

Natural Communities

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Natural Communities

Natural Communities have been part of the Natural Heritage conservation triad, along with plants and animals, since the inception in 1979 of California’s natural heritage program, the California Natural Diversity Data Base (CNDDDB). Natural Community elements were at first classified according to “Preliminary Descriptions of the Terrestrial Natural Communities of California” (Holland 1986). Since the mid-1990s, however, CDFW and our partners, including the California Native Plant Society (CNPS), have been working on classifying vegetation types using the [state standards](#) embodied in the Survey of California Vegetation, which comply with the [National Vegetation Classification Standard \(NVCS\)](#)². We now use the terms “Natural Communities” and “vegetation types” interchangeably.

NVCS is a hierarchical classification, with the most granular level being the Association. Associations are grouped into Alliances, Alliances into Groups, and upward, as follows:

- Formation Class
 - Formation Subclass
 - Formation
 - Division
 - Macrogroup
 - Group
 - Alliance
 - Association

The classification for California was first published as the Manual of California Vegetation in 1995, updated in the second edition of the Manual (Sawyer et al. 2009), and is now most easily accessed in the [Manual of California Vegetation Online](#). However, because we are continually updating the classification based on new projects, much information is also in project-specific [classification and mapping reports](#).

Semi-natural Alliances and Special Stands

The classification also includes **Semi-natural Alliances** and **Special Stands**. Semi-natural Alliances are strongly dominated by non-native plants that have become naturalized in the state. **Special Stands** are specific patches of vegetation in the landscape that are unique from other patches, which may appear structurally distinctive as well as rare. These are usually defined by the presence of locally-dominant but

globally or regionally rare plant taxa, including plants on the California Native Plant Society's Inventory of Rare and Endangered Plants of California or the Department's Special Plants List. The rare species typically defines the type (e.g., *Callitropsis abramsiana*), and stands usually establish in less redundancy (e.g., less than 10 stands) across the landscape than other vegetation types. Certain rare plants establish with a unique set of species within certain climatic and edaphic conditions, and they typically co-dominate with a rare assemblage of species. In the case of certain more widespread taxa, the stands in California may be so isolated from other stands in the species range that we don't know whether they represent an alliance, association or an outlier stand. **Provisional Alliances** and **Provisional Semi-natural Alliances** are types for which we have fewer than 10 stands sampled, but which we expect will prove to be more widespread.

Sensitive Natural Communities

Natural Communities are evaluated using NatureServe's Heritage Methodology, the same system used to assign global and state rarity ranks for plant and animal species in the CNDDDB. VegCAMP has been ranking California Natural Communities by their rarity and threat since the inception of the program. However, since 2012 the ranking methodology has become more transparent and defensible through the advent of a [rank calculator](#). VegCAMP and the California Native Plant Society's Vegetation Program now use this calculator to rank Natural Communities; rankings are reviewed by both programs.

The basic ranking concepts of rarity and threats used in the "Heritage Methodology" since the 1970's remain the same, using the best and most recent scientific information available. However, as a result of better definitions based on classification and mapping of California's Natural Communities, we can apply standardized quantitative rarity and threat parameters and compute weighted scores for rarity and threats. For rarity, the ranking involves the knowledge of range and distribution of a given type of vegetation, and the proportion of occurrences that are of good ecological integrity. Threats and trends are likewise considered in categories such as residential and commercial development, agriculture, energy production and mining, and invasive and other problematic species and genes (among others). Threat scope (typically assessed within a 20-year timeframe for vegetation) and severity are used to calculate an overall threat score, which is added to the overall rarity score for a single rank of 1 through 5. Evaluation is done at both the Global (full natural range within and outside of California) and State (within California) levels resulting in a single G (global) and S (state) rank ranging from 1 (very rare and threatened) to 5 (demonstrably secure). For more details on the components of ranking see the "factor reference sheet" on the conservation rank calculator mentioned above.

Natural Communities with ranks of S1-S3 are considered Sensitive Natural Communities to be addressed in the environmental review processes of CEQA and its equivalents. A question mark (?) denotes an inexact numeric rank because we know we have insufficient samples over the full expected range of the type, but existing information points to this rank; it is the equivalent of the NatureServe rank calculator's "range of rankings" option.

We have not provided the G and S rank for all associations in the current version of the list. However, associations currently designated as being of S3 or rarer are indicated with a Y in the Sensitive column. For alliances with State ranks of S1-S3, all associations within them are also considered Sensitive. Note that Alliances that are not considered sensitive may contain associations that are marked with a Y in the

Sensitive column. Membership rules for associations can be found in project-level reports as referenced in the MCV Online Alliance descriptions. If you have questions about these please contact VegCAMP staff.

Ranking is an ongoing process and we expect to provide association level ranks for all of the S3 or rarer entities in the future. Please note that Semi-natural Alliances are not ranked, as these are defined by non-native species.


As of 2018, about half of California has been mapped and classified according to the state and national standard. Accordingly, not all Sensitive Natural Communities have been described, and the ranks of some current communities may change as we refine their known distributions. However, rankings are based on the best available information.

Our mapping standards call for a minimum mapping unit (MMU) of not greater than 10 acres for upland communities, but usually 1 or 2 acres, with wetlands and other special types such as sensitive natural communities being mapped at a MMU of ¼ acre. These MMUs are used for regional-scale projects and are based on the available imagery or other data and the budget or speed at which the mapping must be done. For project-level review maps, the MMUs will likely be smaller; higher resolution imagery and the ability of ecologists to visit all or most of the stands on the ground can allow a higher resolution map. MMUs may also vary by lifeform, with even very small MMUs for sensitive herbaceous communities, for example, *Selaginella bigelovii* stands on a rock outcrop. They may also be smaller for types of concern such as invading *Arundo donax* stands that will need treatment, depending on the purpose of the map. MMUs will depend on the needs or requirements of the lead and trustee agencies and the needs for impact assessment and mitigation planning. A consideration related to this is the separation distances between trees and shrubs, which can help determine, for a particular landscape, what is a stand of shrub or tree vegetation vs. emergent shrubs or trees over a stand in a different life form.

As noted above, some associations are considered sensitive even though the alliance in which they nest are not. Thus, an alliance-level regional map may not portray stands of association-level sensitive natural communities. For project-level maps for environmental review, all sensitive natural communities should be mapped, even if at the association level.


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](#).
- Refer to the current standard list of Natural Communities to determine if any of these types are ranked Sensitive (S1-S3 rank); if so, see CEQA Guidelines checklist at IVb.
- Other considerations when assessing potential impacts to Sensitive Natural Communities from a project include:
 1. Compliance with state and federal wetland and riparian policies and codes, as certain Natural Communities are restricted to wetlands or riparian settings.
 2. Compliance with the Native Plant Protection Act and the state and federal Endangered Species Acts, as some Natural Communities either support rare species or are defined by the dominance or presence of such species.
 3. Compliance with CEQA Guidelines Section 15065(a), which mandates completion of an EIR if a project would threaten to eliminate a plant community.
 4. Compliance with local regional plans, regulations, or ordinances that call for consideration of impacts to Natural Communities.
 5. Vegetation types that are not on the state's sensitive list but that may be considered rare or unique to the region under CEQA Guidelines Section 15125(c).
- If a Natural Community in the project area has not previously been described, it may be a rare type. In this case, please contact VegCAMP ([Rachelle Boul](#)) about documenting the Natural Community.
- If there are Sensitive Natural Communities on your project site and you need guidance regarding their significance, assessment of quality or value, and potential impacts, contact the appropriate regional staff person through the local CDFW Regional Office. These staff have local knowledge and context.
- The Department's document [Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities \(PDF\)](#)  provides information on reporting.

Semi-Natural Stands and Addressing Grasslands and Flower Fields

Semi-natural alliances have their own membership rules, that is, the minimum percent relative or absolute cover of the non-native to define a stand, which can be ecosystem-dependent. However, California's grasslands and flower fields vegetation types are among the most difficult to analyze and study. The

greatest challenge comes from the variation in species composition and abundance from early to late season and between years. Researchers and consultants have tended to underestimate the significance of native herbaceous plants because they are frequently at their highest cover either very early or very late in the season and may have very low cover during the spring and summer, when non-native grasses dominate and when field work is often performed. Additionally, in some years, a given area may be characterized by an abundance of non-native forbs and grasses, while in other years native herbs may dominate. This inter-seasonal and inter-annual variance of cover between the diagnostic species and the less diagnostic species leads us to conclude that rules for an herbaceous vegetation type's identification should be more broadly inclusive for nativity, with relative cover as low as 10% natives determining a native stand.

Use of the Manual of California Vegetation requires looking closely to determine if native indicator species are evenly distributed and interspersed with non-native plants while visiting the sites throughout the growing season. Although this often makes for more difficult field identification, detection of native plants ensures a proper assessment of the stand's conservation and biodiversity value.

There are indeed many grasslands or herbaceous stands populated almost entirely by non-natives; some have been heavily disturbed in the past and others invaded by exotics that can preclude natives almost completely, such as medusa-head (*Elymus caput-medusae*) and perennial pepperweed (*Lepidium latifolium*). Vegetation scientists at NatureServe, the California Native Plant Society, and CDFW determine non-native stands based on a rule of at least 90% cover of non-native species without evenly distributed or diverse native forbs and grasses at any time in the growing season. Conversely, a stand is considered native if 10% or more relative cover consists of native taxa that are evenly distributed in the stand and present at any time during growing season. For example, the [Sonoma County Vegetation Key \(PDF\)](#) includes this rule for the *Deschampsia caespitosa* alliance: *Deschampsia caespitosa*, *Danthonia californica*, and/or *Eryngium armatum* dominate or co-dominate individually or in combination (if *Holcus lanatus* has the highest cover, but these three species have at least 10% combined cover, key to *Deschampsia*).

Unclassified Areas of the State

For parts of the state that have not been classified according to state standards (the inverse of [this map \(PDF\)](#)), it may be appropriate to use the vegetation types as described in "Preliminary Descriptions of the Terrestrial Natural Communities of California" ([Holland 1986 \(Excel\)](#)). This is particularly true for sensitive natural community types. In some unclassified areas, common types may already be described at the Alliance level. Check the membership rules in the [Manual of California Vegetation Online](#) and use these types whenever possible. Refer to Holland types only when a current type does not exist.

Legacy Sensitive Natural Communities in CNDDB

At the time funding for the Natural Communities part of the CNDDB program was halted in the mid-1990s, approximately 2,500 occurrences of 96 sensitive natural community types had been entered in CNDDB, all based on Holland's classification. No new occurrences have been added since then, and our focus is now on completing an updated statewide classification, element ranking, and map. Once the entire state is

classified and mapped, we will be able to review the existing occurrences in CNDDDB and update them individually by existence, type, and global and state rarity ranking. We think it imprudent to remove these Holland-based elements from the CNDDDB before assessing them and reclassifying them in terms of the currently accepted state and national standards for vegetation classification. Their existence should be addressed in the environmental review processes of CEQA and its equivalents, along with occurrences of plants and animals tracked by the CNDDDB. To convert between Holland and current types see <http://vegetation.cnps.org/classifications>

Jurisdictional Determinations

Vegetation maps produced under the state standards do not imply regulatory jurisdictional determinations under Section 404 of the Federal Clean Water Act, Section 10 of the Rivers and Harbors Act, Section 1600 of the California Fish and Game Code ([Lake and Streambed Alteration Program](#)), Sustainable Ground Water Act (see <https://gis.water.ca.gov/app/NCDataSetViewer/>) or the lack thereof. Such determinations usually require a site visit to assess the current conditions on the ground and to map boundaries at a finer scale than the state vegetation map standard. Similarly, terms such as “riparian” and “wetland” in the vegetation keys and type descriptions may inform but do not imply or assert regulatory jurisdiction or the lack thereof.

References

- Holland, R. 1986. [Preliminary Descriptions of the Terrestrial Natural Communities of California \(PDF\)](#).
- Sawyer, J.O., T. Keeler-Wolf, and J.M. Evens. 2009. [A Manual of California Vegetation, Second Edition](#). California Native Plant Society, Sacramento. 1300 pp.



VegCAMP

[VegCAMP Background](#)

[Reports and Maps](#)

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