

FINDING OF NO SIGNIFICANT IMPACT

HABITAT RESTORATION FOR MISSION BLUE AND SAN BRUNO ELFIN BUTTERFLIES

Proposed Action

The National Park Service proposes restoration of habitat for two federally listed endangered species, the mission blue butterfly (Plebejus icariodes missionensis) and the San Bruno elfin butterfly (Callophrys mossi bayensis). Both of these species are known to occur in the Golden Gate National Recreation Area (GGNRA), on Milagra Ridge and in the Skyline College vicinity of Sweeney Ridge. The mission blue is also found in the GGNRA Marin Headlands. An integrated pest management program would be used to eliminate invasive exotic plants which have eliminated the food and nectar plants of the butterfly. A revegetation program would replant native species, including plants required by the butterflies.

An Environmental Assessment was prepared to evaluate the potential impacts of this project. This Environmental Assessment is included as an attachment to the Finding of No Significant Impact.

Impacts/Mitigation

Impacts identified in the 1/91 Environmental Assessment include:

- o short term disturbance to visitors and wildlife due to work crews, machinery, plant removal activities, and follow-up work. This could include intermittent trail closures for less than one day at a time. Work will be scheduled to minimize impact to native wildlife, and avoid times of high visitor use.
- o change in the visual appearance of the site as a result of removal of alien plants, and revegetation with native vegetation. Revegetation will take place each year in November as soon as possible after alien plant removal.
- o increase in habitat available for the two endangered butterflies, potential short term disturbance to other wildlife in the area of the proposed project. All work will be carried out in conformance with U.S. Fish and Wildlife Service recommendations made in formal consultation with the National Park Service.
- o potential erosion due to soil disturbance caused by alien plant removal. Hand and equipment removal of plants in steep erosive sites will be minimized. Erosion blanket or straw will be used as necessary.

- o potential impacts to unknown archeological resources. All areas subject to ground disturbance will be surveyed and will receive an archeological clearance prior to initiation of work.

Public Review

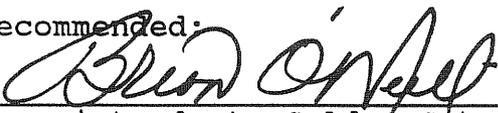
Announcement of the availability of this document will be made to local daily and weekly press and it will be mailed to all persons and agencies and persons consulted, as well as:

Wolfback Ridge Association
City of Sausalito
Marin County Planning Department
Spyglass Ridge Association
Pacifica Planning Department

Determination

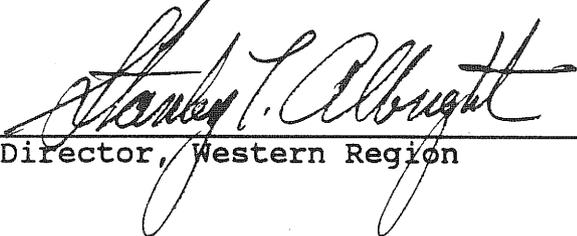
On the basis of the information contained in the Environmental Assessment, it is the determination of the National Park Service that the proposed project is not a major federal action significantly affecting the quality of the human environment. Nor is it one without precedent or similar to one which normally requires an Environmental Impact Statement. Therefore, in compliance with the National Environmental Policy Act, an Environmental Impact Statement will not be prepared.

Recommended:



Superintendent, Golden Gate National Recreation Area 2-6-91
Date

Approved:



Regional Director, Western Region 2/25/91
Date

IMPACT / MITIGATION MATRIX

Impact

Mitigation

1. Temporary noise/activity with potential to disturb park visitors/wildlife.

1. Work will be scheduled to avoid times of high visitor use and breeding season of endangered species. Responsibility: GGNRA Natural Resources Specialist.

2. Trail closure will temporarily inconvenience park visitors.

2. Herbicide and heavy equipment operations will be scheduled to avoid times of high visitor use. Responsibility: GGNRA Natural Resources Specialist.

3. Change in appearance.

3. Both sites will be revegetated as soon as possible to minimize the appearance of a lack of vegetation. Responsibility: GGNRA Natural Resource Specialist

4. Erosion

4. Restoration will include erosion control methods necessary to minimize any erosion at the site. Responsibility: GGNRA Natural Resource Specialist

5. Cultural Resources

5. Areas where soil disturbance could affect unknown archeological resources will be surveyed and will receive an archeological clearance prior to initiation of the work. Responsibility: GGNRA Natural Resources Specialist

6. Impact to Wildlife from disturbance and use of heavy equipment

Recommendations of the USFWS Endangered Species Office are incorporated into the project. Site specific surveys will be completed prior to project initiation to determine the need for additional mitigation measures. Work will take place during times when native wildlife will be least affected.

7. Safety Impacts

Trails will be temporarily closed to visitors during activities which would have potential visitor safety impacts. Care will be taken to reduce visual distraction of freeway traffic by activities and materials during alien plant removal.

ENVIRONMENTAL ASSESSMENT

HABITAT RESTORATION FOR MISSION BLUE AND SAN BRUNO ELFIN BUTTERFLIES

JANUARY, 1991

Introduction

Two federally listed endangered species, the mission blue butterfly (Plebejus icariodes missionensis) and the San Bruno elfin butterfly (Callophrys mossi bayensis) are known to occur in the Golden Gate National Recreation Area (GGNRA), on Milagra Ridge and in the Skyline College vicinity of Sweeney Ridge (Figures 1, 2 and 3). The mission blue is also found in the GGNRA Marin Headlands (Figures 1 and 4). The mission blue is only known to exist at four sites in the world, two of which are on GGNRA land. The San Bruno elfin is only known to exist on three mountain tops, all in the San Francisco area. These butterflies have decreased in population because of the loss of their habitat due to urbanization, and from competition within their habitats where alien (non-native) vegetation which has aggressively replaced much of the native vegetation required the reproduction of these species.

Test Program

Working with the US Fish and Wildlife Service in 1988 and 1989, GGNRA staff tested various techniques for habitat restoration on a site of approximately ten acres, located at Milagra Ridge. The objectives of management included:

- 1) removal of invasive alien species that threaten existing habitat.
- 2) elimination of the impacts of off-road vehicle use and off-trail use in the existing habitat.
- 3) expansion of butterfly habitat in order to increase the population of these species.

Techniques for restoration that have been tested include:

- 1) Pampas grass removal with heavy equipment (D7 cat), light equipment ("bobcat" 1/4 ton front end loader) and herbicide (glyphosate).
- 2) Hand removal of ice plant
- 3) Revegetation by: native grass hydroseeding, native herb

and grass handseeding, native herb and grass seeding with hydromulch, planting of container-sized native plants and seeding natives together with planting container-sized plants.

Based on this test program, the most successful techniques with the least impact include herbicide treatment of pampas grass, and a combination of revegetation by seed and with plants. The preferred treatment method for ice plant is hand removal. Herbicide use is most effective in steep areas where soil disturbance caused by hand removal would cause erosion.

Milagra Ridge Site (GGNRA)

The construction of the air defenses on Milagra and Sweeney Ridges in 1955 required that the ridge tops be flattened. In the process, soil and native plants were removed. This created a highly disturbed site in which many alien species were able to colonize.

The species of the greatest current and potential threat to butterfly habitat at this site are Pampas Grass (Cortaderia jubata), Ice plant (Carpobrotus edule) and Sweet Fennel (Foeniculum vulgare). Approximately 120 acres of the 229 acre site are infested with pampas grass and approximately 10 acres with ice plant. Fennel is sparsely distributed, located mainly on roadsides.

Marin Headlands Site (GGNRA)

The mission blue butterfly population of concern in the Marin Headlands is on the east side of Highway 101 above East Fort Baker (Figure 4). The site is easily seen from the freeway. The steep 40-60% slope has a south aspect. Habitat is found mainly on the tops of the ridges descending into the valley. The swales support dense patches of french broom (Cytisus monspessulanus). The french broom is spreading into the habitat sites. The infested area is approximately 70 acres.

I. PURPOSE AND NEED FOR THE ACTION

These endangered butterflies are further threatened by large populations of alien plant species intruding into and replacing the specialized habitat on which the butterflies depend for food. At Milagra Ridge, pampas grass (Cortaderia jubata) and ice plant (Carpobrotus edule) are invading both mission blue and San Bruno elfin habitat. Approximately 120 acres of the site are infested with pampas grass, and approximately 10 acres are infested with ice plant. Much of the area dominated by pampas grass no longer supports butterfly habitat, however, the edges of pampas grass populations still support habitat.

French broom (Cytisus monspessulanus) is spreading into mission

blue habitat in the Marin Headlands. Approximately 70 acres of potential habitat is now infested with French broom, and this species continues to spread.

Off trail use by visitors on foot and off-road vehicles trample existing habitat and cause further loss of butterfly food plants, particularly at the Milagra Ridge site.

II. DESCRIPTION OF THE ALTERNATIVES

A. No Action. Under this alternative, no action would be taken to reduce or eliminate the effects of alien plant and trampling impacts to butterfly habitat, or to actively restore the habitat.

B. Habitat Restoration of Milagra Ridge and Marin Headlands Using Integrated Pest Management

Under this alternative an integrated management program would be used based on the results of the preliminary work done to test various techniques, and on the formal consultation with U.S. Fish and Wildlife Service. Barriers and signs would be installed in areas where trampling and off road vehicle use has damaged the habitat. New mechanical treatments of french broom would also be tested under this alternative, including mowing, crushing, cutting, and covering plants with plastic. Treatments would focus on removal of alien plant species and revegetation of the sites with native plants in order to provide additional habitat for the endangered butterflies. Each alien plant would be treated separately with a variety of integrated techniques, depending on site conditions and the potential for success. Proposed treatments are as follows:

1. Alien Plant Removal

Pampas Grass Removal (Milagra Ridge)

The goals for pampas grass removal at Milagra Ridge are:

- 1) to treat all pampas grass in year one.
- 2) to follow-up with hand crews and herbicide, if necessary, to remove all sprouts or seedlings in years two and three.
- 3) to secure continued cyclic maintenance funds to continue follow-up treatment after year 3.

Treatment methods include: using a combination of hand removal and an herbicide (2% Round-up) and limited use of light equipment (bobcat and D-7 cat). Pampas grass within mission blue habitat will be removed by hand. Areas outside the habitat have extensive amounts of pampas grass and are beyond the capability of hand crews to effectively remove. These areas will be treated

with 2% roundup and the limited use of light and heavy equipment. Dead clumps of pampas grass will be treated by one of three methods: removal by burning, removal by hand crews, or left in place to decompose.

Ice Plant Removal (Milagra Ridge)

Ice plant has been treated in the habitat area for several years. Manual removal is the primary treatment used; however, herbicide treatment with 2% Round-up has also been successful. The use of an herbicide is necessary in some areas, where hand removal would create erosion detrimental to the site due to steep slopes. All ice plant near host plants will be hand removed and taken from the site in year 2. Maintenance of the habitat area will continue through year 3. Ice plant outside the habitat area may be removed with herbicide when the slope is greater than 20%, however, hand removal is the preferred treatment (year 2).

Fennel Removal (Milagra Ridge)

Most fennel is accessible and will be removed with light equipment (bobcat) and all debris will be removed from the site and taken to a disposal site.

French Broom Removal (Marin Headlands)

The goals for french broom removal are:

- 1) to begin removal at sites closest to the habitat (year 1).
- 2) to maintain safety for freeway traffic by use of a treatment that would not create a visual distraction for drivers.
- 3) to follow-up in treated areas for the successive years of the project.
- 4) to secure cyclic maintenance funds to continue follow-up treatment after the three year project.

Removal methods will include: manual removal with weed wrenches, crushing and covering with plastic, herbicide treatment and mowing. Fire and goats were considered but rejected due to the visual impact from the freeway. Care will be taken to make sure the plastic does not reflect in a way that will threaten the safety of cars using the freeway. Another problem with plastic is that plant limbs stick holes in it which can cause it to be ineffectual. Care in cutting and applying the plastic must be taken.

2. Revegetation

Revegetation will occur in each year of the project.

The objectives of the revegetation are:

1. Replace alien vegetation with native vegetation.
2. Expand mission blue and San Bruno elfin butterfly habitat.

The following methods will be used:

1. All herbaceous and woody plant seed will be collected on site.
2. Native grass seed will be locally collected from the San Francisco Bay area.
3. Where individual plants are removed, the appropriate seed will be spread by hand and raked into the soil.
4. Plants will be grown from seed collected on site and planted in areas of high visibility.
5. Hydroseeding of the native grasses will be used in accessible areas where the grass mix is the appropriate choice.

Plant Propagation

Seeds of silver bush lupine (Lupinus albifrons), varied lupine (Lupinus variicolor), California phacelia (Phacelia californica), and coast buckwheat (Eriogonum latifolia) are plants identified as mission blue butterfly food or nectar plants. These plants will be grown in a well drained, light growing medium with Osmicote, a time release fertilizer.

Outplanting

Outplanting will occur after the first rains in November. The ground will be broken with a dibble or a pick to loosen the ground around the planting area. An auger may need to be used to penetrate hardened clay that had been compacted by off road vehicle use. Top soil or soil amendments may be needed in highly disturbed sites at Milagra Ridge.

Once the plants are removed from the containers, the roots will be loosened for all but the lupine plants, due to the sensitive nature of lupine roots.

Seeding

The native plant mix will be mixed with sawdust at a 1:3 ratio, seeded and then raked into the soil. Plants appropriate for this list are noted in Table 1.

TABLE I Proposed Seed Mix

Species

Stipa pulchra
Elymus glaucus
Plantago erecta
Lupinus albifrons
Eriogonum latifolium
Phacelia californica
Horkelia californica
Lupinus variicolor
Festuca californica
Iris douglasiana
Festuca rubra
Stipa lepida
Cirsium occidentale
Monardella villosa
Danthonia californica
Lupinus formosus
Melica californica
Cirsium quecetorum
Grindelia camporum
Baccharis pilularis consanguinea
Wyethia angustifolia

Monitoring

Success of revegetation treatments will be determined by evaluating the percent cover of: bare ground, native grasses, native forbs, alien grasses, alien forbs, pampas grass, native scrub, larval food plants, and nectar plants. Percent cover will be measured using the point method. To ascertain which treatments were the most effective after one year, factors such as presence of lupine and nectar plants, will be considered positive, and the presence of alien forbs and alien grass, for example, considered negative. Monitoring of the project revegetation success will be done 2, 5, and 10 years after revegetation.

An entomologist will be hired to map food plants and to estimate the population of the Marin Headlands site in year one of the project. Monitoring of the butterfly population in both areas will occur 5 and 10 years after the revegetation is complete in order to assess project success in enhancing butterfly populations.

Administration and Logistics

The project will require close contact with the U.S. Fish and Wildlife Service. In addition, the use of various work crews

available to the park and supervision of these crews is required so that the butterflies are not endangered by them. Coordination and consultation with local experts on the two species will be frequent.

3. Barriers and signs

In areas where trampling and off road vehicle use is damaging habitat, barriers and signs will be installed to protect the habitat.

III. ALTERNATIVES CONSIDERED BUT REJECTED

1. Fencing to Control off-trail use, with no action to control alien plants or restore habitat

Under this alternative, fencing or other barriers would be installed to limit off-trail use by hikers and vehicles, however no action to remove alien plants or restore butterfly habitat would occur. This alternative was rejected because it would provide protection from visitor use impacts but would not restore habitat that has been lost due to the encroachment of alien vegetation into the project site.

2. Other Alternatives

Pampas Grass removal by methods other than herbicide application was considered. These involved more reliance on mechanical removal, mowing or fire to eliminate alien plants, and less reliance on herbicide use. In areas where there is poor access, steep slopes, or a significant presence of native vegetation, impacts associated with removal using heavy or light machinery would create unacceptable impacts, including impacts to remnant butterfly habitat. Areas where alien vegetation is extensive are not practical for hand removal. Large scale mowing and fire have been eliminated from significant use because of the lack of evidence of potential success and, in the case of fire, because of risk to the butterfly habitat. Use of mowing and fire will occur in a controlled, small-scale manner to evaluate its effectiveness. Generally, techniques are selected to minimize impact and to maximize success. Greater reliance on the use of heavy equipment was also considered due to its successful use on a small scale, but it was rejected due to its resultant greater disturbance to adjacent communities, visitors and wildlife. The use of goats was considered but rejected due to the visibility of the Marin site from the freeway and the greater need for supervision and possible impact to remnant habitat.

IV. IMPACTS OF THE ALTERNATIVES

A. No Action

Alien plant species will remain in place of native plant species. Alien plants will continue to spread into habitat required by two federally listed species of butterflies. This could eventually lead to the reduction of habitat to the extent that these species could become extinct in GGNRA. A decrease in the biodiversity of the park would occur.

B. Restoration of the two butterfly habitat sites using integrated pest management (preferred alternative)

Impacts of the proposed restoration include the following:

Short Term Project Impacts. Increased noise, activity and traffic during the restoration process would result from limited use of equipment (bobcat, saws, pumper truck and transport of crews to the project site). This would occur primarily between August and February and would be confined to weekdays as much as possible.

Visitor Use Impacts. Trails may need to be closed during certain treatment activities, such as herbicide application and heavy equipment operations. In each case, closure would be restricted to less than one day. Herbicide treatment would be scheduled on approximately 10 days over a four month period during the first year and for several days during one month in each of the following two years.

Visual Impacts. There would be a change in the appearance of the sites. Areas dominated by showy pampas grass or French broom will appear more sparsely vegetated and more natural to Coastal California when native flora is reestablished.

Vegetation Impacts. Impacts to vegetation would include:

- o Removal of the alien species proposed on approximately 200 acres of park lands,
- o Prevention of further loss of native plant communities on these sites,
- o Reduced competition from the alien species now present.
- o Native vegetation and endangered species habitat planted will increase the availability of natural habitat, conducive to many native species including these two

federally listed endangered species.

Wildlife Impacts. Wildlife impacts include the increase of native habitat which can support many native species including two federally listed butterflies. Formal consultation with U.S. Fish and Wildlife Service has been initiated and will be completed prior to project initiation. Noise and activity associated with the project will disturb animals that would otherwise feed, nest or rest near the project sites. Preliminary wildlife surveys have been completed to verify that there will be no adverse impacts to any special status species. (GGNRA, 1986. CDF&G, 1985) Wildlife using the area will temporarily move from the site during active work phases. Some wildlife will be disrupted by the alien plant removal. Site specific surveys will determine the need for any additional mitigations in order to avoid impacts to more common wildlife species. Work will take place during times when native wildlife will be least affected.

Soils Impacts. Erosion could occur on steep slopes where french broom is being pulled out, disturbing the soil. Sites determined to have potential for erosion will be evaluated in anticipation of the need for active erosion control and will be treated as necessary, using erosion control blankets or a straw mulch. This treatment method will be avoided as much as possible in steep areas where erosion potential is high.

Cultural Resources. The proposed work would take place on sites surrounding a historic district, and will change the appearance of those sites to one more closely resembling the historic appearance. There would be no effect on any historic resources. Areas where soil disturbance could affect unknown archeological resources will be surveyed and will receive an archeological clearance prior to initiating the work.

Air Quality. Proposed burning will create short term air quality impacts. All burning will be coordinated with the Bay Area Air Quality Management District and local fire departments.

V. RELATIONSHIP TO OTHER PLANNING

Management Objectives of the General Management Plan and Environmental Analysis - Golden Gate National Recreation Area/Point Reyes National Seashore include maintaining and restoring the character of natural environment lands by controlling exotic plants and maintaining the diversity of native park life. An Environmental Analysis and Finding of No Significant Impact were approved for this plan and are

incorporated by reference into this document. (GGNRA, 1980)

The approved Natural Resources Management Plan for GGNRA states that "The main objective of the NRMP is to protect and maintain the natural ecosystems of the recreation area." The NRMP calls for Exotic and Noxious Plant Control. Included in the principal species of concern are brooms (Cytisus sp.) and pampas grass (Cortaderia sp.). The Natural Resources Management Plan included an Environmental Assessment and Finding of No Significant Impact. These documents are incorporated by reference into this document.

The Western Regional Office of the National Park Service reviewed and approved the Butterfly Habitat Restoration Plan. (June 26, 1990).

Formal Consultation with the U.S. Fish and Wildlife Service was initiated on October 24, 1990. Consultation was concluded on November 30, 1990 (1-1-91-F-1, 11/30/90). All mitigation noted in consultation is incorporated into the project.

VI. Persons and Agencies Consulted

U. S. Fish and Wildlife Service Endangered Species Office
San Mateo County Planning Department
Thomas Reid and Associates
National Park Service Cooperating Park Science Unit,
University of California, Davis
National Park Service, Western Regional Office
California Native PLant Society
Xerxes Society

A presentation was made to the Pacifica City Manager and Fire Marshall on December 20, 1990.

VII. Preparers of this document
Terri Thomas, GGNRA Ecologist
Nancy Hornor, GGNRA Environmental Specialist

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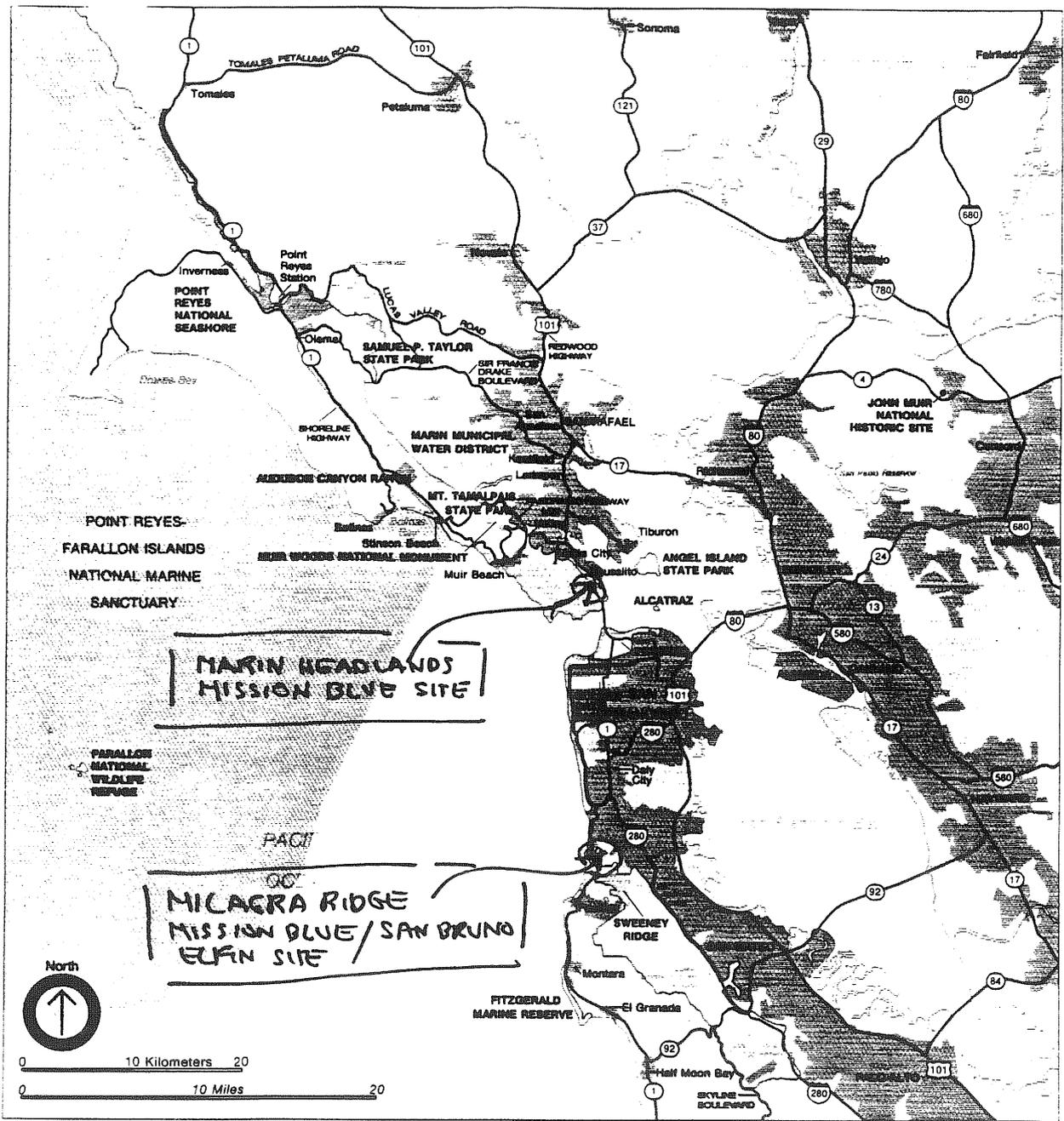
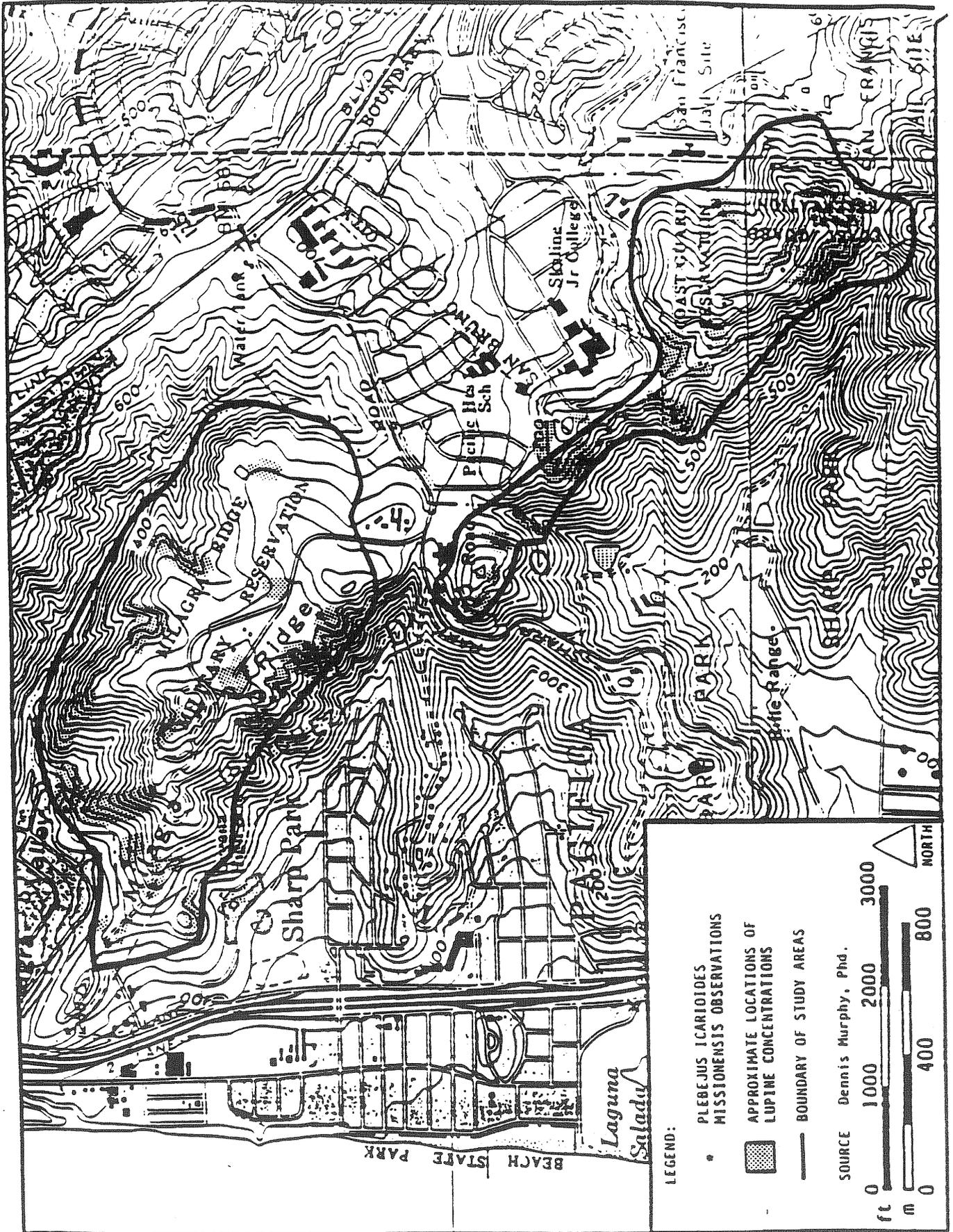


FIGURE 1

GOLDEN GATE
NATIONAL
RECREATION AREA

FIGURE 2

LOCATIONS OF LUPINE AND MISSION BLUE OBSERVATIONS ON MILAGRA RIDGE



LOCATIONS OF SEDUM AND SAN BRUNO ELFIN OBSERVATIONS ON MILAGRA RIDGE

