Section 6.0 – HELP PAGE REVIEW

Table of Contents

Section	Title	Page
6.1	Introduction to HELP PAGE	1
6.2	Navigating the HELP PAGE Window	1
6.21	NRCS California eVegGuide Help Resources	2
6.22	Plant Web Links	7

Section 6.0 – HELP PAGE REVIEW

List of Figures

Number	Caption	Page
1	eVegGuide introductory screen, indicating HELP PAGE tab.	1
2	Display of all HELP PAGE supporting documentation, technical aids, and external active links describing the function, output, and associated links of the eVegGuide.	2
3	Level IV Ecoregion map of California. Full-scale maps, posters, and narrative descriptions are available at: https://www.epa.gov/eco-research/ecoregion-download-files-state-region-9#pane-04.	5
4	Home page for Calflora (http://www.calflora.org/), displaying the 'Search for Plants' module, and additional links (left column) that provide avenues for plant observation submission, plus other plant search and plant information databases developed and hosted by Calflora.	8
5	Display of results from a search in the Calflora database for purple needlegrass, *Nassella pulchra*.	9
6	Example excerpts of condensed HELP page displays of color-coding, coding descriptions, and each color's corresponding numerical value or range, used as an aid in interpreting the background layers of the 'Map' sub-module of the PLANT OR SEED MIX REPORT module.	11
7	Summary results window for a plant search in the USDA PLANTS database for *Nassella pulchra*. Note the links to the species' Characteristics table and its Plant Guide (.pdf or .doc versions).	13
8	First-page excerpt from the USDA-NRCS *Plant Guide* for *Nassella pulchra*, purple needlegrass, as accessed from the summary results window for this species in the PLANTS database.	14
9	First-page excerpt from the PLANTS database *Characteristics* table for *Nassella pulchra*, purple needlegrass, as accessed from the summary results window for this species in the PLANTS database.	15

6.0 HELP PAGE REVIEW

6.1 Introduction to HELP PAGE

The **HELP PAGE** module allows the planner to access many forms of supporting documentation and technical assistance to aid in understanding the function and interpreting the output of the **eVegGuide**. Several of these aids reside within the **eVegGuide** itself as supporting documents that describe and explain specific features, terms, or parameter constraints that are used routinely in data queries and mixture formulation. Other aid types involve active links to *external* web sites and/or comprehensive database reference sources that provide further detail on species taxonomy and nomenclature, biology, ecology, commercial availability, photo galleries, dichotomous keys, and related species background data.

First access the **HELP PAGE** tab at the top of the introductory screen (Figure 1).

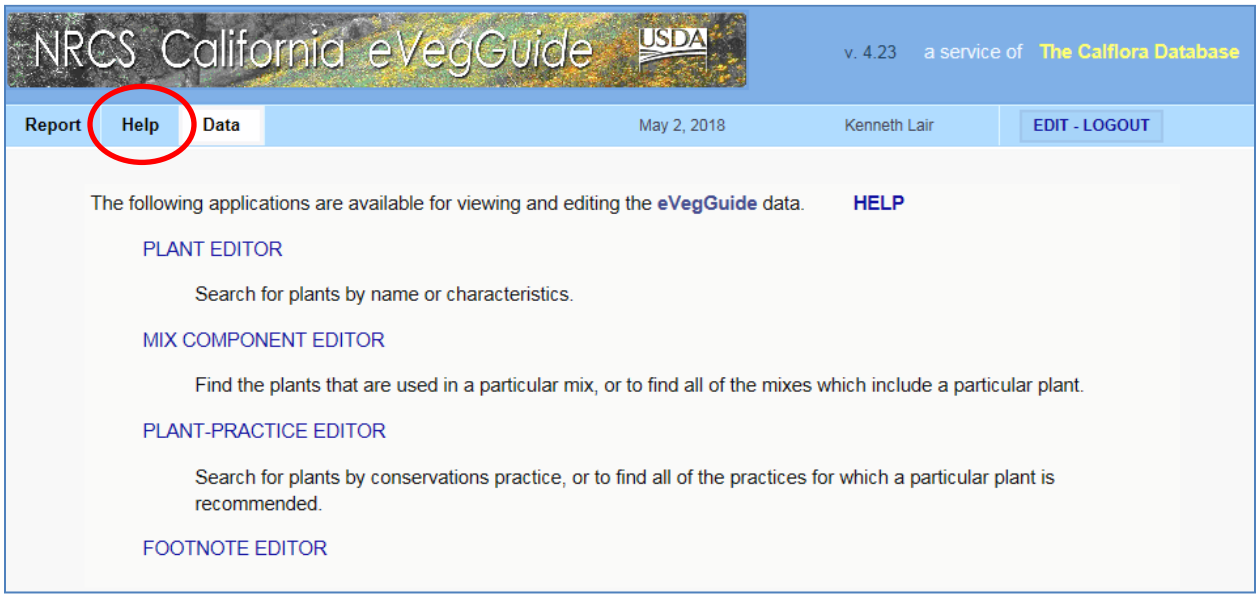


Figure 1. eVegGuide introductory screen, indicating HELP PAGE tab.

When the **HELP PAGE** is accessed, a full listing of all available aids and supporting documentation is displayed (Figure 2).

6.2 Navigating the HELP PAGE Window

Most of the links in the **HELP PAGE** are self-explanatory and self-guiding as you access the underlying documents or web sites. For the purposes of this User's Manual, actual linked documents will not be repeated and displayed in this User's Manual section, unless further explanation is deemed necessary to interpret the technical aspects of the aid. For certain links to external web sites, particularly those with further nested links, pertinent images and discussion will follow, as needed. Each aid will now be described in the order in which they appear on the **HELP PAGE** (Figure 2).

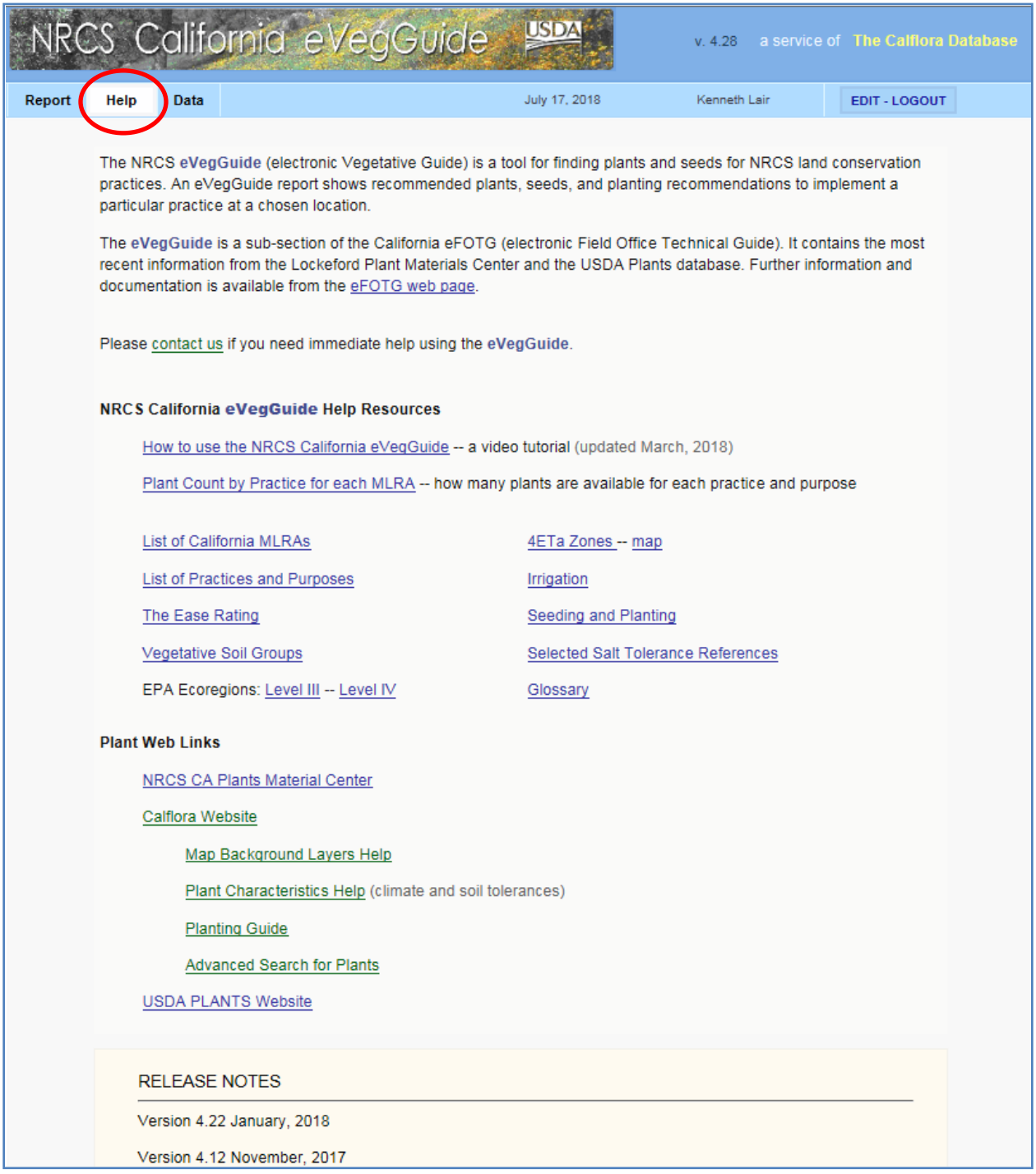


Figure 2. Display of all HELP PAGE supporting documentation, technical aids, and external active links describing the function, output, and associated links of the eVegGuide.

6.21 NRCS California eVegGuide Help Resources

How to Use the NRCS California eVegGuide

This aid is a short (~ 5-minute) tutorial video that provides an abbreviated version of this User's Manual. The video augments this User's Manual, covering all the major aspects of selecting plants and formulating seed mixtures, in a smoothly flowing video format. Emphasis in the video is on the **PLANT or SEED MIX REPORT** module function and outputs.

Plant Count by Practice for Each MLRA

This aid provides a numerical tally of species occurrences (i.e., number of species) assigned to all **Conservation Practices** and their associated **Practice Purposes**, as classified and displayed by **MLRA's** across California. This table serves to familiarize the planner with the total number of species options available for use in seed mixture formulation by conservation practice, practice purpose, and MLRA.

Note that no MLRA classification is shown for Conservation Practice 340 – Cover Crop. For **eVegGuide** purposes, all species assigned to 340 – Cover Crop are considered as comprehensively applicable to all MLRA's within California where cropland applications of cover crops are routinely used.

List of California MLRA's

This aid provides a comprehensive listing, with associated, color-coded map, of all applicable **Major Land Resource Areas (MLRA's)** within California. Information includes a basic definition of MLRA's in general, along with a link that accesses more detailed definitions of individual MLRA's within California.
(http://soils.usda.gov/survey/geography/mlra/mlra_definitions.html).

These definitions and map aid are to be used to augment and further describe the MLRA background layer within the **Map** sub-module of the **PLANT or SEED MIX REPORT**.

List of Practices and Purposes

This aid displays all the **Conservation Practices, Practice Purposes**, and **Purpose Codes** as they are used in the **eVegGuide**. Each Practice Purpose has a numerical code that is used to further identify the appropriate purpose for selection when formulating seed mixtures, or for database queries as a search term. These **eVegGuide** practice purposes may vary somewhat from the description of applicable purposes in the *practice standard*, particularly in terms of combining very similar purposes, in order to better facilitate and expedite selection of appropriate purposes for the most common revegetation applications.

The Ease Rating

This aid provides the definitions and rationale for ratings of **Ease of Establishment** (and Maintenance) for all species and mixtures within the **eVegGuide**. These ratings represent a synthesis of ratings and recommendations derived from several California sources, including Calflora, Calscape (California Native Plant Society – CNPS), and NRCS. These ratings are intended to inform the user of the relative ease of establishing and maintaining a given

species, particularly in relation to a) their common usage in mixtures; b) typical establishment techniques and revegetation equipment; and c) common NRCS revegetation applications across California MLRA's.

Vegetative Soil Groups

This aid provides narrative and tabular descriptions of factors that contribute to formulation of groups of *soils* having similar properties and qualities that affect their suitability for plant establishment and growth – i.e., **Vegetative Soil Groups**, or VSG's. The groups are used primarily for determining the best-suited plants for conservation practices and forage production. These ratings represent the limiting soil feature(s) to which a plant has been shown to be adapted and tolerant. The major soil features that determine the suitability of the groups for plant establishment, survival, growth and long-term maintenance are summarized.

EPA Ecoregions: Level III and Level IV

In order to better determine and apply appropriate revegetation species and mixtures associated with applicable NRCS conservation practices across the varied landscape of California, **Level IV Ecoregions** are now incorporated into the **eVegGuide**. These ecoregion designations were developed as a coordinated effort between the EPA, USGS, NRCS, and the California Department of Fish and Wildlife. They attempt to denote areas of general similarity in true, ground-level ecosystems that are *physiographic sub-units of MLRA's*.

Selection of species and manual mixture formulation (or selection of pre-set guideline mixtures) can be further filtered or constrained within an MLRA by enabling the **Level IV Ecoregion** environmental constraint box 'Search Criteria' sub-module of the **PLANT OR SEED MIX REPORT** module. Enabling this constraint limits the species and mixture selection to those species or mixtures within the **eVegGuide** that are considered to be adapted to the *specific* ***Level IV Ecoregion*** *sub-unit* in which the planner's particular revegetation site is located. See Section 1.0, **PLANT OR SEED MIX REPORT** module, for more details on how this constraint is enabled, and how it affects species and mixture selection.

Level IV Ecoregions stratify the environment physiographically by its probable response to disturbance and/or management measures and conservation treatments. Some MLRA's are relatively uniform, with reduced variation in landform, elevation, climate and hydrology compared to other California MLRA's – for example, MLRA's 17, 30, and 31. As such, the species and mixtures recommended and available for use within the **eVegGuide** are generally applicable across the whole MLRA. In contrast, many other MLRA's are highly variable within the MLRA boundaries in terms of landform, elevation, climate and hydrology. These latter MLRA's pose a greater need to stratify the MLRA into utilitarian sub-units that are more ecologically similar in their species adaptation and potential for successful establishment.

There are 177 **Level IV Ecoregions** in California, and most continue into ecologically similar parts of adjacent States or Mexico. Explanations of the methods used to define these ecoregions, and complete definitions and descriptions of each ecoregion, are provided in the narrative accessed from the links to **Level III** and **Level IV** in the **HELP** page.

In addition to the narrative descriptions accessed from these links, a *color-coded Level IV Ecoregion map* with sub-unit designations and condensed descriptions can also be accessed at: https://www.epa.gov/eco-research/ecoregion-download-files-state-region-9#pane-04. This web site provides access to downloadable .docx and .pdf files, shape files, and metadata files that can be incorporated in planning or reference documents, as needed. Figure 3 depicts an example of the full California **Level IV Ecoregion** map.

Figure 3. Level IV Ecoregion map of California. Full-scale maps, posters, and narrative descriptions are available at: https://www.epa.gov/eco-research/ecoregion-download-files-state-region-9#pane-04.

4ETa Zones and Map

This aid provides a comprehensive listing, with associated definitions, rationale for use, and color-coded map, of all applicable **4ETa Zones** within California. Information includes a basic definition of a 4ETa Zones, along with a link that accesses more detailed definitions of individual MLRA's within California.
(http://soils.usda.gov/survey/geography/mlra/mlra_definitions.html).

These definitions and map aid are to be used in conjunction with the **PLANT or SEED MIX REPORT** module to 1) augment and further describe the **4ETa Zone** background layer within the **Map** sub-module; and 2) provide background information on use of **4ETa Zones** as an environmental filter or constraint to limit species and mixture selections to a specific **4Eta Zone** in which the planner's particular revegetation site is located. See Section 1.0, **PLANT OR SEED MIX REPORT** module, for more details on how this constraint is enabled, and how it affects species and mixture selection.

To access the 4ETa Zone map for California, click on the '**Map**' link from the **HELP** page.

Irrigation Requirement

This aid provides a listing, with associated definitions and rationale for species ratings, of the four **Irrigation Requirement** levels assigned to all species and mixtures within the **eVegGuide**. This rating can be used as a species management search constraint or filter in 1) the 'Search Criteria' sub-module of the **PLANT or SEED MIX REPORT** module; and 2) in the **PLANT-PRACTICE SEARCH** module under the **DATA** tab.

The use and assignment of an **Irrigation Requirement** rating in the **eVegGuide** is typically *specific to* the MLRA, Practice Purpose, and other circumstances and criteria identified in a Conservation Plan for a particular Conservation Practice. Irrigation Requirement ratings may vary within an MLRA for a given species, and may also vary within a Conservation Practice depending upon the nature of the revegetation application in relation to Practice Purpose.

Some conservation practices in the **eVegGuide** do not have an irrigation option because revegetation applications under these practices are typically dryland-oriented (non-irrigated). These latter practices include: 327, 340, 391, 393, 412, 550, 601, 603, and 612.

Seeding and Planting

This aid provides useful instructional materials and examples of computational aspects of developing seed mixtures, as follows:

1) Computing seeding rates for bulk and PLS seed amounts, including use of coated seed.
2) Calibrating row-type and broadcast-type seed drills.
3) Seeding goals and base rates of seeds per square foot used in the eVegGuide.
4) Use of inoculated seed for legume species.

Selected Salt Tolerance References

This aid provides an example of select species and their relative salt tolerances in terms of adaptation to soil solution electrical conductivity (EC, rated in units of dS m^{-1}). Salt tolerance levels are categorized as follows:

>12 dS m^{-1}	Very high salt tolerance
8-12 dS m^{-1}	High salt tolerance
4-8 dS m^{-1}	Moderate salt tolerance
<4 dS m^{-1}	Mild to no salt tolerance

These salt tolerance ranges are displayed in the Plant Record for all individual species using the **PLANT SEARCH** module.

This species list is not comprehensive or exhaustive, but rather is intended to provide examples of commonly used species by growth form (grasses, forbs, and shrubs only) and their relative salt tolerance levels. Literature references, from which these ratings were synthesized, are also provided, some of which will also supply data for salt tolerance of select trees (not included in this **HELP** page table).

Glossary

This aid provides a comprehensive glossary (terms and definitions) for all technical terms used in the eVegGuide. These terms and definitions apply to species searches, other database queries using the **SEARCH** modules, and interpretation of physical, management, and environmental constraints as used in the **PLANT or SEED MIX REPORT** module.

6.22 Plant Web Links

NRCS CA Plant Materials Center

This link accesses the NRCS Plant Materials Program web site home page, from which further information can be obtained about 1) any aspect of the national Plant Materials Program (e.g., research, literature, decision aids, species-specific plant guides and plant fact sheets, etc.); and 2) specific activities and capabilities of the Lockeford Plant Materials Center in California, as accessed through the nested link to individual PMC's.

Calflora Web Site

This link accesses the Calflora primary web site for plant searches within Calflora itself, plus additional links (left column) for plant observation submission or inquiry, and other plant search and plant information databases developed and hosted by Calflora (Figure 4). Note that this site provides ability to search for plants by common name, scientific name, and by plant family. Additionally, searches can be constrained to plants rated as invasive by Cal-IPC, plants rated as rare or sensitive by CNPS, and by inclusion in recognized plant community types across the state. This site provides a wealth of information to augment and expand upon the plant record data for species within the **eVegGuide**, particularly if native or naturalized to California. *The user is highly encouraged to investigate species further using this web site link as part of the NRCS revegetation planning process*.

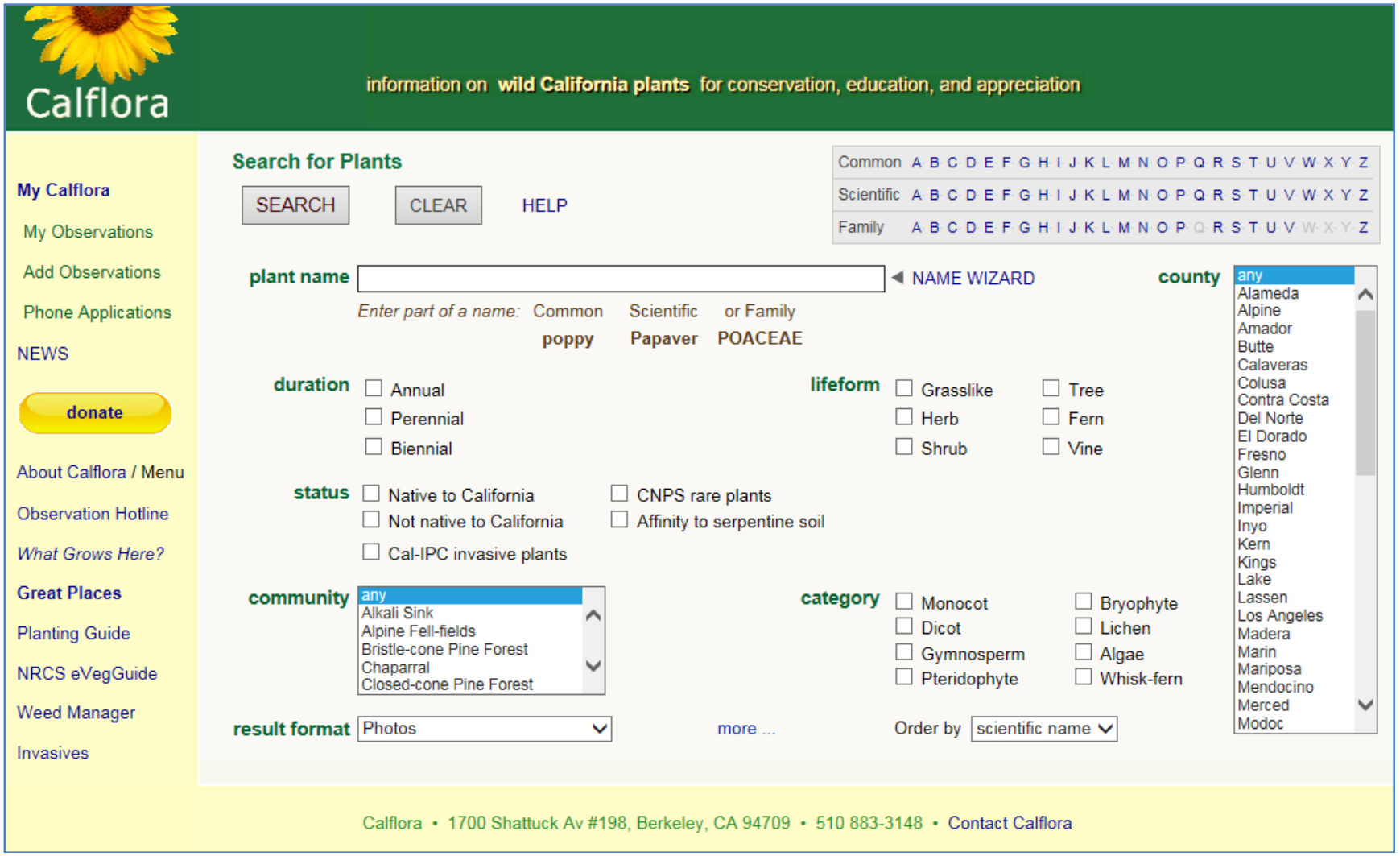


Figure 4. Home page for Calflora (http://www.calflora.org/), displaying the 'Search for Plants' module, and additional links (left column) that provide avenues for plant observation submission, plus other plant search and plant information databases developed and hosted by Calflora.

As an example of using Calflora's web site in this context, search for and select **purple needlegrass** (as a common name search under 'P') or ***Nassella pulchra*** (as a scientific name search under 'N') at the top of the 'Search for Plants' module. Results of this plant search are shown in Figure 5.

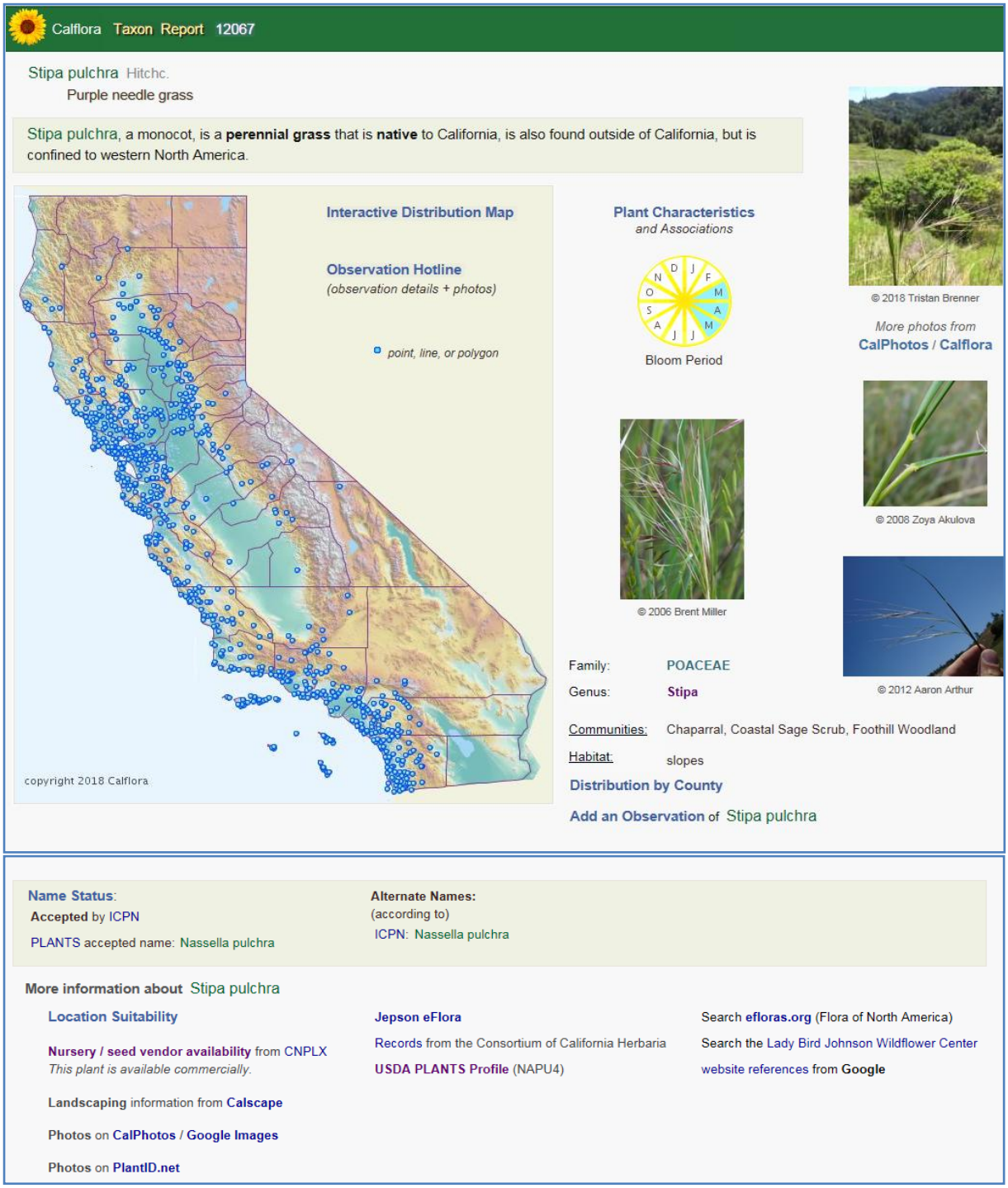


Figure 5. Display of results from a search in the Calflora database for purple needlegrass, *Nassella pulchra*.

Many biological, ecological, and commercial characteristics of this species (or any species you may select) are described or linked, including:

- Calflora taxon report number (which equates to Calflora ID number in the eVegGuide).
- Distribution map of species observations across the state.
- Plant characteristics and associations (including ratings for invasiveness, rareness, plant pest host, and benefit to pollinators and insects).
- Peak bloom period.
- Accepted taxonomy and nomenclature from Jepson and USDA PLANTS database.
- Associated plant communities and habitat.
- Characteristic photos from CalPhotos, Google images, and PlantID.net.
- County distribution.
- Location suitability ratings.
- Landscaping use recommendations from Calscape.
- Nursery and seed vendor availability.

Map Background Layers Help

This important aid provides comprehensive definitions and descriptions, narratively and with color-coded graphics, of all **'Background Layers'** accessible in the '**Map**' sub-module of the **PLANT or SEED MIX REPORT** module of the **eVegGuide**. This latter sub-module provides color-coding and general headings only for the various background layers that are available. In contrast, this **HELP** page aid provides much more detail and comprehensive information on how these background layers are developed, what they represent, and how they should be interpreted relative to the revegetation planning process – including links to further reference sources and other supporting documentation. Color-coded keys displayed in this **HELP** page aid correspond to the color-coding displayed in the **Map**' sub-module of the **PLANT or SEED MIX REPORT** module.

One example excerpt of such additional information is shown in Figure 6 for 1) July high temperature; 2) December low temperature; and 3) accumulated temperature. Tabular, narrative and graphic information such as this provides condensed displays of color-coding, coding descriptions, and each color's corresponding numerical value or range that are so co-located in the '**Map**' sub-module.

See Section 1.0, **PLANT OR SEED MIX REPORT** module, for more details on how to read, interpret and apply the background layers on the 'Map' sub-module to the revegetation planning process.

Plant Characteristics Help

This aid amplifies and helps interpret data for Plant Characteristics and Associations, and Location Suitability data elements found in 1) the site suitability (tolerance) ratings for species relative to soils and climate that are generated for a specified revegetation site in the '**Map**' sub-module of the **PLANT OR SEED MIX REPORT** module; and 2) a plant search using the Calflora '**Search for Plants**' module. This link and **HELP** aid also provides discreet species examples of how to identify flags generated by the **eVegGuide** when species' tolerance ratings do not correspond to the soil and climate characteristics of the selected revegetation site.

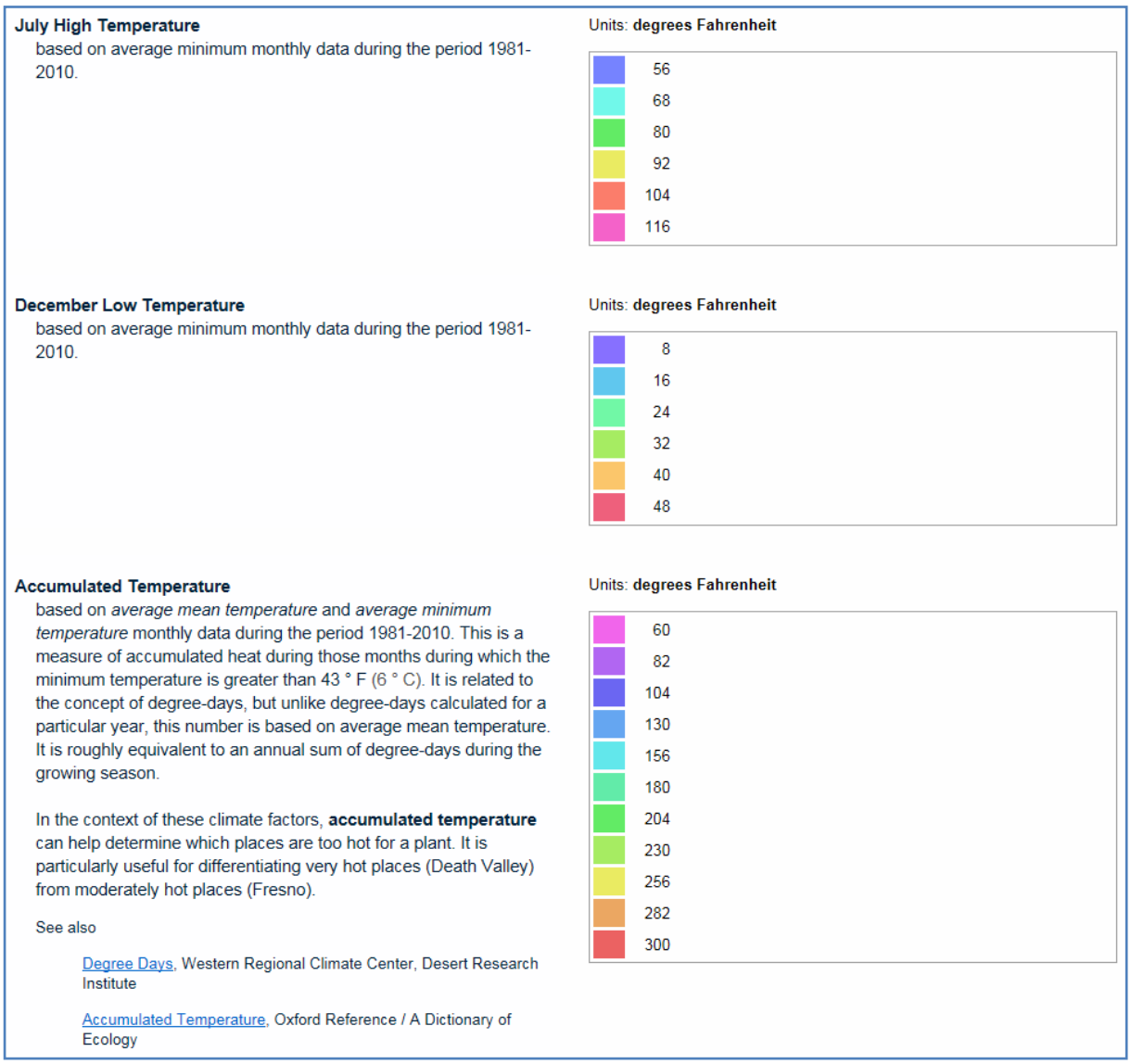


Figure 6. Example excerpts of condensed HELP page displays of color-coding, coding descriptions, and each color's corresponding numerical value or range, used as an aid in interpreting the background layers of the 'Map' sub-module of the PLANT OR SEED MIX REPORT module.

See Section 1.0, **PLANT OR SEED MIX REPORT** module, for more details on the display of species' tolerances relative to a revegetation site's soils and climate constraints.

Planting Guide and Advanced Search for Plants

These two links access database query programs *developed and hosted by Calflora* to assist a user – particularly users other than NRCS technical staff (i.e., primarily public access and use – in more advanced searches and site suitability assessment for species use in revegetation applications across the state. These can still be used to augment and support the findings and recommendations for species and mixture use in the **eVegGuide**, where applicable and utilitarian for NRCS use. Note that the **Planting Guide** is somewhat more

general and restricted in search categories than the **eVegGuide**, whereas the **Advanced Search for Plants** is very similar in detail and comprehensiveness to the **eVegGuide**. The latter offers most of the same data elements as the **eVegGuide** that can be used in plant searches, but in a different query presentation format. Of further importance is that these two links are more oriented toward multiple-purpose revegetation applications, to include many management-intensive landscaping measures incorporating use of ornamentals and trees.

*The **eVegGuide** differs significantly from these two Calflora programs in that it is designed to specifically address species selection and mixture formulation in relationship to 1) NRCS conservation practice selection and application; 2) primarily agricultural (i.e., non-landscaping) history, site settings and follow-up management; 3) often non-irrigated applications, either during establishment or subsequent maintenance; and 4) commercial availability of seed and plant source materials for these primarily agricultural applications.*

USDA PLANTS Web Site

This link provides access directly to the **USDA PLANTS database** home page, from which plant searches can be conducted that access this database's wealth of USDA-based information on any plant within the **eVegGuide**. The **Plant Codes** found in each Plant Record in the eVegGuide are linked directly to the same **Plant Symbols** in the **PLANTS database**.

Of key importance within the **PLANTS database** is access to 1) NRCS *Plant Guides and Plant Fact Sheets* that have been developed for hundreds of species with which NRCS staff routinely work in revegetation applications. These publications provide "state-of-the-science" information and revegetation use recommendations pertaining to seeding or planting techniques; varieties or cultivars available; origin of developed materials; plant identification aids; seed or plant propagation protocols; and field seeding or planting rates – among many other technical data.

Additionally, the **PLANTS database** provides *Characteristics tables* for many species, which provide a comprehensive description of species tolerances, soil and climate adaptation, growth and seed production characteristics, etc.

Again using ***Nassella pulchra*** as the example species, a search within the **PLANTS database** reveals the summary results window for this species (Figure 7), from which links can be accessed to the species' *Plant Guide* (Figure 8) and the species' *Characteristics* table (Figure 9).

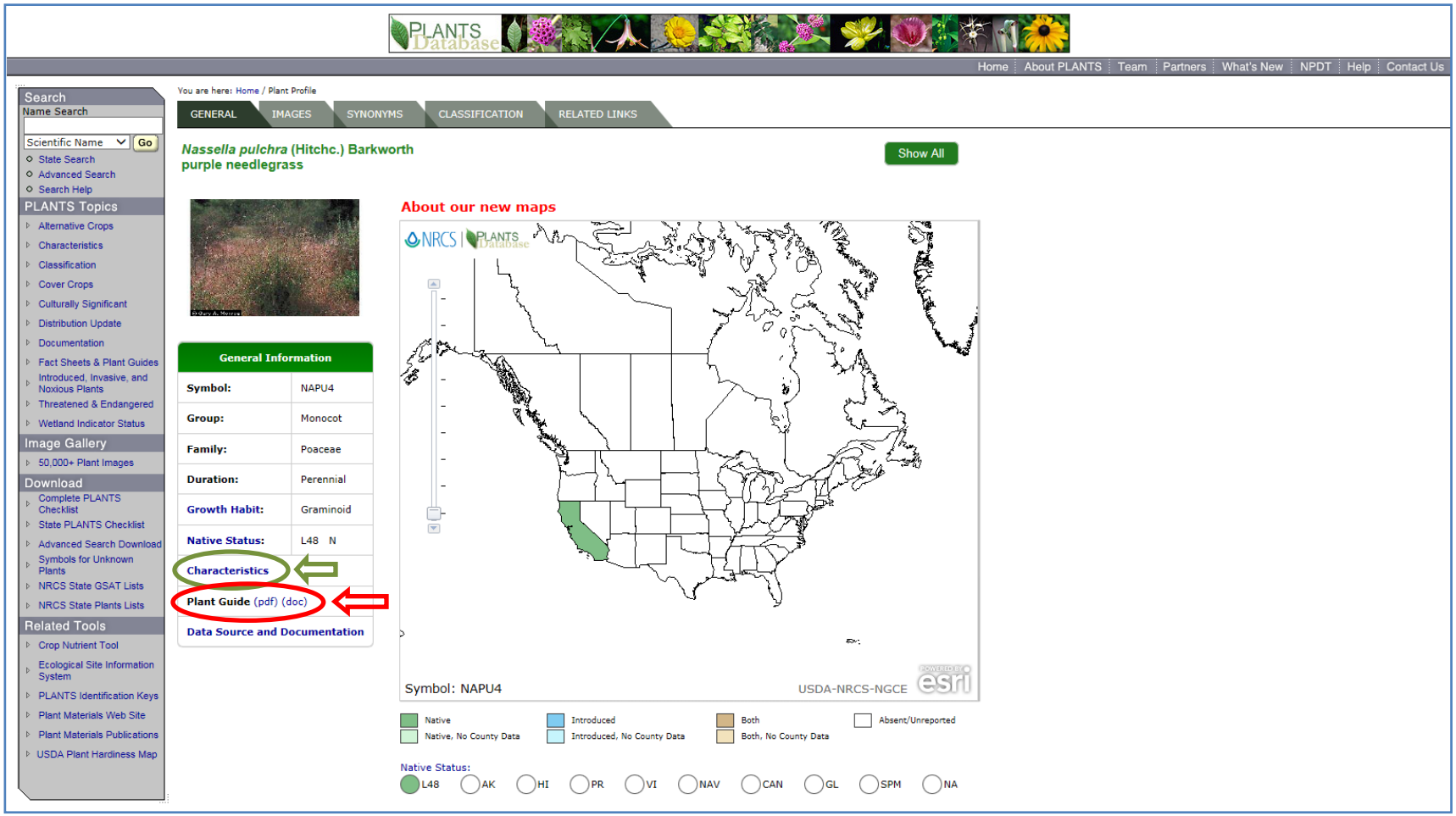


Figure 7. Summary results window for a plant search in the USDA PLANTS database for *Nassella pulchra*. Note the links to the species' Characteristics table and its Plant Guide (.pdf or .doc versions).

USDA NRCS
United States Department of Agriculture
Natural Resources Conservation Service

Plant Guide

PURPLE NEEDLEGRASS

Nassella pulchra (Hitchc.) Barkworth

Plant Symbol = NAPU4

Contributed by: USDA NRCS California State Office and Lockeford Plant Materials Center, California

Purple needlegrass. Photo by Lynn Watson.

Alternate Names
Purple stipa, purple tussockgrass

Uses

Restoration
Purple needlegrass, the state grass of California, is appropriate for restoration and range improvement throughout much of California's Central Valley and foothills. The species is highly valued as an erosion control grass due to its longevity, tolerance to poor soil conditions and its ability to establish a coarse root system on disturbed sites with low soil fertility. The species is known for establishing easily on disturbed soils, roadsides and gopher mounds. It has been successfully used in re-establishing native perennial grasses following weed control on sites previously occupied by introduced annual species.

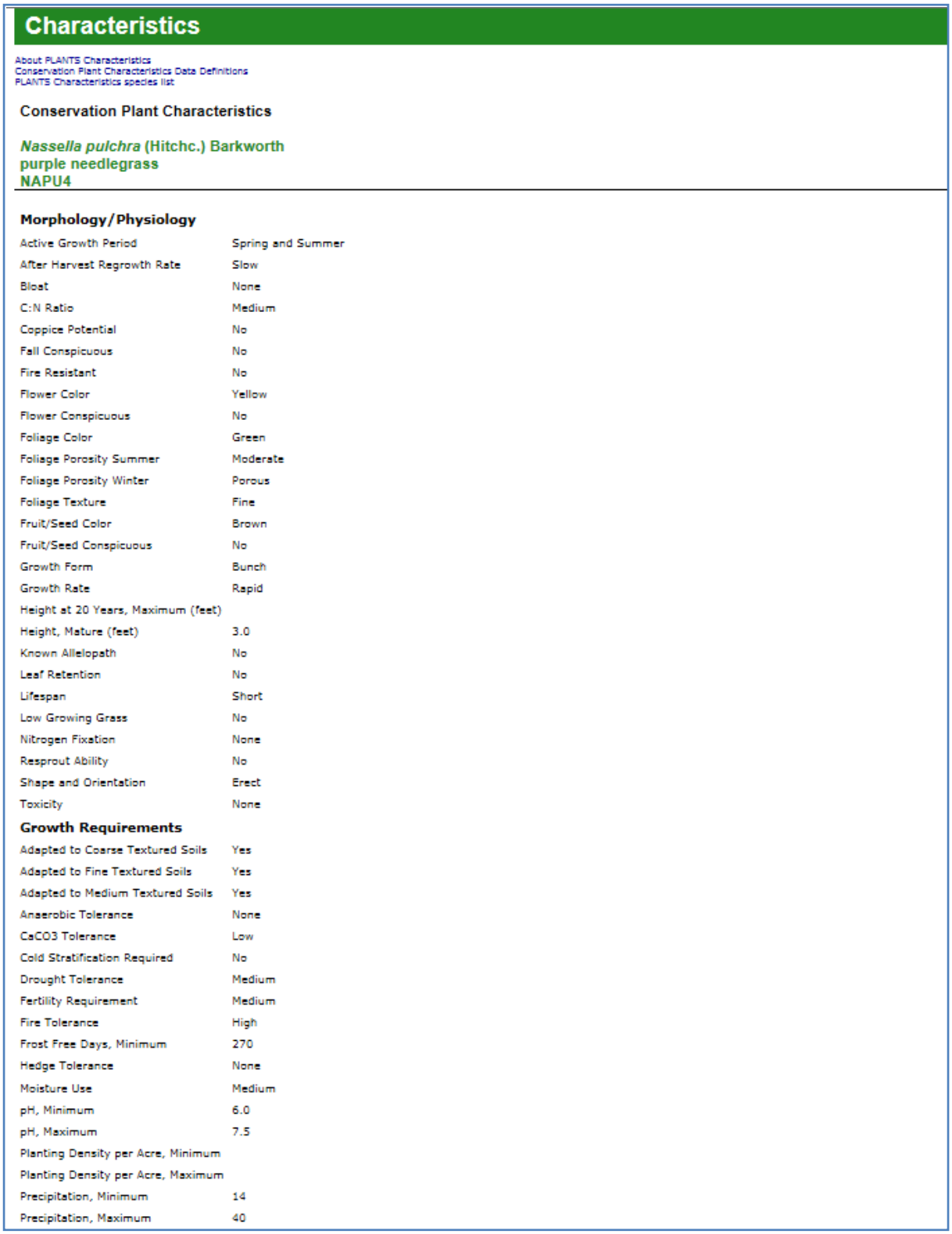
Wildlife/livestock
Purple needlegrass is a valuable forage species which provides food for deer, elk and other wildlife. It can be an important source of food for livestock, having moderate protein values and high palatability (USDA 2009). The leaves green up early in the season and provide good quality early forage for grazing animals. Unfortunately, but the sharp-tipped seeds and awns can become injurious as they dry later in the season. However, shatter is complete within a month of maturity and difficulties can be avoided through pasture management. This species is generally not that important as a livestock forage as it fails to make up a significant portion of the forage base over most of its range, and because under rangeland conditions livestock tend to avoid it later in the season. The fact that livestock do not prefer the species over others is part of reason why it persists in such abundance when compared to other natives of greater palatability for livestock.

Low water use lawn and landscaping
Purple needlegrass is an excellent native grass for use in low water landscaping. The species has also been used in native grass lawns, but its bunching habit prevents it from forming a uniform sod. Animals such as dogs have been known to get the seed lodged in their fur. The awns then break off leaving the small, sharp seed which can burrow under the skin. These problems can be avoided by mowing the seed prior to maturity. Lawns should be mowed to no lower than 4 inches (10 cm).

Status
Consult the PLANTS Web site and your State Department of Natural Resources for this plant's current status (e.g. threatened or endangered species, state noxious status, and wetland indicator values).

Description
General: Grass Family (*Poaceae*). Purple needlegrass is a densely tufted, long-lived, upright perennial bunchgrass with conspicuously long awns. It has numerous basal leaves and a distinct nodding habit at anthesis. Plants are generally 2 to 3 feet tall (0.6 to 0.9 m) producing an open, nodding panicle of 4 to 8 inches (10 to 20 cm). The leaf blades are smooth to finely hairy. Basal blades are long, flat and 0.03 to 0.2 inches (0.8 to 3.5 mm) wide. The seeds (florets) range from 0.3 to 0.4 inches (7.5 to 11.5 mm) long with a hairy lemma and a twice-bent awn reaching 1.5 to 4 inches (38 to 100 mm) in length (Hickman 1993). There are typically between 115,000 and 150,000 seeds/lb in a well processed seed lot. Unprocessed seed with the awns still attached can have as few as 50,000 seeds/lb.

Figure 8. First-page excerpt from the USDA-NRCS *Plant Guide* for *Nassella pulchra*, purple needlegrass, as accessed from the summary results window for this species in the PLANTS database.



Characteristics

About PLANTS Characteristics
Conservation Plant Characteristics Data Definitions
PLANTS Characteristics species list

Conservation Plant Characteristics

Nassella pulchra **(Hitchc.) Barkworth**
purple needlegrass
NAPU4

Morphology/Physiology

Active Growth Period	Spring and Summer
After Harvest Regrowth Rate	Slow
Bloat	None
C:N Ratio	Medium
Coppice Potential	No
Fall Conspicuous	No
Fire Resistant	No
Flower Color	Yellow
Flower Conspicuous	No
Foliage Color	Green
Foliage Porosity Summer	Moderate
Foliage Porosity Winter	Porous
Foliage Texture	Fine
Fruit/Seed Color	Brown
Fruit/Seed Conspicuous	No
Growth Form	Bunch
Growth Rate	Rapid
Height at 20 Years, Maximum (feet)	
Height, Mature (feet)	3.0
Known Allelopath	No
Leaf Retention	No
Lifespan	Short
Low Growing Grass	No
Nitrogen Fixation	None
Resprout Ability	No
Shape and Orientation	Erect
Toxicity	None

Growth Requirements

Adapted to Coarse Textured Soils	Yes
Adapted to Fine Textured Soils	Yes
Adapted to Medium Textured Soils	Yes
Anaerobic Tolerance	None
CaCO3 Tolerance	Low
Cold Stratification Required	No
Drought Tolerance	Medium
Fertility Requirement	Medium
Fire Tolerance	High
Frost Free Days, Minimum	270
Hedge Tolerance	None
Moisture Use	Medium
pH, Minimum	6.0
pH, Maximum	7.5
Planting Density per Acre, Minimum	
Planting Density per Acre, Maximum	
Precipitation, Minimum	14
Precipitation, Maximum	40

Figure 9. First-page excerpt from the PLANTS database *Characteristics* table for *Nassella pulchra*, purple needlegrass, as accessed from the summary results window for this species in the PLANTS database.