

## **Rat Island Habitat Restoration Project - Fall 2008 eradication summary**

### **INTRODUCTION**

The Alaska Maritime National Wildlife Refuge, partnering with The Nature Conservancy and Island Conservation, recently conducted an invasive rat (*Rattus norvegicus*) eradication on Rat Island, located in the Aleutian Islands. The Rat Island Habitat Restoration Project was conducted following measures designed to reduce risk of harm to non-target species, as well as the conditions of an Incidental Harassment Authorization (IHA) issued by National Marine Fisheries Service regarding Steller sea lions and Pacific harbor seals under the Marine Mammal Protection Act. Further, as indicated in Endangered Species Act (ESA) Section 7 consultations with the US Fish and Wildlife Service in Anchorage, boating was limited to minimize disturbance to sea otters.

Operations began September 28, 2008 when the team arrived on-island and conducted the initial perimeter flight and marine mammal count. The eradication operation concluded nine days later on October 6, 2008 after completing demobilization of the camp and aircraft and a final marine mammal count. Initially, weather conditions were typical of the Aleutian Islands in the fall with rough seas and steady winds but soon changed to uncharacteristically clear, calm conditions that persisted for the duration of the project. The excellent weather allowed the team to complete the project earlier than was anticipated. The eradication was carried out as planned and all activities were conducted in a manner that minimized wildlife exposure to helicopter, watercraft or field crew operations.

### **METHODS**

Aerial bait broadcast commenced on September 29. Timed with a pause between, two applications of grain-based bait pellets containing Brodifacoum 25W Conservation rodenticide were broadcast over the entire island, using spreader buckets slung beneath two Bell 206 Long Ranger helicopters. To prevent bait broadcast into fresh and marine water habitats, alternate techniques were used, allowing precise bait placement. The coastal areas of the island were aerially treated with a controlled dribble bucket technique, minimizing the risk of broadcast into the marine ecosystem. In freshwater environments, aerial exclusion zones established around the upland lake clusters were manually baited. Four teams of four individuals, overseen by an experienced ground baiter with AK pesticide applicator certification, conducted systematic hand-baiting of the terrestrial areas within these exclusion zones. All application of bait to the island was completed on October 5.

Ship support operations were conducted from Gunner's Cove. The refuge vessel, M/V *Tiglax*, also visited both ends of Rat Island, known pinniped concentration areas, to support marine mammal counts before and after helicopter flights in those areas. Concurrent with the broadcasts, a system of snap traps was used to monitor bait consumption and effectiveness by rats. Traps were set along beaches within Gunner's Cove over two days following bait application, for a total of 43 trap nights. In total, 23 rat carcasses were collected from the trapping effort or found dead along the beaches, then necropsied to confirm anti-coagulant

exposure. All either displayed internal bleeding or had bait pellets in the gut, suggesting it was effective in causing rodenticide-induced mortality.

While the eradication was timed to avoid overlap with the critical breeding period of the non-target species, various individuals were still present on the island during the project window. Marine mammal counts and incidental observations were recorded as part of the IHA and Section 7 requirements; all fell within the range of normal behavior. Incidental observations of birds were made during the aerial operations to document the general abundance of species encountered. Although specific surveys were not conducted, no birds were observed displaying visual symptoms of anti-coagulant poisoning or found dead during or immediately following the broadcasts.

#### MONITORING

The success of the eradication will be assessed in June 2009 and final outcome of the project determined two years post-eradication (Fall 2010). This will involve monitoring coastal and interior transects for rat presence using multiple indicators (traps, chew blocks, etc), concentrated in areas of critical rat habitat. Ultimately, the eradication will be confirmed by beneficial ecosystem changes; following rat removal there is expected to be significantly improved native habitat and long-term lasting benefit to birds with release from the non-native source of predation.

To monitor the response of native species to rat removal, population-level biological surveys were conducted on Rat Island and nearby islands in 2007 and 2008 to establish baseline population indices. These surveys will be repeated on-island 1, 2, and 5 years following the eradication, and compared with other pre-existing data, to assess ecosystem recovery. These include surveys for population abundances of common avian species (seabirds, shorebirds, waterfowl, song birds and raptors), marine mammals, vegetation, and intertidal flora and fauna. Further, the pre-eradication surveys will be repeated on the nearby islands, all within the Rat Islands group, as a comparative reference of regional change in avian populations.

#### CONCLUSION

The Rat Island Habitat Restoration Project was proficiently accomplished in a minimal time window during late fall while minimizing the impact to marine mammals and other non-target species; nor did operation activities jeopardize any federal ESA-listed or MMPA protected species or their habitats. This project is an important first step towards restoring habitat on Rat Island and potentially on other rat-invaded islands of distinct ecological importance within the Aleutian archipelago.