



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

Sarah Berling, Kelly Brezoczky, Tamara Michie, JC  
Myers, Brian Sours

All meetings are held in the City Council Chambers  
East Side of Monte Verde Street  
Between Ocean and 7th Avenues

### **SPECIAL MEETING Thursday, September 7, 2023**

**3:00 PM**

This meeting will be held in person and via teleconference ("hybrid"). The public is welcome to attend the meeting in person or remotely via Zoom, however, the meeting will proceed as normal even if there are technical difficulties accessing Zoom. The City will do its best to resolve any technical issues as quickly as possible. To view or listen to the meeting from home, you may also watch the live stream on the City's YouTube page at: <https://www.youtube.com/@CityofCarmelbytheSea/streams>. To participate in the meeting via Zoom, copy and paste the link below into your browser.

<https://ci-carmel-ca-us.zoom.us/j/82641562478> Meeting ID: 826 4156 2478 Passcode: 559052 Dial in: (253) 215-8782

**HOW TO OFFER PUBLIC COMMENT** - The public may give public comment at this meeting in person, or using the Zoom teleconference module, provided that there is access to Zoom during the meeting. Zoom comments will be taken after the in-person comments. The public can also email comments to [tford@ci.carmel.ca.us](mailto:tford@ci.carmel.ca.us). Comments must be received at least 2 hours before the meeting in order to be provided to the legislative body. Comments received after that time and up to the beginning of the meeting will be made part of the record.

### **MEETING 3:00 PM**

#### **CALL TO ORDER AND ROLL CALL**

#### **PUBLIC APPEARANCES**

Members of the public are entitled to speak on matters of municipal concern not on the agenda during Public Appearances. Each person's comments shall be limited to 3 minutes, or as otherwise established by the Chair. Matters not appearing on the agenda will not receive action at this meeting and may be referred to staff. Persons are not required to provide their names, and it is helpful for speakers to state their names so they may be identified in the minutes of the meeting.

#### **ORDERS OF BUSINESS**

Orders of Business are agenda items that require City Council, Board or Commission discussion, debate, direction to staff, and/or action.

1. Review and Approve the Final Community Survey for the Urban Forest Master Plan (UFMP)

## **ADJOURNMENT**

2. Correspondence Received After Agenda Posting

This agenda was posted at City Hall, Monte Verde Street between Ocean Avenue and 7th Avenue, Harrison Memorial Library, located on the NE corner of Ocean Avenue and Lincoln Street, the Carmel-by-the-Sea Post Office, 5th Avenue between Dolores Street and San Carlos Street, and the City's webpage <http://www.ci.carmel.ca.us> in accordance with applicable legal requirements.

## **SUPPLEMENTAL MATERIAL RECEIVED AFTER THE POSTING OF THE AGENDA**

Any supplemental writings or documents distributed to a majority of the Forest & Beach Commission regarding any item on this agenda, received after the posting of the agenda will be available at the Public Works Department located on the east side of Junipero Street between Fourth and Fifth Avenues during normal business hours.

## **SPECIAL NOTICES TO PUBLIC**

In compliance with the Americans with Disabilities Act, if you need special assistance to participate in this meeting, please contact the City Clerk's Office at 831-620-2000 at least 48 hours prior to the meeting to ensure that reasonable arrangements can be made to provide accessibility to the meeting (28CFR 35.102-35.104 ADA Title II).



## CITY OF CARMEL-BY-THE-SEA FOREST AND BEACH COMMISSION Staff Report

September 7, 2023  
ORDERS OF BUSINESS

**TO:** Forest and Beach Commissioners

**SUBMITTED BY:** Justin Ono, City Forester

**SUBJECT:** Review and Approve the Final Community Survey for the Urban Forest Master Plan (UFMP)

### RECOMMENDATION:

- Review and approve the final questions for the UFMP Community Survey, including the precise wording of certain questions.
- Determine the start date and end date of the Survey.
- Provide guidance regarding whether paper copies should be available.

### BACKGROUND/SUMMARY:

On June 19, 2023, all Steering Committee members (which include the five Forest and Beach Commissioners plus five public Steering Committee members) were requested to propose questions to be included in the UFMP Community Survey. After collecting proposed questions from the Steering Committee, Forestry staff, and Davey Resource Group (DRG), staff consolidated similar questions and included those questions critical to the development of the UFMP, while maintaining the end goal of having an anonymous survey that would take no more than 10-15 minutes to complete, thus having the highest chance of receiving a large response from the community.

Thus, a 20-question Survey was compiled (see **Attachment 1 – Community Survey**).

At the first UFMP Community Workshop on July 12, 2023, there were requests to edit the Survey before the Survey's initially-intended launch date, which was immediately following the Workshop. Forestry staff agreed that it was in the best interest of all parties to postpone the launch to allow Commissioners to assist in finalizing the Survey.

At the August 10, 2023 meeting of the Forest and Beach Commission, the Commissioners determined a Special Meeting would be needed to focus on this issue.

To assist the Steering Committee in this task, the City Forester and DRG subsequently reviewed the Survey to identify which questions we believe are critical to keep, in order to glean the most essential information needed to complete the UFMP. The Forester made the decision that 12 of the questions in the

Survey should be kept as currently written, **These 12 questions are bolded in Attachment 1.**

The Steering Committee is therefore tasked at this Special Meeting to determine what remaining questions, beyond the 12 indicated in bold, are to be included in the Community Survey. The Commissioners and Steering Committee members are encouraged to add, edit, or delete any other questions, as well as to modify the instructions and other information heading the Survey. The order of the questions may also be modified by the Committee.

The Steering Committee is also be asked to determine the start date and end date of the Survey, taking into consideration the time necessary to update the survey, print copies, and update and test the digital version of the Survey. Also, the Steering Committee is asked for guidance on whether or not paper copies should be made available, and if so, where they should be picked up from and dropped off to.

Survey Monkey will be the online platform used to conduct the digital version of the survey. The Survey will be noticed on the City's website, in the weekly Friday Letters, and via Constant Contact.

While final edits and modifications are encouraged at this time, it is important to note that we need to launch the final Survey promptly after this Special Meeting so that the overall UFMP is not delayed.

#### **FISCAL IMPACT:**

None for this item.

#### **ATTACHMENTS:**

Attachment 1 - Community Survey



The City of Carmel-by-the-Sea has contracted with Davey Resource Group, Inc. to develop an Urban Forest Management Plan (UFMP). The UFMP will provide a road map for the preservation and maintenance of Carmel-by-the-Sea's canopy and trees, including vision, goals, strategies, and actions to be implemented over the next 40 years.

The urban forest includes all of the trees in Carmel-by-the-Sea, including those on public and private property. The urban forest provides significant environmental benefits and is vital to maintaining the character of the community as "a village in the forest by the sea".

Your engagement and commitment to the planning process is key to ensuring that the UFMP reflects the community's vision for the future of the urban forest. Your response to this survey will help us more clearly understand community values and the information you share will guide the development of the UFMP.

This survey should take approximately 15 minutes to complete. Thank you for your participation!

1. **\*Carmel has:**
  - a. Too few trees
  - b. The right amount of trees
  - c. Too many trees
2. **\*Currently the tree canopy covers 36% of Carmel. Considering that many trees are very mature, the urban forest management plan will need to consider replacing aging trees along with meeting community goals for future canopy cover. In your opinion, what is the ideal canopy cover for Carmel's future urban forest?**
  - a. Reduce canopy cover
  - b. Maintain current canopy cover
  - c. Increase canopy cover
3. Trees and canopy have long defined the character of Carmel. To help us better understand where trees and shade are most valued by the community, please rank (1-6) the following areas with 1 representing where you most value and enjoy trees.
  - \_\_\_ Streets
  - \_\_\_ Medians
  - \_\_\_ Downtown
  - \_\_\_ Neighborhoods
  - \_\_\_ Parks/Open space
  - \_\_\_ Trails

4. **\*What characteristics of trees do you appreciate most? Please rank (1-7) the following, with 1 representing the characteristic you most value:**
- \_\_\_ Shade
  - \_\_\_ Ornamental/flowering
  - \_\_\_ Seasonal color
  - \_\_\_ Wildlife habitat
  - \_\_\_ Architectural interest
  - \_\_\_ Greenery
  - \_\_\_ Environmental benefits (air quality, carbon, etc.)
5. Describe your willingness to plant trees on your property. Check all that apply
- \_\_\_ I am willing to plant trees.
  - \_\_\_ I would plant trees but I don't have the space.
  - \_\_\_ I already have enough trees.
  - \_\_\_ I do not want to plant trees.
  - \_\_\_ Other (please explain): \_\_\_\_\_
6. **\*The trees growing on my private property are important to me**
- a. Strongly agree
  - b. Agree
  - c. Neutral
  - d. Disagree
  - e. Strongly disagree
  - f. I don't own property in Carmel with a tree
7. **\*The trees growing in the public right-of-way in front of my house (or business) are important to me**
- a. Strongly agree
  - b. Agree
  - c. Neutral
  - d. Disagree
  - e. Strongly disagree
8. **\*Are you satisfied with the current level of care that the City provides for public trees?**
- a. Yes
  - b. No
  - c. Not sure
  - d. Other (please explain): \_\_\_\_\_

9. Please rank the following from 1 - 5 in order of what you believe should be the priority of Forestry's field tasks:

- \_\_\_ Tree Plantings
- \_\_\_ Tree Watering
- \_\_\_ Stump Removals
- \_\_\_ Tree Removals
- \_\_\_ Tree Pruning (i.e., thinning canopy, removing deadwood/broken limbs)

10. What City services related to trees do you appreciate the most? Rank the following from 1-6, with 1 representing the service you most value:

- \_\_\_ Maintain street trees
- \_\_\_ Remove dead or dying trees
- \_\_\_ Inspect trees for risk
- \_\_\_ Consultation for private trees
- \_\_\_ Conduct Design Reviews and Tree Protection Plans
- \_\_\_ Plant/replace trees in the public rights-of-way

11. **\*What tree benefits/"services" do you value? (Circle/select all that apply)**

- a. Screening
- b. Support mental and physical health
- c. Wildlife habitat
- d. Aesthetics
- e. Shade
- f. Reduce 'noise pollution'
- g. Promote tourism/retail
- h. Improve air quality
- i. Mitigate climate change (e.g.: capture CO<sub>2</sub>)
- j. Food (fruits, nuts)
- k. Reduce flooding and stormwater runoff
- l. Enhance spirituality and connection with nature
- m. Other (please specify)

**12. \*What consequences of trees do you dislike? (Circle/select all that apply)**

- a. Block sunlight/shade lawn/garden
  - b. Litter (leaves, seeds, fruit, etc.)
  - c. Infrastructure conflicts (damage to sidewalks/foundations)
  - d. Allergens
  - e. Nuisance pests (aphids, etc.)
  - f. Tree/limb failure (during storms, etc.)
  - g. Inhibit view
  - h. Costs (maintenance, removal, etc.)
  - i. Other (please specify)
- 

**13. \*Having a large tree(s) on my property... (Circle/select all that apply)**

- a. Is a burden
- b. Is a privilege
- c. Is a part of living in Carmel
- d. I don't have any large trees on my property
- e. I don't own property in Carmel with a tree

**14. \*How do you feel about Monterey pine trees? (Circle/select all that apply)**

- a. More should be planted
- b. They are an important part of our urban forest
- c. They need to be better maintained
- d. They are not suitable for our urban environment

**15. It is important to sustain the row of large Monterey cypresses along Scenic Drive:**

- a. Strongly agree
- b. Agree
- c. Neutral
- d. Disagree
- e. Strongly disagree

**16. \*If a tree is removed within City limits, whether it is on public or private property, it should always be replaced with another tree.**

- a. Strongly disagree
- b. Disagree
- c. Neutral
- d. Agree
- e. Strongly agree

17. Do you currently want a tree planted in the public right-of-way in front of your home (or business) if the City were to provide you a list of adequate trees to choose from?

- a. Yes
- b. No
- c. N/A

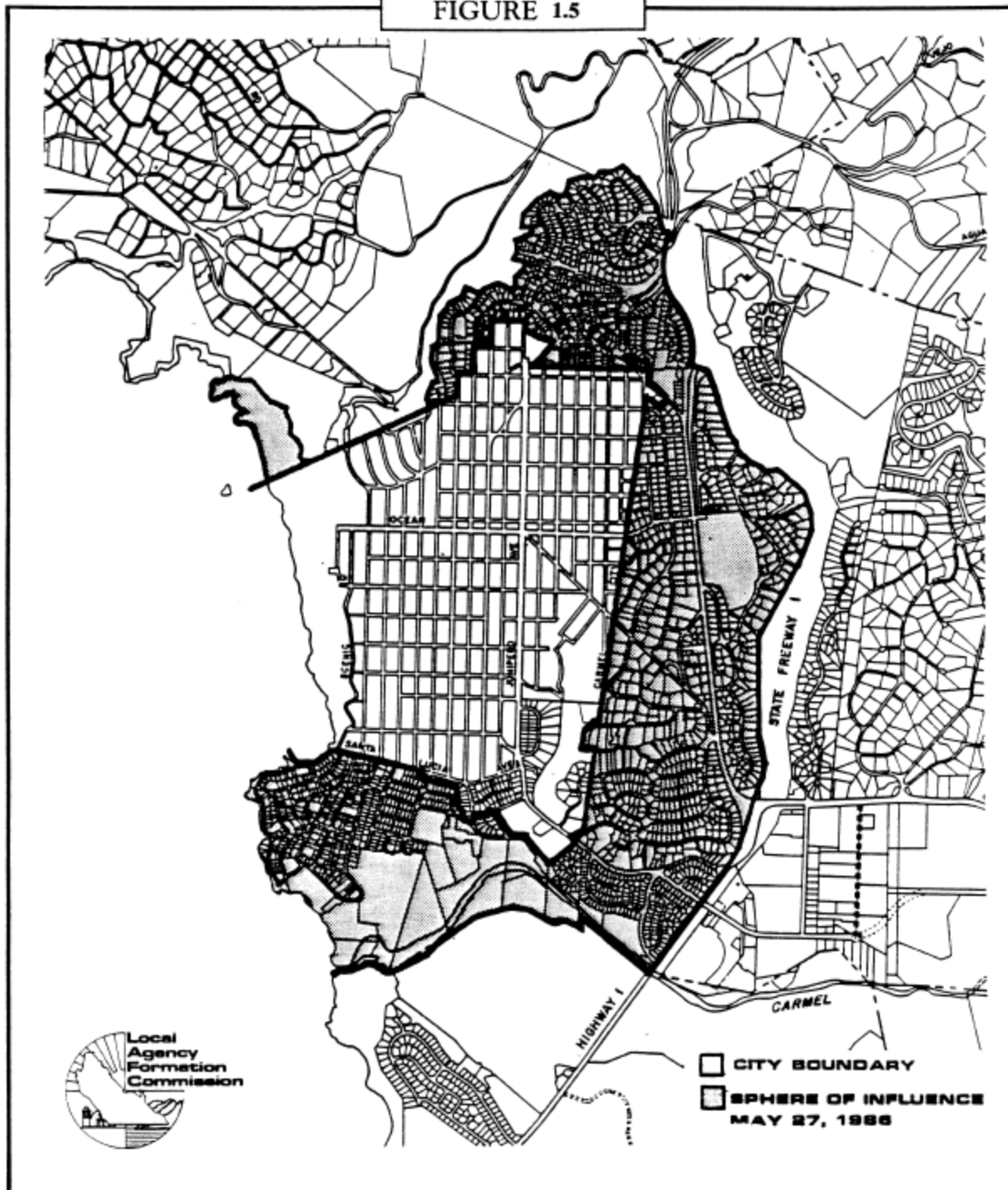
**18. \*What is the most important issue that the Urban Forest Master Plan should address? (open ended)**

19. Please provide any additional comments or suggestions to help guide the creation of our Urban Forest Master Plan. (open ended)

20. What is your connection to the City of Carmel-by-the-Sea?

- a. I am a resident of the City of Carmel-by-the-Sea
- b. I am not a resident but I live within the City of Carmel-by-the-Sea's surrounding Sphere of Influence (map below shows City limits and Sphere of Influence, per the Carmel General Plan)
- c. I am not a resident but I work or own a business within the City limits of Carmel-by-the-Sea
- d. I live outside of the City and its Sphere of Influence

FIGURE 1.5



0' 2000'  
SCALE IN FEET

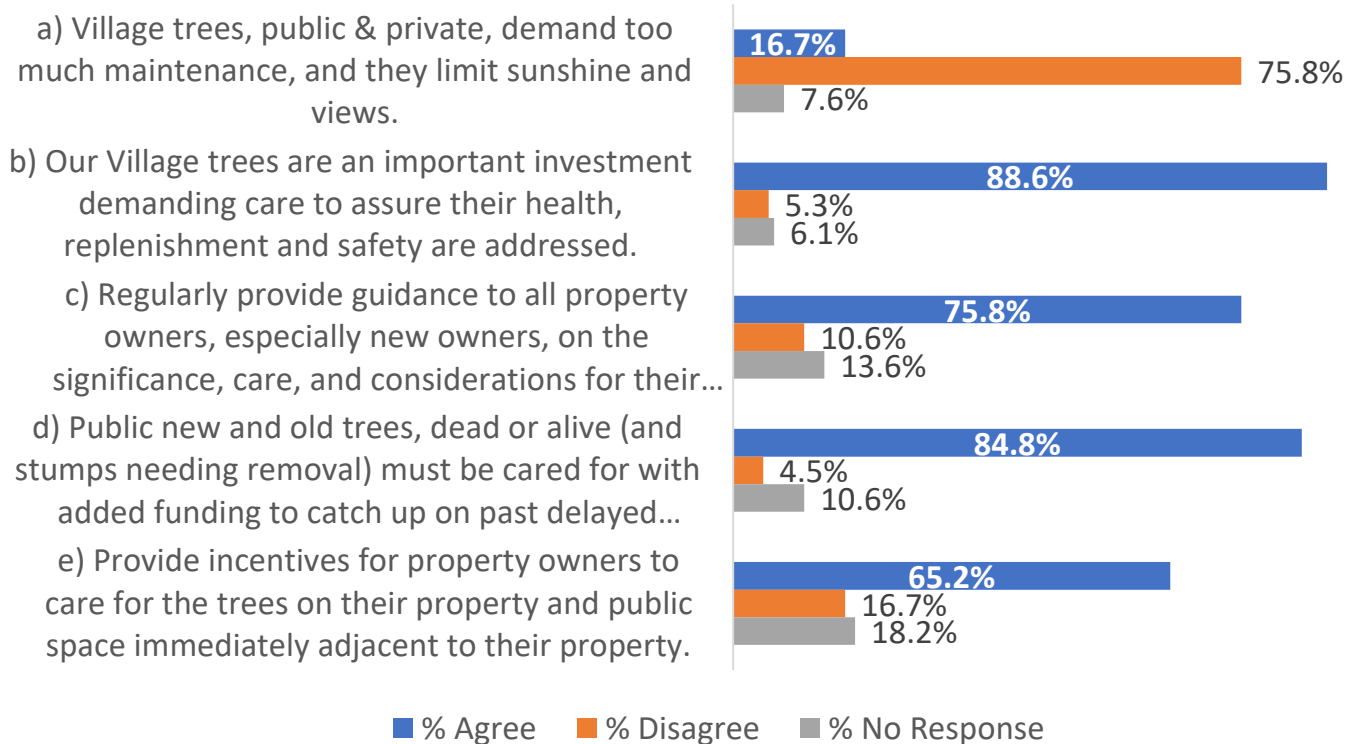
CARMEL  
by the Sea

Sphere of Influence  
and Urban Service Boundaries

## Topic #9 Trees in Carmel – Findings

Aligns to Aug 30 Priorities Meeting Strategic Item #10

### 9. Trees in Carmel & updating our Forest Master Plan



### Open Comments

- *We need to encourage & fund care for trees, but also put the right trees in place to minimize storm related power outages.*

- The above questions are too complex. Tree removal and replacement should be handled on an individual site basis. A blanket regulation for the number of trees per property is not always possible.
- Property owners should not need incentives to properly care for their own trees or those surrounding them!!
- Trees are Carmel along with the Ocean.
- Trees are what make Carmel special!!
- The trees in our Village (esp. City owned) are not well maintained. Permit costs for residents still too high!
- The Friends of the Forest Organization should be of help in these matters.
- Trees make Carmel-by-the-Sea. If you dislike trees, Marina & Sand City are nice places to live too.
- Love our trees!
- Allow owners to prune and remove if necessary old trees! They do have a lifespan and a new tree can be planted to replace.
- Trees need to be maintained by our City taxes. Individuals need to remove dead trees. Businesses need to remove dead trees and care for their own trees. Our City officials are ignoring some "Inns" that have dead trees on their property.
- Leave the good ones and chop the bad ones seems pretty simple to me?
- Part of owning property should include maintaining trees, especially new homeowners. Also, City should check to see if trees are planted following construction. No one is checking this part of the permit.
- What if owners cannot afford or do not want an incentive to do the work on City trees adjacent to their property?
- Save the Monterey Pine forest!
- We need to maintain our trees and stop planting more under utility wires.
- Need to avoid lawsuits against the City by owners who were injured or have property damage from fallen trees or branches for which the City overrules an arborist recommending removal. Human life and limb are higher priorities than tree limbs.
- Not only are trees good for the environment, but they also help the value of our real estate and attract tourism, the key income elements of our community.
- The trees are an intricate part of our Village, along with the architecture. I don't understand why the City allowed beautiful redwoods to be cut down across the street that were healthy; it's a shame!
- Replace dead trees in similar location whenever possible. Can we require homes to allow trees to be planted in front of them?
- I like the idea for incentives.
- Incentives for property owners only for trees on private property.
- Public safety is at risk due to dead and dying trees and limbs in Carmel. I am very concerned about the current irrational policy and process in place.

- Including replacing young trees where old have been removed. The shade and green cover are essential to our town's character and clean air and natural habitat. Prioritize the trees which benefit everyone.
- Way too many trees in Carmel in Carmel by the Sea today. Many, many beautiful public views have been lost over the 70 years.
- Balance ocean views and planting trees. Dead trees used for utility poles are an eyesore. So many overhead wires look like a third-world country. There should be a long-range plan to put all wires underground.
- Old Monterey Pines are a threat to our safety and should be removed upon reasonable request.
- Forestry standards should be informed by post-storm damage assessments on how the tree maintenance could have been adjusted to avoid damage.
- Trees are a liability given how difficult it is to stay on top of maintenance and allow homeowners to proactively remove potential hazards. Carmel used to be dunes -- the 100-yr tree "experiment" may have been a failed one.
- Trees are important, but the City needs to be more responsive to requests to remove dying and/or trees in danger of falling or causing harm.
- This is a common decency to do.
- We are woefully underfunding our Forestry efforts. You don't need a new master plan to figure that out.
- Public trees should be maintained by the City not by homeowners. That is a crazy idea.
- Cypress no oaks.
- Trees need to be maintained to prevent dangerous situations. Learn from Lahaina.
- Do not require upper canopy trees under power lines. The pine trees should only be planted in groups. Replace the isolated pines that are 97 years old with a VARIETY of trees. They are a hazard.
- The native Monterey Pine is too large and dangerous for continued mass plantings. Cypress is also too large for single lots. Focus on smaller species that could be more manageable and accomplish a forest canopy.
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- *Trees are important, but the City needs to be more responsive to requests to remove dying and/or trees in danger of falling or causing harm.*
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- *Cypress no oaks.*
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- *Do not require upper canopy trees under power lines. The pine trees should only be planted in groups. Replace the isolated pines that are 97 years old with a VARIETY of trees. They are a hazard.*
- *The native Monterey Pine is too large and dangerous for continued mass plantings. Cypress is also too large for single lots. Focus on smaller species that could be more manageable and accomplish a forest canopy.*
- *The forest is our defining Village feature. In the last 15-20 years our forest has not been properly maintained. We must fund it properly & have a forester that understands our unique environment.*
- *Carmel is a "Village in a (Monterey) Pine Forest", not just any forest. Carmel is ecologically and spiritually one with our local native Monterey Pine Forest, being the only Peninsula City that made the forest central to its character.*
- *Trees or even worse "totem poles" with utility lines attached should have the lines rerouted so that all totem poles can be removed in the City. A total eyesore.*
- *Monterey pines are fundamental to Carmel's character and should be emphasized in plantings.*
- *I lament over the loss of our forest and trees. City folks don't understand the relationship between human habitation and Mother Nature - they need to be educated and more involved rather than living in fear and destroying their environment when they move here. (originally provided in #17 Summary Comments)*

**Dr. Deborah Rogers, Conservation Geneticist, Genetic Resources Conservation Program  
Founding Director, Monterey Pine Forest Ecology Cooperative, University of California, Davis  
Comments on Carmel General Plan/LUP, December 8, 2002**

Comments on the Importance of Using Science-Based Information in the Development of the Carmel Local Coastal Plan

1. The first stated goal of the California Coastal Act of 1976 is to “protect, maintain, and where feasible, enhance and restore the overall quality of the coastal zone environment and its natural and artificial resources.” Two meaningful measures of the quality of the coastal zone environment are the level of its biodiversity and the health of ecosystems. We do not have comprehensive information on the full extent of biodiversity on the Monterey Peninsula—which includes diversity from the genetic level to species to ecosystems. So we rely on general principles and studies that examine the patterns of biodiversity. Such studies and principles indicate a pattern of biological diversity that is based on the history of soil development on the peninsula and also follows a gradient inland from the coast inland. We are aware of two such studies in the scientific literature—one in 1976 (McBride and Stone) and one more recent (Cylinder 1995). The first study is restricted to the sand dunes and the second continues further inland. They both show a correlation between soil development and plant species composition. This is an expected feature of the peninsula because of the well-established ecological principles and because this has also been demonstrated further north along the coast in an ecological staircase that was recognized as having great ecological value and was designated as a state reserve (i.e., Jug Handle State Reserve). The principle authors of these studies are still in practice and available to discuss their results (Dr. Paul Cylinder, Jones & Stokes, Sacramento; Dr. Joseph McBride, University of California, Berkeley).
2. In addition to the patterns of biodiversity, we also need indicators of species degradation or ecosystem decline if we are to protect the coast’s natural resources as indicated in the California Coastal Act. Again, we do not have comprehensive monitoring programs in place to track changes. We do have the California Endangered Species Act but this only comes into effect when species are in extremely serious condition, perhaps after it is too late to effectively rescue them and then, only at great cost. Another tool that is more effective in identifying species in peril, but at a somewhat earlier stage when there is still an opportunity to reverse the trend with more feasible management practices such as those delineated in is the Rare Plant Program of the California Native Plant Society (CNPS). This program identifies California plant species that are rare or endangered based on objective criteria and science-based information. The program—now in effect for 30 years—has a reputation for scientific accuracy and integrity. It is managed by scientific staff, including botanists and other scientific professionals, and its staff are available for consultation (e.g., David Tibor, Rare Plant Botanist; Dr. Pam Muick, Director, CNPS). The information provided by the Rare Plant Program of CNPS is used by many state and federal agencies to inform their decisions, and in fact, operates under a Memorandum of Understanding with the California Department of Fish and Game. Consulting the CNPS inventory, we see that Monterey pine is listed as “1B”, meaning rare or endangered in California.

Although this CNPS system may be the most useful one because it is local, there are other classification systems internationally that also serve to alert us to species that may be declining and need assistance. For example, specialists in the International Union of Conservation of Nature and Natural Resources (IUCN) maintain a red list of species. As one example, Monterey pine is classified in this list as ‘conservation dependent’, meaning that if conditions worsen or the current conservation activities cease, it would likely become a threatened species (according to their definitions) within five years (Hilton-Taylor 2000).

3. General principles, also, suggest that patterns of diversity are to be expected on the Peninsula. There is considerable diversity in the general environment on the Monterey peninsula, including diversity in underlying soil types and history of soil development, topography, distance from the

ocean, microclimate, etc. These and other environmental patterns are often correlated with changes in species and even changes in genetic diversity within species. For example, while the spread of pollen and seeds would tend to move genes around, effectively 'homogenizing' the genetic diversity of a species, other natural forces can counteract this trend. This movement of pollen and seeds in plant species is just ONE of several natural forces that shape the genetic diversity of species. Others include natural selection and genetic drift—which generally have OPPOSITE effects from that of the pollen and seed movement. So, for example, even though the pollen and seed from some Peninsula tree species may move quite some distance from their source trees, there could still be a significant pattern of genetic differences ~~one~~ from one site on the Peninsula to another—the result of local adaptation if the environmental differences are strong enough. This feature—of tree species with pollen that can move long distances yet showing genetic differences within fairly short distances—has been demonstrated for numerous species including white fir (reference), bishop pine (reference), Monterey cypress (reference), and coast redwood (reference). These patterns of species diversity and genetic diversity are important guidelines for conservation decisions—pointing out areas of high biodiversity and unique entities.

4. To best serve the goals of the California Coastal Act, decisions should be science-based. This means, where possible, using information that is part of the scientific literature. This is information that has been provided by scientists, developed following the scientific method, and peer-reviewed for legitimacy prior to publication in a scientific journal. Information that has gone through this process has rarely been discredited—but rather, built upon. Political commentaries are not a valid substitute or response to research and scientific publication.
5. Some of the natural resources of the Monterey Peninsula have international value and significance. This is true for Monterey pine—which grows in plantation culture on over **10 million acres** internationally (Lavery and Mead 1998, Rogers 2002). The 'birthplace' of these highly valuable plantations is, for the most part, the Monterey pines of the Monterey Peninsula and Año Nuevo area. Those associated with this plantation industry continue to value the native forests of Monterey pine in California as being a place where the genetic diversity of the species is conserved in a natural context and can continue to be shaped by natural forces over time, allowing it to adapt to changing environmental conditions. Regardless of the Monterey pines, they currently have in their country, they place great value in the native forests. At a workshop in Australia in 1998 among foresters and scientists to discuss the management of their own Monterey pine genetic resources, they raised the question "as to whether appropriate authorities in the USA would consider conservation *in situ* [i.e., of the native forests in California] a responsibility." (Spencer 1998).
6. Finally, it is critical in serving the goals of the California Coastal Act to use a conservative standard where absence of information suggests caution in destroying or changing the natural landscape or natural resources. Given the general principle that species diversity will mimic environmental diversity, there is good overall reason to believe that the rich biological diversity of the Monterey peninsula can only be effectively conserved if its pattern is recognized. This means using the best available scientific information and reasonable proxies to determine this pattern. Once landscapes have been destroyed or converted to other uses, the opportunity to study this pattern is lost. Logic suggests and integrity demands that the classroom not be destroyed unless there is overwhelming scientific evidence that it contains nothing that is biologically unique or valuable.

Dr. Deborah Rogers' recommendations to me in 2019 regarding idea of replacing Monterey pines with another pine species to populate Carmel's urbanized Monterey pine forest:

1. Most reasonable hierarchy of decision-making would be to select other individuals within the same, native, local, known species (Monterey pine) rather than jumping to an entirely new species (with its own risks, unknowns)
2. There is much genetic diversity within Monterey pine and there is considerable potential for selecting trees with more desirable characteristics (e.g., more disease resistant trees - Pebble Beach Company efforts and Greenspace efforts, etc.; straighter trees, different branch architecture -- as shown by work done in Australia and New Zealand)
3. Individual tree characteristics can be further 'trained' or modified by management by a qualified arborist
4. No tree (or plant) species are absolutely risk-free (from all disease, all dropping of leaf, pollen, seeds, or needles, etc.)
5. Where possible, there is a better tree-pedestrian relationship when more space is allowed between tree openings and sidewalk use (i.e., allow for more open ground to allow water to penetrate to roots, leaves or seeds to fall in this space rather than sidewalk, etc.)
6. Of course, it is better for the native vegetation in surrounding parks, open spaces, and forests if native plants are used for street trees -- especially to avoid extreme pollen contamination (e.g., hybridization of native and non-native pines)

## **Principles and Recommendations Concerning Conservation of the Amount, Structure, and Integrity of Genetic Diversity of native Monterey Pines at Carmel-by-the-Sea and Environs**

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Prepared: October 25, 2001

### **Introduction**

Genetic diversity is important to the ability of Monterey pine to inhabit different environments and to its longterm survival as a species. Genetic diversity provides the potential for persistence of a species through various changes in the environment. For example, with changes in climate or introductions of new insects or diseases, there is more potential in a genetically diverse and healthy forest to accommodate and survive these influences, than in a genetically impoverished or stressed forest. The maintenance of genetic diversity is also a relatively inexpensive management tool, as genetically based traits are inherited from one generation to another, without requiring the constant input of resources to maintain them.

In Carmel and surrounding areas, Monterey pine grows in contrasting contexts including native forests, transportation corridors, planted greenbelt areas, and natural and planted residential settings. Each of these uses has implications for the genetic and ecological well-being of the native forests, in addition to the value of the specific use. For example, planted Monterey pines in urban environments will influence the genetic composition of the nearby native forests through pollen and seed movement. Depending on specific choices, planted trees can either complement or undermine the local adaptations and longterm viability of Monterey pine forests. Similarly, planted trees can either complement or detract from other processes and values of the native forests (e.g., wildlife habitat, soil composition, disease dynamics) depending on the specific decisions involved in planting projects. Because of the interconnections via genetic exchange, disease transfer, and ecological processes among the native Monterey pine forests and the various extended and introduced uses of Monterey pine, it is recommended that science-based information pertaining to the pines and other forest species and processes be appropriately considered and incorporated into decisions at the various scales (e.g., city, county, regional, state) and with the various constituencies (e.g., private, NGO, public) that influence Monterey pine forest health. Furthermore, it is recommended that any practice that involves selective removal of Monterey pine trees, or planting of trees, be carefully planned and reviewed in the context of the overall and longterm ecological and genetic consequences for Monterey pine forests.

Provided here are some principles and recommendations to assist in genetic conservation of Monterey pine. As there isn't much specific information on spatial structure of genetic diversity in the (former or current), Carmel-area forests or on distances of pollen travel within this region, the recommendations are mostly based on genetic principles and rules of thumb for genetic conservation.

### **General Genetic Principles**

In general, it is best to maintain as much of the natural genetic diversity in Monterey pine as possible. Activities that can reduce genetic diversity include removing individual trees, harvesting/converting forested areas, planting clonal material, planting many seedlings from one parent tree or a narrow genetic base, etc.

The integrity or local adaptations of Monterey pine should be maintained. Activities that can compromise genetic integrity, over the long run, include planting trees from nonlocal or unknown sources.

The natural genetic diversity of Monterey pine may have spatial patterns. That is, the remaining (or former) trees in one geographic area (e.g., along the coast) may have some different types of genetic diversity or different adaptations than trees in other areas (e.g., further inland, higher elevation, different soil type, etc.). It is important, to the extent possible, to respect these patterns; maintaining the structure of genetic diversity.

Activities that tend to support the native levels and structure of genetic diversity in Monterey pine are the using seeds from local (native) trees in replanting programs, planting more seedlings than are desired at maturity, and allowing for natural selection to play a role in determining which trees survive, which remain healthy, and which reproduce.

## Recommendations

1. Keep records on individual trees and forested areas that identifies, if possible, whether the trees are native or have been planted. For all current or future planting efforts, keep record of the genetic source of the seedlings (i.e., not just the nursery, but the geographic area from which the seeds were collected).
2. For any planting projects of Monterey pine (individual pines or reforestation areas):
  - a. Use seeds collected from trees in a similar ecological/geographic area (i.e., rather than seeds from a distant or different area, from a different region of Monterey pine (e.g., Cambria), or imported seeds (e.g., from New Zealand). Be sure to match the characteristics of the source tree's environment with the planting environment. That is, until/unless there is further genetic information available at that time to warrant lumping, I would take the approach of keeping the seedlings segregated by 'site type' and using only those site-matched seedlings for replanting events.
  - b. To the extent possible, allow natural screening by planting several seedlings and allowing for some to die or be removed later.
  - c. Plant seedlings rather than clonal material, thereby maintaining more genetic diversity, unless there is a well-supported reason to plant clonal material.
3. Maintain seedbanks, if possible, of local native Monterey pine. To develop these seedbanks, the following principles should be employed:
  - a. Avoid collecting from any non-native or planted trees (as the latter may not be local in origin).
  - b. Sample from a range of tree sizes, as a proxy for tree age (and thus getting different pollen mixes and natural selection pressures, etc.). One could also sample the same tree in different years to get some variation.
  - c. Sample from many native trees over the full natural range that they occur in the region. If possible, don't collect from immediate neighbors as they may be closely related and have similar genetic compositions.
  - d. Avoid sampling from trees that are isolated by long distances from other Monterey pines. These trees, because of their distance from others, may have high levels of inbreeding in their seeds.
  - e. Collect cones from several heights and different aspects of the tree. By collecting from different sites within the crown, you will again be increasing the chance that you're sampling from different pollen donors, different selection pressures (e.g., amount of heat due to differences in aspect) on the seeds (determining differential survival of seed, etc.), etc.

- f. Keep records on the location and site characteristics of each tree from which seed were collected.
  - g. Maintain the identity (i.e., parent tree location/information) of the seed collected from each tree or area to allow proper matching for planting needs.
  - h. In the absence of direct information on how genetic diversity is structured (or spatially arranged) in the Carmel area, use proxies such as: elevation, soil type, riparian or other habitat type, differences in associated vegetation, distance from the ocean, etc. That is, select trees from a range of these categories over the entire (Carmel) area.
4. If individual native trees, or forested areas, have to be removed (e.g., for safety or other reasons), collect seeds from these trees and deposit them in the seedbank prior to removal.
5. Avoid applying unnecessary filters in seed collecting, seedling development, or planting decisions. Rather, try to sample the native genetic diversity as broadly as possible and allow natural selection to play a role in determining which trees survive and reproduce in the long run. Strongly selecting for certain traits (e.g., fast growth, insect resistance) could have the inadvertent impact of removing some genetic diversity that could have been useful to Monterey pine in surviving future influences.

## Related Issues

**Education:** There is a need to increase the genetic literacy among the general public as it pertains to the conservation and management of Monterey pine. There is lack of understanding of the long-term consequences of using a small genetic base (which is superficially appealing because of uniformity) for planting purposes. This lack of understanding may reduce the suite of options for conservation-related management. For example, one possible manifestation of genetic illiteracy could be public intolerance of diversity in planting stock and/or intolerance to accepting some survival risk (e.g., in the seedlings) by using an array of individuals rather than clones. Although it may be appealing to plant clonal Monterey pines that have some particular feature, doing so may—if planted in many copies over a broad area for a long period of time—contribute to lower genetic diversity in natural Monterey pine forests because of the lower genetic diversity in the pollen and seeds of these clonal trees. There is considerable evidence for inbreeding depression in Monterey pine. The public could assist in good genetic conservation strategies by using locally-adapted Monterey pine planting stock (rather than trees from a different geographic area or an unknown geographic source), by using seedlings rather than clonal material, and by planting a larger number of trees each with some survival risk rather than trying to install a few trees with perhaps lower individual survival risk but with less genetic diversity. This would allow more opportunity for natural selection, maintenance of genetic-environmental relationships, and maintenance of genetic diversity.

**Pitch canker resistance:** Introduced diseases stimulate debate and research concerning the most appropriate, if any, management response. Currently, the nature and genetic basis of resistance to pitch canker are not well understood. As a species, Monterey pine is one of the least resistant among the 23 pine species studied for resistance to pitch canker (in one study). Results of controlled studies may vary according to the source of genetic material for the pines, the type of fungal isolates used, the infection protocol, and how resistance is measured. One greenhouse study found little resistance to pitch canker among samples from the native mainland and Cedros populations of Monterey pine. In other studies, variability in susceptibility among individual trees of Monterey pine suggests there may be some genetic basis. The diversity within the fungus (measured in one system as vegetative compatibility groups, VCGs), coupled with evidence for recombination between VCGs of the fungus in the laboratory, suggest

that there is the potential for a dynamic relationship between host and pathogen. Furthermore, there is the possibility that different genotypes of Monterey pine may have different susceptibilities to infection by different strains of the pathogen, although there is no evidence of this to-date for pathogen strains resident in California. However, exotic strains (from México and Florida) have been found that are more virulent than resident strains, based on growth chamber inoculations. Such strains could compromise genetic resistance in some Monterey pine genotypes.

Numerous laboratory, nursery, and field trials are in progress and planned which should elucidate genetic relationships. Any breeding and delivery program aimed at providing disease-resistant trees for use within the genetic sphere of influence for native Monterey pine populations should be well-informed about the genetic basis of resistance for that disease, the inheritance of the desired trait, its interaction with the environment, and the overall impact of artificially selected genotypes on the genetic diversity and population viability of Monterey pine. Any such program should not unnecessarily screen out potentially valuable genetic diversity. Deployment of propagules from such programs should proceed only when and if their use is well reasoned and well informed. Natural regeneration and selection processes should be encouraged and accommodated as much as possible, and unnecessary artificial selection should be avoided. Given the long-lived nature of Monterey pine and the uncertainty of how any resistance may play out over the lifetime of an individual tree, the potential for complex interactions between the pines and new variants of an introduced pathogen, and the potential to inadvertently screen out valuable genetic diversity, a cautious and conservative approach to any genetic manipulation motivated by introduced biotic influences is indicated. A crucial factor is that disease resistance is almost always just one of many components of fitness, and any selection for resistance is likely to incur a cost in the selection differential for other fitness components. A large palette of genetic diversity, expressed in good levels of regeneration, will allow scope for strong natural selection to operate in a biotic crisis.

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4. To best serve the goals of the California Coastal Act, decisions should be science-based. This means, where possible, using information that is part of the scientific literature. This is information that has been provided by scientists, developed following the scientific method, and peer-reviewed for legitimacy prior to publication in a scientific journal. Information that has gone through this process has rarely been discredited—but rather, built upon. Political commentaries are not a valid substitute or response to research and scientific publication.
5. Some of the natural resources of the Monterey Peninsula have international value and significance. This is true for Monterey pine—which grows in plantation culture on over **10 million acres** internationally (Lavery and Mead 1998, Rogers 2002). The ‘birthplace’ of these highly valuable plantations is, for the most part, the Monterey pines of the Monterey Peninsula and Año Nuevo area. Those associated with this plantation industry continue to value the native forests of Monterey pine in California as being a place where the genetic diversity of the species is conserved in a natural context and can continue to be shaped by natural forces over time, allowing it to adapt to changing environmental conditions. Regardless of the Monterey pines, they currently have in their country, they place great value in the native forests. At a workshop in Australia in 1998 among foresters and scientists to discuss the management of their own Monterey pine genetic resources, they raised the question “as to whether appropriate authorities in the USA would consider conservation *in situ* [i.e., of the native forests in California] a responsibility.” (Spencer 1998).
6. Finally, it is critical in serving the goals of the California Coastal Act to use a conservative standard where absence of information suggests caution in destroying or changing the natural landscape or natural resources. Given the general principle that species diversity will mimic environmental diversity, there is good overall reason to believe that the rich biological diversity of the Monterey peninsula can only be effectively conserved if its pattern is recognized. This means using the best available scientific information and reasonable proxies to determine this pattern. Once landscapes have been destroyed or converted to other uses, the opportunity to study this pattern is lost. Logic suggests and integrity demands that the classroom not be destroyed unless there is overwhelming scientific evidence that it contains nothing that is biologically unique or valuable.

**From the General Plan/Coastal Land Use Plan  
Coastal Resource Management Element  
Carmel-by-the-Sea  
Adopted June 3, 2003**

## **Coastal Resource Management Background**

### **Environmental Setting (Pages 5-1 to 5-2)**

The City of Carmel-by-the-Sea is located in a region of California's central coast that is known for its diversity of plants and plant communities. The region surrounding the city supports several different climatic, topographic, and soil conditions, resulting in a wide variety of habitats. This diversity of conditions supports many native plants and wildlife species. As an example of this diversity, 146 plant species reach their most southern and 156 plant species reach their most northern distributional limits in Monterey County, and at least 34 plant species are found only in Monterey County. (LUP)

Residential development occurs on almost all land in the city, except for seven parks, several mini-parks, a compact centralized commercial area and some privately owned parcels in Pescadero Canyon. Approximately 68 acres of public open space and approximately 10 acres of privately owned undeveloped land are under the City's jurisdiction. Most of the parks in the City are developed to support passive and active recreational activities. Of the City's public lands, Carmel Beach, Mission Trail Nature Preserve, and the proposed Rio Park (outside City boundaries), support the most intact and highest quality natural resources. The lower portion of Forest Hill Park also supports natural habitat but has been substantially altered by past activities and continues to be maintained for public recreational uses. The privately owned properties in Pescadero Canyon are part of a larger watershed for Pescadero Creek that extends into Del Monte Forest and supports Monterey Pine forest. (LUP)

The landform of the Monterey Peninsula is an ascending staircase or series of six marine terraces of increasing geologic age, rising inland from the seashore. These marine terraces reflect the changes in sea level and the general uplift of underlying bedrock along the central coast in roughly the last half-million years or more. The city is built on the first five of the six marine terraces. The marine sediment of the first four terraces is covered by sand dunes, which also are of increasing age with ascending elevation and distance from the ocean. The greater degree of soil development in the older dunes, such as organic matter accumulation, and clay and iron weathering and translocation to the subsoil, reflect the age of the dunes. (LUP)

Drainages have cut through the dunes and marine terraces of Pescadero Canyon and Mission Trail Nature Preserve to expose the underlying bedrock. Shale from marine deposits is exposed in Pescadero Canyon, and granitic bedrock is exposed in the lower slopes and stream channel in Mission Trail Nature Preserve. Uplifted alluvial terraces formed by the Carmel River are found along the southern boundary of the City. (LUP)...

### **Urbanized Forest, Parks and Open Spaces (Pages 5-5 to 5-7)**

Since the early 1900s Carmel's forest has been carefully nurtured and enhanced. Monterey pines, Coast Live oaks and other trees were often planted when lots were first sold or developed in an effort to extend the forest cover and range. Over time,

the resident's ongoing interest in the forest and natural environment resulted in the adoption of ordinances, resolutions, policies and a Master Plan relating to trees. Taken together, these documents have successfully guided the City's tree program over the years. However, since the measures were adopted at different times to address separate concerns, they lacked a sense of overall cohesion. In order to meld these documents together, the first Forest Management Plan for the City of Carmel-by-the-Sea was adopted in 1971. In early 2001, the City updated the Forest Management Plan and incorporated it into the Local Coastal Program. (LUP)

Carmel's forest is an "urbanized" Monterey pine forest rather than an "urban" forest. "Urban" forests are planted after development and typically consist of single species, regularly spaced trees planted in a row between the sidewalk and the street. An "urbanized" forest exists before development and is characterized by its diversity in species, age and randomness in tree location resulting in meandering streets of varying width. (LUP)

To many, the "urbanized" forest is *the* character-defining feature that makes Carmel-by-the-Sea so unique. The forest, along with the beach and ocean, is the City's largest and most visible natural resource. Homes are nestled into the native Monterey pine and Coast Live oak on a grid of streets that yields to trees more than to engineering expediency. Upper canopy trees impart a distinctive ambiance and identity to the City. Lower canopy trees soften and provide screening of development. Together the mix of upper and lower canopy trees establishes a powerful sense of place. (LUP)

In a city with few formal street improvements or drainage systems, the "urbanized" forest also serves to convey runoff from the watershed to the beach and Carmel Bay through a variety of natural drainages, swales, and creeks. The forest performs the important functions of absorbing water from the soil, reducing runoff, filtering pollutants, and minimizing erosion. As such, the "urbanized" forest reduces the amount of polluted runoff and in large part, helps the City comply with the National Pollutant Discharge Elimination System (NPDES) Phase II Storm Water permit regulations. (LUP)

In recent years, the Monterey Pine forest has suffered from a severe outbreak of pitch canker disease spreading throughout much of the City. The initial findings of a survey of the east side of town (east of Junipero Avenue) revealed that 50% of Carmel's pines were infected with pitch canker and 2% of the standing trees were dead. The City has responded in the past by removing dead and dying trees and disposing of the infected materials. During the years of 1999 to 2001, the Forestry Department removed roughly 180 pitch canker-infected pines. Roughly 70% of those trees (125) were young trees 12" or less in diameter. Up to 70% of the younger trees east of Junipero Avenue now appear to be infected. Older trees are less susceptible to infection and only 30% of these are infected. (LUP)

The City's Forest, Parks and Beach Department has an ongoing program of replacing dead and diseased pines on public property. The City also has been working on developing a disease-resistant pine and has been successful in planting 15 pines that have so far proved to be completely resistant to the disease. However, the loss of Monterey Pines due to pine pitch canker and other causes on private property continues to be an issue. (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)

## Goals, Objectives and Policies

### Urban Forests, Parks and Open Spaces (Pages 5-23 to 5-30)

**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)

**P5-49** Review periodically all existing tree-related ordinances and policies in the Forest Management Plan/LCP. Propose changes to bring them into alignment with new advances in urbanized forest management practice. (LUP)

**P5-50** Conduct the forest program in accordance with a coherent body of laws, goals, policies and guidelines. (LUP)

**P5-51** Coordinate all functions of the urban forest program through the City Forester. (LUP)

**P5-52** Commit resources necessary to support the forest, parks and beach programs. (LUP)

**O5-10** Maintain a Citywide map and database of trees and landscaped areas to support tree planting and maintenance programs. (LUP)

**P5-53** Complete a Citywide survey and database update every four years. Compile the data by size of tree and species in an electronic format. Also survey replacement trees required by permit conditions of approval. Report survey information and the status of replacement trees to the Forest and Beach Commission and Planning Commission at the conclusion of each yearly survey. Continue to monitor replacement trees for at least one survey cycle (i.e., 4 years). (LUP)

**P5-54** Require more open space on sites with significant forest resources based on site conditions as warranted to preserve the integrity of the urbanized forest. (LUP)

**O5-11** Maintain, restore and enhance the upper and lower tree canopy of Carmel's urbanized forest. (LUP)

**P5-55** Implement adopted tree density policies for private and public property as appropriate to each site taking into consideration neighborhood characteristics and site constraints. (LUP)

**P5-56** Establish and implement tree canopy policies for the commercial district. (LUP)

**P5-57** Maintain a list of tree species that could qualify as indigenous upper and lower canopy trees, for the purposes of meeting tree density and replacement policies. (LUP)

**P5-58** Maintain, restore and enhance a predominantly indigenous forest of native Monterey pines and coast live oaks. (LUP)

**P5-59** Avoid encroachment within the root protection zone of significant trees. Removal of significant live Monterey pine trees to facilitate residential development is prohibited unless necessary to provide a viable economic use or protect public health and safety. (LUP)

**P5-60** Review all projects involving an increase in lot coverage or tree removal and apply the adopted tree density policy as appropriate to each neighborhood and site conditions. Preserve upper and lower canopy trees classified as significant when planning and implementing residential and commercial development. (LUP)

**P5-61** Promote natural regeneration of the forest and retention of seedlings by maintaining natural ground surfaces. (LUP)

**P5-62** Use tree species and sizes well adapted for each planting site. (LUP)

**P5-63** Manage the tree-planting program to achieve an uneven-aged, healthy forest with particular emphasis on native Monterey pines and coast live oaks. (LUP)

**P5-64** New development shall be sited and designed to avoid or minimize significant adverse effects to the forest. Avoid projects that significantly increase building footprint to the detriment of trees. No grading, compaction of soils, construction of building walls or placement of impermeable surfaces within six feet of trees classified as significant shall be permitted. (LUP)

**O5-12** Implement policies, standards and procedures to regulate removal, pruning, and replacement of trees on private property. (LUP)

**P5-65** Permit the City Forester to act on requests for the removal and pruning of all trees growing on public and private property. (LUP)

**P5-66** Report sites that are non-conforming with standards for permeable surface lot coverage when applications for tree removal or pruning permits are filed. (LUP)

**P5-67** Permit the City Forester to apply special procedures for tree removal and pruning during emergencies. (LUP)

**P5-68** Record and monitor replacement trees to ensure their establishment and growth to maturity. (LUP)

**P5-69** Require ample and appropriate landscaping and tree plantings on all sites. Determine what is appropriate for each site by consulting the recommended tree density as appropriate to each neighborhood. Special emphasis must be paid to construction sites. Required replacement trees shall be of substantial size, caliper and height to produce an immediate visual impact and to reduce the incidence of unauthorized removal. (LUP)

**P5-70** Require a documented site assessment, or meeting between a planner, City Forester, and the property owner/developer, on each proposed construction site to discuss tree preservation and planting. Establish tree protection zones and suitable locations for development through this process. This shall be done before plans have been drawn. (LUP)

**P5-71** Evaluate, protect and preserve all trees (and their root zones) on sites prior to, during, and after construction. Ensure that all building sites abide by appropriate tree protection and preservation standards and guidelines provided in the Forest Management Plan. (LUP)

**O5-13** Perform all tree work and landscaping within the City in accordance with City codes and policies and uniform planting practices that reflect the best current knowledge of tree and plant care. (LUP)

**P5-72** Maintain close cooperation among all public agencies, tree services, arborists, landscape architects, gardeners and utility companies affecting the urban forest. (LUP)

**P5-73** Require that all City departments, utility companies, tree service companies, arborists, landscapers and gardeners adhere to the adopted Tree Maintenance Standards policies and guidelines. (LUP)

**P5-74** Provide a comprehensive training program for City staff and encourage employees to become Certified Arborists or Certified Tree Workers under the standards of the International Society of Arboriculture. (LUP)

**P5-75** Negotiate with the Public Utilities Commission and utility companies to adopt minimal line clearance standards to give special attention to Carmel's urbanized forest. (LUP)

#### **05-14 Maintain a healthy forest.**

**P5-76** Work in concert with other area foresters and arborists, the Monterey Pine Forest Ecology Cooperative, the Pitch Canker Task Force, Oak Mortality Task Force and university researchers to address acute concerns to the health of the forest. (LUP)

**P5-77** Monitor tree pest and disease problems and take appropriate measures to minimize their impact. (LUP)

**P5-78** Foster healthy and disease resistant trees and avoid widespread application of pesticides. (LUP)

**P5-79** Investigate ways to discourage large trucks from using streets with low tree limbs. (LUP)

**P5-80** Plant native Monterey pine seedlings of different genotypes to maximize resistance to diseases and make these seedlings available to the public. (LUP)

**P5-81** Minimize risk to trees by regulating the use of heavy equipment. (LUP)

**P5-82** Properly dispose of diseased trees and recycle tree waste. (LUP)

**P5-83** Avoid disturbance and fragmentation of large intact stands of Monterey pine. (LUP)

**P5-84** Minimize the spread of pitch canker through appropriate methods (sterilize equipment, appropriate disposal of cuttings, etc.). (LUP)

**P5-85** Conduct most City pruning activities on Monterey Pine and other conifers during winter months when insect populations are less active and when bird, raptor and mammal populations are not nesting. (LUP)

#### **05-15 Educate and involve the public in tree issues. (LUP)**

**P5-86** Undertake an active program of community outreach and education. (LUP)

**P5-87** Publish timely tree care articles in local news media. (LUP)

**P5-88** Encourage monetary and other contributions in support of the urbanized forest program. (LUP)

**P5-89** Provide the City Council, Planning Commission and Forest and Beach Commission with information on an annual basis from the ongoing tree survey regarding projected changes in the composition of the forest and recommendations for policy amendments. (LUP)

**P5-90** Involve citizen groups in forestry programs so that forest-related subjects are seen as community issues that require broad based involvement and support. (LUP)

#### **G5-5 Maintain and enhance the informality of streetscapes. (LUP)**

**05-16** Remove or reduce unnecessary or excessive hardscape and other nonconforming encroachments on City parklands and within street right-of-way to provide for and promote planting of trees and native vegetation. (LUP)

**P5-91** Require at the issuance of a building permit, the abatement or retroactive approval of any nonconforming encroachments in the public rights-of-way. (LUP)

**P5-92** Look for opportunities to reduce or eliminate hardscape areas Citywide on public and private lands. Identify hardscape in the public rights-of-way and on-site that does not meet current policies or codes during preliminary site assessments and/or design review for all projects in the R-1 District. Require that project landscaping plans include the public rights-of-way. (LUP)

**P5-93** Continue the practice of painting only the vertical portion of the curb on the west side of Scenic Road for traffic control. (LUP)

**05-17** Use mini-parks and islands for planting trees, with an emphasis on native Monterey Pines, oaks, and other native vegetation. (LUP)

**P5-94** Identify opportunities for new trees, removal of invasive plants and landscaping to enhance streetscapes during planning for street reconstruction projects. (LUP)

**P5-95** Recognize the City's narrow street paving, roadside vegetation and overarching canopy as important elements contributing to the streetscape, pedestrian circulation, traffic calming, community aesthetics and environmental enhancement. Identify characterdefining features of roadways and retain and enhance these features when planning and implementing street improvements, repairs and reconstructions. (LUP)

**05-18** Incorporate adequate landscaping and trees of the urbanized forest in all public construction projects. (LUP)

**P5-96** The City staff member responsible for any public project shall involve the Forest, Parks and Beach Department through the planning and implementation stages of the project. (LUP)

**P5-97** Include funding for the design and installation of landscaping as part of each public project. (LUP)

## **G5-6 Preserve and acquire open space and parks. (LUP)**

**05-19** Maximize the amount of open space in the City and sphere of influence by establishing development fees and/or other methods to fund open space acquisition. (LUP)

**P5-98** Resist the transfer of open space to other uses. (LUP)

**P5-99** Encourage rezoning to open space. (LUP)

**P5-100** Actively pursue the preservation of existing open space within the City's sphere of influence. (LUP)

**05-20** Restore and maintain open space to its natural state. (LUP)

**P5-101** Establish and implement a procedure for removal of invasive vegetation. (LUP)

**P5-102** Minimize removal of native vegetation. (LUP)

**P5-103** Identify and protect environmentally sensitive habitat areas against any significant disruption of habitat values. Only uses dependant upon those resources shall be allowed. For private lots of record within ESHA, establish a transfer of development rights program using credits of water, floor area, density or some other development parameter to relocate development to less sensitive areas. (LUP)

**P5-104** Preserve and protect wetlands. (LUP)