

Restoring the South Farallon Islands: Invasive Mouse Eradication Project

Farallon National Wildlife Refuge

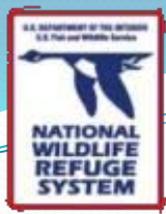


Alternatives: Meeting Goals

- To update cooperating/reviewing agencies on the proposed non-native house mouse eradication project
- To provide a summary of public scoping comments
- To receive comments on the project issues and alternatives to consider
- To provide a forum for input on development of an informed decision-making process

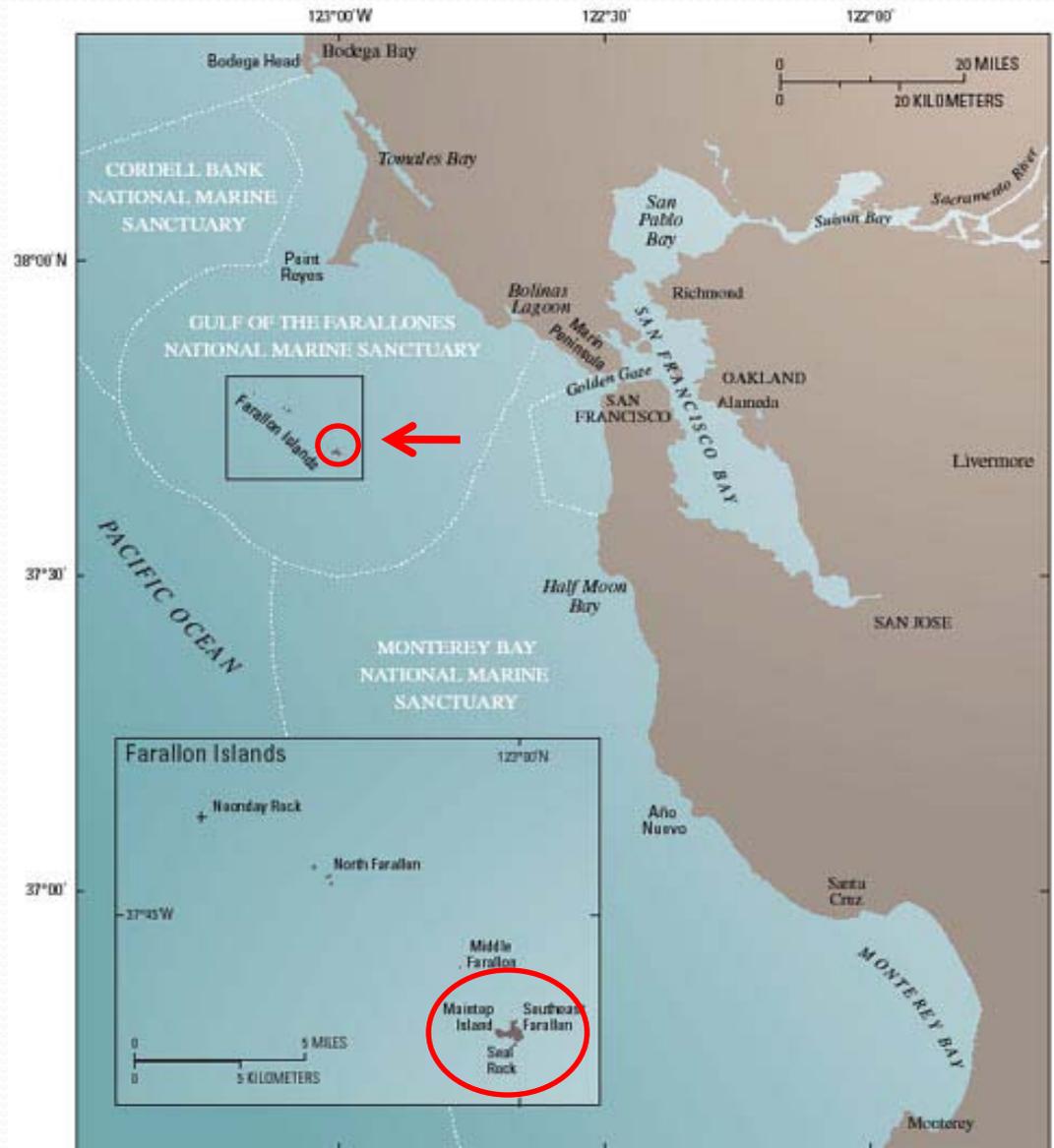
Agenda

- **Introductions; Purpose & Goals of the Meeting** (9:00 - 9:20)
- **Presentation: Project Background** (9:20 – 9:45)
- **Summary of DEIS Scoping Period Comments** (9:45- 10:00)
- **Summary of Available Rodenticides**
- **Questions on the Presentations** (10:00 - 10:15)
- **Receive input on Alternatives, Issues, etc....** (10:30 - 11:30)
- **Present draft Alternative Selection Process;
solicit comments** (11:30 - 12:00)
- **Adjourn** (12:00)



Location of the South Farallon Islands

Approx. 27 miles off the coast of San Francisco



South Farallon Islands (Farallon National Wildlife Refuge)



Size: 120 acres (49 ha); Very steep 370 feet high



300,000 Breeding Seabirds

13 Species

Brandt's Cormorant



Ashy Storm-Petrel



Western Gull



Tufted Puffin



Common Murre



Pigeon Guillemot



Rhinceros Auklet



Cassin's Auklet

Five Species of Pinnipeds

~3,000 – 6,000 Animals

California Sea Lion



Steller Sea Lion (threatened)



Harbor Seal



Northern Elephant Seal



Northern Fur Seal

Endemic Species

Farallon Arboreal Salamander



Farallon Camel Cricket



Human Impacts on Farallones



- Early 1800s: Seals, sea lions decimated for fur and blubber.
- 1848-1900: Common Murre eggs collected for sale in San Francisco
- WWII: U.S. Navy
- 1855 – 1969: Lighthouse keepers, impacts heavy
- Invasive mice, rabbits, cats, plants introduced, causing major impacts to the island ecosystem

Direct Impacts of Mice on Farallones

Egg & Chick
Predation



Native and
Endemic
Plant
Consumption



Weed Dispersal



Introduced
House
Mice

Likely impacts on:
Salamanders and Invertebrates

Feed Burrowing Owls





Island Extinctions:

- **68-94%** of historic bird, mammal, reptile & plant extinctions are on islands
- **55-67%** of island extinctions are due to invasive species introductions
- **Invasive rodents cause ~2/3 of all bird & reptile extinctions on islands**

Indirect Impacts of Mice

Ashy Storm-Petrels

- Endemic to coastal California and northern Baja California
- World population: 5,000-7,000 breeders; 50% on Farallon Islands
- 40% decline over 20-yr period



Ashy Storm-Petrel



- Small bird, limited range, small world population size
- Long life span (35 yrs)
- Low annual production of young
- = Highly susceptible to predation, other threats
- USFWS Species of Concern
- California Species of Special Concern
- **IUCN globally endangered**

Burrowing Owl

(fall-winter)



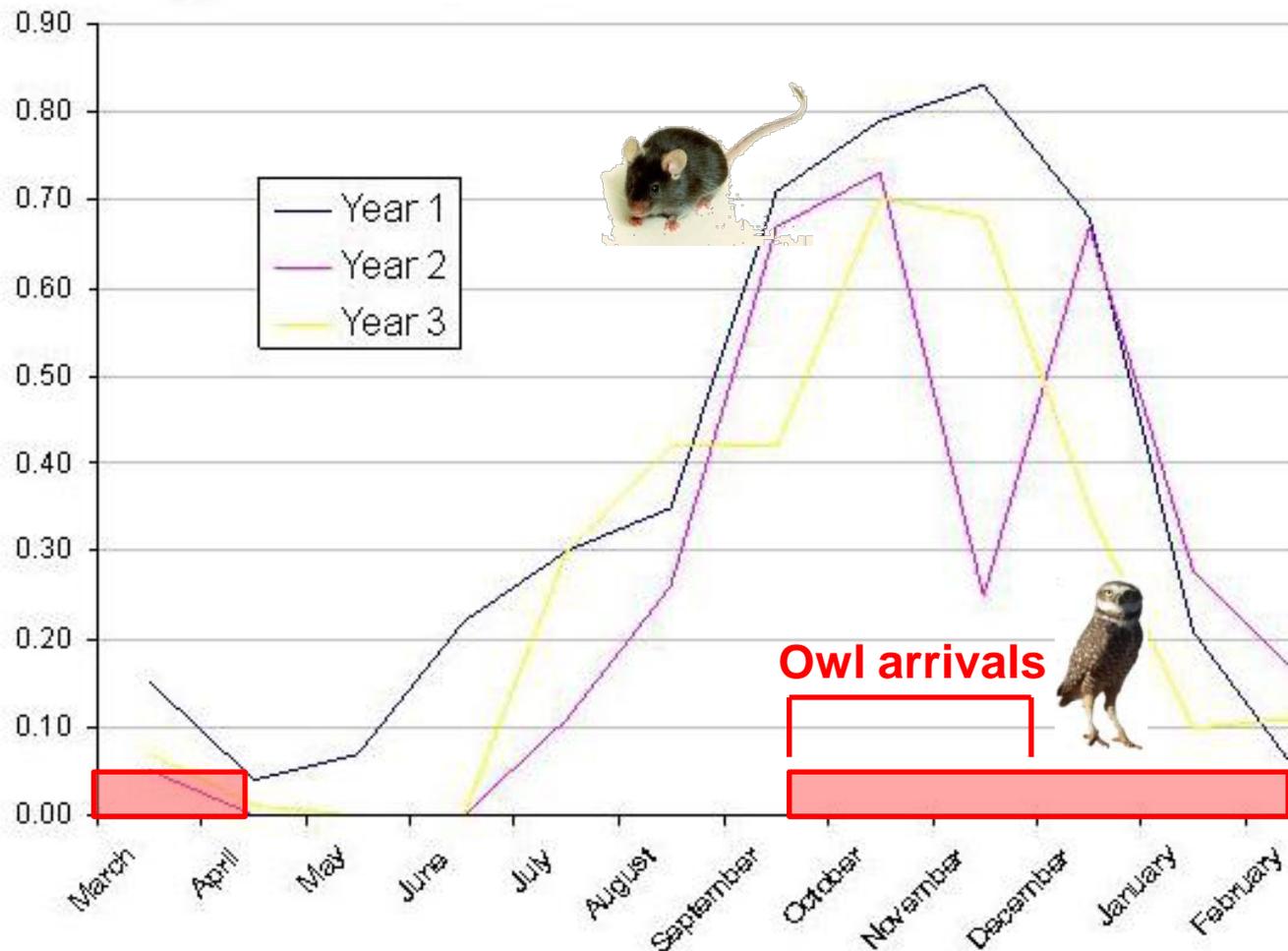
Ashy Storm-Petrel

feather pile



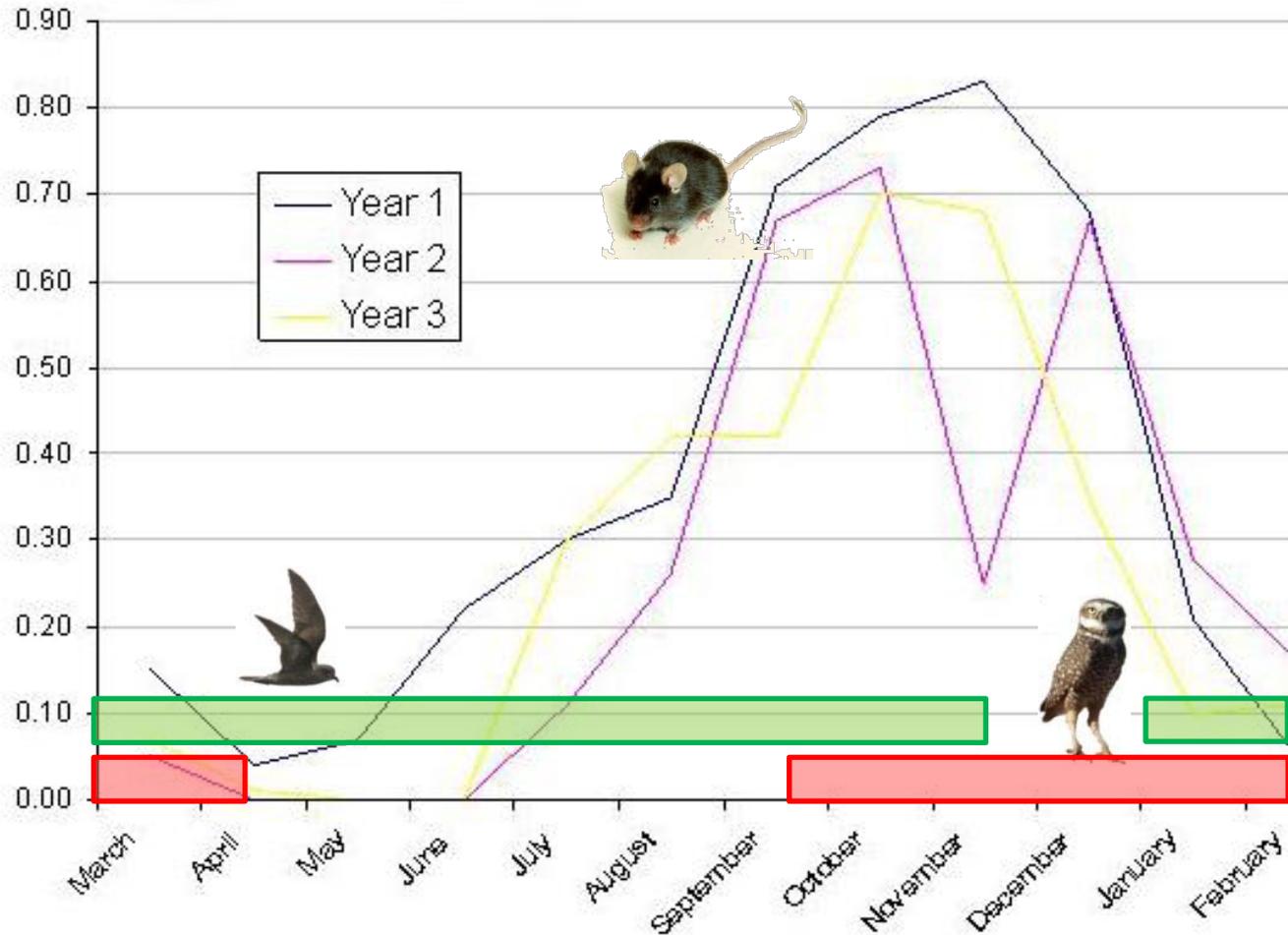
- 40% (avg. 225-270) petrel carcasses found per year are from burrowing owls.
- Petrel remains in 70% of owl pellets (April – July)

Farallon House Mouse Population Cycle



(Y axis = mouse trap success)

Farallon House Mouse Population Cycle



(Y axis = mouse trap success; X axis = month)

Mouse Impacts on the Ecosystem

- **Plague-levels of mice:** over 1200 mice per hectare in the fall (most heavily affected islands worldwide have ~20 - 200/ha)
- Encourage overwintering by **Burrowing Owls**.
 - Owls switch to prey on **Ashy storm-petrels** when mouse population crashes.
 - Owls also prey on declining **Cassin's Auklet, Leach's Storm-Petrel**.
 - Many **owls** eventually die as well
- Impacts likely to endemic **salamander, invertebrates** due to mouse predation or competition for resources;
- Likely impact to **native plants** from consumption; **invasive plants** by seed spread .
- Other impacts not realized.



Farallon NWR Management

- Closed to public access to protect wildlife and habitats.
- Removal of feral rabbits and cats in the early 1970s.
- Control of invasive plants (ongoing).
- Installation of boardwalks to prevent trampling of sensitive habitat.
- Removal of unneeded structures to increase natural habitat.
- Artificial habitat creation for seabirds
- Boat closures and aircraft restrictions (through other agencies)
- **Introduced house mice not yet addressed**

Farallon National Wildlife Refuge

*Final Comprehensive Conservation Plan
and Environmental Assessment*



S.S. Jacob Luckenbach and Associated Mystery Oil Spills

FINAL
Damage Assessment and Restoration Plan/
Environmental Assessment



November 1, 2006

Prepared by:
California Department of Fish and Game
National Oceanic and Atmospheric Administration
United States Fish and Wildlife Service
National Park Service



Purpose and Need

To assist in the protection and restoration of the South Farallon Islands ecosystem, particularly seabirds and other native biological resources, by eradicating non-native house mice.



Principles of Eradication Projects

- Method used must meet the *Purpose and Need*
- Must result in complete removal (100%) of all mice
(*Control is not eradication*)
- Method should minimize non-target impacts
- Long-term ecosystem benefits must outweigh any short-term impacts or likely risks of the project

History of the Farallon Restoration Partnership



Luckenbach Oil Spill Trustee Council



Farallon Mouse Project History

- **2004:** Farallon Feasibility Study Written for Mouse Removal
- **2006:** Initial EA Scoping Period and Public Scoping Meeting
- **2006-09:** Draft EA development with NFWF and IC funds
- **2006:** Luckenbach Oil Spill Restoration Plan identified Farallon mouse eradication as preferred project for seabird restoration
- **2009:** Farallon NWR Comprehensive Conservation Plan & EA
- **2010:** Luckenbach Oil Spill Restoration funding approved
- **Sept. 2010 - February 2011:** EA development & field studies
- **Feb 10 2011:** Decision to switch to an EIS
- **April 2011:** Notice of Intent for Draft EIS issued
- **April 13- June 10, 2011:** Public Scoping Period
- **May 12, 2011:** Public Scoping Meeting

Removal Methods Initially Considered

(in the previous EA planning process)

- Introduced predators
- Live-Trapping
- Snap-trapping
- Virus – Sterilization
- **Rodenticide - only successful proven method: >330 islands**
 - Two compounds are currently registered for this use in the US:
 - **Brodifacoum** has a demonstrated history of eradication success on mice;
 - **Diphacinone** has not been used successfully for a mouse eradication

We are now completely revisiting all potential alternatives to consider for the DEIS.

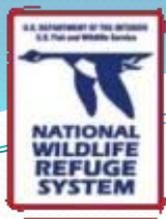
Environmental Compliance

- National Environmental Policy Act (NEPA)
- Pesticide Use Permit (PUP)
- Federal Insecticide Fungicide and Rodenticide Act (FIFRA)
- Clean Water Act (CWA) - NPDES
- Wilderness Act (WA) – Minimum Requirements
- Migratory Bird Treaty Act (MBTA) – Special Purpose
- Endangered Species Act (ESA) – Section 7
- National Historic Preservation Act (NHPA) – Section 106
- Marine Mammal Protection Act (MMPA)
- National Marine Sanctuaries Act (NMSA)
- Coastal Zone Management Act (CZMA) – Consistency

Current Proposed Milestones:

- **Incorporate scoping comments from agencies and the public into the Draft Environmental Impact Statement (DEIS)**
- **Develop and implement DEIS Alternative Section Process (make informed decisions on reasonable alternatives)**
- **Present Draft Alternatives and Selection Process used to cooperating agencies for your review and comments**
- **Prepare Draft EIS for partner review; incorporate comments**
- **Prepare Draft EIS for agency review; address comments**
- **Prepare DEIS for public comment; address comments**
- **Prepare Final EIS and Record of Decision (ROD) - Spring 2012?**
- **Implementation if action alternative selected - Fall 2012?**





Summary of Scoping Comments

Overall characterization:

- We received 48 comments
(545 with WildCare petitioner comments)
- 2,709 signed WildCare petitions
(497 included comments) against the project
- 41 signed other petitions against the project.

Overall Characterization of the Scoping Period Comments

- 12 - **Fully support** the listed alternatives (25%)
(0.4% including petitions)
- 8 - **Support w/exceptions** the listed alternatives (17%)
(0.3% including petitions)
- 24 - **Against rodenticide use** (50%) (0.9% w/petitions)
- 4 - **Against mouse eradication** (8%) (0.1% w/petitions)
- 2,751 - **Against Brodifacoum-25 use** (98% with petitions)

Common Comment Themes

- Reduce non-target impacts (9)
- Analyze more than one rodenticide (4)
- Justification for purpose and need (3)
- Analyze success/failures of previous rodent eradications (7)
- Minimize rodenticide dispersion into marine environment (3)
- Translocate of burrowing owls (7)
- Do not support use of rodenticide (22)
- Support the use of mechanical methods to eradicate mice (43)
- Do not support use of Brodifacoum-25 Conservation (2,709)

EPA Comment Summary

- **Purpose and Need:**

- Write a clear Purpose and Need statement
- Provide a framework for a complete project description and alternatives

- **Alternatives:**

- Evaluate a reasonable range of alternatives
- Include different rodenticides, different application rates, and combined methods. Also consider non-pesticide alternatives
- Make the alternatives selection process transparent

EPA Comment Summary (cont.)

— **Application Methods:**

- Considerations for rodenticides – palatability, appropriateness of toxicant for target population, potential for resistance, potential efficacy, and non-target impacts
- Don't limit pre-project studies to brodifacoum
- Weigh the risk of failure vs. risks to non-targets

— **Impact Assessment:**

- Acknowledge uncertain information that cannot be obtained due to cost
- Provide a statement of incomplete information, a statement of relevance, and summary of existing credible scientific data
- Address owl hyperpredation better – provide sufficient documentation to support assumptions

EPA Comment Summary *(cont.)*

- **Impact Assessment:**

- Analyze impacts of a failed eradication attempt
- Objective 1.1 in the CCP is intended to reduce gulls on SEFI
 - How will this project help reach that goal?

- **Mitigation Measures:**

- State mitigation measures in terms of measurable performance standards or expected results to establish performance expectations ie.) remove mouse and gull carcasses and unconsumed bait to reduce secondary poisoning

CDFG Comment Summary

- The DFG supports USFWS's goal to eradicate house mice
 - Purpose and Need – advises a thorough description of mouse/owl/ASSP relationship
 - Describe lessons learned from previous eradication projects
 - 2 alternatives using one rodenticide and aerial application are not acceptable
 - Consider a large group of alternatives and clearly describe why an alternative was dismissed from further consideration

USDA Comment Summary

- Eradication projects must be carefully planned to avoid unacceptable short or long-term negative impacts as these could put the use of this tool for future invasive management activities at risk.
- A proposal with only the most toxic remedies in its range of alternatives is unacceptable
- Provide a detailed discussion of the need for the project and the need to implement at this time to help identify the environmental issues that should be evaluated.
- Explore other action alternatives that minimize harmful environmental effects
- The use of diphacinone may require evaluating a new formulation for mice that would be warranted due to the high likelihood for significant adverse effects to BUOW, other raptors and gulls.

All Public Comments - Summary

- **Supportive**

- Defer to USFWS and PRBO scientific expertise. Concerned with potential impacts to burrowing owls and raptors. Suggest USFWS improve communications with the public.
- Weigh long-term impacts more heavily than short-term, and similarly population level effects more than individuals.
- Non-native mice alter the ecosystem by providing food for owls during fall, yet the vast majority die off in winter from starvation, causing the owls often to starve by early spring.

Public Comment Summary (*cont.*)

- **Support with Exception**

- In addition to brodifacoum, other potential rodenticides need to be compared and analyzed for palatability, primary and secondary toxicity. Concern about aerial broadcast of brodifacoum, the potential environmental contamination, and non-target risks.
- The islands will experience an explosion of vegetation once mice are removed, and this may negatively impact nesting habitat for storm-petrels. Mouse eradication should not occur unless a strong vegetative component is included.

Public Comment Summary (*cont.*)

- **Opposed**

- Alternative B and C are unacceptable due to the potential significant impacts to non-targets. EIS needs to consider the possibility of eradication failure, consider alternatives other than aerial bait broadcast like mouse control by use of snap traps, and owl relocation.
- Do not support use of rodenticides and suggest leaving island uninhabited for a minimum of 30 years to restore ecological balance.
- Use mechanical means to eradicate the mice (traps, predators, birth control) instead of toxins

Rodenticide Basics: Gregg Howald/USDA (5-10 min)

Type of Rodenticide	Rodenticide	Efficacy on Mice	Reasons for Efficacy	EPA Registered
Acute	Zinc phosphide	Low	Low acceptance/ rejected	No
	Bromethalin	Low	Low acceptance/ rejected	No
Sub-acute	Cholecalciferol	Low	Moderate acceptance/ rejected	No
First Generation Anticoagulants	Warfarin	Moderate	Multi-Feed	No
	Diphacinone	Low-Mod	Multi-Feed	Yes
	Chlorophacinone	Moderate	Multi-Feed	No
Second Generation Anticoagulants	Brodifacoum	High	Single-Feed	Yes
	Bromadiolone	High	Single-Feed	No
	Difethialone	High	Single-Feed	No



Questions on the Presentations

We Now Request Your Input on:

- 1. Scoping Comments Received**
- 2. Purpose and Need Justification**
- 3. General Environmental Issues**
- 4. Alternatives to Consider in DEIS**
- 5. General Operational Considerations**
- 6. Other Compliance issues/permits needed**

Alternative Selection Process Recommended for the DEIS

Objectives:

- **Identify a set of reasonable alternatives** meeting Purpose & Need
- **Systematically assess each alternative** to be considered, according to a set of agreed-upon environmental and operational issues, and criteria/parameters for success
- **Systematically justify the dismissal of additional alternatives** from further consideration
- **Set the groundwork for any future decisions** with respect to alternatives to be considered
- **Document the alternatives development process** and rationale using established methods

Eradication Parameters to be Met:

- **Method must meet the project's *Purpose and Need***
- **Must be likely to completely remove 100% of all mice**
- **Method should strive to minimize non-target impacts**
- **Long-term ecosystem benefits of method must outweigh likely short-term impacts of the project**
- **Method must be available for use within the projected time-frame and with the likely funds foreseeably available**

Alternative Process Steps

1. Review the Justification for Purpose and Need
2. Identify Important General Environmental Issues
3. Identify a Complete Lists of Operational Tools
4. Record the Operational Considerations for project
5. Record the Environmental Issues for each tool
6. Assess each potential tool in a **Matrix**
7. Dismiss Tools not meeting Alternative Parameters
8. **Create Matrix of Remaining Alternatives**
9. USFWS makes decision on Alternatives based on 1-8

Your Input on the Draft EIS Alternative Selection Process

- Please feel free to make any comments now
- You can submit comments/suggestions on revising the process in writing to the USFWS by Aug. 10th



THANKS FOR YOUR INPUT!!

***We appreciate your time, effort and expertise
to help make the Restoration of the South
Farallon Islands a successful project!***