Definition of Maritime Chaparral

in the Manual of California Vegetation

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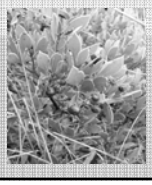
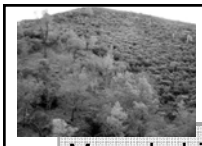
What is Maritime Chaparral?

(Focus: Northern and Central Maritime Chaparral)

- Shrublands whose plants have sclerophyllous leaves and grow in nutrient-poor soils on windward uplands and coastal lowlands of northern and central California (from Mendocino to Santa Barbara Cos.).





Many habitats contain distinctive plant species and characteristic vegetation types that make habitats easy to distinguish from other habitats.

- "The kind of site or region with respect to physical features (as soil, weather, elevation) naturally or normally preferred by a biological species" – Merriam-Webster Dictionary
- Alkali sinks, fens, freshwater marshes, salt marshes, vernal pools

Northern/Central Maritime Chaparral exists on California's coast between southern Mendocino and Santa Barbara Cos.

Maritime chaparral
- contains plants adapted to areas with cool, foggy summers, unlike interior chaparral types (where summers are not moderated by fog)

Maritime chaparral
- has nutrient-poor soils and occurs on windward uplands and coastal lowlands



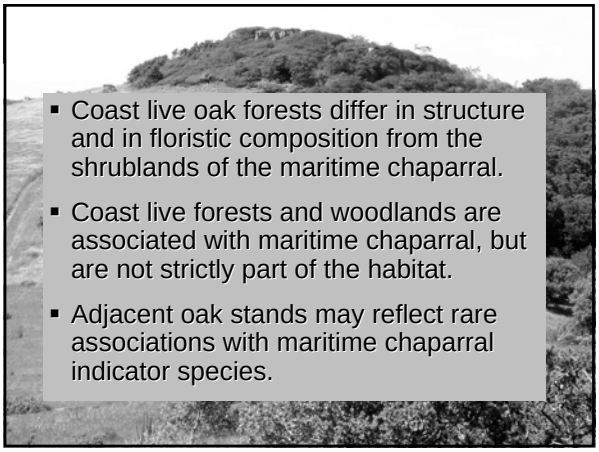
Maritime chaparral
- includes *Arctostaphylos* or *Ceanothus* species, including any narrow endemics considered rare and endangered.
- They characterize the habitat.

In maritime chaparral –
- Periodic burning is necessary for renewal of plant populations that characterize the habitat.
- Recent fire suppression practices have reduced the size and frequency of wildfires in the habitat.

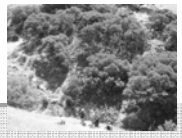
In maritime chaparral –
- Recent conditions favor longer- lived shrubs and trees over shorter-lived, crown-sprouting or obligate-seeding shrubs characteristic of the habitat.
- Obligate-seeders tend to occur in less fire-prone areas that generally burn more intensely when fires occur.

In maritime chaparral –
- Agricultural conversion, residential development, and fire suppression have fragmented and degraded the habitat.
- Preservation and management are high priorities.

- A vegetation type is a collection of stands that have similar structure and floristic composition.
- Habitats are made up of one or more vegetation types.
- The same vegetation type can occur in more that one habitat.



- Coast live oak forests differ in structure and in floristic composition from the shrublands of the maritime chaparral.
- Coast live forests and woodlands are associated with maritime chaparral, but are not strictly part of the habitat.
- Adjacent oak stands may reflect rare associations with maritime chaparral indicator species.



- Maritime chaparral is characterized at different levels
  - At the vegetation level
  - At the stand level
  - At the individual plant level

- The vegetation of maritime chaparral involves several alliances, associations, and individuals.
  - *Arctostaphylos montana* shrubland alliance
    - *Arctostaphylos montana* ssp. *montana* association [1, 2]
    - *Arctostaphylos montana - Adenostoma fasciculatum* association [1]
      - Associations restricted to Mount Tamalpais on rocky, serpentinite soils below 600 m
  - *Arctostaphylos montana* ssp. *ravenii*
    - A single individual (clone) in San Francisco at the Presidio above Bakers Beach (other 5 occurrences were extirpated)

[1] Evens et al. 2006b, [2] Keeler-Wolf et al. 2003a

Arctostaphylos montana ssp. *montana* association

Arctostaphylos montana - Adenostoma fasciculatum association

- Some alliances are more widely distributed, occurring on unproductive sandstone and granitic outcrops with sandy soils.
  - *Arctostaphylos crustacea* shrubland
    - Occurs from Marin and Napa Cos., south to Santa Barbara Co.
  - *Arctostaphylos hookeri* shrubland
    - Occurs in Santa Cruz Mountains, Prunedale Hills, Fort Ord, Monterey Peninsula

- The vegetation of maritime chaparral involves special stands and individual species (examples below).
  - Less than 10 *Arctostaphylos bakeri* stands
    - Restricted to Sonoma Co. on rocky, serpentinite soils below 800 m
  - The 5 *Arctostaphylos imbricata* stands
    - Restricted to San Bruno Mountain (San Mateo Co.) on exposed, rocky areas with a lack of soil development below 400 m

- The vegetation of maritime chaparral may involve rare species found as individual plants.
  - *Arctostaphylos hookeri* ssp. *hearstiorium*
    - plants mix in shrubland and grassland types in San Luis Obispo Co.
  - *Arctostaphylos pacifica*
    - few plants on San Bruno Mountain in San Mateo Co.
  - *Arctostaphylos andersonii*
    - individual plants that mix with tree and chaparral stands in Santa Cruz Co.

Proposed Maritime Chaparral Types at the Alliance/Stand Level

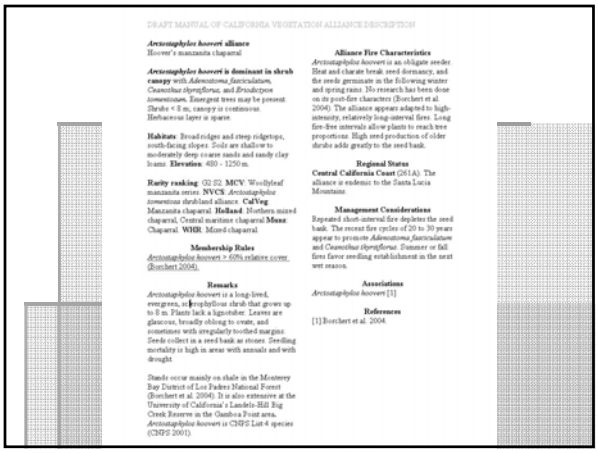
- *Arctostaphylos crustacea* shrubland*
- *Arctostaphylos hookeri* shrubland
- *Arctostaphylos hooveri* shrubland*
- *Arctostaphylos montana* shrubland*
- *Arctostaphylos morroensis* shrubland*
- *Arctostaphylos nummularia* shrubland*
- *Arctostaphylos pajaroensis* shrubland
- *Arctostaphylos pumila* shrubland
- *Arctostaphylos (rudis, purissima)* shrubland
- *Arctostaphylos silvicola* shrubland
- *Arctostaphylos tomentosa* shrubland

Alliances Partially within or *Related* to Maritime Chaparral

- *Arctostaphylos canescens* shrubland*
- *Arctostaphylos manzanita* shrubland
- *Arctostaphylos glandulosa* shrubland*
- *Arctostaphylos myrtifolia* shrubland*

Adenostoma fasciculatum shrubland
Closed cone conifer woodlands
Quercus agrifolia woodlands

*formally defined with recent survey data and analysis



DRAFT MANUAL OF CALIFORNIA VEGETATION ALLIANCE DESCRIPTION

***Arctostaphylos hooveri* alliance**
Hoover's manzanita chaparral

***Arctostaphylos hooveri* is dominant in shrub canopy** with *Adenostoma fasciculatum*, *Ceanothus thyrsiflorus*, and *Brodiaeopsis tomentosum*. Emergent trees may be present. Shrubs < 8 m, canopy is continuous. Herbaceous layer is sparse.

Habitats: Broad ridges and steep ridgetops, south-facing slopes. Soils are shallow to moderately deep coarse sands and sandy clay loams. **Elevation**: 400 - 1250 m.

Rarity ranking: G2 S2. **MCV**: Woollyleaf manzanita series. **NVCS**: *Arctostaphylos tomentosa* shrubland alliance. **CalVeg**: Manzanita chaparral. **Holland**: Northern mixed chaparral, Central maritime chaparral. **Munz**: Chaparral. **WHR**: Mixed chaparral.

Membership Rules
Arctostaphylos hooveri > 60% relative cover (Borchert 2004).

Remarks
Arctostaphylos hooveri is a long-lived, evergreen, sclerophyllous shrub that grows up to 8 m. Plants lack a lignotuber. Leaves are glaucous, broadly oblong to ovate, and sometimes with irregularly toothed margins. Seeds collect in a seed bank as stones. Seedling mortality is high in areas with annuals and with drought.

Stands occur mainly on shale in the Monterey Bay District of Los Padres National Forest (Borchert et al. 2004). It is also extensive at the University of California's Landels-Hill Big Creek Reserve in the Gamboa Point area. *Arctostaphylos hooveri* is CNPS List 4 species (CNPS 2001).

Alliance Fire Characteristics
Arctostaphylos hooveri is an obligate seeder. Heat and charate break seed dormancy, and the seeds germinate in the following winter and spring rains. No research has been done on its post-fire characters (Borchert et al. 2004). The alliance appears adapted to high-intensity, relatively long-interval fires. Long fire-free intervals allow plants to reach tree proportions. High seed production of older shrubs adds greatly to the seed bank.

Regional Status
Central California Coast (261A). The alliance is endemic to the Santa Lucia Mountains.

Management Considerations
Repeated short-interval fire depletes the seed bank. The recent fire cycles of 20 to 30 years appear to promote *Adenostoma fasciculatum* and *Ceanothus thyrsiflorus*. Summer or fall fires favor seedling establishment in the next wet season.

Associations
Arctostaphylos hooveri [1]

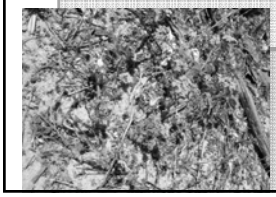
References
[1] Borchert et al. 2004.

We need to describe and to classify vegetation that makes up maritime chaparral and work to understand its dynamics, so that we can better manage and preserve this important aspect of California's biodiversity.

Example Data Collection and Description from the Santa Cruz Sandhills

- *Arctostaphylos silvicola* chaparral stands, conifer stands, and open sandy vegetation
- A version of northern maritime chaparral on nutrient-poor sandstone and marine sediments
- Associated rare plants and animals: Ben Lomond spineflower, Ben Lomond buckwheat, Santa Cruz kangaroo rat, Mount Hermon June Beetle
- Only small isolated patches exist (threatened by development and quarrying)

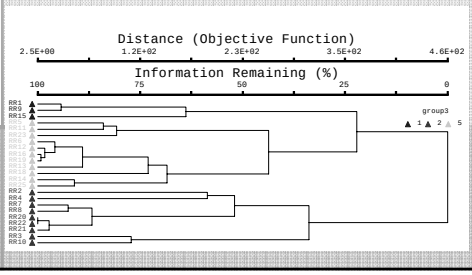
Releve sampling with *Arctostaphylos silvicola* dominant in stands



Associated species include rare endemics such as *Chorizanthe pungens var. hartwegiana*

Example Data Collection & Analysis from the Gabilan Range

- 23 releves collected at Reeves Ranch per Susan Bainbrige & The Nature Conservancy



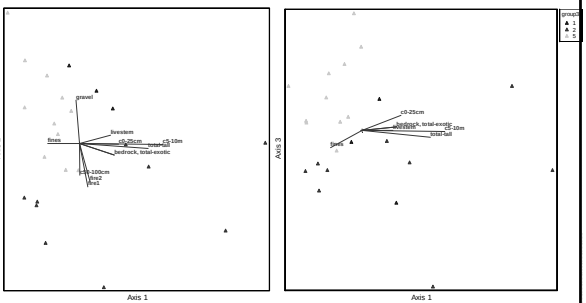
Results of Constancy/Average Midpoint Cover for Species with Significant Indicator Values

- **Group 1** *Arctostaphylos crustacea - Adenostoma fasciculatum - Ceanothus (cuneatus, papillosus)*
- **Group 2** *Arctostaphylos crustacea*
- **Group 5** *Arctostaphylos crustacea - Arctostaphylos gabilensis*

Group -	Adfa -l	Adfa -m	SaSo -l	CePaP -m	CeCuC -m	RhCaC -m	ArCr -l	ArCr -m	ArGa -l	ArGa -m	QuWiF -l	QuWiF -t
1	67 / 1	100 / 37.5	100 / 5	67 / 1	100 / 13.5	33 / 0.8	33 / 0.2	100 / 13.5	33 / 0.2	0 / 0	0 / 0	0 / 0
2	44 / 0.4	100 / 10	89 / 0.9	33 / 0.4	33 / 0.2	0 / 0	89 / 3.4	100 / 43.6	0 / 0	33 / 0.8	33 / 4.3	22 / 4.4
5	100 / 9.7	100 / 23.7	82 / 3.9	36 / 0.4	36 / 0.4	0 / 0	91 / 2.4	91 / 9.8	55 / 1.1	100 / 14.1	0 / 0	0 / 0

Species highlighted in bright blue had Indicator Values >30

Ordination Diagrams



R-squared

Axis	Increment	Cumulative
1	.378	.378
2	.126	.504

R-squared

Axis	Increment	Cumulative
1	.378	.378
3	.197	.575

Basis for Definition of Maritime Chaparral Vegetation Types

- Presence of indicator species (including rare and endemic taxa)
- Localized manzanita or ceanothus species (may or may not be dominant or co-dominant)
- Structurally similar stands that repeat in the landscape
- Environmental site conditions (harsh soils, fog-moderated summers, varied fire return intervals)

- Data and analysis are needed to provide the definitions of the different types and levels of rarity


Questions?