



House mouse eradication from the South Farallon Islands  
2010 scope of work  
*prepared on March 26, 2010*

Overview

The Farallon Islands provide critical habitat for seabirds and pinnipeds, and support some of the world's largest nesting seabird colonies including ashy storm-petrel (*Oceanodroma homochroa*), Brandt's cormorant (*Phalacrocorax penicillatus*) and western gull (*Larus occidentalis*). On the South Farallon Islands, which include two main islands- Southeast Farallon and West End Islands, introduced house mice (*Mus musculus*) appear to be directly and indirectly impacting the breeding success of burrow nesting seabirds. The US Fish and Wildlife Service (USFWS), partnered with PRBO Conservation Science and Island Conservation, proposes to protect and restore the ecosystem of the Farallones, particularly seabirds and other native biological resources, by eradicating non-native house mice. The currently preferred technique for mouse eradication requires an aerial application of pelletized grain bait containing rodenticide across the island. Prior to commencing with the proposed eradication, a series of work objectives must be met to trial the efficacy of the preferred technique, and prepare an Environmental Assessment (EA), in accordance with the National Environmental Policy Act (NEPA) and its associated regulations, to determine whether mouse eradication would have significant impacts on the quality of the human environment. This scope of work describes tasks related to the proposed mouse eradication which will be completed in 2010.

Description of Work

The work tasks are structured in six distinct phases. The methods for each phase are further described, and total costs summarized in Table 1.

**Phase 1: NEPA Review and Revisions**

In 2006, Island Conservation obtained funding to prepare an environmental impacts analysis, as required by the National Environmental Policy Act (NEPA), for non-native house mouse eradication on the South Farallon Islands.

While the impacts analysis – an Environmental Assessment (EA) – is nearly complete, its development has taken longer than anticipated due to long delays from other anticipated sources of funds, as well as personnel transitions both at FWS and IC.

Furthermore, the analysis uncovered critical environmental issues that required additional scrutiny. The primary environmental issue identified during the NEPA analysis process is the potential vulnerability of gulls to non-target impacts from the mouse eradication. The Farallones are home to the world's largest colony of western gulls, and the population ecology of the Farallones western gull colony is unique. The importance of understanding the potential risk to gulls was underscored by the observation of numerous gull mortalities following a similar rodent eradication operation on Rat Island in the Aleutian Islands, AK.

Long-awaited funds for project implementation will soon be available. In preparation for implementation, IC proposes to complete the environmental compliance process for mouse eradication on the Farallones. Specifically, completion of the environmental impacts analysis and associated timeline include:

- i) Administrative draft Environmental Assessment (EA) for review and comment by FWS Region Office, FWS Ecological Service, FWS Division of Migratory Birds Management, and external natural resource management agencies. These reviews will be contingent upon results from a comprehensive gull risk analysis (refer to Phase 4). *estimated completion July '10*
- ii) Minimum Requirements Analysis (Wilderness Act), which will be incorporated into the EA during this work phase. *estimated completion July '10*
- iii) Biological Assessments for Endangered Species Act (ESA) listed species, which will be incorporated into the EA during this work phase. *estimated completion July '10*

*Duration of phase:* March-July 2010

*Number of people:* 1 key personnel to complete EA draft, not including personnel to provide review and comment

*Deliverables:* draft EA (refer to Phase 2)

## **Phase 2: NEPA Document Release**

After administrative review of the EA is complete, and revisions and comments from reviewing parties have been incorporated, the EA will be circulated to the affected public for review as required by NEPA.

- i) A draft EA will be made available for public review, announced in the Federal Register, media outlets such as regional papers of record, and through directly contacting individuals and organizations that have expressed or are otherwise thought to have interest in the project. The public review period will include a public information session in which members of the public will be able to meet face-to-face with FWS and IC

personnel to discuss the project. A formal public comment period will be open for at least 45 days. Estimated circulation date for Draft EA *Sept. '10*

- ii) A Final EA will be prepared after the public comment period has closed, addressing the comments that FWS has received. The Final EA will be accompanied by a Finding of No Significant Impact (FONSI), signed by the appropriate decisionmaker at FWS (likely the Project Lead for the SF Bay NWRC, but possibly the FWS Regional Director). Estimated date of FONSI *Jan. '11*
- iii) If, at any point during Phases 1 or 2, the FWS decision makers determine that a FONSI would not be appropriate (i.e., significant impacts to the environment appear likely), this Scope of Work will need to be revised substantially. The most likely course of action in this case would be the issuance of a Notice of Intent to prepare an Environmental Impact Statement, which would require additional public input and document preparation time and would add additional cost and time.

*Duration of phase:* July 2010 – January 2011

*Number of people:* 1 IC compliance specialist to manage EA circulation and revision, 1 IC Project Manager to contribute to public information session, 1 FWS personnel to administer FWS requirements for public EA circulation and collect & synthesize public comments, not including personnel to provide support for public information session and addressing comments

*Deliverables:* Public Draft EA, Final EA including public comments

### **Phase 3: Additional Compliance**

The proposed mouse eradication would be carried out in compliance with all applicable Federal and state laws and regulations. Therefore, in preparation for implementation applications for permission or authorization to conduct the eradication will be completed to coincide with the administrative draft of the Environmental Assessment (anticipated July 2010). These permit applications include:

- i) Application for Manager's Permit from Gulf of Farallones National Marine Sanctuary
- ii) Application for incidental take of migratory birds (under the Migratory Bird Treaty Act)
- iii) Application for National Pollution Discharge Elimination System individual permit (under the Clean Water Act)
- iv) Application for Incidental Harassment Authorization (under the Marine Mammal Protection Act)

*Duration of phase:* Mar- July 2010

*Number of people:* 1 IC compliance specialist to complete permit applications, 1 FWS personnel to administer FWS requirements for permit application, not including personnel to provide review and comment

*Deliverables:* completed permit applications, as listed above

## Phase 4: Gull Risk Analysis

In order to better understand the potential risk to western gulls, IC proposes to request the assistance of experts in risk analysis modeling to quantify potential impacts to gulls on the Farallones as a result of mouse eradication operations. The gull impact model would be used to enumerate the number of potential gull mortalities (both low and high-end estimates) following aerial bait application. The model would use input variables, including expected gull population size during time of proposed eradication, bait availability with eradication time window, toxicant environmental fate, and likelihood index for each possible gull exposure pathway based on dietary preference. Criteria for model analysis would include use of best available scientific evidence, clear identification of model uncertainty and sources, and conservative estimate of anticipate impact (e.g. err on the side of overestimation). Model results would be applied to complete the comprehensive environmental compliance process for mouse eradication on the Farallones (refer to Phase 1).

*Duration of phase:* Apr- June 2010

*Number of people:* risk model consultant (likely with subcontractor to avian population ecologist)

*Deliverables:* completed gull risk assessment model report

## Phase 5: Reporting and Communications

To support the primary goal of the project – to protect and restore the ecosystem of the South Farallon Islands by eradicating non-native house mice – the project partners will develop a strategic communications plan. The purpose of the communications planning is to:

- i. support the environmental assessment with strategic communications to educate local and regional agencies, decision-makers, NGOs, and the public about the purpose and need for eradication and the expected long-term conservation benefits;
- ii. mitigate any potential opposition to eradication by garnering support from key audiences;
- iii. develop a strategy for handling crisis communications.

The partners will create a communications team made up of a staff member each from Island Conservation, the USFWS, and PRBO Conservation Science. In 2010, the team will create a plan and key messages and produce information to educate constituencies about the project (via web

sites, printed materials, PowerPoint, etc.). Communications planning will begin as soon as funding is available (~May 2010) with key messages and background materials developed to coincide with release of the Environmental Assessment. It is expected that the communications team, strategy development, and outreach will continue in follow-on years through implementation, eradication confirmation, and 1-5 years of recovery monitoring using additional funds.

The Communications plan is a critical path element in the mouse eradication and must be completed prior to the EA release for public comment. If funding is delayed for the Communications plan this will inevitably delay the NEPA timeline, which may in-turn delay implementation of the eradication.

*Duration of phase:* May-Dec 2010

*Number of people:* 3 key personnel for the core communication team

*Deliverables:* communication plan and associated educational material

*Equipment/supplies to be purchased:* Website url, website development (contract), some printed materials.

## Phase 6: Biomarker trial

Prior to the proposed eradication, a field trial that will be conducted on Southeast Farallon Island in fall 2010 to assess the efficacy of mouse eradication at the target application rate of a preferred bait (using a placebo replica infused with the non-toxic biomarker pyranine), and to monitor non-target species exposure to broadcast pellets. Specifically during the trial the following will be evaluated:

- i) mouse density and reproductive status using mark-recapture techniques;
- ii) mouse home range size and movement using radio telemetry;
- iii) mouse acceptance and palatability of preferred bait type using paired food choice trials;
- iv) the rate of bait removal using bait consumption plots to extrapolate a target application rate for the eradication;
- v) determine the probability of eradication by assessing mouse exposure to a biomarker from a non-,toxic, biomarker-infused bait applied at the target application rate in study plots;
- vi) and evaluate what non-target species are at risk of primary or secondary rodenticide exposure using a biomarker from a non-,toxic, biomarker-infused bait applied at the target application rate in study plots.

*Duration of phase:* field trial Nov- Dec 2010

*Number of people:* 4 (not including participation by PRBO field staff)

*Deliverables:* field trial report, including considerations for eradication and non-target mitigation

*Equipment/supplies to be purchased:* Sherman mouse traps; trap supplies; biomarker bait; bait application and monitoring supplies (bait application measuring devices, survey flags); UV lights for biomarker screening; dissection supplies; gull capture devices (box traps, spotlight, noose pole)

**Table 1.** House mouse eradication from the South Farallon Islands 2010 estimated project costs.

		Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6	TOTAL
	Description	NEPA reviews / revisions	Document release	Additional compliance	Reporting & Communications	Biomarker trial	Gull risk analysis	
<b>INCOME</b>								
	Commonweal					35,000		<b>35,000</b>
	NFWF 2006	134,548						<b>134,548</b>
	Total income received through 12/31/09	134,548				35,000		<b>169,548</b>
	Project expenses(1/1/06-12/31/09)							<b>190,058</b>
	Net income through 12/31/2009							<b>(20,510)</b>
<b>2010 Income</b>								
		14,952						14,952
<b>2010 EXPENSES</b>								
		TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL
	Project Services	140	1,510	39	238	1,503	173	<b>3,605</b>
	Field Work	85	57	37	131	10,416	1,004	<b>11,730</b>
	Grants to Others							
	Travel	1,853	2,487	1,653	544	22,936	682	<b>30,156</b>
	General Management							
	Personnel Costs	7,611	2,458	2,471	4,018	41,026	1,853	<b>59,437</b>
	Professional Services	466	313	202	10,718	3,649	15,900	<b>31,248</b>
	Occupancy Expense	248	167	108	382	1,943	479	<b>3,326</b>
	SUBTOTAL PROGRAM EXPENSE	10,402	6,993	4,509	16,032	81,473	20,092	<b>139,501</b>
	ALLOCATED G & A	1,640	1,103	711	2,528	12,846	3,168	<b>21,996</b>
	TOTAL EXPENSES (2010)	12,043	8,095	5,220	18,560	94,319	23,260	<b>161,497</b>
	<i>2010 Deficit</i>							<b>(167,055)</b>