



# United States Department of the Interior



FISH AND WILDLIFE SERVICE  
Deepwater Horizon Gulf Restoration Office  
341 Greeno Road North, Suite A  
Fairhope, Alabama 36532

In Reply Refer To:  
FWS/R4/DH NRDAR

Memorandum

July 20, 2023

To: Memorandum to File

From: Michael Barron, Deepwater Horizon Gulf Restoration Office

Subject: No Effect Determination for Open Ocean Trustee Implementation Group's Restoration Plan #3: Birds Project: Seabird Nesting Colony Protection and Enhancement at Dry Tortugas National Park, Florida

Under the Endangered Species Act (ESA) Section 7(a)(2), each Federal agency shall ensure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered or threatened species, or destroy/adversely modify designated critical habitat. If a Federal agency determines that a Federal action will have no effect on ESA-listed species or designated critical habitat, then the Federal agency is not required to consult with the U.S. Fish and Wildlife Service (Service) for purposes of ESA. This memo does not include any information or effects determinations for protected species under the jurisdiction of the National Marine Fisheries Service.

We have reviewed the project materials provided (see attached Biological Evaluation Form) for the proposed project entitled: "Seabird Nesting Colony Protection and Enhancement at Dry Tortugas National Park, Florida" from the draft Open Ocean Trustee Implementation Group's Restoration Plan #3: Birds. Based on our evaluation, we have determined that the project will have No Effect on any listed species. Should the project be modified in a way that could adversely impact species or habitats, this determination will be reevaluated as appropriate.

We have also reviewed the proposed project for impacts to bald eagles (*Haliaeetus leucocephalus*) in accordance with the Bald and Golden Eagle Protection Act of 1940 as amended (16 U.S.C. 668-668c) and impacts to migratory birds in accordance with the Migratory Bird Treaty Act of 1918 as amended (16 U.S.C. 703-712 and determined that take would be avoided, and best management practices will be followed. In accordance with the Marine

Mammal Protection Act of 1972 as amended (16 U.S.C. 1361-1383b, 1401-1406, 1411-1421h), no marine mammals under the jurisdiction of the Service will be impacted.

We have also reviewed the proposed project for consistency with the Coastal Barrier Resources Act of 1982 (16 U.S.C. 3501-3510) and determined that the project will not be implemented in any System Units.

This project may also include chemical treatment and the use of herbicides to control vegetation. The National Park Service (NPS) will address any pesticide-related ESA requirements for this project during the NPS' routine Pesticide Use Proposal System (PUPS). Personnel would apply herbicide in accordance with the direction and guidance provided on the appropriate United States Environmental Protection Act labels and state statutes during land-based activities and would follow all federal pesticide regulations and the NPS' Integrated Pest Management policy. All pesticides would be approved prior to use through the PUPS and usage will be reported for each calendar year. Application would occur outside of bird nesting season. Herbicides would not be applied within 60 feet of any ESA-listed plant species, plant species of concern, or freshwater habitats unless analysis indicates herbicide use is the best way to protect the ecosystem from invasive plants. Vegetation management (including chemical treatment) would provide long-term benefits to wildlife and habitats by restoring natural vegetative communities and increasing biodiversity. Therefore, there is no need for ESA compliance to be completed within the Deepwater Horizon compliance processes.

If you have questions or concerns regarding this action, please contact Michael Barron, Fish and Wildlife Biologist, at 251-421-7030 or [michael\\_barron@fws.gov](mailto:michael_barron@fws.gov).

Attachments (1)

**Attachment 1**  
**Biological Evaluation Form**  
**Deepwater Horizon Oil Spill Restoration**  
U.S. Fish and Wildlife Service & National Marine Fisheries Service

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This form will be filled out by the Implementing Trustee and used by the regulatory agencies. The form will provide information to initiate informal Section 7 consultations under the Endangered Species Act (ESA) and may be used to document a No Effect determination or to initiate pre-consultation technical assistance.

It is recommended that this form also be completed to inform and evaluate additional needs for compliance with the following authorities: Migratory Bird Treaty Act (MBTA), Marine Mammal Protection Act (MMPA), Coastal Barrier Resources Act (CBRA), Bald and Golden Eagle Protection Act (BGEPA) and Section 106 of the National Historic Preservation Act (NHPA).

Further information may be required beyond what is captured on this form. Note: if you need additional space for writing, please attach pages as needed.

For assistance, please contact the compliance liaisons  
USFWS: Michael Barron at michael\_barron@fws.gov  
NMFS: Christy Fellas at christina.fellas@noaa.gov

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**A. Project Identification**

Federal Action Agency(one or more):USFWS  NOAA  EPA  USDA

Implementing Trustee(s): Department of the Interior (DOI)

Contact Name: **Ashley Mills** Phone: 812-756-2712 Email: Ashley\_mills@fws.gov

Project Name: **Seabird Nesting Colony Protection and Enhancement at Dry Tortugas National Park, Florida**

DIVER ID# N/A TIG: Open Ocean TIG Restoration Plan # 3

**B. Project Phase**

Please choose the box which best describes the project status, as proposed in this BE form, check ALL that apply:

Construction/Implementation  Planning/Conceptual  Engineering & Design

If “Engineering & Design” was selected, please describe the level of design that has been

completed and is available for review:

N/A

### **C. Project Location**

#### **I. State and County/Parish of action area**

Dry Tortugas National Park, Monroe County, Florida.

#### **II. Latitude/Longitude for action area (Decimal degrees and datum [e.g., 27.71622°N, 80.25174°W NAD83])**

[online conversion: <https://www.fcc.gov/encyclopedia/degrees-minutes-seconds-to-from-decimal-degrees>]

Project activities could occur on all seven keys within Dry Tortugas National Park (DRTO) including Bush, Garden, Long, Loggerhead, Hospital, Middle, and East Keys. Coordinates for each of the islands are: Bush Key (24.627853°N, 82.868472°W NAD83); Garden Key (24.628082°N, 82.873176°W NAD83), Long Key (24.626607°N, 82.863753°W NAD83), Loggerhead Key (24.632677°N, 82.920889°W NAD83), Hospital Key (24.647491°N, 82.852822°W NAD83), Middle Key (24.650408°N, 82.828983°W NAD83), and East Key (24.652303°N, 82.806279°W NAD83).

#### **III. Maps and Drawings**

**Please insert any maps, aerial photographs, or design drawings here or attach to the end of this BE form.**

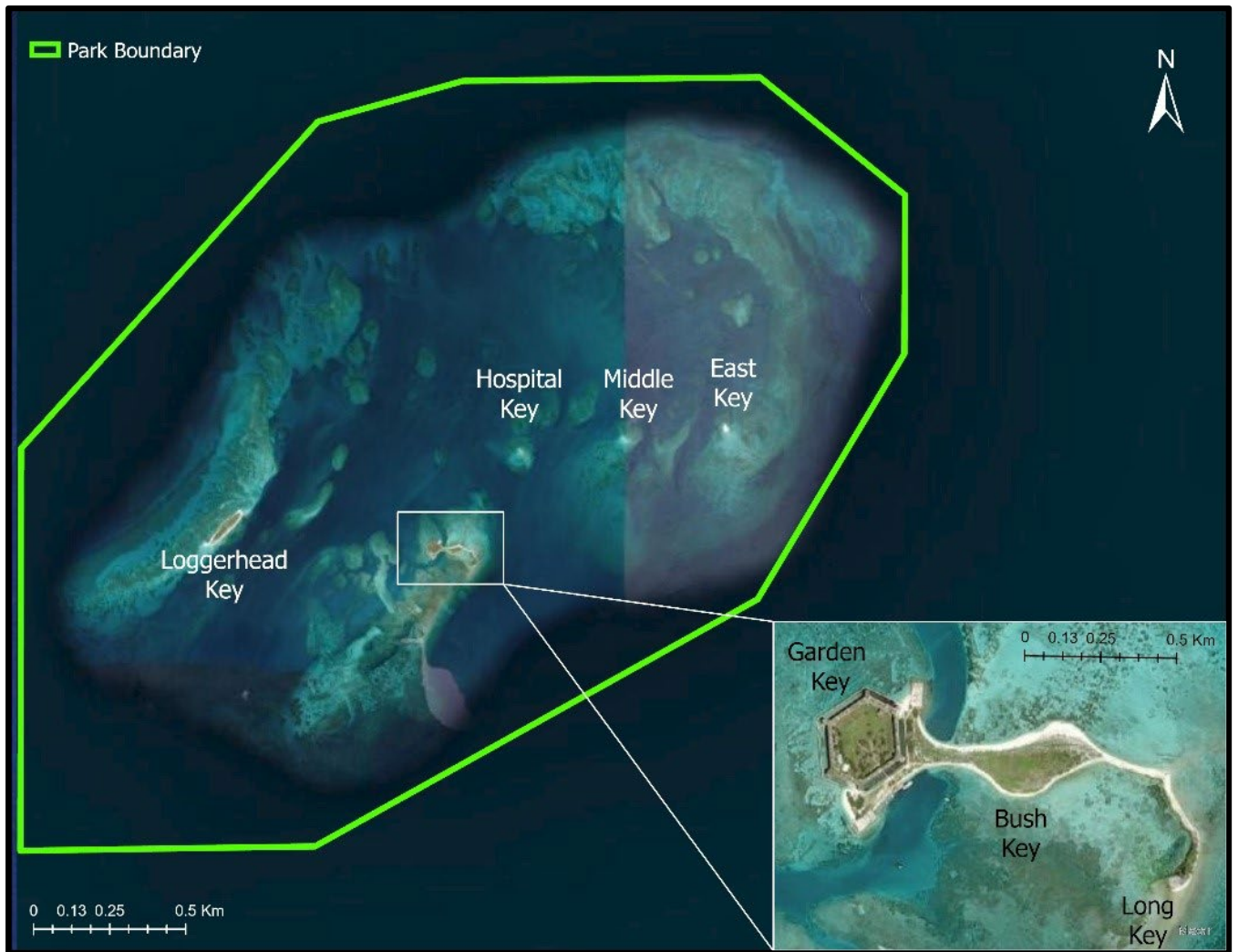
Examples of such supporting documentation include, but are not limited to:

- Plan view of design drawings

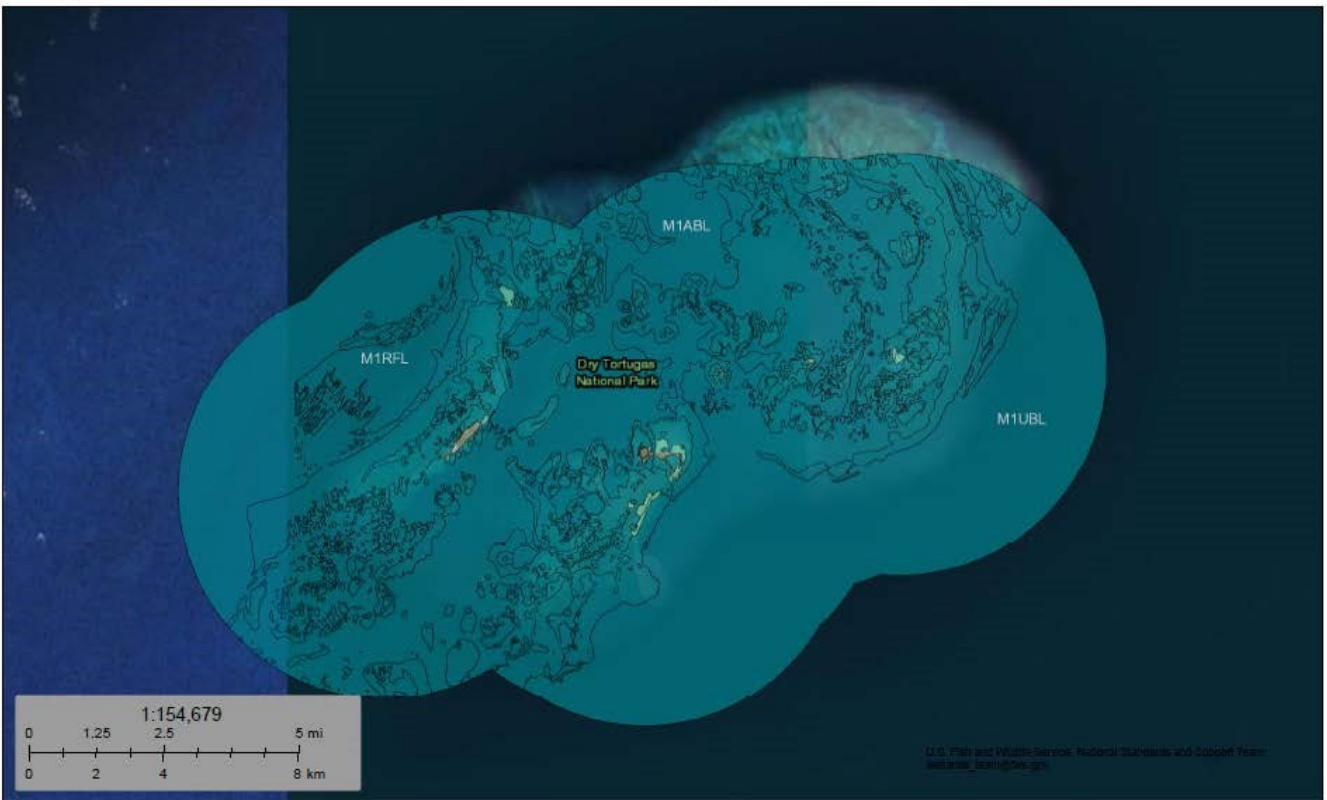
- Aerial images of project action area and surrounding area, showing state or regional scale

- Map of project area with elements proposed (polygons showing proposed construction elements) Map of action area with critical habitat units or sensitive habitats overlaid

**Figure 1.** Map of the seven keys of Dry Tortugas National Park, Florida.



**Figure 2.** Map of the designated wetland habitat within the action area (Source: USFWS 2021, National Wetlands Inventory).



November 10, 2022

**Wetlands**

- |  |   |  |
|--|---|--|
|  Estuarine and Marine Deepwater |  Freshwater Emergent Wetland       |  Lake     |
|  Estuarine and Marine Wetland   |  Freshwater Forested/Shrub Wetland |  Other    |
|  |  Freshwater Pond                   |  Riverine |

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)  
This page was produced by the NWI mapper

**Figure 3.** Map of mangrove habitat within the action area (displayed in green; Source: NOAA 2022, ERMA)



**Figure 4.** Map of loggerhead sea turtle critical habitat within the action area (displayed in green; Source: NOAA 2022, ERMA)



**D. Existing Compliance Documentation**

**NEPA Documents**

Are there any **existing** draft or final NEPA analyses (not PDARP/PEIS) that cover all or part of this project?

YES

NO

Examples:

- TIG Restoration Plan/EA or EIS (draft or final)
- USACE programmatic NEPA analysis
- USACE Clean Water Act individual permit for the project
- NEPA analysis provided by a federal agency that gave approval, funding or authorization

**Permits**

Have any federal permits been obtained for this project, if so which ones and what is the permit number(s)?

YES

NO

Permit Number and Type: N/A

Have any federal permits been applied for but not yet obtained, if so which ones and what is



the permit number(s)?

YES

NO

Permit Number and Type: N/A

If yes to any question above, please provide details in the text box (i.e. link to the NEPA document, or name of the document, year, lead federal agency, POC, copy of the permit or permit application, etc.). This is needed to check for consistency of the project scope across different sources and to facilitate the NEPA analysis. If you do not have a link, email the documents to the TIG representative for the Trustee designated as lead federal agency for the restoration plan.

A National Environmental Policy Act (NEPA) analysis for this project would be included in the Open Ocean Trustee Implementation Group's (TIG) Restoration Plan 3 and Environmental Assessment (RP3/EA).

The National Park Service (NPS), in coordination with the U.S. Department of Agriculture – Animal and Plant Health Inspection Services – Wildlife Service (USDA-APHIS-WS) implemented a rat eradication project in 2022, separate from this restoration project, on Bush, Long, Garden, and Loggerhead Key. The existing rat eradication work was analyzed in the Integrated Pest Management Plan and NEPA Compliance for the Management of the Non-Native Black Rat (*Rattus rattus*) at Dry Tortugas National Park (NPS 2014) (**Attachments A and B**) and conducted by USDA-APHIS-WS under their statutory authority. Additionally, the proposed biosecurity measures (and associated activities) were reviewed and approved through NPS's Planning, Environment and Public Comment (PEPC) system (PEPC # 104480; NPS 2022a).

Management and conservation actions implemented by NPS staff are analyzed under the Dry Tortugas National Park General Management Plan and Environmental Impact Statement (NPS, 2015).

Any documentation or information provided will be very helpful in moving your project forward.

Name of Person Completing this Form: Nadia Martin, IEC

Name of Project Lead: Ashley Mills, USFWS

Date Form Completed: 12.14.2022

Date Form Updated: 3.17.2023

### **E. Description of Action Area**

*Provide a description of the existing environment (e.g., topography, vegetation type, soil type, substrate type, water quality, water depth, tidal/riverine/estuarine, hydrology and drainage patterns, current flow and direction), and land uses (e.g., public, residential, commercial, industrial, agricultural). Describe all areas that may be directly or indirectly affected by the action. If critical habitat (CH) is not designated in the area, then describe any suitable habitat in the area.*

#### **a. Waterbody & Wetlands**

*If applicable. Name the body of water, including wetlands (freshwater or estuarine), on which the project is located. If applicable, please describe water quality, depth, hydrology, current flow, and direction of flow.*

This project would primarily involve conducting monitoring, augmenting existing biosecurity, and conducting upland vegetation management and social attraction to enhance seabird colonies (see Section F) within Dry Tortugas National Park (DRTO), Florida. No in-water work would be conducted as part of the project. The proposed project’s activities could be conducted on all seven keys, Bush, Long, Garden, Loggerhead, Hospital, Middle, and East Keys, within DRTO (**Figure 1**), located approximately 70 miles west of Key West, Florida. DRTO consists of seven atoll-like tropical islands along the southern edge of the Florida shelf. It is bounded to the north by the shallow Florida Bay, to the south by the Straits of Florida, to the west by the Gulf of Mexico, and to the east by the Atlantic Ocean. All islands within DRTO are at or below sea level (NPS 2015). DRTO is located away from many land-based anthropogenic runoff areas. As such, waters are largely pollution-free, leading to the area’s designation as an Outstanding Florida Water Body (Florida Department of Environmental Protection [FDEP] 2022a). The 2022 statewide comprehensive verified list of water quality impairments does not include any water quality parameters of concern for the DRTO (FDEP 2022b). Various estuarine and marine wetlands are present within DRTO (**Figure 2**; U.S. Fish and Wildlife Service [USFWS] 2021). Despite the tropical climate with a designated rainy season, freshwater is scarce on the keys due to sandy soil and evaporation from sun exposure.

*Does the project area include a river or estuary?*

YES       NO

*If yes, please approximate the navigable distance from the project location to the marine environment. Click or tap here to enter text.*

#### **b. Existing Structures**

*If applicable. Describe the current and historical structures found in the action area (e.g., buildings, parking lots, docks, seawalls, groynes, jetties, marina). If known, please provide the years of construction.*

DRTO contains numerous historical structures and shipwrecks, with many dating back to the Spanish exploration of the Americas in the 1500s (NPS 2015). Most notably, Garden Key is the site of the 1800s-era Fort Jefferson, which occupies approximately 16 acres of the Key. Fort Jefferson’s masonry has severely deteriorated due to exposure to the marine environment, and DRTO has and continues to support historical preservation of the structure (NPS 2015). Loggerhead Key contains an 1800s-era lighthouse and associated structures and the ruins of an early-1900s marine biology laboratory that are subject to historical preservation efforts. DRTO (listed October 26, 1992) and Fort Jefferson (listed November 10, 1970) are listed on the National Register of Historic Places (NPS 2022b). These existing structures are within designated Cultural Landscape areas on Garden and Loggerhead Keys; project activities would not occur within these designated areas.

#### **c. Seagrasses & Other Marine Vegetation**

*If applicable. Describe seagrasses found in action area. If a benthic survey was done, provide the date it was completed and a copy of the report. Estimate the species area of coverage and density. Attach a separate map showing the location of the seagrasses in the action area.*

N/A – no in-water work would occur as part of the project.

#### d. Mangroves

*If applicable. Describe the mangroves found in action area. Indicate the species found (red, black, white), the species area of coverage in square footage and linear footage along project shoreline. Attach a separate map showing the location of the mangroves in the action area.*

Mangroves and habitat suitable for mangroves are present on Bush and Long Keys (National Oceanic and Atmospheric Administration [NOAA] 2022). To minimize impacts to sensitive vegetation including mangroves, any project equipment (e.g., cameras), bait stations, and/or traps would be placed in a location to avoid disturbance.

#### e. Corals

*If applicable. Describe the corals found in action area. If a benthic survey was done, provide the date it was completed and a copy of the report. Estimate the species area of coverage and density. Attach a separate map showing the location of the corals in the action area. Click here to enter text.*

N/A – no in-water work would occur as part of the project.

#### f. Uplands

*If applicable. Describe the current terrestrial habitat in which the project is located (e.g. pasture, forest, meadows, beach and dune habitats, etc.).*

All land within DRTO are at or below sea level (NPS 2015). The uplands consist of standard tropical island habitats such as beaches and associated intertidal habitats. The U.S. Geological Survey's (USGS) National Land Cover Database categorizes upland areas as woody wetlands, emergent herbaceous wetlands, and barren land (sand/rock) (USGS 2016). Three-quarters of previously inventoried plant and animal species within DRTO are non-native (NPS 2015).

#### g. Soils and Sediments

*If applicable. Indicate topography, soil type, substrate type.*

Sediments and soils within DRTO have not been formally characterized (NPS 2015). However, as tropical atolls, they are assumed to be largely composed of well-drained fine sands. The keys are constantly changing in shape, size, and elevation, and in some cases disappearing and reappearing entirely, due to sand movement from wind and wave energy. Middle Key, for example, is a sandbar that emerges only intermittently.

#### h. Land Use

*If applicable. Indicate existing or previous land use activities (agriculture, dredge disposal, etc).*

Areas within DRTO are zoned for a variety of historic preservation, research, and public visitation purposes. Garden Key (the site of Fort Jefferson) is zoned for historic preservation and is open year-round for public access (NPS 2015). The central portion of Loggerhead Key (including the lighthouse and associated structures) is also zoned for historic preservation. Remaining portions of Loggerhead

Key are zoned as research natural areas. The public is allowed on Loggerhead Key. Bush Key is zoned for natural and cultural use, and the Key is also closed to public access during seabird and sea turtle nesting season (approximately April to September). East Key is also closed during nesting season. Hospital and Long Key are permanently closed to public access, and Middle Key is only intermittently above sea level.

**i. Marine Mammals**

*Please select the following marine mammals that could be present within the project area:*

- Dolphins YES  NO
- Whales YES  NO
- Manatees YES  NO

*If applicable. Indicate and describe the species found in the action area. Use NMFS' Stock Assessment Reports (SARs) for more information, see <http://www.nmfs.noaa.gov/pr/sars/region.htm>*

N/A – no in-water work would occur as part of the project.

**F. Project Description**

*I. Describe the Proposed Action/Project Objectives: What are you trying to accomplish and how with this project? Describe in detail the construction equipment and methods\*\* needed; long term vs. short term impacts; duration of short term impacts; dust, erosion, and sedimentation controls; restoration areas; if the project is growth-inducing or facilitates growth; whether the project is part of a larger project or plan; and what permits will need to be obtained.*

*Attach a separate map showing project footprint, avoidance areas, construction accesses, staging/laydown areas.*

*\*\*If construction involves overwater structures, pilings and sheetpiles, boat slips, boat ramps, shoreline armoring, dredging, blasting, artificial reefs or fishery activities, list the method here, but complete the next section(s) in detail.*

This project would be implemented by the U.S. Department of the Interior Open Ocean TIG Trustee in partnership with NPS, DRTO staff, and USDA-APHIS-WS. NPS recently partnered with USDA-APHIS to plan, fund, and implement a black rat eradication effort on Bush, Garden, Long, Loggerhead Keys (**Figure 1**), a total area of 135 acres, with the work concluding in 2022. This project would build off the NPS’s rat eradication efforts to further enhance seabird nesting colonies across the DRTO for magnificent frigatebird (*Fregata magnificens*), sooty (*Onychoprion fuscatus*) and bridled (*Onychoprion anaethetus*) terns, brown noddy (*Anous stolidus*), and masked booby (*Sula dactylatra*). . This project would be conducted in phases. During Phase I, data compilation and analysis and additional monitoring would inform restoration activities and enhancement of existing biosecurity measures. During Phase II, social attraction and additional habitat enhancement (specifically, vegetation management) would be conducted. Work could be conducted on some or all of Dry Tortugas’ seven keys, but would primarily occur on Bush, Long, and Loggerhead Keys. Project activities most relevant to the assessment of environmental consequences include:

- **Monitoring.** Overflight or unmanned aerial system (UAS) surveys would be conducted during Phase I to collect additional data on presence of nesting seabird species and colonies to establish baseline

and inform subsequent restoration activities. Surveys would be conducted monthly from February through September on an annual basis through the project lifespan. These surveys would only be conducted during daylight hours. If UAS are used, they would be approximately 3-feet by 3-feet by 10-inches high and battery-powered.

- **Biosecurity measures.** To prevent the (re)introduction of invasive species, the project would augment existing biosecurity efforts as outlined in the Integrated Pest Management (IPM) Plan (NPS 2012). Measures may include vessel inspections, education and outreach, use of network surveillance cameras near landing areas, baiting cameras with non-toxic bait to lure species and increase detection rates, deployment of chew tags in high-use areas to detect rats, and deployment of traps (e.g., snap traps) and rodent bait stations if evidence of rats is found. If rodenticide is used for this project, work would be conducted in accordance with applicable permits and regulations under USDA-APHIS-WS. Only rodenticides approved through the IPM, pesticide use proposal system, that is utilized by the NPS would be used (NPS 2012). Additional information on the rodenticide diphacinone and its use are provided below.
- **Vegetation Management.** Vegetation management such as mechanical removal of invasive species and planting of native species to enhance habitat for nesting seabirds would be conducted during Phase II on some or all of DRTO's seven keys. These actions would be consistent with vegetation management activities currently implemented by the park and described in their General Management Plan. All vegetation management would occur in areas where seabirds are known to nest, prior to the initiation of seabird and sea turtle nesting season. In Phase I, DOI and NPS would evaluate opportunities to coordinate vegetation management efforts with hurricane-related emergency response actions from Hurricane Ian in September 2022 to increase efficiencies and avoid duplication.
- **Social attraction.** Bird and egg decoys, mirrors, and sound systems would be installed during nesting season in suitable nesting habitat for target species to attract seabirds to establish new or re-establish seabird nesting colonies. Up to three social attraction set-ups (which include 10 mirrors, 30 decoys, two outdoor speakers, a solar panel array with 4 panels, and four to five trail cameras) would be installed in suitable, vegetated nesting habitat (**Figure 5**). All materials would be installed manually prior to the onset of seabird and sea turtle nesting and would be removed once the project is complete. Manual installations may include driving anchors/mounts into substrates. Decoys (made of recycled, highdensity polyethylene and painted to look like target species) would be installed using high strength anchoring epoxy. Mirrors (approximately 12 inches by 6 inches [30 centimeters by 15 centimeters]) and sound systems (amplifier, charge controller, MP3 player, speakers, solar panels, and marine batteries) would be bolted to substrates using hand tools. Social attraction materials would be removed after each breeding season, if possible, and would be removed after project completion. Social attraction methods would be used to establish or re-establish seabird colonies in areas identified as suitable based on baseline data gathered in Phase I and enhanced through Phase I and II biosecurity and habitat enhancements.

Project activities would be conducted by aircraft (or UAS) and on land. No in-water work is planned.

*More information about diphacinone and rodenticide use*

Diphacinone is a first-generation anticoagulant, and although it can be lethal to some rats when administered in a single, large dose, it is more potent in small doses administered over several days (Buckle and Smith 1994, Timm 1994). Laboratory studies have shown that bait needs to be available and

consumed for a least 12 days to ensure 100 percent mortality (USFWS 2011). Diphacinone-50 is a cereal bait product, available in one to two grams kibble, with an added fish flavor. The bait contains 50 parts per million diphacinone. Pellets are dyed dark green, which has been shown to make pellets less attractive to some birds and reptiles (Pank 1976, Tershy et al. 1992, Tershy and Breese 1994). The primary advantage of diphacinone as a rodenticide for conservation purposes is the low risk it poses to non-target organisms in comparison to brodifacoum. Diphacinone has comparatively low persistence in animal tissues, which makes toxicity to non-target species through secondary exposure less likely than for brodifacoum (Fisher 2009).

Per the IPM Plan (**Attachment A**; NPS 2012): “DRTO staff will place the IPM approved rodenticide in tamper proof bait boxes. The bait boxes provide the highest level of protection to wildlife, humans, and the environment. To further minimize potential impacts to ground dwelling wildlife (i.e., hermit crabs) the bait boxes will be placed on supports approximately 6 inches or more above the ground. All treatment bait boxes will be labeled with a warning indicating that pesticides are being used on the islands. All spoiled or unused, exposed bait will be removed from the treatment areas. All baits stations traps and bait will be removed at the end of the management effort. Traps will be inspected daily and stations will be inspected daily during the management effort. Dead rats found on the surface of the ground in natural areas will be buried or bagged, removed and disposed of as a burnable. Dead rats found in developed areas will be bagged, removed and disposed of as a burnable.” All bait would be secured inside of the boxes and would be unable to be removed by rodents.

With the use of bait stations, rodenticide is not anticipated to leach into the marine environment and non-target species are not anticipated to consume rodenticide pellets. Bait stations would not be located near sea turtle nesting areas (NPS 2012).

II. *Construction Schedule (What is the anticipated schedule for major phases of work? Include duration of in-water work.)*

The project is expected to take approximately 5 to 7 years to complete. Phase I would occur from the project start through Year 5. Phase II would begin in Year 3 or 4 and continue through project completion in approximately Year 5. Monitoring would begin in Year 3 or 4 and continue through approximately Year 7.

7. III. *Specific In-Water and/or Terrestrial Construction Methods*

*Please check yes or no for the following questions related to in-water work and overwater structures*

<i>Does this project include in-water work?</i>	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
<i>Does this project include terrestrial construction?</i>	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
<i>Does this project include construction of an overwater structure?</i>	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
<i>Will fishing be allowed from this overwater structure?</i>	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
<i>Will wildlife observation be allowed from this overwater structure?</i>	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
<i>Will boat docking be allowed from this overwater structure?</i>	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>

*If this is a fishing pier, please provide the following information: public or private access to pier, estimated number of people fishing per day, plan to address hook and line captures of protected species, specific operating hours/open 24 hours, artificial lighting of pier (if any), number of fish cleaning stations, and number of pier*

attendants (if any).

N/A

Construction: Provide a detailed account of construction methods. It is important to include step-by-step descriptions of how demolition or removal of structures is conducted and if any debris will be moved and how. Describe how construction will be implemented, what type and size of materials will be used and if machines will be used, manual labor, or both. Indicate if work will be done from upland, barge, or both.)

iii. Use of "Dock Construction Guidelines"? [https://media.fisheries.noaa.gov/dam-](https://media.fisheries.noaa.gov/dam-migration/dockkey2002.pdf)

- iv. Type of decking: Grated – 43% open space; Wooden planks or composite planks – proposed spacing? v. Height above Mean High Water (MHW) elevation?
- vi. Directional orientation of main axis of dock?
- vii. Overwater area (sq ft)?

N/A

b. Pilings & Sheetpiles: If this project includes installation of pilings or sheets, please provide answers to questions 1-11 listed below

1. Method of pile installation	N/A
2. Material type of piles used	N/A
3. Size (width) of piles/sheets	N/A
4. Total number of piles/sheets	N/A
5. Number of strikes for each single pile	N/A
6. Number of strikes per hour (for a single pile)	N/A
7. Expected number of piles to be driven each day	N/A
8. Expected amount of time needed to drive each pile (minutes of driving activities)	N/A
9. Expected number of sequential days spent pile driving	N/A
10. Whether pile driving occurring in-water or on land	N/A
11. Depth of water where piles will be driven	N/A

c. Marinas and Boat Slips (Describe the number and size of slips and if the number of new slips changes from what is currently available at the project. Indicate how many are wet slips and how many are dry slips. Estimate the shadow effect of the boats - the area (sqft) beneath the boats that will be shaded.)

N/A

d. Boat Ramp (Describe the number and size of boat ramps, the number of vessels that can be moored at the site (e.g., staging area) and if this is a public or private ramp. Indicate the boat trailer parking lot capacity, and if this number changes from what is currently available at the project.)

N/A

e. *Shoreline Armoring (This includes all manner of shoreline armoring (e.g., riprap, seawalls, jetties, groins, breakwaters, etc.). Provide specific information on material and construction methodology used to install the shoreline armoring materials. Include linear footage and square footage. Attach a separate map showing the location of the shoreline armoring in the action area.*

N/A

f. *Dredging or digging (Provide details about dredge type (hopper, cutterhead, clamshell, etc.), maximum depth of dredging, area (ft<sup>2</sup>) to be dredged, volume of material (yd<sup>3</sup>) to be produced, grain size of material, sediment testing for contamination, spoil disposition plans, and hydrodynamic description (average current speed/direction)). If digging in the terrestrial environment, please describe fully with details about possible water jetting, vibration methods to install pilings for dune walk-over structure, or other methods. If using devices/methods/turtle relocation dredging to relocate sea turtles, then describe the methods here.*

N/A

g. *Blasting (Projects that use blasting might not qualify as “minor projects,” and a Biological Assessment (BA) may need to be prepared for the project. Arrange a technical consultation meeting with NMFS Protected Resources Division to determine if a BA is necessary. Please include explosive weights and blasting plan.)*

N/A

h. *Artificial Reefs (Provide a detailed account of the artificial reef site selection and reef establishment decisions [i.e., management and siting considerations, stakeholder considerations, environmental considerations, long term maintenance plan (periodic clean-up of lost fishing gear/debris)], deployment schedule, materials used, deployment methods, as well as final depth profile and overhead clearance for vessel traffic. For additional information and detailed guidance on artificial reefs, please refer to the artificial reef program websites for the particular state the project will occur in.*

N/A

i. *Fishery Activities (Describe any use of gear that could entangle or capture protected species. This includes activities that may enhance fishing opportunities (e.g. fishing piers) or be fishery/gear research related (e.g. involve trawl gear, gillnets, hook and line gear, crab pots etc)).*

N/A

### **G. NOAA Essential Fish Habitat (EFH)**

*If applicable, describe any designated Essential Fish Habitat within the project area in the text box and answer the questions below about habitat effects, conversions or benefits. If there is no EFH in your project area, enter N/A in the box below and move to section F.*

*Depending on the effects of your project, EFH consultation with NMFS may be required:*

<https://www.fisheries.noaa.gov/southeast/consultations/essential-fish-habitat-consultations-southeast> N/A



In this table, please use checkboxes to indicate which EFH eco-region(s) and habitat zone(s) in which the project is located. For more information about EFH Eco Regions see the references here:  
<https://noaasdd.sharepoint.com/:f:/s/tcover/Euupi2PMtXdEqQtJSdKyq-wBdyb42ubMUUbMy7QsijqK7A?e=oYgSsb>  
<https://portal.gulfcouncil.org/EFHreview.html>

<u>Gulf of Mexico EFH Eco-Region</u>	<u>Estuarine</u>	<u>Nearshore</u>	<u>Offshore</u>
<b>Eco-Region 1: South Florida</b> (Florida Keys north to Tarpon Springs, Florida)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Eco-Region 2: North Florida</b> (Tarpon Springs, Florida, north and west to Pensacola Bay, Florida)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Eco-Region 3: East Louisiana, Mississippi, and Alabama</b> (Pensacola Bay, Florida, west to the Mississippi River Delta)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Eco-Region 4: East Texas and West Louisiana</b> (Mississippi River Delta west and south to Freeport, Texas)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Eco-Region 5: West Texas</b> (Freeport, Texas south to the U.S./Mexico border)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Effects to EFH

In this section, please indicate if your project has effects on EFH, either beneficial or adverse. For example, whether the project creates, improves, removes or converts habitat. Please describe the types of habitats that will be affected by the project, including number of acres.

Will this project affect EFH?

YES  NO

N/A

If no, please proceed to section X. (For example, your project is wholly upland or includes only desktop analysis tasks)	
Will this project have beneficial effects to EFH? If yes, please proceed to additional boxes below.	
YES <input type="checkbox"/> NO <input type="checkbox"/> N/A	
If yes, please describe how your project will have beneficial effects the text box below:	
Will this project have adverse effects on EFH?	
YES <input type="checkbox"/> NO <input type="checkbox"/>	

N/A

If yes, please describe what type of adverse effects your project will cause to EFH in the text box below:

## H. NOAA ESA Species and Critical Habitat and Effects Determination Requested

If your project occurs in a location that does not contain any listed NOAA species or designated Critical Habitats, please check the box below. If this box is checked, you may skip Section H. and proceed to Section I.

This project occurs in a location that does not contain any listed NOAA species or designated Critical Habitats.

ESA effects have been accounted for under an existing consultation.

1. List all species, critical habitat, proposed species and proposed critical habitat that may be found in the action area. Species that do not currently occur in the action area (but are listed on county species lists) do not need to be listed in drop downs. For species not included in the drop down menu please add manually to the table.

2. Attach a separate map identifying species/critical habitat locations within the action area. For information on species and critical habitat under NMFS jurisdiction, visit: [http://sero.nmfs.noaa.gov/protected\\_resources/section\\_7/threatened\\_endangered/Documents/gulf\\_of\\_mexico.pdf](http://sero.nmfs.noaa.gov/protected_resources/section_7/threatened_endangered/Documents/gulf_of_mexico.pdf).

If Gulf sturgeon in marine waters may be affected, include them in the table here. If Gulf Sturgeon in riverine/freshwater may be affected include them in the USFWS table below in Section H. If sea turtles in water may be affected include them in the table here. If sea turtles on land may be affected include them in the USFWS table below in Section H.

Species and/or Critical Habitat	CH Unit (if applicable)	Location (Sea turtles and Gulf Sturgeon <u>only</u> )	Determinations (see definitions below)	For "No Effect", please select justification.
None				

### Determination Definitions

Please make the appropriate choice in the drop down menus for both species and designated critical habitat listed in the first column.

**NE = no effect.** This determination is appropriate when the proposed action will not directly, indirectly, or cumulatively impact, either positively or negatively, any listed, proposed, candidate species or designated/proposed critical habitat.

**NLAA = may affect, not likely to adversely affect.** This determination is appropriate when the proposed action is not likely to adversely impact any listed, proposed, candidate species or designated/proposed critical habitat or there may be beneficial effects to these resources. Response requested is concurrence with the not likely to affect determination. This conclusion is appropriate when effects to the species or critical habitat will be wholly beneficial, discountable, or insignificant. Beneficial effects are contemporaneous positive effects without any adverse effects to the species or habitat. Insignificant effects relate to the size of the impact, while discountable effects are those that are extremely unlikely to occur. Based on best judgment, a person would not: (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur. If the

Services concur in writing with the Action Agency’s determination of "is not likely to adversely affect" listed species or critical habitat, the section 7 consultation process is completed.

**LAA = may affect, likely to adversely affect.** This determination is appropriate when the proposed action is likely to adversely impact any listed, proposed, candidate species or designated/proposed critical habitat. Response requested for listed species is formal consultation for action with a likely to adversely affect determination, with a biological opinion as the concluding document. This conclusion is reached if any adverse effect to listed species or critical habitat may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not discountable or insignificant. In the event the overall effect of the proposed action is beneficial to the listed species or critical habitat, but may also cause some adverse effect on individuals of the listed species or segments of the critical habitat, then the determination is "likely to adversely affect." Any LAA determination requires formal section 7 consultation and will require additional information.

**I. USFWS Species and Critical Habitat and Effects Determination Requested**

*If your project occurs in a location that does not contain any listed USFWS species or designated Critical Habitats, please check the box below. If this box is checked, you may skip Section I and proceed to Section J.*

This project occurs in a location that does not contain any listed USFWS species or designated Critical Habitats.

ESA effects have been accounted for under an existing consultation.

1. List all species, critical habitat, proposed species and proposed critical habitat **generated by IPaC** that may be found in the action area. For species not included in the drop down menu please add manually to the table.

2. Attach a separate map identifying species/critical habitat locations within the action area. For information on species and critical habitat under NMFS jurisdiction, visit:

[http://sero.nmfs.noaa.gov/protected\\_resources/section\\_7/threatened\\_endangered/Documents/gulf\\_of\\_mexico.pdf](http://sero.nmfs.noaa.gov/protected_resources/section_7/threatened_endangered/Documents/gulf_of_mexico.pdf).

If Gulf sturgeon in riverine/freshwater waters may be affected, include them in the table here. If Gulf Sturgeon in marine waters may be affected include them in the NMFS table above in Section G. If sea turtles on land may be affected include them in the table here. If sea turtles in water may be affected include them in the NMFS table above in Section G.

Species and/or Critical Habitat	CH Unit (if applicable)	Location (Sea turtles and Gulf Sturgeon <b>only</b> )	Determinations (see definitions below)	For “No Effect”, please select justification.
Loggerhead Sea Turtle	N/A	Terrestrial	No Effect	See analysis in Section J.
Loggerhead Sea Turtle CH	LOGG-T-FL-34	Terrestrial	No Effect	See analysis in Section K.
Green Sea Turtle	N/A	Terrestrial	No Effect	See analysis in Section J.
Piping Plover	N/A		No Effect	See analysis in Section J.
Florida Panther		Choose an item.	No Effect	Species does not occur within action area

Puma		Choose an item.	No Effect	Species does not occur within action area
West Indian Manatee		Choose an item.	No Effect	Species does not occur within action area
Bachman's Warbler		Choose an item.	No Effect	Species does not occur within action area
Eastern Black Rail		Choose an item.	No Effect	Species does not occur within action area
American Alligator		Choose an item.	No Effect	Species does not occur within action area
Florida Keys Mole Skink		Choose an item.	No Effect	Species does not occur within action area
Florida Keys Mole Skink CH		Choose an item.	No Effect	Species does not occur within action area
Hawksbill Sea Turtle		Terrestrial	No Effect	Species does not occur within action area
Leatherback Sea Turtle		Terrestrial	No Effect	Species does not occur within action area
Gulf Sturgeon		Riverine/Freshwater	No Effect	Species does not occur within action area
<b>Species and/or Critical Habitat</b>	<b>CH Unit</b> (if applicable)	<b>Location</b> (Sea turtles and Gulf Sturgeon <b>only</b> )	<b>Determinations</b> (see definitions below)	<b>For "No Effect", please select justification.</b>
Bartram's Hairstreak Butterfly		Choose an item.	No Effect	Species does not occur within action area
Florida Leafwing Butterfly		Choose an item.	No Effect	Species does not occur within action area
Miami Blue Butterfly		Choose an item.	No Effect	Species does not occur within action area
Big Pine Partridge Pea		Choose an item.	No Effect	Species does not occur within action area
Blodgett's Silverbush		Choose an item.	No Effect	Species does not occur within action area
Cape Sable Thoroughwort		Choose an item.	No Effect	Species does not occur within action area
Everglades Bully		Choose an item.	No Effect	Species does not occur within action area
Florida Pineland Crabgrass		Choose an item.	No Effect	Species does not occur within action area
Florida Prairie-Clover		Choose an item.	No Effect	Species does not occur within action area
Florida Semaphore Cactus		Choose an item.	No Effect	Species does not occur within action area
Garber's Spurge		Choose an item.	No Effect	Species does not occur within action area

Key Tree Cactus		Choose an item.	No Effect	Species does not occur within action area
Sand Flax		Choose an item.	No Effect	Species does not occur within action area
Wedge Spurge		Choose an item.	No Effect	Species does not occur within action area

## Determination Definitions

Please make the appropriate choice in the drop down menus for both species and designated critical habitat

**NE = no effect.** This determination is appropriate when the proposed action will not directly, indirectly, or cumulatively impact, either positively or negatively, any listed, proposed, candidate species or designated/proposed critical habitat.

**NLAA = may affect, not likely to adversely affect.** This determination is appropriate when the proposed action is not likely to adversely impact any listed, proposed, candidate species or designated/proposed critical habitat or there may be beneficial effects to these resources. Response requested is concurrence with the not likely to affect determination. This conclusion is appropriate when effects to the species or critical habitat will be wholly beneficial, discountable, or insignificant. Beneficial effects are contemporaneous positive effects without any adverse effects to the species or habitat. Insignificant effects relate to the size of the impact, while discountable effects are those that are extremely unlikely to occur. Based on best judgment, a person would not: (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur. If the Services concur in writing with the Action Agency's determination of "is not likely to adversely affect" listed species or critical habitat, the section 7 consultation process is completed.

**LAA = may affect, likely to adversely affect.** This determination is appropriate when the proposed action is likely to adversely impact any listed, proposed, candidate species or designated/proposed critical habitat. Response requested for listed species is formal consultation for action with a likely to adversely affect determination, with a biological opinion as the concluding document. This conclusion is reached if any adverse effect to listed species or critical habitat may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not discountable or insignificant. In the event the overall effect of the proposed action is beneficial to the listed species or critical habitat, but may also cause some adverse effect on individuals of the listed species or segments of the critical habitat, then the determination is "likely to adversely affect." Any LAA determination requires formal section 7 consultation and will require additional information.

## J. Effects of the Proposed Project to the Species and Actions to Reduce Impacts

*NOTE: Species selected as "No Effect" with justification in tables above do not need to be addressed in Section I or J.*

*I. Explain the potential beneficial and adverse effects to each species listed above. Describe what, when, and how the species will be impacted and the likely response to the impact. Be sure to include direct, indirect, and cumulative impacts and where possible, quantify effects.*

*If species are present (or potentially present) and will not be adversely affected describe your rationale. If species are unlikely to be present in the general area or action area, explain why. This justification provides documentation for your administrative record, avoids the need for additional correspondence regarding the species, and helps expedite review.*

Project activities would be conducted by aircraft (or UAS) and on land. Boats would be used to access project sites (remote islands); however, boat use is not anticipated to be appreciably greater than currently occurs for Park management. No inwater work is planned; thus, the project would have no effect on Endangered Species Act-listed species under the National Marine Fisheries Service purview. Rodenticide would only be used during biosecurity activities if rats are found on the Dry Tortugas. NPS (2012) concluded that the infrequent use and method of application (pellets in secure bait boxes on land) minimizes the potential for rodenticide to reach the marine environment and contact marine organisms.

Land-based project activities would include monitoring (via aircraft/UAS and trail cameras), biosecurity, vegetation management, and social attraction. These activities involve visits to the keys by project staff, minor foot traffic, installation of equipment, and mechanical removal of vegetation. Staff visiting the keys to conduct work, walking, installing equipment, and removing vegetation would conduct work in a manner to minimize disturbance of protected plant, invertebrate, reptile, and bird species. No land-based work (i.e., vegetation management, deployment of social attraction/biosecurity materials) would be conducted during sea turtle and seabird nesting season; however, some minor maintenance (e.g., watering planted vegetation) may need to occur. Any use of rodenticide would build on NPS's recent and ongoing rat eradication program. The IPM Plan evaluated impacts of rodenticide on the DRTO's terrestrial biota (NPS, 2012) and concluded that the infrequent use and method of application (pellets in secure bait boxes on land) minimizes the potential for rodenticide to expose terrestrial fauna. Bait boxes would be placed away from locations that protected species are known to occupy and/or nest. Rodenticide does not resemble customary food items, and it is not likely that non-target taxa would be attracted to or consume the bait. All biosecurity equipment would be removed after each breeding season, if possible, and after project completion. Dead rats would be located and removed, which would reduce or eliminate the probability of protected species consuming rodent carcasses and being exposed to rodenticide secondarily.

Collection of aerial imagery and GPS data via aircraft or UAS would be conducted in a manner to not affect biological resources. The target altitude of the fixed-wing aircraft would be between 600 and 900 feet above sea level to collect high quality imagery and avoid disrupting birds and other biological resources. UAS would be flown via remote control no more than 150 to 200 feet in altitude, or higher if birds are known to spook from UAS. Aircrafts and UAS have the potential to strike birds during flight. NPS staff that are familiar with bird behavior would be present during all flight operations. NPS and USFWS's BMPs for avoiding impacts to natural resources when using unmanned aircrafts would be followed (NPS, 2017; USFWS, 2017). In most cases, imagery would be collected from one visit per colony. Flights would be conducted for each key's colonies approximately once per month during peak seabird nesting season, generally between February and September.

**Loggerhead (*Caretta caretta*) and green (*Chelonia mydas*) sea turtles** nest along sandy beaches in the Dry Tortugas.

Seabirds typically nest in shrubby/woody vegetation up-land of sandy beaches in the Park. Social attraction materials (described in Section F) would be deployed prior to the onset of sea turtle and seabird nesting season. Materials would be placed land-ward of sea turtle nests (in vegetated areas) and would therefore not interfere with hatchlings leaving nests and crawling towards the sea. Some trail camera mounts and anchors for these materials would be driven into substrates; however, since these

activities would be conducted prior to sea turtle nesting, it would not affect sea turtle nests. Mirrors used in social attraction set-ups would be placed in vegetated areas, would be oriented to the interior of the island, and would be low-lying so as to not mis-orient hatchlings. If drones are used for aerial surveys, they would only be operated during the day (not night-time when sea turtles typically nest/hatchlings typically emerge from nests), and if sea turtles are known to be present on nesting beaches, then drones would not be operated in their vicinity. For these reasons, the project would have no effect on loggerhead or green sea turtles.

**Piping plover** (*Charadrius melodus*) occasionally winter on Dry Tortugas beaches and intertidal habitat. Since piping plovers are present outside of seabird nesting season, monitoring and social attraction would have no effect on piping plovers. Vegetation management would occur in areas where piping plover are absent to avoid disturbance. As such, the project would have no effect on piping plovers.

*II. Explain the actions to reduce adverse effects to each species listed above. For each species for which impacts were identified, describe any Conservation Measures and/or BMPs that will be implemented to avoid or minimize the impacts. Conservation Measures and/or BMPs are designed to avoid or minimize effects to listed species and critical habitats or further the recovery of the species under review. Conservation Measures and/or BMPs are considered part of the proposed action and their implementation is required. Any changes to, modifications of, or failure to implement these conservation measures may result in a need to reinstate this consultation.*

**Frequently Recommended Conservation Measures and BMPs: This checklist provides standard practices recommended by NMFS and USFWS. Please select any BMPs that will be implemented:**

- USFWS Standard Manatee In Water Conditions**
- NMFS Protected Species Construction Conditions (2021)<sup>1</sup>**
- NMFS Measures for Reducing the Entrapment Risk to Protected Species<sup>1</sup>**
- NMFS Vessel Strike Avoidance Measures (2021)<sup>1</sup>**

**Additional BMPs or Conservation Measures**

On October 21, 2022, DOI issued a memorandum updating the Department’s Uncrewed Aircraft Systems operations and procurement policy to remove restrictions on UAS use by all Bureaus (**Attachment C**). NPS would use drones for this project only if UAS use is consistent with all laws, regulations, and policies applicable on NPS lands at the time of use.

Collection of aerial imagery and GPS data via aircraft or UAS would be conducted in a manner to minimize impacts to biological resources. The target altitude of the aircraft would be between 600 and 900 feet above sea level to collect high quality imagery and avoid disrupting birds and other biological resources. Aircrafts and drones have the potential to strike birds during flight. NPS staff that are familiar with bird behavior would be present during all flight operations. NPS and USFWS’s BMPs for avoiding impacts to natural resources when using unmanned aircrafts would be followed (NPS, 2017; USFWS, 2017). In most cases, imagery would be collected from one visit per colony. Flights would be conducted for each key’s colonies approximately once per month during peak seabird nesting season, generally

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<sup>1</sup> <https://www.fisheries.noaa.gov/southeast/consultations/regulations-policies-and-guidance>

between February and September.

**K. Effects to Critical Habitats and Actions to Reduce Impacts**

*NOTE: Species selected as "No Effect" with justification in table do not need to be addressed in Section I or J.*

I. *Explain the potential beneficial and adverse effects to critical habitat listed above. Describe what, when, and how the critical habitat will be impacted and the likely response to the impact. Be sure to include direct, indirect, and cumulative impacts to physical and biological features, and where possible, quantify effects (e.g. acres of habitat, miles of habitat).*

*Describe your rationale if designated or proposed critical habitats are present and will not be adversely affected.*

Terrestrial critical habitat for nesting loggerhead sea turtles is present within the action area. While some project activities such as drone usage may occur along beaches where loggerhead sea turtles nest, the activities would not change the primary constituent elements of the critical habitat. As such, the project would have no effect on loggerhead sea turtle terrestrial critical habitat.

II. *Explain the actions to reduce adverse effects to critical habitat listed above. For critical habitat for which impacts were identified, describe any conservation measures (e.g. BMPs) that will be implemented to avoid or minimize the impacts. Conservation measures are designed to avoid or minimize effects to listed species and critical habitats or further the recovery of the species under review.*

*Conservation measures are considered part of the proposed action and their implementation is required. Any changes to, modifications of, or failure to implement these conservation measures may result in a need to reinstate this consultation.*

N/A

**L. Marine Mammals**

I. The Marine Mammal Protection Act prohibits the taking (including disruption of behavior, entrapment, injury, or death) of all marine mammals (e.g., whales, dolphins, manatees). However, the MMPA allows limited exceptions to the take prohibition if authorized, such as the incidental (i.e., unintentional but not unexpected) take of marine mammals. The following questions are designed to allow the Agencies to quickly determine if your action has the potential to take marine mammals. If the information provided indicates that incidental take is possible, further discussion with the Agencies is required.

Is your activity occurring in or on marine or estuarine waters? NO YES

If yes, is your activity likely to cause large-scale, ecosystem level impacts to the quality (e.g. salinity, temperature) of marine or

estuarine waters? NO YES

II. If Yes, describe activities further using checkboxes. Does your activity involve any of the following:

NO	YES	ACTIVITY
<input checked="" type="checkbox"/>	<input type="checkbox"/>	a) Use of active acoustic equipment (e.g., echosounder) producing sound below 200 kHz



<input checked="" type="checkbox"/>	<input type="checkbox"/>	b) In-water construction or demolition
<input checked="" type="checkbox"/>	<input type="checkbox"/>	c) Temporary or fixed use of active or passive sampling gear (e.g., nets, lines, traps; turtle relocation trawls)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	d) In-water Explosive detonation
<input checked="" type="checkbox"/>	<input type="checkbox"/>	e) Aquaculture
<input checked="" type="checkbox"/>	<input type="checkbox"/>	f) Restoration of barrier islands, levee construction or similar projects
<input checked="" type="checkbox"/>	<input type="checkbox"/>	g) Fresh-water river diversions
<input checked="" type="checkbox"/>	<input type="checkbox"/>	h) Building or enhancing areas for water-related recreational use or fishing opportunities (e.g. fishing piers, bridges, boat ramps, marinas)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	i) Dredging or in-water construction activities to change hydrologic conditions or connectivity, create breakwaters and living shorelines, etc.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	j) Conducting driving of sheet piles or pilings
<input checked="" type="checkbox"/>	<input type="checkbox"/>	k) Use of floating pipeline during dredging activities

III. If you checked “Yes” to any of the activities immediately above or the activity could impact the quality of marine or estuarine waters, please describe the nature of the activities in more detail or indicate which section of the form already includes these descriptions. See the NOAA Acoustic Guidance for more information: <http://www.nmfs.noaa.gov/pr/acoustics/faq.htm>

N/A

IV. *Frequently Recommended BMPs for marine mammals (manatees are covered in Section I above): This checklist provides standard BMPs recommended by NOAA. Please select any BMPs that will be implemented:*

<input type="checkbox"/>	NMFS Southeast U.S. Marine Mammal and Sea Turtle Viewing Guidelines <sup>2</sup>
<input type="checkbox"/>	NMFS Protected Species Construction Conditions (2021) <sup>3</sup>
<input type="checkbox"/>	NMFS Measures for Reducing the Entrapment Risk to Protected Species (2012) <sup>3</sup>
<input type="checkbox"/>	NMFS Vessel Strike Avoidance Measures and Reporting for Mariners (2021) <sup>3</sup>
<input type="checkbox"/>	NMFS Reproducing and posting outreach signs: Dolphin Friendly Fishing Tips sign, Don’t Feed Wild Dolphins sign <sup>4</sup>

If not listed above, please describe any additional BMPs or conservation measures that may be implemented for marine mammals. N/A

### **M. Bald Eagles**

Are bald eagles present in the action area?  NO  YES

If YES, the following conservation measures should be implemented:

<sup>2</sup> <https://www.fisheries.noaa.gov/topic/marine-life-viewing-guidelines>

<sup>3</sup> <https://www.fisheries.noaa.gov/southeast/consultations/regulations-policies-and-guidance>

<sup>4</sup> <https://www.fisheries.noaa.gov/southeast/consultations/protected-species-educational-signs>

1. If bald eagle breeding or nesting behaviors are observed or a nest is discovered or known, all activities (e.g., walking, camping, clean-up, use of a UTV, ATV, or boat) should avoid the nest by a minimum of 660 feet. If the nest is protected by a vegetated buffer where there is *no* line of sight to the nest, then the minimum avoidance distance is 330 feet. This avoidance distance shall be maintained from the onset of breeding/courtship behaviors until any eggs have hatched and eaglets have fledged (approximately 6 months).
2. If a similar activity (e.g., driving on a roadway) is closer than 660 feet to a nest, then you may maintain a distance buffer as close to the nest as the existing tolerated activity.
3. If a vegetated buffer is present and there is no line of sight to the nest and a similar activity is closer than 330 feet to a nest, then you may maintain a distance buffer as close to the nest as the existing tolerated activity.
4. In some instances, activities conducted at a distance greater than 660 feet of a nest may result in disturbance. If an activity appears to cause initial disturbance, the activity shall stop and all individuals and equipment will be moved away until the eagles are no longer displaying disturbance behaviors.

Will you implement the above measures? NO YES

If these measures cannot be implemented, then you must contact the Service’s Migratory Bird Permit Office.

Texas – (505) 248-7882 or by email: [permitsR2MB@fws.gov](mailto:permitsR2MB@fws.gov)

Louisiana, Mississippi, Alabama, Florida – (404) 679-7070 or by email: [permitsR4MB@fws.gov](mailto:permitsR4MB@fws.gov)

#### **N. Migratory Bird Treaty Act**

In accordance with the Migratory Bird Treaty Act of 1918 as amended (16 U.S.C. 703-712), will this project cause the take of any birds covered under this act? NO YES

If YES, please explain and indicate if the pertinent permits will be or have been obtained:

Project proponent will review the appropriate BMPs and CMs found at this website and implement the appropriate measures to the extent practicable:

<https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take-migratory-birds>

NO YES

If NO, please explain:

#### **O. Request Approval for Use of NMFS PDCs for This Project**

Complete this section only if your project qualifies for streamlined ESA consultation under the ESA Framework Programmatic Biological Opinion completed by NMFS on February 10, 2016.

To be eligible for streamlined ESA consultation with NMFS, you must implement all Project Design Criteria (PDCs) applicable to your project. Check “yes” for PDC categories that apply to the proposed project, and [request PDC checklist from NMFS](#).

NO	YES	ACTIVITY
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Oyster Reef Creation and Enhancement
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Marine Debris Removal
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Construction of Living Shorelines
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Marsh Creation and Enhancement
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Construction of Non-Fishing Piers

**P. Submitting the BE Form**

**We request that all BE forms and consultation materials be placed on Sharepoint for review.**

Upon receipt, we will conduct a preliminary review and provide any comments and feedback, including any requests for modifications or additional information.

If modifications or additional information is necessary, we will work with you until the Biological Evaluation form is considered complete. Once complete, we will use the Biological Evaluation form to initiate appropriate consultations.

Questions may be directed to:

**NMFS ESA § 7 Consultation**

Christy Fellas, National Oceanic Atmospheric Administration

Email: Christina.Fellas@noaa.gov

Phone: 727-551-5714

**USFWS ESA § 7 Consultation**

Michael Barron, Department of the Interior

Email: michael\_barron@fws.gov

Phone: 251-421-7030

**References**

Buckle, A. and R. Smith. 1994. Rodent pests and their control. CAB International, Bristol, UK.

Fisher, P. 2009. Residual concentrations and persistence of the anticoagulant rodenticides brodifacoum and diphacinone in fauna. Doctoral dissertation. Lincoln University, Lincoln, NZ.

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## of Water Quality

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**Figure 5. Example bird decoy and mirror for social attraction**



**Integrated Pest Management Plan and NEPA Compliance  
for the Management  
of the Non-Native Black Rat (*Rattus rattus*) at  
Dry Tortugas National Park**

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## I. Introduction

### Purpose:

Provide an effective long term management plan for the prevention, detection, and management of the non-native Black Rat (*Rattus rattus*) in Dry Tortugas National Park.

### Need for action:

There is a need for a comprehensive long term rat management program at Dry Tortugas National Park that has the cooperation of managers, park employees, residents, visitors, and volunteers.

### Background:

There are non-native black rats (*Rattus rattus*) that live on many of the islands of the Dry Tortugas National Park as pests. Historically and currently today, rats only occur on the islands of Garden Key, Loggerhead Key and Bush and Long Key. The remaining islands have not had rats because they do not provide suitable habitat. These islands are routinely washed over and provide little permanent habitat for any terrestrial organisms.

The non-native black rats were first introduced to the islands of the Dry Tortugas by man sometime after European explorers started visiting the islands of the Caribbean. The Dry Tortugas has a long history of ships passing through the islands, including the intense visitation during the period when materials and laborers were brought to the Dry Tortugas to build Fort Jefferson. Today, Dry Tortugas National Park is frequently visited by boats transporting Park staff, visitors, commercial fishermen and recreational boaters, Coast Guard employees, contractors as well as all of the supplies, produce, and products supporting the activities of these people.

The black rat adversely impacts the historic structures, island ecology, human occupants and visitors. Black rats are long time resident pests of Garden Key particularly within the confines of the walls of Fort Jefferson and conceptually have a permanent population. Black rats have episodically established populations on some of the other islands (keys) in the Dry Tortugas, this includes Loggerhead, Bush and Long Keys.

The black rats are pests in Fort Jefferson and on Garden Key due to the impact on Park resident staff, visitors, operations and historic structures. Park visitors complain that rats are present in the campground area at night, and are sometimes reported to be foraging off of their perishable goods. Fort Jefferson on Garden Key is home for 10 permanent Park staff (this number may fluctuate from 10-60 throughout the year) and is the main visitor attraction of the area. Rats also adversely affect the occupants of the two residences on Loggerhead Key however the principle pest problem the black rats present on Loggerhead, Bush and Long Keys are to the ecology of the islands (wildlife and vegetation).

It is possible that black rats continue to be introduced to the islands of the Dry Tortugas from the mainland, particularly Garden Key. It is thought that the black rats arrive as stowaways in the products and supplies off loaded at the Dry Tortugas. However, black rats can swim ½ mile in open water, tread water for up to 3 days (NPS Rodent Exclusion Manual 2005), so it is possible that rats could “jump ship” from boats anchored at Garden Key and swim ashore. Severe weather events cause larger vessels, such as fishing vessels, to anchor in Garden Key. However, the majority of the boats visiting the Dry Tortugas are small “live ins” with a low likelihood of resident rats due to vessel size and close proximity to humans (easy detection and eradication). The rate at which new introductions of black rats occurs in this manner is probably very low, however over time, given the high number of visiting ships and the large volume of supplies shipped to the Park, it is likely that the colonization of the Dry Tortugas by black rats is an ongoing process.

The possibility that black rats pose a continuous risk to the islands at Dry Tortugas means that monitoring actions will be a regular responsibility for the managers of Dry Tortugas National Park.

## II. Biology: Black Rat (*Rattus*

*rattus*)

There are three species of rats in the genus *Rattus* in the subfamily Murinae (murine rodents), which are commensal with humans. In order of decreasing size they are: the Norway or brown rat (*R. norvegicus*), the ship or black rat (*R. rattus*), and the Pacific or Polynesian Rat (*R. exulans*). They have different dietary preferences, distributions and histories of introduction, but all three species are omnivorous, behaviorally plastic, have high reproductive rates, and can survive in a variety of habitats (Atkinson 1985, Moors et al. 1992).

The **black rat** (*Rattus rattus*) (alt. **ship rat, roof rat, house rat, Alexandrine rat, old English**



**rat**) originated in tropical Asia and spread through the Near East in Roman times before reaching Europe by the 6th century AD and spreading with Europeans across the world. At least one of the three species occurs on an estimated 82% of all island groups, with *R. rattus* being the most common introduced rat (Atkinson 1985).

Today, the black rat is largely confined to warmer areas, having been supplanted by the brown rat (*Rattus norvegicus*) in cooler regions. Despite its name, the black rat exhibits several color forms. It is usually black to light brown in color with a lighter underside. In the 1920s in England, several color variations were bred and shown alongside domesticated brown rats. This included an unusual green tinted variety.<sup>[1]</sup> Today, very few people keep black rats as pets. Most pet rats (or fancy rats) are domesticated brown rats.

*R. rattus* lives for about 2–3 years. A typical black rat will be 15–20 cm (5.9–7.9 in) long with a further 20 cm (7.9 in) of tail. In contrast to the Norway rat the tail of the black rat is longer than the body and the ears of the black rat are nearly hairless and large enough to be pulled down to cover the eyes. It is nocturnal and omnivorous, with a preference for grains and fruit. Compared to the brown rat, it is a poor swimmer, but more agile and a better climber, tending even to flee upwards.

In a suitable environment black rats will breed throughout the year, with a female producing three to six litters of up to ten young. Females may regulate their production of offspring during times when food is scarce, throwing as few as only one litter a year. Black rats can become reproductively mature when about 3 months old (this information is important to informing the monitoring frequency (*i.e.* no less than every 3 to 4 months)).

Black rats usually range within about 100 to 150 feet of their nest (this information is important to the spacing of traps or bait stations). They may sometimes nest indoors and forage outside for food—or nest outside and forage indoors. Native rats have relatively large forage areas and can move long distances from an indoor nest site to a food source.

Black rats (or their ectoparasites) are able to carry a number of pathogens<sup>[2]</sup>, of which bubonic plague (via the rat flea), typhus, Weil's disease, toxoplasmosis and trichinosis are the best known. Throughout most of the world, black rats are found only in disturbed habitats near people, mainly near the coast. Black Rats have little fear of humans and learn to associate humans with food. However, black rats have a preference for native foods (seeds, flora and fauna).

### III. Impacts of Black Rats

#### Black Rats Impact on Structures and Infrastructure

Many of the structures on Garden Key and the central portion of Loggerhead Key around the lighthouse are designated cultural landscapes that contain numerous significant historic structures. Fort Jefferson and its associated historic features dominate almost the entire area of Garden Key. The central feature of Loggerhead key is the historic Dry Tortugas Lighthouse and associated ancillary structures. The impacts caused by black rats on the historic structures include gnawing and soiling (due to urine and feces), both of which compromise historic features. Burrowing can

undermine walls. Rat infestation inside the walls of historic structures can also necessitate removal of historic fabric which compromises the integrity of the structures. Potential health risks of rat feces also complicate routine preservation activities to maintain historic structures.

Many kinds of physical damage can be expected by black rats. Electrical wiring in office equipment, gnawed by black rats can be damaged. Files, office documents, official documents and other materials can be damaged by gnawing or soiled by urine and feces. Electrical wiring in generators, tractors, and other maintenance equipment could be damaged by black rats. Emergency response equipment or personal protective equipment are also vulnerable to damage by black rats and the integrity of the safety equipment could be compromised.

## Black Rats Impact on Humans

Black rats have the potential to affect people, directly or indirectly, through bites, by parasites, or by transmission of disease organisms. Part of the pest status of rats is due to the emotional stress they cause. Many people are frightened, disgusted or both by the sight and presence of rats. Because both rats and humans are restricted to the confines of the islands therefore there is an increased probability of undesired interactions, disease presence and transmittal through the rat populations with subsequent transmission to humans.

By far the most important reason to control black rats is potential health risks from human contact with rodents or rodent debris. Rodents in general are known to be capable of carrying over 200 disease organisms, many of which can be transmitted to man. Many of these diseases are spread while rodents wander about in buildings at night searching for food and mates. During those activities, they continually drop feces, urine, and hairs, which can come in contact with human foodstuff, eating utensils, and bedding, or can be responsible in other ways for the spread of diseases.

Black Rats can spread plague, typhus, rat-bite fever, trichinosis, salmonella food poisoning, and other infectious diseases. Black rats in the Dry Tortugas could potentially spread hantavirus. It is not likely that the hanta virus is yet endemic to the Dry Tortugas. (In 1992, deer mice were identified as the most important transmitter of hantavirus pulmonary syndrome, HPS).

Nonetheless, humans can become ill with the hanta virus after coming in contact with Black rats, or their feces, urine, or body fluids; or after inhaling dust arising from rodent feces or nesting materials.

Rodent food caches and nests, and dead rodent carcasses (*i.e.*, poisoned animals or animals dying from natural causes) cause secondary health issues when they attract parasites, flies, carpet beetles, and other pests—all of which can cause serious problems in buildings and act as agents of human disease.

The presence of the Fort Jefferson, the U.S. Coast Guard Lighthouse of 1856, and the Carnegie Research Laboratory of 1910 have functioned to draw numerous visitors to the island. The potential exists that the visitor experience will be adversely impacted by the presence of rats.

## Black Rats Impact on Island Ecology of the Dry Tortugas

The Dry Tortugas is comprised of a cluster of seven keys. The seven keys encompass

approximately 104 acres. Historically and currently today, rats only occur on the islands of Garden Key, Loggerhead Key and Bush and Long Key. The remaining islands have not had rats because they do not provide suitable habitat. These islands are routinely washed over and provide little permanent habitat for any terrestrial organisms.

Due to Fort Jefferson on Garden Key and the historic Coast Guard Station on Loggerhead Key much of the available land area is developed. What natural habitat remains is uniformly xerophytic with native vegetation that is restricted to a small group of maritime shore species. Because of development within the greater Florida Keys system this habitat is increasingly rare. Additionally the natural habitat is very important to wildlife. In particular, there are number of migratory neo-tropical birds that use the native vegetation for refuge, forage and nesting. Sea turtles also use the beaches for nesting.

Naturally, the isolated islands of the Dry Tortugas were barren of any mammal species. Therefore the black rats are not in competition with or predated on by any other mammals. This fact, contributes to the ability of the rats to reach population levels that threaten the survival of the native flora and fauna species that live on or use the Dry Tortugas.

Rats have impacted the large nesting colonies of sooty terns and brown noddy terns on Bush Key. Dr. William Robertson documented predation on tern eggs and young by *Rattus rattus* from 1942 to 1954 and again in the early 1980's. The biggest impact is on the noddy terns that nest in cover where they are more susceptible to rat predation. However there is a possible threat to four species of nesting terns, (brown noddy, sooty tern, bridle tern, and the federally listed roseate tern). The eradication of introduced predators, such as rats, on islands around the world, has been listed among the highest conservation priorities by the International Council for Bird Preservation (Moors 1992).

Predation on sea turtle nests at the Dry Tortugas may also be occurring. Loggerhead, Leatherback and Green sea turtles are all known to nest at the Dry Tortugas. Rat tracks around nests of endangered Green Turtles have been reported by volunteer monitors, but predation has not been confirmed.

While raptors such as the (Peregrine Falcon (*Falco peregrines*) and the Burrowing Owl (*Athene cunicularia*)) do occasionally visit the Dry Tortugas, for all practical purposes the Dry Tortugas are predator free. This fact together with the black rat's preference for native foods (seeds, flora and fauna) ensures that the rat can survive and if left unchecked reach population levels that can threaten native flora and fauna populations and change the ecosystem. This is typical only of oceanic islands that lack native mammals, especially other rodents. Rats are known as ecosystem changers on many other islands throughout the world where they have been introduced. Black rats are utterly pervasive and the most frequent predator of small forest birds, seeds, invertebrates, and perhaps lizards in New Zealand forests and Rose Island National Wildlife Refuge in American Samoa. Turtle nest predation by black rats is well documented in the Virgin Islands and Rose Island National Wildlife Refuge where rat populations are high and food is limited.

## IV. Rat Management Plan

### Alternatives Proposed in

### Detail

#### Introduction

There are only two Rat Management Plan Alternatives proposed in detail; a “No Action Rat Management Plan Alternative” and a “Preferred Rat Management Plan Alternative”. The methods for monitoring and eradication are different for each island in the Dry Tortugas. Each of the proposed Rat Management Plans describes for the resource managers at Dry Tortugas and Everglades National Parks the methods, materials and approach for conducting monitoring and eradication efforts on each island in the Dry Tortugas known to have a rat problem (Garden Key, Loggerhead Key, Bush and Long Key). It is possible that one of the islands of the Dry Tortugas, such as East Key, that have historically never provided suitable habitat for rats would one day develop into an island that would support long term terrestrial resident organisms, including rats. Both proposed Rat Management Plan Alternatives address this latter possibility.

Besides these two proposed rat management plans there are a range of possible alternatives that are potentially reasonable. For example, one strategy could be to use rodenticide only in natural areas and not in or around structures. There is considerable justification for this approach. The National Park Service normally does not recommend that rodenticides be used in facilities except under extreme circumstances (NPS IPM Training Manual 1993). This is based on the fact that rats which have ingested a toxic dose of rodenticide may crawl into the wall voids and other inaccessible areas to die. The decaying carcass can produce foul odors and attract insects such as dermestid beetles or blowflies, which feed on the dead animal. Once they have consumed the carcass, the insects will seek other food sources and may become pests themselves, feeding on fabrics, furs and historic artifacts.

However, Fort Jefferson is a large, very complex structure and affords a lot of refuge. In addition, since monitoring is proposed to be conducted with traps, there will always be rats within the fort that develops “trap shyness”. Trap shyness diminishes the effectiveness of an eradication program using traps only. To sidestep trap shyness and increase the likelihood of success during eradication efforts the preferred alternative includes the use of rodenticides in and around facilities.

#### Features Common to Both Alternatives

Human Food, Human Refuse Management

The management at Dry Tortugas makes every effort to make the Park residential living quarters

impervious to access by rats. However, despite the exclusion efforts, rats do periodically access the residential quarters. Permanent residents, long term guests, volunteers and contractors usually detect the rats relatively quickly which is followed up with prompt trapping efforts in the residential area affected and the installation of additional exclusionary measures. Park residents could take additional steps to rat proof their quarters by putting human food items that would potentially be eaten by rats in pest proof containers. This would include but not be limited to such things as cereals, bagged rice, breads, fruits, cookies, crackers, cereal bars, protein bars etc. . This idea might be applicable when residents are planning on going away for long periods of time (*i.e.* vacations or details).

Rats are known to be able to jump 3 feet into the air. Therefore, campers at the Park will be directed to store their un-attended food stuffs in rat proof containers or on the highest hooks of the Park supplied food hangers (a pole with hooks). Aluminum baffles have been placed on the bottom of the food hangers (extending from the ground level up 3 feet) to prevent rats from climbing the poles. The Park does provide hard coolers (rat proof) to campers if they have brought soft coolers. The Park directs campers to keep all refuse in rat proof containers and carry out all of their refuse at the end of their stay.

All residents to the Park would be directed to put human refuse into rat proof containers which are located within or near to the Park housing. The organic refuse (*i.e.* any un-eaten food stuffs) would be separated from inorganic refuse (*i.e.* glass bottles, cans, plastics etc.). The organic refuse is either burned or put into rat proof composting bins.

Instruct new residents and visitors of the rat problem and the refuse and food storage actions necessary to manage rat pests. Label recycle and refuse cans and distribute information on proper refuse handling.

Identify opportunities to reduce or eliminate rat harborage such as cleaning up the dump site on Loggerhead, or refuse in the campground. Additional instructions (signage/handouts) on food storage and disposal may facilitate added cooperation from visitors.

#### Rat Management on the Concessionaire Boats

The concessionaires will be required (contractually) to participate in the management of rats at the Dry Tortugas by taking steps to prevent rats from seeking refuge and food on the boats used by the concessionaires to transport visitors to the Park. Due to the frequency of the concessionaire's visits (almost daily) this will be an important part of the rat management effort at the Park.

#### Rat Exclusion Methods

Controlling rodents in the quarters where people live or where important equipment is stored is very important from the perspectives of both their potential effects on human health and their possible damage to equipment, supplies and cultural materials. It is proposed that every effort will be made to rodent proof employee quarters, recreational rooms, storage rooms, administrative offices, and dormitories found in Fort Jefferson and on Loggerhead Key. The National Park Service's RODENT-EXCLUSION MANUAL, 2005, provides guidance and ideas for accomplishing this goal.

## Rat Management Zones

For the purposes of monitoring and eradication of rats, DRTO is divided into three distinct management zones (Zone 1, 2 and 3).

**Zone 1** occurs within the confines of the moat and the outer walls of the fort on Garden Key. Zone 1 is further divided into Zone 1A which includes the residential, maintenance and storage, administrative areas within the fort. Zone 1B includes the Parade Ground includes: all unused structures (*i.e.* the powder building) and the lawn and landscaped area.

**Zone 2** is comprised of developed areas on Garden and Loggerhead Key. Zone 2 is comprised of all the areas on Garden Key outside the fort structure including the campground, pier, rock piles, coaling docks, and any other vegetated areas which harbor rats. On Loggerhead Zone 2 is the maintained area around the dock, lighthouse, bunkhouse, boat house, main house, and refuse dump.

**Zone 3** is comprised of the natural areas on Loggerhead, Bush, Long Keys.

## Vegetation Management Zone 1 and 2

The vegetation in Zones 1 and 2 (developed areas) should be managed on a regular schedule. Mowing, removal of dead plant material, for example dead palm fronds, should be performed on a regular schedule around structures, particularly structures that house employees, visitors or volunteers. This cleanup activity will decrease black rat habitat around structures.

## Rodenticide and Trapping Recommendations and Restrictions

Only rodenticides approved through the Integrated Pest Management (IPM), pesticide use proposal system (PUPs), that is utilized by the National Park Service will be used.

IPM approved rodenticides will be used and stored according their labels.

Bush Key and Long Key are the only islands at Dry Tortugas where nesting seabird activity restrict the rat monitoring and eradication efforts. Nesting season on Bush and Long is described as occurring between (January to September). Sometimes the season starts a little earlier or lasts a little longer, or both. In any event monitoring and eradication activities will not occur during seabird nesting season on Bush Key.

The DRTO staff will place the IPM approved rodenticide in tamper proof bait boxes. The bait boxes provide the highest level of protection to wildlife, humans and the environment. To further minimize potential impacts to ground dwelling wildlife (*i.e.* hermit crabs) the bait boxes will be placed on supports approximately 6 inches or more above the ground. All treatment bait boxes will be labeled with a warning indicating that pesticides are being used on the islands.

All spoiled or unused, exposed bait will be removed from the treatment areas. All bait stations traps and bait will be removed at the end of the management effort. Traps will be inspected daily and stations will be inspected daily during the management effort.

Dead rats found on the surface of the ground in natural areas will be buried or bagged, removed and disposed of as a burnable. Dead rats found in developed areas will be bagged, removed and disposed of as a burnable.

Observations for off-target damage will be part of the daily routine even though the probability of damage is very low.

As a starting point it is recommended that any trap monitoring or eradication effort use an evenly spaced grid system (40-50 meters between traps or bait stations). The recommended spacing is based on the biology of the rats. Black rats usually range within about 100 to 150 feet of their nest. They may sometimes nest indoors and forage outside for food—or nest outside and forage indoors. Native rats have relatively large forage areas and will move as far as 200 from an indoor nest site to a food source. The recommended spacing will allow for effective coverage of all potential nests in an area. It is possible and acceptable that trap monitoring or eradication data will suggest that more traps or bait stations are required. However, it is not recommended to do less than what is proposed is recommended here.

An evenly distributed grid of bait stations and traps ensures the success of rat management efforts. Appendix B provides proposed locations for the placement of traps or bait stations on all of the islands. The exact location can be altered to some extent. For example to minimize impact to vegetation in the natural areas of Loggerhead, Bush and Long Keys, the placement and checking of bait stations and traps will be carried out in a manner that reasonably maintains the integrity of the grid system but avoids excessive disturbance to island vegetation. In order to minimize impact on vegetation due to placing and accessing bait and trapping stations, the exact location of bait stations and traps do not have to be placed exactly where the grid designs might indicate. Or perhaps monitoring or eradication efforts indicate that additional traps need to be placed to increase effective coverage of a problematic area. In any event, resource managers at Dry Tortugas will record on data sheets the ultimate location of bait stations and traps. This will include the use of GPS, maps and numbering system.

#### Integrated Pest Management: Rodenticide Use Proposals and Tracking

The Integrated Pest Management system utilized by the National Park Service is a process designed to ensure that Park managers use pesticides with appropriate justification and with appropriate reflection on what is the best pesticide to use under the circumstances. While this NEPA document provides a review of the more common rodenticides on the market today (See Rodenticides), it is not the intent of this compliance document to determine which specific brand will be used throughout the lifetime of the selected Rat Management Plan Alternative. The current IPM approved recommendation is to use a second generation (improved) rodenticide called Brodifacoum (Weatherblock). However, it might be that over the life time of this plan a new generation of rodenticides will be made available to resource managers. It might be that the IPM reviewers of the Parks pesticide use proposals (PUPs), will make a recommendation of a newer rodenticide that is more effective or safer in some way. Perhaps the new rodenticide is more selective (with fewer secondary effects).

The following steps are provided so that the DRTO Park staff can understand how to obtain and track the use of a rodenticide, with the assurance that the National Park Service IPM process and NPS management objectives are being met.

1. Review the PUPs history for Everglades National Park.

Taking this first step will help you determine if you need to submit a PUP in order to purchase a pesticide. If an approved PUP for the current year is already in the system and addresses your needs you simply need to advise the DRTO IPM Coordinator of your intent to purchase that pesticide.

DRTO employees can view the list of pesticides that have been proposed for use in Everglades and Dry Tortugas National Parks by accessing the website <http://nrintra.nps.gov/IPM/> . In order to locate the products for the park find the browse/search function on the left side of the screen. Choose EVER or DRTO and the year from the drop down screens to see what is currently in the system. Please also note that the full proposal can be seen by clicking on the product name. It may be necessary to read the notes/memos area of section 2 in order to find out if the product has been submitted for indoor or outdoor use.

If a pesticide is not listed within the PUPS system for Everglades National Park or Dry Tortugas, then the employee must fill out a PUPs request form (Appendix A).

2. Fill out a Pesticide Use Proposal form (PUPs).

Appendix A is a blank PUPs form. The questions on the form are required to be filled out, in order for the Park's IPM Coordinator to submit your request to the Regional/WASO IPM Coordinators for approval. Not doing so will probably delay the ability of the Regional/WASO IPM Coordinators to approve your PUPs.

3. Send the completed PUPS request form to the DRTO IPM Coordinator, who will compile requests and send to the Regional IPM Coordinator (SERO). The DRTO IPM coordinator will upload the request within the national centralized system for review and approval.

4. Track the use of your pesticide throughout the year using the annual pesticide use log (Appendix B).

5. Send the annual pesticide use log to the DRTO's IPM Coordinator, who will compile the Division's pesticide use logs and upload to National Park Services' Centralized Integrated Pesticide Management pesticide tracking system.

#### Park Management and Employee Roles and Responsibilities

Superintendent/Deputy Superintendent - Everglades and Dry Tortugas National Parks:

- will ensure that the EPAP for the Deputy Superintendent/Site Manager at Dry Tortugas National Park reflects the responsibility to implement the selected rat management plan.
- will ensure that discretion be given to Everglades Supervisors to allow employees to assist with eradication efforts if the employees primary duties are not interfered with.

Deputy Superintendent/Site Manager - Dry Tortugas National Park:

- will ensure that the EPAP (s) of the appropriate "in house" park employee(s) (i.e. DRTO IPM technician, Bio Tech, or other designated Park employee(s)) reflects the responsibilities to



implement the selected alternative for rat management at Dry Tortugas National Park.  
-will ensure that all DRTO employees assist the DRTO IPM Technician with the implementation of the monitoring and eradication of rats.

DRTO IPM Technician (or other DRTO employee(s) as designated by the DRTO Deputy Superintendent/ Site Manager):

- will implement the selected rat management plan
- will implement the selected rat monitoring plan
- will coordinate timing and implementation of eradication efforts
- will coordinate the scheduling and activities of volunteers, and NPS employees assisting with the rat monitoring and eradication efforts.
- will coordinate housing and transportation for visiting volunteers and additional NPS employees needed to conduct eradication efforts
- will maintain an electronic data base that records the amounts of rodenticide used, maintain rodenticide use logs and submit annual pesticide use to the IPM Coordinator for Everglades and Dry Tortugas National Parks.
- will procure rodenticides
- will ensure that rodenticides are stored safely
- will ensure that expired or unusable rodenticides are disposed of promptly and according to the rodenticide label.
- will purchase and acquire the materials needed to implement the monitoring and eradication efforts (i.e. PVC pipe, bait stations, rat traps, peanut butter etc.).
- will submit IPM Pesticide Use Proposals (PUPS) for rodenticide on behalf of the DRTO staff
- will maintain a copy of the rodenticide label and MSDS sheets for employee and public safety
- will maintain a list of emergency contact information in the event an employee or visitor is exposed to significant dose of rodenticide.

Park IPM Coordinator – Everglades and Dry Tortugas National Parks:

- will provide technical assistance to the DRTO IPM technician
- will assist, as needed, with monitoring and eradication efforts as coordinated by the DRTO IPM Technician
- will assist the DRTO IPM Technician with identifying and contacting employees at Everglades National Park who

Biological Branch Chief (SFNRC)

- will ensure that employees of the Biological Branch can assist with eradication efforts on an “as needed basis” if the employee’s primary duties are not interfered with.

Action Thresholds

Each rat management zone has its own action threshold. An action threshold is an unacceptable level of rats collected or rat sign observed during monitoring that triggers a suppression activity. A sensitive action threshold is one that ensures that the eradication activities are cost effective (time and money) and results with the greatest impact on the rat population. The monitoring data is the guidepost to adjusting action thresholds. At the moment, the action threshold for all management zones (1,2 and 3) is zero. That is, one rat will trigger an eradication effort. Action thresholds can be adjusted but should be based on monitoring data and or management objectives.

## Alternative 1 – No Action

Currently there is no formal rat management plan in place at Dry Tortugas National Park even though rats have been recognized as a chronic problem for quite some time. No formal or systematic rat monitoring is in place. There is not a specific “action threshold” established for initiating trapping or eradication efforts. Sporadic trapping or eradication efforts will occur when the rat population at Dry Tortugas National Park when there is a complaint or when there is clear evidence that the rats are causing harm to structures or to the ecology of the natural areas. For example, when rats become a nuisance to resident employees or visiting campers there is often a short term trapping effort started to remove or minimize the impact of rats.

Park managers and employees at from both Everglades National Park and Dry Tortugas National Park have, over the years, initiated various short term rat management efforts including: monitoring, prevention, exclusion and suppression/eradication efforts. Suppression/eradication efforts have been temporarily successful on Loggerhead and Bush Key. However, the inconsistent snap trapping efforts and other exclusion methods on at Dry Tortugas National Park have had only minimal impact. A long term monitoring program for Garden Key, Loggerhead Key, Bush and Long Key has never been successfully implemented. It is important to recognize that the current lack of a long term, consistent rat monitoring plan limits the ability of managers to prevent the rat population from reaching levels that can threaten human health, harm structures or the ecology of the islands. The lack of monitoring data prevents managers from being able to estimate the size and distribution of the rat population on all the islands. Currently all we can definitively state is that we know that rats are present on the islands and that they pose a problem.

The historic and current management of the rat population on an ad hoc, inconsistent basis is attributable to limited “in house” resources at Dry Tortugas National Park. It is also attributable to the case by case approach to NEPA evaluation of rat trapping and rodenticide actions. However, a consequence of this approach is that it requires the management of Dry Tortugas National Park to request the mobilization of resources from outside the Park in an atmosphere that resembles a crisis. This is the historical management approach. This approach is inefficient but does provide short term solutions to the protection of the employees, cultural and natural resources. The “no action alternative” is to continue to use this management approach.

The following is a brief history of rat suppression/eradication efforts at Dry Tortugas:

**1981 and 1982.** A rodenticide control project on Bush and Long island proved “highly effective” in reducing losses during the tern breeding seasons to a minimal level. Observations during the 1984 nesting season showed a resurgence of tern predation by rats once the rodenticide program was relaxed.

**1994.** A pilot monitoring project by personnel from NPS, U.S. Fish and Wildlife, and Florida Fresh Water Fish and Game Commission was conducted November 1-2, 1994. Snap traps (46) were baited with peanut butter and oatmeal and placed on Bush Key the first night and on Garden Key the second night. On Bush Key a single trap line was set up along the length of the island. On Garden Key the traps were clustered in two areas: in the campground and around the overgrown rock piles north of the main pier. Four rats were trapped on Bush Key, but the majority of traps were tripped by the abundant population of hermit crabs who devoured the bait - probably before the rats discovered it. The results indicate presence of rats on Bush Key even though tern nesting

(a primary food source) ended weeks ago. Future trap monitoring should address the trap disturbance by the crabs. The catch rate on Garden Key indicates a large rat population (23 rats caught in 46 traps - 2 rats per trap hour).

**2000.** An eradication of rats from Loggerhead key was carried out using a grid of bait station containing Weatherblock XT.

**2008.** One rat was reported on Bush Key by Sonny Bass (NPS Wildlife Biologist). Kayla Nimmo (DRTO Bio Tech/ IPM Technician) reported that one rat was trapped on Bush Key. No other rats have been report since this one sighting in 2008.

**2010 - 2011.** Park staff began trapping rats both on Garden Key and on Loggerhead Key. At first these efforts were intermittent. However, the outcome of these efforts together with visual inspection of structures indicated that the rat populations were very high. Consequently trapping efforts intensified and have for the moment occurred more regularly and systematically. The need for a comprehensive rat management plan, once again, became identified.

#### MONITORING METHODS

Monitoring Methods (Management Zones 1, 2 and 3):

Only informal monitoring will be conducted. This will consist of personal observations from employees or receiving complaints from residents, visitors or resource managers that rats are present and posing a problem. While an “Action Threshold” of zero has been identified, there is no specific “Action Threshold” to determine when a trapping or eradication effort is required. Park management and employees will determine on a case by case basis.

There will be no long term trap monitoring program in place that generates data for managers to use.

#### ERADICATION METHODS

Eradication Methods (Management Zones 1, 2 and 3):

Currently there have not been any formal methods adopted for conducting eradication on any of the island of the Dry Tortugas. Historically, when major eradication efforts were conducted in the natural areas (i.e. Loggerhead) they followed the methods found in Alternative 2 (See Alternative 2: Eradication Methods for Loggerhead Key (Zone 3)). As a starting point the methodological approach to eradication efforts in all management zones will be as recommended in Alternative 2. However, historically there is considerable discretion exercised by the resource managers at Dry Tortugas as to how and when they conduct eradication efforts. This alternative provides only a broad recommendation. Generally, current eradication efforts, in all management zones follow the same eradication methods.

#### **Rodenticide or Trap Eradication Methods in All Management Zones (Zones 1 2 an 3):**

Materials: Bait Stations or traps, rodenticide or peanut butter, oatmeal, gloves, zip-lock baggies, data sheets, computer.

Duration: depends on # of traps

Effort: depends on the # of traps.

Timing: As time permits.

Methods:

1. Traps spaced randomly at individual discretion.
2. Bait traps with peanut butter.
3. Inspect traps daily.
4. Place dead rats in zip-lock baggies and dispose. (Note: If rats are not killed by the snap trap then rats can be euthanized by freezing.
5. Reset and bait traps.
6. Record data on data sheets.
7. Record data on spreadsheets.

## Alternative 2 – Preferred Alternative

The methods for monitoring and eradication are more demanding in alternative 2. The objective of both the monitoring and eradication efforts are to ensure that the rat population never reaches a crisis mode or comes close to posing a threat to human health, cultural values or island ecology. To be successful this alternative will require more effort.

The objective of this plan is to provide Park Management and employees with an understanding of the methods, materials and approaches to the successful control of rats in the Dry Tortugas.

### ROUTINE MONITORING

The implementation of a disciplined, permanent, routine monitoring program is an important distinction between Alternative 1 and 2. The managers at Dry Tortugas National Park will rely on a combination of Informal and Formal Monitoring. Informal monitoring relies on individuals (visitors, employees, and researchers) sharing with Park employees their observations that rats are present in an area. Formal Monitoring will be conducted both with and without traps. Formal monitoring without traps requires Park employees to visually inspect areas such as housing or storage areas and document whether they have detected fresh rat signs. Formal monitoring with traps requires Park employees to use traps to identify if and where rats are present.

Trap monitoring of the rat population is a permanent, responsibility. Trap monitoring, implemented on a regular schedule, will have to be conducted in all of the management zones at the Dry Tortugas. Each island has its own monitoring schedule. For example, monitoring cannot be conducted on Bush and Long during the tern nesting season. Monitoring schedules will be interrupted only if an eradication effort occurs. After the eradication effort the monitoring schedule will resume. An eradication event on one island or management zone will not affect monitoring schedules on other islands or unaffected management zones. Monitoring schedules or the intensity of monitoring for any management zone can be adjusted. Monitoring can be done more frequently or with more traps than recommended below. The decision to adjust the monitoring schedule and structure will be based on information from a combination of informal reporting, formal visual inspections and trapping.

The proposed monitoring schedules vary between 1 to three months. These schedules are informed by the biology of black rats. Black rats can become reproductively mature when about 3 months old and female black rats can breed throughout the year, with a female producing three to six litters of up to ten young. Therefore detecting a growing population of rats early is crucial to effective rat management. The proposed schedules will allow Park managers to become aware of a problem early.

Monitoring Objective: To provide baseline population data to determine when eradication efforts should be initiated and to create efficacy data on eradication efforts. Monitoring will be done using a combination of informal reporting, formal visual inspections and trapping. Described below are the methods and materials, estimate of effort (# of traps, duration and timing) required to conduct monitoring in each of the management zones at the Dry Tortugas.

**NOTE:**

There is trap monitoring conducted immediately after an eradication event using rodenticide. It is conceptually included in the eradication effort using rodenticide and should not be confused with the routine monitoring described above. The purpose of the monitoring conducted after an eradication event with rodenticide is to assess the success of the rodenticide application and to determine if the application of the rodenticide should be continued. The trap monitoring is conducted after every rodenticide application, everyday, for up to 15 days unless a rat is caught. If a rat is caught, the rodenticide application effort is repeated. If no rats are caught after 15 days, the eradication effort using rodenticide is complete.

**ROUTINE MONITORING METHODS**

Informal Monitoring and Reporting Methods (Zone 1, 2 and 3):

Materials: Report Form, and Computer

Duration: Case by case.

Timing: Anytime

Action Threshold: 1 rat.

Methods:

1. Document information on a form. The data will include location, date, nature of complaint (*i.e.* ate a campers food or predation of tern nests and sea turtle nests during the nesting seasons).
2. Make recommendation for improvement of any deficiencies noted. Evaluate the need for accelerating and initiating the trap monitoring schedule. Determine if trap monitoring design (more traps or different locations) needs to be adjusted to assess the problem.

Formal Monitoring and Visual Inspection Methods(Zone 1, 2 and 3)

Materials: Report Form, Computer, broom and dust pan

Duration: 2 hours, Garden Key (Zone 1 and 2); 2 hours, Loggerhead Key (Zone 3); 1 hour, Bush and Long Key (Zone 3).

Timing: Once a Month

Action Threshold: 1 rat.

Methods:

1. Once a month the site IPM technician will conduct a visual inspection of known and likely rat sites other than residential quarters for rat signs and rat damage. Residents will be encouraged to inspect their quarters for rat sign and report to the IPM technician their findings. Night time inspections of outdoor areas such as brick piles, refuse areas, boat dock and campground are encouraged.
2. Inspect all refuse collection sites.
3. Document observations. The data collected utilizes rat sign (*i.e.* feces, nests, gnawed material), records location, date, etc.
4. Clean up observed rat sign.
5. Make recommendation for improvement of any deficiencies noted. Evaluate the need for accelerating and initiating the trap monitoring schedule. Determine if trap monitoring design (more traps or different locations) needs to be adjusted to assess the problem.

Trap Monitoring Methods Garden Key/Fort Jefferson Zone 1:

Fort Jefferson is a 3 tiered structure (1<sup>st</sup> tier, 2<sup>nd</sup> tier, and terreplein). The perimeter of one tier is approximately 710 meters. The preferred method for monitoring rats in Fort Jefferson is to apply the trapping plan to all zones (Zone 1(A) Zone 1(B) at the same time. The methods for monitoring these zones includes an even distribution of traps throughout the fort and parade ground. Figure one below provides an illustration of how traps might be evenly spaced across and throughout the fort to provide for effective monitoring and eradication.

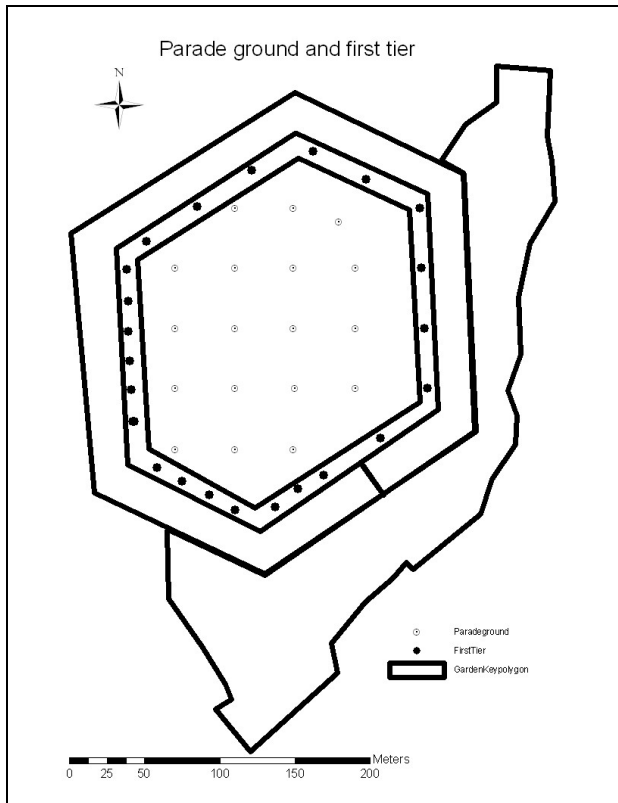


Figure 1: A conceptual illustration of the placement of trap locations on the 1<sup>st</sup> tier and parade ground for monitoring or eradication. See appendix A for approximat GPS grid locations of bait stations.

Trap Monitoring Methods Garden Key/Fort Jefferson Zone 1(A):

Materials: 71 traps, peanut butter, oatmeal, gloves, zip-lock baggies, computer.

Duration: 2 days

Effort: 5 hours/day for 2 days. Total 10 hours.

Timing: Once a month.

Action Threshold: 1 rat

Methods:

1. Place 17 traps spaced approximately 40 meters apart on each tier of Fort Jefferson (1<sup>st</sup> tier, 2<sup>nd</sup> tier, and terra plain). See appendix A for approximat UTM locations of bait stations. This is a total of **51** traps for all three tiers.

2. Place an additional **20** traps randomly in areas where rats are known to routinely visit and are known to affect Park residents or operations (i.e. residential areas, refuse areas, storage areas, etc).
3. Bait traps with peanut butter.
4. Inspect traps daily.
5. Place dead rats in zip-lock baggies and dispose. (Note: If rats are not killed by the snap trap then rats can be euthanized by freezing.
6. Reset and bait traps.
7. Record data on data sheets.
8. Record data on spreadsheets.
9. Make recommendation for improvement of any deficiencies noted. Evaluate the need for accelerating and initiating the trap monitoring schedule. Determine if trap monitoring design (more traps or different locations) needs to be adjusted to assess the problem.

Trap Monitoring Methods Garden Key/Fort Jefferson Parade Ground Zone 1 (B):

Materials: 18 traps, peanut butter, oatmeal, gloves, zip-lock baggies, computer.

Duration: 2 days

Effort: 1 hour/day for 2 days. Total 2 hours.

Timing: Once a month.

Action Threshold: 1 rat

Methods:

1. Place 18 traps spaced approximately 40 meters apart in the parade Ground. See appendix A for approximate UTM locations of bait stations. Note: Traps that are in areas where the public would see them need to be covered, and Identified as rat traps
2. Bait traps with peanut butter.
3. Inspect traps daily.
4. Place dead rats in zip-lock baggies and dispose. (Note: If rats are not killed by the snap trap then rats can be euthanized by freezing.
5. Reset and bait traps.



6. Record data on data sheets.
7. Record data on spreadsheets.
8. Make recommendation for improvement of any deficiencies noted. Evaluate the need for accelerating and initiating the trap monitoring schedule. Determine if trap monitoring design (more traps or different locations) needs to be adjusted to assess the problem.

Trap Monitoring Methods Garden Key/Fort Jefferson Zone 2:

Materials: 20 traps, peanut butter, oatmeal, gloves, zip-lock baggies, computer.

Duration: 2 days

Effort: 1 hour/day for 2 days. Total 2 hours

Timing: Anytime

Action Threshold: 1 rat

Methods:

1. Place 20 traps randomly throughout zone 2. The campground, brick pile and the refuse /burn pile area. Note: Traps that are in areas where the public would see them need to be covered, and Identified as rat traps (See proposed rat trap cover for public areas).
2. Bait traps with peanut butter.
3. Inspect traps daily.
4. Place dead rats in zip-lock baggies and dispose. (Note: If rats are not killed by the snap trap then rats can be euthanized by freezing).
5. Reset and bait traps.
6. Record data on data sheets.
7. Record data on spreadsheets.
8. Make recommendation for improvement of any deficiencies noted. Evaluate the need for accelerating and initiating the trap monitoring schedule. Determine if trap monitoring design (more traps or different locations) needs to be adjusted to assess the problem.

Trap Monitoring Methods Loggerhead Zone 3:

Materials: 20 traps, peanut butter, oatmeal, gloves, zip-lock baggies, computer.

Duration: 2 days

Effort: 3 hour/day for 2 days. Total 6 hours.

Timing: Every 3 months

Action Threshold: 1 rat

Methods:

1. Set out 20 PVC poles on a 60m x 50 m grid. Loggerhead Key is the largest key currently measuring 1300 m long x 25-200 m wide (approximately 55 acres, 35 acres vegetated or developed). Overtime, the grid might need to be expanded or contracted as the size and shape of the island changes. It may be necessary to clear a trail through the native vegetation in order to place the bait boxes within the grid. Trails will be cut with hand tools (machetes and loops). See appendix A for approximate UTM locations of bait stations. Loggerhead Monitoring Occurs Every 4 months.

To minimize impacts of monitoring on loggerhead vegetation, 20 traps need to be placed 150 to 200 feet apart, and approximately 150 from the seaward edge of the vegetation, ensuring the traps are as close to the center of the island as possible.

2. Place 20 traps at the grid intersections. Attach traps to trees or wooden dowels with wire, within a 2 meters radius of the intersection. Do not adversely impact any natural or cultural resources that may occur within the 2 meter radius. Record the exact location of the traps with a GPS. The traps can be elevated 6-20 inches on PVC piping or wooden dowels to keep hermit crabs from consuming the bait. The wooden dowels will be inserted in to the ground 3-5 inches.
3. Bait traps with peanut butter.
4. Inspect traps daily.
5. Bury dead rats in the sand.
6. Reset and bait traps.
7. Record data on data sheets.
8. Record data on spreadsheets.
9. Make recommendation for improvement of any deficiencies noted. Evaluate the need for accelerating and initiating the trap monitoring schedule. Determine if trap monitoring design (more traps or different locations) needs to be adjusted to assess the problem.

Trap Monitoring Methods Bush and Long Keys Zone 3:

Materials: 10 traps, peanut butter, oatmeal, gloves, zip-lock baggies, computer.

Duration: 2 days

Effort: 2 hour/day for 2 days. Total 4 hours.

Timing: Every 3 months

Action Threshold: 1 rat

Methods:

1. Set out 10 PVC poles on a 60m x 50 m grid. Overtime, the grid might need to be expanded or contracted as the size and shape of the island changes. It may be necessary to clear a trail through the native vegetation in order to place the bait boxes within the grid. Trails will be cut with hand tools (machetes and loops). See appendix A for approximate UTM locations of bait stations.
2. Place 10 traps at the grid intersections. Attach the traps to trees or wooden dowels with wire, within a 2 meters radius of the intersection. Do not adversely impact any natural or cultural resources that may occur within the 2 meter radius. Record the exact location of the traps with a GPS. The traps can be elevated 6-20 inches on PVC piping or wooden dowels to keep hermit crabs from consuming the bait. The wooden dowels will be inserted in to the ground 3-5 inches.
3. Bait traps peanut butter.
4. Inspect traps daily.
5. Bury dead rats in the sand.
6. Reset and bait traps.
7. Record data on data sheets.
8. Record data on spreadsheets.
9. Make recommendation for improvement of any deficiencies noted. Evaluate the need for accelerating and initiating the trap monitoring schedule. Determine if trap monitoring design (more traps or different locations) needs to be adjusted to assess the problem.

#### ERADICATION METHODS

Eradication Objective: To conduct eradication in a manner such that there will be a 95% reduction of the rat population. Eradication effort will be done with rodenticide using what is called a **pulsed** rodenticide application method. The pulsed eradication effort includes a rodenticide application period which will last for 15 days and a 15 day efficacy monitoring period using traps. The trap monitoring is conducted after every rodenticide application, everyday, for

up to 15 days unless a rat is caught. If a rat is caught, the rodenticide application effort is repeated. If no rats are caught after 15 days, the eradication effort using rodenticide is complete. No additional rodenticides will be used until routine monitoring indicates that an eradication effort is required.

Rodenticides are placed in Bell Protecta bait stations or similar products. The bait stations are themselves placed on a metal frame (maybe in trees or shrubs) that raises the bait stations approximately 6 inches or more above the surface. The bait stations and metal frame minimize non-target consumption of the rodenticide and minimize the chances the rodenticide is released into the environment.

Described below are the methods and materials and estimate of effort (duration and timing) for eradicating rats in each of the management zones at the Dry Tortugas.

#### Rodenticide Eradication Methods Garden Key/Fort Jefferson Zone 1 (A)

Fort Jefferson is a 3 tiered structure (1<sup>st</sup> tier, 2<sup>nd</sup> tier, and terreplein). The perimeter of one tier is approximately 710 meters.

The preferred method for eradicating rats from Garden Key/Fort Jefferson is to apply the eradication effort to all zones (Zone 1(A) Zone 1(B) and Zone 2) at the same time. However, management can modify the implementation plan as informed by the data collected by the routine rat monitoring.

Materials: 70 Bell Protecta bait stations, Rodenticide, Rodenticide/warning labels, drill, Data sheets

Timing: Anytime during the year.

Duration: 15 days for rodenticide application, 15 days of efficacy monitoring using traps. Total 30 days. (assumes one rodenticide application is necessary)

Effort: 3 hours/day Total: 90 hours

#### Methods:

1. Place 17 Bell Protecta bait stations spaced approximately 40 meters apart on each tier of Fort Jefferson (1<sup>st</sup> tier, 2<sup>nd</sup> tier, and terra plain). See appendix A for approximant UTM locations of bait stations. This is a total of **51** traps for all three tiers.
2. Place an additional **20** bait stations in random areas where rats are known to routinely visit and are known to affect Park residents or operations (i.e. residential areas, refuse areas, storage areas, etc.).
3. Place four 20 gm blocks of Weatherblock XT in bait stations.
4. Inspect bait stations daily for 15 days and replace any consumed bait.

5. Record on data sheets, any dead rats encountered, the amount consumed (%), condition of the bait remaining, and signs of activity for each station. Collect any dead rats found, bag and dispose of in the burn pile; carcasses will begin to appear in 5-6 days after baiting has started.
6. Enter all data into a spreadsheet.
7. Conduct efficacy monitoring for 15 days using traps. Efficacy monitoring after every 15 day rodenticide application effort. Use on the same grid layout as used for the rodenticide applications. Check traps every day. If a rodent is captured stop the efficacy monitoring using traps and repeat the rodenticide application for an additional 15 days (steps 1-6).
8. If efficacy monitoring indicates that the rodenticide application is successful (no rats) then resume routine monitoring schedule using traps.

#### Rodenticide Eradication Methods Garden Key/Fort Jefferson Zone 1 (B)

Materials: 18 Bell Protecta bait stations, Rodenticide, Rodenticide/warning labels, drill, Data sheets

Timing: Anytime during the year.

Duration: 15 days for rodenticide application, 15 days of efficacy monitoring using traps. Total 30 days. (assumes one rodenticide application is necessary)

Effort: 1 hour/day Total: 30 hours

#### Methods:

1. Place 18 Bell Protecta Bait Stations spaced approximately 40 meters apart in the parade Ground. See appendix A for approximate UTM locations of bait stations. Note: Bait stations that are in areas where the public would see them need to be covered, and Identified as bait stations .
2. Place four 20 gm blocks of Weatherblock XT in bait stations.
3. Inspect bait stations daily for 15 days and replace any consumed bait.
4. Record on data sheets, any dead rats encountered, the amount consumed (%), condition of the bait remaining, and signs of activity for each station. Bury any dead rats found; carcasses will begin to appear in 5-6 days after baiting has started.
5. Enter all data into a spreadsheet.
6. Conduct efficacy monitoring for 15 days using traps. Efficacy monitoring after every 15 day rodenticide application effort. Use on the same grid layout as used for the rodenticide applications. Check traps every day. If a rodent is captured stop the efficacy monitoring using traps and repeat the rodenticide application for an additional 15 days (steps 1-6).

7. If efficacy monitoring indicates that the rodenticide application is successful (no rats) then resume routine monitoring schedule using traps.

#### Rodenticide Eradication Methods Garden Key/Fort Jefferson Zone 2

Materials: 20 Bell Protecta bait stations, Rodenticide, Rodenticide/warning labels, drill, Data sheets

Timing: Anytime during the year.

Duration: 15 days for rodenticide application, 15 days of efficacy monitoring using traps. Total 30 days. (assumes one rodenticide application is necessary)

Effort: 1 hour/day Total: 30 hours

#### Methods:

1. Place 20 Bell Protecta bait stations randomly throughout zone 2. The campground, brick pile and the refuse /burn pile area. Note: Bait stations that are in areas where the public would see them need to be covered, and identified as a bait station.
2. Place four 20 gm blocks of Weatherblock XT in bait stations.
3. Inspect bait stations daily for 15 days and replace any consumed bait.
4. Record on data sheets, any dead rats encountered, the amount consumed (%), condition of the bait remaining, and signs of activity for each station. Bury any dead rats found; carcasses will begin to appear in 5-6 days after baiting has started.
5. Enter all data into a spreadsheet.
6. Conduct efficacy monitoring for 15 days using traps. Efficacy monitoring after every 15 day rodenticide application effort. Use on the same grid layout as used for the rodenticide applications. Check traps every day. If a rodent is captured stop the efficacy monitoring using traps and repeat the rodenticide application for an additional 15 days (steps 1-6).
7. If efficacy monitoring indicates that the rodenticide application is successful (no rats) then resume routine monitoring schedule using traps.

#### Rodenticide Eradication Methods Loggerhead Key Zone 3

Materials: 52 Bell Protecta bait stations, metal frames, Rodenticide, Rodenticide/warning labels, Data sheets.

Timing: Anytime during the year.

Duration: 15 days for rodenticide application, 15 days of efficacy monitoring using traps. Total 30 days. (assumes one rodenticide application is necessary)

Effort: 3 hours/day (includes commute from Garden Key) Total: 90 hours

Methods:

1. Set out 52 metal frames on a 60m x 50 m grid. Loggerhead Key is the largest key currently measuring 1300 m long x 25-200 m wide (approximately 55 acres, 35 acres vegetated or developed). Overtime, the grid might need to be expanded or contracted as the size and shape of the island changes. It may be necessary to clear a trail though the native vegetation in order to place the bait boxes within the grid. Trails will be cut with hand tools (machetes and loops). See appendix A for approximate UTM locations of bait stations.
2. Place 52 Bell Protecta bait stations at the grid intersections. Place bait boxes on metal frames or attach bait boxes to trees or shrubs, within a 2 meters radius of the intersection. Do not adversely impact any natural or cultural resources that may occur within the 2 meter radius. Record the exact location of the bait station will be GPS. The stations will be elevated 6-20 inches on metal frames to keep hermit crabs from consuming the rodenticide. The manufactured (Bell Protecta) bait stations have an internal bait partition that also serves to reduce access by hermit crabs.

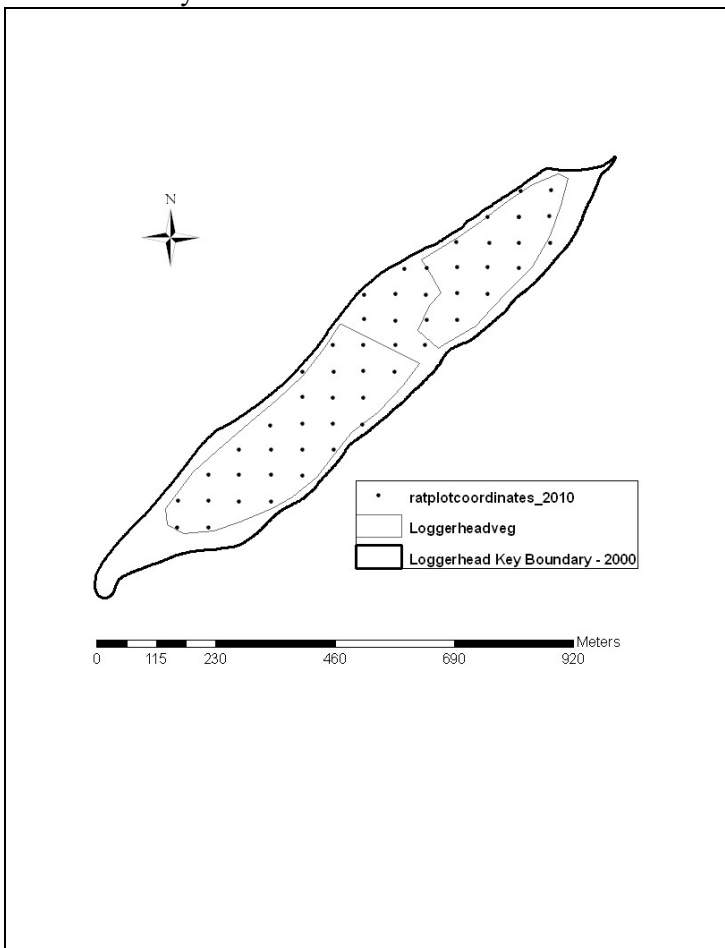


Figure 2: Map shows the conceptual layout of the (60 x 50 m) grid for bait stations on

Loggerhead Key.

3. Place four 20 gm blocks of Weatherblock XT in bait stations.
4. Inspect bait stations daily for 15 days and replace any consumed bait.
5. Record on data sheets, any dead rats encountered, the amount consumed (%), condition of the bait remaining, and signs of activity for each station. Bury any dead rats found; carcasses will begin to appear in 5-6 days after baiting has started.
6. Enter all data into a spreadsheet.
7. Conduct efficacy monitoring for 15 days using traps. Efficacy monitoring after every 15 day rodenticide application effort. Use on the same grid layout as used for the rodenticide applications. Check traps every day. If a rodent is captured stop the efficacy monitoring using traps and repeat the rodenticide application for an additional 15 days (steps 1-6).
8. If efficacy monitoring indicates that the rodenticide application is successful (no rats) then resume routine monitoring schedule using traps.

Rodenticide Eradication Methods Bush and Long Keys Zone 3

Materials: 30 Bell Protecta bait stations, metal frames, Rodenticide, Rodenticide/warning labels, log sheets.

Timing: Conduct eradication efforts between September 1 and February 1. This will both reduce the rat population (and therefore predation) before the tern nesting season and prevent disturbance to breeding terns.

Duration: 15 days for rodenticide application, 15 days of efficacy monitoring using traps. Total 30 days. (assumes one rodenticide application is necessary)

Effort: 2 hours/day (includes commute from Garden Key) Total: 60 hours

Methods:

1. Set out 30 PVC poles on a 60m x 50 m grid. Overtime, the grid might need to be expanded or contracted as the size and shape of the islands change. It may be necessary to clear a trail through the native vegetation in order to place the bait boxes within the grid. Trails will be cut with hand tools (machetes and loops). See appendix A for approximate UTM locations of bait stations.
2. Place 30 Bell Protecta bait stations at the grid intersections. Attach bait boxes to trees shrubs with wire, within a 2 meters radius of the intersection. Do not adversely impact any natural or cultural resources that may occur within the 2 meter radius. Record the exact location of the bait station will be GPS. The stations will be elevated 6-20 inches trees, shrubs or metal frames to keep hermit crabs from consuming the rodenticide. The manufactured (Bell Protecta) bait stations have an internal bait partition that also serves to reduce access by hermit crabs.



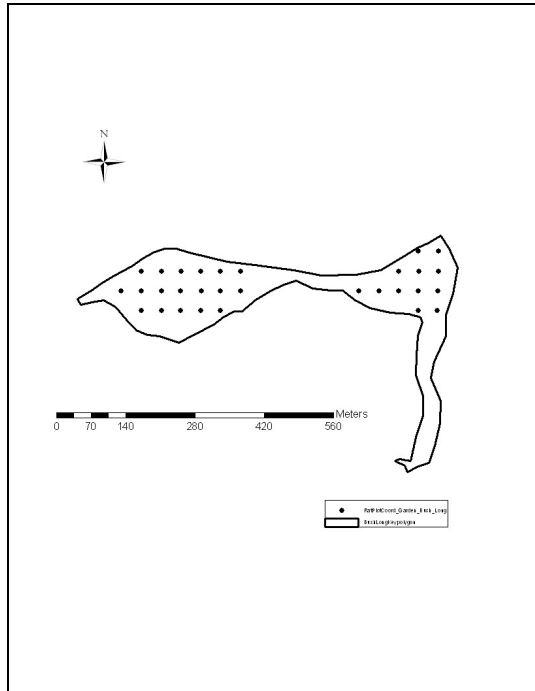


Figure 3. Map show conceptual layout of (60 x 50 m) grid for bait stations on Bush and Long Keys.

3. Place four 20 gm blocks of Weatherblock XT in bait stations.
4. Inspect bait stations daily for 15 days and replace any consumed bait.
5. Record on data sheets, any dead rats encountered, the amount consumed (%), condition of the bait remaining, and signs of activity for each station. Bury any dead rats found; carcasses will begin to appear in 5-6 days after baiting has started.
6. Enter all data into a spreadsheet.
7. Conduct efficacy monitoring for 15 days using traps. Efficacy monitoring after every 15 day rodenticide application effort. Use on the same grid layout as used for the rodenticide applications. Check traps every day. If a rodent is captured stop the efficacy monitoring using traps and repeat the rodenticide application for an additional 15 days (steps 1-6).
8. If efficacy monitoring indicates that the rodenticide application is successful (no rats) then resume routine monitoring schedule using traps.

#### IV. RODENTICIDES

National Park Service policy states that rodenticides should only be used as a last resort (NPS Management Policies 2006). Every year, DRTO will submit to the regional IPM office a rodenticide use proposal for approval. The Washington Office must review and approve or deny the use of the proposed rodenticide and the use of the rodenticide must conform to NPS policies and guidelines. Typically, the National Park Service does not recommend that rodenticides be used in-doors in NPS facilities particularly in historic buildings, except under extreme circumstances. Rodents that have ingested a fatal dose of rodenticide may crawl into wall voids and other inaccessible areas to die. The decaying carcass can produce foul odors and attract insects such as the dermestid beetles or blowflies, which feed on the dead animal. Once they have consumed the carcass, the insects will seek other food sources and may become pests themselves, feeding on fabrics, stored foods or historic artifacts.

There are three major formulations of rodenticide used against rats: food baits, water baits and tracking powders.

**Water Baits.** Water baits mix a rodenticide with water. In dry areas where fresh water is limited this type of baiting is a possibility. However, water baits are attractive to most animals, more difficult to deploy. Water baits are not proposed for DRTO.

**Tracking Powders.** Tracking powders are rodenticides carried on talc or powdery clay. It is applied where rats live and travel. The tracking powder sticks to the feet and fur and the rodenticide is swallowed when the rats groom themselves. Tracking powders are effective when rats have developed trap or bait shyness. However the rodenticide in tracking powders is much higher than in baits. Tracking powders are not often recommended for use indoors. Typically tracking powders are applied to the inside of burrows. This rat management plan does not propose the use of tracking powders.

**Food Baits.** Rat baits combine a poison effective against rats with a food bait attractive to rats. Today, most baits are purchased ready-made and packaged. They come in extruded pellets, in a dry meal, or molded into paraffin blocks for wet sites. Baits may be packaged in bulk tubs, in individual place packs containing less than one ounce of bait, or anything in between. For safety, some baits include chemicals that are extremely bad tasting to humans, but not to rodents.

Some baits kill rats after a single feeding, some require multiple feedings. Some are anticoagulants, meaning they cause rats to bleed to death, some affect respiration, and some have totally different modes of action. Some are only slightly toxic to people or pets, some moderately toxic, and some very toxic. Again the purpose of this rat plan is not to describe which rodenticide will be used from year to year. Each rodenticide product has different characteristics. In addition, over time, new products are developed or the labels change and both the DRTO park staff and the National Park Service's IPM process might recommend different rodenticides. Nonetheless, the DRTO staff will always use the National Park Service IPM process for approval of a rodenticide product that is appropriate for use. The following is a brief description of two common anticoagulant rodenticides.

**Rodenticide Alternative 1:** Weatherblock with active ingredient Brodifacoum is a second generation anticoagulant rodenticide. Brodifacoum was used successfully at DRTO in the early 1980's.

**Rodenticide Alternative 2:** JT Eaton with active ingredient Diphacinone is a first generation

anticoagulant rodenticide. It was successfully used on Buck Island Reef National Monument in the U.S. Virgin Islands in the late 1990's and early 2000's. Diphacinone can provide an alternative to the highly toxic Brodifacoum and may help reduce non-target hazards in some situations, although several applications are generally required.

Table 1. Characteristics of rodenticides registered with the US EPA.						
Rodenticide	Category	Previous Success in Island Restoration	Activity	Ability to Induce Bait Avoidance	Danger to Humans	Antidote Available?
Brodifacoum (Weatherblock)	Second Generation Anticoagulant	High	Single Feed	Very Low	Low	Yes
Diphacinone (JT Eaton)	First Generation Anticoagulant	High	Multi-Feed	Low	Low	Yes

## V. IMPACT ANALYSIS OF TRAPPING AND RODENTICIDE EFFORTS

### Mammals

There are no native mammals that inhabit the Dry Tortugas. There would be no of trapping or rodenticide impact to this group of animals.

### Fish

There will be no impact to this group of animals. While the use of a rodenticide during eradication events is proposed in this rat management plan, both the infrequent use of the rodenticide in the natural areas (assume, one 15 day eradication event/year ) and the method of application (putting pellets of rodenticide in bait boxes in a terrestrial environment) makes it only a remote chance that fish would become exposed to the pellets of rodenticide.

Furthermore, while placebo pellet studies conducted in the marine environment around the Anacapa Islands (Anacapa Islands EIS 2000) could not rule out the possibility that large marine fish might consume a pellet of rodenticide, their studies also indicated that most marine fish 62% where not attracted to pellets falling through the water column. 29% of the fish at least inspected the pellets however did not consume them. In the unlikely event that a block of rodenticide should reach the marine environment, the fish may also be at risk of exposure through the absorption of rodenticide residue across their gills if a high enough concentration is found within the water column. All the rodenticides in the alternatives are slightly to highly lipophilic and would therefore not be found in significant concentration in the water column. Any bait

finding its way into the ocean would rapidly absorb moisture and begin to breakdown. Studies with placebo baits has shown that a compressed pellet lasts up to a “few hours” in calm conditions on the ocean floor. The incessant wave action and persistent swells around the islands would probably expedite the degradation process. On breakup of the bait blocks, the rodenticides, are not water soluble and would not readily stay in the water column, rather, begin to bind to available organic matter – such as marine animals and in the benthic layer. Therefore, the probability of a high enough concentration of rodenticide to enter into the sea and be of high enough concentration to be absorbed across the gills or skin of fish is low.

### ***Secondary Exposure (Indirect)***

Predatory fish may consume any primary exposed fish and/or other prey and are secondarily exposed to the rodenticide. However, this event is not likely to be extensive and would not likely adversely affect any local fish populations.

## Herptofauna

There are no native terrestrial herptofauna that permanently inhabit the Dry Tortugas. There would be no impact to this group of animals.

There are sea turtles and an occasional crocodile that visit the islands. There would be no impact to this group of animals. Sea Turtles do nest seasonally on the islands of the Dry Tortugas and crocodiles are known to occasionally appear and stay for short periods of time. However, given the infrequent use of the rodenticide in the natural areas (assume one 15 day eradication event/year ) and the application method proposed in this plan (i.e. in bait boxes in a terrestrial environment away from turtle nesting areas), the chance that a sea turtle or crocodile might be exposed to a block of rodenticide is very remote. In the unlikely event a sea turtle or crocodile came across a block of rodenticide it is not likely that they would be attracted to or consume the bait. The blocks of bait simply do not resemble in any way, their customary food items. Any bait finding its way into the ocean would rapidly absorb moisture and begin to breakdown. Studies with placebo baits has shown that a compressed blocks lasts up to a “few hours” in calm conditions on the ocean floor (Anacapa Islands EIS 2000). The incessant wave action and persistent swells around the islands would probably expedite the degradation process. On breakup of the bait blocks, the rodenticides, are not water soluble and would not readily stay in the water column, rather, begin to bind to available organic matter – such as marine animals and in the benthic layer. Therefore, the probability of a high enough concentration of rodenticide to enter into the sea and be of high enough concentration to be absorbed across the skin is low.

## Invertebrates

Terrestrial invertebrates are the most likely animal group in the Dry Tortugas to have both primary and secondary exposure to Brodifacoum. There isn't a comprehensive inventory of the terrestrial invertebrates in the Dry Tortugas. However, there are cockroaches, ants, termites, beetles, butterflies, and numerous other flying insects. The most common terrestrial invertebrate in the Dry Tortugas is the hermit crab. It is the hermit crab and the land crabs that are thought to be the most likely to have primary and secondary exposure to Brodifacoum.

Invertebrates are generally considered to be resistant to anticoagulant rodenticides because of

their different blood clotting systems (Shirer 1992, Pain *et al* 2000, Booth *et al* 2001 and 2003). There are documented cases where beetles, cockroaches, land crabs, snails, slugs, millipedes and ants consume rodent baits and can survive on a diet of 20-50 ppm Brodifacoum (Anacapa Island EIS 2000, Booth *et al* 2001). Conversely, there is documentation that beetle and terrestrial snail and worm populations can decline due to the consumption of Brodifacoum (Gerlach 2005, Booth *et al* 2003). There aren't any records or known observations by Park staff of terrestrial mollusks or worms in the Dry Tortugas. The coastal barrier island like habitat of the Dry Tortugas does not seem suitable for these types of invertebrates.

In the documented cases where there was a decline in the invertebrate populations due to Brodifacoum exposure the method of application was a broadcast or saturation approach. This is very different from the pulsed application method of Brodifacoum that the National Park Service is using in the Dry Tortugas. The pulsed application method minimizes the introduction of the rodenticide into the environment (Dubock 1982). Furthermore, the use of bait boxes positioned above ground level will significantly minimize the risk of primary poisoning to any invertebrate and significantly minimizes the introduction of the rodenticide into the environment.

However unlikely, some bait may enter into the intertidal zone and ocean water around the islands of the Dry Tortugas. If bait were to enter the marine environment, the marine invertebrates would likely consume what bait they could. However, it is unlikely to have significant impacts to individual species as their blood clotting mechanisms are comparable to the terrestrial species (Shirer 1992).

Both the pulsed application method and the use of bait boxes, and invertebrate's (as a group) general resistance to Brodifacoum suggests that the use of Brodifacoum is unlikely to adversely impact the invertebrates of the Dry Tortugas both terrestrial and marine.

## Vegetation

The vegetation of the natural areas of DRTO is uniformly xerophytic with native vegetation that is restricted to a small group of maritime shore species. There are a few plant species that are of management importance, the State Endangered Sea Lavender (*Argusia gnaphalodes*), the State Threatened Ink Berry (*Scaevola plumieri*) and the protected Sea Oats (*Uniola paniculata*) and Sand Bur (*Cenchrus myosuroides*). There are three islands in the Dry Tortugas with significant maritime shore habitat. The largest is Loggerhead Key at approximately 33 acres with Bush and Long Keys Bay Cedar at approximately 5 acres. Bay Cedar (*Suriana maritima*), Sea Lavender (*Argusia gnaphalodes*), Sea Oats (*Uniola paniculata*) and Pricklypear (*Opuntia stricta*) are abundant across all three islands. Threatened Ink Berry (*Scaevola plumieri*) and protected Sand Bur (*Cenchrus myosuroides*) are only found on Loggerhead Key in a few areas. Because of development within the greater Florida Keys system the habitat like what is found on these islands is increasingly rare. Additionally the natural habitat is very important to wildlife. In particular, there are number of migratory neo-tropical birds that use the native vegetation for refuge, forage and nesting. The native vegetation is sensitive to trampling and repeated foot traffic.

The black rat monitoring and eradication efforts could have an impact on the native vegetation. The nature of the impact would be broken vegetation and possibly the establishment of trails. The traps and bait stations, particularly during eradication efforts, need to be spaced at regular intervals across the islands in order to get good coverage and eliminate refugia for the rats. This could result in the need to break through vegetation. Then the regularly spaced traps and bait stations would need to be repeatedly placed and accessed. For example, monitoring on Loggerhead Key is proposed to occur every 3 months. This regular activity and the fact that the native vegetation is sensitive to repeated foot traffic, could result in the establishment of trails.

To minimize the impact of black rat monitoring and eradication efforts on native vegetation, DRTO resource management staff will access the areas where the traps will be placed by following natural openings or “trails” that are present in, around and through the vegetation. These natural openings or “trails” should be utilized to the extent possible. Following this approach will result in minimal damage to the vegetation. If noticeable vegetation damage is likely to occur as a result of trap placement an alternate area of access will be attempted. On Loggerhead Key, no traps will be placed in the protected Big Sand Bur (*Cenchrus myosuroides*) population (Critically imperiled in South Florida). The current population of Big Sand Bur is located immediately north of the kitchen house. DRTO vegetation monitoring staff will inform the resource management staff conducting the rat monitoring if the status of the known population changes or if new populations are found.

The impact to the native vegetation as a result of rat monitoring and eradication efforts is considered to be very minimal and reversible. While the vegetation is sensitive to disturbance, it is adapted to recovering from the extreme impacts of hurricanes, which occur routinely. The rat monitoring and eradication efforts, particularly in light of the mitigating efforts described above, will not cause harm. The impact to the native vegetation as a result of the monitoring and eradication efforts is also considered less than the impacts to the native vegetation caused by the black rats themselves. Black rats have a preference for plant shoots, seeds and fruits. The black rats in the Dry Tortugas are having an un-quantified level of impact on the native vegetation. The removal of the black rats will have a positive impact on the native vegetation in the Dry Tortugas.

## Birds

It is thought that the routine monitoring and rodenticide applications efforts may but are unlikely to impact the majority of 299 bird species that have been documented at the Dry Tortugas. Most of the birds at the Dry Tortugas are transients or strays present only very briefly. Both the abundance and diversity of birds is highest during the spring and fall migrations as the birds pass through the Dry Tortugas on their way to their destinations. The Dry Tortugas provides longterm habitat (not permanent) to only a very few bird species including the 9 species of birds that nest in the Dry Tortugas. Usually, there are fewer than 40 species of birds present at any one time (mostly seabirds). Approximately 29 species of birds are considered common (with 20 or more observations per season) for two or more seasons out of the year (usually spring and fall).

Routine monitoring and eradication efforts would have an impact on the success of the 7 species of nesting seabirds. It would be impossible to place and maintain the traps or bait stations without disturbing the nesting birds. Bush Key is the only island at Dry Tortugas that seabirds use for

nesting. Nesting season is described as occurring between (January through September 1). Sometimes the season starts earlier or lasts longer, or both. There are 7 species of nesting sea birds that nest at the Dry Tortugas (masked booby, magnificent frigate, brown pelican, brown noddy tern, sooty tern, least tern, and the federally listed roseate tern). Currently all of the pelagic nesting seabirds use Bush and Long Keys. Therefore, no monitoring or eradication efforts will be conducted during the nesting season.

There is documentation that raptors and scavenger birds are susceptible to secondary poisoning of Brodifacoum (Eason and Spur 1995, Eason et al 1999, Mendenhall and Pank 1984, Stone et al 1999 and Hosea 2000). All of these documented cases describe permanent to semi-permanent (breeding) populations of raptors with long term exposure to a population of rats being controlled with Brodifacoum. While these sources indicate that secondary poisoning can be lethal after one feeding, the documentation indicates that the amount of Brodifacoum in any one rat varies considerably and may require multiple feedings to cause lethal secondary poisoning in raptors.

In contrast to the documentation mentioned above, the circumstances surrounding the interaction between raptors and rats at the Dry Tortugas is very different. Fundamentally the chances of exposure appears unlikely. First, in the documented cases mentioned above, where raptor populations are affected by Brodifacoum exposure the method of application was a broadcast or saturation approach. This is very different from the pulsed application method of Brodifacoum that the National Park Service is using in the Dry Tortugas. The pulsed application method minimizes the introduction of the rodenticide into the environment (Dubock 1982). Secondly, there are not permanent or even semi permanent raptor species at the Dry Tortugas with a preference for rats.

There are 21 species of raptors or scavengers documented for the Dry Tortugas. All the raptors at the Dry Tortugas are migratory and transient. 17 of those species are considered uncommon or rare visitors. 4 raptor species are considered common (with 20 or more observations per season) for two or more seasons out of the year (usually spring and fall). Of these, 3 of the raptors are principally birders (Common Night Hawk, Sharp Shinned Hawk and the Merlin). The remaining raptor considered common, the kestrel, is known to feed on a wide range of prey and its diet includes rodents. During the winter months, December through February the Dry Tortugas is practically raptor-free.

Furthermore, the actual interaction between the migratory raptors and rats depends on the availability of rats, the random, short term presence of individual migratory raptors and how the raptors respond to rats during migration. To date there isn't any documentation of migratory raptors feeding on rats. Any predation would be very random and the number of feedings an individual raptor would experience would be very limited. Therefore, there is a chance that raptors may be exposed to secondary poisoning of Brodifacoum however it appears unlikely.

There is some documentation that that passerine birds are at risk to both direct primary poisoning

and secondary poisoning from the use of Brodifacoum. Primary poisoning may occur to granivore or omnivore passerines that feed directly on the Brodifacoum bait. While insectivore passerines may experience secondary poisoning by consuming insects that have fed on bait or fed on invertebrates that have fed on dead poisoned rats.

There are numerous migratory passerines in the Dry Tortugas. With the exception of the House Sparrow and the Morning Doves all the passerines are very transient. The abundance of individuals and the number of species are highest during the spring and fall migrations.

For insectivore passerines, it is unknown how much consumption of Brodifacoum laden invertebrates is tolerable. For most invertebrates the resident time of material passing through the gut of the organism is very short and the amount of residual rodenticide is very small (Pain et al. 2000; Morgan et al. 1996). Additionally, only a very small percentage of the invertebrate community located on the island would directly consume Brodifacoum bait or would actually consume a dead anticoagulated poisoned rat. Finally the likely hood that any one passerine bird would encounter and consume one, much less an appreciable number of affected invertebrates seems very low.

In the documented cases where passerine populations were affected by Brodifacoum exposure the method of application was a broadcast or saturation approach. This is very different from the pulsed application method of Brodifacoum that the National Park Service is using in the Dry Tortugas. The pulsed application method minimizes the introduction of the rodenticide into the environment (Dubock 1982). Furthermore, the use of bait boxes positioned above ground level will significantly minimize the risk of primary poisoning to any granivore or omnivore passerine thought that the potential risk of any one bird being fatally poisoned is unlikely.

Therefore, the migratory passerines depending on the species, may be affected by applications of brodifacoum in the Dry Tortugas, but it appears unlikely.

The National Park Service seeks to avoid causing harm to any biological resource. However, it is essential to be able to manage rats at Dry Tortugas National Park. Any harm to individual animals is incidental to this effort and necessary in the balance. Therefore, the National Park Service is prepared to accept the potential for harm to some individual animals incidental to the use of brodifacoum in the Dry Tortugas as long as these individual negative effects outweigh the expected beneficial effects of rat eradication.

## Employee and Public Safety

The risk of harm to employees handling rodenticide is small. Studies have shown that workers handling Brodifacoum, the most potent of the rodenticides presented, over a 9 month period did not show any effects suggestive of significant exposure (ICI, in Taylor 1993). Individuals involved in handling bait can further reduce the chance of exposure by wearing gloves.

The probability of visitors exposed to the bait is extremely small. The rodent bait would be encased within a bait station that would be appropriately labeled "Rat Poison- Do Not Disturb". The stations would limit access to the bait to all but the most persistent visitors, such as those that may vandalize stations. However, it should be noted that exposure at this point would need to be an intentional on the part of the visitor, i.e., a person would have to seek out the bait and



deliberately consume it. Additionally, it would be rather difficult for one to find and consume enough bait to be of any consequence.

In the event of significant exposure to employees or the public, pesticide labels, and MSDS sheets would be kept by the DRTO IPM Technician and would provide information as to the bait in the stations. DRTO IPM Technician would maintain a list of emergency contact numbers. In the event, of significant exposure of Brodifacoum the onset of toxicosis is slow. This allows time to get effective medical treatment. For Brodifacoum there is an effective antidote available in the form of (Vitamin K1).

## Visitor Experience

It is not thought that visitor experience will in anyway be affected. Normal Park operations will not be altered. Visitor access to the Park will not be restricted in any manner due to trapping or eradication efforts. The placement, inspection, baiting of traps and bait stations will not be conducted in management zones 1 and 2 during regular visitor hours. While bait stations might be visible to visitors throughout the day, they are not likely to impact their experience. Reduction of rats to a level not detectable to visitors and campers will likely improve visitor experience.

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## Appendix A: Figures



Figure 1: Rat trap elevated with PVC pole. Aluminum can used to provide a barrier to hermit crabs.

## Appendix B:

### GPS Coordinates (NAD 83 Zone 17) for approximant grid locations of bait stations.

Key	Area	Trans_#	Plot_#	X	Y
Loggerhead	Natural	1	LH1_1	305159	2725300
Loggerhead	Natural	1	LH1_2	305219	2725299
Loggerhead	Natural	2	LH2_1	305161	2725351
Loggerhead	Natural	2	LH2_2	305219	2725351
Loggerhead	Natural	2	LH2_3	305279	2725349
Loggerhead	Natural	2	LH2_4	305341	2725349
Loggerhead	Natural	3	LH3_1	305219	2725401
Loggerhead	Natural	3	LH3_2	305279	2725401
Loggerhead	Natural	3	LH3_3	305340	2725401
Loggerhead	Natural	3	LH3_4	305401	2725399

Loggerhead	Natural	4	LH4_1	305279	2725450
Loggerhead	Natural	4	LH4_2	305340	2725450
Loggerhead	Natural	4	LH4_3	305400	2725450
Loggerhead	Natural	4	LH4_4	305461	2725450
Loggerhead	Natural	5	LH5_1	305338	2725497
Loggerhead	Natural	5	LH5_2	305401	2725500
Loggerhead	Natural	5	LH5_3	305459	2725500
Loggerhead	Natural	5	LH5_4	305517	2725498
Loggerhead	Natural	6	LH6_1	305400	2725552
Loggerhead	Natural	6	LH6_2	305459	2725549
Loggerhead	Natural	6	LH6_3	305519	2725549
Loggerhead	Natural	7	LH7_1	305400	2725599
Loggerhead	Natural	7	LH7_2	305461	2725599
Loggerhead	Natural	7	LH7_3	305519	2725601
Loggerhead	Natural	7	LH7_4	305579	2725599
Loggerhead	Natural	8	LH8_1	305459	2725651
Loggerhead	Natural	8	LH8_2	305519	2725651
Loggerhead	Developed	8	LH8_3	305580	2725651
Loggerhead	Developed	8	LH8_4	305638	2725651
Loggerhead	Developed	9	LH9_1	305520	2725701
Loggerhead	Developed	9	LH9_2	305580	2725699
Loggerhead	Natural	9	LH9_3	305640	2725700
Loggerhead	Natural	9	LH9_4	305700	2725700
Loggerhead	Developed	10	LH10_1	305520	2725748
Loggerhead	Developed	10	LH10_2	305580	2725750
Loggerhead	Developed	10	LH10_3	305639	2725749
Loggerhead	Natural	10	LH10_4	305700	2725751
Loggerhead	Natural	10	LH10_5	305759	2725750
Loggerhead	Developed	11	LH11_1	305597	2725798
Loggerhead	Natural	11	LH11_2	305640	2725800
Loggerhead	Natural	11	LH11_3	305700	2725802
Loggerhead	Natural	11	LH11_4	305759	2725802
Loggerhead	Natural	11	LH11_5	305819	2725800
Loggerhead	Natural	12	LH12_1	305698	2725850
Loggerhead	Natural	12	LH12_2	305761	2725849
Loggerhead	Natural	12	LH12_3	305819	2725849
Loggerhead	Natural	12	LH12_4	305879	2725849
Loggerhead	Natural	13	LH13_1	305759	2725899
Loggerhead	Natural	13	LH13_2	305819	2725899
Loggerhead	Natural	13	LH13_3	305819	2725899
Loggerhead	Natural	13	LH13_4	305877	2725901
Loggerhead	Natural	14	LH14_1	305822	2725948

Loggerhead	Natural		14	LH14_2	305880	2725951
Bush	Vegetation		1	BK1_1	310800	2725000
Bush	Vegetation		1	BK1_2	310840	2725000
Bush	Vegetation		1	BK1_3	310879	2725000
Bush	Vegetation		1	BK1_4	310920	2725000
Bush	Vegetation		1	BK1_5	310959	2725000
Bush	Vegetation		2	BK2_1	310759	2725040
Bush	Vegetation		2	BK2_2	310800	2725040
Bush	Vegetation		2	BK2_3	310840	2725040
Bush	Vegetation		2	BK2_4	310879	2725040
Bush	Vegetation		2	BK2_5	310921	2725040
Bush	Vegetation		2	BK2_6	310959	2725040
Bush	Vegetation		2	BK2_7	311000	2725040
Bush	Vegetation		3	BK3_1	310800	2725080
Bush	Vegetation		3	BK3_2	310840	2725080
Bush	Vegetation		4	BK4_3	310880	2725080
Bush	Vegetation		4	BK4_4	310920	2725080
Bush	Vegetation		4	BK4_5	310959	2725080
Bush	Vegetation		4	BK4_6	311000	2725080
Long	Vegetation		1	LK1_1	311359	2725000
Long	Vegetation		1	LK1_2	311398	2725000
Long	Vegetation		2	LK2_1	311239	2725040
Long	Vegetation		2	LK2_2	311280	2725040
Long	Vegetation		2	LK2_3	311320	2725040
Long	Vegetation		2	LK2_4	311359	2725040
Long	Vegetation		2	LK2_5	311399	2725040
Long	Vegetation		3	LK3_1	311320	2725080
Long	Vegetation		3	LK3_2	311360	2725080
Long	Vegetation		3	LK3_3	311400	2725080
Long	Vegetation		4	LK4_1	311359	2725120
Long	Vegetation		4	LK4_2	311400	2725120
Garden	Firsttier	East		FT1	310488	2725080
Garden	Firsttier	East		FT2	310486	2725120
Garden	Firsttier	East		FT3	310484	2725160
Garden	Firsttier	East		FT4	310483	2725200
Garden	Firsttier	Northeast		FT5	310447	2725219
Garden	Firsttier	Northeast		FT6	310412	2725238
Garden	Firsttier	Northwest		FT7	310371	2725225
Garden	Firsttier	Northwest		FT8	310335	2725201
Garden	Firsttier	Northwest		FT9	310301	2725178
Garden	Firsttier	West		FT19	310288	2725159
Garden	Firsttier	West		FT11	310289	2725138

Garden	Firsttier	West	FT12	310289	2725118
Garden	Firsttier	West	FT13	310290	2725098
Garden	Firsttier	West	FT14	310292	2725058
Garden	Firsttier	West	FT15	310291	2725079
Garden	Firsttier	Southwest	FT16	310308	2725027
Garden	Firsttier	Southwest	FT17	310325	2725018
Garden	Firsttier	Southwest	FT18	310343	2725009
Garden	Firsttier	Southwest	FT19	310360	2724999
Garden	Firsttier	Southeast	FT20	310387	2725001
Garden	Firsttier	Southeast	FT21	310402	2725013
Garden	Firsttier	Southeast	FT22	310419	2725022
Garden	Firsttier	Southeast	FT23	310293	2725058
Garden	Firsttier	Southeast	FT24	310457	2725047
	Parade Ground				
Garden			1 PG1_1	310320	2725039
	Parade Ground				
Garden			1 PG1_2	310360	2725039
	Parade Ground				
Garden			1 PG1_3	310399	2725039
	Parade Ground				
Garden			2 PG2_1	310320	2725080
	Parade Ground				
Garden			2 PG2_2	310360	2725080
	Parade Ground				
Garden			2 PG2_3	310400	2725080
	Parade Ground				
Garden			2 PG2_4	310440	2725080
	Parade Ground				
Garden			3 PG3_1	310320	2725120
	Parade Ground				
Garden			3 PG3_2	310360	2725120
	Parade Ground				
Garden			3 PG3_3	310399	2725120
	Parade Ground				
Garden			3 PG3_4	310440	2725120
	Parade Ground				
Garden			4 PG4_1	310320	2725160
	Parade Ground				
Garden			4 PG4_2	310360	2725160
	Parade Ground				
Garden			4 PG4_3	310399	2725160
	Parade Ground				
Garden			4 PH4_4	310440	2725160
	Parade Ground				
Garden			5 PG5_1	310360	2725200

	Parade Ground				
Garden			5 PG5_2	310399	2725200
	Parade Ground				
Garden			5 PG5_3	310429	2725191
Garden	Secondtier	East	ST1	310488	2725080
Garden	Secondtier	East	ST2	310486	2725120
Garden	Secondtier	East	ST3	310484	2725160
Garden	Secondtier	East	ST4	310483	2725200
Garden	Secondtier	Northeast	ST5	310447	2725219
Garden	Secondtier	Northeast	ST6	310412	2725238
Garden	Secondtier	Northwest	ST7	310371	2725225
Garden	Secondtier	Northwest	ST8	310335	2725201
Garden	Secondtier	Northwest	ST9	310301	2725178
Garden	Secondtier	West	ST19	310288	2725159
Garden	Secondtier	West	ST11	310289	2725138
Garden	Secondtier	West	ST12	310289	2725118
Garden	Secondtier	West	ST13	310290	2725098
Garden	Secondtier	West	ST14	310292	2725058
Garden	Secondtier	West	ST15	310291	2725079
Garden	Secondtier	Southwest	ST16	310308	2725027
Garden	Secondtier	Southwest	ST17	310325	2725018
Garden	Secondtier	Southwest	ST18	310343	2725009
Garden	Secondtier	Southwest	ST19	310360	2724999
Garden	Secondtier	Southeast	ST20	310387	2725001
Garden	Secondtier	Southeast	ST21	310402	2725013
Garden	Secondtier	Southeast	ST22	310419	2725022
Garden	Secondtier	Southeast	ST23	310293	2725058
Garden	Secondtier	Southeast	ST24	310457	2725047
Garden	Terreplein	East	TP1	310488	2725080
Garden	Terreplein	East	TP2	310486	2725120
Garden	Terreplein	East	TP3	310484	2725160
Garden	Terreplein	East	TP4	310483	2725200
Garden	Terreplein	Northeast	TP5	310447	2725219
Garden	Terreplein	Northeast	TP6	310412	2725238
Garden	Terreplein	Northeast	TP7	310371	2725225
Garden	Terreplein	Northwest	TP8	310335	2725201
Garden	Terreplein	Northwest	TP9	310301	2725178
Garden	Terreplein	West	TP10	310288	2725159
Garden	Terreplein	West	TP11	310291	2725079
Garden	Terreplein	Southwest	TP12	310308	2725027
Garden	Terreplein	Southwest	TP13	310343	2725009
Garden	Terreplein	Southeast	TP14	310387	2725001
Garden	Terreplein	Southeast	TP15	310419	2725022

Garden	Terreplein	Southeast	TP16	310293	2725058
Garden	Terreplein	Southeast	TP17	310457	2725047





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## Memo To File

### A. Project Information

**Park Name:** Dry Tortugas National Park

**PEPC Project Number:** 104480

**Project Title:** DRTO Rat Management Plan Implementation

**Project Location:**

**County, State:** Monroe, Florida

**Project Leader:** Clayton Pollock

### B. Description of the Current Action (Project Description)

The purpose of the Rat Management Plan Implementation project is to completely eradicate the non-native Black Rat (*Rattus rattus*) from Dry Tortugas National Park (DRTO) and update the prevention, detection, and management of a potential re-introduction of black rats to the park. This project will rely heavily on the established DRTO Rat Management Plan with minor adjustments to reflect new best management practices as well as a more pragmatic approach to rat management. Non-native black rats live on several islands of Dry Tortugas National Park (DRTO) as pests. Historically and currently today, rats occur on Garden, Loggerhead, Bush, and Long Keys, where suitable habitat exists. The rats present human health and safety issues and impact the visitor experience, bird and sea turtle populations, native vegetation, and historical and cultural structures. The National Park Service (NPS) has implemented various management initiatives to mitigate rat populations since the 1930's but have not successfully eradicated rats from the Park. Various suppression efforts have been implemented over the years by NPS staff and volunteers to manage the rat population including the use of traditional "snap traps" in addition to CO2 and electronic traps, as well as baiting attempts. However, efforts were either intended to reduce visitor and rat interactions in very specific locations (i.e. campgrounds) and/or were not conducted exhaustively, island wide.

The United States Department of Agriculture (USDA) Animal and Plant Health Inspection Services (APHIS) Wildlife Services (WS) has statutory authority under the Act of March 2, 1931 (46 Stat. 1468; 7 USCA 8351-7 USCA 8352) as amended, and the Act of December 22, 1987 (101 Stat. 1329-331, 7 USCA 8353), to cooperate with States, local jurisdictions, individuals, public and private agencies, organizations, and institutions while conducting a program of wildlife services involving mammal and bird species that are reservoirs for zoonotic diseases, or animal species that are injurious and/or a nuisance to, among other things, agriculture, horticulture, forestry, animal husbandry, wildlife, and human health and safety.

The APHIS WS program uses an Integrated Wildlife Damage Management (IWDM) approach (sometimes referred to as IPM or "Integrated Pest Management") in which a series of methods may be used or recommended to reduce wildlife damage. These methods include the alteration of cultural practices as well as habitat and behavioral modification to prevent damage. However, controlling wildlife damage may require that the offending animal(s) are killed or that the populations of the offending species be reduced.

The NPS will enter into an inter-agency agreement with USDA APHIS WS with the objective of complete eradication of black rates from Garden Key, Bush Key, Long Key, and Loggerhead Key in order to eliminate human health and safety issues associated with black rats, prevent further predation of nesting migratory birds

(sooty terns, brown noddy terns, roseate tern, laughing gull, least tern, royal tern, common tern, brown pelican, magnificent frigatebird), prevent further degradation of native habitat, and reduce damage to historical structures.

See supporting documentation in PEPC for additional information.

### C. Description of Previous Compliance Documentation

**Decision Document Name:** DRTO Rat Management Plan

**Decision Document PEPC ID:** 41203

**Decision Document Approval Date:** 2014-03-28

#### Mitigations:

The Project Leader must adhere to all applicable mitigations and stipulations outlined in the approved DRTO Rat Management Plan.

All boat transportation required to move personnel from island to island will adhere to standard manatee protection measures.

Roseate terns nest in open areas on Bush Key. They usually arrive in late April and initiate nesting in late May, typically completing nesting by September. No monitoring or eradication efforts will be conducted during the nesting season on Bush and Long Key or any other areas where nesting occurred historically.

The project manager for the DRTO rat management plan will consult with appropriate NPS wildlife specialists to ensure that rat management activities are timed to avoid sensitive seasons and sites for wildlife.

Any rodenticide will be placed in elevated bait stations to minimize non-target exposure.

Throughout the baiting period, surveys will be conducted to locate and remove any dead rats.

The NPS will adhere to the standard protection measures for sea turtles.

Project implementation will be coordinated with sea turtle nest monitoring and activities associated with rat management plan implementation in turtle nest locations will be avoided.

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#### Stipulations:

No attachments to historic architectural fabric. Stakes holding traps should be minimum required to hold traps and should be removed carefully to avoid ground disturbance.

Have a monitor on site for instillation and removal of PVC within the parade ground and outside the fort. Do not install PVC in the "no go" areas on the attached map (PEPC104480\_No\_PVC\_Areas.pdf). Do not install PVC within 10 feet of the headstone on Loggerhead Key. Be careful installing PVC in the areas on the "PEPC104480\_Caution\_Areas.pdf" map, the walkways indicated have brick and brick rubble associated with them.

If items protected by the Native American Graves Protection and Repatriation Act (NAGPRA) are discovered during project implementation all activity must cease in the area of discovery and immediate notice made to the Superintendent, as well as the appropriate federally recognized Indian Tribes / Organizations and State Historic Preservation Officer (SHPO).

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Adherence to all project mitigations and stipulations is assigned to Clayton Pollock.

**IDT Members:**

Jorge Balboa - 106 Advisor  
Bonnie Ciolino - Curator  
Joshua Marano - NHPA Specialist  
Clayton Pollock - Project Leader  
Abby Sadle - NEPA Specialist  
Jimi Sadle - Wetlands/Vegetation  
Glenn Simpson - Park Manager  
Mark Vadas - Archeologist  
Jaci Wells - NHPA Specialist  
James Williams - Historian

**D. Notes**

This project will be carried out under the approved DRTO Rat Management Plan with minimal changes: 1) A slightly different but USDA approved bait and 2) explicitly stating that the objective of this work is to eradicate (not simply manage) rat populations at DRTO. The team reviewed these changes and determined that they are consistent with the level of impacts considered under the original plan. APS

Critical habitat for loggerhead sea turtle nesting was designated after the previous review. Proposed project will not result in impacts to PBFs of critical habitat and a no effect determination was made. No additional Section 7 consultation required. JS

**E. Conclusion**

I certify that the existing NPS NEPA document has been reviewed and there are no substantive differences between the current proposal and its associated environmental impacts and the proposal and impacts as described in the existing NEPA document and associated decision document.

**Superintendent:** \_\_\_\_\_ **Date:** \_\_\_\_\_  
Pedro M. Ramos



OFFICE OF THE SECRETARY  
Washington, DC 20240

October 21, 2022

MEMORANDUM

# United States Department of the Interior

To: Assistant Secretaries  
Bureau Heads

From: Lisa Branum  
Deputy Assistant Secretary  
Public Safety, Resource Protection, and Emergency Management

Subject: Updated Uncrewed Aircraft Systems (UAS) operations and procurement policy

## **1. PURPOSE**

This memorandum establishes current policy for the operation and procurement of Uncrewed Aircraft Systems (UAS) at the Department, including the resumption of all non-emergency UAS flights, the procurement of non-covered UAS, and the adoption of UAS terminology consistent with executive branch guidance. This policy is informed by the Department's completion of a comprehensive review of the UAS program, as required by Secretary's Order (SO) 3379, and addresses the Department's critical need for UAS capabilities while also ensuring that requisite security measures and related mitigations are met pursuant to Executive Order (EO) 13981.

## **2. AUTHORITY**

The Assistant Secretary for Policy, Management and Budget (AS-PMB) discharges the authority of the Secretary for Departmental management with the assistance of Deputy Assistant

Secretaries (DAS) who oversee PMB offices (112 DM 1). SO 3379 specifically authorized the AS-PMB to carry out the requirements of that order and to redelegate such authority as appropriate; the AS-PMB redelegated this authority to the DAS for Public Safety, Resource Protection, and Emergency Services. PMB's Office of Aviation Services (OAS) is responsible for interpreting, developing, amending, and issuing Department-wide aviation management program policies (112 DM 12).

## **3. BACKGROUND**

On January 29, 2020, the Department issued SO 3379, "Temporary Cessation of NonEmergency Unmanned Aircraft Systems Fleet Operations," in order to "better ensure the cybersecurity and supply of American technology of [UAS]." To meet this purpose, SO 3379, pending the completion of an ongoing review, grounded the Department's fleet of UAS (with the exception of emergency operations for missions such as wildland fire or search and rescue) and prohibited additional procurement of "designated" UAS. Per SO 3379's direction, AS-PMB released implementing guidance related to SO 3379 over the course of the year, including the definition of "designated UAS" and a waiver process for non-emergency flights to be reviewed by a Departmental UAS Advisory Board.

The following year on January 18, 2021, the White House issued EO 13981, "Protecting the United States From Certain Unmanned Aircraft Systems," to similarly ensure "the security of [UAS]" and to prevent the use of taxpayer dollars to procure UAS that present "unacceptable

risks.” EO 13981 specifically directed agencies to review whether they could cease procuring “covered UAS.” Under EO 13981’s controlling definition, a majority of the Department’s current UAS fleet are considered covered UAS. Given this classification, and SO 3379’s grounding order pending the completion of an ongoing review, the Department reviewed its UAS program to ascertain potential security risks and identify any measures that might sufficiently mitigate those risks.

On May 30, 2021, the Department’s Executive Aviation Committee (EAC) and related subcommittee completed a comprehensive review of the DOI UAS Program. In a 95-page report outlining its findings and recommendations, the EAC concluded that the Department’s thorough and rigorous defense-in-depth security strategy, which includes overlapping technical, policy, training, and oversight components, sufficiently mitigates potential risks posed by the current fleet of covered UAS. It further found that the Department’s generally “benign” operating environment, largely accessible to the public and typically removed from populated areas or areas of national security interest, created a primarily low security risk mission environment for the operation of covered UAS. These factors, taken together, mitigate the security risk of the fleet as currently understood to an acceptable level.

The Department issues this policy after careful review of the EAC’s findings, executive guidance, and the benefits of UAS operations for the Department and its missions, including critical emergency, natural hazard, and science-related mission efficiencies as well as improving employee safety and dramatically reducing Department costs.

#### **4. POLICY**

Consistent with SO 3379 and the findings of the EAC’s comprehensive review, as well as EO 13981’s direction to prevent unacceptable risks and to consider ceasing procurement of covered UAS, the Department will resume operation of all DOI-mission appropriate UAS flights by the existing fleet and authorize procurement of appropriate non-covered UAS to diversify its fleet and further mitigate potential risk.

The Department will also adopt the EO 13981 terms and definitions related to covered UAS and will no longer use the term “designated UAS.” Further, Operational Procedures Memorandum 11 ([OPM-11](#)) will be the central Departmental policy governing the use and procurement of UAS.

OAS will revise OPM-11 to reflect this updated policy. The process for approving cooperator/affiliate UAS operators remains within [351 DM 4](#), and the OAS UAS Division Chief is responsible for evaluating cooperator approval requests. This memorandum supersedes all previous AS-PMB Departmental and bureau guidance related to SO 3379.

#### **5. IMPLEMENTATION**

##### **5.1 OPERATIONS**

DOI bureaus and offices possessing “covered” fleet UAS may perform all DOI missions deemed appropriate for UAS. Additional Departmental UAS policy is provided within [OPM-11](#) and

subordinate, respective bureau policy. OAS, in collaboration with the bureaus, will revise OPM11 as necessary to implement the directives provided in this policy.

Heads of Bureaus/Offices shall also comply with the following requirements:

1. Limit Department funds from being expended for covered UAS.
2. Condition all Department contracts, grants, and cooperative agreements relying on UAS for achieving approved objectives on the requirement that funds will not be expended on covered UAS.
3. Condition all parties' operations pursuant to a department contract, grant or cooperative agreement on the requirement that covered UAS will not be operated on Departmentmanaged lands.
4. Execute their responsibilities under this Order consistent with guidance from AS-PMB.

## **5.2 PROCUREMENT**

The Department allows the procurement of appropriate “non-covered” UAS to meet bureau mission requirements. Procurement of OAS-approved non-covered UAS must follow the procedures outlined in OPM-11.

## **6. TERMS AND DEFINITIONS**

The term “covered UAS” as defined in EO 13981, and adopted for official use by the Department moving forward, means any UAS that:

- (i) is manufactured, in whole or in part, by an entity domiciled in an adversary country.
- (ii) uses critical electronic components installed in flight controllers, ground control system processors, radios, digital transmission devices, cameras, or gimbals manufactured, in whole or in part, in an adversary country (as defined by the Department of Commerce and referenced in OPM-11.)
- (iii) uses operating software (including cell phone or tablet applications, but not cell phone or tablet operating systems) developed, in whole or in part, by an entity domiciled in an adversary country.
- (iv) uses network connectivity or data storage located outside the United States, or administered by any entity domiciled in an adversary country; or
- (v) contains hardware and software components used for transmitting photographs, videos, location information, flight paths, or any other data collected by the UAS manufactured by an entity domiciled in an adversary country.
- (vi) The term “critical electronic component” means any electronic device that stores, manipulates, or transfers digital data. The term critical electronic component does not include, for example, passive electronics such as resistors, and non-data transmitting motors, batteries, and wiring.

cc: Walker Craig, Acting Director, Office of Aviation Services