ANACAPA ISLAND RESTORATION PROJECT

FINAL ENVIRONMENTAL IMPACT STATEMENT

National Park Service

Channel Islands National Park

Ventura County, California

October, 2000

ANACAPA ISLAND RESTORATION PROJECT

FINAL ENVIRONMENTAL IMPACT STATEMENT

Channel Islands National Park

Ventura County, California

October, 2000

Responsible Official

John Reynolds, Regional Director
Pacific West Region
600 Harrison Street, Suite 600
San Francisco, CA 94107-1372

Lead Agency:

USDI National Park Service

For Further Information

Tim Setnicka, Superintendent
Channel Islands National Park
1901 Spinnaker Dr.
Ventura, CA 93001

Abstract

This Final Environmental Impact Statement (FEIS) was prepared in accordance with the Department of the Interior National Environmental Policy Act (NEPA) regulations, and the National Park Service NEPA guidelines (NPS-12). As required by NEPA, this FEIS is necessary because actions proposed as part of this FEIS are considered a major federal action significantly affecting the quality of the human environment.

Channel Islands National Park in coordination with the Island Conservation and Ecology Group formulated the proposed action to mitigate the ecological degradation that is occurring on Anacapa Island from the impacts of the non-native Black Rat. The purpose of the proposed action is to eradicate rats from Anacapa Island and keep it and Santa Barbara Island, Prince Island and Sutil Island rat-free. Maintaining rat-free islands would improve seabird-nesting habitat and would aid in the recovery of crevice nesting seabirds such as the Xantus' Murrelet and Ashy Storm-Petrel.

The proposed action involves the aerial and hand placed ground application of a bait containing the rodenticide brodifacoum into all rat territories on Anacapa Island. Application of the rodenticide would occur during the fall of the year to minimize disturbance and exposure to other affected resources on the island. The Park conducted extensive "scoping" on the proposed action. As a result of comments from interested public, federal and state agencies, and conservation groups on the proposed action, the Park identified three significant environmental issues. The significant environmental issues are: 1) Efficacy on target species; 2) Impacts on non-target species; and 3) Impacts to the public and visitor use.

To address these significant environmental issues, the Park prepared five alternatives to the proposed action. Each alternative was developed to respond to the environmental issues identified. The Park also considered many other alternatives and methods to eradicate the Black Rat on Anacapa Island; however, many of the methods failed to meet the purpose and need of the project.

As part of this FEIS the Park described the "Affected" environment for the project. This section describes what is currently known about the status and the trend of affected island resources. The affected environment included the physical setting of the island, terrestrial resources, and marine resources.

For full disclosure, the Park prepared an analysis of the environmental consequences that would occur should any of the alternatives presented be chosen for implementation.

No sooner than 30 (thirty) days after release of this FEIS a Record of Decision (ROD) will be executed. Release of the FEIS is expected on or around October 13, 2000. John Reynolds, Regional Director, Pacific West Region, is responsible for the final decision. Tim Setnicka, Superintendent, Channel Islands National Park, is responsible for plan implementation and monitoring of all activities.

Glossary of Terms and Abbreviations

AIRP	Anacapa Island Restoration Project
ATTC	American Trader Trustee Council
EC_{50}	Effective Concentration. The concentration at which 50% of an exposed test population is affected sublethally.
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ERP	Emergency Response Plan
ESA	Endangered Species Act
ft	Foot. 1 ft = 30 centimeters or 12 inches
g	Gram. 1 g = 0.035 oz.
GMP	NPS General Management Plan
GPS	Global Positioning System
ha	Hectare. 1 ha = 2.47 acres
ICEG	Island Conservation and Ecology Group
kg	Kilogram. 1 kg = 2.205 pounds
LC_{50}	LC - Lethal Concentration. Concentration of active ingredient that could cause death in 50% of an animal test population. Presented as mg active ingredient per unit volume.

LD_{50}	LD – Lethal Dose. Acute oral dose required to cause death in 50% of an animal test population. Presented as mg active ingredient per kg body weight (mg/kg).
LOC	Level of Concern. See text.
mg	Milligram. 1/1000 of a gram.
NEPA	National Environmental Policy Act
NPS	National Park Service
ppm	Parts per million
PT	Prothrombin time. A measure of blood clotting time.
RMP	NPS - Resources management plan
RQ	Risk Quotient = Exposure/Toxicity. See text.
USFWS	US Fish and Wildlife Service

ANACAPA ISLAND RESTORATION PROJECT

SUMMARY OF THE FINAL ENVIRONMENTAL IMPACT STATEMENT

Introduction

This Final Environmental Impact Statement analyzes the effects of implementing proposed actions that accomplish the following objectives: 1) eradication of the introduced Black Rat on Anacapa Island; 2) adopt an emergency response plan for accidental introductions of rodents on Anacapa, Santa Barbara, Prince, and Sutil Islands; and 3) incorporate a prevention strategy to reduce the potential for rodents to be accidentally introduced to Park islands. The proposed action was developed in concert with the Island Conservation and Ecology Group and is based on other successful island rat eradication efforts worldwide. Actions to manage existing and potential Black Rat infestations is necessary because of the ecological impacts Black Rats are having on Anacapa Island, and the potential negative impact they would have if introduced to other Park islands.

Public Involvement

In compliance with the National Park Service National Environmental Policy Act (NEPA) implementing regulations, the Park conducted "scoping" on the proposed action. Scoping involved contacting interested publics, regulatory agencies with oversight concerns, conservation groups, and worldwide experts in the field of vertebrate pest ecology. The Park used several methods to solicit comment on the proposed action

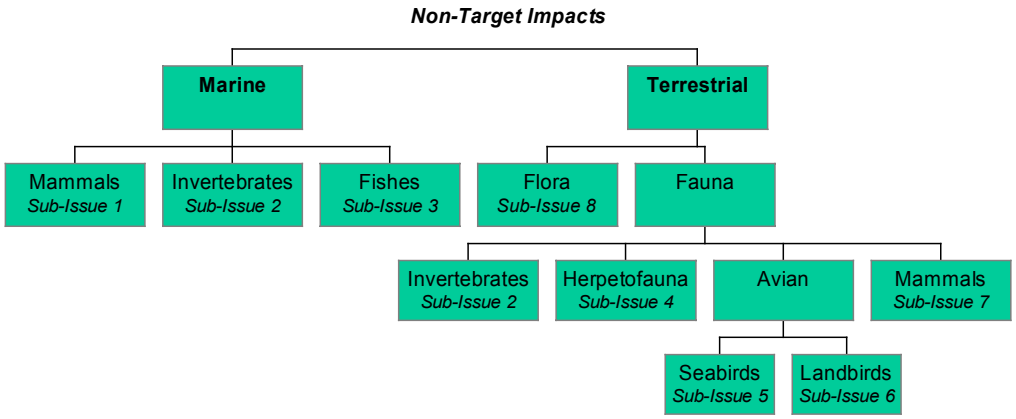
including letters, public meetings, web-site, press releases, and press, radio and television advertisements.

Environmental Issues

Based on internal and external comments on the proposed action the Park concluded that the analysis would need to address three significant environmental issues. These issues are: 1) Efficacy on Target species; 2) Impacts to Non-target species; and 3) Effect on public use and visitation.

Issue	Description
Target Species Efficacy	Efficacy for this analysis is defined as how well the alternative would meet the 100% eradication objective.
Non-Target Species:	Impacts to non-target species are separated into two categories: physical disturbance and toxicological risk. Physical disturbance may occur from the activities associated from baiting, and monitoring. Toxicological risk will analyze both primary (direct) exposure and secondary (indirect) exposure.
Public Use/ Visitation	Anacapa Island is the most visited of all the islands in the Park. Although camping is allowed on East Anacapa, day trips via the concessionaire boats is the most common visitation that occurs on the island.

The issue "Impacts to Non-target species" is a broad category that incorporates several sub-issues. The sub-issues are the species groups that may be impacted by the proposed action. The following taxonomic hierarchy identified the species groups that may be impacted by the project:



Alternatives

After identifying the significant environmental issues associated with the proposed action, the Park began developing alternatives by modifying the eradication strategies to address the environmental issue concerns. In all, six alternatives were developed, including the "No Action" alternative.

Summary of Alternatives.

Alternative	East Anacapa		Middle Anacapa		West Anacapa		Active Ingredient	Concentration (ppm)
	Top	Cliff	Top	Cliff	Top	Cliff		
1 (No Action)	NA	NA	NA	NA	NA	NA	NA	NA
2 (Preferred)	Aerial/ Hand	Aerial/ Hand	Aerial/ Hand	Aerial/ Hand	Aerial/ Hand	Aerial/ Hand	Brodifacoum	25
3	Bait Stn	Aerial	Bait Stn	Aerial	Aerial	Aerial	Brodifacoum	25
4	Aerial	Aerial	Aerial	Aerial	Aerial	Aerial	Bromadiolone	50
5	Bait Stn	Aerial	Bait Stn	Aerial	Aerial	Aerial	Bromadiolone	50
6	Aerial	Aerial	Aerial	Aerial	Aerial	Aerial	Diphacinone and Brodifacoum	50 and 25

Several methods and techniques were rejected from consideration. Exclusive use of bait stations (elevated and ground) was rejected because of the steep cliffsides on Anacapa Island and the problems associated with placing bait stations in all of the rat territories on the island, including the steep cliffsides. Studies cited in the analysis documented that not all rats could access the elevated bait stations. Several alternate rodenticides were also considered, but were rejected because: 1) they had not been used previously in successful island eradication; 2) they had potential to cause bait shyness; 3) they could not cope with the potential "Warfarin resistant" rats; and 4) there is no

antidote for some of the rodenticides. Exclusive use of trapping, and introduction of predators were both rejected because they failed to meet the purpose and need.

Environmental Consequences

For each environmental issue, the Park analyzed the potential effects that may occur should one of the six alternatives be implemented. For Issue 1 (Efficacy), analysis focused on the probability of a successful eradication for each alternative. Factors considered in the analysis included the toxicology of the rodenticide, bait composition and delivery into the ecosystem, and local factors. From an efficacy standpoint, Alternative Two (preferred action) offers the highest probability of success in eradicating rats from the island.

For Issue 2 (Non-Target Impacts), each alternative was analyzed for potential physical disturbance, as well as the toxicological effects of the proposed rodenticide on non-target species. The physical impacts were restricted to short-term disturbance to landbird, seabird, and marine mammal species.

Toxicological impacts were analyzed for a wide range of species that may be present in the project area. The effects analysis included both primary exposure (direct consumption of the bait containing the rodenticide), and secondary exposure (species who feed on animals that have been directly exposed) impacts. Mitigation measures were incorporated for species at risk of exposure. The presence of the endemic deer mouse on Anacapa Island presented a logistical challenge because they are at risk of exposure to the rodenticide, but must be protected to ensure a viable population remains on the island. Actions to ensure that a viable population of the endemic Anacapa deer mouse remain on the island are incorporated into each action alternative.

For Issue 3 (Public Use and Visitation), each alternative was analyzed for its potential to expose island visitors to rodenticides, and the potential impacts to visitor enjoyment and visitation. Rodenticide exposure to the public, although considered to be a very low risk was analyzed in detail to quantify the potential risk. Mitigation measures are presented to minimize this risk further. In addition, the use of bait stations (as opposed

to broadcast spreading of bait) around public areas was built into all of the action alternatives. Rodenticide bait will not be used inside structures. The structures on east islet were rodent proofed in 1999, snap traps will be used to determine if rodents are getting into the buildings. Indoor snap trapping would begin prior to island-wide baiting operations. The 2-3 day restriction around the application period would preclude island visitation to East Anacapa during the slowest part of the visitation year.

ANACAPA ISLAND RESTORATION PROJECT

TABLE OF CONTENTS

ABSTRACT I

GLOSSARY II

SUMMARY OF FEIS IV

Chapter One – Purpose and Need

INTRODUCTION *2*
GENERAL MANAGEMENT PLAN DIRECTION *2*
PROPOSED ACTION AND PURPOSE & NEED *3*
Purpose 3
Need For Action 3
Introduced Species and Island Ecosystems *3*
Introduced Commensal Rats *4*
Impacts of Introduced Rats on Island Ecosystems *5*
Rats on Anacapa Island *5*
Proposed Action 6
Anacapa Rat Eradication *6*
Emergency Response Plan *7*
Prevention *7*

SCOPE OF THE PROPOSED ACTION *8*
DECISIONS TO BE MADE ***8***

Chapter Two - Alternatives
INTRODUCTION ***11***
ALTERNATIVE DEVELOPMENT PROCESS ***11***
INTERNAL SCOPING AND PUBLIC INVOLVEMENT 11
Significant Environmental Issues *12*
Issue 1: Efficacy on Target Population *12*
Issue 2: Impact to Non-Target Species *12*
Sub-issue 1 - Marine Mammals 13
Sub-Issue 2 - Invertebrates (Marine/Terrestrial) 13
Sub-Issue 3 - Marine Fishes 14
Sub-Issue 4 - Herpetofauna 14

Sub-Issue 5 - Seabirds 14
Sub-Issue 6 - Landbirds 14
Sub-Issue 7 - Mammals (Terrestrial) 15
Sub-Issue 8 - Flora 15
Issue 3: Public Safety and Visitation 15
Issues Dismissed from Analysis 15

ALTERNATIVES CONSIDERED IN DETAIL 16
INTRODUCTION 16
FEATURES COMMON TO ALL ACTION ALTERNATIVES 16
Effectiveness and Validation Monitoring 16
Non-native Rodent Introduction Prevention Plan 17
Protection of Native Deer Mouse Population 17
Rat Detection Response Plan 18
Human Health 18
Timing 18
Permits and Approval 18
Public Awareness 18
Visitation Restrictions 18
ALTERNATIVES 19
ALTERNATIVE ONE - No Action 19
ALTERNATIVE TWO (Proposed Action and Preferred Alternative) – Aerial broadcast of a Rodent Bait Containing Brodifacoum 19
ALTERNATIVE THREE - Bait Stations for Top of Island and Aerial Broadcast the Cliffsides with Brodifacoum 20
ALTERNATIVE FOUR - Aerial broadcast of a Rodent Bait Containing Bromadiolone 22
ALTERNATIVE FIVE - Bait Stations for Top of Island and Aerial Broadcast the Cliffsides with Bromadiolone 23
ALTERNATIVE SIX - Aerial broadcast of a Rodent Bait Containing Diphacinone followed by a Rodent Bait Containing Brodifacoum 24
ALTERNATIVES CONSIDERED AND REJECTED 26
BAIT STATIONS 26
ELEVATED BAIT STATIONS 26
ALTERNATE RODENTICIDES 26
TRAPPING 28
INTRODUCING PREDATORS 29
SUMMARY OF ALTERNATIVES 29

Chapter Three – Affected Environment

INTRODUCTION 32
PHYSICAL ENVIRONMENT 32
SETTING 32
GEOLOGY 32
SOILS 34
CLIMATE 34
AIR QUALITY (CLEAN AIR ACT) 35
TERRESTRIAL ENVIRONMENT 36

INVERTEBRATES 36
HERPETOFAUNA 37
AVIAN 38
Landbirds *38*
Seabirds *38*
Brown Pelican (Endangered) 39
Species of Special Concern 40
MAMMALS 41
RARE, THREATENED AND ENDANGERED PLANTS 41

MARINE ENVIRONMENT 42
MARINE MAMMALS 42
California Sea Lion *42*
Harbor Seal *42*
MARINE INVERTEBRATES 44
HUMAN USES AND VALUES *45*

Chapter Four – Environmental Consequences

INTRODUCTION 48

ISSUE 1: EFFICACY 48
INTRODUCTION 48
THE RODENTICIDE AND TOXICOLOGICAL PROPERTIES 48
COMPOSITION OF BAIT AND HOW IT IS APPLIED 50
Alternative 1- No Action Alternative *50*
Alternatives 3 & 5: Aerial - Bait Station Combined *50*
Alternatives 2, 4 and 6: Aerial Broadcast *51*

ISSUE 2: NON-TARGET IMPACTS 52
INTRODUCTION 52
PHYSICAL IMPACTS 52
TOXICOLOGICAL IMPACTS 57
Introduction *57*
Biochemistry 57
Relative Comparison of Toxicological Impacts by Alternative *58*
Primary Exposure 58
Secondary Exposure 61
Toxicological Impacts by Sub-Issue *64*
Sub-Issue 1: Marine Mammals 64
Sub-Issue 2: Invertebrates 66
Sub-Issue 3: Marine Fishes 66
Sub-Issue 4: Herpetofauna 67
Sub-Issue 5 & 6: Seabirds and Landbirds 69
Sub-Issue 7: Terrestrial Mammals 74
CUMULATIVE EFFECTS 74

ISSUE 3: PUBLIC SAFETY AND VISITATION 78
Exposure to the rodenticide 78
Impacts to Visitor Enjoyment 80

SUSTAINABILITY AND LONG TERM MANAGEMENT 81

Chapter Five – Coordination and Consultation

COORDINATION 84
PUBLIC INVOLVEMENT 84
INTERNAL SCOPING 84
EXTERNAL SCOPING 84
LIST OF PREPARERS 85
LIST OF RECIPIENTS 86
RESPONSE TO COMMENTS 87

References 108

Index 119

APPENDIX A 121
APPENDIX B 127
APPENDIX C 137
APPENDIX D 139