United States Department of the Interior

FISH AND WILDLIFE SERVICE

Pacific Reefs National Wildlife Refuges and Marine National Monuments
300 Ala Moana Blvd., Room 5-211
Honolulu, Hawaii 96850

In Reply Refer To:

MEMORANDUM

To: Project Leader, Hawaiian and Pacific Islands National Wildlife Refuge Complex

From: Project Leader, Pacific Reefs National Wildlife Refuge Complex

Digitally signed by Susan White
DN: cn=Susan White, o=U.S. Fish and Wildlife Service, ou=Pacific Reefs National Wildlife Refuge Complex, email=susan_white@fws.gov, c=US
Date: 2011.08.01 15:55:07 -10'00'

Subject: Summary of June 2011 implementation of Palmyra Atoll NWR rat eradication project

Date: July 29, 2011

Between June 3 and 30, the Palmyra Atoll National Wildlife Refuge rat eradication project was implemented through a partnership between the Service, The Nature Conservancy (landowners and co-managers of the atoll), and Island Conservation (IC). Although it will be 2 years before we know the ultimate outcome for eradication; the eradication team can be lauded for an incredible accomplishment. Over the 28-day period the team of 41 people from 5 countries utilizing 1 ship, 2 helicopters, 6 small boats, 12 slingshots, bait stations, and hundreds of field hours systematically applied 38,560 kg of rodenticide per the Final Environmental Impact Statement and following EPA supplemental label guidelines with 5 methologies to every part of the atoll in order to eradicate the estimated 30,000 rats living on the 1 square-mile of land. Amidst mechanical breakdowns, weather shutdowns, and extreme bird-helicopter hazards, this remarkable team of people came together to accomplish the highly complex mission with no major accidents or human injuries.

Throughout the month, the team applied bait using aerial and hand broadcast, bait stations, and thousands of specially designed canopy baits ("bolas") that were slung into palm crowns from the ground (with slingshots) and from the air by a crew member harnessed on a 50-foot line hovering from a helicopter. Application rates were within 5% of the targeted rate, and below maximum allowable limits. The first application (targeted at 80 kg/ha, not to exceed 90 kg/ha) was applied at 84 kg/ha. The second application (targeted at 75 kg/ha, not to exceed 90 kg/ha) occurred 10 days after the first application began and was applied at 79.3 kg/ha. After a rat was detected on July 10 in the camp area on Cooper Island (18 days after the second bait application); an EPA-authorized "detection response" bait application was conducted in the vicinity of the rat detection at a rate of 71.6 kg/ha (targeted 80 kg/ha). Altogether, roughly 43,000 kg was transported to Palmyra; and of that, roughly 38,560 kg has been used in the project (the EPA supplemental Palmyra label allowed for 47,000 kg of bait for the atoll overall).

The team's aerial broadcast application (with 2 helicopters) was complicated by more than 110,000 nesting sooty terns and thousands of red-footed, brown, and masked boobies sharing the airspace. The helicopter pilots, among the most experienced in island eradications in the world, remarked that bird densities were greater than anything they had previously experienced. As a result, operational plans were augmented to enhance the safety of aircrew by instructing them on bird behavior, modifying application timing to try to coincide with lower bird activity, enhancing emergency response capabilities, and slowing

flight speed to improve bird avoidance. Project leadership also revised and instituted a precautionary protocol for handling suspected bird strikes.

An operational change was also made to authorize the pilots to use their discretion for gauging potential accidental bait drift into the marine environment as well as ensure their safety. The GIS treatment blocks used to direct and document aerial baiting were based on 2010 satellite imagery that could not differentiate between the actual shoreline and dense vegetation overhanging the shoreline, resulting in the potential to add to accidental bait drift. Pilots were directed use their best judgment rather than strictly flying by the map when applying bait to coastal areas in order to minimize the amount of bait drift into the marine environment, maximize the evenness of bait spread across the islands, as well as provide additional safety margin when flying around birds.

The extent of nontarget mortality due to the rodenticide will not be known until USDA laboratory testing is completed later this year, but as of July 29, migratory bird carcasses collected and suspected to be possible victims of the rodenticide application numbered 8 bristle-thighed curlew, 2 pacific golden plovers, 2 ruddy turnstones, and 1 wandering tattler (the Migratory Bird Special Purposes permit authorized take of 182, 62, 35, and 48 of these species; respectively). Other wildlife carcasses found that showed no signs of bait exposure but were discovered in the refuge during the hundreds of person-hours spent canvassing the islands include roughly 40 small mullet, 1 green turtle, 7 land crabs and 2 sooty terns. Additionally, there were 11 known or suspected bird-helicopter collisions and 1 bird-airplane collision during the operation. No carcasses have been found since the last one found on July 5, and no other injury or mortality has been detected as a result of the bait application.

In addition to the successful baiting, there were additional notable discoveries and achievements made by this team during the implementation. Team members defied odds and are the first to have successfully captured and cared for bristle-thighed curlews. Thirteen curlews and one pacific golden plover were caught and have been cared for since early June. Two of the curlews were confirmed to have been exposed to bait prior to capture and were successfully treated. All 14 birds have been, and continue to be held in captive care, with a projected release in early August. All are stable, eating on their own, and some have gained weight since their capture. The scientific knowledge gained through this capture and care will provide significant contributions to future conservation programs focused on bristle-thighed curlews and other shorebirds. Thirty individuals of two native gecko species (one undescribed) were also captured, cared for, and have now been successfully released. In addition, the three elderly domestic animals (one dog and two cats) who's residence at Palmyra were grandfathered in when it was purchased, remain in close care of the island staff and are in relatively good health for their age. During the significant field hours spent on the outer islands, a team member found an unconfirmed, yet possible first evidence of ancient Polynesian presence at Palmyra. Finally, targeted and independent monitoring of the bait application and possible environmental effects from this action was undertaken by the USDA, with Service and IC assistance, throughout the operation and continues through August. Samples of wildlife (geckos, land and marine crabs, fish, cockroaches, ants), soils, water, and carcasses collected will have follow-up analysis by the USDA to provide additional scientific understanding of the movement and fate of the toxicant in the ecosystem to inform future eradication operations.

Two final components that yielded highly favorable results in this project came from lessons learned on previous eradication efforts. The team was organized, trained, and committed to the implementation of an Incident Command Structure (ICS), under Service lead. The group used a structured and documented decision-making process to guide this highly complex, multifaceted, dynamic, and time-sensitive project. The ICS provided clear levels of decision-making, chains of communication, and organization. These factors were essential to carrying out the mission clearly and effectively and the commitment and expertise of each talented individual on this team made it work.