

# Assessing species rarity

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# California Natural Diversity Database & Vegetation and Classification Mapping Program



Non-regulatory data and science programs in the Biogeographic Data Branch

## California Natural Diversity Database (CNDDDB)

- Provides data on special status species
- Maintains lists, reports statuses and assesses state rarity

**2,352 plants** on the Special Plants list ~ **700 coastal**

**918 animals** on the Special Animals list ~ **360 coastal**



## Vegetation and Classification Mapping Program (VegCAMP)

- Develops and Applies National Vegetation System for California
- Conducts vegetation mapping and sets standards
  - Classified **>500 vegetation alliances** ~ **240 coastal**
  - Rank natural communities for rarity



# Status for Species & Communities

	Animals	Plants	Communities
Federal Endangered Species Act	X	X	
CA Endangered Species Act	X	X	
CDFW Fully Protected	X		
(CA) Native Plant Protection Act		X	
*CDFW Species of Special Concern	X		
*California Rare Plant Rank		X	
*NatureServe Global & State Conservation Ranks	X	X	X
Other statuses: BLM, US Forest Service, IUCN & other expert associations	X	X	



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# CDFW Species of Special Concern



## **Animals** not covered under California Endangered Species Act (CESA)

- Population or range declines that if continued could qualify under CESA
- Small population and high risk factors that could lead to declines & CESA listing
- Extirpated entirely or as breeding population from California
- Meet definitions of State- Threatened or Endangered (e.g. Federally listed)

## Expert review processes overseen by CDFW: Nongame Wildlife & Fisheries programs



Fishes

2015



Reptiles & Amphibians

2016  
(anticipated)



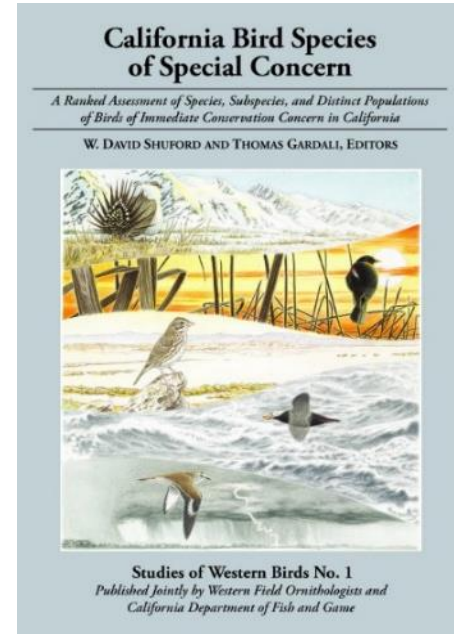
Mammals

1986  
(in revision)



Birds

2008



# California Rare Plant Ranking System

Maintained by CNPS since 1974

*CNPS Inventory of Rare, Threatened, and Endangered Plants*

## California Rare Plant Ranks (formerly known as CNPS ranks)



**Sandmat manzanita**  
(*Arctostaphylos pumila*)

Status: **1B.2**

- 1A** Presumed extirpated in CA- rare or extinct elsewhere
- 1B** Rare or Endangered in CA and elsewhere
- 2A** Presumed extirpated in CA, but more common elsewhere
- 2B** Rare or Endangered in CA, but more common elsewhere
- 3** Plants for which we need more information - Review list
- 4** Plants of limited distribution - Watch list

### Threat Rank

- .1** -Seriously threatened (80% occurrences/high degree)
- .2** -Moderately threatened (20-80% occurrences/moderate)
- .3** -Not very threatened (<20 % occurrences /low degree)

## Rare Plant Status Review Process

- **CNPS** and **CDFW** (CNDDDB) work jointly
- Conduct initial research and propose a rank (or change)
- Ranking determined by consultation with **Rare Plant Review Group**:  
**300+ botanical experts from government, academia, NGOs and the private sector**

- CDFW & CNPS MOU:**
- Cooperate in cause of native plant protection
  - Data sharing and access



**Seaside cistanthe 4.2**  
*Cistanthe maritima*



**California adolphia 2B.1**  
*Adolphia californica*

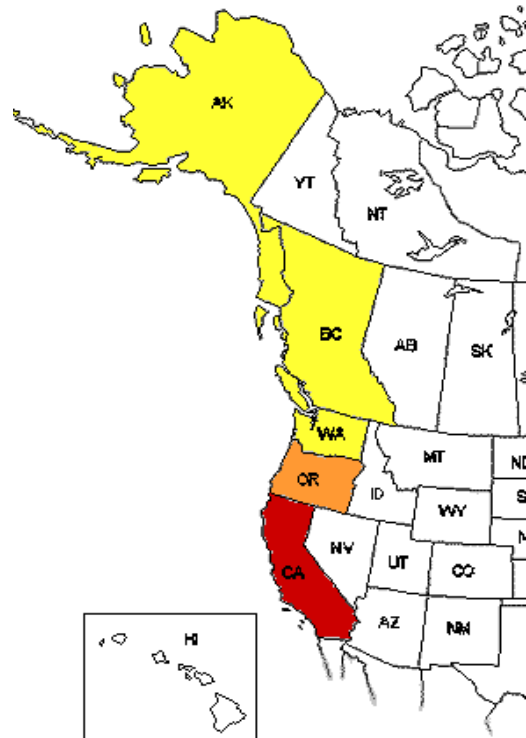


**Mendocino coast paintbrush 1B.2**  
*Castilleja mendocinensis*

## Global ranks

GX	GH	G1	G2	G3	G4	G5
Presumed Extinct	Possibly Extinct (historic)	Critically imperiled	Imperiled	Vulnerable	Apparently secure	Secure

## State ranks



### State/Province Conservation Status

- SX: Presumed Extirpated
- SH: Possibly Extirpated
- S1: Critically Imperiled
- S2: Imperiled
- S3: Vulnerable
- S4: Apparently Secure
- S5: Secure



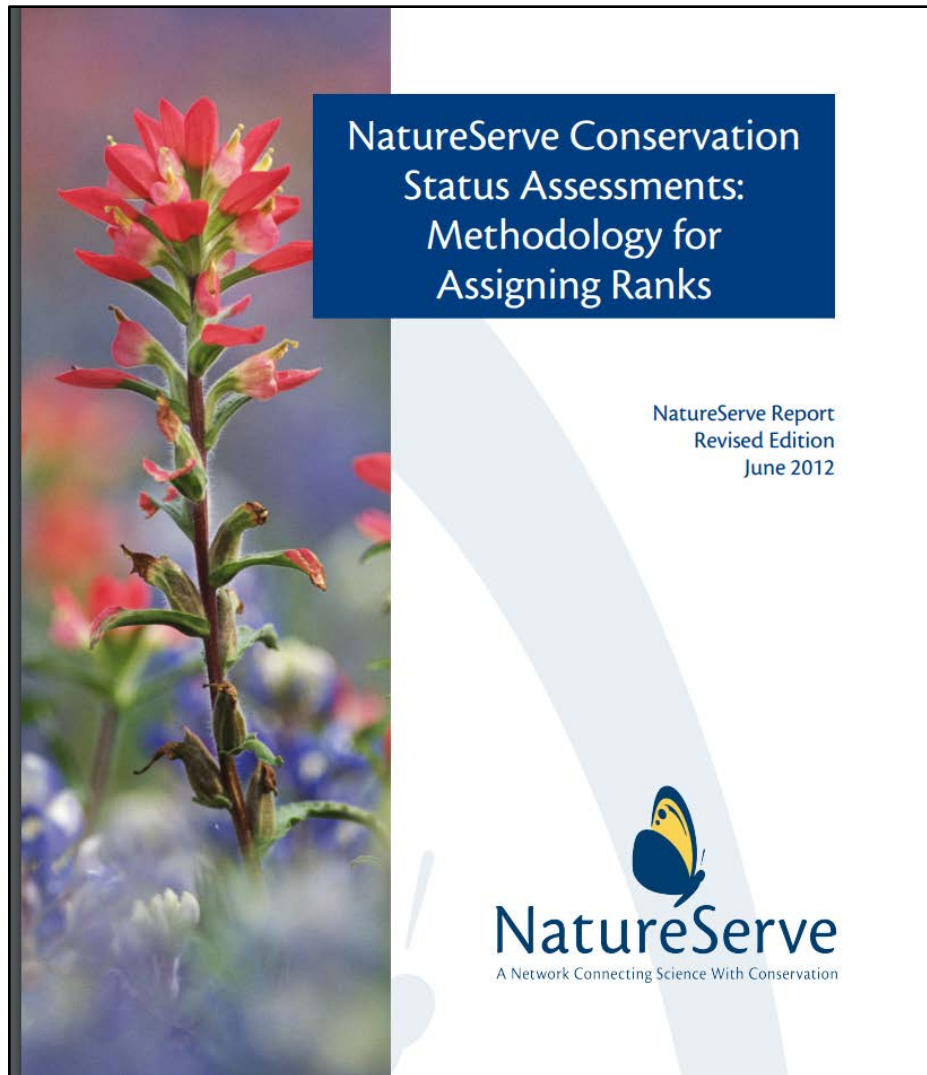
Marbled Murrelet

**G3 S1** (CA)

# Global and State Conservation Ranks

Calculated based on quantitative assessments of :

- Rarity
- Threats
- Trends



## Who's responsible?

State Rank- CA: CNDDDB

Global Ranks: NatureServe

CNDDDB  
(California endemics)



# Global and State Conservation Ranks: variables

## Rarity

### Distribution

Geographic range

Occupied area

### Abundance

Number of occurrences

Population size

### Condition

Viable occurrences



scope

## Threats

Threat impact

Intrinsic vulnerability

	Pervasive	Large	Restricted	Small	<i>Unknown</i>
Extreme	Very High	High	Medium	Low	Medium
Serious	High	High	Medium	Low	Medium
Moderate	Medium	Medium	Low	Low	Low
Slight	Low	Low	Low	Low	Low
<i>Unknown</i>	Medium	Medium	Low	Low	

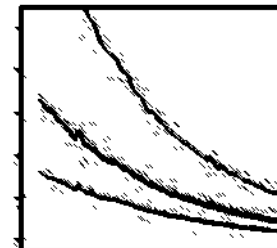
Severity

## Trends

Short term

Long term

Population index



1970

2010

# Global and State Conservation Ranks: Assessing rarity



## Step 1: Distribution

Review and map:

- CNDDDB records
- Museum data
- Other sources

2,179 km<sup>2</sup> range



**Tidestrom's lupine**  
*(Lupinus tidestromii)*

# Global and State Conservation Ranks: Assessing rarity

## Step 2: Occupied Area

Use standard grid of 4 km<sup>2</sup> grid cells  
Area of Occupancy:

15 cells  
(~3% of the range)

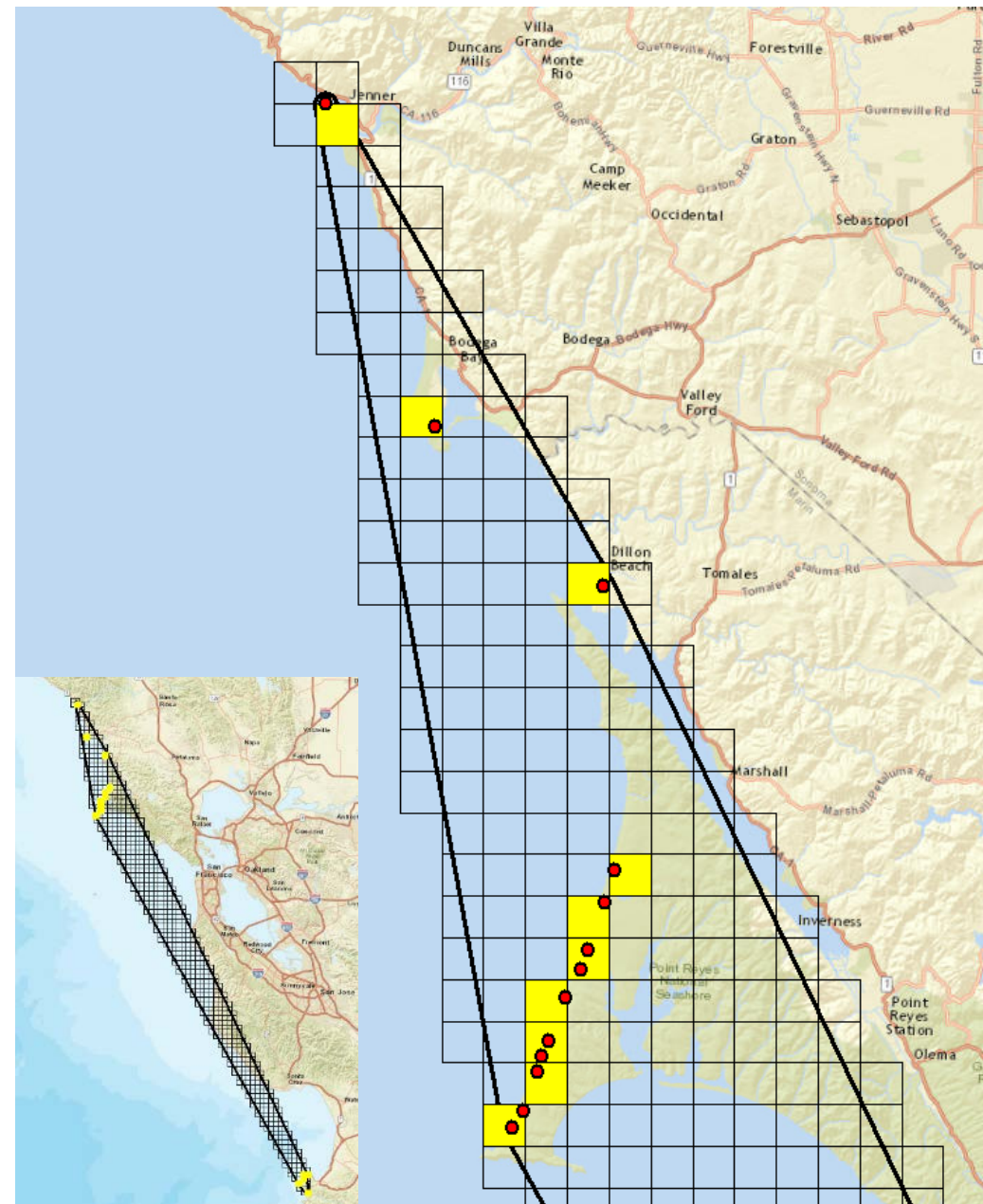


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**Tidestrom's lupine**  
**(*Lupinus tidestromii*)**

**G1 S1**

Slide 11



2,179 km<sup>2</sup> range

# NatureServe Calculator for Global and State Ranks

Repeatable and consistent method to generate ranks

Rarity weight: 0.7	Range/Distr.	##	Range Extent		
		##	Area of Occupancy:		FILL OUT ONLY 1 OF FOLLOWING 3 FIELDS
			Direct estimate (ecosystems) <i>OR</i> 4 km <sup>2</sup> grid cells (species) <i>OR</i> 1 km <sup>2</sup> grid cells (linear species)		
	Abund./Cond.	##	Number of Occurrences		
		##	Population Size*		
		##	Good Viability/Ecological Integrity:		FILL OUT ONLY 1 OF FOLLOWING 2 FIELDS
	X	##	Number of Occurrences <i>OR</i>		
			Percent of Area Occupied		
	X	##	Environmental Specificity (opt.)		
	Threats #####	##	Assigned Overall Threat Impact		
Calculated Overall Threat Impact (FYI)					
X		##	Intrinsic Vulnerability (opt.)		
Trends	##	Short-term Trend			
		Long-term Trend			

# Multiple statuses: complementary sources of information



Burrowing owl  
CDFW Species of  
Special Concern

G4 S3



Tidestom's lupine  
(*Lupinus tidestromii*)

CRPR: 1B.1 G1 S1



Coast Range Lomatium  
(*Lomatium martindalei*)

CRPR: 2B.3 G5 S3