>Erimonax monachus</i>	Threatened	Final	Fishes
Spreading avens	<i>Geum radiatum</i>	Endangered		Flowering Plants
Spreading navarretia	<i>Navarretia fossalis</i>	Threatened	Final	Flowering Plants
Spring Creek bladderpod	<i>Lesquerella perforata</i>	Endangered		Flowering Plants
Spring-loving centaury	<i>Centaureum namophilum</i>	Threatened	Final	Flowering Plants
Spring pygmy sunfish	<i>Elassoma alabamae</i>	Threatened	Final	Fishes
Springville clarkia	<i>Clarkia springvillensis</i>	Threatened		Flowering Plants
Spruce-fir moss spider	<i>Microhexura montivaga</i>	Endangered	Final	Arachnids
Squirrel Chimney Cave shrimp	<i>Palaemonetes cummingi</i>	Threatened		Crustaceans
St. Andrew beach mouse	<i>Peromyscus polionotus peninsularis</i>	Endangered	Final	Mammals
Star cactus	<i>Astrophytum asterias</i>	Endangered		Flowering Plants
St. Croix ground lizard	<i>Ameiva polops</i>	Endangered	Final	Reptiles
Steamboat buckwheat	<i>Eriogonum ovalifolium</i> var. <i>williamsiae</i>	Endangered		Flowering Plants
Stebbins' morning-glory	<i>Calystegia stebbinsii</i>	Endangered		Flowering Plants
Steller's Eider	<i>Polysticta stelleri</i>	Threatened	Final	Birds
Stephens' kangaroo rat	<i>Dipodomys stephensi</i> (incl. <i>D. cactus</i> )	Threatened		Mammals
St. Francis River Crayfish	<i>Faxonius quadruncus</i>	Threatened	Final	Crustaceans
Stock Island tree snail	<i>Orthalicus reses</i> (not incl. <i>nesodryas</i> )	Threatened		Snails
straight-horned markhor	<i>Capra falconeri megaceros</i>	Endangered		Mammals
Streaked Horned lark	<i>Eremophila alpestris strigata</i>	Threatened	Final	Birds
St. Thomas prickly-ash	<i>Zanthoxylum thomasianum</i>	Endangered		Flowering Plants

Suisun thistle	<i>Cirsium hydrophilum</i> var. <i>hydrophilum</i>	Endangered	Final	Flowering Plants
Suwannee alligator snapping turtle	<i>Macrochelys suwanniensis</i>	Threatened		Reptiles
Suwannee moccasinshell	<i>Medionidus walkeri</i>	Threatened	Final	Clams
swale paintbrush	<i>Castilleja ornata</i>	Endangered	Not Prudent	Flowering Plants
Swamp pink	<i>Helonias bullata</i>	Threatened		Flowering Plants
Tan riffleshell	<i>Epioblasma florentina walkeri</i> (=E. <i>walkeri</i> )	Endangered		Clams
Tapered pigtoe	<i>Fusconaia burkei</i>	Threatened	Final	Clams
Tar River spinymussel	<i>Parvaspina steinstansana</i>	Endangered		Clams
Taylor's (=whulge) Checkerspot	<i>Euphydryas editha taylori</i>	Endangered	Final	Insects
Telephus spurge	<i>Euphorbia telephioides</i>	Threatened		Flowering Plants
Tenino pocket gopher	<i>Thomomys mazama tumuli</i>	Threatened	Final	Mammals
Tennessee yellow-eyed grass	<i>Xyris tennesseensis</i>	Endangered		Flowering Plants
Terlingua Creek cat's-eye	<i>Cryptantha crassipes</i>	Endangered		Flowering Plants
Texas ayenia	<i>Ayenia limitaris</i>	Endangered		Flowering Plants
Texas blind salamander	<i>Eurycea rathbuni</i>	Endangered		Amphibians
Texas fatmucket	<i>Lampsilis bracteata</i>	Endangered	Final	Clams
Texas fawnsfoot	<i>Truncilla macrodon</i>	Threatened	Final	Clams
Texas golden Gladecress	<i>Leavenworthia texana</i>	Endangered	Final	Flowering Plants
Texas Hornshell	<i>Popenaias popeii</i>	Endangered	Proposed	Clams
Texas pimpleback	<i>Cyclonaias petrina</i>	Endangered	Final	Clams
Texas poppy-mallow	<i>Callirhoe scabriuscula</i>	Endangered		Flowering Plants
Texas prairie dawn-flower	<i>Hymenoxys texana</i>	Endangered		Flowering Plants
Texas snowbells	<i>Styrax platanifolius</i> ssp. <i>texanus</i>	Endangered		Flowering Plants
Texas trailing phlox	<i>Phlox nivalis</i> ssp. <i>texensis</i>	Endangered		Flowering Plants
Texas wild-rice	<i>Zizania texana</i>	Endangered	Final	Flowering Plants
Thick-billed parrot	<i>Rhynchopsitta pachyrhyncha</i>	Endangered		Birds
Thread-leaved brodiaea	<i>Brodiaea filifolia</i>	Threatened	Final	Flowering Plants
Three Forks Springsnail	<i>Pyrgulopsis trivialis</i>	Endangered	Final	Snails
Tiburon jewelflower	<i>Streptanthus niger</i>	Endangered		Flowering Plants
Tiburon mariposa lily	<i>Calochortus tiburonensis</i>	Threatened		Flowering Plants
Tiburon paintbrush	<i>Castilleja affinis</i> ssp. <i>neglecta</i>	Endangered		Flowering Plants

Tidewater goby	<i>Eucyclogobius newberryi</i>	Endangered	Final	Fishes
Tiehm's buckwheat	<i>Eriogonum tiehmii</i>	Endangered	Proposed	Flowering Plants
Tiny polygala	<i>Polygala smallii</i>	Endangered		Flowering Plants
Tipton kangaroo rat	<i>Dipodomys nitratoide nitratoide</i>	Endangered		Mammals
Tobusch fishhook cactus	<i>Sclerocactus brevihamatus</i> ssp. <i>tobuschii</i>	Threatened		Flowering Plants
Todsen's pennyroyal	<i>Hedeoma todsenii</i>	Endangered	Final	Flowering Plants
Tooth Cave ground beetle	<i>Rhadine persephone</i>	Endangered		Insects
Tooth Cave pseudoscorpion	<i>Tartarocreagris texana</i>	Endangered		Arachnids
Tooth Cave spider	<i>Tayshaneta myopica</i>	Endangered		Arachnids
Topeka shiner	<i>Notropis topeka</i> (=tristis)	Endangered	Final	Fishes
Triangular Kidneyshell	<i>Ptychobranchus greenii</i>	Endangered	Final	Clams
Triple-ribbed milk-vetch	<i>Astragalus tricarinatus</i>	Endangered		Flowering Plants
Trispot darter	<i>Etheostoma trisella</i>	Threatened	Final	Fishes
Tulotoma snail	<i>Tulotoma magnifica</i>	Threatened		Snails
Tumbling Creek cavesnail	<i>Antrobia culveri</i>	Endangered	Final	Snails
Ufa-halomtano	<i>Heritiera longipetiolata</i>	Endangered		Flowering Plants
Uhiuhi	<i>Mezoneuron kavaense</i>	Endangered	Final	Flowering Plants
Uinta Basin hookless cactus	<i>Sclerocactus wetlandicus</i>	Threatened		Flowering Plants
Umtanum desert buckwheat	<i>Eriogonum codium</i>	Threatened	Final	Flowering Plants
Unarmored threespine stickleback	<i>Gasterosteus aculeatus williamsoni</i>	Endangered	Not Prudent	Fishes
Uncompahgre fritillary butterfly	<i>Boloria acrocynema</i>	Endangered		Insects
Utah prairie dog	<i>Cynomys parvidens</i>	Threatened		Mammals
Ute ladies'-tresses	<i>Spiranthes diluvialis</i>	Threatened		Flowering Plants
Uvillo	<i>Eugenia haematocarpa</i>	Endangered		Flowering Plants
Vahl's boxwood	<i>Buxus vahlII</i>	Endangered		Flowering Plants
Vail Lake ceanothus	<i>Ceanothus ophiochilus</i>	Threatened	Final	Flowering Plants
Valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>	Threatened	Final	Insects
Vandenberg monkeyflower	<i>Diplacus vandenbergensis</i>	Endangered	Final	Flowering Plants
Ventura Marsh Milk-vetch	<i>Astragalus pycnostachyus</i> var. <i>lanosissimus</i>	Endangered	Final	Flowering Plants
Verity's dudleya	<i>Dudleya verityi</i>	Threatened		Flowering Plants
Vermilion darter	<i>Etheostoma chermocki</i>	Endangered	Final	Fishes

Vernal pool fairy shrimp	Branchinecta lynchi	Threatened	Final	Crustaceans
Vernal pool tadpole shrimp	Lepidurus packardii	Endangered	Final	Crustaceans
Vine Hill clarkia	Clarkia imbricata	Endangered		Flowering Plants
Virginia big-eared bat	Corynorhinus (=Plecotus) townsendii virginianus	Endangered	Final	Mammals
Virginia fringed mountain snail	Polygyriscus virginianus	Endangered		Snails
Virginia round-leaf birch	Betula uber	Threatened		Flowering Plants
Virginia sneezeweed	Helenium virginicum	Threatened		Flowering Plants
Virginia spiraea	Spiraea virginiana	Threatened		Flowering Plants
Virgin Islands tree boa	Chilabothrus granti	Endangered		Reptiles
Virgin River Chub	Gila seminuda (=robusta)	Endangered	Final	Fishes
Waccamaw silverside	Menidia extensa	Threatened	Final	Fishes
wahine noho Kula	Isodendron pyrifolium	Endangered	Final	Flowering Plants
Walker's manioc	Manihot walkerae	Endangered		Flowering Plants
Warm Springs pupfish	Cyprinodon nevadensis pectoralis	Endangered		Fishes
Warner sucker	Catostomus warnerensis	Threatened	Final	Fishes
Watercress darter	Etheostoma nuchale	Endangered		Fishes
Wawae`iole	Phlegmariurus mannii	Endangered	Final	Ferns and Allies
Wawae`iole	Phlegmariurus nutans	Endangered	Final	Ferns and Allies
Webber's ivesia	Ivesia webberi	Threatened	Final	Flowering Plants
Wedge spurge	Chamaesyce deltoidea serpyllum	Endangered	Proposed	Flowering Plants
Welsh's milkweed	Asclepias welshii	Threatened	Final	Flowering Plants
Wenatchee Mountains checkermallow	Sidalcea oregana var. calva	Endangered	Final	Flowering Plants
Western fanshell	Cyprogenia aberti	Threatened	Final	Clams
Western glacier stonefly	Zapada glacier	Threatened		Insects
Western lily	Lilium occidentale	Endangered		Flowering Plants
Western prairie fringed Orchid	Platanthera praeclara	Threatened		Flowering Plants
Western Snowy Plover	Charadrius nivosus nivosus	Threatened	Final	Birds
West Indian Manatee	Trichechus manatus	Threatened	Proposed	Mammals
West Indian Manatee	Trichechus manatus	Threatened	Final	Mammals
West Indian Walnut (=Nogal)	Juglans jamaicensis	Endangered		Flowering Plants

Wheeler's peperomia	Peperomia wheeleri	Endangered		Flowering Plants
Whitebark pine	Pinus albicaulis	Threatened	Not Prudent	Conifers and Cycads
White birds-in-a-nest	Macbridea alba	Threatened		Flowering Plants
White bladderpod	Physaria pallida	Endangered		Flowering Plants
White Bluffs bladderpod	Physaria douglasii ssp. tuplashensis	Threatened	Final	Flowering Plants
White catspaw (pearlymussel)	Epioblasma perobliqua	Endangered		Clams
White fringeless orchid	Platanthera integrilabia	Threatened		Flowering Plants
White irisette	Sisyrinchium dichotomum	Endangered		Flowering Plants
White-necked crow	Corvus leucognaphalus	Endangered		Birds
White-rayed pentachaeta	Pentachaeta bellidiflora	Endangered		Flowering Plants
White River spinedace	Lepidomeda albivallis	Endangered	Final	Fishes
White River springfish	Crenichthys baileyi baileyi	Endangered	Final	Fishes
White sedge	Carex albida	Endangered		Flowering Plants
White sturgeon	Acipenser transmontanus	Endangered	Final	Fishes
White wartyback (pearlymussel)	Plethobasus cicatricosus	Endangered		Clams
Whooping crane	Grus americana	Endangered	Final	Birds
Whorled Sunflower	Helianthus verticillatus	Endangered	Final	Flowering Plants
Wide-leaf warea	Warea amplexifolia	Endangered		Flowering Plants
Willamette daisy	Erigeron decumbens	Endangered	Final	Flowering Plants
Willow monardella	Monardella viminea	Endangered	Final	Flowering Plants
Winged Mapleleaf	Quadrula fragosa	Endangered		Clams
Winkler cactus	Pediocactus winkleri	Threatened		Flowering Plants
Wireweed	Polygonella basiramia	Endangered		Flowering Plants
Wood Bison	Bison bison athabascaae	Threatened		Mammals
Wood stork	Mycteria americana	Threatened		Birds
Woundfin	Plagopterus argentissimus	Endangered	Final	Fishes
Wright fishhook cactus	Sclerocactus wrightiae	Endangered		Flowering Plants
Wright's marsh thistle	Cirsium wrightii	Threatened	Final	Flowering Plants
Wyoming Toad	Anaxyrus baxteri	Endangered		Amphibians
Yadon's piperia	Piperia yadonii	Endangered	Final	Flowering Plants

Yaqui catfish	<i>Ictalurus pricei</i>	Threatened	Final	Fishes
Yaqui chub	<i>Gila purpurea</i>	Endangered	Final	Fishes
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	Threatened	Final	Birds
Yellow-blotched map turtle	<i>Graptemys flavimaculata</i>	Threatened		Reptiles
Yellowcheek Darter	<i>Etheostoma moorei</i>	Endangered	Final	Fishes
Yellowfin madtom	<i>Noturus flavipinnis</i>	Threatened	Final	Fishes
Yellow lance	<i>Elliptio lanceolata</i>	Threatened	Final	Clams
Yellow larkspur	<i>Delphinium luteum</i>	Endangered	Final	Flowering Plants
Yellow-shouldered blackbird	<i>Agelaius xanthomus</i>	Endangered	Final	Birds
Yelm pocket gopher	<i>Thomomys mazama yelmensis</i>	Threatened	Final	Mammals
Yosemite toad	<i>Anaxyrus canorus</i>	Threatened	Final	Amphibians
Yreka phlox	<i>Phlox hirsuta</i>	Endangered		Flowering Plants
Yuma Ridgway's rail	<i>Rallus obsoletus yumanensis</i>	Endangered		Birds
Zapata bladderpod	<i>Physaria thamnophila</i>	Endangered	Final	Flowering Plants
Zayante band-winged grasshopper	<i>Trimerotropis infantilis</i>	Endangered	Final	Insects
Zuni bluehead Sucker	<i>Catostomus discobolus yarrowi</i>	Endangered	Final	Fishes
Zuni fleabane	<i>Erigeron rhizomatus</i>	Threatened		Flowering Plants



**Appendix D:**  
**C-UAS Best Management Practice Implementation Checklist**

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DEPARTMENT OF HOMELAND SECURITY PROGRAMMATIC ENVIRONMENTAL  
ASSESSMENT FOR THE NATIONWIDE OPERATION OF COUNTER UNMANNED  
AIRCRAFT SYSTEMS (C-UAS)

Best Management Practices (BMP) Implementation Checklist

The following checklist is to be utilized for confirming the proposed action is covered under the scope and review of the 2025 Programmatic Environmental Assessment (PEA) and that project-specific analysis is not necessary. With these best management practices in place, DHS continues to ensure that no significant adverse impacts to the environment or the public would occur as a result of counter unmanned aircraft system (C-UAS) activities. Specific measures for environmental resource topics analyzed in the 2025 PEA are incorporated into this checklist, which is to be completed prior to C-UAS use, to the maximum extent practicable. This checklist also incorporates by reference the BMP Implementation Checklist that was prepared as part of the *Final Programmatic Environmental Assessment for the Nationwide Operation of Small Unmanned Aircraft Systems (sUAS)*, published in December 2022. For situations where DHS plans to launch sUAS to conduct research, development, testing, and evaluation (RDT&E) of C-UAS systems, DHS would also adhere to the BMPs included in the 2022 PEA. If Components have listed species or critical habitat<sup>1</sup> in their project area and cannot implement the Biological Resources BMPs below, the Component should contact the local USFWS Ecological Services Field Office and/or the NMFS Office of Protected Resources ([nmfs.hq.esa.consultations@noaa.gov](mailto:nmfs.hq.esa.consultations@noaa.gov)) with the Eco Record ID in the subject line) to determine if site-specific Endangered Species Act (ESA) consultation is necessary.

BMPs are required and should be followed; however, C-UAS are predominately utilized to respond to potential threats to support national security. Under no circumstances would emergency response actions be delayed in order to implement the BMPs. However, as indicated in the 2022 sUAS PEA, BMPs would be followed during an emergency or national security scenario as the situation allows. If the BMPs cannot be implemented during an emergency response, operators would prioritize emergency response actions and follow established procedures for emergency situations including compliance under ESA. Section 7 regulations recognize that an emergency (imminent loss of human life or property) may require expedited consultation. As soon as practicable after the emergency is under control, if listed species or critical habitat were affected by the emergency response and it was not possible to implement the BMPs, the USFWS and/or NMFS would be contacted for discussion of potential after-the-fact consultation.

This checklist is to be completed prior to C-UAS use, unless the nature of the particular emergency precludes it. For activities that regularly occur within a specified geographic location (e.g. RDT&E), a single checklist may suffice. Checklists should be saved as part of the National Environmental Policy Act, National Historic Preservation Act, and Endangered Species Act administrative record for the proposed action.

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<sup>1</sup> As determined by the U.S. Fish and Wildlife Service (USFWS) species list obtained through the Information for Planning and Consultation (IPaC) tool and by referencing the National Marine Fisheries Service (NMFS) ESA Critical Habitat Mapper.

<b>Date(s) of Use</b>	
<b>Location of Event</b>	
<b>Point of Contact (POC) Completing this Checklist (name, phone number and email, organization)</b>	
<b>C-UAS Project Manager (name, phone number and email, organization)</b>	
<b>Provide a short summary of the Proposed Action.</b>	

Human Health and Safety	A) Response to Question (Click the appropriate box)	B) Are there any extenuating circumstances? If so, explain here.
1. Ensure that active radar is not operated at power densities for a length of time beyond the established occupational and public time limits (less than 30 minutes and less than 6 minutes, respectively) that could result in radiofrequency (RF) exposures in exceedance of the maximum permissible exposure limits established by the FCC under 47 CFR 1.1307(b).	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
2. Use of active radar will comply with the following standards: a. Institute of Electrical and Electronics Engineers Standards Associates C95.7-214, Recommended Practice for Radio Frequency Safety Programs, 3 Kilohertz to 300 Gigahertz. b. International Commission of Non-Ionizing Radiation Protection RF Electromagnetic Field Guidelines 2020.	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
3. Prior to undertaking any operational activities using active radar in a public setting, cordon off sites and post signage to limit public proximity to the active radar.	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	

<p>4. Radiation hazard from the radar and RF systems will not exceed the following permissible radar exposure limit guidelines as defined in Army Regulation 385-10:</p> <ul style="list-style-type: none"> <li>a. Hazards of Electromagnetic Radiation to Personnel.</li> <li>b. Hazards of Electromagnetic Radiation to Ordnance.</li> <li>c. Hazards of Electromagnetic Radiation to Fuel.</li> </ul> <p><b>(See note [a] below).</b></p>	<p><input type="checkbox"/> <b>Yes</b> – Go to next practice</p> <p><input type="checkbox"/> <b>No</b> – Explain in B)</p>	
<p>5. No active radar will be powered and emitting while personnel are standing nearby. Radar signal strength varies depending on equipment make and model. Test and operational personnel must be familiar with the radar specifications and advised of minimum safe distance. If radar specifications are not available, a safe distance of 1 meter from the radar will be enforced.</p>	<p><input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice</p> <p><input type="checkbox"/> <b>No</b> – Explain in B)</p>	
<p>6. All test participants who remain outdoors during testing will wear laser-rated protective eyewear and long-sleeved clothing, pants, close-toed shoes, and other coverings that protect exposed skin as will be positioned to the rear of any laser equipment prior to activation.</p>	<p><input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice</p> <p><input type="checkbox"/> <b>No</b> – Explain in B)</p>	
<b>Visual Resources and Aesthetics</b>	<b>Response to Question (Click the appropriate box)</b>	<b>B) Are there any extenuating circumstances? If so, explain here.</b>
<p>7. sUAS flights conducted for RDT&amp;E purposes will not exceed 400 feet in altitude, unless prior approval is given by the FAA.</p>	<p><input type="checkbox"/> <b>Yes</b> – Go to next practice</p> <p><input type="checkbox"/> <b>No</b> – Explain in B)</p>	
<p>8. Adhere to applicable regulations regarding visual quality near historic sites or other protected land uses.</p>	<p><input type="checkbox"/> <b>Yes</b> – Go to next practice</p> <p><input type="checkbox"/> <b>No</b> – Explain in B)</p>	

<b>Airspace</b>	<b>A) Response to Question (Click the appropriate box)</b>	<b>B) Are there any extenuating circumstances? If so, explain here.</b>
9. Request Temporary Flight Restrictions (TFRs) and Notices to Airmen (NOTAMs), as applicable.	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
10. File FAA Certificates of Authorization (COAs) and Notification Capability (LAANC) notifications for all RDT&E activity and, as applicable, to all operational missions.	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
11. File FAA Form 7140-1 at least 30 days prior to conducting any outdoor RDT&E activity using directed energy (i.e., lasers).	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
<b>Biological Resources</b>	<b>A) Response to Question (Click the appropriate box)</b>	<b>B) Are there any extenuating circumstances? If so, explain here.</b>
12. Generate a list of species and critical habitat within the project area no earlier than 90 days before the planned operation. <b>(See note [b]).</b>	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
13. Coordinate with appropriate land managers to identify potential wildlife concern and avoidance or minimization measures if C-UAS activities will occur on or over a unit of the National Wildlife Refuge System (NWRS), National Fish Hatchery, National Park Service lands or other Federal lands. <b>(See note [c]).</b>	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	

14. Locate C-UAS RDT&E activities at DHS facilities on roads, trails, paved surfaces, or otherwise previously disturbed or developed areas where no direct impacts on critical habitat, listed species, or migratory birds are anticipated. For species under NMFS's jurisdiction this includes avoiding activities that may result in debris or recovery efforts occurring in riparian, estuarine, or coastal nearshore locations within species' habitats (as determined in #12).	<input checked="" type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
15. Locate C-UAS ground-based equipment on roads, trails, paved surfaces, and/or otherwise previously disturbed or developed areas if they are within terrestrial critical habitat or the range of a listed species (as indicated by your IPaC species and critical habitat list). <b>(See note [d]).</b>	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
16. Avoid operating C-UAS within 200 feet (vertically and horizontally) of a known breeding or roosting colony, or other known high density nesting area, of federally listed or proposed birds or migratory birds (as indicated by one or more bird species appearing on your IPaC generated species list). <b>(See note [e] for specific instructions).</b>	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
17. Maintain a 330-foot buffer around any known bald eagle nests during the breeding season. Extend the buffer distance would to 660 feet in open areas where the nest may have increased visibility and exposure to C-UAS activities.	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	



18. When possible, conduct C-UAS activities and RDT&E during seasons when federally listed, proposed, or migratory birds are not present or nesting in the operational area (e.g., the bird species on your IPaC list is migratory and will not be present during a particular season). <b>(See note [e]).</b>	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
19. Conduct a visual check for migratory birds and federally listed species (use your list generated through IPaC and the National ESA Critical Habitat Mapper) immediately prior to operating C-UAS. <b>(See note [f]).</b>	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
20. If personnel observe a federally listed animal or migratory bird including federally listed bird nests during the visual check, delay activities until either the animal has moved away from the area of operation, or the C-UAS RDT&E or operation area will be relocated to an area where the animal or nests will not be disturbed (at least 200 feet away both horizontally and vertically). <b>(See note [g] below).</b>	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
21. If personnel encounter wildlife during C-UAS RDT&E, training, demonstrations, or operations, operators will ensure all personnel and UAS maintain a safe distance (at least 200 feet is recommended) and will avoid buzzing, animal-directed movements, hovering, landing, taking off, lingering, or taxiing near the observed wildlife.	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	

22. If, despite the measures in #21, wildlife, including migratory birds, listed animal species, and bald and golden eagles exhibit signs of distress (e.g. wing flapping, crouching, fleeing, or flushing), the C-UAS activity will be immediately moved beyond the 200-foot recommended distance from the animal.	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
23. To minimize impacts to federally listed or proposed insect species, sUAS deployed during RDT&E of C-UAS activities will maintain a minimum altitude of 65 feet above the ground.	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
24. If IPaC results include federally listed or proposed bat species, operate C-UAS during daylight hours (one hour after sunrise to one hour before sunset) and avoid operating C-UAS in close proximity to known hibernacula whenever practicable. In addition, for nighttime use of C-UAS involving sUAS, maintain a minimum altitude of 98 feet above vegetation, tree canopy, or open water (including rivers, streams, lakes, reservoirs, etc.).	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
25. Document and report to the USFWS and/or NMFS, in a timely manner, any operation involving a collision with or harassment of a federally listed species (if species is clearly identifiable). To contact NMFS, send an email detailing the incident to <a href="mailto:nmfs.hq.esa.consultations@noaa.gov">nmfs.hq.esa.consultations@noaa.gov</a> with the Eco Record ID in the subject line.	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
26. Avoid operating C-UAS from/on beaches that support nesting sea turtles during their breeding season.	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	

27. Avoid flying UAVs within 500 feet of known haul-out locations, sea turtles, and marine mammals at the water's surface (unless prior authorization was received from NOAA or USFWS).	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
28. To the maximum extent feasible, recover any debris resulting from C-UAS mitigation operations. Make effort to minimize disturbance if recovery activities must take place in riverine, estuarine, or coastal nearshore habitats.	<input type="checkbox"/> <b>Yes or N/A</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	

Cultural and Historic Resources	A) Response to Question (Click the appropriate box)	B) Are there any extenuating circumstances? If so, explain here.
<p>29. Provide letters of notification to State Historic Preservation Offices (SHPO), Tribal Historic Preservation Offices (THPO), and/or Federal Preservation Officers at least 30 days prior to applicable C-UAS undertakings. Coordinate with Tribal Nations to the maximum extent feasible when proposed operations would include flying over or deploying from tribal sensitive areas, above-ground historic properties, or culturally significant areas (e.g. to identify appropriate launch sites or sensitive resources to avoid). Consult, as necessary, with applicable State Historic Preservation Office (SHPO), Tribal Historic Preservation Officer (THPO), and/or Certified Local Governments.</p>	<p><input type="checkbox"/> <b>Yes</b> – Go to next practice</p> <p><input type="checkbox"/> <b>No</b> – Explain in B)</p>	
<p>30. Coordinate with Tribal Nations to the maximum extent feasible when proposed operations would include flying over or deploying from Tribal sensitive areas, above-ground historic properties, or culturally significant areas. Reference the Bureau of Indian Affairs Sacred Sites Best Practice Guide for additional information if sacred sites or traditional cultural properties are present at a C-UAS undertaking.</p>	<p><input type="checkbox"/> <b>Yes</b> – Go to next practice</p> <p><input type="checkbox"/> <b>No</b> – Explain in B)</p>	

31. Avoid operations within 100 feet vertically and/or horizontally from Tribal sensitive areas or historically or culturally significant areas (i.e. known historic properties, National Historic Landmarks, monuments, or cemeteries), unless necessitated by an emergency facility inspection or condition assessment, or prior notification to the NPS for National Historic Landmarks and appropriate SHPO or THPO has been completed. <b>(See note [h]).</b>	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
32. Apply and adhere to the conditions of the Nationwide Programmatic Agreement (NPA) Among the DHS, the National Conference of Historic Preservation Officers (NCSHPO), and the Advisory Council for Historic Preservation (ACHP) Regarding DHS C-UAS Systems Undertakings for Section 106 compliance if the criteria for C-UAS undertakings are met.	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	
<b>Other Coordination</b>	<b>A) Response to Question (Click the appropriate box)</b>	<b>B) Are there any extenuating circumstances? If so, explain here.</b>
33. Obtain all applicable permits, permissions, and authorizations from applicable landowners and federal, state, and local regulatory authorities prior to initiating operation of C-UAS.	<input type="checkbox"/> <b>Yes</b> – Go to next practice <input type="checkbox"/> <b>No</b> – Explain in B)	

**To be completed by the Environmental Reviewer.**

**Name:**

**Date:**

☐ **The proposed action is covered by the scope of the 2025 C-UAS PEA and no further environmental analysis is required.**

☐ **The proposed action is outside of the C-UAS PEA scope; therefore, additional analysis for compliance with the National Environmental Policy Act, National Historic Preservation**

**Act, Endangered Species Act, or other environmental statute, regulation or Executive Order is necessary.**

**Notes:**

### **Health and Safety**

**[a] Question 4:** The following is general safety information for active RF equipment as it pertains to Radiation Hazards (RADHAZ):

- a. Hazard of Electromagnetic Radiation to Ordnance (HERO) safe ordnance with a minimum Surface Shaded Display (SSD) of 10 feet.
- b. Hazard of Electromagnetic Radiation to Fuel (HERF) minimum safe distance is 14.2 centimeters.
- c. Hazard of Electromagnetic Radiation to Personnel (HERP) minimum safe distance is 0.5 meters.

### **Biological Resources**

**[b] Question 12:** For species under jurisdiction of USFWS use Information for Planning and Consultation (IPaC) tool (<https://ipac.ecosphere.fws.gov/>). USFWS IPaC reports are valid for 90 days following its date of creation. If past 90 days, please complete a new IPaC report online. For species under jurisdiction of NMFS use the National ESA Critical Habitat Mapper and/or regional spatial data applications (<https://www.fisheries.noaa.gov/resource/map/national-esa-critical-habitat-mapper>). NMFS will notify DHS once a nationwide range mapper is available for species under jurisdiction of NMFS.

**[c] Question 13:** To minimize impacts to wildlife, units of the NWRS and other federal lands and waters managed for wildlife (e.g., national parks) should be identified before any C-UAS operation. Visit U.S. Fish & Wildlife Service website to determine locations of NWRS. Refuge Managers or other land/water managers should be contacted to identify site-specific wildlife use, potential responses to disturbance, and other information regarding cultural or sensitive sites, wildlife aggregation sites, and public use areas. For coordination efforts or activities (non-emergency) that occur on USFWS owned or managed lands contact the local USFWS site manager (such as a Refuge or Hatchery Manager). In emergency situations (imminent loss of life or property), if pre-planning or early coordination is not practicable, operators should proceed with emergency response actions.

**[d] Question 15:** If it is necessary to utilize operations sites within naturally vegetated areas of terrestrial critical habitat or the range of federally listed plant or lichen species, DHS will coordinate with the appropriate USFWS Field Office to identify if alternate launch or landing sites are necessary or sensitive resources need avoidance.

**[e] Question 18:** In areas that are known to contain migratory and federally listed bird nesting colonies, or areas that are known to contain listed avian species during their breeding season, as identified in the USFWS IPaC migratory bird frequency charts (using IPaC results obtained at least 90 days prior to a test event), implement seasonal restrictions, such as changing flight area or seasonally restricting flights, to reduce any potential impact to migratory and federally listed bird species. If IPaC does not indicate breeding season timeframes for non-migratory identified

federally listed bird species, DHS environmental would utilize best available information to identify federally listed bird breeding season timeframe for its Project area and implement recommended seasonal restrictions. DHS commits to conducting testing activities outside of the migratory and federally listed bird nesting season or breeding season areas, unless in the event of imminent loss of life or property (i.e., an emergency situation). In the event that unforeseen schedule changes result in testing to occur during the migratory and listed bird nesting season, DHS commits to consulting with USFWS on a project level (as necessary) and conducting a pedestrian nest survey of the project area to avoid and minimize potential impacts. If pedestrian nest surveys are required, surveys would be conducted by qualified environmental professionals in conformance with USFWS Regional Office methodologies or state-specific guidelines.

**[f] Question 19:** Conduct a visual pre-operation check for migratory birds, including bald and golden eagles, and any listed species in the IPaC species report, in the operation area immediately before launch. Should a DHS professional observe a migratory bird or bald or golden eagle or any listed species including federally listed bird nesting colonies within approximately 100 feet of the C-UAS operation site or sUAS launch/flight area, the C-UAS operation should be delayed or relocated to another location until the animal leaves the area on its own accord. If the animal does not leave, and a different launch site cannot be utilized, the USFWS local Field Office should be contacted for advice. In emergency situations (imminent loss of life or property), if pre-planning or early coordination is not practicable, operators should prioritize emergency response actions.

**[g] Questions 20:** In areas that are known to contain bird nesting colonies, or areas that are known to contain listed avian species during their breeding season, as identified in the USFWS IPaC migratory bird frequency charts (using IPaC results obtained at least 90 days prior to a test event), implement seasonal restrictions, such as changing flight area or seasonally restricting flights, to reduce any potential impact to the listed species. DHS commits to conducting testing activities outside of the migratory bird nesting season (April 15 through August 1) in these colony or breeding season areas. In the event that unforeseen schedule changes result in testing to occur during the migratory bird nesting season, DHS commits to consulting with USFWS on a project level (as necessary) and conducting a pedestrian nest survey of the project area to avoid and minimize potential impacts on migratory birds.

### **Cultural Resources**

**[h] Question 31:** This practice refers to Tribal sensitive areas, above-ground historic properties, and culturally significant areas including historic buildings, districts, cemeteries, parks, monuments, or any other culturally significant areas, historic properties, sacred sites, or traditional cultural properties.