

**CITY OF CARMEL-BY-THE-SEA
FOREST AND BEACH COMMISSION**

REGULAR MEETING AGENDA

Thursday, 6 September 2012

Regular Meeting – 1:30 p.m.

City Hall, Council Chambers
East side Monte Verde St. between Ocean & 7th Avenues
Carmel, California

I. CALL TO ORDER AND ROLL CALL

COMMISSION MEMBERS: TOM LEVERONE, CHAIRPERSON
LESLIE KADIS
LISA BOARDMAN
DAVID REFUERZO
KAREN FERLITO

II. PLEDGE OF ALLEGIANCE

III. APPEARANCES

Thank you for attending the meeting. Anyone wishing to address the Commission on matters within the jurisdiction of the Commission may do so now. Please state the matter on which you wish to speak. Matters not appearing on the Commission's agenda will not receive action at this meeting but may be referred to staff for a future meeting. Presentations will be limited to three minutes, or as established by the Commission. Persons are not required to give their name or address, but it is helpful for speakers to state their name in order that the Secretary may identify them.

IV. CONSENT AGENDA

1. Consideration of the minutes for the 2 August 2012 regular meeting. Page 1.

V. ORDERS OF BUSINESS

1. Discussion of a request from a group of residents for removal of most of the trees in the North Dunes area of Carmel Beach. Page 4.
2. Consideration and approval of an Arbor Day Event for 2012. Page 51

VI. REPORTS FROM STAFF AND COMMISSION

1. Receive report from the Ad hoc Beach Committee. Page 52.
2. Forester's report. Page 54.

VII. ADJOURNMENT

Any writings or documents provided to a majority of the Forest and Beach Commission regarding any item on this agenda will be made available for public inspection in the Planning and Building Department located at City Hall, on Monte Verde between Ocean and 7th Avenues during normal business hours.

If there is not a special meeting, the next regular meeting of the Forest and Beach Commission will be:

4 October 2012
1:30 p.m. – Tour of Inspection
2:00 p.m. - Regular Agenda

The City of Carmel-by-the-Sea does not discriminate against persons with disabilities. The City of Carmel-by-the-Sea Telecommunication's Device for the Deaf /Speech Impaired (TDD) number is 1-800-735-2929.

**CITY OF CARMEL-BY-THE-SEA
FOREST AND BEACH COMMISSION**

REGULAR MEETING MINUTES

Thursday, August 2, 2012
1:30p.m.

I. CALL TO ORDER AND ROLL CALL

The regular meeting of the Forest and Beach Commission of the City of Carmel-by-the-Sea, California was held on the above date at the hour of 1:30 p.m. The meeting was adjourned to the tour of inspection and reconvened the meeting at 2:00p.m.

PRESENT: Lisa Boardman
Karen Ferlito
Les Kadis
David Refuerzo
Tom Leverone

ABSENT: None

STAFF PRESENT: Mike Branson, City Forester
Margi Perotti, Secretary to the Forest and Beach Commission

II. PLEDGE OF ALLEGIANCE

Members of the audience joined the Commission in the Pledge of Allegiance.

III. ELECTION OF A VICE CHAIRPERSON

It was moved by LEVERONE and a second by REFUERZO to nominate Commissioner BOARDMAN as Vice Chairperson. No other nominations submitted. By a unanimous voice vote BOARDMAN was elected as Vice Chairperson.

IV. APPEARANCES

Cora-May "Corkie" Duke appeared before the Commission.

V. CONSENT AGENDA

1. Consideration of the minutes for the 5 July 2012 regular meeting.

It was moved by REFUERZO and seconded by BOARDMAN to approve the minutes of the 5 July 2012. The motion was carried by the following roll call vote:

AYES: COMMISSION MEMBERS: BOARDMAN, KADIS, REFUERZO, FERLITO
LEVERONE
NOES: COMMISSION MEMBERS: NONE
ABSTAINED: COMMISSION MEMBERS: NONE
ABSENT: COMMISSION MEMBERS: NONE

VI. APPLICATIONS/PUBLIC HEARINGS

1. Review and forward a recommendation to the City Council proposed revisions to the tree permit and tree replacement ordinances and procedures.

Chairperson LEVRONE handed out samples of different tree tags that will be attached to the trees.

Chairperson LEVERONE opened and closed public appearances.

It was moved by LEVERONE and seconded by REFUERZO to forward a recommendation to the City Council to adopt the attached proposed revisions to the tree permit and tree placement ordinances and procedures. The motion passed by the following roll call vote:

AYES:	COMMISSION MEMBERS: BOARDMAN, KADIS, REFUERZO, FERLITO LEVERONE
NOES:	COMMISSION MEMBERS: NONE
ABSTAINED:	COMMISSION MEMBERS: NONE
ABSENT:	COMMISSION MEMBERS: NONE

2. Discussion and consider action regarding topped trees on 2nd Avenue near Lincoln Street.

Mike Branson, City Forest presented his report and addressed questions of the Commission.

Chairperson LEVERONE opened and closed public appearances.

No further action taken.

3. Consideration and approval of an Arbor Day Event for 2012.

Commissioner BOARDMAN presented her progress report.

Chairperson LEVERONE opened and closed public appearances.

KADIS moved to accept Boardman's idea of a walking tour with middle school children, seconded by FERLITO and carried by the following roll call:

AYES:	COMMISSION MEMBERS: BOARDMAN, KADIS, REFUERZO, FERLITO LEVERONE
NOES:	COMMISSION MEMBERS: NONE
ABSTAINED:	COMMISSION MEMBERS: NONE
ABSENT:	COMMISSION MEMBERS: NONE

4. Develop topics for discussion at a joint meeting with the Planning Commission in August.

Staff member Branson stated the target date is 29, August 2012.

Commissioner FERLITO presented some ideas and wanted to focus on Tree Damage during construction. Discussion regarding the process and procedures and where it is breaking down.

Chairperson LEVERONE opened and closed public appearances.

By general consensus the topics will be tree protection and protection during construction. No other action taken.

- 5. Consideration of making a recommendation to the City Council requiring Waste Management provide trash and recycling receptacles that are clearly marked as to their intended purpose along Scenic Road and Del Mar Avenue.

Chairperson LEVERONE presented his report and gave information he received from Waste Management.

Chairperson LEVERONE opened and closed public appearances.

It was moved by LEVERONE and seconded by BOARDMAN to forward a recommendation to the City Council to require Waste Management clearly identify the trash, recycling and green waste receptacles with luminance signage/paint, for containers in City Parks and along the beach. The motion carried by the following roll call vote:

AYES: COMMISSION MEMBERS: BOARDMAN, FERLITO, KADIS, REFUERZO, LEVERONE
NOES: COMMISSION MEMBERS: NONE
ABSTAINED: COMMISSION MEMBERS: NONE
ABSENT: COMMISSION MEMBERS: NONE

VII. REPORTS FROM STAFF AND COMMISSION

- 1. Receive verbal report from the Ad Hoc Beach Committee.

Commissioner Boardman reported on rodents in the area. Ferlito noted people are removing rocks from the revetments. No other action taken.

- 2. Forester's Report.

Mike Branson City Forester presented his report.

IV. ADJOURNMENT

There being no further business, Chairperson LEVERONE adjourned the meeting at 3:50 p.m.

Approved,

Respectfully submitted,

Tom Leverone, Chairman

Margi Perotti, Secretary

MEMORANDUM

TO: Chairperson Tom Leverone
Members of the Forest and Beach Commission

FROM: Mike Branson, City Forester

DATE: 29 August 2012

SUBJECT: Discuss a request to remove most of the trees in the North Dunes area of Carmel Beach.

Recently a group of residents submitted a request for the city to remove the trees located in the North Dunes to conform to the dune restoration section of the Del Mar Master Plan and to enhance the views of the dune area and the landscapes beyond.

Discussion of this item should try to determine the appropriate level of management for the trees within the North Dunes area in accordance with the General Plan policies and habitat restoration plan. Some of the items raised by the resident group and the habitat restoration plan conflict with the General Plan policies. It may also be necessary to determine a past date or time period as the point the dune restoration efforts should be taken to.

Background

The city adopted the Del Mar Master Plan in 2009 as a guide for the management of the various issues related to the Del Mar and North Dunes area of Carmel-by-the-Sea. The plan addresses parking, traffic flow, public access, and environmental resources of the parking area and the dune area north of Ocean Ave. Some elements of the plan have completed, others are underway, and others are still being developed. The North Dunes area is also designated as an environmentally sensitive habitat area (ESHA).

The North Dunes Habitat Restoration Plan is an appendix to the Del Mar Master Plan. The restoration plan was developed for the city by botanist, Jean Ferreira. Her plan addresses the fauna and flora of the dune habitat, the history of the dunes area, problems and issues, and a working plan for restoration and protection of the dune habitat. It should be noted that the restoration plan is an appendix to the Master Plan and not all elements are included in the final plan.

The restoration plan addresses the cypress and pine trees as introduced native trees in the dune environment that may have a detrimental effect on the natural dune habitat. The plan recommends not replacing the pine and cypress trees as they die out over time. Younger

trees should be evaluated as to whether it is appropriate to remove them now before the impact a larger area or to wait until they die. The plan does recommend retaining and replacing the cypress trees along Ocean Ave. as a note to the historical planting of these trees as human activity increased from the early 1900's to today.

Recent Planting Activities

The larger pines and cypress trees and almost all of the oak trees in the North Dunes were either planted by persons unknown or naturally occurring volunteers – particularly for the oaks and possibly the older pines. The oak trees in the area are probably in the dune zone where they would naturally occur. The larger trees near Ocean and San Antonio Aves are probably larger due to the wind protection the older, now gone, cypress trees provided for many years.

Over the past 15 years the city has planted or supported the planting of a number of new cypress trees to replace dead cypress trees in the central dunes area. For the most part this planting was on a one-to-one basis without any intent to further expand the area covered by trees. The pine grove has also had new young pine trees planted to perpetuate this small grove. No new planting have occurred for several years but some volunteers have become established in this area.

General Plan

The Carmel-by-the-Sea General Plan contains several sections supporting protecting the dune habitat and special species that live there. The General Plan has policies to maintain a low density of trees in the North Dunes and to replace trees that die or need to be removed for other reasons, address protection of scenic views in the dune area, removal of non-native invasive species, and several other issues specific to the dune habitat.

Attached to this memo is the Del Mar Habitat Plan and pertinent sections of the General Plan relating to the North Dunes environment and management. Staff plans to have a short Powerpoint presentation with photo's of the area and some additional historical information.

2/28/12

The Del Mar and North Dunes

Background

This writing will deal with the concern of trees on the North Dunes, in particular (but not exclusively) recent Cypress and Monterey pine plantings. The trees and invasive plants are negatively transforming the formerly pristine dunes, which are the last vestige of the original dunes which were a significant and beloved feature of early Carmel by the Sea (henceforth "Carmel")

(As Ocean Avenue passes San Antonio, it becomes Del Mar Avenue. The "North Dunes" are the dunes north of Del Mar, from San Antonio West to the foredunes.)

Brief History

This section is largely derived from the July 15, 2008 "North Dunes & Del Mar Dunes Habitat Restoration Plan", commissioned by Carmel and written by Jean Ferreira, Botanist. You will find it a thorough and well done plan.

Concerned about alteration of the dunes by human activities, Carmel's 1990 General Plan established a policy to restore, maintain and enhance the degraded dunes habitat. A study, commissioned by Carmel in 1995, identified Carmel Beach, including the dunes, as "Environmentally Sensitive Habitat Areas".

A Shoreline Management Plan was adopted by Carmel in 1995. Inter alia, it addressed impacts to the North and Del Mar dunes. This plan led to a Public Workshop in July of 2008, Planning Commission meetings in October of 2008 and December of 2009, followed by City Council review and approval of a plan. The determinations of the workshop, Planning Commission, and City Council meetings were naturally influenced by those who participated in such meetings.

As late as 1939, an aerial photograph shows the North Dunes without noticeable trees.

The recently constructed (June 2010) pathway from the Carmel Gate (to Pebble Beach) is soon to be extended from 4th Street to Ocean Avenue. ~~There will be a boardwalk (to protect the dunes), wheelchair accessible, in a rough circle, between San Antonio and the rest room area, and an extended boardwalk to the north which is not wheelchair accessible.~~

Effect of Trees on the Dunes

Readers are invited to visit the Dunes and see for yourself the impact upon the Dunes of trees. The Botanist observed native dune plants do not survive under the shade canopies, as well as leaves, needles, and other litter of the trees. As you walk West along Del Mar Avenue, decide for yourself if you prefer the view of the dunes or the trees.

In addition to the impact upon native biota, the beautiful outlook to the ocean and Pescadero Point is, and will increasingly be, largely blocked by the trees. This is particularly true for the wheelchair accessible portion of the pending boardwalks.

If you now walk North across the dunes, passing the young Cypress trees which soon will create a green wall, you will see recently planted Monterey Pines. These young trees will soon be creating their own

(b)¹

litter, further "browning" the pristine white sand of yesteryear. Please also observe the large volunteer oak, which also blocks views and destroys the white sand.

Many readers of this writing will fondly remember trekking over the beautiful white sand dunes to the beach. As the Botanist's report observes, early dunes went as far as Camino Real; the North Dunes are the last unspoiled (well, relatively unspoiled) remnant.

The Forest and Beach Commission, Planning Commission, and City Council are urged to see to the removal of the trees and non-native plantings. The "ghost" cypress tree, now hidden by a large oak, may stay.

Niels Reimers
PO Box 6295
Carmel, CA 93921
USA

RECEIVED

JUL 24 2012

CITY OF
CARMEL BY-THE-SEA

July 24, 2012

Heidi Burch
City of Carmel by-the-Sea

Subject: Letter for Forest and Beach Commission

Dear Heidi,

Could you please see that each member of the Forest and Beach Commission receives one of the attached letters in their packets for their August 2 meeting?

Many thanks!



Niels Reimers

8

Forest and Beach Commission

July 24, 2012

City of Carmel by the Sea, CA 93921

Subject: North Dunes and blocking of public views

Dear Commissioners:

We are long-time residents of Carmel by the Sea and/or spent our youth here. Our concern is with the tree plantings on the North dunes. Of particular concern is the recent North-South planting of rows of cypress trees in the dunes that in a few short years will form a dark green wall blocking the view of the Pacific Ocean and Pescadero Point. These dunes are the last of the upper dunes in Carmel that reached up in many places as far east as Camino Real. Many photographs and paintings are available that show the dunes without trees. We believe that this last remnant of those dunes should be restored as much as possible to its beauty when the first visitors discovered Carmel.

We are not aware of any public input to the decision to plant these trees. Also, as stated by the botanist hired by the City, the debris (needles, leaves, bark) of trees in the dunes effectively destroy the unique fine white sand dunes of Carmel and native dune plants do not grow under trees.

In addition to removal of the newly planted cypress trees, the pine trees in the north section of the dunes and the oaks and cypress in the center of the Del Mar dunes should be removed. An elderly cypress or two behind the oak trees, if no longer shedding debris on the dunes, could stay or not.

The boardwalk to the north of the dunes and the walk planned along San Antonio are welcome additions for admirers of the dunes and the views of the sea. We thank the Commission for its support of these additions.

Please note both the Carmel by the Sea Municipal Code (17.10.010) and California Coastal Act (Section 30251) require the protection of coastal views for the public. The first sentence of the Act reads "The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance."

We urge the Forest and Beach Commission to become a Beach and Forest Commission in this instance and take action to preserve this important vestige of early Carmel by removing the trees on the Del Mar dunes.

Sincerely,

Niels Reimers, Donna Douglas, Diane Hanger, Bill Daniels, Clare Wermuth, Pam Klauman, Clyde Klauman, Pat Sippel, Andrea Thatcher, Gary Bang, Kathy Bang, Nancy Hallman, William Hallman, Leonard Riggs, Ronni Roman, John Fortier, Jim Heilig, Carol Hamlin, Bill Varien, Ron Stoney, + more names to come.

North Dunes & Del Mar Dunes Habitat Restoration Plan

City of Carmel-by-the-Sea

Written for:
Mr. Sean Conroy
Senior Planner

Written By:
Jean Ferreira
Botanist

April 1, 2009

Note: This appendix contains findings and recommendations from a professional Botanist contracted by the City. The information in this appendix is meant to provide background and assist in the dune restoration efforts. Not all recommendations from this appendix have been incorporated into the final Del Mar Master Plan.

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Background

The North Dunes and Del Mar Dunes on the City of Carmel's shoreline have been greatly altered from their natural state over the past century by various human activities. The City of Carmel's 1990 General Plan recognized this situation and established the following policy to address the impacts.

P-5-42 Restore, maintain and enhance the degraded habitat in the North Dunes area to enhance environmental resources and aesthetics. Protect sensitive habitat and special-status species through development and implementation of the Del Mar and North Dunes Master Plan.

The General Plan also outlines ten additional policies specifically calling for long-term maintenance and management of the sensitive species, native plants and the dune habitat in general.

In 1995, a study was commissioned by the City of Carmel to study five undeveloped sites within the city, including Carmel Beach, to identify any sensitive resources and environmentally sensitive habitat areas (ESHA). ESHA as defined by the California Coastal Act (PRC 30107.5) are:

"areas in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem, and which could be easily disturbed or degraded by human activities and developments. In addition, some of these sensitive habitats require further protection from disturbance, and this subset of sensitive habitats is called environmentally sensitive habitat areas."

The 1995 study, conducted by Jones and Stokes, identified Carmel Beach as ESHA. The City of Carmel designated both the North Dunes and the Del Mar Dunes as ESHA.

In 2003, the City of Carmel created and adopted a comprehensive Shoreline Management Plan, consolidating three previous plans: the Beach Master Plan (2000), the Shoreline Emergency Plan (1989), and the Beach Bluff Pathway Landscape Plan (1985-88). The creation of the Shoreline Management Plan fulfilled a CA Coastal Commission condition to permit repairs on the shoreline damage received during the 1997-8 El Nino storms.

The Shoreline Management Plan also addresses the impacts to the North and Del Mar Dunes. Below are listed a few of the applicable management policies:

O5-40: Ensure that long-term management activities maintain the natural dune ecology of Carmel Beach in a manner consistent with public safety. Protect areas of the beach from loss of habitat where special status plant species are growing.

O5-7: Protect the fragile dune and sensitive plants in the Del Mar Dunes and North Dunes against any significant disruption of habitat values.

G-5-12: Identify, protect and manage Environmentally Sensitive Habitat Areas to ensure their long-term integrity and the biological productivity of these habitats.

O5-36 Monitor, study and develop effective management programs for the City's parks and ESHA. Endeavor to reduce conflicts between environmental protection and use of public and private property within ESHA.

Study Methods

A review of the City of Carmel's Shoreline Management Plan and the Jones and Stokes report "Final Results of the Environmentally Sensitive Habitat Area Study Conducted for the City of Carmel", was completed for this study. Prior to the field survey, information from the California Department of Fish and Game's RareFind data base was compiled to determine the sensitive biota in the Carmel shoreline area. Historical and current aerial photographs of the Carmel Beach area were obtained from the UC Santa Cruz Science and Engineering Library. Aerial photographs, USGS topographic map and City parcel boundary maps were used for the mapping portion of the survey results. The City of Carmel's Harrison Memorial Library provided historical photographs from their collection documenting early vegetation patterns on the dunes and beach in Carmel.

The dunes were surveyed numerous times between April 15, 2008 and July 15, 2008. The field work included identifying all plant species present, surveying for the presence of any sensitive plant or animal species, mapping non-native species coverage, noting use patterns, and human impacts to the dunes. Access was easily gained by foot over the entire dune areas except in dense acacia hedges. Due to the high density of the shrubs, the acacia hedges were observed from existing trails wherever possible to gain access.

Findings

The Carmel Beach, owned by the City of Carmel, includes over 22 acres of white sand beach and dunes. More than eight decades ago, residential development claimed most of the ocean front areas of the City, and now only two natural dune areas remain within the city limits.

The North Dunes covers the beach property north of Ocean Ave, west of San Antonio Ave, and east of the high tide line. It is about 4 to 5 acres in size and has the most diverse dune habitat remaining in the City. The North Dunes range in elevation from about 50 to 100 ft. There is a north-south aligned dune hummock, or mound, at the rear of the active beach at the high tide line; this area is typically referred to as the foredune. Just to the east of the foredune, the dunes drop in elevation to a low area protected from the high winds, behind the foredune ridge called the dune swale. Moving east, the dunes gradually rise in elevation back to the developed city edge at N. San Antonio Ave. This area to the east of the swale is the reardune. The majority of the dunes are west facing with the exception of the leeward side of the foredune hummock facing east. The strong coastal winds not only shape the dunes with wind carried sand, but define zones on the dune which are colonized with plants species adapted to the different degrees of wind exposure. Plants growing on the foredune are much better adapted to high winds and salt spray than those found in the dune swales or reardunes.

The Del Mar Dunes are a linear ridge of foredunes, about an acre in size, just east of the high tide line between Ocean and Eighth Avenues.

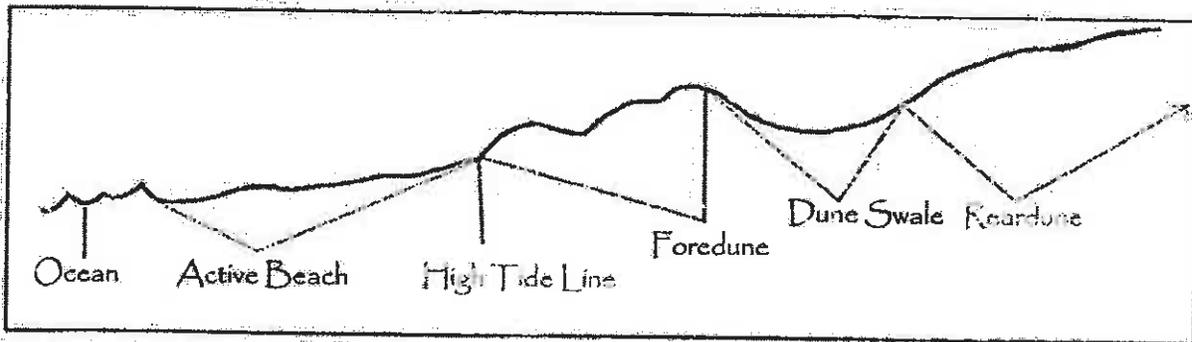


Figure 1. Generalized Carmel beach & dune profile.

Central Dune Scrub

Prior to human disturbance of the Carmel Beach dunes, the sand dunes originally supported a plant community of central dune scrub. The composition of the central dune scrub varies around the Monterey Bay, with some common plant species found at all sites. The original composition of the Carmel dunes may never be completely known, however, remnants of the community still present and use of the historic photographs of the area, allows general descriptions to be drawn. The foredune was probably a mix of *Leymus mollis* (dune grass), *Camissonia cheiranthifolia* (beach primrose), *Ambrosia chamissonis* (beach bur) and *Abronia latifolia* (yellow sand verbena). The dune swale, low areas out of the high winds with typically more moisture available to the plants, supported *Carex pansa* (dune sedge) and *Juncus effusus* var. *brunneus* (common rush). The rear dune had the most plant diversity, with *Artemisia pycnocephala* (dune sagewort), *Ericameria ericoides* (mock heather),

and *Lupinus arboreus* (bush lupine) providing the dominant cover, with occasional stands of *Croton californicus* (croton), *Eriogonum parvifolium* (dune buckwheat), *Erigeron glaucus* (seaside daisy), *Poa douglasii* (dune bluegrass), *Lotus scoparius* (deerweed), *Phacelia ramosissima* (branching phacelia), *Abronia umbellata* (pink sand verbena), and beach primrose. In the reardunes, coast live oaks established where conditions were right: stable sand, an established duff layer from long-term plant growth, and shelter from the prevailing winds. Plants associated with the coast live oaks were *Marah fabaceus* (wild cucumber), *Pteridium aquilinum* (bracken fern), and *Rubus ursinus* (CA blackberry).

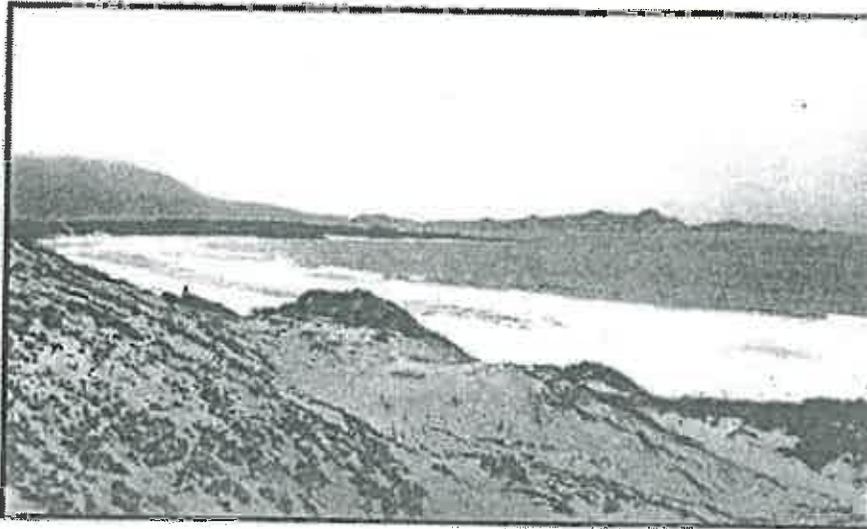


Photo 1. Native foredune vegetation on Carmel's North Dunes. Harrison Memorial Library Collection.

Today, the dune scrub of the Carmel dunes, looks and functions very differently than the original natural habitat. Most of the native dune plants listed above are still present in the dunes, but only in small isolated patches, surrounded by large expanses of iceplant, acacia or bare sand. The two dominant plant species are a South African native, *Carpobrotus edulis* (hottentot fig or iceplant) and an Australian native plant, *Acacia longifolia* (Sydney golden wattle or acacia). Both species spread rapidly on their own, out-competing the native species for light, space, water and nutrients.

A large percentage of the North Dunes is dominated by Monterey Cypress, some planted over 100 years ago, along with younger trees more recently added to replace the original plantings that have died (Shoreline Management Plan). A small grove of Monterey Pines were planted in the North Dunes sometime after 1939; the trees are absent in the 1939 aerial photograph. Some of these original planted pines have died, some have re-seeded, and the City has recently planted five new pine saplings in the same area. Many non-native grasses have also colonized the disturbed areas in the reardune including wild oat, rattlesnake grass, rip-gut brome, veldt grass and foxtail barley. All are invasive and difficult to eradicate. Veldt grass has become the number one weedy grass in the City over the last decade, increasing by leaps and bounds each spring. A large blue gum eucalyptus tree dominates the corner of Ocean & N. San Antonio Ave. According to the Shoreline Management Plan it is the largest eucalyptus in the City. All dune plants have been destroyed under the eucalyptus canopy by shade and eucalyptus leaf litter. There are also many horticultural species found on the North Dunes, primarily near the adjacent residences. Some have 'escaped' cultivation and spread to

the dunes, but most are 'trespass landscaping' from overzealous gardeners not minding the property lines. A complete plant list compiled during the spring field work for this report is found in Table 1.

Table 1. Native & Naturalized Plant Species of North/Del Mar Dunes, Carmel, California. Survey Date: May 13, 2008.

Family	Species	Common Name
Asteraceae (Sunflower)	<i>Artemisia pycnocephala</i> <i>Baccharis pilularis ssp. consanguinea</i> <i>Ericameria ericoides</i>	Dune Sagewort Coyote Bush Mock Heather
Aizoaceae (Iceplant)	* <i>Carpotrotus edulis</i> * <i>Conicosia pugioniformis</i>	Hottentot Fig Conicosia
Brassicaceae (Mustard)	* <i>Cakile maritima</i>	Sea thrift
Cucurbitaceae (Gourd)	<i>Marah fabaceus</i>	Wild cucumber
Cyperaceae (Sedge)	<i>Carex pansa</i>	Dune sedge
Dennstaedtiaceae (Bracken)	<i>Pteridium aquilinum</i>	Bracken fern
Euphorbiaceae (Spurge)	<i>Croton californicus</i>	Croton
Fabaceae (Pea)	* <i>Acacia longifolia</i> <i>Lotus scoparius</i> <i>Lupinus arboreus</i> <i>L. chamissonis</i> <i>L. tidestromii</i>	Sydney golden wattle Deerweed Bush lupine Silver beach lupine Tidestrom's lupine
Fagaceae (Oak)	<i>Quercus agrifolia</i>	Coast live oak
Hydrophyllaceae (Waterleaf)	<i>Phacelia ramosissima</i>	Branching phacelia
Juncaceae (Rush)	<i>Juncus effusus var. brunneus</i>	Common rush
Malvaceae (Mallow)	* <i>Malva parviflora</i>	Cheeseweed
Nyctaginaceae (Four O'Clock)	<i>Abronia latifolia</i> <i>A. umbellata</i> <i>A. latifolia X umbellata</i> (hybrid)	Yellow Sand Verbena Pink Sand Verbena White Sand Verbena
Onagraceae (Evening Primrose)	<i>Camissonia cheiranthifolia</i>	Beach Evening Primrose
Oxalidaceae (Oxalis)	* <i>Oxalis pes-caprae</i>	Bermuda buttercup
Polygonaceae (Knotweed)	<i>Eriogonum parvifolium</i> * <i>Rumex acetosella</i>	Dune buckwheat Sheep sorrel
Poaceae (Grass)	* <i>Avena sp.</i> * <i>Briza major</i> * <i>Bromus diandrus</i> <i>Distichlis spicata</i> * <i>Ehrharta erecta</i> * <i>Hordeum jubatum</i> <i>Leymus mollis</i> <i>Poa douglasii</i>	Wild oat Rattlesnake grass Rig-gut grass Salt grass Veldt grass Foxtail barley Dune grass Dune blue grass
Rosaceae (Rose)	<i>Rubus ursinus</i>	CA blackberry
*Horticultural species planted on City of Carmel dunes		
Monterey Cypress	Bermuda grass	
Fountain Grass	Flowering plum	
Broom	Pride of Madera	
Australian Tea Tree	Agave	
Aloe	Rosemary	
Allium	Honeysuckle	
Nasturtium	Sydney golden wattle	

* = species not native to Carmel dunes

Sensitive Biotic Species & Habitats

The sensitive biotic species and habitats listed in Department of Fish and Game's database (CNDDDB) for the Monterey Quadrangle or found on dunes in the Monterey Bay area were considered during the survey of North & Del Mar Dunes. The sensitive species information from the 1995 Jones and Stokes study was also reviewed prior to the field work. The Jones and Stokes report was based on field work during a limited window in the month of April. They acknowledged the limits of the survey and note three additional potential sensitive plant species that might be found in the Carmel Beach dunes. The survey for this Habitat Restoration Plan was more comprehensive, stretching through the full blooming season of the dune plants.

Two sensitive species and one sensitive habitat were found in the Carmel Dunes. They are listed below and their locations are mapped on Map 3.

Table 2. Sensitive Biota Found at North Dunes, Spring 2008.

Scientific Name	Common Name	Listing Status			
		Federal	California	CNPS	CDFG
<i>Lupinus tidestromii</i> var. <i>tidestromii</i>	Central Dune Scrub Tidestrom's Lupine	Endangered	Endangered	1B.1	
<i>Aniella pulchra nigra</i>	Black Legless Lizard				SC

Federal Listing = U.S. Department of Interior, Fish & Wildlife Service

California Listing = State of California, Department of Fish & Game

CNPS Listing = California Native Plant Society, List 1B.1: Seriously Endangered in California

CDFG: Species of Special Concern. Vertebrates that have declining population levels, limited ranges and/or continuing threats making them vulnerable to extinction.

Central Dune Scrub is the natural community found on the coastal sand dunes on the central coast of California. It is recognized by the State of California and the County of Monterey as a rare community and therefore, a sensitive habitat. The central dune scrub has a naturally limited distribution. However, it has also suffered a loss of distribution area due to residential and agricultural development, and degradation of habitat due to human use and introduction of non-native plant species. Central dune scrub within the City of Carmel historically extended from the high tideline up to Camino Real Street, and from Pescadero Creek, south to Santa Lucia. (J. Rodriguez, pers. comm.) Today, it is limited to the North Dunes and Del Mar Dunes.

Lupinus tidestromii* var. *tidestromii, the Tidestrom's lupine is a rhizomatous herb in the pea family that grows only in coastal dunes in Monterey County. It is listed as endangered by the Federal (1992) and State (1987) governments and the California Native Plant Society. In 1997 only five occurrences in Monterey County, with less than 400 individuals were considered extant: Pt. Pinos lighthouse, Aislomar, Bird Rock, Carmel North Dunes and Spyglass Hill. An additional population was planted as mitigation on artificial dunes at Spanish Bay. The Tidestrom's lupine populations have been seriously threatened by development, trampling, non-native plants, and hybridization with *Lupinus chamissonis*, the silver beach lupine (CNPS web site). The North Dunes population has been subjected to all of these threats.

The population of Tidestrom's lupine was first discovered on the North Dunes in 1995 during the Jones & Stokes survey. The presence of Tidestrom's lupine was a major factor in recognizing the

North Dunes as ESHA. The Jones & Stokes surveyor noted 280 plants (168 seedlings, and 112 mature) found in four areas in the dunes. The survey for this report (2008) found 340 plants (124 seedlings/216 mature) in only two of the four areas that had plants in 1995. Although it is unknown why only 2 of 4 location in the North dunes support the lupine this season, the two areas without Tidestrom's lupine have been heavily impacted by non-native plants, including shading by non-native trees, and human trampling.

The current location of the Tidestrom's lupine on the North Dunes is shown on Map 3. The plants are growing with *Abronia umbellata*, *Leymus mollis*, *Conocosia pugioniformis*, and *Poa douglasii*, and *Lupinus chamissonis*. The location of the Tidestrom's lupine with the silver lupine is adjacent to the western most residence of the Surf and Sea development. There has been some speculation that the silver lupine was planted when the house was built, since it presently does not occur anywhere else in the Carmel dunes. Since the two lupines can hybridize, the presence of the silver lupine could threaten the continued survival of Tidestrom's lupine in the North Dunes.

Past taxonomic treatments of the Tidestrom's lupine separated similar plants found in Sonoma and Marin Counties from the Monterey County populations as *Lupinus tidestromii* var. *layneae*, and based on this treatment, the State of California listed only the Monterey County populations as Endangered in 1987. More recent taxonomic treatments combine the two variations into one species (Sholars & Riggins in Jepson Manual, 1993). The 1993 Federal listing included both the Monterey County plants (*L. tidestromii* var. *tidestromii*) and the Marin and Sonoma plants (*L. tidestromii* var. *layneae*). Genetic studies are need to sort out the relationship of the two variations; however, both variations occur on impacted sand dunes and qualify for the Endangered status.

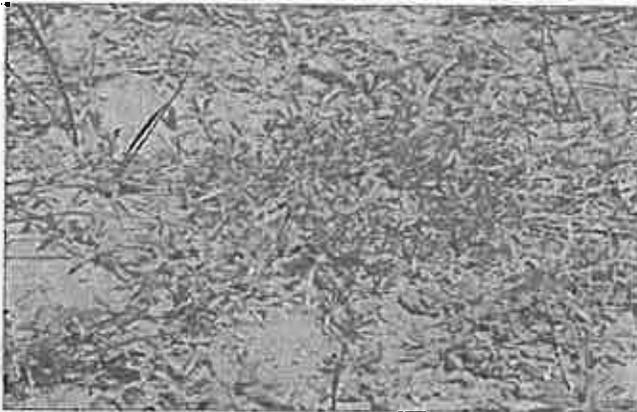


Photo 2 & 3. Tidestrom's lupine (*Lupinus tidestromii*) plant and flower on North Dunes, 26 April 08.

Aniella pulchra nigra, the Black legless lizard is a species of special concern in the State of California. It inhabits coastal dunes in Monterey County, between the Salinas and Carmel Rivers. The lizard burrows in loose sand under mature plants including *Ericameria ericoides*, *Lupinus arboreus*, and *Eriogonum parvifolium*, where a developed leaf litter layer attracts many insects and their larvae (prey of the lizards) and helps to moderate soil temperature and conserve soil moisture. A 1984 USFWS survey by Bury captured 12 black legless lizards at Carmel Beach. Bury noted the problems of frequent human use of the habitat and the encroachment of non-native

plants. In 1995, the Jones and Stokes surveyors failed to locate any black legless lizards in the North or Del Mar Dunes. On June 20, 2008, a survey for this Habitat Restoration Plan located 2 adult black legless lizards in one hour of search. Both were found in the North Dunes under mature mock heather. North Dunes and Del Mar Dunes are habitat for the lizards, and restoration and management recommendations will be designed to avoid impacting the lizards or their habitat.

Recent taxonomic studies suggest the Black legless lizard is not a sub-species of the California legless lizard, *Aniella pulchra*, but only a color variation. However, to date genetic studies are inconclusive and the taxonomy remains unchanged. The CA Department of Fish and Game recognizes both *A. pulchra* and *A. pulchra nigra* as species of special concern.



Photo 4 & 5. Black Legless Lizard. City of Carmel, North Dunes. 20 Jun 08.

Impacts to the Dunes

Human impact to the Carmel beach and dunes began before the turn of the century. The area has been a popular spot for picnics, camping, and beach recreation for over a hundred years. In 1889, a bath house was constructed at the base of Ocean Avenue in the vicinity of the where the beach parking lot sits today. It was a popular spot for the forty years that it operated. Photographs taken in 1922, show a denuded foredune around the Bath House after over 30 years of concentrated recreational use of the area. The photograph below shows the Bath House in its early days. Note the only visible transportation to the beach are the horses tethered behind the building. Also the boardwalk which ran from Monte Verde Ave. to the beach (C. Buckminster, per. communication) is barely visible to the right of the main building. The figure sitting on a bench on the right side of the photograph is probably resting before their climb up the hill to town.



Photo 6. East side of the Bath House at Carmel Beach. Constructed in 1888-9, it operated for 40 years before being torn down in 1929. The reardune plant coverage is still well developed at this point in time. Harrison Memorial Library Collection.

The reardune vegetation, behind the Bath House, appears to have diverse composition and fairly dense cover. In the foreground of the photograph, the dunes have received some sort of disturbance that has resulted in a more open plant community with more bare sand. One of the greatest points of interest in this photograph is the hummock of sand front and center, when magnified, appears to be covered with dune buckwheat (*Eriogonum parvifolium*), beach bur (*Ambrosia chamissonis*), and seaside daisy (*Engeron glaucus*). Only a few dune buckwheat plants are remaining on North Dunes and both seaside daisy and beach bur no longer grow naturally within the City of Carmel.



Photo 7. Bath House in later years (cars and electrical lines that were installed ~1916 are present). The fore-dune vegetation is still fairly intact to the south of the Bath House. The gentle grade of the foredune is the natural formation, as opposed to the steep banks today formed by the non-native acacia. Harrison Memorial Library Collection.

In addition to the early recreational use of the dunes and beach, in 1941-42, a temporary military camp was erected in the North Dunes area, to provide on-site military protection of the coast (C. Buckminster, pers. communication). Although some bare sand is natural in the dynamic dune scrub plant community, the intensity of use of Carmel's beach and dunes was well established by the time the following 1939 aerial photograph was taken.

Over the last fifty years the impacts to the Carmel dunes have continued. Non-native plants have been planted on the dunes or have spread to the dunes by other means. Most of the bare sand that was the result of intense use between 1889 and 1950, has been colonized by non-native plants, especially ice-plants, acacia, and non-native grasses. The dune scrub in the vicinity of the planted Monterey cypress, Monterey pine, and eucalyptus has gradually died out from the shading and leaf litter. As the trees have died, the litter from dying leaves branches and trunks add an abnormal amount of organic matter to the dune system. Adjacent to the shared property line with the Surf and Sea development, five of the homes have landscaped on the City's sand dunes adjacent to their homes. This trespass has reduced the native dune scrub, the Tidestrom's lupine distribution, and the black legless lizard habitat. There also appears to be a fairly high amount of gopher activity in North Dunes, in addition to dogs digging and neighborhood cats hunting the wildlife. Cats are also a threat to black legless lizards.

Storm runoff from San Antonio Ave. is concentrated and piped across the southeast corner of the North Dunes. Installation of the 4th Ave. sewer outfall, left a large scar across the very north end of North Dunes. Volleyball courts have also been designated in the North Dunes, and their use intensely



Photo 8. This 1939 aerial of Carmel shows the large amount of bare sand present in the North Dune 70 years ago. Most of the bare area is now filled with non-native plants.

Photo 9. A sunbather relaxes on a patch of iceplant with a few yards of unprotected Tidestrom's lupine plants.



disturbs the courts and sideline areas. The bare sand in the court area is moved by the prevailing winds onto the reardune. Most sand movement in the dunes is carried by the strong spring winds, which pelt or bury the seedlings that have germinated with the winter rains. The more sand movement in the dunes, the less natural plant establishment, resulting in a degradation of the habitat. The dunes are also open to foot-traffic, with dogs frequently accompanying their owners. Trails criss-cross everywhere across the dunes, including through the Tidestrom's lupine stands. Because the dunes offer shelter from the wind and more privacy than the beach, many sun-bathers opt for a quiet spot in North Dunes, unaware of the sensitive biotic resources. Although most visitor and resident use of the Del Mar and North Dunes is as an area to cut through on the way to the beach, the proximity of the dune areas to the parking lot and restroom will continue to draw some curious beach-goers to explore the dunes. Having an environmentally sensitive habitat areas so close to a high use recreational area, requires protective measures to ensure the long-term maintenance of the sensitive biological features of the Del Mar and North Dunes.

Dune Restoration & Management Program

THE MISSION of this restoration & management program is to recreate a self-sustaining native dune habitat with thriving populations of the special status species, while providing safe visitor access and enjoyment of the dunes.

THE OBJECTIVES are to eliminate all aggressive non-native species, restore the native dune scrub, expand the population of Tidestrom's lupine, and the quantity and quality of available habitat for Black Legless Lizards, establish a trail system to provide safe visitor access without compromising the health of the dune habitat and provide interpretation of the North Dunes, Del Mar Dunes and Carmel Beach to enhance the visitors experience and knowledge of the Carmel dunes.

THE SPECIFIC GOALS to achieve these objectives are outlined below and described further in the following sections of this plan.

1. Providing protection for existing populations of the special status species during the implementation of this plan and for management of the populations in perpetuity.
2. Elimination of all aggressive exotic species on the dunes. The two species with the greatest cover and opportunity for restoration are iceplant and Sydney golden wattle. The weedy components of the dune scrub adjacent to the roads and restroom will also be addressed.
3. Identify Monterey Cypress landscaping areas in North Dunes that will be maintained as historical landscaping including the one landmark-sized Eucalyptus tree at the corner of Ocean and N. San Antonio Ave.
4. Stabilize drifting sand in areas to be planted with straw or jute.
5. Plant and seed native dune plants in areas of bare sand or where exotics were removed.
6. Use only local plant sources for the revegetation. Seeds and plants shall be propagated from plant material collections within two miles of the site.
7. Establish thriving new stands of Tidestrom's lupine in the dunes to add stability and long-term survival to the population.
8. Improve the quality of habitat for the black legless lizard by establishing large stands of native dune scrub, and creating a habitat corridor between North Dunes and Del Mar Dunes.
9. Establish short (5-year) and long range (on-going) monitoring program for the special status species and dune scrub.
10. Establish a maintenance program to follow-up on the exotic plant control, sand stabilization and respond to all needed actions noted during monitoring.
11. Provide safe pedestrian access to the dunes, minimizing impact to the dune habitat. Con-

sider constructing an ADA compliant boardwalk in North and Del Mar Dunes.

12. Through information panels, interpret the natural and cultural history of the dunes and Carmel Bay.
13. Consult with the CA Department of Fish and Game for plan review and approval. Obtain a permit from CA Fish and Game for collection, propagation and planting of a State Listed plant species. Submit special status species information to CA DFG on Tidestrom's lupine population surveys and any sitings of Black legless lizards.

Restoration Implementation Methods

Access

Presently, all foot traffic through the dunes is uncontrolled, and is negatively impacting the native dune scrub and sensitive species. The dunes, designated as ESHA, are subjected to a high concentration of human use due to the proximity of the Del Mar parking lot and the beach. By designating trails, people and their leashed dogs can visit the dunes or pass through on their way to the beach with only a minimal impact, if any.

The size of the North Dunes presents the opportunity to provide a loop trail for viewing the dune habitat, access to the beach from San Antonio Ave. and a vista point of the Carmel Bay and Point Lobos. Providing a ADA compliant boardwalk on some of the North Dunes trails would open the dunes to disabled persons and others not inclined to trudge through the sand. Coastal dune boardwalks have proven to not only provide access to those not able to physically maneuver in the sand but many people who bypass sand dunes for an easier path. Coupling the boardwalk with interpretive panels or programs will increase the general understanding and appreciation of the very special habitat found in the City of Carmel's dunes.

The Del Mar Dunes, although limited in size could provide an exciting addition to the assets of Carmel Beach. An ADA compliant boardwalk leaving the south end of the parking lot, running south into the Del Mar dunes, would provide an avenue for the disabled, seniors and visitors not prepared for deep sand walking to experience views of the ocean, the Carmel Bay, Point Lobos, Pebble Beach and of course the beach strollers and their dogs. Extending this trail with a sand path to the Eighth Ave. stairs would complete the City of Carmel's portion of the California Coastal Trail, a statewide endeavor to provide a public coastal trail from Oregon to Mexico.

The sand trails and the boardwalk should be fenced to delineate the pathway and to keep people on the designated trail. One of the most unobtrusive methods of fencing is the eye rod and cable fence shown in the pictures below. Boardwalks can be constructed of a natural wood such as redwood or a recycled material such as Treks. The width of the trails should be at least 4 ft to allow easy passing. Sand trails can be made wider to provide the City's maintenance staff easy access and to give visitors a spacious feeling. However, the wider the trail, the greater amount of bare sand that will blow with the prevailing winds, especially in the spring. Blowing sand is a major cause of plant seedling mortality in the late spring, which limits reproduction and establishment of the native dune scrub.

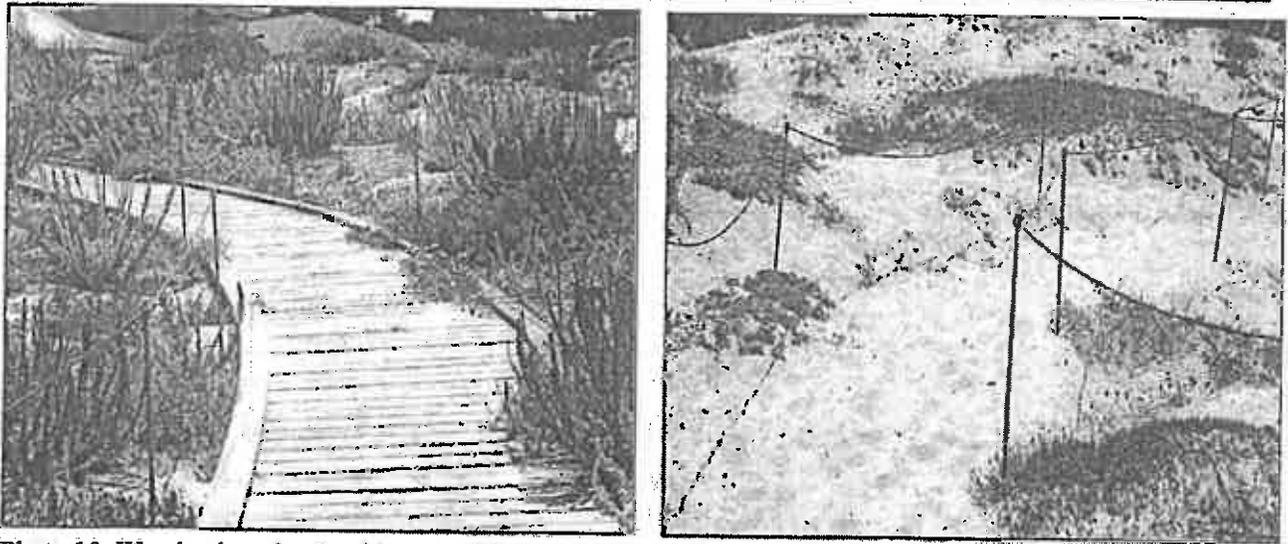


Photo 10. Wooden boardwalk with eye rod & cable fencing. Photo 11. Sand trail with eye rod & cable fencing.

Non-native Plant Control

All aggressive non-native plant species will be removed from the dunes through an initial control followed by a maintenance program. The main focus of the non-native control will be on the iceplants (*Carpobrotus* and *Conococisia* sp.), Sydney golden wattle (*Acacia longifolia*) and the invasive grasses and forbs on the roadside edges of the North Dunes. The control methods will vary with species and more than one method may be needed with a single species. The control program will include removal of solid stands of the non-native plant and individuals within stands of native dune scrub.

When herbicide is used, the handler must strictly adhere to the label, have been trained properly to safely handle pesticides and report the use to the County of Monterey. All herbicide use shall be carefully planned to provide complete control over the treatment site until the spray is dry. Wind is almost a constant on the dunes, very calm mornings offer short windows of opportunity to spray without drift. This is especially important in areas with native plants proximate to non-native plants.

Iceplants • Carpoprotus & Conococisia sp.

All iceplant mats will be killed with 2% glyphosate during its active growing period, and left in place to desiccate. The mats will be monitored on a monthly basis for need of re-spraying live sprigs. Seedlings and small plants of iceplant will be hand-pulled and disposed of off-site at an appropriate disposal area. Leaving the mats in place while they die will provide sand stability during the period planted native dune plants are becoming established. Iceplant growing within 30 ft of Tidestrom's lupine will be pulled by hand and disposed of off-site.

Sydney Golden Wattle • Acacia longifolia

During the active growing period, all leaf and top growth will be cut and disposed of off-site at an appropriate disposal site. Short stumps of the main stems of the wattle will be left. Immediately after cut-

ting the stems, 50 to 100% glyphosate shall be applied in an injection or frill method to cuts along the thick stems. Oblique angled cuts should be used to avoid any runoff into the sand. The stumps will be monitored for any re-growth and re-treated along fresh cuts if needed. Once treatment is successful, the aerial portions of the wattle stems can be trimmed to just below the sand surface.

Invasive Grasses & Forbs

The best control method for each site with invasive grasses and forbs will be used. Possible methods include hand-pulling, spraying (especially perennials), mowing, or a combination of shallow tilling and irrigating to reduce the seed bank.

Planted Trees: Monterey Cypress, Monterey Pine, Blue Gum Eucalyptus

All digging in the dunes will be done with caution as to not harm black legless lizards. They are usually found in the top 18 inches of sand under shrubs and trees with a well developed leaf litter. Control of any non-native trees could disturb a legless lizard, so the work must be done slowly, with a watchful eye. Removal of all leaf litter under the tree 48 hours prior to the tree removal will encourage the lizards to move out of the tree root zone. Any lizards observed during non-native plant removal should be reported to the CA Department of Fish & Game's CNDDB.

Planted Monterey cypress trees along Ocean Ave. and the southern boundary of North Dunes have both historical and landscape significance. However, the planted trees are eliminating dune habitat and therefore negatively impacting ESHA. In order to minimize the impact to the dunes, and retain the historical and esthetic value of the cypress in Del Mar and North Dunes, the Monterey cypress trees adjacent to Ocean Ave. and planted at the base of the Ocean Ave. hill, shall be maintained and replaced as necessary as consistent with the Shoreline Management Plan. Those individual trees planted away from Ocean Ave, more in the central portion of the North Dunes and the Monterey Pines planted at the very north end of the dunes should not be replaced if removed due to disease or death and the area restored to the native dune scrub. Mature cypress and pines should be removed after they died or decline to the point they are no longer esthetic or safe. Young trees should be evaluated to determine if they should be removed now, to begin the restoration of native dune scrub. The mature blue gum eucalyptus at the corner of Ocean Ave. and San Antonio, should also be maintained due to its landmark size. Map 2 delineates the corridor in the dunes to be dedicated to Monterey cypress landscaping.

Stabilizing the Sand

All planting areas will be stabilized with straw or jute to allow the seedlings or seed to get established with a minimum of shifting sands. For straw treatments, bundles of straw will be 'planted' 4 inches into the sand at 12 to 15 inches on-center spacing. Each bundle will consist of a generous fistful of straw, and measure approximately 10 inches long. The bundles will be placed into a 4 inch deep hole, perpendicular to the surface of the dunes and backfilled with sand. The straw bales shall be bundled preferably from rice or wheat. Use of straw from grains that can naturalize on the dunes such as oats, rye, bromes, and barley shall not be used. Jute can be placed on dune slopes with typical installation methods. Jute works well on steep sites or narrow corridors.

In addition to the straw bundle planting or jute, segments of 4 ft high snow fencing, typically made of lath and wire or heavy gauge plastic can be added to problem wind areas to literally bounce the wind upward, offering relief to the ten to twenty feet behind the fence. Multiple segments can be useful in wind tunnel areas. Installation of wind fencing prior to planting an area is advisable.

Planting areas covered with dead iceplant should not require any additional stabilization techniques.

Planting

Bare sand created by human disturbance and non-native plant removal will be planted with native dune species. The exception will be the volleyball courts and viewing areas along the court sidelines and the designated trails through the dunes. Native seedlings will be planted according to Table 2.

Table 3. Dune Scrub Planting Mix and spacing by zone in North Dunes and Del Mar Dunes.

Foredune	Dune Swale	Riardune	CLO Associates
<i>Abronia latifolia</i> 5' oc*	<i>Carex pansa</i> 1' oc	<i>Abronia umbellata</i> 4' oc	<i>Marah fabaceus</i> 5' oc
<i>Ambrosia chamissonis</i> 5' oc	<i>Juncus effusus</i> 3' oc	<i>Artemisia pycnocephala</i> 3' oc	<i>Pteridium aquilinum</i> 3' oc
<i>Camissonia cheiranthifolia</i> 2' oc		<i>Camissonia cheiranthifolia</i> 2' oc	<i>Rubus ursinus</i> 3' oc
<i>Leymus mollis</i> 3' oc		<i>Croton californica</i> 2' oc	
		<i>Ericameria ericoides</i> 4' oc	
		<i>Erigeron glaucus</i> 1' oc	
		<i>Eriogonum parvifolium</i> 3' oc	
		<i>Lotus scoparius</i> 3' oc	
		<i>Lupinus arboreus</i> 5' oc	
		<i>Lupinus tidestromii</i> 2' oc	
		<i>Phacelia ramosissima</i> 3' oc	
		<i>Poa douglasii</i> 1' oc	

* The on-center spacing for planting listed in feet.

The planting shall follow the following guidelines:

- Thinning of dead iceplant mats should be considered to open up the sand surface. At a minimum, planting holes shall be chopped through the dead mat, and a planting hole cultivated in the sand below.
- The plants shall be from local genetic source in the Carmel and Pebble Beach areas.
- The planting should be scheduled during the late fall or early winter, as soon as 2-3 inches of rain has been received and more storms are expected. Winter rains can be supplemented with irrigation, however, the timing of the planting should still be in the winter months.
- A temporary above-ground irrigation system could be installed to provide watering to supplement the winter rains. Each seedling should receive a minimum of ¼ gallon per watering. The goal should be to provide only supplemental water to the rains and water deeply the entire root zone of each plant.

- General guidelines for the scheduling of the water system: up to three times per week during winter and spring months, once a week in June and once per month in July, August and September during the first six months the plants are in the ground only. Irrigation should be monitored to insure the application of usable water within the root zone and to avoid runoff.
- Seedling containers should be a supercell 6", 2 inch pot or of equivalent volume.
- The seedlings shall be spaced according to the table above. The general planting plan will be a random mix of the dune scrub species with some stands of single species.
- Planting holes shall be equal depth to the container. Each planting hole will be back filled with native sand and a tablespoon of slow release fertilizer r.e. E.B Stone Organic All Purpose Fertilizer or Osmocote 14-14-14.

Sensitive Species Management

Tidestrom's Lupine: The goal is to establish thriving new pockets of Tidestrom's lupine in the dunes to add stability and long-term survival to the population. Presently, the Tidestrom's lupine grows in relatively open sand areas with *Abronia umbellata*, *Leymus mollis*, and *Poa douglasii*, but primarily with other individuals of Tidestrom's lupine. In 1995, biologists from Jones & Stokes mapped four Tidestrom's lupine locations in North Dunes. In 2008, only two of the four locations had Tidestrom's lupine. To achieve a stable population that can survive minor changes and disturbances to the dunes, both natural and human caused, at least ten locations scattered throughout North Dunes should be established with each location supporting at least 100 plants.

Collection of seed for propagation of the Tidestrom's lupine shall be limited to the population on the North Dunes. Due to the small size of the population, and therefore limited seed available each year, direct sowing into the dune is not an efficient use of the seed or method of propagation. Lupines generally are easily grown from seed that have been collected when ripe, lightly scarified and sown in a well draining planting mix. Propagation in a supercell 6" container will encourage a healthy tap root to form and the plant will be ready to plant out in the dune within 3 to 4 months after sowing. Younger plants have a better chance of establishing in the wild, provided the proper care after planting. Plant-



Photo 12. Seed pods of the Tidestrom's lupine. Seeds are ripe when the pod cracks open easily and the seeds are dark in color.

ing should follow the methods outlined in the previous section.

The locations of Tidestrom's lupine plants on the North Dunes are being negatively impacted by human and pet trampling. Fencing the plant locations may be necessary to protect the endangered species from disturbance, especially near the volleyball courts. However, if the proposed trail system is installed, and hikers are respectful of the dunes and stay on the designated trails, fencing of the lupine may not be needed. As a part of the annual monitoring of the lupine population, the need for fencing will be considered and if deemed necessary will be added. A simple plastic coated cable and steel eye rod style of fence should be sufficient to give visitors the message to avoid the area and only create a minimal visual impact.

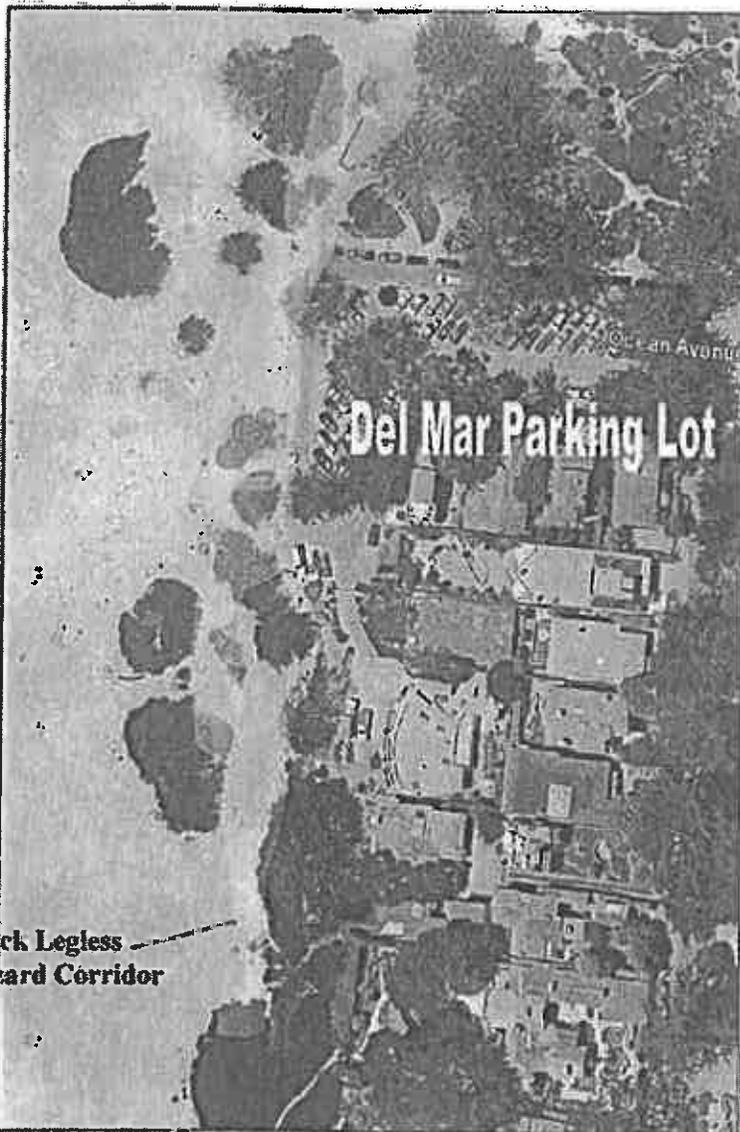


Photo 13: Proposed Black Legless Lizard Corridor.

Black Legless Lizard: The historic photographs of the original dunes behind Carmel Beach (Photo 6) show large expanses of dune scrub that appears to be ideal habitat for the black legless lizards. Today, their habitat is limited to North and possibly Del Mar Dunes. A goal of this restoration program is to improve the quality of habitat for the black legless lizard by establishing large stands of native dune scrub, and creating a habitat corridor between North Dunes and Del Mar Dunes for lizards to be able to move between the two areas.

The restoration methods outlined in the section above will be used to restore the dune scrub to the bare sand areas and where non-native plants are removed. In addition, a habitat corridor between North Dunes and Del Mar Dunes shall be established with some specific planting of *Ericameria ericoides*, *Eriogonum parvifolium*, *Lotus scoparius*, *Lupinus arboreus*, and *Phacelia ramosissima*. These plant species create especially good habitat for the legless lizards due to the size and shading ability of their canopy, and the large amount of annual leaf litter that collects under the shrubs. The litter attracts insects which the legless lizards feed upon. Large bare sand pathways will be necessary to allow visitors to move easily from the Del Mar

parking lot to the beach, but with careful planning and open areas between shrub stands of no more than 75 ft in length, a habitat corridor can co-exist with the primary beach access area. On the aerial photograph in Photo 13, potential corridor planting locations have been highlighted in yellow. Because this planting will need to cross a very high traffic area, protective fencing will be needed to ensure the establishment of the plants. Again, plastic coated wire cable with steel eye posts has minimal visual impact while offering protection to the plants.

Interpretation of the Dunes, Beach and Restoration Program

The dunes are a unique area in the City of Carmel, and sharing the natural and cultural history with the residents and visitors through interpretive panels, can enhance their appreciation of the dunes. Appreciation leads to respect and placing value on the resource, and even becoming a steward of the dunes, through volunteering. Interpretive panels could successfully attract the curious reader adjacent to restroom, at the foot of the boardwalk in North Dunes and at the boardwalk bench area on North and Del Mar Dunes.

The following list contains some broad ideas for interpretive subjects. Many additional ideas can be generated from each theme.

- Fragile dune scrub habitat: the flora, fauna, geology, endangered species present
- Human history of Carmel Beach and the dunes: Bath House, military, and century of recreation, famous artist of Carmel at beach gatherings, etc.
- Ocean habitat of Carmel Bay: the fish, mammal, birds, invertebrates, type of seaweeds that maybe seen on the beach
- Ocean tides, currents, and how they form and shape the summer and winter beach
- The Monterey cypress as the 'sentinel' of Carmel Beach. Its natural distribution, planting history in Carmel, world-wide popularity as a landscape tree, life span, grace
- Restoration of the dune scrub habitat of Carmel, how, why, and how you can help
- Geography of the area: all landmarks you can see from the dunes or beach

In addition to interpretive signing, some general signing to encourage the visitors to use the designated trails through the dunes will probably be necessary during the restoration project. It may be necessary to sign the small volunteer trails off San Antonio Ave. guiding hikers to the designated trail. Small signs asking people to stay off of planting areas can also help. "Dune Restoration in progress - Please stay off the young plants" or something similar has helped on many State Park dune restoration projects.

Maintenance Methods

Timely follow-up maintenance of any restoration project is often the key to success, and dune restoration is no exception. At least quarterly inspections of the treatment areas are needed to identify any problems and schedule maintenance. Maintenance activities may include but not be limited to:

- Repair or replace segments of fence or boardwalk as needed.

- Removal of aggressive exotic plants on the project site, including any live sprigs of iceplant.
- Replant vegetation if necessary until the site is stabilized. Planting should be limited to winter and spring months.
- Addition of organic fertilizer around plantings that have not shown typical growth.
- Repair or adjusting the irrigation system and/or schedule. Inspect the irrigation system during a watering cycle to detect any leaks or malfunctions. Evaluate the emitter placement and the adequacy of the sphere of water delivered at each plant.
- If animal browse is heavy, caging Tidestrom's lupine or fencing the site may be considered.
- Replacement of jute netting or their stakes if used.
- Re-apply straw planting in disturbed areas or areas where new sand deposition has occurred.
- Addition of segments of wind fencing to break up strong wind patterns.
- Consider the addition of fencing around any Tidestrom's lupine locations that are being impacted by foot traffic.
- Other actions identified during the monitoring, necessary to meet the success criteria.

Monitoring Methods

To insure the long-term protection and maintenance of the Tidestrom's lupine and Black Legless Lizard within the dunes in the City of Carmel, on-going monitoring of the populations should be implemented.

Tidestrom's lupine should be monitored annually by a qualified biologist. The information collected each year should include:

1. Direct count of individuals, noting number of mature blooming plants, and number of non-blooming seedlings. These numbers should be compared with previous surveys to determine whether the population is stable, increasing, or declining.
2. Note any impact from human use of the dunes. Considered fencing as a protection measure.
3. Note encroachment from non-native plant species and trigger maintenance actions to remove the weeds.
4. Map locations in North Dunes, analyze reasons for any changes from previous years.
5. Submit annual data collected to CA Department of Fish & Game's CA Natural Diversity Data Base.

Black Legless Lizards are difficult to assess both the population size or population stability. As more information is developed for the species, including what constitutes a viable population, and established methods to estimate population size and stability, these endeavors should be undertaken. In the interim, once every 5 years, a survey for presence/absence should be undertaken to confirm the continued presence of the lizards.

Restoration Program Success Criteria

The mission of this restoration & management program is to recreate a self-sustaining native dune habitat with thriving populations of the special status species, while providing safe visitor access and enjoyment of the dunes. To accomplish a successful project the following criteria should be met:

- Aggressive non-native species shall have less than 1% of coverage in the project area.
- The dune scrub plant coverage should reach at least 70% coverage in the project area, with the other 30% occupied by bare sand or Monterey cypress within the cypress corridor.
- All planted species must be displaying evidence of reproduction.
- The dune scrub shall be comprised of all 22 native species mentioned in this report.
- Successful establishment of 10 locations of Tidestrom's lupine with at least 100 plants each.
- Successful establishment of the quantity and quality of available habitat for Black Legless Lizards, including the habitat corridor between Del Mar and North Dunes.
- Annual monitoring of the Tidestrom's lupine population is performed and results reported to the CA Department of Fish and Game's Data Base.
- The trail system has been established and is being used exclusively for visiting or traversing the dunes. No foot traffic impact is occurring within the Del Mar or North Dunes.
- Interpretive panels are increasing the visitors experience and knowledge of the dune habitat.

Implementation

The implementation of this program can take a variety of paths ranging from full funding contracting all components of the program to a phased approach, installed by volunteers. Reality typically falls somewhere between the two options.

If full project funding were available, the entire area could be treated at one time by contractors. The contracts may need to be divided in a few specialties: carpenter for boardwalk and bench construction, pest control contractor for efficient treatment of iceplant and acacia, and a restoration specialist/landscape contractor for plant propagation and installation.

However, there are many other avenues for accomplishing the work. First is a phased approach where the project is divided into six to ten manageable areas for treatment. Even boardwalks and path ways can be installed sections at a time if necessary. A general rule of thumb for dune restoration projects is to begin in the foredunes and end up in the reardunes, due to the possible inland movement of sand when non-native plants are removed. A great advantage to phasing the work is that the methods of restoration are honed during the first phases, allowing the rest of the project to take advantage of the knowledge. It divides the project site into more manageable sizes, avoiding overwhelming the project manager and volunteers and also spreads costs over time.

Some of the lower cost alternatives include recruiting low or no-cost labor or donations from Carmel Middle School, Carmel High School, the CA Conservation Corp, civic groups such as Scouts, Carmel Garden Club, the CA Native Plant Society, or Return of the Natives program at CSUMB. Groups or individuals can be asked to sponsor a bench, or foot of boardwalk, an interpretive panel, etc.

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City of Carmel: North Dunes Monterey Cypress Corridor

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Date: July 19, 2004

(35)



COASTAL ACCESS AND RECREATION ELEMENT

Introduction

This Element of the General Plan is an optional element not required by California's General Plan statutes. However, the subjects addressed in this element are central to an effective Local Coastal Land Use Plan. Protecting and enhancing public access to the coast is mandated by the California Coastal Act and was accepted as an essential part of Carmel's development long before the Coastal Act was adopted.

Carmel-by-the Sea is a popular visitor destination, known as much for its spectacular coast as for its unique community character. Carmel Beach is owned and maintained by the City of Carmel and includes over 22 acres of white sand beach. Carmel Beach sits on the northern half of Carmel Bay, which stretches from Cypress Point on the north to the outer tip of Point Lobos to the south. The beach is used year round and represents an important recreational resource. (LUP)

One of the shoreline's outstanding features is the sand itself, with the texture and bright appearance of granulated sugar. Beaches composed of such fine white sand are very rare along the central coast of California. At about one mile in length, the beach's white sands extend out below translucent blue waters into Carmel Bay. Wind-sculpted Monterey Cypress trees line the bluffs. Views to the north are of the rocky headlands of Pebble Beach. The south vista is of Abalone Point and Point Lobos beyond. Together, the beach, ocean, trees and views combine to create one of the most scenic landscapes in California. (LUP)

Scenic Road and the Beach Bluff Pathway are also owned and maintained by the City of Carmel. The pathway offers a unique pedestrian experience as it meanders along the bluffs. The decomposed granite pathway passes between the tree-dotted, vegetated bluff outcrops and the rock curb that defines the edge of Scenic Road. The bluff top area is maintained by the City and is complemented by nine beach access stairways and a series of benches and overlooks. This pathway is heavily used, providing a complementary experience to the sandy beach. From the bluff top one can see different vistas, relax on benches, and stroll along a path that is perfect for jogging or pushing strollers or for those whose physical condition makes walking on the beach difficult or impossible. Over the years, Carmel has maintained a balance between preserving the beauty of the shoreline environment and adding the physical improvements that make the Carmel shoreline accessible and enjoyable to the public. (LUP)



- P4-46** Establish, in coordination with the State Department of Parks and Recreation, Monterey County Regional Park District and the Monterey County Parks Department, a trail network linking the state-owned Odello land and Carmel River State Beach to the Carmel Mission, Mission Trail Nature Preserve and Beach Bluff Pathway. (LUP)
- P4-47** Allow surfing, hiking, picnicking, horseback riding, and typical beach games, such as Frisbee and volleyball on the beach without restriction. Allow dogs on the beach when on a leash or under voice control. Require dogs on the Beach Bluff Pathway to be on a leash. However, if the dog policy combined with educational efforts does not promote a safe environment for beach users and dogs, a leash law for certain times should be considered. (LUP)
- P4-48** Discourage any further incursion of recreational activities into the North Dunes habitat. Sensitive resources in the North Dunes habitat area shall be protected. (LUP)
- P4-49** Prohibit percussion instruments on Scenic Road, the Beach Bluff Pathway, and beach bluff without a permit. Prohibit sound amplifying equipment on the City Beach without a permit. (LUP)
- P4-50** Prohibit sales or other commercial activities on Carmel Beach, along the bluff or in the Ocean Avenue/Del Mar parking lot. (LUP)
- P4-51** Prohibit overnight camping on any portion of the beach and bluffs. (LUP)
- P4-52** Allow alcohol consumption on the beach until 10:00 p.m. (LUP)
- P4-53** Prohibit bicycles and skating on pedestrian access easements between Scenic Road and San Antonio Avenue and on the Beach Bluff Pathway. (LUP)
- P4-54** Prohibit private dune buggies and motorized marine vehicles on the beach. (LUP)
- P4-55** Maintain as operational all wash-off stations located adjacent to the stairways at Eighth, Eleventh, Thirteenth, and Santa Lucia Avenues. (LUP)



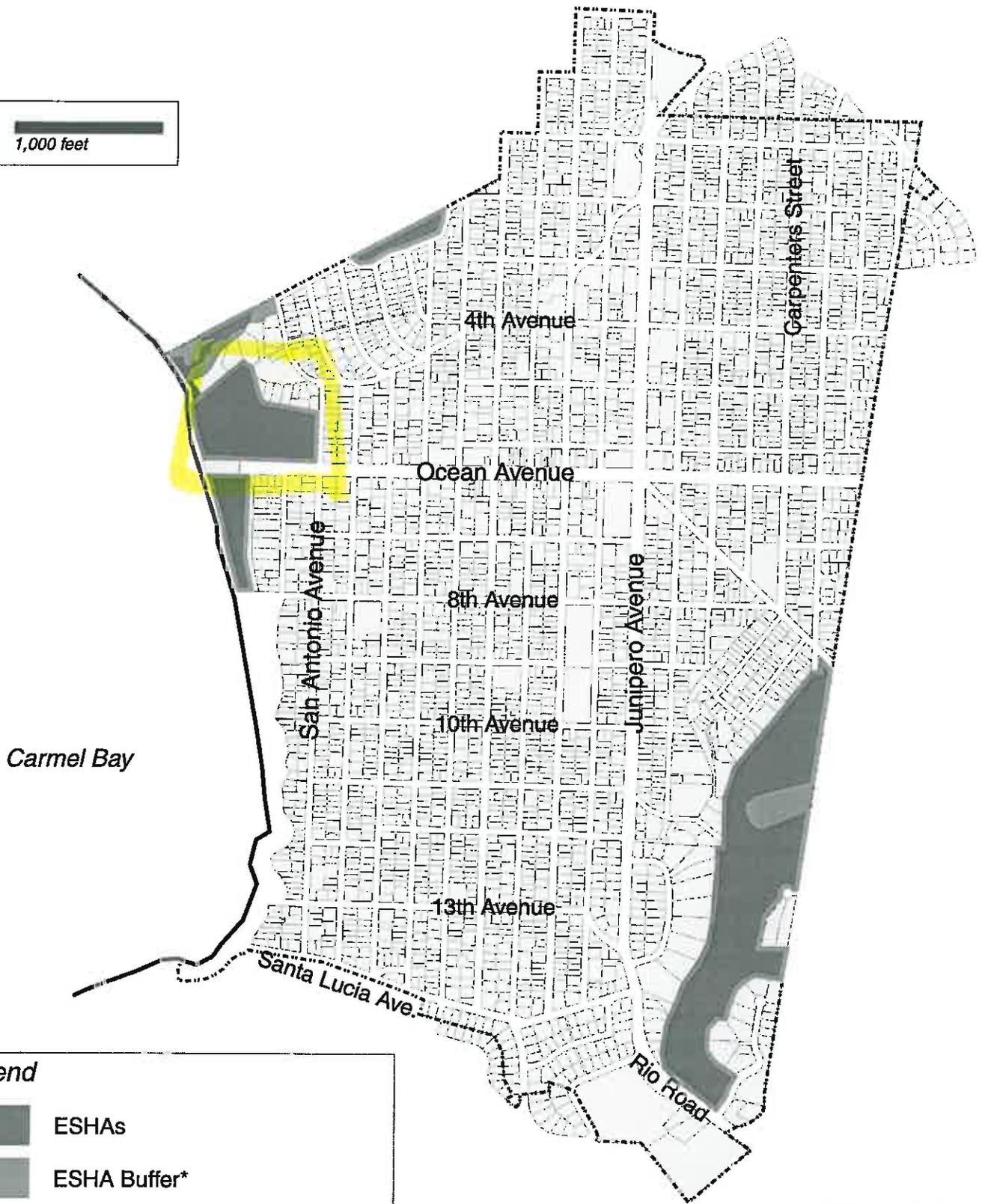
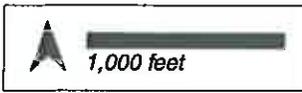
The City of Carmel maintains an ongoing survey of trees by species and size, started in 1971. Since that time, the numbers of Monterey pines on public property declined roughly 2%, while the decline on private property has reached 10%. It is unclear whether pine pitch canker is entirely responsible for the decline on private property; there are many other factors including disease, development impacts, and old age. Though many large mature trees can probably survive pitch canker, given the age of the City's Monterey pine forest, coupled with the susceptibility of young trees to the disease, the overall health of the City's pine forest may be in jeopardy. As the number of Monterey Pines declined since 1971, the number of Coast Live Oaks increased 17% on private property and 40% on public property. The increase in oaks, dramatic as it may be, cannot offset the loss of Monterey pines, which impart a very different sense of place for the village. (LUP)

Steps must be taken to minimize the threat to existing healthy Monterey pines and new seedlings to ensure continued diversity in species, age, and location. This document includes policies to respond to this issue. Disturbance and/or removal of mature and disease resistant trees during construction or other development activities should be avoided. Permit conditions requiring replacement trees for those removed from private land should be monitored and enforced to ensure that the trees are healthy and reach maturity. Replacements should also be in like kind. It is essential that these and other policy directives be carried out to ensure that the Monterey pine forest landscape is protected so that the forested character of this unique coastal village is preserved. (LUP)

Environmentally Sensitive Habitat Areas

In addition to the urbanized Monterey pine forest, the City of Carmel-by-the-Sea has other environmentally sensitive habitats including wetlands, riparian forest, wet meadow, and coastal terrace prairie. In 1995, the City completed a detailed study of environmentally sensitive habitat areas (ESHAs) (Jones & Stokes, 1995), which includes specific recommendations for City policies and practices. Relevant policies and recommendations derived from this document are incorporated into this section of the Land Use Plan. Figure 5.3 shows a map of the currently designated ESHA's. The location and types of ESHAs found in Carmel include:

- Pescadero Canyon supports Monterey pine forest that provides watershed protection and a buffer for Pescadero Creek and is part of an important local wildlife habitat corridor, wetland drainage (Pescadero Creek), central coast arroyo willow riparian forest, and wet meadow. (LUP)
- Mission Trail Nature Preserve supports Monterey pine forest; central coast arroyo willow riparian forest along wetland drainages; coastal terrace prairie; wet meadow; and known occurrences of special-status plant and wildlife species,



Legend

-  ESHAs
-  ESHA Buffer*
-  City Limits

* Note: A 30 foot buffer is required contiguous to all ESHAs.

Figure 5.3
Environmentally Sensitive
Habitat Areas (ESHAs)



including Hickman's onion, and Monterey dusky footed woodrat, which are state and/or federal species of special concern, as well as potential habitats for other special-status species. (LUP)

- Carmel Beach supports dune scrub; un-vegetated dunes; a known occurrence of Tidestrom's lupine, a state- and federal-listed endangered species, black legless lizard, a state species of special concern and other potential habitat for other special-status species. (LUP)

A brief description and management guidance for these resources follows:

Pescadero Canyon. Pescadero Canyon, located along the northern boundary of the City, supports two undeveloped segments referred to as Pescadero Canyon East and Pescadero Canyon West. These two segments are part of the larger Pescadero Canyon that extends to the northeast beyond the City's jurisdiction. Pescadero Canyon supports Monterey pine forest along its slopes and riparian and wetland habitat at the bottom of the canyon along Pescadero Creek. Most of Pescadero Canyon is in private ownership and supports some residential development. (LUP)

The Pescadero Creek watershed begins on marine terrace 6 at the top of Huckleberry Hill and extends down through a succession of geomorphic surfaces to the Pacific Ocean. This succession of marine and dune-covered terraces can be observed along the steep canyon walls. Exposed in the canyon bottom and adjacent side slopes are the soils and shale bedrock of the Monterey formation. (LUP)

Under natural conditions, a high rainfall runoff rate and consequent high discharge into Pescadero Creek would be expected on the Narlon soils of the marine terraces. The natural runoff rate and stream flows in Pescadero Creek have increased beyond natural conditions with development in the Pescadero Creek watershed. (LUP)

Pescadero Canyon East supports Monterey pine forest along the steep slopes of the canyon. Wetland drainage and two small, planted redwood groves can be found at the bottom of the canyon. Monterey pine forest in Pescadero Canyon East can be found on middle-aged dunes and on shale bedrock. Within this part of the Canyon, Monterey pine forest on middle-aged dunes is dominant occurring on the upper north-facing slope of Pescadero Canyon, along 2nd Avenue. Monterey pine forest on shale bedrock forms a narrow band on both sides of the Creek. Pescadero Canyon East is traversed by a perennial drainage that conveys runoff from the upper reaches of Pescadero Canyon to Carmel Bay. The drainage bottom varies from 3 to 6 feet wide and is generally un-vegetated. Wetland plants occur sporadically along the drainage edge. No special-status species have been found in Pescadero Canyon East. (LUP)



The presence of one special-status wildlife species, the Monterey dusky-footed woodrat, a federal and state species of special concern, was observed during fieldwork in the Preserve (Jones and Stokes, 1995). As with federal species of concern, state species of special concern are not listed or candidates for listing as threatened or endangered and have no formal protection under the State Endangered Species Act. The designation merely indicates that California Department of Fish and Game (DFG) is concerned about these species and that special consideration should be taken when decisions are made regarding the future of an area containing these species. (LUP)

Two woodrat nests were observed on the eastern edge of the Preserve and several nests were seen in the Outlet Meadow area. The nests had obvious entrance and exit holes that showed evidence of use and appeared active. Because of the relatively large size and isolation of the Mission Trail Nature Preserve, it has the greatest potential ecological value of all the habitats studied in the City. The dense riparian areas provide potential habitat for yellow warbler. The fairly frequent downed and decomposing logs could potentially be used by the Monterey ornate shrew. Sharp-shinned hawks and Cooper's hawks could use the Monterey pine forest for foraging and nesting. (LUP)

Management guidelines for Mission Trail Nature Preserve should be implemented that respond to the following issues of habitat quality and enhancement and control of invasive vegetation:

- Reduce erosion and loss of native coastal terrace prairie vegetation
- Enhance the habitat value of the coastal terrace prairie
- Monitor and protect the Hickman's onion population
- Maintain and enhance habitat for the Monterey dusky-footed woodrat
- Prohibit removal of native vegetation from riparian forest habitat
- Reduce the introduction and spread of invasive horticultural species
- Survey for special status plants periodically and manage as appropriate. (LUP)

Carmel Beach and Shoreline.

The white sands of Carmel Beach form the entire western boundary of the City. Although largely un-vegetated, Carmel Beach does support scattered areas of native dune scrub and



horticultural plantings. Native dune scrub occurs near the corner of Ocean and San Antonio Avenues in the North Dunes area. Species observed in this scrub habitat during the field survey include mock heather, bush lupine, beach sagewort, California blackberry, beach evening primrose, pink sand verbena, croton, California sea rocket and ice plant. Coast Live oaks are scattered in the dune scrub. Horticultural plantings occur in scattered locations along the bluffs of the Carmel shoreline. One grove of Monterey Cypress occurs along Ocean Avenue, near the dune scrub. (LUP)

Tidestrom's lupine can be found in and near the dune scrub habitat in the north dunes at Carmel Beach. Tidestrom's lupine is a state and federal listed endangered species and is on list 1B of the CNPS. This is a perennial herb that typically occurs in coastal dune habitat. The species is seriously threatened by coastal development, trampling, and competition from invasive, non-native plants. The Carmel dunes population is a new occurrence first reported in 1995 and contains approximately 280 individual plants (Jones and Stokes, 1995). Other populations nearby can be found at Asilomar State Beach and at several locations in Pebble Beach. At Carmel, the plant is associated with beach sagewort, mock heather, beach evening primrose, bush lupine and wildrye. While the local population appears viable the habitat conditions for Tidestrom's lupine is degraded from public use and the spread of invasive non-native species. No other special-status plant species have been reported but the habitat is suitable for one-awned spineflower, robust spineflower, and beach layia. (LUP)

In this area, black legless lizard, a State species of special concern, has been reported as well. Twelve of these lizards were captured in the dunes along the Carmel shoreline in 1984 during a USFWS study (Bury 1985). Currently, potential habitat for black legless lizards exists in the eastern portion of the north dunes area where a small pocket of native dune vegetation exists. Frequent human use of the area and encroachment of non-native species such as ice plant reduce the area's value for legless lizard. The potential for these lizards to still occur along Carmel's shoreline is considered moderate. No other special-status wildlife species are expected to occur along the shoreline. (LUP)

ESHA Management guidelines for the Carmel shoreline should be implemented that respond to the issues of habitat quality enhancement and control of invasive vegetation:

- Restore, enhance and protect the dunes to improve habitat for Tidestrom's lupine
- Develop interpretive signage to educate the public about dune ecology and discourage trampling of dune vegetation
- Avoid planting and control the spread of invasive, non-native plants
- Monitor the population of Tidestrom's lupine and adjust management programs to retain or increase the size of the existing population

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- Determine whether black legless lizards remain along the Carmel shoreline. Implement habitat conservation and restoration measures if this species is found to exist. (LUP)

Water Quality, Drainage and Marine Resources

The City presently coordinates with the Carmel Area Wastewater District, the County of Monterey and other public agencies concerning the status and impact of future development on the water quality of the Carmel Bay Area of Special Biological Significance (ASBS). Since Carmel Bay is not under the direct planning purview of the City, this coordination role is the appropriate response for the City to this concern. Compared to the impact of growth in other areas, the impact of Carmel growth on future water supply and quality is minimal. However, the City has an important role to play in assuring that new development in the incorporated City limits does not contribute to water quality impacts from storm water or drainage discharges into the bay. (LUP)

Storm runoff onto Carmel Beach has been addressed in two fashions. First, the Association of Monterey Bay Area Governments, in preparation of the area wide 2008 water quality plan, reviewed the issue of runoff. It noted that high-density development has been causing sediment discharge in the area and encouraged local jurisdictions to adopt erosion and sediment control ordinances. Second, and more specifically, the adopted policy of the City is to clean the portions of the beach affected by runoff and sediment deposits after each winter. In this fashion, build-up of potential contaminants is prevented and the general quality of the sand is enhanced. Once each year, the beach is also re-contoured under the policies of the Shoreline Management Plan to reestablish the beach and bluff configuration, which is altered throughout the course of each year by visitor foot traffic. (LUP)

As a third management approach, the City is developing its NPDES Phase II Storm Water Plan (SWMP) and procedures manual that incorporates Best Management Practices to reduce the negative effects related to storm water runoff. The program outlines six minimum measures to proactively attack the problem of storm water runoff in a semi-urban area like Carmel. Minimum measures of the Storm Water Management Plan (SWMP) shall include:

- Public education and outreach
- Public participation and involvement
- Illicit discharge detection and elimination



determinations regarding the effects of seawall structures and sand redistribution activities. If the results of the City's beach monitoring program indicate that the beach has been losing sand over time investigate options for beach nourishment using offshore deposits or other sources that match Carmel Beach sand to replenish the beach and protect its width. The program shall at a minimum: 1) identify potential sources of beach quality sand; 2) include testing and screening for determining the acceptable quality and quantity of beach material; 3) identify placement locations; 4) establish placement methods and any restrictions on work timing or methods. (LUP)

P5-21 Maintain Carmel Beach as a public recreational resource. If the results of the City's beach monitoring program indicate that the beach has been losing sand over time, develop, implement, and then further monitor and evaluate a beach nourishment program to maintain or increase the available volume of sand. (LUP)

P5-22 Maintain records of the volumes of sand moved and the volumes needed to cover each engineered revetment. When revetments fail or need to be substantially reconstructed or replaced, consider vertical seawalls as a preferred alternative unless monitoring data and/or engineering requirements favor an engineered revetment design. (LUP)

P5-23 Where unavoidable, minimize and mitigate all impacts to both marine and terrestrial resources when performing sand redistribution. (LUP)

P5-24 Prohibit motorized vehicles and motorized recreational equipment on Carmel Beach, sand dunes and other City owned parkland. This prohibition does not apply to city and contracted maintenance vehicles or public safety vehicles. (LUP)

O5-3 Perpetuate the mix of native dune and horticultural plants in an informal beach landscape. (LUP)

P5-25 Continue the use of Monterey Cypress as the predominant tree species on the beach bluff and North Dunes. The exact number of trees may vary over time, but whenever a tree dies or is lost during a storm, replacement trees should be planted in approximately the same location. Maintain a low-to-medium density of trees (40 to 60 trees) in the North Dunes. (LUP)



- P5-26** Encourage neighborhood cooperation and volunteers to assist City staff with the care of the landscape along the pathway. (LUP)
- P5-27** Maintain an attractive mix of plant material that favors native species and other, drought-tolerant, noninvasive species. (LUP)
- P5-28** Restore dune areas to improve habitat for Tidestrom's lupine and other native dune plants. (LUP)
- P5-29** Prohibit planting and control the spread of invasive non-native plants. (LUP)
- P5-30** Improve habitat values for the preservation of the California black legless lizard. (LUP)
- P5-31** Encourage the extension of the City's Pathway landscape style onto neighboring properties:
- Bring all City-owned property along this portion of Scenic Road into compliance with the approved Pathway plan.
 - Encourage private property owners to draw from the broad palette of plants used in the Pathway design.
 - Make presentations to the Scenic Road Property Owner's Association about this concept and share with the Association the plant list and a list of local suppliers.
 - Encourage the use of plants from this palette when reviewing projects on Scenic Road through the Design Review processes. (LUP)
- P5-32** Evaluate the Pathway landscape, including plant selection and associated design elements in consultation with a coastal landscape specialist; identify sites that require revitalization and implement restoration based on the Pathway Design Plan. Address the most severely impacted sites first. (LUP)
- O5-4** Maintain the vegetation and trees along the shoreline in a safe and healthy condition. (LUP)
- P5-33** Protect Monterey Cypress from structural damage caused by high winds. Develop a proactive trimming program to reduce length and weight of limbs and branches. (LUP)
- P5-34** Prune or repair trees immediately following limb failure to mitigate any safety hazards. At other times, trees may be pruned in accordance with City policy, keeping public safety, access and the tree's health as the primary goals. (LUP)
- P5-35** Pruning of vegetation will be done as needed for the health of the plants. This is a natural landscape and formal garden pruning is to be avoided. The pathway must be kept clear of overgrowth and

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periodic pruning is desired. However, neat straight edging is discouraged. Prevent shrubs from growing too high and blocking views of the ocean through the Cypress trees along the Beach Bluff Pathway. (LUP)

O5-5 Continue implementation of the *Shoreline Emergency Action Response Plan* to minimize the dangers to public safety and facilities that may be caused by winter storms or other natural disasters (LUP).

P5-36 Maintain the existing shoreline maintenance and emergency reserve account. Build fund balances over time, to the extent feasible, to handle future emergency repairs at the beach. (LUP)

P5-37 Consider beach-related projects that address public safety and access as high-priority projects when preparing budgets. (LUP)

O5-6 Keep the beach free of refuse. (LUP)

P5-38 Provide sufficient trash containers at the beach. Regularly patrol the beach and Del Mar area to remove all litter and excess charcoal from the sand, bluffs and parking lot. (LUP)

P5-39 Encourage volunteer programs for beach and bluff clean-up activities. (LUP)

O5-7 Protect the fragile dunes and sensitive plants in the Del Mar Dunes and North Dunes against any significant disruption of habitat values. (LUP)

P5-40 Provide signage prohibiting fires in the dunes area. Consider using doors on restroom stalls for posting beach rules and regulations. (LUP)

P5-41 Continue Police Department enforcement of the no-fire regulation north of 10th Avenue and especially in the North Dunes and Del Mar Dunes areas. (LUP)

P5-42 Restore, maintain and enhance the degraded habitat in the Del Mar Dunes area to enhance environmental resources and aesthetics. Protect sensitive habitat and special-status species through development and implementation of the Del Mar and North Dunes Master Plan. (LUP)

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**Urban Forests, Parks and Open Spaces**

G5-3 Protect, conserve and enhance the unique natural beauty and irreplaceable natural resources of Carmel and its Sphere of Influence, including its biological resources, water resources, and scenic routes and corridors. (LUP)

O5-8 Protect, conserve and enhance designated open space, the urban Monterey pine forest, beach and shoreline, the sensitive habitats and the hillside areas, and acquire additional open space as deemed appropriate. (LUP)

P5-43 Maintain and preserve the shoreline in a manner that will ensure its availability for public use and enjoyment and preserve the natural condition in conformance with the adopted Carmel Shoreline Management Plan. (LUP)

P5-44 Maintain a Park Overlay District to ensure that development of private property adjacent to parks and open spaces is compatible with their continued enjoyment. (LUP)

P5-45 Maintain a Beach Overlay District for the purpose of providing a method of review and control for private property that is adjacent to public beach lands. Ensure that the development of private property is compatible with public enjoyment of the beach as a coastal resource. (LUP)

P5-46 Preserve and protect areas within the City's jurisdiction, which due to their outstanding aesthetic quality, historical value, wildlife habitats or scenic viewsheds, should be maintained in permanent open space to enhance the quality of life. Such acquired areas would be left in a natural state or restored for aesthetic and/or wildlife purposes. (LUP)

P5-47 Continue Carmel's tree preservation program and encourage the use of indigenous or native plants. (LUP)

P5-48 New development shall protect areas of unique scenic quality (e.g. Scenic Road, Junipero Ave, Torres & 3rd, etc.). Development in these areas shall be sited to protect public views to and along the coast, minimize impacts via landform alteration, and be visually compatible with the character of surrounding areas. (LUP)

G5-4 Preserve and enhance the City's legacy of an urbanized forest of predominantly Monterey pine, coast live oak and Monterey Cypress. (LUP)

O5-9 Maintain a Forest and Beach Commission and a Forest, Parks and Beach Department that have specific responsibility and jurisdiction for the health and well-being of the forest, parks and beach. (LUP)



- allow access of equipment (Annually: September - October.) (LUP)
- P5-151** Remove fallen limbs and trees from stream channels (As needed.) (LUP)
- P5-152** Place rip-rap to prevent erosion only in situations where private property or public safety is at risk (as needed.) (LUP)
- P5-153** Mow meadow grasses to reduce the risk of fire (June.) if consistent with special status plant management needs. (LUP)
- P5-154** Maintain the Serra Trail to allow access of emergency vehicles (Semiannually.) (LUP)
- P5-155** Remove dead/hazardous trees only as needed. Leave dead trunks in place when not hazardous to provide habitat for woodpeckers and other fauna. (LUP)
- P5-156** Conduct trail maintenance and clearance (June - August.) (LUP)

Environmentally Sensitive Habitat Areas

G5-12 Identify, protect and manage Environmentally Sensitive Habitat Areas (ESHAs) to ensure their long-term integrity and the biological productivity of these habitats. (LUP)

O5-36 Monitor, study and develop effective management programs for the City's parks and ESHAs. Endeavor to reduce conflicts between environmental protection and use of public and private property within ESHAs. (LUP)

P5-157 Support public ownership of sensitive habitats and encourage public-private partnerships for the long-term management of habitats. (LUP)

P5-158 Regulate the removal or alteration of riparian vegetation within identified ESHAs to protect riparian habitats. (LUP)

P5-159 Maintain and enhance the resource value of environmentally sensitive habitat areas in consultation with a qualified biologist and in coordination with the California Department of Fish and Game. Remove any non-native, invasive vegetation from sensitive habitats. (LUP)



- P5-160** Implement a Transfer of Development Rights program to allow owners of single-family residential lots containing ESHAs to transfer water credits, density, floor area or some other form of development credit to other property within the City as an alternative to the development of their lots. If this proves infeasible, allow such lots to be developed with one single-family house limited in size to not more than 50% of the standard floor area for the lot, sited and designed to avoid or, if avoidance is not possible, minimize disturbance of the ESHA to the greatest degree possible. Also consider purchase of private ESHA properties with assistance from land trust or similar organizations. (LUP)
- P5-161** Avoid disturbance or degradation of resources when maintenance vehicles and equipment enter sensitive habitat areas. (LUP)
- O5-37** Reduce the introduction and spread of invasive horticultural species into and within identified ESHAs. Encourage a volunteer program of citizens and property owners to participate in maintenance and enhancement of sensitive habitats. Develop a Stewardship Program based on the premise that resource management is a cooperative effort between the City and its citizens. (LUP)
- P5-162** Establish a 100-foot buffer measured from the edge of the riparian habitat where fertilizers, pesticides, herbicides, or other chemicals are prohibited. (LUP)
- P5-163** Prepare and distribute an information pamphlet about the Stewardship Program to educate landowners on the importance of maintaining and enhancing ESHAs and other important habitats that cross over park boundaries and into residential neighborhoods. (LUP)
- P5-164** Compile and maintain a mailing list of all property owners adjacent to each ESHA. Send periodic mailings or information sheets to property owners concerning various topics, such as maintenance of fire buffers, use of native plants in landscaping to enhance habitats, not feeding feral animals, and removal techniques for common invasive species (e.g., French broom, Cape ivy, etc.). (LUP)
- P5-165** The information could be distributed by volunteer members to achieve a more personal relationship, thereby, stimulating the Stewardship Program. (LUP)



- P5-172** Develop a long-term plan to control surface drainage into the canyon from streets and adjacent parcels. Direct drainage into either the storm water system or to the canyon bottom with erosion-control devices to prevent damage to the riparian and wetland zones. (LUP)
- O5-40** Ensure that long-term management activities maintain the natural dune ecology of Carmel Beach in a manner consistent with public safety. Protect areas of the beach from the loss of habitat, where special status plant species are growing. (LUP)
- P5-173** Retain a qualified botanist to monitor the population of Tidestrom's lupine and other special status species on the North Dunes of Carmel Beach. The population should be assessed annually (or based upon a schedule agreed upon by the Department of Fish and Game, Coastal Commission and U.S. Fish and Wildlife Service) to determine if the population is stable and if measures to protect the population should be instituted. If the population appears heavily affected by public use, the City should consider fencing or placing barriers around the lupine habitat on the beach. (LUP)
- P5-174** Prevent further planting and spread of invasive horticultural species within the dunes at Carmel Beach. (LUP)
- P5-175** Remove any non-native invasive vegetation from special status habitat to eliminate competition and implement a dune restoration plan. (LUP)
- P5-176** Implement a Dune Restoration Plan. (LUP)
- P5-177** Minimize spread of non-native plants. (LUP)
- P5-178** Conduct black legless lizard surveys and manage appropriately. (LUP)
- G5-13** Develop, preserve and enhance areas of scenic interest and determine methods to protect key scenic corridors and routes. (LUP)
- O5-41** Encourage increased use of open space areas for such uses as pedestrian paths and scenic viewpoints that would provide for public enjoyment of these areas. (LUP)
- P5-179** Enhance the natural resources at Forest Hill Park. Plant Monterey pine seedlings using local genetic stock, according to guidelines

MEMORANDUM

TO: Tom Leverone, Chairperson
Members of the Forest and Beach Commission

FROM: Mike Branson, City Forester

DATE: 31 August 2012

SUBJECT: Consideration and Adoption of an Arbor Day Event for 2012

The Commission passed a motion to work on a tree tour with students and teachers from Carmel Middle School as an Arbor Day event. I think we can continue to work on this idea but I am proposing an alternative event as an Arbor Day event for recognition as a Tree City USA.

Mayor Burnett is planning an event with the Japanese Consul General to plant a flowering cherry tree in Devendorf Park. This tree is a progeny of the Japanese cherry trees planted in Washington D.C. and has been donated to the City of Carmel-by-the-Sea by the Japanese Consulate in San Francisco.

Tentatively the ceremony is scheduled for the morning of October 4th 2012.

Shoreline Inspection and Maintenance Checklist 8/25/2012

- I. Carmel Beach
 - a. Beach Cleaning
 - i. On 8/25/2012, participated along with ~32 other volunteers at the monthly(10am-12noon) CRA(Carmel Residents Association) beach cleanup
 - ii. Beach was generally clean probably due to cooler than normal weather and end of summer/start of school year
 - iii. **Noted remnants of 3-5 illegal fires north on 10th which is pretty much the norm on any given weekend.**
 - 1. **Newer and more visible signage would help**
- II. Beach Accessways
 - a. Stairway Safety/Structural Integrity/Handrails (Inspected 8/25/2012)
 - i. 4th Ave Stairs
 - 1. Didn't inspect
 - ii. 8th Ave Stone Stairs
 - 1. Stone stairs generally in good shape
 - 2. **Sand coverage at bottom adequate with a short drop-off(6-8 inches)**
 - 3. **Removed sand at top of stairs that was covering beach fire code sign**
 - iii. 9th Ave Wood Stairs
 - 1. **Top rails at landing are rotting**
 - 2. Drop-off at sand greater than 12 inches
 - iv. 10th Ave Wood Stairs(North)
 - 1. Wood is generally in good condition with no visible signs of rotting
 - 2. Good sand coverage at bottom
 - v. 10th Ave Wood/Stone Stairs(South)
 - 1. Both wood(rails/steps) and stone(steps) in good condition
 - 2. Good sand coverage at bottom
 - vi. 11th Ave Stone Stairs
 - 1. Stone is in good condition
 - 2. **Rails are somewhat unstable the last 12-15 feet near bottom**
 - vii. 12th Ave Wood
 - 1. **Right top rail near top is rotting**
 - 2. Upper half of wood stairs is older and beginning to show signs of rot
 - 3. Lower half of stairs are in very good shape due to recent replacement
 - viii. 13th Ave Stone Stairs
 - 1. Stone stairs generally in good condition

2. Lower right railing fairly unstable
 3. Sand coverage at bottom good
- ix. Lucia Stone Stairs
1. Stone stairs generally in good condition
 2. Railing is new and stable
- x. Scenic Stone/Wood Stairs
1. Lower wood stairs in good condition
 2. Upper wood railing older, but in generally good condition
 3. Sand coverage good

FORESTER REPORT

2011												
	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT,	NOV.	DEC.
Trees removed			2 (10 - storm loss)	12	6	13	2	0	2	20	12	8
Trees planted			15	11	7	5	4	0	2	3	3	5

Note: several of the plantings in June and July were replacements of recently planted trees that died or were damaged in the storm in June, not new planting locations.

2012												
	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT,	NOV.	DEC.
City trees removed	10 1-storm	10	20*	2	5	17	1	5				
City trees planted	5	7	8	12	2	13	3	2				
Private trees removed	9	4	4	4	2	5	2	6				
Private trees removed - const.	5	3	3	9	0	7	0	18**				
Private replanting						1	1	2				
Construction replanting						PLP	0	1 and TBD				

* Six eucalyptus trees and four dead pines removed on Ocean Ave. / **16 trees removed at Carmel Mission for restoration scaffolding and improvements
 PLP - per landscape plan

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