



South Farallon Islands Invasive House Mouse Eradication Project

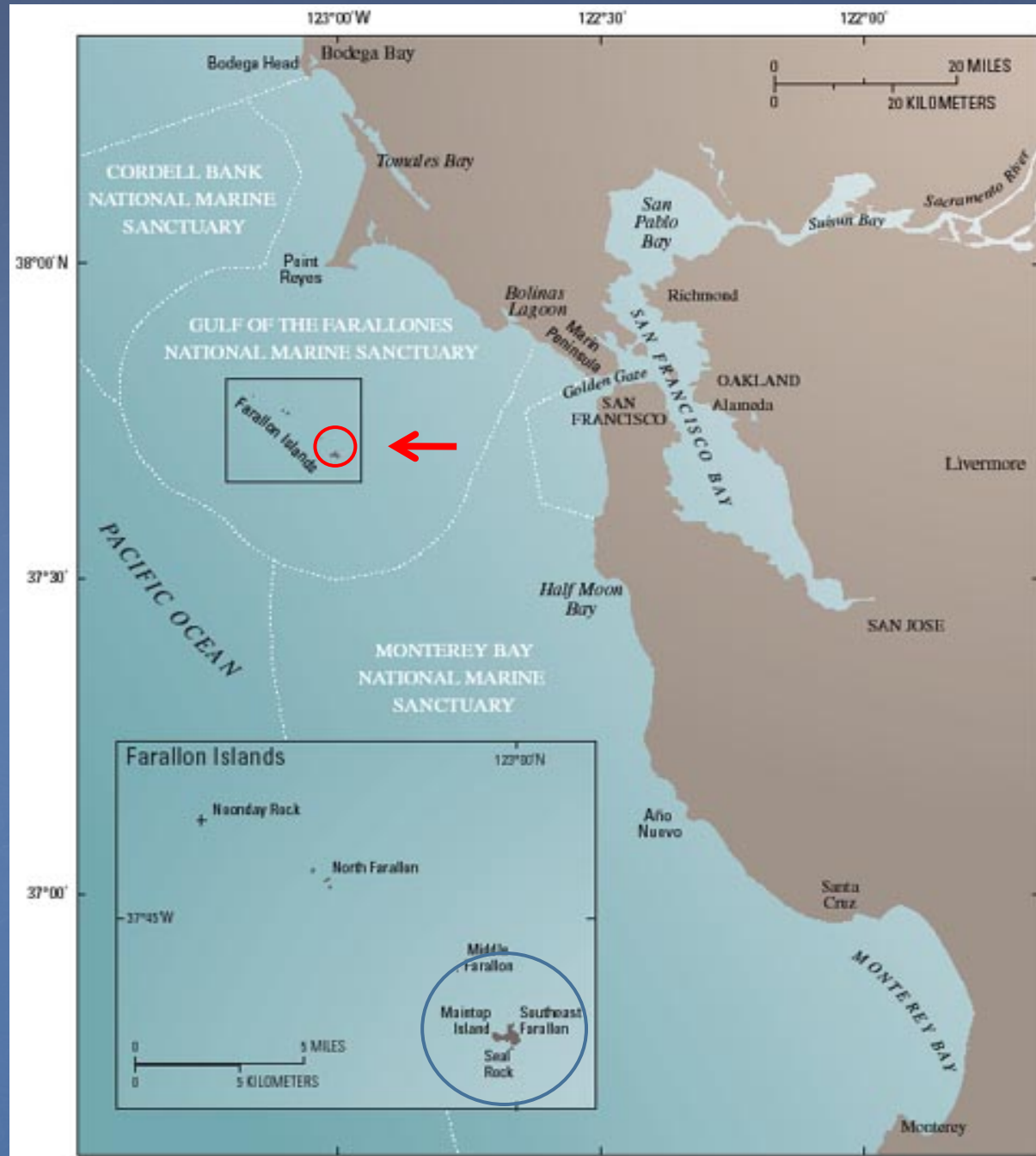
In partnership with:





Location of the South Farallon Islands, California

Approx. 30 miles west of San Francisco





South Farallon Islands (Farallon National Wildlife Refuge)



- 120 acres (49 ha)
- 350 feet high (113 m)
- Rugged
- Some islands are designated Wilderness



South Farallon Islands

300,000 Breeding Seabirds
13 Species

Brandt's Cormorant



Ashy Storm-Petrel



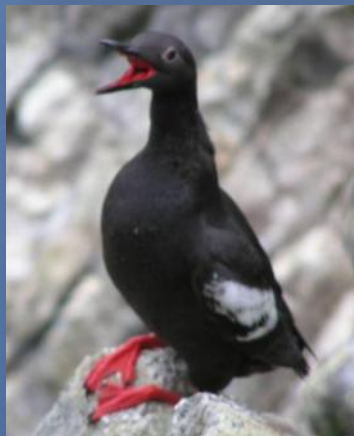
Western Gull



Tufted Puffin



Common Murre



Pigeon Guillemot



Rhinceros Auklet



Cassin's Auklet



South Farallon Islands

Five Species of Pinnipeds
~3,000 – 6,000 Animals

California Sea Lion



Steller Sea Lion (threatened)



Harbor Seal



Northern Elephant Seal



Northern Fur Seal



Extensive Human History

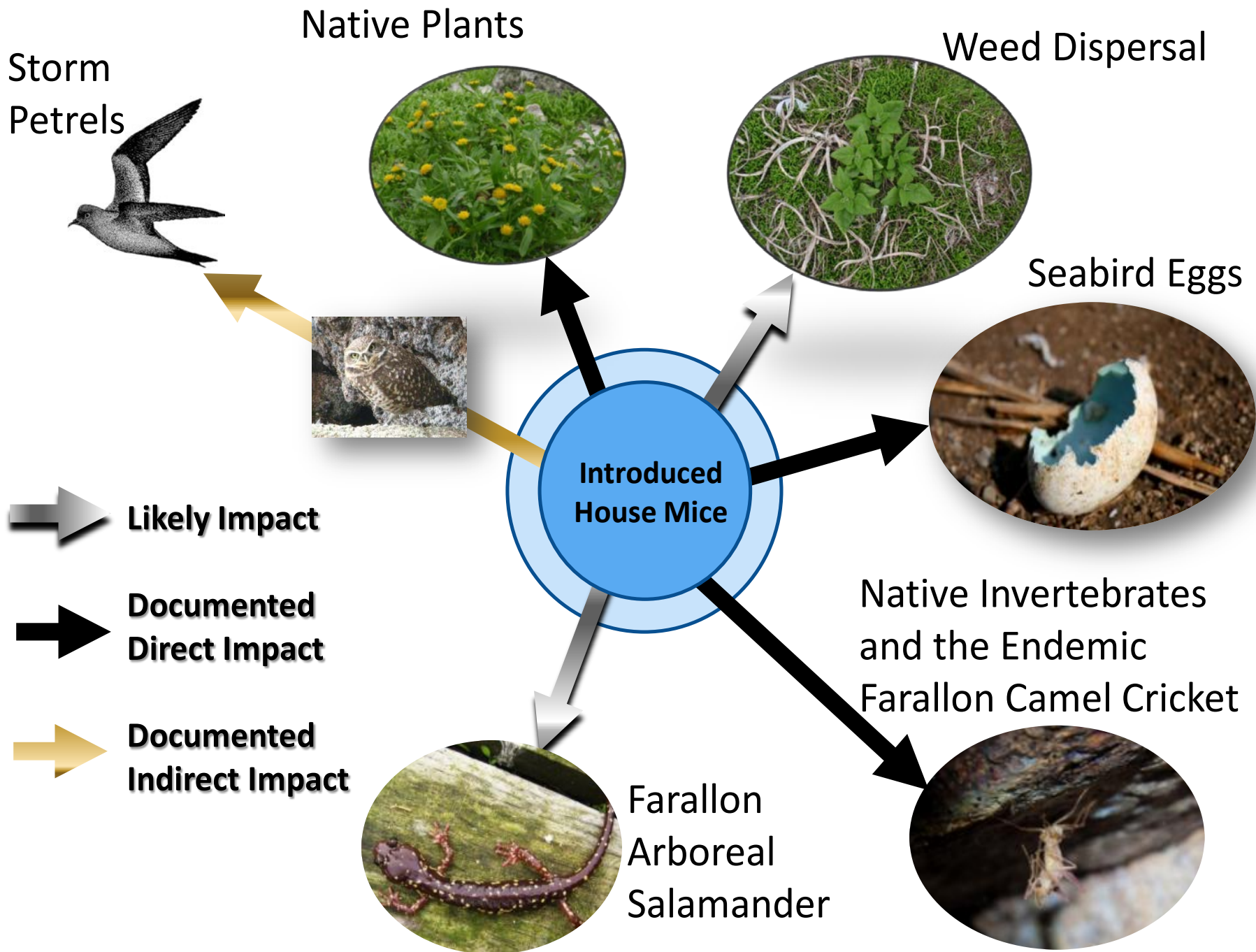




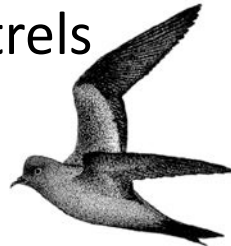
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Project Purpose

To meet the Service's management goal of protecting and restoring the ecosystem of the Farallon Islands by **eradicating** invasive house mice (*Mus musculus*), thereby eliminating their negative impacts on seabirds and other native species of the Farallon National Wildlife Refuge.



Storm
Petrels



Native Plants



Weed Dispersal



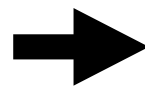
Seabird Eggs



**Introduced
House Mice**



Likely Impact



**Documented
Direct Impact**



**Documented
Indirect Impact**



Farallon
Arboreal
Salamander

Native Invertebrates
and the Endemic
Farallon Camel Cricket



Burrowing Owl (stay all winter)

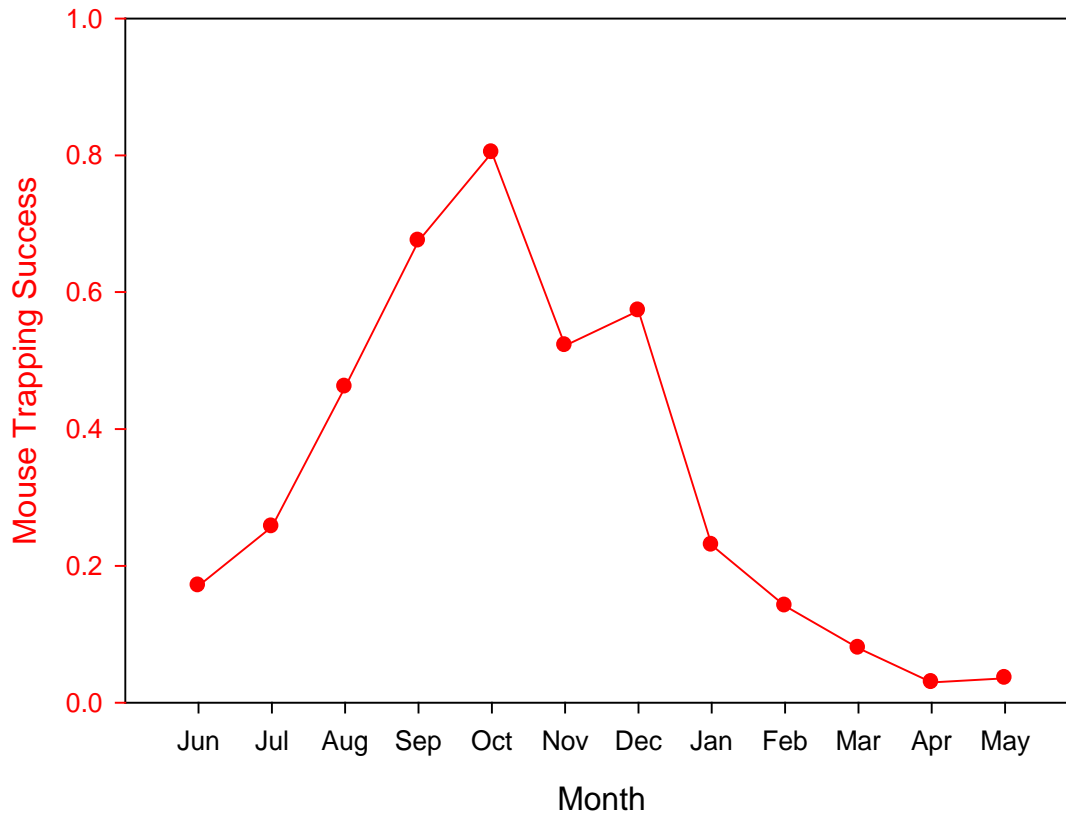


Storm-petrel feather pile



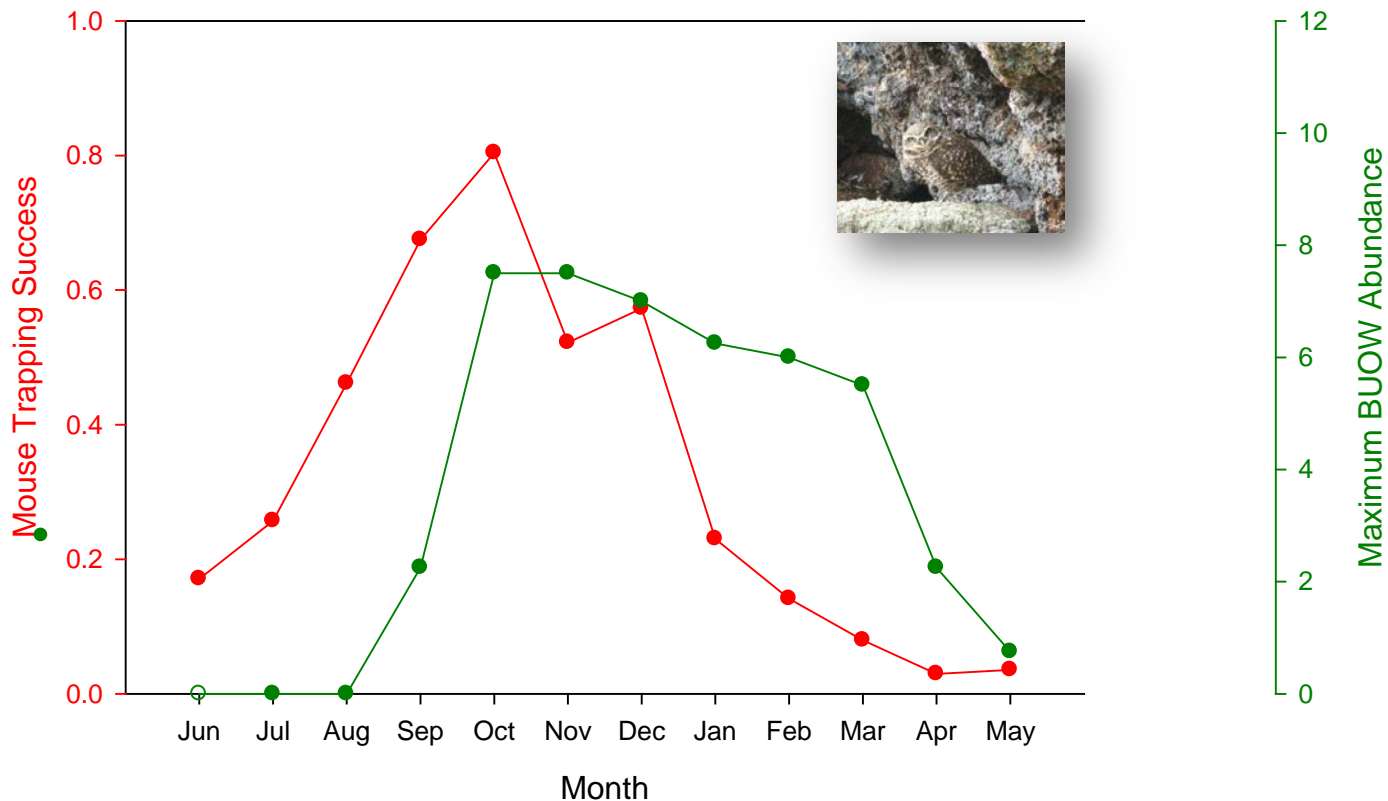
- Hundreds of adult storm-petrels killed per year by burrowing owls.

Relationship of Mouse and Owl Abundance with Storm-Petrel Predation



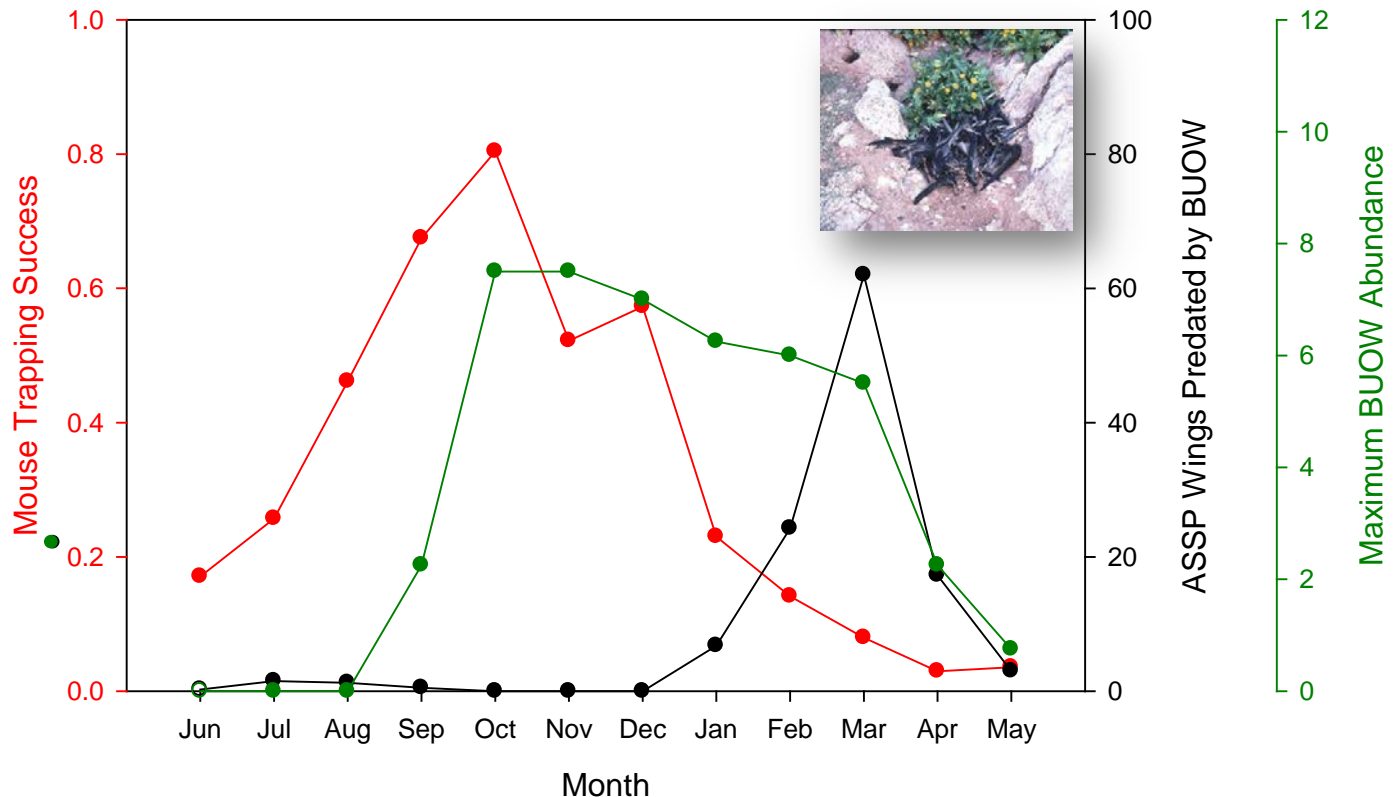
—●— Mouse Trapping Success (proportion)

Relationship of Mouse and Owl Abundance with Storm-Petrel Predation



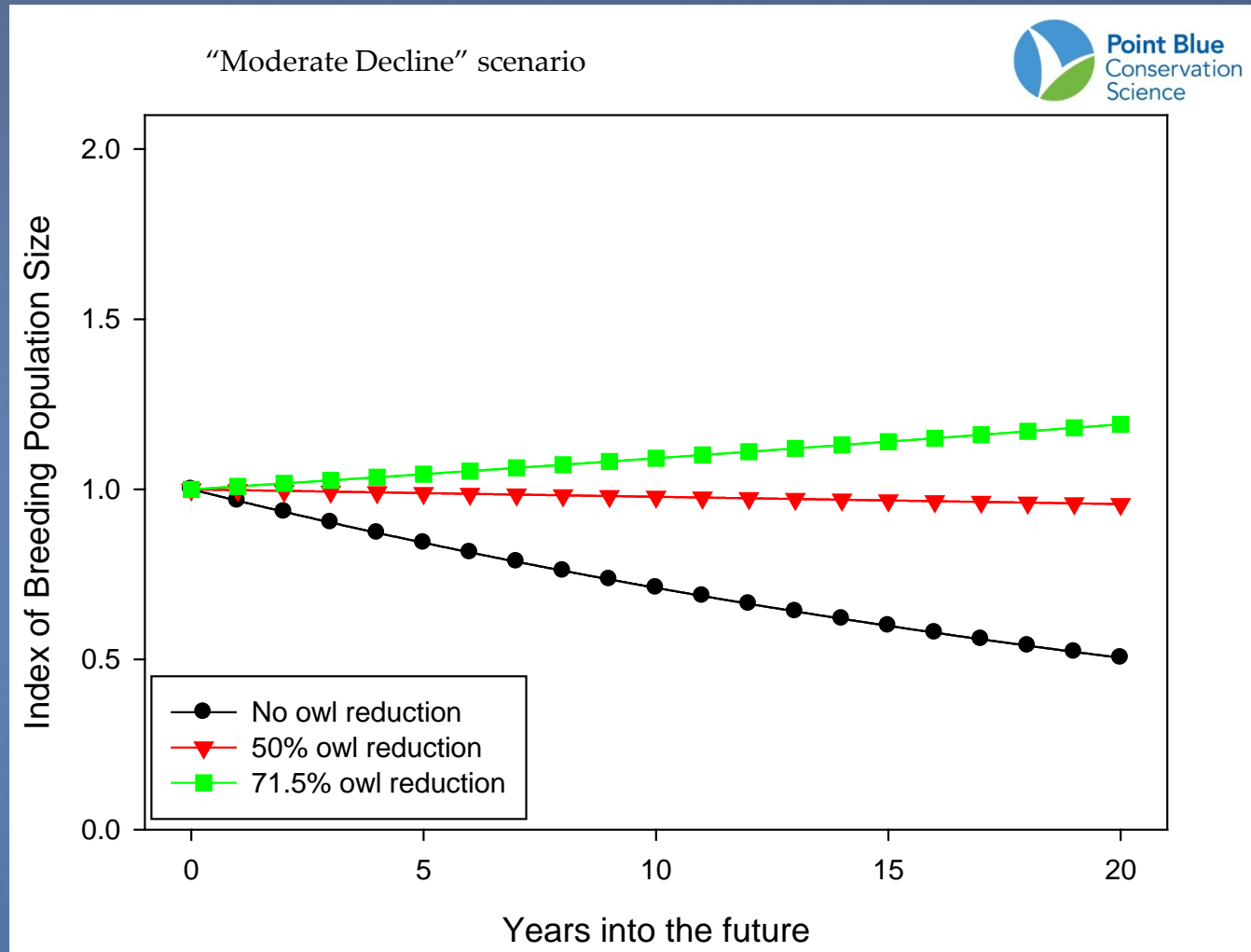
● Mouse Trapping Success (proportion)
● Maximum BUOW Abundance (# owls)

Relationship of Mouse and Owl Abundance with Storm-Petrel Predation



- Mouse Trapping Success (proportion)
- ASSP wings Predated by BUOW (# wings)
- Maximum BUOW Abundance (# owls)

Ashy Storm-Petrel Trends With and Without Owl Reduction



Nur et al. (2013)

South Farallon Islands

Endemic Species and Subspecies

Farallon Arboreal Salamander



Farallon Camel Cricket



Farallon Project Expected Benefits

Decreases in:

- Predation on storm-petrels
- Predation on invertebrates
- Competition with salamanders
- Spread of invasive weeds

Increases in:

- Ashy Storm-Petrels
- Native plants
- Endemic Salamanders
- Endemic Camel Crickets
- Other Invertebrates



Alternatives Development Process

All reasonable potential alternatives were considered in initial process.

49 possible methods examined:

- **6 Non-rodenticide methods**
 - Live-trapping
 - Snap-trapping
 - Introduce predators
 - Contraception
 - Disease
 - Genetic modification

- **15 Rodenticides X multiple delivery methods**
 - Aerial broadcast
 - Hand broadcast
 - Bait Station

Alternatives in Revised Draft Environmental Impact Statement

- **Alternative A:**
 - **No Action;** allow mice to remain.
- **Alternative B:**
 - Aerial broadcast of **Brodifacoum-25D Conservation.**
- **Alternative C:**
 - Aerial broadcast of **Diphacinone-50 Conservation.**

Action Alternatives

Brodifacoum 25D Conservation

- Highly potent
- 2-3 Applications
- 10-21 days between applications
- Single feeding
- Trace amounts in soil after 6 months

Diphacinone D50 Conservation

- Low to moderately potent
- 3-4 Applications
- 7 days between applications
- Multiple, continuous feedings
- Undetectable in soil after 2 months

Protecting wildlife and habitats

- Gulls
- Raptors
- Salamanders
- Invertebrates
- Fish
- Pinnipeds
- Habitats
- Water
- Soil
- Wilderness
- People





Protection Measures

Operations

Timing

Gull hazing

Capture birds of prey

Capture salamanders

Carcass removal

Monitoring and adaptive
management



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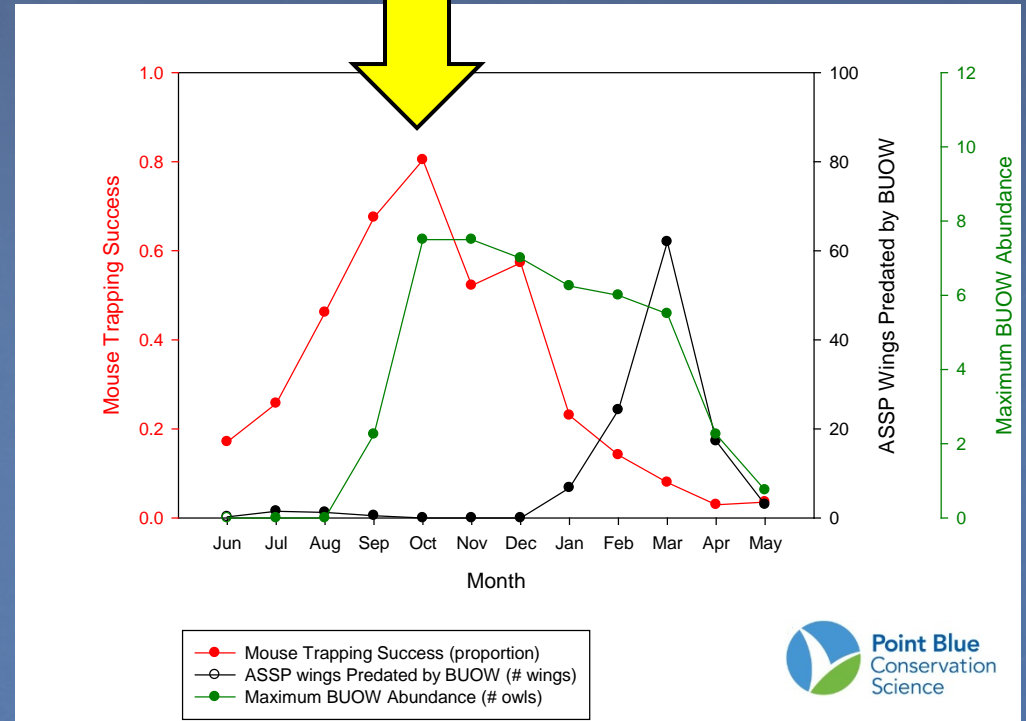
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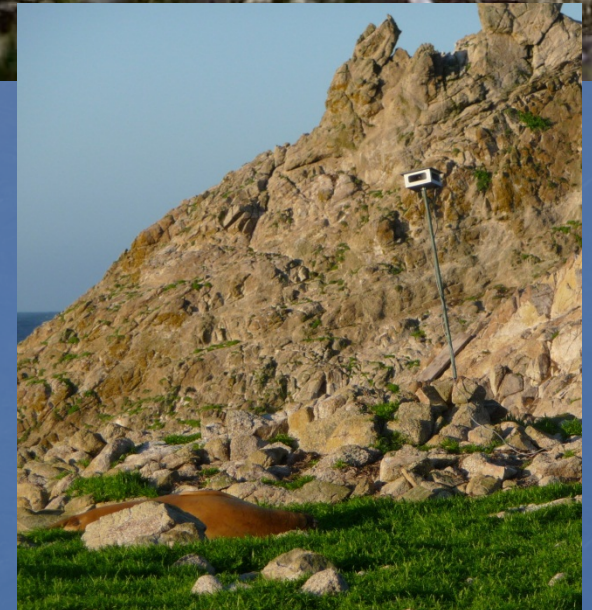
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Conclusions

- Introduced, invasive house mice are impacting Farallon Islands ecosystem.
- Eradicating mice will remove their negative impacts.
- Conservation rodenticides are only proven method.
 - One time event.
 - Distinct from ongoing control.
- Benefits must outweigh risks.

Next Steps

- Public comment period through Dec 9th
- Address public comments
- Publish Final Environmental Impact Statement
- Issue Record of Decision



Thank you

To download a copy of Revised Draft EIS and
to submit comments:

*<http://www.regulations.gov> (enter Docket
Number FWS-R8-NWRS-2013-0036)*

More information:

www.restorethefarallones.org