Mapping and Vegetation Classification of Mendocino Cypress Woodlands as the Path Toward Effective Conservation

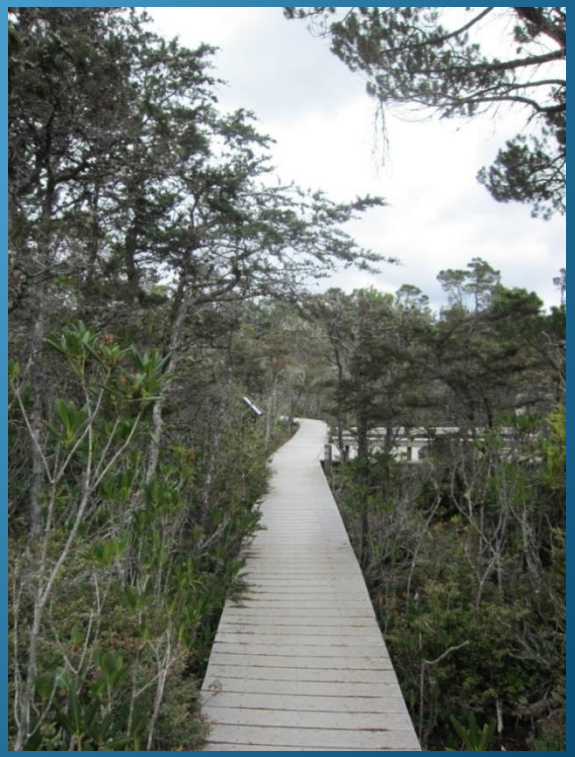
Teresa Sholars

CDFW/CNPS Webinar

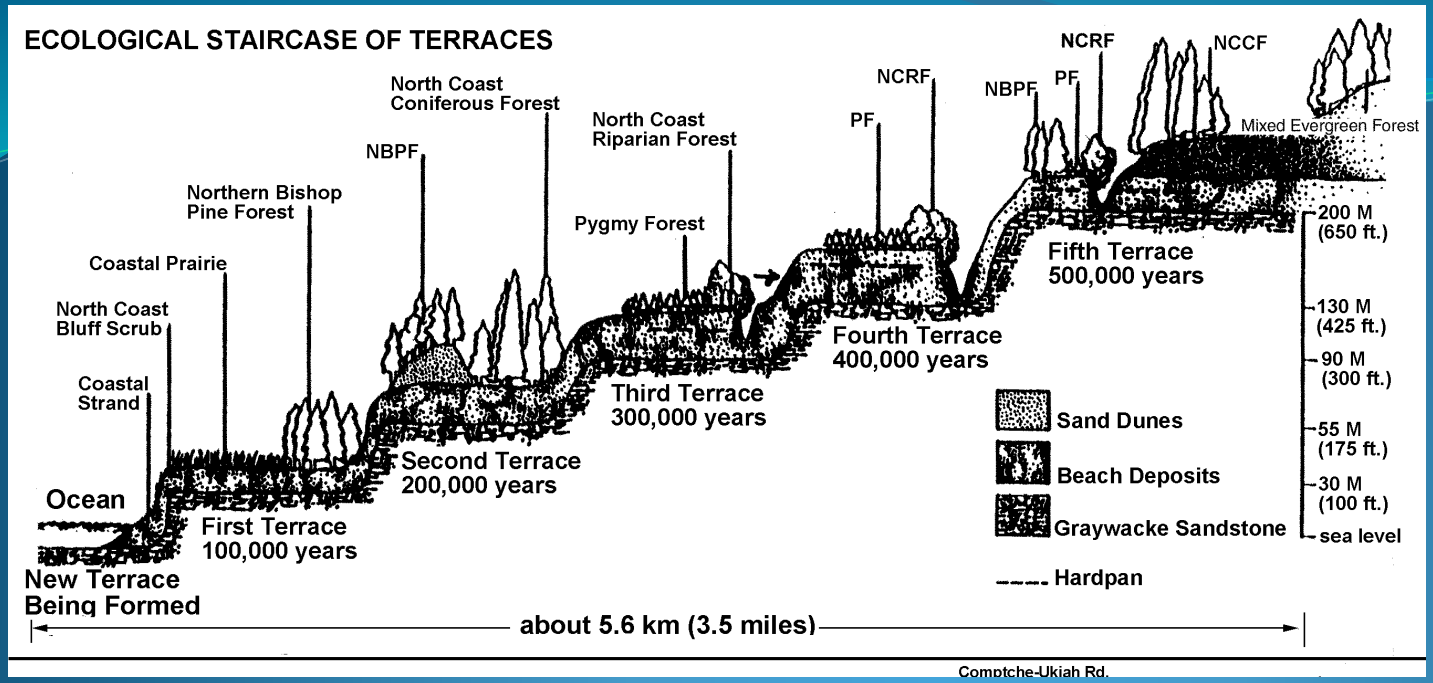
Dec 2, 2021

The Problem

The pygmy forest has long been recognized as a rare plant community filled with rare plants. However, our conservation efforts have been hampered by the ambiguous nature of defining what is pygmy forest and what it isn't.



This is because **only some** of the forest types are short in stature.



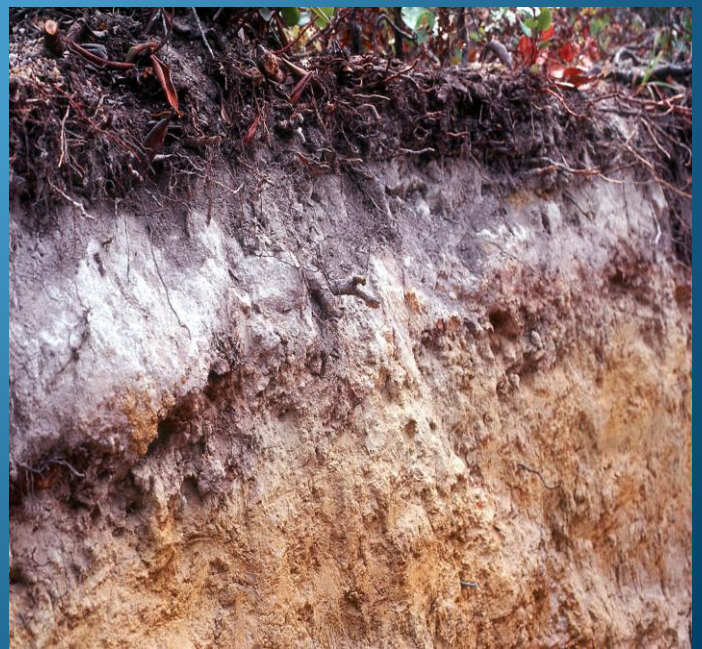
This is the classic definition but it is more complicated

"A series of terraces were uplifted flat in just a few areas; setting the stage for the creation of old, nutrient poor highly acidic soils dominated by the Mendocino cypress known as the Pygmy forest".

Defining the Community

In the past we have generally defined pygmy forest as a plant community that is dominated by the pygmy cypress (*Hesperocyparis pygmaea*) and Bolander or pygmy pine (*Pinus contorta ssp. bolanderi*).

But the growth stature of cypress and pine is determined by the soils resulting in a high diversity of heights and species composition.



Oligotrophic Soils

At first we focused on Blacklock and Aborigine soil types. These soils produced the “classic” short stature of pygmy pine and cypress. We then broadened our search parameters to **oligotrophic soils** (nutrient poor soils) to clarify the alliances that might be confused with cypress dominated ecosystems.

Beach sand overlay

Leached layer

“It looks like pygmy forest”

There is a lot of vegetation called pygmy that lacked the cypress on oligotrophic soils

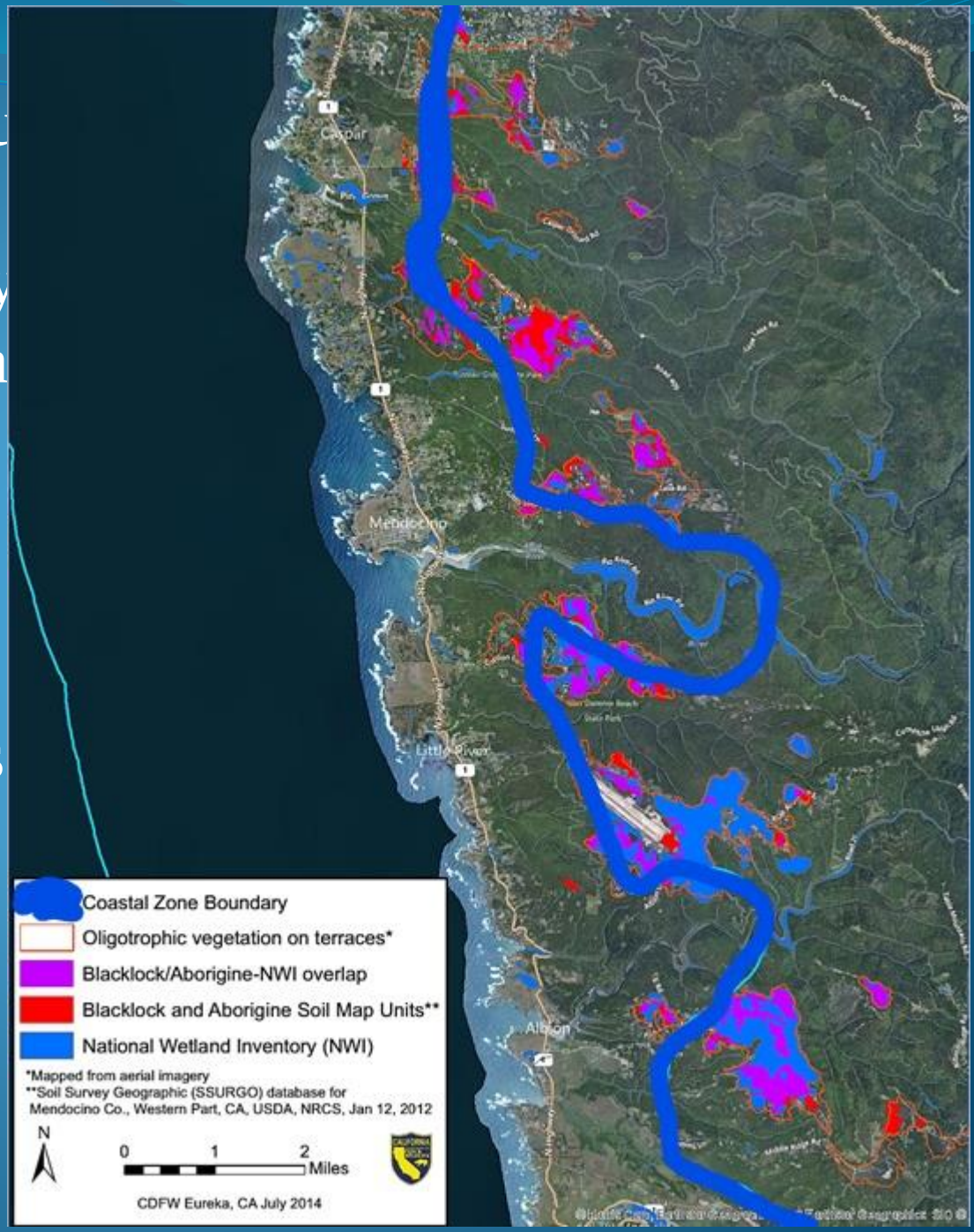
Oligotrophic Soils

= nutrient poor soils: Blacklock, Aborigine Shinglemill-Gibney complex, Tropoquept Gibney-Gibwell complex, Gibwell loamy sand, Noyo, Seaside-Rock outcrop complex, Tregoning-Cleone complex

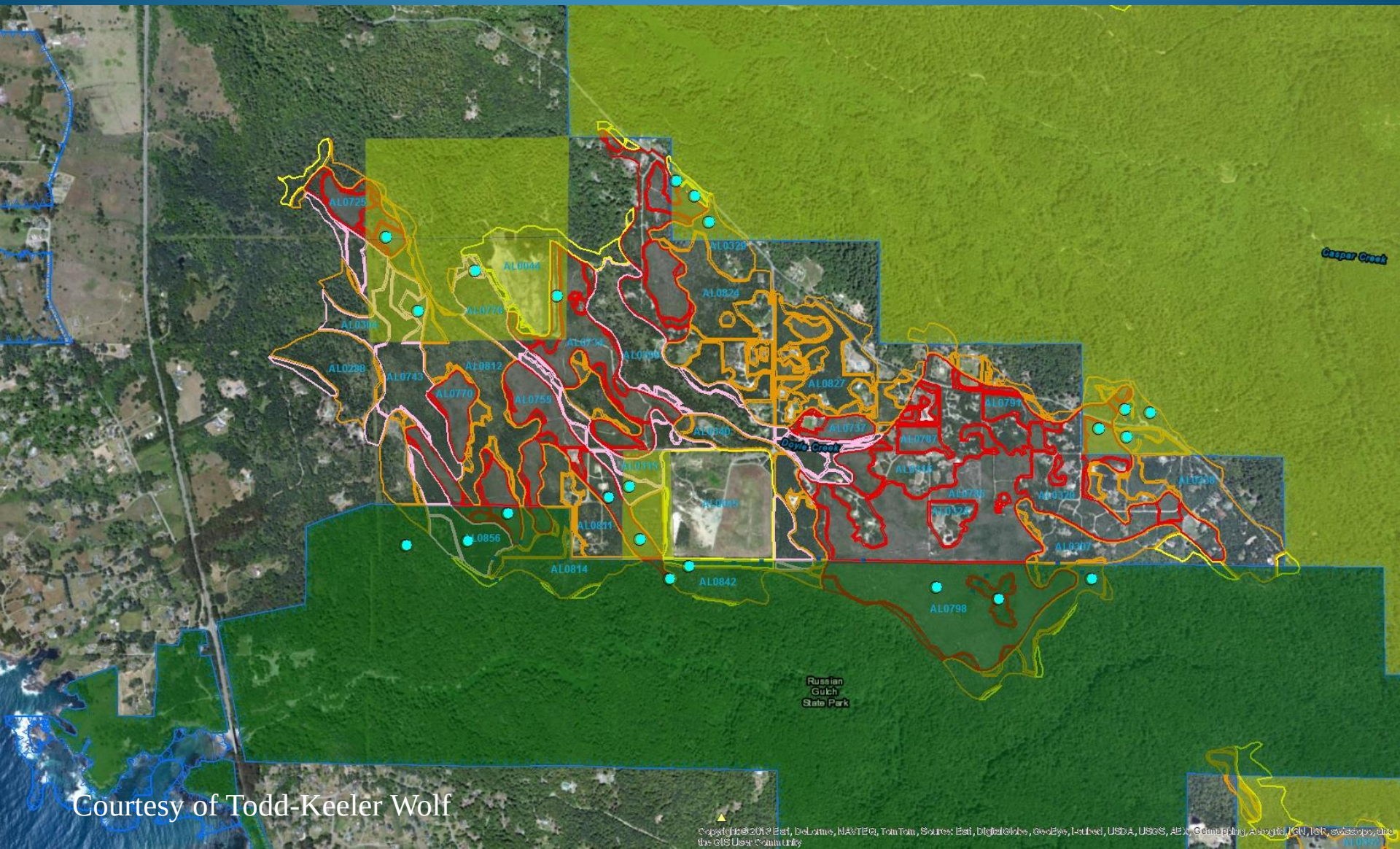
Courtesy of L. Miller CDFW

CDFW's Vegetation Classification and Mapping Program (VegCAMP) and local staff partnered with CNPS, landowners, and volunteers to conduct vegetation sampling to classify, map, and quantify Mendocino Pygmy Cypress Woodland (MPCW), also known as "pygmy forest," and closely related habitats

Before completion of ou
mapping project
Mendocino County only
protected Environmenta
Sensitive Habitat Areas
(ESHAs) in the coastal
zone, delineated by the
blue line. Note much of
the pygmy ecosystem is
outside the zone.



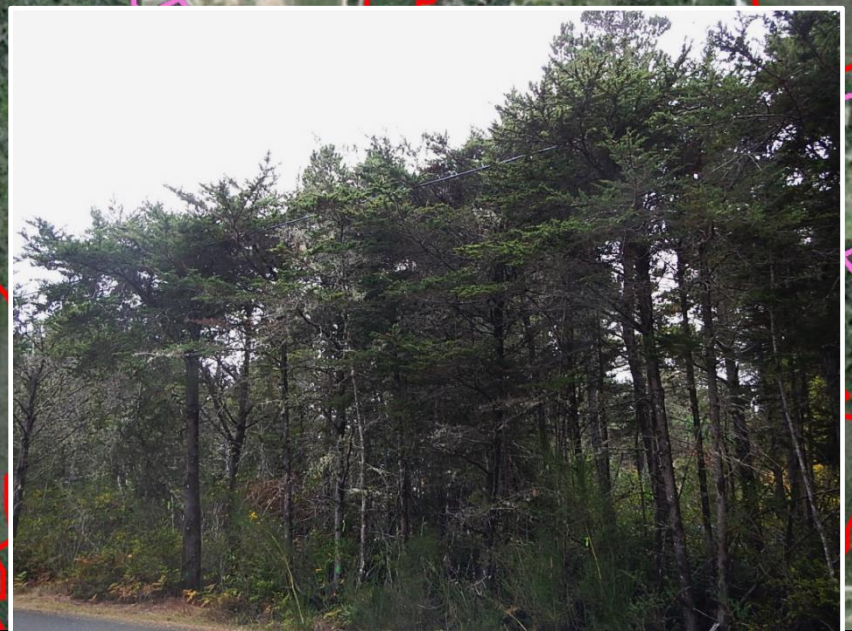
Sample selections based on oligotrophic polygon type, veg signature, and access.



Courtesy of Todd-Keeler Wolf

Courtesy of Linda Miller

West



Vegetation sampling used CNPS/CDFW protocol and broke into multiple teams to collect info on:

- Species list – vascular plant composition and cover
- Community composition - vertical structure and physiognomy of vegetation by strata

Courtesy of Todd Keeler-Wolf

To finish the project accuracy assessment was completed in 2018

- Polygons with similar vegetation signatures were ground truthed.

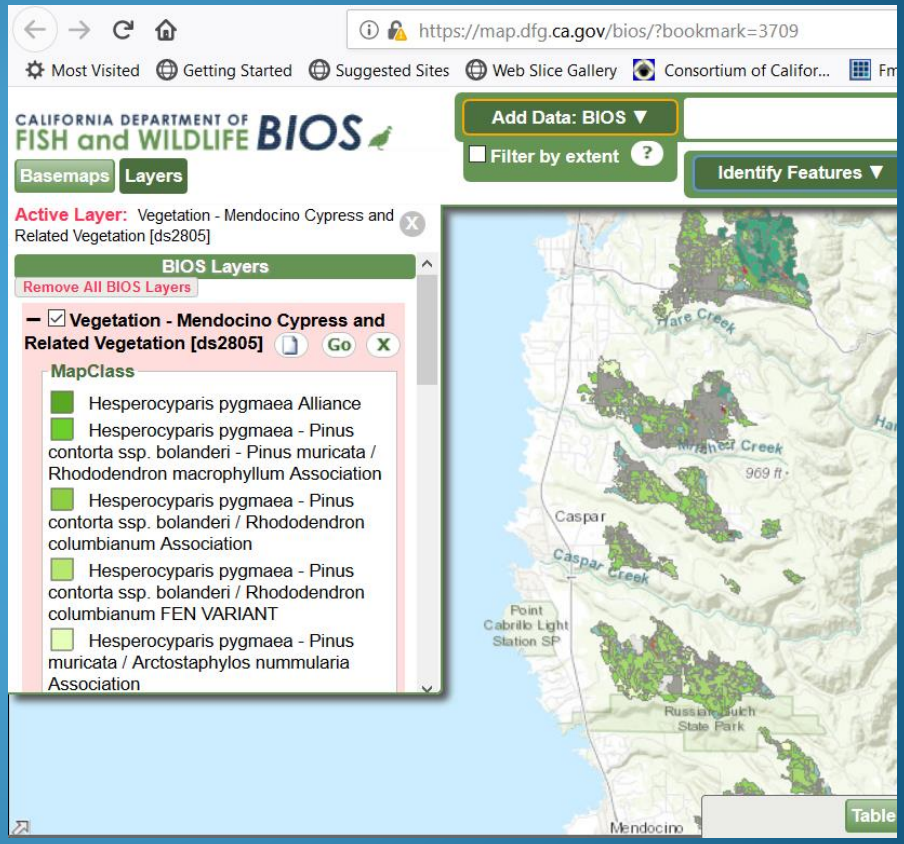
Haley Ross photo

Changing the name from pygmy

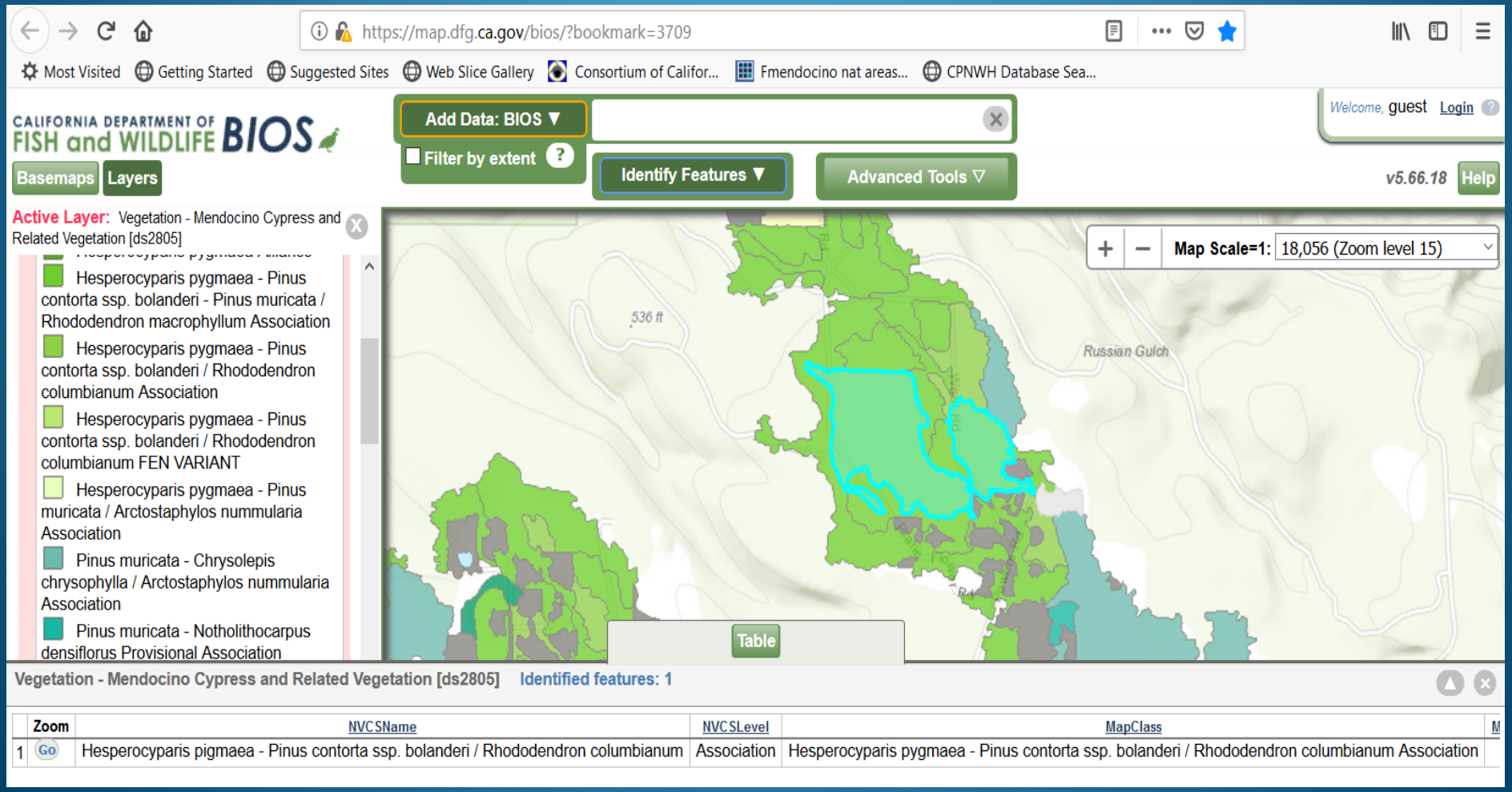
- Our work produced rankings for sensitive vegetation types historically known as pygmy forests.
- They are now classified as Mendocino cypress Woodlands and associated vegetation types that occurs “oligotrophic” (nutrient poor) soils..

The majority of the data was collected 2015-18

All of these associations & their alliances are available on CDFW's BIOS website.

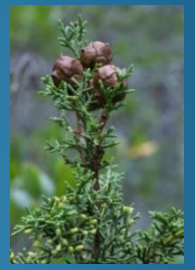


Each association has data tied to polygons on BIOS.



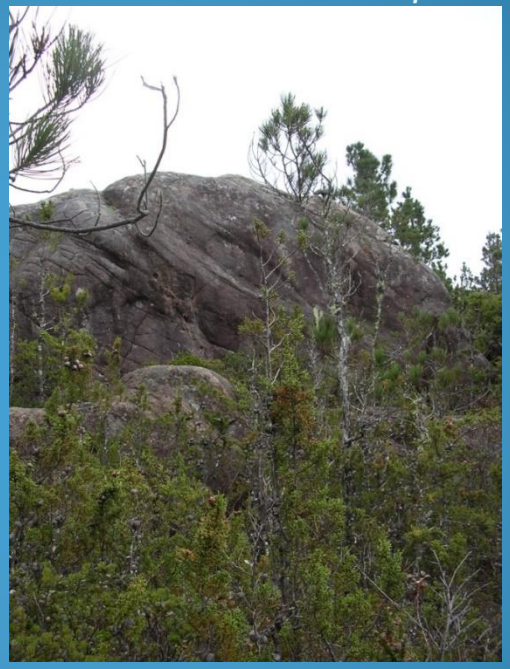
This vegetation classification and mapping project on oligotrophic soils resulted in: six new rare associations within four alliances.

1. Mendocino cypress woodland **Alliance**. G1/S1
2. Bishop or Monterey pine forests **Alliance**. G3/S3
3. Glossy leaf manzanita - Golden chinquapin chaparral Shrubland Alliance G2/S2



4. Redwood forest ***Alliance****. G3/S3.2*

Mendocino cypress **Alliance** G1/S1



Hesperocyparis pygmaea

Association 1: Mendocino cypress/ Bishop pine/ Ft. Bragg manzanita

Hesperocyparis pygmaea - Pinus muricata / Arctostaphylos nummularia

620 acres

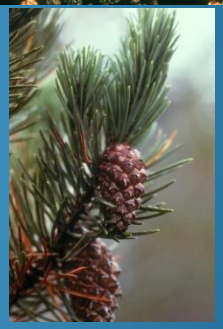
Mendocino cypress **Alliance**

G1/S1

Hesperocyparis pygmaea







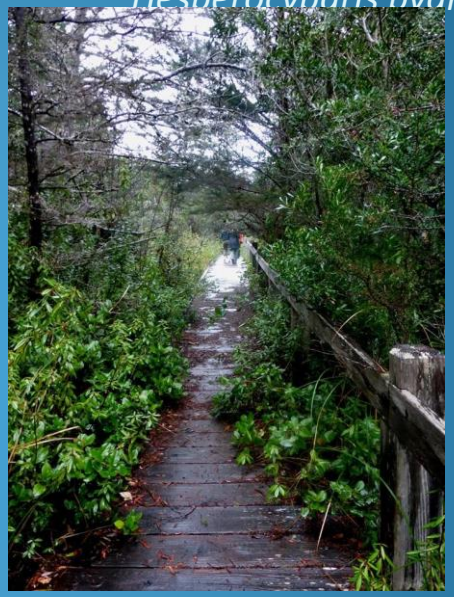

Association 2: Mendocino cypress/ Bolander pine/Labrador tea

Hesperocyparis pygmaea - Pinus contorta var. *bolanderi / Rhododendron columbianum*

2,029 acres

Mendocino cypress **Alliance** G1/S1

Hesperocyparis pygmaea



Association 2: Mendocino cypress/Bolander pine/Labrador tea (**fen variant**)

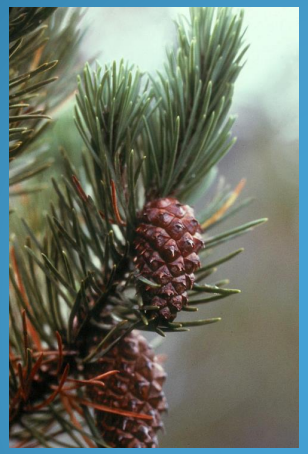
Hesperocyparis pygmaea - Pinus contorta var. *bolanderi / Rhododendron columbianum*

9 acres

Mendocino cypress **Alliance**

G1/S1

Hesperocyparis pygmaea

Association 3: Mendocino cypress/Bolander pine/rhododendron

Hesperocyparis pygmaea - Pinus contorta ssp. *bolanderi - Pinus muricata /*
Rhododendron macrophyllum

2,292 acres

Bishop (or Monterey) Pine **Alliance** G3

Pinus muricata or P. radiata

***Association 4**: Bishop pine/chinquapin/ Ft Bragg manzanita* G2/S2 **1,835 acres**

Pinus muricata - Chrysolepis chrysophylla / Arctostaphylos nummularia

Glossy leaf manzanita - Golden chinquapin chaparral Shrubland Alliance G2/S2

Arctostaphylos (*nummularia*, *sensitiva*) - *Chrysolepis chrysophylla*

Association 5: Chinquapin/huckleberry (G2/S2) *Chrysolepis chrysophylla / Vaccinium ovatum* **55 acres**

Glossy leaf manzanita - Golden chinquapin chaparral Shrubland Alliance G2/S2

Arctostaphylos (*nummularia, sensitiva*) - *Chrysolepis chrysophylla*

Association 6: Ft. Bragg manzanita

Arctostaphylos nummularia

473 acres

*Redwood **Alliance** S3.2 G3*

This provisional association does not grow on true oligotrophic soils but has large Mendocino cypress

Association 7 *Redwood/Mendocino cypress* G1/S1

Collaborative science leads to more effective conservation!

The mapping project would never have been accomplished without the support and leadership of CDFW VegCAMP group in Sacramento, Eureka, Fort Bragg and local and regional **volunteers.** Thirty five people from 14 groups were represented:: **No external funding was used!!**

CDFW
CNPS
Botanical consultants
California State Parks
Coastal Commission
Mendocino Land Trust
TNC
Mendocino Redwood Co
Campbell Global Timber
Mendocino Botanical Gardens
CDF
CSUSF
CSC arboretum

Mendocino and other coast cypress alliance

- A report has been completed, the NVC and MCV classifications will combine some of the cypress alliances to Mendocino and other coastal cypress woodland alliance (S1 to S2 ranking)

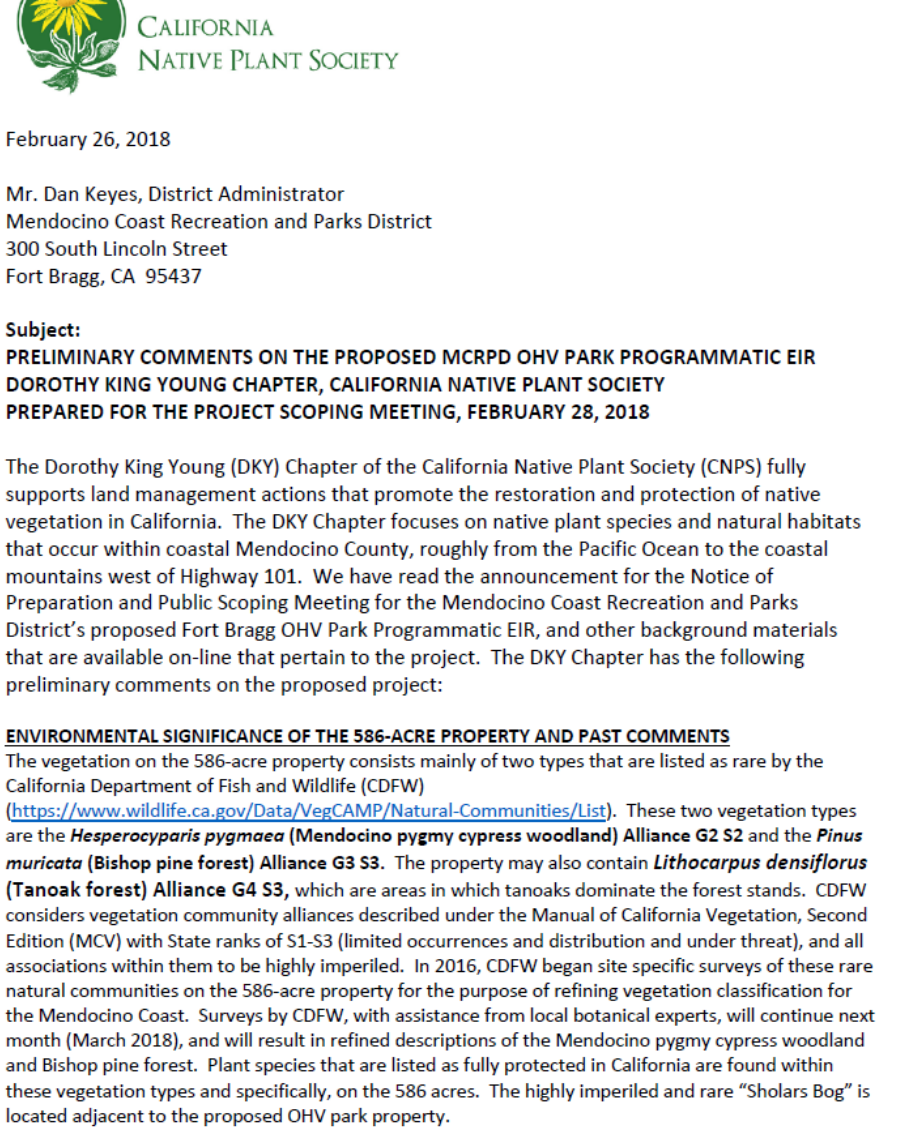
Names change as we know more

pygmy cypress -> Mendocino cypress

Cupressus goveniana var. "*pigmaea*" (1895) ->*Cupressus pygmaea* (1901) -> *Cupressus goveniana* subsp. *pygmaea* (1914) ->*Callitropsis pigmaea* (2006)-> ***Hesperocyparis pygmaea (2009)***

Conservation successes

- A proposed OHV park on MCPR land.
- Surveys were done during the Mendocino Cypress Woodland mapping process.
- Letter written by DKY chapter of CNPS



California Native Plant Society

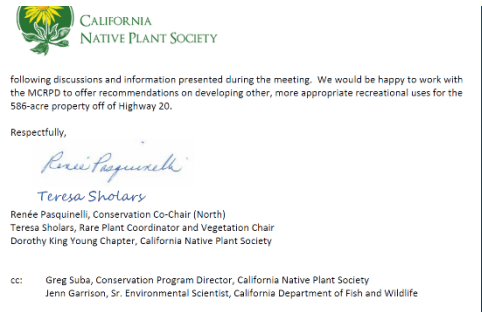
February 26, 2018

Mr. Dan Keyes, District Administrator
Mendocino Coast Recreation and Parks District
300 South Lincoln Street
Fort Bragg, CA 95437

Subject:
PRELIMINARY COMMENTS ON THE PROPOSED MCRPD OHV PARK PROGRAMMATIC EIR
DOROTHY KING YOUNG CHAPTER, CALIFORNIA NATIVE PLANT SOCIETY
PREPARED FOR THE PROJECT SCOPING MEETING, FEBRUARY 28, 2018

The Dorothy King Young (DKY) Chapter of the California Native Plant Society (CNPS) fully supports land management actions that promote the restoration and protection of native vegetation in California. The DKY Chapter focuses on native plant species and natural habitats that occur within coastal Mendocino County, roughly from the Pacific Ocean to the coastal mountains west of Highway 101. We have read the announcement for the Notice of Preparation and Public Scoping Meeting for the Mendocino Coast Recreation and Parks District's proposed Fort Bragg OHV Park Programmatic EIR, and other background materials that are available on-line that pertain to the project. The DKY Chapter has the following preliminary comments on the proposed project:

ENVIRONMENTAL SIGNIFICANCE OF THE 586-ACRE PROPERTY AND PAST COMMENTS
The vegetation on the 586-acre property consists mainly of two types that are listed as rare by the California Department of Fish and Wildlife (CDFW) (https://www.wildlife.ca.gov/Data/VegCAMP/Natural-Communities/List). These two vegetation types are the ***Hesperocyparis pygmaea*** **(Mendocino pygmy cypress woodland) Alliance G2 S2** and the ***Pinus muricata*** **(Bishop pine forest) Alliance G3 S3.** The property may also contain ***Lithocarpus densiflorus*** **(Tanoak forest) Alliance G4 S3,** which are areas in which tanoaks dominate the forest stands. CDFW considers vegetation community alliances described under the Manual of California Vegetation, Second Edition (MCV) with State ranks of S1-S3 (limited occurrences and distribution and under threat), and all associations within them to be highly imperiled. In 2016, CDFW began site specific surveys of these rare natural communities on the 586-acre property for the purpose of refining vegetation classification for the Mendocino Coast. Surveys by CDFW, with assistance from local botanical experts, will continue next month (March 2018), and will result in refined descriptions of the Mendocino pygmy cypress woodland and Bishop pine forest. Plant species that are listed as fully protected in California are found within these vegetation types and specifically, on the 586 acres. The highly imperiled and rare "Sholars Bog" is located adjacent to the proposed OHV park property.



California Native Plant Society

following discussions and information presented during the meeting. We would be happy to work with the MCRPD to offer recommendations on developing other, more appropriate recreational uses for the 586-acre property off of Highway 20.

Respectfully,

Renée Pasquinelli

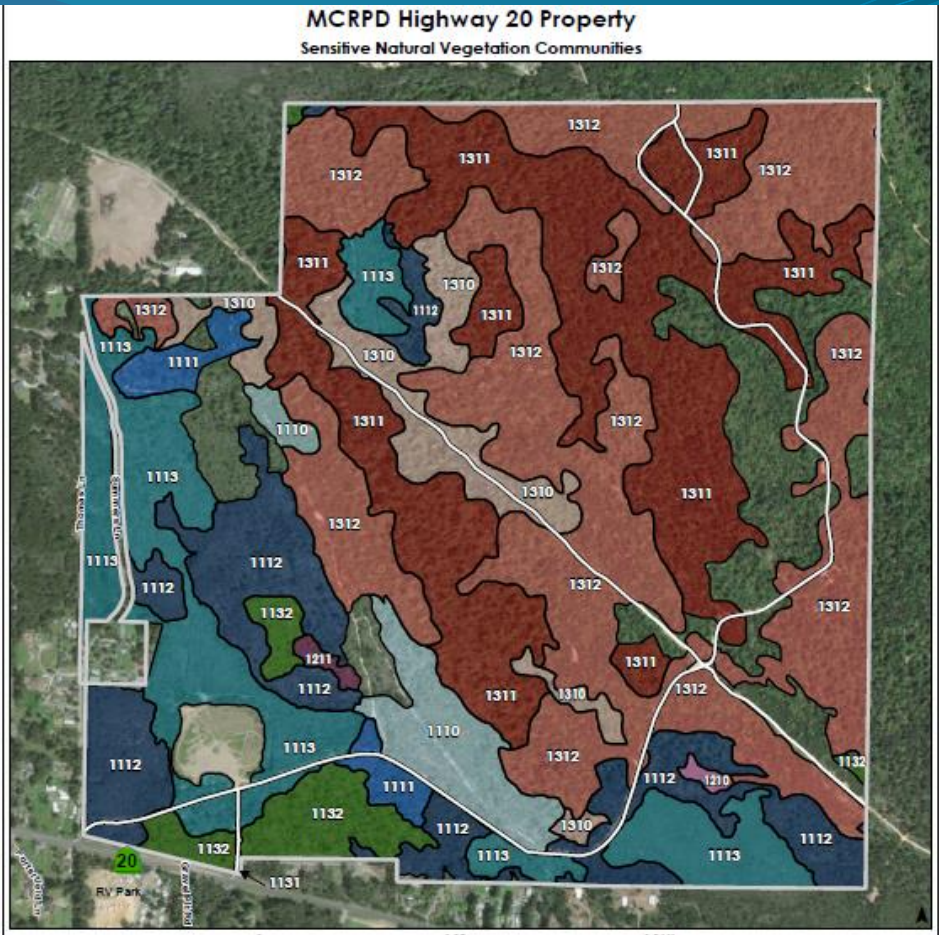
Teresa Sholars

Renée Pasquinelli, Conservation Co-Chair (North)
Teresa Sholars, Rare Plant Coordinator and Vegetation Chair
Dorothy King Young Chapter, California Native Plant Society

cc: Greg Suba, Conservation Program Director, California Native Plant Society
Jenn Garrison, Sr. Environmental Scientist, California Department of Fish and Wildlife

SNC map of MCPR Hw 20 site

- The data on this map is now on the BIOS site.
- 89% (518 acers) of this site is covered with SNC's
- OHV project not approved by MCPR Board



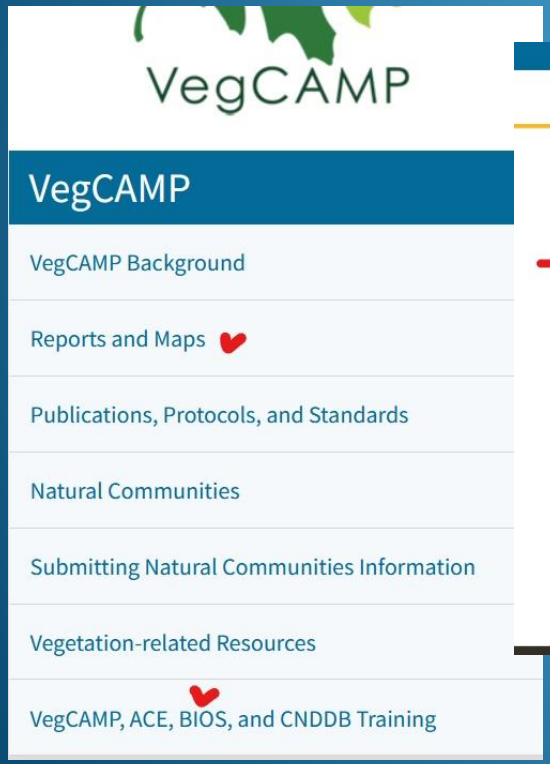
Major Trails
Proposed MCRPD OHV Boundary (586ac)

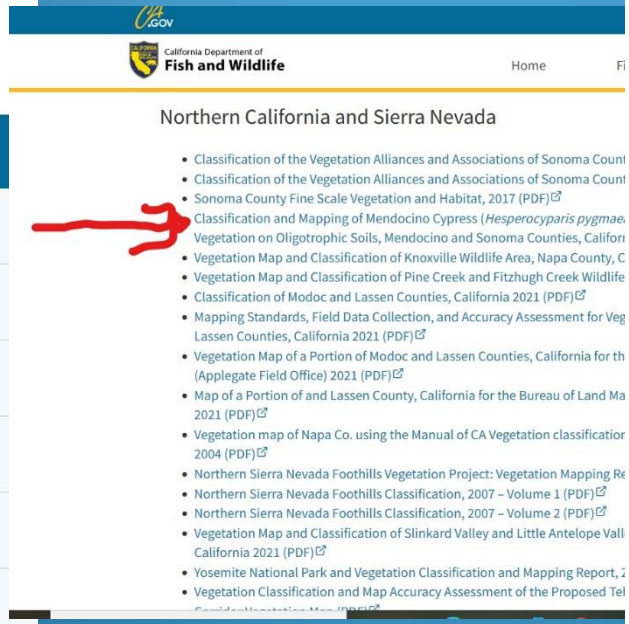
Code	Sensitive Natural Community Type	Global and State Ranking	Acres	% of 586 Acres
Chrysolepis chrysophylla Alliance				
1210	Chrysolepis chrysophylla Alliance	G2S2	1.0	0.2
1211	Chrysolepis chrysophylla / Vaccinium ovatum Association	G2S2	1.5	0.3
Hesperocyparis pigmaea Alliance				
1110	Hesperocyparis pigmaea Alliance	G2S2	20.9	3.6
1111	Hesperocyparis pigmaea - Pinus muricata / Arctostaphylos nummularia Association	G2S2	9.7	1.7
1112	Hesperocyparis pigmaea - Pinus contorta ssp. Bolanderi - Pinus muricata / Rhododendron macrophyllum Association	G2S2	65.0	11.1
1113	Hesperocyparis pigmaea - Pinus contorta bolanderi / Rhododendron columbianum Association	G2S2	68.0	11.6
Pinus muricata Alliance				
1131	Pinus muricata - Notholithocarpus densiflorus Association	G3S3	< 0.1	< 0.1
1132	Pinus muricata - Chrysolepis chrysophylla / Arctostaphylos nummularia Association	G2S2	19.7	3.4
Sequoia sempervirens Alliance				
1310	Sequoia sempervirens Alliance	G3S3	28.5	4.9
1311	Sequoia sempervirens - Pinus muricata Provisional Association	G3S3 (Proposed)	129.6	22.1
1312	Sequoia sempervirens - Hesperocyparis pigmaea Provisional Association	G1S1 (Proposed)	173.8	29.7
	Sensitive Natural Community Total (rounded)		518	89

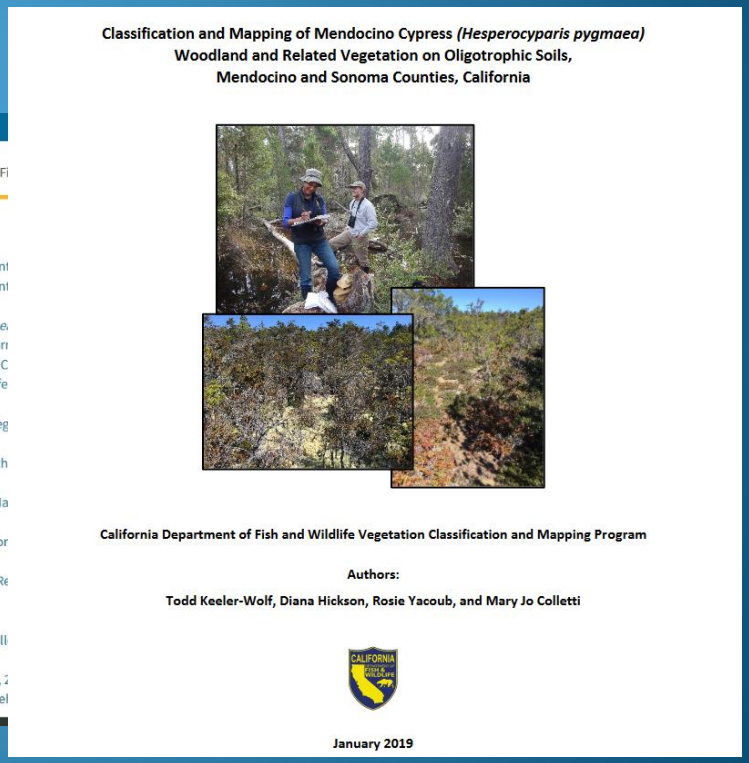
NOTE: DRAFT MAP pending finalization of accuracy assessment process.
Finalized map and data to be published in BIOS (www.wildlife.ca.gov/Data/BIOS) in fall 2018.

Challenges for conservation

- Information for SNC's is hard to find, even if the report and mapping are done.







Challenges for conservation

Key to vegetation types of the Mendocino cypress woodland and related vegetation on oligotrophic soils, Sonoma and Mendocino Counties

Class A. Trees are evenly distributed with at least 10% cover unless noted in the key. Understory shrubs and/or herbs may have higher cover than trees = Tree (Woodland / Forest) Vegetation

Class B. Shrubs usually have at least 10% cover and are evenly dispersed. Herbaceous species may have higher cover than shrubs = Shrubland Vegetation

Class A. Tree (Woodland / Forest) Vegetation

1. *Sequoia sempervirens* characteristic (rarely with as little as 5% cover).

***Sequoia sempervirens* Alliance (1310)**

1a. *Pinus muricata* is sub- to co-dominant with *Sequoia sempervirens*.

***Sequoia sempervirens – Pinus muricata* Provisional Association (1311)**

1b. *Hesperocyparis pygmaea* is sub- to co-dominant with *Sequoia sempervirens*.

***Sequoia sempervirens – Hesperocyparis pygmaea* Provisional Association (1312)**

2. *Hesperocyparis pygmaea, Notholithocarpus densiflorus, Pinus attenuata, Pinus contorta* ssp. *bolanderi*, and/or *Pinus muricata* characteristic.

2a. *Pinus muricata* (or *Pinus attenuata*, see 2a2) dominant, or co-dominant with *Notholithocarpus densiflorus*, in the overstory or regenerating tree layers; *Hesperocyparis pygmaea* not significant in cover.

***Pinus muricata* Alliance (1130)**

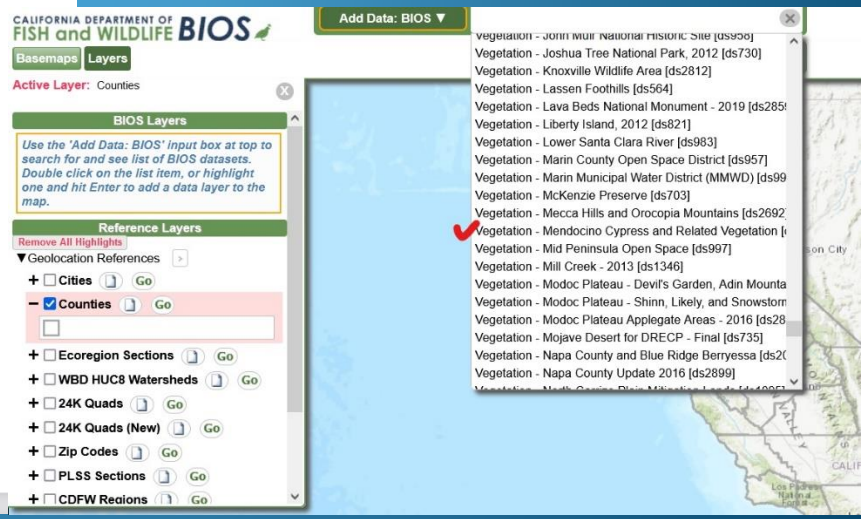
2a1. *Notholithocarpus densiflorus* and *Pinus muricata* characteristic. If *Pseudotsuga menziesii* shares similar cover with *Pinus muricata* and *Notholithocarpus*, key out here.

***Pinus muricata – Notholithocarpus densiflorus* Provisional Association (1131)**

2a2. *Pinus muricata* dominant or co-dominant with *Chrysolepis chrysophylla*, and *Arctostaphylos nummularia* characteristic in the understory. *Chrysolepis chrysophylla* may vary in stature from a

Appendix I: Key to Vegetation Types Page I-2

- Key to SNC from report.
- Pathway to vegetation maps of vegetation in BIOS

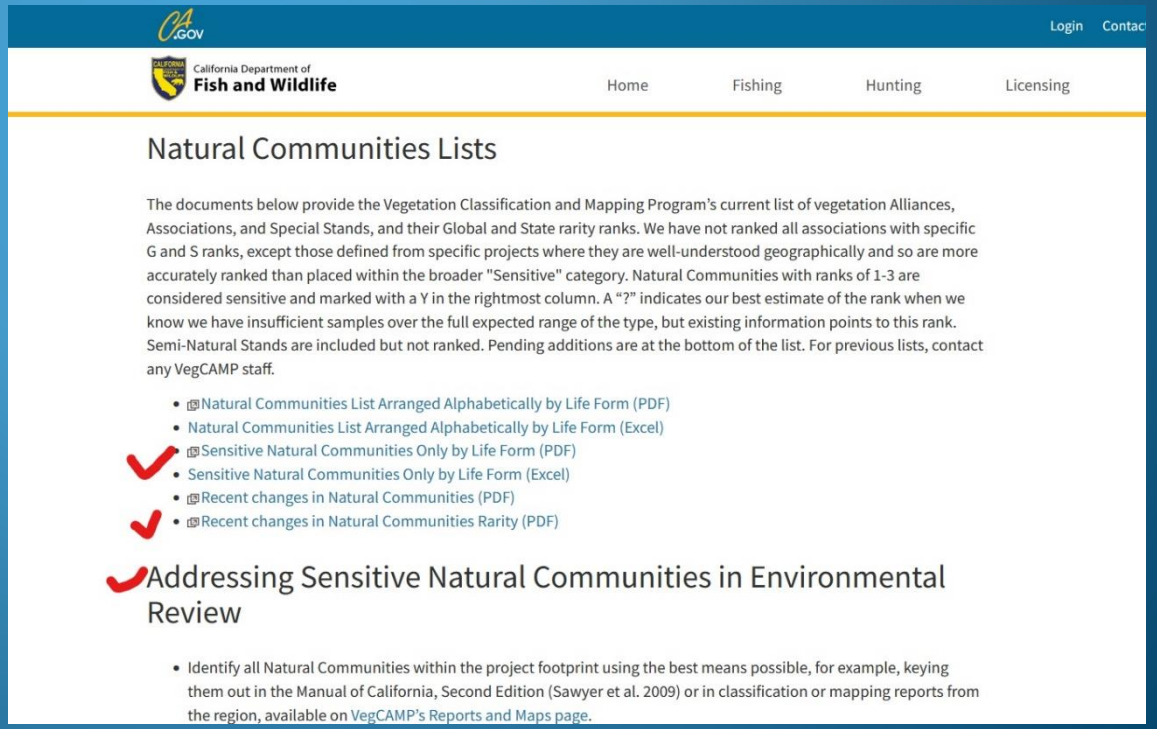


Challenges for conservation

Its important to check CDFW and MCV web sites before writing or reviewing Botanical Surveys! Most SNC's have not been mapped in northwestern Ca.

VegCAMP

- VegCAMP Background
- Reports and Maps
- Publications, Protocols, and Standards
- ✔ Natural Communities
- Submitting Natural Communities Information
- Vegetation-related Resources
- VegCAMP, ACE, BIOS, and CNDDB Training



CA.GOV Login Contact

California Department of Fish and Wildlife — Home | Fishing | Hunting | Licensing

Natural Communities Lists

The documents below provide the Vegetation Classification and Mapping Program's current list of vegetation Alliances, Associations, and Special Stands, and their Global and State rarity ranks. We have not ranked all associations with specific G and S ranks, except those defined from specific projects where they are well-understood geographically and so are more accurately ranked than placed within the broader "Sensitive" category. Natural Communities with ranks of 1-3 are considered sensitive and marked with a Y in the rightmost column. A "?" indicates our best estimate of the rank when we know we have insufficient samples over the full expected range of the type, but existing information points to this rank. Semi-Natural Stands are included but not ranked. Pending additions are at the bottom of the list. For previous lists, contact any VegCAMP staff.

- Natural Communities List Arranged Alphabetically by Life Form (PDF)
- Natural Communities List Arranged Alphabetically by Life Form (Excel)
- ✔ Sensitive Natural Communities Only by Life Form (PDF)
- Sensitive Natural Communities Only by Life Form (Excel)
- Recent changes in Natural Communities (PDF)
- ✔ Recent changes in Natural Communities Rarity (PDF)

✔ Addressing Sensitive Natural Communities in Environmental Review

- Identify all Natural Communities within the project footprint using the best means possible, for example, keying them out in the Manual of California, Second Edition (Sawyer et al. 2009) or in classification or mapping reports from the region, available on VegCAMP's Reports and Maps page.

Questions and Answers