

Fitzgerald Marine Reserve Pilot Projects

Upland Vegetation
Restoration in San Vicente
Creek and the Monterey
Cypress Grove



Public Meeting Objectives

- Restoration Plan Goals for each project
- San Vicente Creek Restoration
 - Invasive species and Encroachment
 - Pilot Project Details
- Monterey Cypress Grove Restoration
 - Forest Succession
 - Pilot Project Details

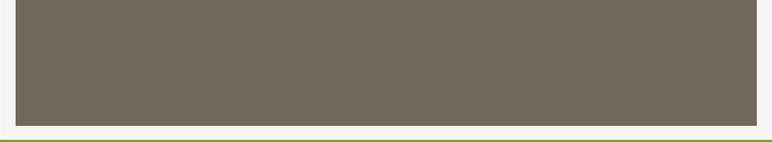
Restoration Plan Goals

San Vicente Creek

- *Protect and enhance existing Environmentally Sensitive Habitat Areas*
- *Improve biodiversity by restoring native plant communities*
- *Restore areas that are fully colonized by invasive species adjacent to high quality habitat*
- *Work to provide community members opportunities to contribute to site stewardship and be involved in restoration efforts*

Monterey Cypress Grove

- *Conserve and enhance cypress grove and its unique character*
- *Improve individual tree vigor through trimming and thinning treatments*
- *Prevent loss of cypress grove over the next 10-15 years due to tree-to-tree competition by improving growing conditions*
- *Improve biodiversity*
- *Preserve and protect American Chestnut tree*



San Vicente Creek

Goals:

Enhancing Environmentally Sensitive Habitat Areas,
Improving biodiversity, and Restoring Fragmented
and Increasingly Rare Vegetation Communities

San Vicente Creek

San Vicente Creek

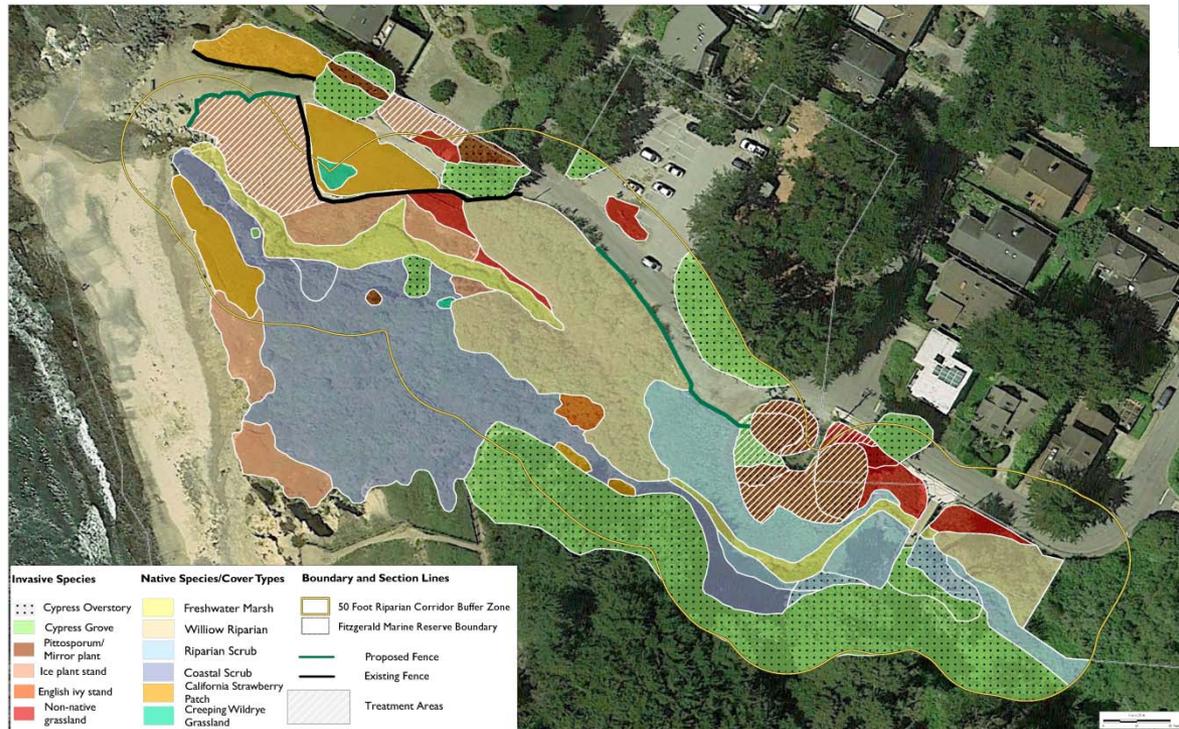
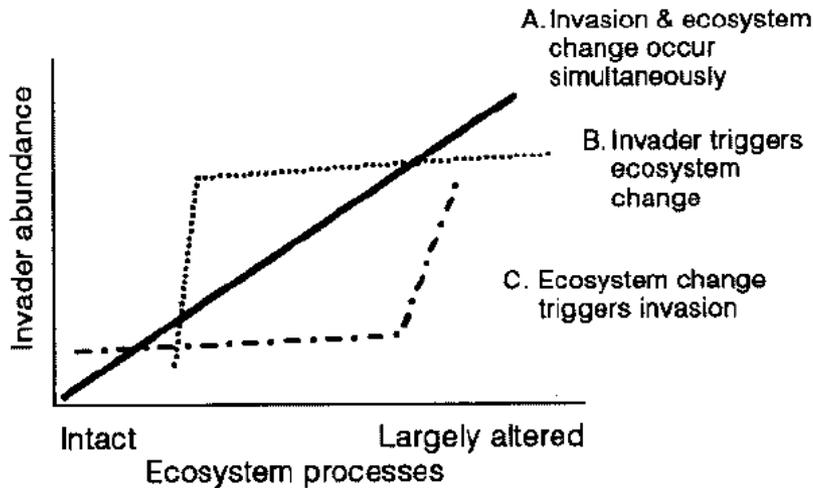


FIGURE 1. REGIONAL LOCATION
SAN VICENTE CREEK HABITAT ENHANCEMENT PLAN
 PRELIMINARY DRAFT 10/25/2013
 FITZGERALD MARINE RESERVE
 SAN MATEO COUNTY

Restoration Theory

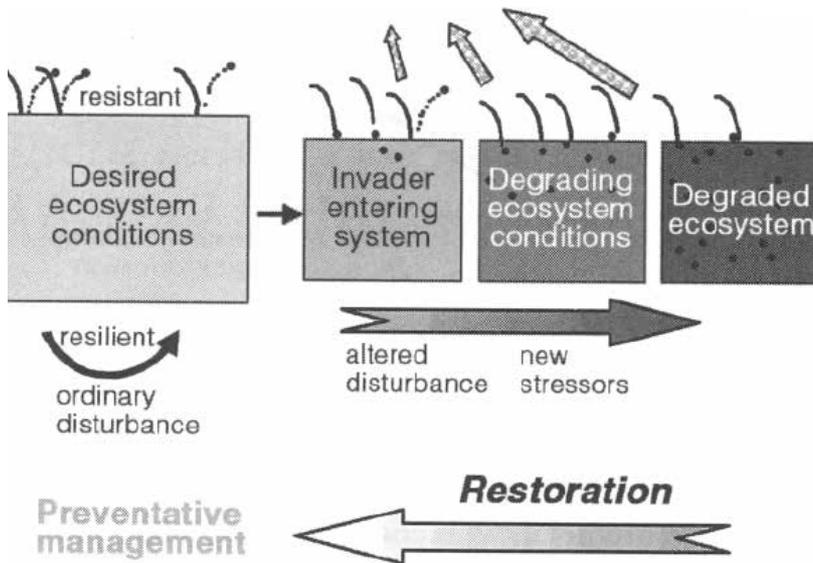


Questions:

- What is the current state (pristine or degraded)?
- Are invasives driving change or degradation?
- How do we manage and prevent?

Why do we restore?

- Function
- Biodiversity
- Structure





Replacing an invasive monoculture

0.2*

With a Native Plant Community
thereby increasing:

- Biodiversity
- Improving Habitat
- Protecting adjacent ESHAs

*Total area is 0.20 acres. ESHA is defined as Environmentally sensitive habitat areas as designated by the California Coastal Act FMR. These include: California wild strawberry, coastal freshwater marsh, central coast arroyo willow riparian forest, beach, sea cliffs, seasonal wetland, and waters.

Native Species List

Herbs

- Coast strawberry (*Fragaria chiloensis*)
- Yarrow (*Achillea millefolium*)
- California poppy (*Eschscholzia californica*)
- Lizard-tail (*Eriogonum staechadifolium*)
- Seaside daisy (*Erigeron glaucus*)
- Cliff buckwheat (*Eriogonum parvifolium*)

Grasses

- Wild rye (*Elymus triticoides*)
- Red fescue (*Festuca rubra*)
- California brome (*Bromus carinatus*)*

* Once natives are established

Environmentally Sensitive Habitat Areas

Coastal Strawberry

- Existing habitat adjacent to the area
- Ability to spread
- Has poppy and yarrow as companion plants

Native Grassland

- Losing to non-native grasses
- Increasingly rare
- Good habitat for Red-legged frog and therefore San Francisco garter snakes

CALIFORNIA COASTAL ACT ENVIRONMENTALLY SENSITIVE HABITAT AREA (ESHA)

An Environmentally Sensitive Habitat Area (ESHA) is any area 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 (California Coastal Act 2010, Section 30107.5).

ESHA prohibits any significant disruption of 1) CDFG rare plant communities; 2) Federal and State listed species; 3) CNPS 1B listed plant species; 4) habitats that support listed species. (Engel, Jonna D., June 2007. Maritime chapparral in the context of the Coastal Act).



Shrubs



Anchor trees



Replacing invasive shrubs and trees

0.15*

Continue to provide a screen with:

- Native trees and shrubs
- Improve both vertical and horizontal structure
- Improve wildlife habitat

*Total area is 0.15 acres. These natives will be less likely to spread into the creek corridor or create monocultures. They will also provide more diversity in terms light availability throughout the year.

Species List

Invasive

- Pittosporum (*Pittosporum crassifolium*)
- Monterey cypress (*Hesperocyparis macrocarpa*)
- Cape ivy (*Delaria odorata*)
- Nasturtium (*Tropaeolum majus*)
- Wild radish (*Raphanus raphanistrum*)

Native

- Coast live oak (*Quercus agrifolia*)
- Pacific waxmyrtle (*Myrica californica*)
- Red elderberry (*Sambucus racemosa*)
- Red-flowering current (*Ribes sanguineum*)
- Coffeeberry (*Rhamnus californica*)

Monterey Cypress Grove

Goals:

Restoration for both individual tree health and grove health

Reduce public hazards

Questions to ponder

- Do you want this grove to be healthy through your lifetime?
- Do you want to continue to walk and picnic under the trees?
- Do you want your grandchildren to be able to experience a similar grove of Monterey cypress trees?

Forest Succession

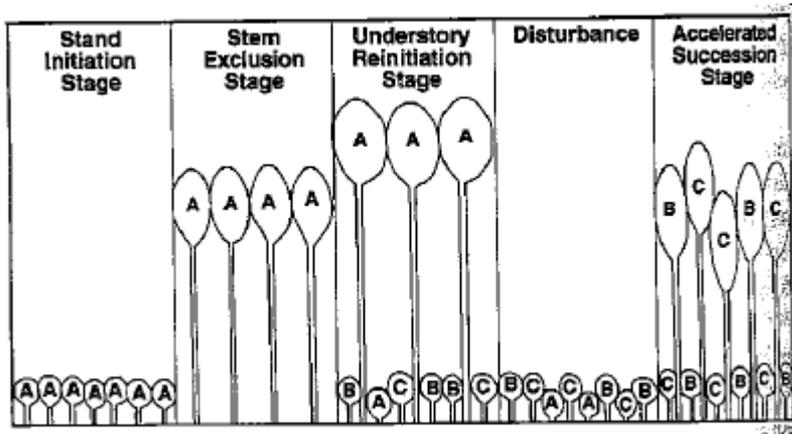


Table 17.3 Stages of Secondary Succession

Stand Development Model (Oliver, 1981)	Population Model (Peet and Christensen, 1980a,b)
Stand Initiation	Establishment
Stem Exclusion	Thinning
Understory Reinitiation	Transition
Old Growth	Steady-State

- How long does Monterey Cypress live?
- What stage of succession is our Monterey Cypress Grove?
- What do we want our grove to look like in 10, 20, 50, and 100 years?
- How do we get there?



Current Grove Conditions

- Total trees over 8" = 1067
- Acres = 12.3
- 87 trees per acre
 - Ideal ~50 trees per acre (based on Leffingwell 2004)

Stand Composition:

Tree Species	Dead Trees	<38" Circumference	≥ 38" Circumference
Monterey cypress	135	172	739
Blue gum eucalyptus	1	0	18
American chestnut	0	0	1
Black locust	0	0	1
Totals	136	172	759

Considerations

Public Safety

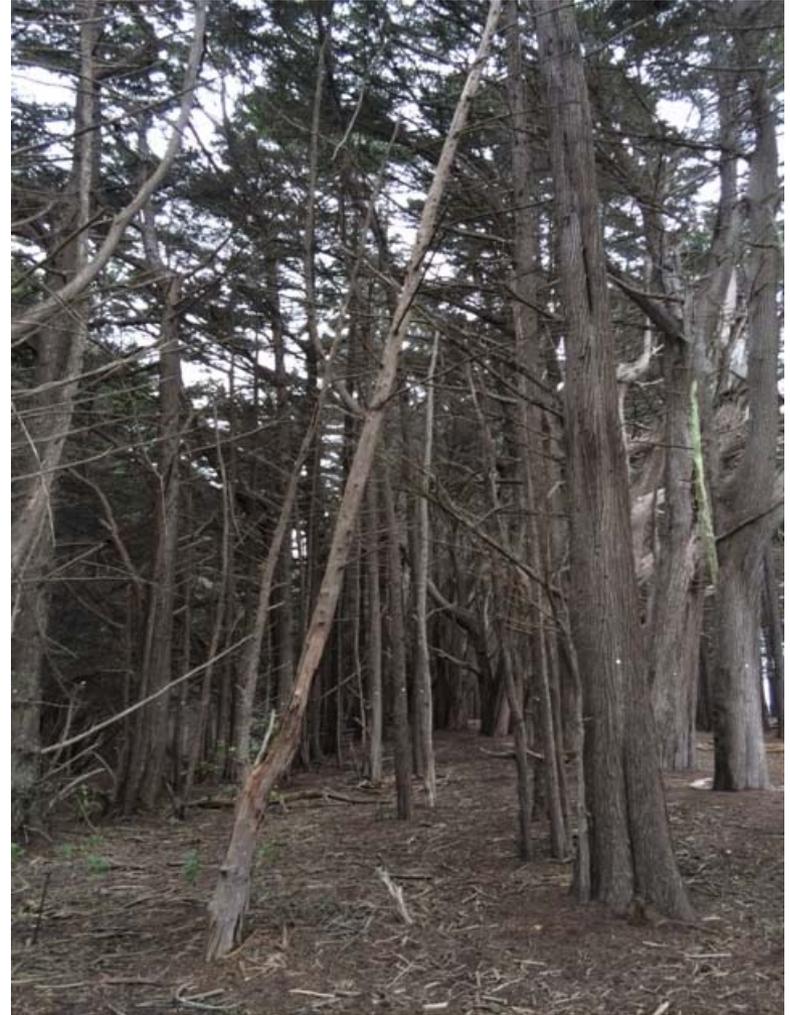
Dead lateral limbs fall...





Standing dead trees from tree-to-tree competition

Heavy dead lower limbs from lack of sunlight





Wind Sound Trees

Have:

- Good taper
- Good Live Crown Ratios
- Healthy Canopies

Live Crown Ratio (LCR) =

Length of live crown /
Total height of the tree

< 35 % = risk for wind
throw potential

Other consideration:

- Soil
- Location
- Topography
- Prevailing winds



Vigor

How can you tell how healthy a tree is?

Look up!

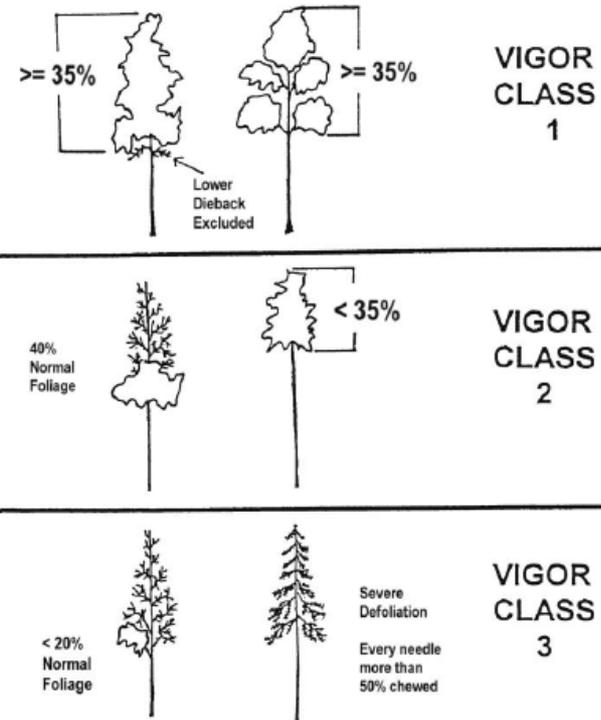


Figure 23-10. Sapling CROWN VIGOR classes.

How do we restore health and improve public safety?

- **Thin the less vigorous trees to make room for the healthy individuals**
 - **Improve individual tree vigor**
- **Trim the trees to “lighten their load”**
- **Thin *enough* trees to initiate understory re-initiation to:**
 - **Get the next generation of cypress established**
 - **Increase biodiversity**

Treatment Outcomes

- **Live trees to be removed: 11**
 - pose the greatest risk to humans
 - based on current condition, vigor, and location
 - 1% of the grove
- **Live trees to be trimmed: 56**
 - Trimming will significantly reduce dead wood
 - Reduce hazards to pedestrians from dropping limbs
 - Trimming of trees can improve overall vigor
 - 5% of the grove
- **Dead trees to be removed: 34**
 - 25% of the tagged **dead** trees
 - 3% of the grove
- **Total trees removed: 45**
 - 4% of the grove

Measuring Success

How we know our vegetation treatments worked?

What's next?

San Vicente Creek

- Monitor
 - Individual plug survival
 - Percent cover of native plants
 - Rate of colonization

Monterey Cypress

- Monitor
 - Changes in LCR
 - Improved Vigor
 - Understory development
 - New seedling counts

Questions?



Healthy Monterey cypress
crown
Healthy patch of strawberry

