

**VEGETATION
MANAGEMENT
PLAN**

CABRILLO N.M.

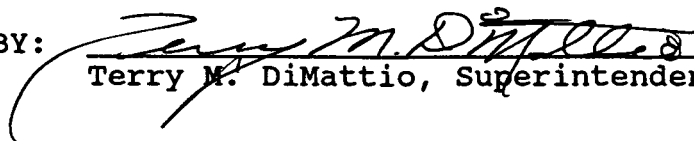
1992

CABRILLO NATIONAL MONUMENT
VEGETATION MANAGEMENT PLAN
June 20, 1992

PREPARED BY:


Howard B. Overton, Chief Ranger

APPROVED BY:


Terry M. DiMattio, Superintendent

INDEX

INTRODUCTION	1
DEFINITIONS	1
TASK ASSIGNMENTS	2
ASSIGNMENT MAP	8
ENVIRONMENTAL ASSESSMENT	9
VEGETATION MANAGEMENT PROBLEMS	11
NO ACTION ALTERNATIVE	13
VEGETATION MANAGEMENT ALTERNATIVE	13
EXOTIC PLANTS AT CABRILLO	14
NATIVE SPECIES TO REPLACE EXOTICS	15
AFFECTED ENVIRONMENT	16
NATURAL RESOURCES DESCRIBED	17
ENVIRONMENTAL CONSEQUENCES	20
NO ACTION ALTERNATIVE	20
VEGETATION MANAGEMENT ALTERNATIVE	22
CONSULTATION AND COORDINATION	24

VEGETATION MANAGEMENT PLAN

INTRODUCTION

This Vegetation Management Plan was written to accomplish the following objectives: to properly manage the park's vegetative resources in accordance with National Park Service Policy; conserve water; use limited human resources more efficiently and effectively; and restore and enhance the native coastal sage scrub habitat. The plan lays the foundation for pursuing these management objectives over a five year time period and through changes of personnel.

Cabrillo National Monument has three management zones: Natural, Developed, and Historic. Each has different management objectives, and methods of implementation.

DEFINITIONS

The Historic Zone is found around the Old Point Loma Lighthouse. It extends from the lighthouse to the outer rock retaining wall. Following the restoration of the lighthouse in the 1930's, the National Park Service established a city park atmosphere by planting many exotic species. This is now seen as incompatible with current NPS management policies. This vegetation management plan recommends restoration of the area around the lighthouse to the historic period of the 1880's. Documentation for this effort will be provided by a Cultural Landscape Report, scheduled for preparation in Fiscal Year 92. It is anticipated that exotics will be removed, the historic contours restored, soils protected from foot traffic, and historically accurate native vegetation replanted.

The Developed Zone is found around the Visitor Center (VC), parking areas, walkways, and entrance road. This zone has been managed to provide an aesthetically pleasing environment, and to keep visitors on paved surfaces and off the fragile soils. Exotics were planted primarily in these areas because most natives would not accomplish the desired management objectives. Natives were simply not aggressive enough and could not withstand foot traffic in the early stages of growth. There are now several problems associated this zone. Exotics are aggressive and tend to spill over into adjacent natural areas, which requires their removal for proper management. Many ornamental species were planted in the late 1960's and are now overmature. Exotics require more water, fertilizer and cultivation than do natives. In the areas identified in the plan, exotics will be removed gradually and replaced with natives to accomplish the aesthetically pleasing environment needed and reduce the need for water, feeding, and pruning.

The Natural Zone includes most of the land mass comprising the park. There are roughly 120 acres of coastal sage scrub within the park. This vegetation type is rapidly disappearing in southern California due to general development for residences, businesses and roads. The State of California is introducing a new management concept to retain the biological diversity of the state. Within the park, many exotic species have escaped cultivation or have been deliberately planted and crowd out the natives. This has a number of corollary effects including reducing populations of native animals which were once in abundance. Cabrillo National Monument is home to many plants that are on the edge of becoming listed as rare and endangered. Management of the Natural Zone includes gradual removal of exotics, such as eucalyptus, melaleuca, and acacia, replacement with natives, and erosion control of areas impacted by visitor foot traffic.

This Vegetative Management Plan will allow correct management of the exotic and native terrestrial vegetation and, in the end, produce the most healthy vegetative environment for the park.

TASK ASSIGNMENTS

The following tasks are associated with areas within the Developed Zone. They were developed by the multi-disciplinary vegetation management planning team. The number in parentheses corresponds to the number on the map and shows locations for the proposed action.

NORTH SLOPE - MAIN PARKING AREA (1)

Task: Gradually remove exotic plants - myoporum, melaleuca, and acacia - leaving one to shield the USN radar reflector. Other exotics will be removed as they die. Vegetation will be weaned off of irrigation through 1993.

Personnel: Maintenance and Resource Management.

Time Frame: Start 6-92, complete 6-94. 9 work days.

EXIT AREA (NORTH) (2) -

Task: Remove myoporum starting with VC side, one every six months in winter and summer. Remove ice plant (Carpobrotus sp.). Plant lemonade berry, black sage, toyon, California sagebrush, flat-topped buckwheat, coyote bush, bladderpod and laurel sumac, not too densely. Wean vegetation from irrigation by end of 1992.

Personnel: Maintenance.

Time Frame: Start 6-92, complete in 1995. 3 work days.

EXIT AREA (WEST SIDE) (3) -

Task: Remove myoporum (9) and natal plum (Carrisa sp.) gradually. Remove ice plant. Prune bottlebrush to allow natives to expand and plant natives such as red bush, monkeyflower, California poppy and gooseberry. Be sensitive to when bottlebrush is blooming and prune when it will make the least impact. Wean off irrigation by end 1994.

Personnel: Maintenance.

Time Frame: Start 6-92, complete 1995. 10 workdays.

OCEAN VIEW PARKING AREA (4)-

Task: Put in split rail fence along sidewalk. Prune acacias, and plant wild rye, lemonade berry seed, bladderpod, chaparral broom, California encelia and laurel sumac underneath and behind. As plants/shrubs grow, remove acacias. Have replacement plants and fence ready to install before pruning the acacias. After new vegetation is established, wean off irrigation. See additional comments on Myoporum Grove, below.

Personnel: Maintenance will do pruning, Resource Management, the rest.

Time Frame: Start 6-92, complete 9-93. 7 workdays.

LIGHTHOUSE ROAD (WEST SIDE) (5)-

Task: Remove myoporum (2), beginning near lighthouse, one every six months, and wean off irrigation. Natives are established but are shaded by myoporum.

Personnel: Maintenance.

Time Frame: Start 6-92, complete 12-92. 2 workdays.

LIGHTHOUSE REST ROOM AREA (6)-

Task: Remove dying pine. Plant natives. Leave other pine and cypress alone until they die - then remove. Resource Management will start removing ice plant and will plant natives.

Personnel: Maintenance will remove the trees.

Time Frame: 6-92. 1 work day.

WHALE OVERLOOK (7) -

Task: Remove small melaleucas near benches at the north side of the Whale Overlook and the largest pine on the south side of the overlook. Spread the chips on the revegetation area. Except for the planting right at the overlook, stop irrigating.

Personnel: Maintenance.

Time Frame: Start 6-92, complete 9-92. 2 work days.

RADIO TOWERS (8) -

Task: Remove acacias adjacent to fence and plant wild rye, lemonade berry and toyon. As the natives mature, take out the rest of the acacias. Remove natal plum. Remove large melaleuca and replace with lemonade berry and toyon.

Personnel: Maintenance.

Time Frame: Start 6-92, complete 6-96. 5 workdays.

DRINKING FOUNTAIN SO. LIGHTHOUSE (9) -

Text: Remove acacias and natal plum to junction of Battery Humphrey road. Plant bare spots with scrub oak, cliff spurge, coyote bush, monkeyflower, California encelia and other appropriate natives.

Personnel: Resource Management will replant with natives. Maintenance will remove the acacia and natal plum.

Time Frame: Start 6-92, complete 5-93. 5 work days.

REVEGETATION AREA (10) -

Task: Fence and plant along west side with toyon, lemonade berry and scrub oak. Remove stumps of exotic trees, ice plant, geraniums and other exotics, and old light fixtures. Where the trail is being used by visitors to get to the Whale Overlook, cut a path and pave the surface, revegetate the slopes using erosion control mat and drip irrigation. Installation of the fence should be a Boy Scout project, the replanting contingent on their schedule.

Personnel: BSA Eagle Project.

Time Frame: 1993.

LIGHTHOUSE (11)-

Task: Leave as is until completion of Cultural Landscape Report. Gradually remove geraniums and Lily of the Nile.

Personnel: Maintenance.

Time Frame: Start 6-92. 2 work days.

WEDDING BLUFFS (12)-

Task: Remove melaleuca and eucalyptus over bunker. Remove acacias and ice plant. Pine trees will remain. Bring in soil where necessary and replant with natives. Install erosion control mat and drip irrigation to allow establishment of native plants.

Personnel: Resources Management will take responsibility for this area.

Time Frame: Finish in 1993, depending on plant availability. 5 work days to remove trees.

LIGHTHOUSE ROAD (EAST SIDE) (13) -

Text: Remove pittosporum, natal plum and other exotics gradually and replace with appropriate natives suitable for the location. Remove ice plant. Remove shuttle path when the walkway from the Visitor Center to the lighthouse is replaced. Wean off irrigation once natives established.

Personnel: Maintenance.

Time Frame: Start 6-92 and complete 1994. 2 work days.

SOUTH SLOPE - ENTRANCE ROAD (14) -

Task: Wean off irrigation. Plant natives where necessary, when plants are available. Remove ice plant, exotic flowers (Lily of the Nile and geraniums) and weeds on flat area adjacent to walkway and replant with low native plants, such as California sage, flat-topped buckwheat, bladderpod, California encelia, sawtoothed goldenbush, purple needlegrass, and yuccas.

Personnel: Maintenance.

Time Frame: 1992. 2 work days.

VISITOR CENTER (15)-

Task: Leave as is except Cabrillo statue area. At the statue plant natives outboard of natal plum and wall. When natives are

established, remove natal plum. See additional comments below.

Personnel: Maintenance.

Time Frame: When plants are available, 6-92. 5 work days.

NORTH BANK - ENTRANCE ROAD (16) -

Task: Plant natives where holes exist or open in the natal plum. Be aware of heights and plant lower shrubs where the view may be obscured. Install walkway to Ocean View. See additional comments on main parking area below.

Personnel: Maintenance

Time Frame: Start 6-92. Ongoing.

The following tasks are associated with areas within the Natural Zone. They were developed by the multi-disciplinary vegetation management planning team, and have been developed to restore the coastal sage scrub habitat.

EAST OF BATTERY HUMPHREY ROAD (17) -

Task: Resource Management did revegetate the social trails and will gradually remove the exotics, including eucalyptus.

Personnel: Resource Management

Time Frame: 1992-1997.

TIDEPOOL AREA (18) -

Task: Resource Management will revegetate the area west of the fence with appropriate natives.

Personnel: Resources Management

Time Frame: 1992-1993.

NORTH OF OLD MAINTENANCE (19)

Task: Gradually remove eucalyptus down slope.

Personnel: Resources Management Division.

Time Frame: 1992 - 1997.

VISITOR CENTER AREA

In the area immediately adjacent to the visitor center complex (auditorium/exhibit room, rest area, view building and administration building), the vegetation will remain predominantly exotic trees, plants and flowers. These plants will be fertilized, and pruned as needed to maintain their health and attractive appearance. Diseased, severely damaged or dead specimens will be removed and replaced with drought tolerant species compatible with San Diego's climate. The park will request a list of appropriate replacement trees/shrubs that enhance bird habitat from the San Diego Chapter of the Audubon Society. Native and exotic plants that have grown adjacent to the east side of the administration building and that pose a threat to the structure and visitors should a fire erupt on the east side of the park will be removed to a point 20 feet down slope to protect the welfare of visitors and employees, and National Park Service structures.

PICNIC AREA - MYOPORUM GROVE

The Myoporum Grove is defined as that area southwest of the intersection of the entrance and lighthouse roads and bounded by the paved path and the entrance and lighthouse roads.

The Myoporum Grove will continue to be managed as follows to provide maximum habitat for birds. Dead, diseased, damaged and dying myoporum, pittosporum and natal plum will be removed and replaced with appropriate natives, such as toyon, lemonade berry, and laurel sumac. The existing myoporums will be allowed to grow naturally and not be pruned, except to remove dead and broken branches, wind or winter storm damaged plants or those that pose a hazard to visitor safety.

The picnic tables, trash receptacle and wooden border that outlines the picnic area will be removed in the fall of 1992. The watering area for birds will be maintained by the park staff.

LANDSCAPED ISLANDS IN MAIN PARKING AREA

The vegetation in the landscaped islands consists of a mixture of native and exotic shrubs and small trees. As the exotic plants die or become damaged and/or diseased, they will be removed and replaced with appropriate natives. The exotic shrubs and trees will be fertilized, and pruned to maintain their health and attractive appearance. Broken branches or those that are a hazard to visitor safety, will be removed.

ENVIRONMENTAL ASSESSMENT FOR
VEGETATION MANAGEMENT
CABRILLO NATIONAL MONUMENT

I. Purpose and Need.

Description of Park.

Cabrillo National Monument consists of 144 acres. It is bounded by the Pacific Ocean on the west and San Diego Bay on the east. On the north and south Navy land, and City of San Diego land abut the park.

The monument is located within the City and County of San Diego, California, in the community of Point Loma. It is physically located on the ridge of Point Loma that forms the western side of San Diego Bay. California Route 209/Catalina Boulevard directs traffic to the park, which is located at the southern end of Point Loma.

Cabrillo National Monument was established by President Woodrow Wilson's proclamation No. 1255, October 14, 1913, for the purpose of reserving a site for the construction of a heroic statue of Juan Rodriguez Cabrillo by the Order of Panama "to commemorate the discovery of California by Juan Rodriguez Cabrillo on the 28th day of September, 1542."

In Presidential Proclamation No. 1773, May 12, 1926, the Native Sons of the Golden West, a patriotic organization, was authorized to erect a suitable monument upon the site in commemoration of the discovery of California. Neither organization exercised its authority to construct a statue or monument.

The one half acre monument, which was transferred from the War Department to the National Park Service on July 28, 1933 by Executive Order 6228, has since been enlarged three times. President Dwight Eisenhower's Proclamation No. 3273, February 2, 1959, increased its size by 80.5 acres. President Gerald Ford's Proclamation No. 4319, September 28, 1974, enlarged the Monument by 56.6 acres to its present size of 143.94 acres. Both proclamations state that "... the additional land is essential to the proper care and management of the historical landmarks and historical objects of the area."

The 6.88 acres on which the "old Maintenance area" is located is presently used by the park but title resides with the Bureau of Land Management. This parcel of land is described in PLO 5234 of July 14, 1972 and became part of the park in a swap with the U.S. Navy. It, and an additional 16 acres in survey and withdrawal

process at the time of writing, need to be transferred to Cabrillo by Presidential Proclamation.

The monument is part of the Federal reservation which was withdrawn from the public domain for military use by the Order of February 26, 1852. Exclusive Federal criminal jurisdiction was acquired from the State of California on March 2, 1897. Civil jurisdiction remains with the State of California.

The purpose of Cabrillo National Monument is to commemorate the voyage and accomplishments of Juan Rodriguez Cabrillo and to communicate this story and its significance to visitors and local residents; preserve, protect, interpret, and enhance the cultural and natural resources within and adjacent to the park; and to provide visitors the opportunity to experience and understand the environmental and human interrelationships both within and visible from the park.

The mentioned Presidential Proclamations also state: "The land shall be subject.... to the right of the Department of Defense to retain, for such length of time as required by it, the use of roads and utilities now being used by it, and the right to require that no activity will be conducted within the monument that would interfere with the defense activities being conducted in the vicinity thereof."

A Memorandum of Agreement with the Navy (Submarine Base), designates a portion of the land described in PLO 5234 as a buffer zone (explosive arc). Since the buffer zone precludes the "use" of the old maintenance building, the agreement provides a replacement structure within the Naval Ocean Systems Center (new maintenance). Use is defined as: persons can come and go from the site, it can be used for storage and other purposes, but it can not have people staying in the area for long periods of time on a regular basis.

Submerged lands containing the tidepools are managed under a Cooperative Agreement with the U.S. Army Corps of Engineers. The Agreement, No. DACA09-4-89-62, expires 10 August 1994. The land in question extends from the low water mark to 300 yards offshore and from the mutual boundary between the Point Loma Wastewater Treatment Plant and Cabrillo National Monument to a point 300 yards east of the new Point Loma Light.

An Interagency Agreement between the Naval Ocean Systems Center and the National Park Service (IA8110-6-002) allows us to manage 16+ acres of land north of the Naval mammals facility and west of Gatchell Road. This area is known as the tidepool parking and access area. This Interagency Agreement expires 12-6-92. This land has been declared excess to the Navy's needs and Cabrillo

N.M. is seeking withdrawal for NPS use at the time of this writing.

Walking access to the Bayside Trail is provided by a Navy license for use of portions of Battery Humphrey's Road and Sylvester Road. License No. N6871192RP02P73 expires 12-31-96.

The National Park Service has issued a Right of Way Permit to the City of San Diego for the construction, use, and maintenance of Cabrillo Road and Gatchell Road in exchange for access to the Point Loma Wastewater Treatment Plant. That Right of Way is being renewed at this time. The City has sought a change in the right of way due to heavy coastal erosion near the current entrance to the wastewater treatment plant.

The Bayside Trail itself is on land excepted from the land transferred to the National Park service in Proclamation 4319. This trail is the remnant of the Sylvester Road on the Submarine Base.

Cabrillo National Monument has always been heavily visited. From the 1960's through 1987 visitation increased. In 1987 visitation peaked at 1.8 million per year. Over the last several years visitation has decreased as has visitation at other visitor attractions in San Diego. Visitation to the park in 1990 was 1.37 million. Visitation in 1992 is increasing over 1991.

Vegetation Management Problems.

Point Loma has been impacted by humans since the late 1700's. Cattle have been grazed over this area since San Diego was established in 1769. After California became part of the United States, these uses continued. Exotics planted by the U.S. Army and the National Park Service are invading the Natural Zone, are not in keeping with National Park Service management policies, in particular those resulting from the Leopold Report of 1967. This study recommended that native flora and fauna should be promoted in National Parks and that exotic habitats were inappropriate to these areas. These exotics contribute to loss of native coastal sage scrub, and cost park funds to maintain.

When the land comprising the park belonged to the U.S. Army, a large number of eucalyptus and Monterrey cypress trees were planted. The eucalyptus trees have escaped cultivation, resulting in three large groves in the park. These groves compete with native coastal sage scrub plants by shading out the lower growth natives and competing for the limited rainfall at the park.

When the park was transferred to the NPS from the War Department in 1933, it consisted of $\frac{1}{2}$ acre around the Old Point Loma Lighthouse. The lighthouse was restored and the surrounding grounds were landscaped to a non-historic, city park landscape. This non-historic scene remains to this day with a large amount of ice plant, Carpobrotus edulis and five torrey pines, Pinus torreyana which historically did not occur on Point Loma.

The primary ecotype of the park is described as coastal sage-scrub. Other names include: chaparral, coastal chaparral, and maritime scrub. This ecotype is fast disappearing in San Diego County because of the rapid development of buildable land. In the period 1980 to 1990, San Diego County added about 1 $\frac{1}{2}$ million residents. This puts added pressure on the park's ecosystem as a remnant of a diminishing resource. The rich lichen flora of Point Loma is well represented at the Monument.

Although fire is a common element in the evolution of coastal sage scrub, it has been suppressed within the park for the last 90 years. This causes senescence to occur. The resulting changes primarily are the dominance of longer lived plants, and a lessening of the number of species.

In the Mission 66 program, the National Park Service created a large parking area and visitor center complex primarily by filling in canyons. In the landscaping of this area, a great many exotic cultivars were used. At the time this was not contrary to NPS policy. Shortly afterward, the Leopold report came out. Many of the exotics planted by the park remain. Some of them escape cultivation easily, especially acacia, myoporum, and to a lesser extent melaleuca. They are thought to be more competitive than natives due to nitrogen fixing bacteria in their root systems.

Over the past ten years, a great deal of resources management work, primarily removal of exotic plants, has occurred in the park. This has met with varying degrees of success. The following exotic plants have been largely, but not completely, removed from the native areas: acacia, Acacia cyclops; Melaleuca sp.; sweet fennel, Foeniculum vulgare; jade plant, Crassula argentea; geranium, Pelargonium sp.; castor bean, Ricinus communis; oleander, Nerium oleander; tree tobacco, Nicotiana glauca; klamath weed, Hypericum sp.; and myoporum, Myoporum laetum. A few eucalyptus have been removed. The most abundant, persistent and invasive exotic is sea fig, Carpobrotus edulis, generally called ice plant. Small patches of this plant have been removed, but it is dominant in many areas. Three plants that are extremely persistent are acacia, eucalyptus, and myoporum. Birds drop the seeds in the park from plants on Navy property. Also the seeds dropped from acacia's removed from the park remain viable for 80 years. A long range effort must be maintained to keep these exotics out of the park.

II. Alternatives

1. No Action

If no action is taken the following natural processes will occur: exotics such as acacia, eucalyptus, myoporum will escape cultivation and appear in the Natural Zone; exotics will out compete natives for available water, nutrients, and sunlight resulting in a decrease of native biomass and an increase of exotic biomass; the ecosystem will continue to age due to lack of fire; the non-historic landscapes in the historic zone will remain; vegetation management policies that are no longer appropriate will continue; and the ecosystem will continue to decline.

2. The Proposal: Vegetative Management.

There are three zones in the park: Historic, Development, and Natural. Each zone requires the application of unique techniques.

The Historic Zone at the Old Point Loma Lighthouse would be planted and restored to the historic scene of the 1880's insofar as that can be determined.

The exotics in the Native Zone (coastal sage scrub) would gradually be removed. This would be accomplished by physical removal. Native plants will be planted to reduce erosion and restore the coastal sage scrub habitat and heal the scars wrought by removal of exotics. Continuous monitoring will be done to prevent the reintroduction of exotics species.

The Developed Zone requires more complex decision making. Natives are often less tolerant of human impact than exotics, making them less suitable for cultivation. In the immediate vicinity of the Visitor Center, exotics have to be used. The Visitor Center is shown on the map on page 8. This area includes the view building, administration building, museum, auditorium, statue, main parking lot, and associated walkways, streets and parking lots. Only those exotics that will not escape from cultivation and that are drought tolerant would be used in the Developed Zone. Such plant populations need to be monitored to ensure they do not escape cultivation. In the areas on the periphery of the Developed Zone, exotics will be gradually removed and replaced with natives to save water, make more efficient use of limited human resources, and reduce the amount of time spent on cultivating the designated landscape.

Exotic Plants Found At Cabrillo

Trees

TECHNICAL NAME	COMMON NAME
<u>Cupressus macrocarpa</u>	Monterrey Cypress
<u>Cupressus forbesii</u>	Tecate Cypress
<u>Eucalyptus sp.</u>	Eucalyptus
<u>Pinus halepensis</u>	Aleppo Pine
<u>Pinus thunbergii</u>	Japanese Black Pine
<u>Pinus torreyana</u>	Torrey Pine

Shrubs

<u>Acacia spp.</u>	Acacia (Several species)
<u>Callistemon citrinus</u>	Red Bottlebrush
<u>Carissa grandiflora</u>	Dwarf Natal Plum
<u>Ceanothus impressus</u>	Blue Ceanothus
<u>Crassula argentea</u>	Jade Plant
<u>Dodonaea viscosa</u>	Purple Leaved Dodonea
<u>Eriogonum arborescens</u>	Santa Cruz Island Buckwheat
<u>Foeniculum vulgare</u>	Sweet Fennel
<u>Hakea suaveolens</u>	Needle Bush
<u>Hebe elliptica</u>	Hebe
<u>Hypericum sp.</u>	Klamath Weed
<u>Juniperus conferta</u>	Shore Juniper
<u>Leptospermum laevigatum</u>	Compact Australian Tea
<u>Melaleuca sp.</u>	Melaleuca
<u>Myoporum laetum</u>	Myoporum
<u>Nerium oleander</u>	Oleander
<u>Nicotiana glauca</u>	Tree Tobacco
<u>Pelargonium sp.</u>	Geranium
<u>Pittosporum crassifolium</u>	Evergreen Pittosporum
<u>Pittosporum tobira</u>	Mock Orange
<u>Ricinus communis</u>	Castor Bean
<u>Xylosma congestum</u>	Shiny Xylosma

Vines, Groundcovers, etc.:

<u>Agapanthus africanus</u>	Lily Of The Nile
<u>Ajuga reptans atropurpurea</u>	Carpet Bugle
<u>Carpobrotus edulis</u>	Sea Fig
<u>Cissus rhombifolia</u>	Grape Ivy
<u>Gasoua crystallinum</u>	Annual Ice Plant
<u>Gazania pavonia</u>	Yellow Hybrid Gazania
<u>Hedera helix</u>	Boston Ivy

Native Species to Replace Exotics

Technical Name	Common Name
<u>Adenostoma fasciculatum</u>	Chamise
<u>Agave shawii</u>	Shaws Agave
<u>Arbutus menziesii</u>	Madrone
<u>Artemisia californica</u>	Sage Brush
<u>Baccharis pilularis</u>	Chaparral Broom
<u>Bergerocactus emoryi</u>	Velvet Cactus
<u>Ceanothus verrucosus</u>	Coast White Lilac
<u>Cleome arborea</u>	Bladderpod
<u>Cneoridium dumosum</u>	Coast Spice Bush
<u>Dichelostemma pulchellum</u>	Wild Hyacinth
<u>Dudleya spp.</u>	Dudleya, 4 species
<u>Elymus condensatus</u>	Giant Ryegrass
<u>Encelia californica</u>	Blackeyed Susan
<u>Eriogonum fasciculatum</u>	Buckwheat
<u>Euphorbia misera</u>	Cliff Spurge
<u>Ferocactus viridescens</u>	Coast Barrel Cactus
<u>Haplopappus squarrosus</u>	
<u>Heteromeles arbutifolia</u>	Toyon
<u>Mammillaria dioica</u>	Fishhook Cactus
<u>Nesella pulchra</u>	Bunchgrass
<u>Opuntia parryi var. serpentina</u>	Snake Cholla Cactus
<u>Quercus dumosa</u>	Scrub Oak
<u>Rhus integrifolia</u>	Lemonadeberry
<u>Salvia mellifera</u>	Black Sage
<u>Satureja douglasii</u>	Yerba buena
<u>Xylococcus bicolor</u>	Mission Manzanita
<u>Yucca schidigera</u>	Mojave Yucca

This list of natives is not meant to be exclusive of other native species.

Implementation of Proposed Action.

Implementation of this proposal will require mitigation for the following concerns.

1. Natural resistance to change in and of itself: Because Cabrillo has a visitor population that repeatedly visits the park and parts of the park are San Diego landmarks, change is often noticed and opposed. Mitigation for this effect is to slow the process of removal of exotic plants to lessen the observable impact, and to provide information and interpretation to the public about what is being done.

2. Resistance to change for reason: Bird watchers resist change because they specifically want myoporum and other trees that attract and shelter birds and allow the bird watching community to easily see the birds. Native vegetation also attracts birds,

but the bird watchers have more difficulty seeing them in native plants. Mitigation for this effect is accomplished submitting the vegetation management plan to bird watching groups for review and comment, by communicating with the bird watching groups, halting removal of exotics in specific areas, replacing exotics with appropriate natives, and keeping their concerns in mind.

3. Land scars caused by vegetation removal. Mitigation can be effected by gradually removing exotics, replanting with native stock rather than reseeding and educating the public with signs and other interpretive media. As exotics in the landscaped islands in the main parking lot die, they will be replaced with appropriate natives. When native vegetation is planted, the park will make every effort to ensure they survive: soil amendments and fertilizer will be used when new stock is planted, and the plants will be regularly fertilized and watered until they have become established.

4. Irrigation to restored areas may be discontinued. It may be restored, however, during times of drought to maintain vegetation.

III. Affected Environment

Cultural and Historical Resources.

Cabrillo National Monument was established to commemorate the discovery of the west coast of the United States by European man and to remember that particular man, Juan Rodriguez Cabrillo, a Portuguese, in the service of Spain. Cabrillo did not stay and Spain did not consider colonization for over 70 years. This area, within recorded history, has been part of New Spain, Mexico, and the United States. The overriding interpretive theme is "The Man and the Sea Relationship". Spanish exploration and native Americans are part of that. Lighthouses are part of that. Coastal sage scrub is part of that. The magnificent harbor and city view are part of that. Coastal fortifications are part of that. Together these make up the complex interaction of many assets that are Cabrillo National Monument.

The original statue of Juan Rodriguez Cabrillo, brought to San Diego in 1940, was placed at the lighthouse and dedicated on September 28, 1949. It was later moved to it's current site, adjacent to the Visitor Center. Because of the physical deterioration of the original statue a new one was cut, duplicating the exact shape and color of the original. The stone of the new statue is harder than that of the original, however. The new statue, cut in Portugal, transported to the United States by the Portuguese Navy and paid for by Marion Reupsch, a Point Loma resident, was dedicated Sunday, February 28, 1988.

The Old Point Loma Lighthouse, built in 1855, is one of the original eight lighthouses built along the west coast of the U.S. It was to be torn down and be replaced by an heroic statue of Cabrillo that was never constructed. The Old Point Loma Lighthouse went out of service in 1891.

The original one half acre National Monument was carved out of Fort Rosecrans, part of the coastal defenses of the United States. As it expanded, the park obtained historic structures associated with this pre WW I and WW II period of U.S. military history.

Additions to the monument of excess military land increased our acreage of coastal sage scrub. This ecotype is vanishing rapidly in southern California as more and more land is developed. At this time, San Diego is one of the ten fastest growing cities in the U.S.

There are 17 structures on the List of Classified Structures, including the lighthouse. If the transfer of land from the Navy to the NPS occurs, there will be two other structures to add. There are at least 10 archeological sites, some of which are identified on a geographic information map in the Chief Ranger's office.

Cabrillo is thought never to have set foot in what is now the park. Rather, he most likely landed on what is now Ballast Point, the Naval Submarine Base, which can be viewed from the park.

Natural Resources

Water

There are no known ground water resources within the park. There are no natural seeps, or springs. Runoff only occurs during heavy rainfall. The Old Point Loma Lighthouse historically was dependent on rain stored in cisterns for water. The park presently uses City of San Diego water for all its needs.

Mapping

The park contains a number of survey bench marks which are important resources to the community. One City of San Diego boundary marker is located within the park. There is also a new bench mark within the park. This is a satellite disk that will enable scientists to determine relative tectonic plate movements of the western United States.

Vegetation

Cabrillo National Monument consists of 128 acres of coastal sage scrub, chaparral, and maritime succulent scrub communities (Beauchamp 1986). Of the total 145 acres in the park, 17 acres are cultivated in a variety of different native and exotic plants. The remainder is most likely representative of that which existed at the time of European man's introduction to California. Another name used for the coastal sage scrub is coastal chaparral. It is a unique resource that is quickly disappearing in southern California because of rapid urban development. It may soon become a vestigial resource, and increasingly more important. An abundant lichen flora is also found in the park with several species being rare.

This coastal sage scrub is a fire dependent ecotype. The fire cycle of this resource is said to be every 80 to 120 years. The fire cycle of inland chaparral is every 20 years. The difference may be attributable to the increased moisture of the sea breezes constantly impacting this resource, and the generally milder temperatures along the ocean. The age of this park's coastal sage scrub is now about 90 years. This was determined by the U.S. Forest Service in 1980. The fuel load in the park is very high on the east side and north facing slopes. A fire under adverse conditions would be very difficult to stop. Park fire suppression is handled by the Federal Fire Department.

Birds

Over 350 species of birds have been identified in the park. This is due to a combination of factors. The park is on the Pacific flyway and is a land trap, surrounded on three sides by water.

Both coastal sage scrub species and marine species are found here. Birds who have lost their sense of direction in migration, accidentally come to the park. Being surrounded by water, many of them remain. This last factor accounts for the tremendous number of accidental species found here.

Marine Mammals

The Gray Whale is of interest to many visitors to Cabrillo. During the migration period of December through March, thousands of visitors come to the park to see these whales as they pass by a short distance offshore.

Rare, Endangered Species

There are a number of plants and animals that are rare, endangered or of more than casual interest in the park. The peregrine falcon, which historically nested near the park has been successfully reintroduced on Naval Command, Control, and Ocean Surveillance Center (NCCOSC) land. It is often seen here, but does not nest here. The Brown Pelican roosts and flies by the park daily. There are no nesting activities yet. Both of these birds are endangered.

In the continental United States one species of lichen is only found here; Dendrographa leucophaea. Other plants of interest: Agave shawii, only one of two locations in continental US, it is found throughout Mexico; Euphorbia misera, cliff spurge, almost on the California endangered list, common in the park; Ferocactus viridescens, coast barrel cactus, habitat diminishing and plant diminishing, common in park; Opuntia parryi serpentina, snake cholla, rare, common in park; an unusual stand of Bergerocactus emoryi, velvet cactus; Dudleya caespitosa, recently discovered and well south of the known range of the plant.

Mammals

The grey fox, striped skunk, California ground squirrel, and brush rabbit are dominate mammals. Mule deer, coyote, and bobcat have not been observed. Feral house cats, common mouse and rats also inhabit the park and at times become a problem.

Reptiles

Three species of snakes: California striped racer; San Diego gopher snake; southern Pacific rattlesnake; and three species of lizards: great basin fence lizard; California side-blotched lizard; San Diego alligator lizard inhabit the park.

Climate

The climate is semi-arid, Mediterranean. Average annual rainfall is 9.32 inches.

Geology

The park sits on top of the Point Loma peninsula. This land mass, once an island, moved north over geologic time until it came in contact with the mainland. This joining caused the Bay of San Diego to form. The peninsula is comprised of three formations; uppermost is the Bay Point formation (Quaternary age), next the Cabrillo formation, and next the Point Loma formation (latter two are Cretaceous age). The park is surrounded by water on the east, west and south sides.

Tidepools

Adjacent to the park, and administered by the National Park Service under a cooperative agreement with the U.S. Army Corps of Engineers, are approximately one half mile of tidepools. These tidepools have always received a greater degree of protection than others found in San Diego County. For this reason, and because of the large population that has easy access to them, they are an attractive resource for both school groups of all ages and the casual visitor. The tidepools are currently the subject of a six year monitoring program managed by Gary Davis, Channel Islands National Park. Over 350 species of plants and animals live in the tidepools.

Neighbors

Park neighbors have an effect on the natural environment. To the northwest of the park lies the Point Loma Wastewater Treatment Plant. It processes up to 250 MGD of effluent. It is advanced primary treatment and removes 85% of solids. The discharge is into the Pacific about 2 miles out. Hazardous materials are transported to this site in volume daily through the park.

The San Diego treatment plant presently is under a one billion dollar expansion program. The sole access to the plant is through the park.

Other park neighbors are the Naval Command Control and Ocean Surveillance Center and the San Diego Naval Submarine Base. Both of these facilities are interested in security of their installations. These concerns quite often impact park operations. A third neighbor is the U.S. Coast Guard. Their operation generally does not impact the park.

Aesthetics

Perhaps the most overlooked resource is the view itself. Although the park was established to commemorate Cabrillo, the reason that a large proportion of persons come to the park is the view. In a recent visitor questionnaire, 65% indicated they came to see the view.

IV. Environmental Consequences

1. No Action Alternative.

Water

Water resources will not be impacted by the No Action Alternative. The park will continue to use large amounts of city water to maintain the health of exotic vegetation.

Mapping

Mapping resources will not be impacted by the No Action Alternative.

Vegetation

Through the No Action Alternative Cabrillo National Monument will not be in compliance with NPS policy on vegetation management as outlined in the Leopold report and NPS policy guidelines.

Exotics will continue to invade the Natural Zone and increase in proportion to relative biomass of all species of plants in the park. The reason for this is that they are more competitive, escape cultivation, and crowd out natives. This currently is observable in several areas of the park.

As the plant community becomes less native and more exotic, animals that are resident of and dependent on native plant species for survival will decline.

Plants that are rare or endangered will have diminished space available for them.

The park will continue to spend limited fiscal and human resources to fertilize, prune, and care for exotic vegetation.

Birds

Birds may be impacted by the No Action Alternative. These are animals that are ecotype dependant. As habitat is reduced and fragmented, ecotype dependent species may decrease. The fact that coastal sage scrub is rapidly disappearing throughout the state further aggravates this problem. The No Action Alternative will cause increased habitat depletion. This will occur over a long time span and will not be noticeable to casual observers.

Marine Mammals

Marine mammals will not be impacted by the No Action Alternative.

Reptiles

Reptiles may be impacted in the same way as birds. The reptiles found in the park are endemic to the habitat found here. As it diminishes, the reptile population will diminish in relation.

Climate

The climate will not be impacted by the No Action Alternative.

Geology

The geology will not be impacted by the No Action Alternative.

Tidepools

It is believed that the tidepools will not be impacted by the No Action Alternative. However, tidepools are affected by runoff from the land and there could be an unknown impact.

Endangered Species

Endangered species that are ecotype dependent would be further threatened.

Neighbors

Park neighbors will not be impacted by the No Action Alternative. Things will remain the same. To our knowledge this will not impact neighbors operations.

Other

The view from Cabrillo will be impacted over time by the No Action Alternative. In particular, as eucalyptus grow, view sheds will gradually disappear in the park.

2. The Proposal: Vegetation Management Alternative.

Water

Park water resources will not be impacted by the Vegetation Management Alternative. The park will use less city water for irrigation under this alternative.

Mapping

Vegetation mapping done at the park will be impacted. As types change, the map will need to be altered to correspond. No other mapping outside of the park will be impacted.

Vegetation

Plants that are rare or endangered would have more land in which to grow naturally. This would enhance all native plant populations. Through maintenance of the ecotype, dependent animal and bird populations will be more secure.

Cabrillo National Monument will be in compliance with NPS policies and the Leopold report by the Vegetation Management Alternative.

The acreage for coastal sage scrub will be slightly increased.

Animals that are endemic to the coastal sage scrub would have a greater area in which to compete and survive. Populations would correspondingly grow.

Birds

Native bird populations would be enhanced due to greater space being available. Bird watching groups would suffer somewhat from this alternative. Birds are more difficult to see in native shrubs than in many exotic shrubs. The birds watchers would have more difficulty seeing them. Food sources for these birds would remain stable.

Marine Mammals

Marine mammals would not be impacted by the Vegetation Management Alternative.

Reptiles

Reptile habitat would be improved. This would result, over a greater length of time, in improved reptile populations at the park.

Climate

Climate would not be impacted by the Vegetation Management Alternative.

Geology

Geology would not be impacted by the Vegetation Management Alternative.

Tidepools

To our knowledge, tidepools would not be impacted by the Vegetation Management Alternative.

Endangered Species

Species that are ecotype dependent would be enhanced.

Neighbors

As view sheds change under this alternative, neighbors might be impacted by the changing scenes.

Aesthetics

The views from the park would improve. The lower native vegetation would open up view sheds that were once available in the park but have been obscured for many years.

All actions under this alternative would need to be closely monitored to see that adverse impacts were not occurring. Once vegetation management is complete, the park will be able to redirect money and people to preservation of other park resources.

V. Consultation and Coordination

The following persons assisted, were consulted or otherwise had planning input into this document.

1. Jim Huddleston, Division of Planning, Western Regional Office, National Park Service.
2. Gary Davis, marine biologist, Channel Islands National Park.
3. Steve Viers, ecologist, National Park Service Cooperative Science Unit, University of California, Davis.
4. Roni Lee Clark, botanist, California State Park System, Regional Office, San Diego, California.
5. Bill Halvorsen, botanist, Channel Islands National Park.
6. Claude Edwards, ornithology consultant, San Diego, California.
7. Dr. Joy B. Zedler, Biology Department, San Diego State University, San Diego, California.
8. Dr. William Graf, Biology Department, San Jose State University, San Jose, California.
9. A. Starker Leopold Report, National Park Service, 1967.
10. Charis C. Bratt, lichenologist, Santa Barbara Museum of Natural History, Santa Barbara, California.
11. Dr. Andrew Lissner, Science Applications Intl Corp, La Jolla, California.
12. Dr. Joan G. Stewart, Scripps Institute of Oceanography, La Jolla, California.

13. The San Diego Field Ornithologist group.
14. Walter Graves, Agricultural Extension Agent.
15. Gary Reece, County of San Diego, Office of Fire Services, Watershed Fire Management Program.
16. Thomas C. White, Assistant Program Manager, Laguna Morena Demonstration Area, Cleveland National Forest.
17. Don L. Studebaker, Assistant Fuel Modification Manager, Cleveland National Forest.
18. Lisle R. Greene, Pacific Southwest Forest and Range Experiment Station, Riverside, California.
19. Kathleen M. Davies, Western Regional Office, National Park Service.
20. R. Mitchel Beauchamp, Pacific Southwest Biological Services.

N1617 (WR-RN)

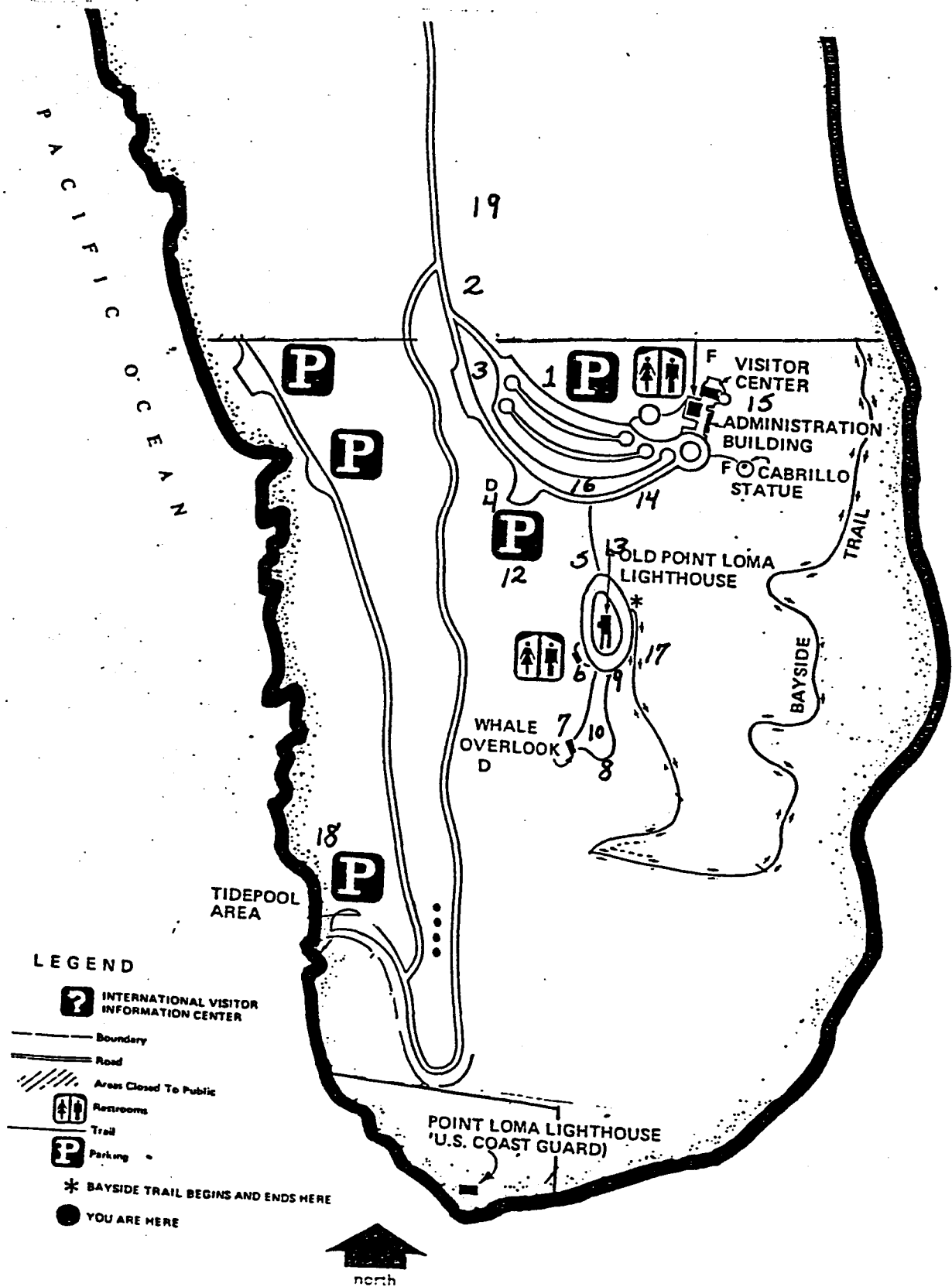
June 23, 1992

To: Regional Director, Western Region
From: Superintendent, Cabrillo National Monument
Subject: Vegetation Management Plan

Enclosed is the completed vegetation management plan for Cabrillo National Monument for your review and approval. The plan has undergone a public review process. A finding of no significant impact resulted. It is enclosed for your review.

Terry M. DiMattio

CABRILLO NATIONAL MONUMENT



CABRILLO NATIONAL MONUMENT PLANT COMMUNITIES

There are two prominent natural plant communities within Cabrillo National Monument, both are chaparral types. The north-facing slopes support a 'mixed chaparral' while the south-facing slopes support a 'maritime succulent sage scrub'. Ravine bottoms support a transition zone composed of plant taxa unique to these areas, and plants typical of each of the chaparral types. A brief list of taxa found within these communities is presented in Table 1. The species composition of the communities varies slightly among sites as the physical characteristics of the site (slope, slope aspect, elevation, and substrate) vary.

Table 1. Plants typical of the plant communities, and ravine bottom (transition zone) within Cabrillo National Monument.

mixed chaparral

Heteromeles arbutifolia
Xylococcus bicolor
Rhus integrifolia

Ceanothus verrucosus
C. impressus
Quercus dumosa

maritime succulent sage scrub

Eriogonum fasciculatum
Lotus scoparius subsp. scoparius
C. impressus
Euphorbia misera
Eriophyllum confertiflorum
Bergerocactus emoryi
Opuntia parryi var. serpentina

Salvia mellifera
Ceanothus verrucosus
Yucca shidigera
Dudleya spp.
Encelia californica
Ferocactus viridescens
Agave shawii

transition zone

Cneoridium dumosum
Corethrogyne filaginifolia
G. luteo-album
Malacothamnus fasciculatus
var. fasciculatus

Baccharis sarothroides
Gnaphalium ramosissimum
Artemisia californica
Rhus laurina

THE VEGETATION-TYPE

Chaparral, including sage scrub, is one of the most abundant plant communities throughout California (Lenz and Dourley 1981,

Holland and Keil 1989), and the dominant natural vegetative community throughout the San Diego coastal zone. Typically 'mixed chaparral' occupies mesic (moist) sites at higher elevations than those occupied by the sage scrub community. Both of these community types have been significantly disturbed by urban development throughout southern California. Beauchamp (1986) estimates that 70% of the historic extent of coastal sage scrub within San Diego County has been lost to development and/or significant habitat modification. Westman (1987) suggests a more drastic reduction in extent, with as little as 10-15% of the former habitat throughout the state supporting extant stands of the coastal sage community today.

The 'maritime succulent sage scrub' that occurs at Cabrillo N.M. is an unusual segregate of the more typical coastal sage plant community. This community is extremely restricted in California, occurring only within San Diego County, and within this limited range, is best developed at Torrey Pines State Park and on Point Loma. A number of the plant taxa within the maritime succulent sage scrub reach their northern distributional limit within San Diego County (Table 2). Each of these taxa occur within Cabrillo National Monument, and yet their ranges are more extensive within northwestern Baja California, Norte (Beauchamp 1986).

Table 2. Plant taxa occurring within Cabrillo National Monument that reach their northern distributional limit within San Diego County, California.

Bergerocactus emoryi
Ferocactus viridescens
Euphorbia misera
Opuntia parryi var. serpentina
Selaginella cinerascens

Coreopsis maritima
Agavi shawii
Mammillaria dioica
Viguiera laciniata

THE WATER CONSERVATION ISSUE

The California Department of Water Resources (DWR) has estimated that approximately one-half of the water used in urban settings by residential, commercial, and governmental entities is used in irrigation (DWR 1981). Therefore, the greatest potential savings is in landscaping because of the significant reductions possible through the use of efficient irrigation systems, the practice of mulching, and the use of drought tolerant plants. Plants that characterize the chaparral community grow naturally in areas of limited moisture, and typify the natural vegetation for many residential areas. Lenz and Dourley (1981) state that the chaparral community contains more species of importance, or potential importance, to the horticulturalist than any other in the state.

A brief list of interesting and useful books available that discuss the uses of native plants in gardens and home landscape situations is provided on page 5. This list can be made available to staff and visitors if desired.

CABRILLO INTERPRETATIVE GARDEN

The plants used in the interpretative garden at Cabrillo National Monument were chosen to represent the ecological associations that occur within the monument: the northern portion of the planter represents the mixed chaparral community that is typical of north-facing slope exposures, the middle portion near the dry ravine represents the transition zone that occurs within the ravine bottoms, and the plants on the southern end of the planter are found on south-facing slopes, and cliff faces above the ocean. This vegetation type (maritime succulent sage scrub) is widespread within the monument, and quite variable in species composition among sites. Certainly, not all plants found within these communities are represented in the planter due to the limitation of space and the scarcity of certain plants. A listing of the plants used in the garden is provided in Table 3.

Table 3. Plants used in the interpretative garden planted outside the Administration Building, Cabrillo National Monument, November 1-3, 1989.

north-facing slope

Ceanothus verrucosus
Heteromeles arbutifolia
Quercus dumosa

C. impressus
Rhus integrifolia

transition zone

Stipa pulchra
Cleome arborea (seed planted)

Encelia californica

south-facing slope

Opuntia littoralis
D. lanceolata
Agave shawii
Ferocactus viridescens
Eriophyllum confertiflorum

Dudleya pulverulenta
D. edulis
Euphorbia misera
Yucca shidigera

LITERATURE CITED

- Beauchamp, R. M. 1986. A Flora of San Diego County, California. Sweetwater Press, National City, CA.
- Department of Water Resources. 1981. Plants for California Landscapes, A Catalog of Drought Tolerant Plants. State of California, The Resources Agency. Bulletin No. 209.
- Holland, V.L. and D.J. Keil. 1989. California Vegetation. El Corral Publications.
- Lenz, L.W. and J. Dourley. 1981. California Native Trees and Shrubs for Garden and Environmental Use in Southern California and Adjacent Areas. Rancho Santa Ana Botanic Garden. Claremont, CA.
- Westman, W.E. 1987. Implications of Ecological Theory for Rare Plant Conservation in Coastal Sage Scrub. In: T. Elias and J. Nelson (eds.) Conservation and Management of Rare and Endangered Plants, pp 133-140. California Native Plant Society.

**SELECTED REFERENCES ON THE USE OF CALIFORNIA NATIVE PLANTS IN
GARDENING AND RESIDENTIAL PLANTINGS**

- L.W. Lenz and J. Dourley. 1981. California Native Trees and Shrubs for Gardens and Environmental Use in Southern California and Adjacent Areas. Rancho Santa Ana Botanic Garden, Claremont, CA.
- M.G. Schmidt. 1980. Growing California Native Plants. University of California Press, Berkeley, CA.
- S.L. Labadie. 1978. Native Plants for Use in California Landscapes. Sierra City Press.
- Saratoga Horticultural Foundation. 1980. Selected California Native Plants in Color and Selected California Native Plants with Commercial Sources.
- Lane Publishing Co. 1979. New Sunset Western Garden Book.
- Department of Water Resources (DWR). 1981. A Catalog of Drought Tolerant Plants. State of California, The Resources Agency. Bulletin No. 209
- A. Nehrling and I. Nehrling. 1968. Easy Gardening with Drought Resistant Plants. Hearthside Press, Inc., Publishers, N.Y., N.Y.