

Priorities for Restoring U.S. Islands Through Invasive Species Management

Background

Islands host a disproportionate share of the world's biodiversity relative to their total area. Islands are also particularly vulnerable to loss of that biodiversity from anthropogenic threats, in particular, invasive species. The introduction of invasive species usually results in direct and indirect harm to island species by predation, competition, or alteration of habitat. For example, accidental introduction of the black rat at Palmyra Atoll National Wildlife Refuge (NWR) impacted native seabird, crab, and plant populations, ultimately resulting in fewer nutrients flowing into the coral reef ecosystem.



Black rat depredating a nest

There are more than 23,000 islands under U.S. jurisdiction, not including those in the Great Lakes. The U.S. Fish and Wildlife Service (FWS) assists in the management of several thousand of these islands, many of which are threatened by invasive vertebrates, invertebrates, or plants. To date, there have been more than 1,300 successful invasive species eradications on islands worldwide, including the removal of invasive rats from several NWRs: Midway Atoll, Palmyra Atoll, Desecheo, and Hawadax (within Alaska Maritime).

Invasive species eradication has been shown to have the highest potential for recovery of native species and has played an important role in the recovery of FWS trust resources, notably in Alaska, the Pacific, and Caribbean Islands. Ongoing monitoring and biosecurity measures to ensure reinvasion of invasive species does not occur is equally important following eradication projects.



Desecheo NWR

Importance of Partnerships

In recognition of the importance of addressing the impacts of invasive species on islands, in 2015, the FWS signed the Island Restoration Memorandum of Understanding (MOU, <https://ecos.fws.gov/ServCat/Reference/Profile/48715>) with the non-governmental organization Island Conservation to work together even more strategically on restoring islands through invasive species removals. The American Bird Conservancy, USDA APHIS Wildlife Services, National Park Service, The Nature Conservancy, and Pacific Rim Conservation have also signed on to the MOU.

In 2021, FWS NWRS Headquarters and Regional Invasive Species and Integrated Pest Management Coordinators undertook an exercise to



Red-footed booby, Palmyra Atoll NWR

create strategic lists of islands where invasive species removal would have significant conservation benefit. This document summarizes the work and updates a similar exercise that was carried out in 2009. The results will assist FWS and our Island Restoration Partners in long-term restoration planning, including the creation of future budget initiatives, and to clearly articulate to stakeholders where to focus future collaboration. Priority lists from Regions will aid in determining where future resources should be allocated.

Development of Island Lists

Regional NWRS Invasive Species Coordinators worked across programs in their respective regions to review island resources, invasive species issues, and management feasibility to develop lists of islands where invasive species management would provide the greatest benefit to FWS trust resources. The focus was on islands where eradication or maximum control of one or more invasive species (both animal and plant) was possible and ones with high levels of biosecurity (low chance of invasive species re-establishing). Therefore, barrier and nearshore islands, as well as those with significant human populations, were typically excluded.

The lists from each Region represent a set of sites where invasive species eradication/control is most desirable. Other sideboards for the exercise were: (1) priorities based on biological considerations only (not administrative considerations such as cost or political expediency); (2) islands within the U.S., but not limited to the NWRS; and (3) eradication projects emphasized over maximum control projects.

It is important to keep in mind that the highest priority invasive species project for any island/atoll may change if available funding includes unique requirements, such as the need to benefit specific native species. Therefore, it becomes challenging to develop generalized lists across FWS Regions and programs. Every eradication project requires extensive planning, environmental compliance, permits, partner coordination, and adequate funding that will affect the order in which projects are implemented. As such, the following islands are priorities, but not listed in “priority order”, but rather in alphabetical order by FWS Region and by island.

Lists of Priority Islands for Invasive Species Management and Restoration

The following list of 146 islands/atolls represent opportunities for recovery of high priority trust resources through the eradication/control of one or more invasive species.



Crested auklets, Alaska Maritime NWR

Alaska, 44 islands

AK: Adak, Afognak, Aiktak, Akun, Akutan, Amaknak, Amchitka, Atka, Attu, Barren Islands (East and West Amatuli), Big Koniuji, Camp, Carlisle, Chankliut, Chirikof, Chowiet, Chuginadak, Great Sitkin, Hagemeister, Kagalaska, Kaligagan, Kasatochi, Kateekuk, Kavalga, Kiliktagik, Kiska, Kodiak, Long Island, Samalga, Sedanka, Shemya, Simeonof, St. George, St. Paul, Sud, Tangik1, Umnak, Unalaska, Unalga, Unga, Unimak, Woody, Wosnesenski.

Midwest, 43 islands

IL/MO: Barns, Beaver, Chatton, Crains, Flannigan, Fox, Haps, Harlow, Island Number 419, Kaskaskia, La Grange, Long, Long Island Lake, Rockwood, Shandrew, Slim, Wilkinson; MI: Big Charity, Calf, Cattle, Gull, Harbor, Hat, Humbug, Lighthouse, Little Charity, McIntyre, Poverty, Rocky, Scarecrow, St. Martin, Standerson, Sugar, Thunder Bay; OH: West Sister; WI: Black Oak, Detroit, Gravel, Hog, Kleps, Pilot, Plum, Spider.



Lighthouse Island, Huron NWR

Pacific, 29 islands/atolls/units

AS: Rose, Swains¹; CNMI: Aguiguan¹, Asuncion¹, Sarigan¹, Guguan¹, Maug¹, Rota¹, Uracas (Farallon de Pajaros)¹; HI: Kaho’olawae¹, Ka’ula, Kure¹, Laysan, Lehua¹, Mokapu (North Coast of Molokai)¹, Nihoa; WA: Protection, Destruction; Other: Baker, Cocos¹, Midway, Jarvis, Johnston, Palmyra, Ritidian Unit of Guam, Wake²; OR: Other Oregon Islands, Saddle Rock;

PW: Kayangel¹.



Palmyra Atoll NWR

Northeast, 12 islands/sites

MA: Thacher, Third; ME: Isle of Shoals (Appledore, Malaga, Cedar, Duck, Smuttynose), Stratton Island; NH: Lunging, Seaveys, Star, White.

Pacific Southwest, 9 islands

CA: Anacapa¹, Marin Islands¹, San Clemente¹, San Miguel¹, San Nicolas¹, Santa Catalina¹, Santa Cruz¹, Santa Rosa¹, South Farallon Islands.

Southeast, 9 islands

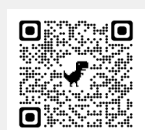
GA: Blackbeard; LA: Breton; VI: Navassa; PR: Buck Island, Cayo Luis Peña, Culebrita, Desecheo, Mona¹, Monito¹.



Leatherback sea turtle, Caribbean Islands NWR Complex

Additional detail on these islands can be found at <https://ecos.fws.gov/ServCat/Reference/Profile/143912>.

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¹ Non-FWS Managed, ² U.S. Air Force and FWS Managed