Using NRCS's PLANTS Database in Conservation Planning

Using NRCS's PLANTS Database in Conservation Planning

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Background

National Plant Data Team

Kat Anderson (Ethnoecologist), Davis, California

Mark Garland (Botanist), ENTSC, Greensboro, North Carolina

Doug Goldman (Botanist), ENTSC, Greensboro, North Carolina

Gerry Moore (Leader), ENTSC, Greensboro, North Carolina

National Plant Data Team

Kat Anderson

Mark Garland

Doug Goldman

Gerry Moore

PLANTS Database - History

1960. Agency began maintaining a standardized plant list.

1971. National List of Scientific Plant Names (NLSPN) published.

1982. NRCS (in cooperation with the Smithsonian Institution) published revised NLSPN.

1990. NRCS initiated a continuation and expansion of the NLSPN in the form of the PLANTS database.

1994. PLANTS website established (plants.usda.gov).

Late 1980s-2005. Data provided by Biota of North America Program (Dr. John Kartesz, Director).

2005-present. Data provided through numerous sources, many datasets obtained through agreements.

PLANTS Database – Mission

- PLANTS assists with the integration of natural resource information throughout NRCS and across other government agencies, disciplines, and applications.
- See General Manual Title 190 Part 401 for more information (http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=39083.wba)

PLANTS Database - Coverage

Vascular plants (gymnosperms, flowering plants): 28,236 species

Nonvascular plants (mosses, liverworts, hornworts): 1,933 species

Lichens: 3,983 species

TOTAL: 34, 152 species

PLANTS Floristic Areas: U.S.: Lower 48 States, Alaska, Hawaii, Pacific Basin, Puerto Rico, U.S. Virgin Islands, Navassa; Canada; Greenland; Saint Pierre and Miquelon (France)

PLANTS – Data Provided

Scientific names (accepted names, synonyms)
Common names
Symbols
Taxonomy
Distribution
Nativity
***Ethnoecology**
***Legal status (e.g., wetland, E&T, invasive, noxious)**
***Characteristics**
***Cover crops**
***Crop Nutrients**
***Interactive Keys**

PLANTS – Databases not yet online

Phytoremediation

Pollinators

Photosynthetic pathways (C3, C4)

PLANTS Database – Searching

Basic Search

State Search

Advanced Search

Web Services

Using the PLANTS website

Ethnoecology

NRCS General Manual

Part 405 - American Indians and Alaska Natives

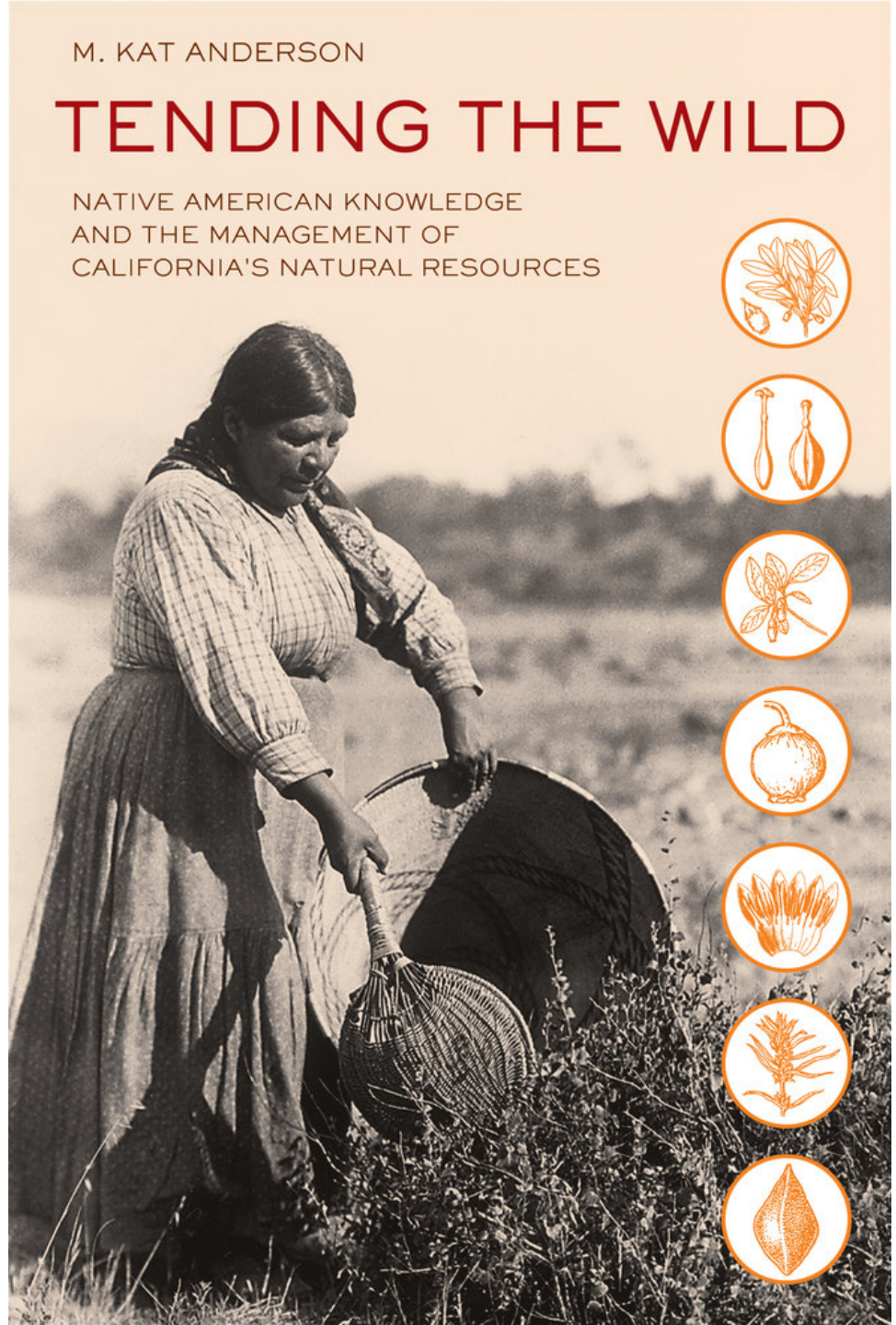
NRCS recognizes and commits to a Government-to-Government relationship with Indian Tribes. NRCS, as a Federal agency, acknowledges the trust responsibility relationship between the Federal Government and Indian Tribes as established by specific statutes, treaties, court decisions, Executive orders, regulations, and policies.

Ethnoecology

M. KAT ANDERSON

TENDING THE WILD

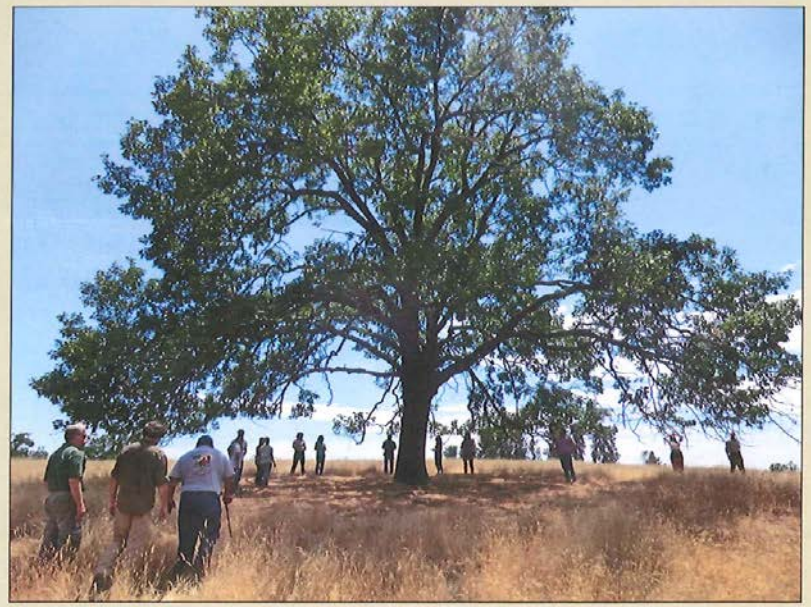
NATIVE AMERICAN KNOWLEDGE AND THE MANAGEMENT OF CALIFORNIA'S NATURAL RESOURCES



USDA
United States Department of Agriculture

Restoring California Black Oak Ecosystems to Promote Tribal Values and Wildlife

Jonathan W. Long, M. Kat Anderson, Lenya Quinn-Davidson, Ron W. Goode, Frank K. Lake, and Carl N. Skinner



Forest Service | Pacific Southwest Research Station | General Technical Report PSW-GTR-252 | February 2016

You are here: Home/

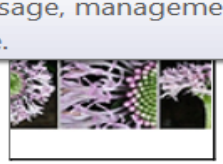
The PLANTS Database provides standardized information about the vascular plants, mosses, liverworts, hornworts, and lichens of the U.S. and its territories.

Plant of the Week

diphyscium moss
Diphyscium foliosum (Hedw.) D. Mohr

Click on the photo for a full plant profile.

Spotlights



images
PLANTS now presents images in a "slide show", enabling PLANTS users to scroll through photos and line art, providing a faster and easier way to review images.

PLANTS has new maps
Plants is trying out a new, more modern mapping system. Our new system allows users to scroll side to side and zoom in and out. At higher scale zoom levels users can see county-level data.

2014 National Wetland Plant List
The wetland indicator status ratings from the 2014 National Wetland Plant List (NWPL) are now on our species profile pages and are fully

Search
Name Search
Scientific Name Go
State Search
Advanced Search
Search Help

PLANTS Topics
Alternative Crops
Characteristics
Classification
Cover Crops
Culturally Significant
Distribution Update
Documentation
Fact Sheets & Plant
Introduced, Invasive, and Noxious Plants
Threatened & Endangered
Wetland Indicator Status

Image Gallery
50,000+ Plant Images

Download
Complete PLANTS Checklist
State PLANTS Checklist
Advanced Search
Download

Information about culturally significant plants, including usage, management, and cultural importance.

I Want To...
See a list of the plants in my state
Learn about the wetland plants in my region
Learn about all the endangered plants of the U.S.
Learn about noxious and invasive plants
Search for and view images of plants
Read and print abstracts about important conservation plants
Download data or posters
Contribute plant distribution information to PLANTS
Get ecological descriptions of sites from around the country
View the USDA Plant Hardiness Zone Map

I Want Help
Introduction to PLANTS
Frequently Asked Questions
Citing the PLANTS Database

USDA NRCS
United States Department of Agriculture
Natural Resources Conservation Service

Plant Guide

MOUNTAIN STRAWBERRY

Fragaria virginiana Duchesne

Plant Symbol = FRVI

Contributed By: USDA NRCS National Plant Data Center

thin and basal with a petiole generally 1-12 cm. They appear in leaflets of 3 and are generally glabrous above. The flowers have 5 white petals that are 4-9 mm. with numerous pistils and 20-35 stamens. The five bractlets are unlobed. The red fleshy fruit is covered with achenes.

Distribution

For current distribution, please consult the Plant Profile page for this species on the PLANTS Web site. This plant is found between 1200 and 3300 m in meadows and forest openings. It occurs in the Klamath Ranges, high Cascade Range, Modoc Plateau, Sierra Nevada, to eastern North America.

Establishment

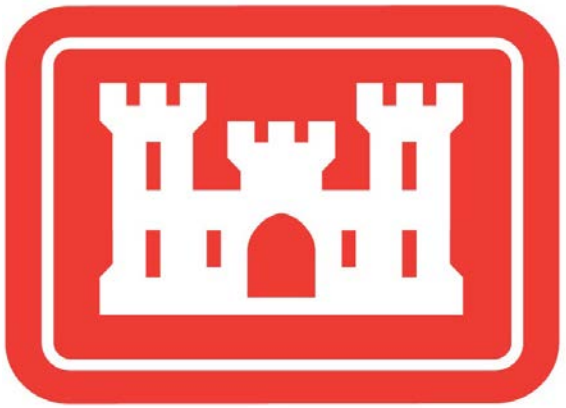
This strawberry is best established at higher elevations where a good frost occurs (over 600 m). Dig up plantlets or runners and plant them in pots in fall--being sure to cover the stems and roots in soil. Place the pots in a sheltered place to establish good,

wild strawberry (*Fragaria virginiana*)

Legal Status – National Wetland Plant List

streambank spider lily (*Hymenocallis rotata*)

Legal Status – National Wetland Plant List



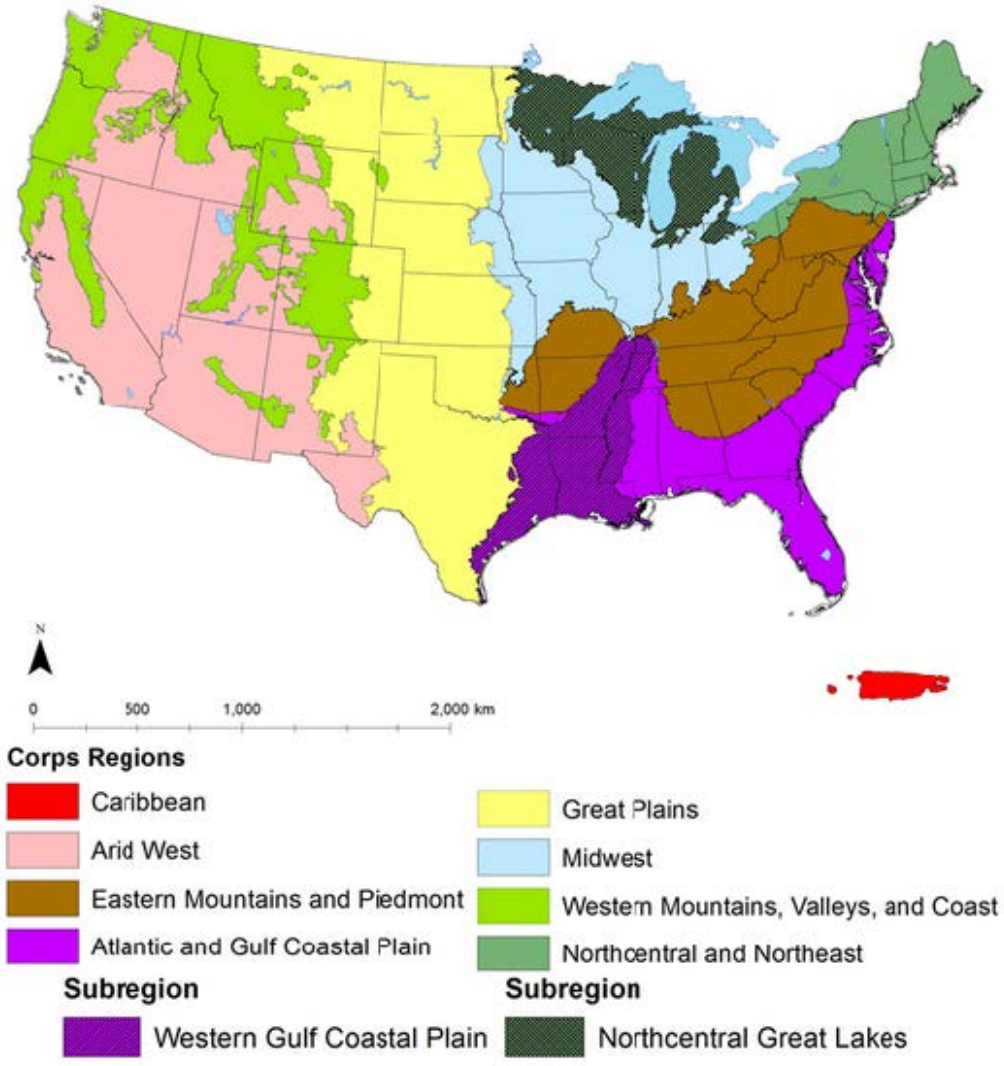
Legal Status -- National Wetland Plant List

- used nationwide in the determination of hydrophytic vegetation as specified by the Swampbuster Provisions of the Food Security Act and Section 404 of the Clean Water Act
- includes approximately 8000 plants known to occur in wetlands
- rates each species according to its frequency of occurrence in wetlands (indicator status)
- each species is rated independently in each of 10 geographic regions (some subregions) where it occurs

Legal Status -- National Wetland Plant List

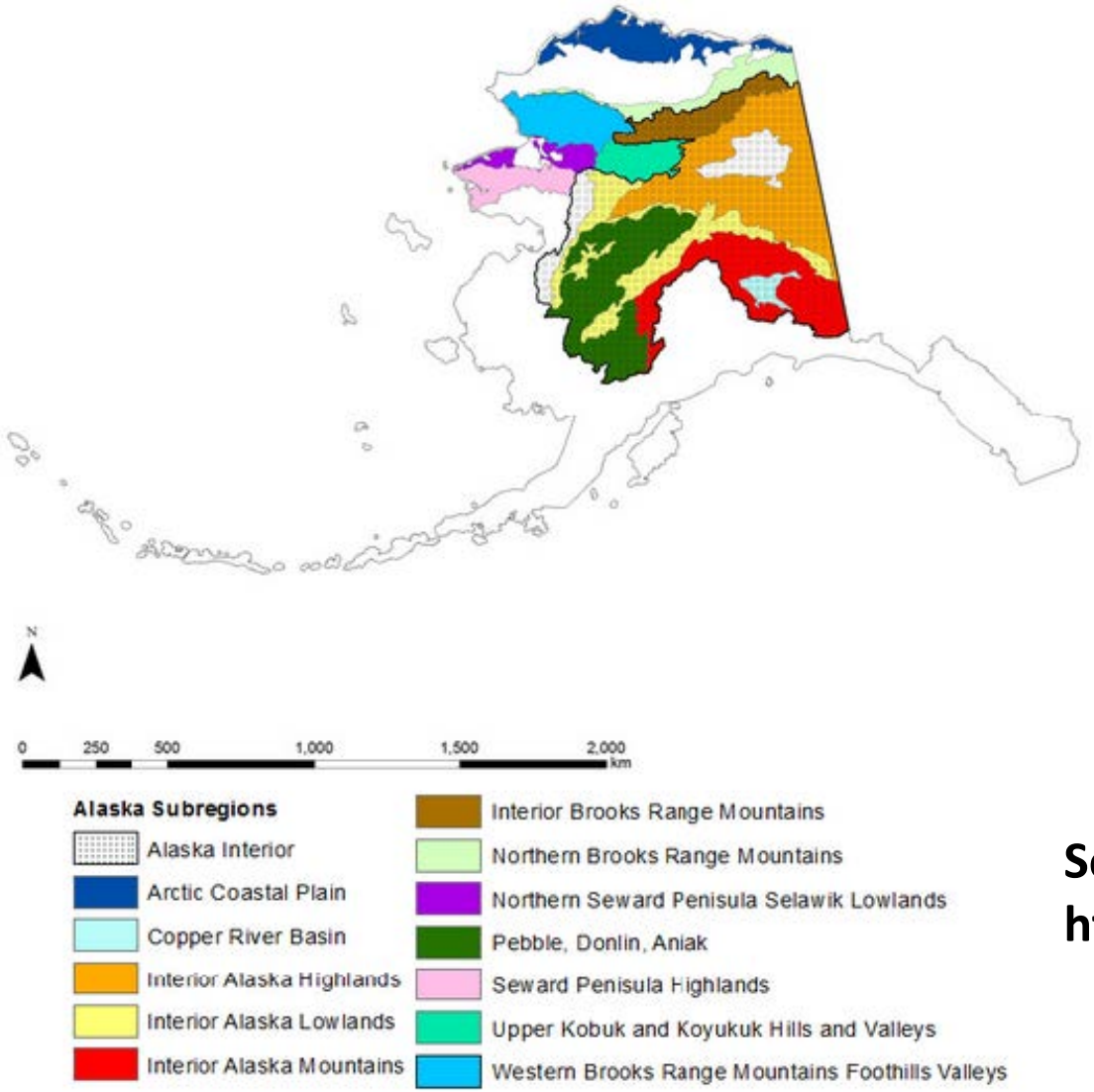
- **Obligate (OBL).** Occur almost always under natural conditions in wetlands.
- **Facultative Wetland (FACW).** Usually occur in wetlands but occasionally found in non-wetlands.
- **Facultative (FAC).** Equally likely to occur in wetlands and nonwetlands.
- **Facultative Upland (FACU).** Usually occur in non-wetlands but occasionally found in wetlands.
- **Upland (UPL).** Occur in wetlands in another region, but occur almost always under natural conditions in non-wetlands in the region specified.

Wetland regions – lower 48 states



Source: U.S. Army Corps of Engineers
http://rsgisias.crrel.usace.army.mil/NWPL/

Alaska region



Source: U.S. Army Corps of Engineers
http://rsgisias.crrel.usace.army.mil/NWPL/

Wetland Indicator Status

Sweet flag
(*Acorus americanus*)

OBL

Jack-in-the-pulpit
(*Arisaema triphyllum*)

FACW

fringetree
(*Chionanthus virginicus*)

FAC

cutleaf toothwort
(*Cardamine concatenata*)

FACU

Wetland Indicator Status

Uinta Basin hookless cactus
(*Sclerocactus wetlandicus*)

UPL

Source: Rebou at the German language Wikipedia https://commons.wikimedia.org/w/index.php?curid=3858418

Legal Status -- National Wetland Plant List

Wetland Indicator Status Search

Interpreting Wetland Indicator Status

Find National Wetland Plant List wetland indicator status for vascular plants using custom search criteria.

1. Enter Search Criteria:

Select by scientific name, symbol or common name:

Scientific Name

Select by Category:

All
Dicot
Fern
Gymnosperm

Select by Duration:

All
Annual
Biennial
Perennial

Select by Growth Habits:

All
Forb/herb
Graminoid
Shrub

Native Status:

Any Status
Native to PLANTS Floristic Area
- Native to North America
- Native to Hawaii

Select by State Distribution:

All
U.S. States
--Alabama
--Alaska

Select by Wetland Region:

All
Alaska
--Alaska Interior
--Arctic Coastal Plain

Select by Regional Wetland Indicator (Status):

All
FAC - Facultative
FACU - Facultative Upland
FACW - Facultative Wetland

2. View and Sort by:

(•) Scientific Name ( ) Common Name ( ) Symbol

3. Results per page:

Legal Status – Endangered and Threatened

Federally endangered or threatened plant and lichen species

Flowering plants: 862 species

Gymnosperms: 4 species

Ferns and fern allies: 31 species

Total vascular plants: 897 species

Lichens: 2 species

Legal Status – Endangered and Threatened

chaffseed
(*Schwalbea americana*)

sensitive joint-vetch
(*Aeschynomene virginica*)

Swamp pink
(*Helonias bullata*)

Florida perforate cladonia (*Cladonia perforata*)

Legal Status – Endangered and Threatened

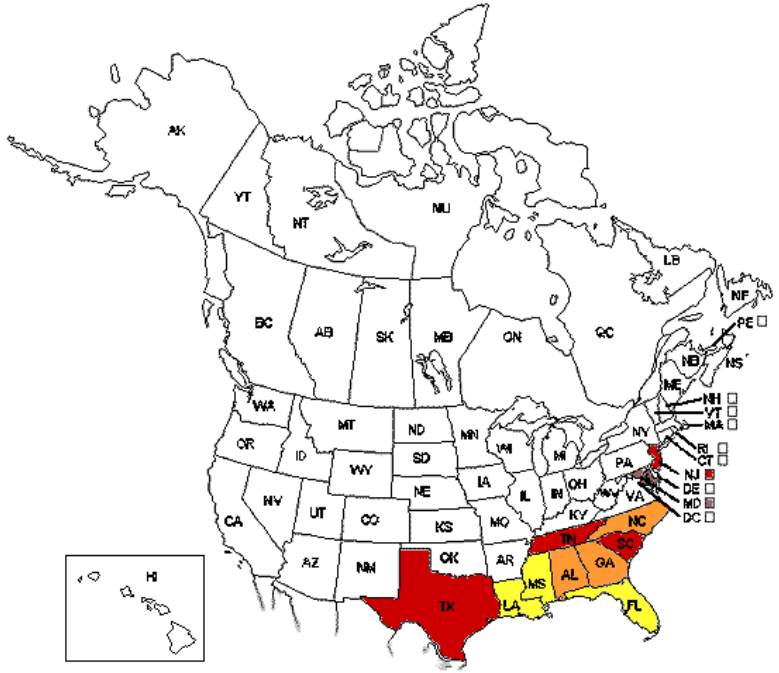
yellow fringeless orchid
(*Platanthera integra*)

pine barren gentian
(*Gentiana autumnalis*)

Legal Status – Endangered and Threatened

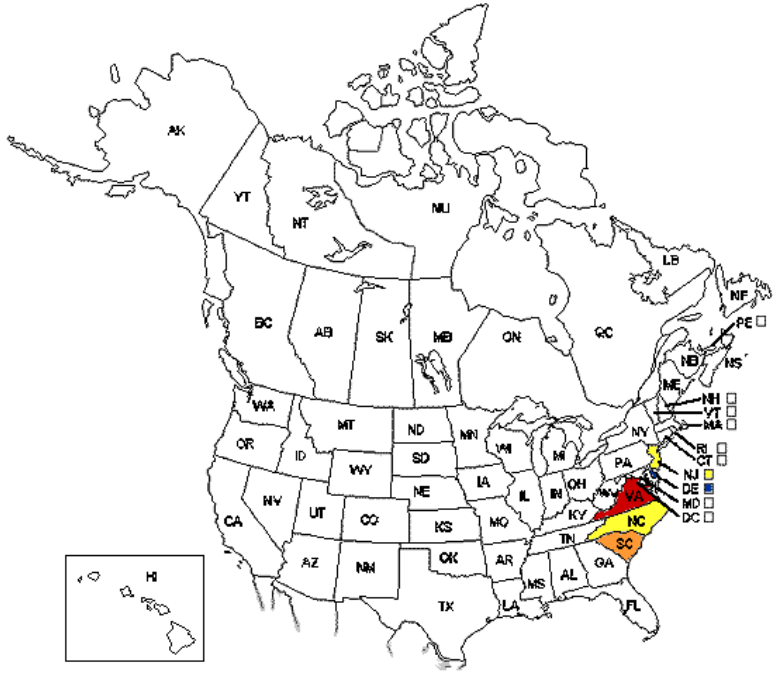
yellow fringeless orchid

(Platanthera integra)



pine barren gentian

(*Gentiana autumnalis)*



Source: NatureServe

http:// www.natureserve.org

Legal Status – Endangered and Threatened

1. **Current E&T species data in PLANTS are outdated.**
2. **New dataset has been prepared with updated information on federal list and all 50 states.**
3. **This will be posted as a file; look for it on the main page as a spotlight**.

Legal Status – Noxious and Invasive

About Weeds of the U.S. in PLANTS

- assists users to avoid potentially harmful plants when selecting species for conservation purposes
- from sources around the country to provide a comprehensive look at potential problem plants in the U.S.
- some plants may be suitable for one use and not another depending on the location and other circumstances
- plants on this list are weedy or invasive, or have the potential to become weedy or invasive, in all or part of their U.S. range
- some do not occur in the U.S., but occur on state or federal noxious weed lists to emphasize their potential to invade and degrade our landscapes.
- some are natives in parts of the country and serious pests in others

Source: http://plants.usda.gov/about_invasive.html

Legal Status – Noxious

“Any plant or plant product that can directly or indirectly injure or cause damage to crops (including nursery stock or plant products), livestock, poultry, or other interests of agriculture, irrigation, navigation, the natural resources of the United States, the public health, or the environment.”

Source: Plant Protection Act. Public law 106—224.

https://www.aphis.usda.gov/plant_health/plant_pest_info/weeds/downloads/PPAText.pdf

Legal Status – Noxious

Federal Noxious Weed List

Effective as of December 10, 2010

Aquatic

Latin Name	Author(s)	Common Name(s)
Azolla pinnata	R. Brown	Mosquito fern, water velvet
Caulerpa taxifolia (Mediterranean strain)	(Vahl) C. Agardh	Killer algae
Eichhornia azurea	(Swartz) Kunth	Anchored waterhyacinth, rooted waterhyacinth
Hydrilla verticillata	(L.) Royle	Hydrilla
Hygrophila polysperma	T. Anderson	Miramar weed
Ipomoea aquatica	Forsskal	Water-spinach, swamp morning glory
Lagarosiphon major	(Ridley) Moss	African elodea
Limnophila sessiliflora	(Vahl) Blume	Ambulia
Melaleuca quinquenervia	(Cavanilles) S.T. Blake	Broadleaf paper bark tree
Monochoria hastata	(Linnaeus) Solms-Laubach	Arrowleaf false pickerelweed

Source: Animal and Plant Health Inspection Service (APHIS) https://www.aphis.usda.gov/plant_health/plant_pest_info/weeds/downloads/weedlist.pdf

Legal Status – Noxious Weeds

Catclaw mimosa
(*Mimosa pigra*)

Legal Status – Invasive

sericea lespedeza
(*Lespedeza cuneata*)

Legal Status – Invasive

You are here: Home / Plant Profile

GENERAL | IMAGES | SYNONYMS | CLASSIFICATION | LEGAL STATUS | WETLAND | RELATED LINKS | WILDLIFE

***Lespedeza cuneata* (Dum. Cours.) G. Don**
sericea lespedeza

Show All

Noxious Weed Information

This plant is listed by the U.S. federal government or a state. Common names are from state and federal lists. Click on a place name to get a complete noxious weed list for that location, or click here for a composite list of all Federal and State Noxious Weeds.

Colorado sericea lespedeza	A list (noxious weeds)
Kansas sericea lespedeza	Noxious weed

U.S. Weed Information

Lespedeza cuneata
Chinese lespedeza
sericea lespedeza

This plant can be weedy or invasive according to the authoritative sources noted below.This plant may be known by one or more common names in different places, and some are listed above. Click on an acronym to view each weed list, or click here for a composite list of Weeds of the U.S.

STATE	Assorted authors. *State noxious weed lists for 46 states*. State agriculture or natural resource departments.
SEEPPC	Southeast Exotic Pest Plant Council. 1996. *Invasive exotic pest plants in Tennessee* (19 October 1999). Research Committee of the Tennessee Exotic Pest Plant Council. Tennessee.

Legal Status – Noxious and Invasive

1. **Current noxious and invasive species data in PLANTS are outdated**
2. **New dataset has been prepared with updated information on federal noxious weed list and all 50 states.**
3. **This will be posted as a file; look for it on the main page as a spotlight.**

Conservation Plant Characteristics

- about one hundred plant characteristics ranging from growth form and growth requirements to suitability for various uses
- compiled for over 2,000 species and an additional 500 cultivars from the scientific literature, gray literature, agency documents, and the knowledge of plant specialists
- assists land managers in the design of natural resource conservation plantings
- values are best viewed as approximations since they are primarily based on field observations and estimates from the literature, not precise measurements or experiments

Source: http://plants.usda.gov/about_characteristics.html

Conservation Plant Characteristics

trumpet honeysuckle
(*Lonicera sempervirens*)

Conservation Plant Characteristics

Characteristics

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

Conservation Plant Characteristics

***Lonicera sempervirens* L.**
trumpet honeysuckle
LOSE

Morphology/Physiology

Active Growth Period	Spring
After Harvest Regrowth Rate	
Bloat	None
C:N Ratio	High
Coppice Potential	No
Fall Conspicuous	No
Fire Resistant	No
Flower Color	Red
Flower Conspicuous	Yes
Foliage Color	Green
Foliage Porosity Summer	Dense
Foliage Porosity Winter	Dense
Foliage Texture	Medium
Fruit/Seed Color	Black
Fruit/Seed Conspicuous	Yes
Growth Form	Multiple Stem
Growth Rate	Rapid
Height at 20 Years, Maximum (feet)	16
Height, Mature (feet)	16.0
Known Allelopath	No
Leaf Retention	Yes

Wildlife Plant Characteristics

GENERAL | IMAGES | SYNONYMS | CLASSIFICATION | LEGAL STATUS | WETLAND | RELATED LINKS | WILDLIFE

Lonicera sempervirens L.
trumpet honeysuckle

Show All

Food

Source	Large Mammals	Small Mammals	Water Birds	Terrestrial Birds
Miller	Low	Low		Low

Cover

Source	Large Mammals	Small Mammals	Water Birds	Terrestrial Birds
Miller		Moderate		Moderate

Sources

Miller, J.H., and K.V. Miller. 1999. *Forest plants of the southeast and their wildlife uses.* Southern Weed Science Society.

Description of Values

Value Class	Food	Cover
High	Average 25-50% of diet	Regular source of cover
Low	5-10% of diet	Infrequently used as

Cover Crops

- grasses, legumes, and other forbs planted for erosion control; improving soil structure, moisture, and nutrient content; increasing beneficial soil biota; suppressing weeds; providing habitat for beneficial insects; facilitating crop pollinators; providing wildlife habitat; and forage for farm animals.
- can provide energy costs savings by adding nitrogen to the soil and making more soil nutrients available, thereby reducing the need to apply fertilizer.
- a list of 109 species used as cover crops in the PLANTS floristic area

Source: http://plants.usda.gov/about_cover_crops.html

Cover Crops

turnip
(*Brassica rapa* subsp. *rapa*)

Cover Crops

corn
(*Zea mays*)

Crop Nutrient Tool -- Background

The objectives of a complete system approach to waste management are to design a system that

- recycles nutrients in quantities that benefit plants
- builds levels of soil organic matter
- limits nutrient or harmful contaminant movement to surface and ground water
- does not contaminate food crops with pathogens or toxic concentrations of metals or organics
- provides a method in the soil environment to fix or transform nonessential elements and compounds into harmless forms

Crop Nutrient Tool – Background

Nutrient transformation

1. Absorbed by the roots and assimilated by the plant
2. Degraded by soil micro-organisms and become a part of the soil organic component, or broken down further
3. Fixed to soil minerals or attached to soil exchange sites
4. Solubilized and moved with runoff water
5. Moved with eroded mineral or organic material
6. Leached downward through the soil toward the ground water
7. Escaped from plant tissue into the atmosphere

4—7: Nutrient escape mechanisms

Crop Nutrient Tool -- Overview

- provides estimates of nutrient removal by crops at various levels
- nutrient percentages utilized in this tool reflect national averages
- estimates are used to calculate nutrient balance sheets, which can be employed in the design of animal waste management systems
- automates and augments the information that is currently in Chapter 6 (Role of Plants in Waste Management) of the NRCS Agricultural Waste Management Field Handbook
- nutrient values contained in the database supporting this tool have been compiled by the Natural Resources Conservation Service from various sources.
- values represent estimates of the nutrient content in harvested plant biomass for many different crops

Chapter 6: http://www.wcc.nrcs.usda.gov/ftpref/wntsc/AWM/handbook/ch6.pdf

Crop Nutrient Tool -- Sources

106 Sources, 1948—2000

- **12 Sources for Dry Matter-Moisture, 1959-2000**
- **32 Sources for Nitrogen, 1948-2000**
- **23 Sources for Phosphorus, 1948-2000**
- **21 Sources for Potassium, 1948-2000**
- **14 Sources for Yield Unit, 1985-1999**

Source: http://plants.usda.gov/npk/NutrientSources

alfalfa (*Medicago sativa*)

Nutrient Content of Crops

Select Crops
About the Crop Nutrient Tool
Nutrient Data Sources
Download Crop Nutrient Database

A tool for calculating the approximate amount of nitrogen, phosphorus, and potassium that is removed by the harvest of agricultural crops.

Step 1

Select the crop type(s) in which you are interested. At least one selection must be made:

- [ ] Cereal and Oil Crops
- [ ] Forage Crops
- [ ] Fiber and Miscellaneous Crops
- [ ] Tree and Fruit Crops
- [ ] Vegetable Crops

OR...

Enter the full or partial name of a crop (i.e. 'corn'). All crops from any crop type will be displayed on the following page.
The search will be performed so that any crop name containing the string entered will be retrieved.

Click the button below to view a list of crops associated with the crop type(s) selected above.

View Crop List | Reset Selections

Step 2

At least one crop below must be checked. The % Moisture value may be changed if desired. The # of Yield Units/Acres value must be entered for every crop checked. For information about container net weights for fruit and vegetable crops see the Fruit and Vegetable Market News Users Guide of the Agricultural Marketing Service. Then click the button below to view the calculated nutrients removed for the crops selected.

Calculate Nutrients Removed

Select Row	Crop Common Name	Scientific Name	Nutrient Information Available	Acres (Optional)	Yield Per Acre (Required)	Yield Unit	Lbs. Per Yield Unit	%Moisture (editable)
☐	Alfalfa + Orchardgrass, for hay	*Medicago sativa, Dactylis glomerata*	N,P			ton	2000	9.70 %
☐	Alfalfa + Orchardgrass, for hay (cut 1)	*Medicago sativa, Dactylis glomerata*	N,P,K			ton	2000	7.95 %
☐	Alfalfa + Smooth Brome, for green chop	*Medicago sativa, Bromus inermis*	N,P,K			ton	2000	77.63 %
☐	Alfalfa + Smooth Brome, for hay	*Medicago sativa, Bromus inermis*	N,P,K			ton	2000	11.58 %
☐	Alfalfa + Smooth Brome, for hay (cut 1)	*Medicago sativa, Bromus inermis*	N,P,K			ton	2000	10.10 %
☐	Alfalfa + Smooth Brome, for hay (cut 2)	*Medicago sativa, Bromus inermis*	N,P			ton	2000	10.20 %
☐	Alfalfa + Timothy, for green chop (50% alfalfa)	*Medicago sativa, Phleum pratense*	N,P,K			ton	2000	78.08 %
☐	Alfalfa + Timothy, for hay	*Medicago sativa, Phleum pratense*	N,P,K			ton	2000	10.37 %
☐	Alfalfa + Timothy, for hay (cut 1)	*Medicago sativa, Phleum pratense*	N,P			ton	2000	9.80 %
☐	Alfalfa + Timothy, for hay (cut 2)	*Medicago sativa, Phleum pratense*	N,P			ton	2000	9.00 %
☑	Alfalfa, for green chop	*Medicago sativa*	N,P,K		2.4	ton	2000	76.50 %
☐	Alfalfa, for green chop (early bloom)	*Medicago sativa*	N,P,K			ton	2000	76.18 %
☐	Alfalfa, for green chop (early bloom, cut 1)	*Medicago sativa*	N,P,K			ton	2000	76.10 %

Crop Nutrient Results

Select Crops
About the Crop Nutrient Tool
Nutrient Data Sources
Download Crop Nutrient Database

Nutrient Details

The following is a detailed list of nutrient information based on each specific crop type chosen.

Alfalfa, for green chop

Crop type:	Forage
Scientific name:	Medicago sativa
Crop yield unit:	ton
Harvested plant part:	Aboveground biomass

Nutrients in harvested part (lb/ton) at 76.5% moisture percentage.

Nitrogen	Phosphorus	Potassium
15.0691	1.3112	12.2578

Nutrients removed in harvested part (lb/acre) at 2.4 ton yield level.

Nitrogen	Phosphorus	Potassium
36.1659	3.1468	29.4186

Element-Fertilizer Equivalents | Average NPK Percentages

Calculate Nutrients Removed

Select Row	Crop Common Name	Scientific Name	Nutrient Information Available	Acres (Optional)	Yield Per Acre (Required)	Yield Unit	Lbs. Per Yield Unit	%Moisture (editable)
☐	Alfalfa + Orchardgrass, for hay	*Medicago sativa, Dactylis glomerata*	N,P			ton	2000	9.70 %
☐	Alfalfa + Orchardgrass, for hay (cut 1)	*Medicago sativa, Dactylis glomerata*	N,P,K			ton	2000	7.95 %
☐	Alfalfa + Smooth Brome, for green chop	*Medicago sativa, Bromus inermis*	N,P,K			ton	2000	77.63 %
☐	Alfalfa + Smooth Brome, for hay	*Medicago sativa, Bromus inermis*	N,P,K			ton	2000	11.58 %
☐	Alfalfa + Smooth Brome, for hay (cut 1)	*Medicago sativa, Bromus inermis*	N,P,K			ton	2000	10.10 %
☐	Alfalfa + Smooth Brome, for hay (cut 2)	*Medicago sativa, Bromus inermis*	N,P			ton	2000	10.20 %
☐	Alfalfa + Timothy, for green chop (50% alfalfa)	*Medicago sativa, Phleum pratense*	N,P,K			ton	2000	78.08 %
☐	Alfalfa + Timothy, for hay	*Medicago sativa, Phleum pratense*	N,P,K			ton	2000	10.37 %
☐	Alfalfa + Timothy, for hay (cut 1)	*Medicago sativa, Phleum pratense*	N,P			ton	2000	9.80 %
☐	Alfalfa + Timothy, for hay (cut 2)	*Medicago sativa, Phleum pratense*	N,P			ton	2000	9.00 %
☑	Alfalfa, for green chop	*Medicago sativa*	N,P,K		2.4	ton	2000	53.50 %
☐	Alfalfa, for green chop (early bloom)	*Medicago sativa*	N,P,K			ton	2000	76.18 %
☐	Alfalfa, for green chop (early bloom, cut 1)	*Medicago sativa*	N,P,K			ton	2000	76.10 %
☐	Alfalfa, for green chop (early bloom, cut 2)	*Medicago sativa*	N,P,K			ton	2000	74.60 %
☐	Alfalfa, for green chop (early bloom, cut 3)	*Medicago sativa*	N			ton	2000	74.35 %

Crop Nutrient Results

Select Crops
About the Crop Nutrient Tool
Nutrient Data Sources
Download Crop Nutrient Database

Nutrient Details

The following is a detailed list of nutrient information based on each specific crop type chosen.

Alfalfa, for green chop

Crop type:	Forage
Scientific name:	Medicago sativa
Crop yield unit:	ton
Harvested plant part:	Aboveground biomass

Nutrients in harvested part (lb/ton) at 53.5% moisture percentage.

Nitrogen	Phosphorus	Potassium
29.8176	2.5945	24.2547

Nutrients removed in harvested part (lb/acre) at 2.4 ton yield level.

Nitrogen	Phosphorus	Potassium
71.5623	6.2267	58.2113

Element-Fertilizer Equivalents | Average NPK Percentages

Calculate Nutrients Removed

Select Row	Crop Common Name	Scientific Name	Nutrient Information Available	Acres (Optional)	Yield Per Acre (Required)	Yield Unit	Lbs. Per Yield Unit	%Moisture (editable)
☐	Alfalfa + Orchardgrass, for hay	*Medicago sativa, Dactylis glomerata*	N,P			ton	2000	9.70 %
☐	Alfalfa + Orchardgrass, for hay (cut 1)	*Medicago sativa, Dactylis glomerata*	N,P,K			ton	2000	7.95 %
☐	Alfalfa + Smooth Brome, for green chop	*Medicago sativa, Bromus inermis*	N,P,K			ton	2000	77.63 %
☐	Alfalfa + Smooth Brome, for hay	*Medicago sativa, Bromus inermis*	N,P,K			ton	2000	11.58 %
☐	Alfalfa + Smooth Brome, for hay (cut 1)	*Medicago sativa, Bromus inermis*	N,P,K			ton	2000	10.10 %
☐	Alfalfa + Smooth Brome, for hay (cut 2)	*Medicago sativa, Bromus inermis*	N,P			ton	2000	10.20 %
☐	Alfalfa + Timothy, for green chop (50% alfalfa)	*Medicago sativa, Phleum pratense*	N,P,K			ton	2000	78.08 %
☐	Alfalfa + Timothy, for hay	*Medicago sativa, Phleum pratense*	N,P,K			ton	2000	10.37 %
☐	Alfalfa + Timothy, for hay (cut 1)	*Medicago sativa, Phleum pratense*	N,P			ton	2000	9.80 %
☐	Alfalfa + Timothy, for hay (cut 2)	*Medicago sativa, Phleum pratense*	N,P			ton	2000	9.00 %
☑	Alfalfa, for green chop	*Medicago sativa*	N,P,K		2.4	ton	2000	86.50 %
☐	Alfalfa, for green chop (early bloom)	*Medicago sativa*	N,P,K			ton	2000	76.18 %
☐	Alfalfa, for green chop (early bloom, cut 1)	*Medicago sativa*	N,P,K			ton	2000	76.10 %
☐	Alfalfa, for green chop (early bloom, cut 2)	*Medicago sativa*	N,P,K			ton	2000	74.60 %
☐	Alfalfa, for green chop (early bloom, cut 3)	*Medicago sativa*	N			ton	2000	74.35 %

Crop Nutrient Results

Select Crops
About the Crop Nutrient Tool
Nutrient Data Sources
Download Crop Nutrient Database

Nutrient Details

The following is a detailed list of nutrient information based on each specific crop type chosen.

Alfalfa, for green chop

Crop type:	Forage
Scientific name:	Medicago sativa
Crop yield unit:	ton
Harvested plant part:	Aboveground biomass

Nutrients in harvested part (lb/ton) at 86.5% moisture percentage.

Nitrogen	Phosphorus	Potassium
8.6567	0.7532	7.0417

Nutrients removed in harvested part (lb/acre) at 2.4 ton yield level.

Nitrogen	Phosphorus	Potassium
20.7762	1.8078	16.9001

Element-Fertilizer Equivalents | Average NPK Percentages

tomato (*Solanum lycopersicum*)

Crop Nutrient Results

Select Crops
About the Crop Nutrient Tool
Nutrient Data Sources
Download Crop Nutrient Database

Nutrient Details

The following is a detailed list of nutrient information based on each specific crop type chosen.

Tomato

Crop type:	Vegetable
Scientific name:	Solanum lycopersicum var. lycopersicum
Crop yield unit:	lb of fruit
Harvested plant part:	Fruit

Nutrients in harvested part (lb/lb of fruit) at 94.0% moisture percentage.

Nitrogen	Phosphorus	Potassium
0.0015	0.0003	0.0026

Nutrients removed in harvested part (lb/acre) at 30360.0 lb of fruit yield level.

Nitrogen	Phosphorus	Potassium
46.597	8.5807	77.9408

Element-Fertilizer Equivalents | Average NPK Percentages

Crop Nutrient Tool

1. **Data available for over 200 kinds of plants.**
2. **Acorns (oaks) to yams.**
3. **Many crop combinations also available**
    1. **alfalfa + orchardgrass**
    2. **alfalfa + brome**
    3. **alfalfa + timothy**
    4. **clover + timothy**
    5. **grass + clover**

asparagus *(Asparagus officinalis)*

switchgrass *(Panicum virgatum)*

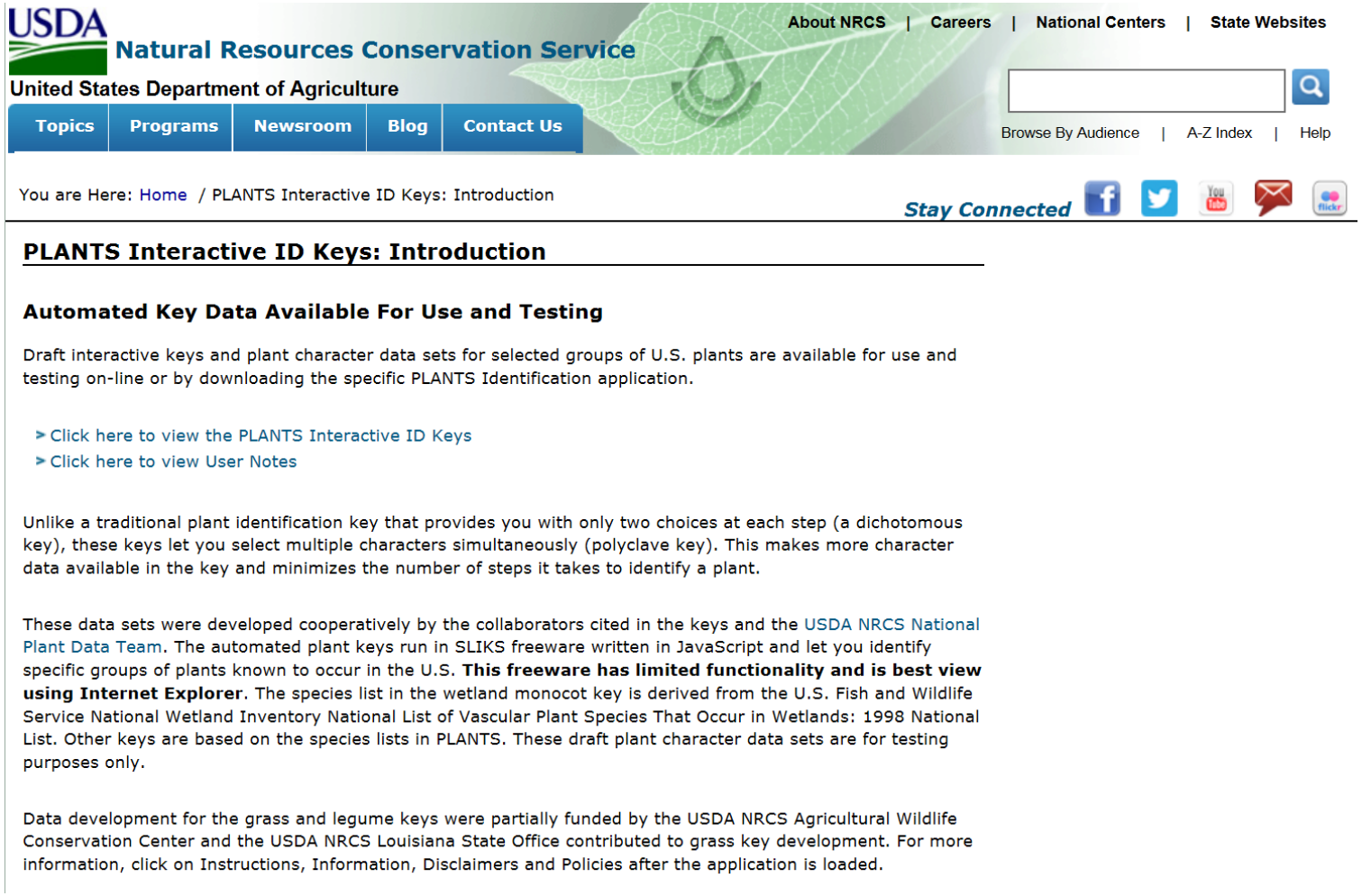
gooseberry *(Ribes rubrum)*

eastern gamagrass *(Tripsacum dactyloides)*

pawpaw (*Asimina triloba*)

persimmon (*Diospyros virginiana*)

Interactive Keys



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United States Department of Agriculture

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You are Here: Home / PLANTS Interactive ID Keys: Introduction

Stay Connected

PLANTS Interactive ID Keys: Introduction

Automated Key Data Available For Use and Testing

Draft interactive keys and plant character data sets for selected groups of U.S. plants are available for use and testing on-line or by downloading the specific PLANTS Identification application.

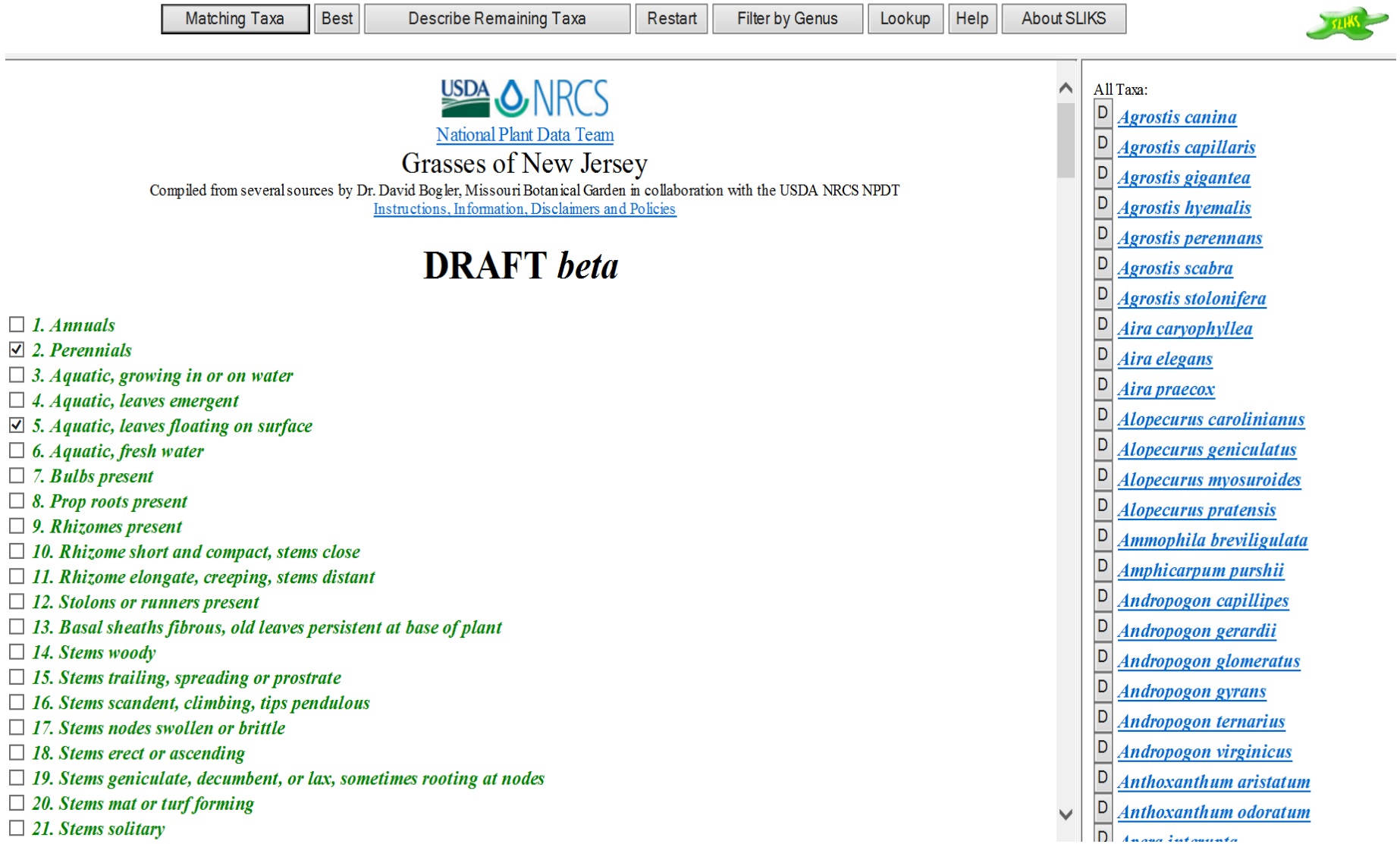
- Click here to view the PLANTS Interactive ID Keys
- Click here to view User Notes

Unlike a traditional plant identification key that provides you with only two choices at each step (a dichotomous key), these keys let you select multiple characters simultaneously (polyclave key). This makes more character data available in the key and minimizes the number of steps it takes to identify a plant.

These data sets were developed cooperatively by the collaborators cited in the keys and the USDA NRCS National Plant Data Team. The automated plant keys run in SLIKS freeware written in JavaScript and let you identify specific groups of plants known to occur in the U.S. **This freeware has limited functionality and is best view using Internet Explorer**. The species list in the wetland monocot key is derived from the U.S. Fish and Wildlife Service National Wetland Inventory National List of Vascular Plant Species That Occur in Wetlands: 1998 National List. Other keys are based on the species lists in PLANTS. These draft plant character data sets are for testing purposes only.

Data development for the grass and legume keys were partially funded by the USDA NRCS Agricultural Wildlife Conservation Center and the USDA NRCS Louisiana State Office contributed to grass key development. For more information, click on Instructions, Information, Disclaimers and Policies after the application is loaded.

Interactive Keys



Offline Databases

Pollinators

PLANTS Pollinators

NRCS documents for pollinator conservation and enhancement:

The 2008 and 2014 Farm Bills both made pollinators a priority for all USDA conservation programs. See Using 2014 Farm Bill Programs for Pollinator Conservation for details. To support this mandate, state and national guidance documents have been developed by the NRCS to help conservation planners and landowners who are working to protect and improve pollinator habitat.

These technical documents include plant lists, fact sheets, and other general guidance such as technical notes, habitat installation guides, and habitat assessment guides that provide additional information to improve planning and implementation of conservation practices or broaden understanding of a practice's value. The NRCS and its partners have also presented and recorded webinars to help train NRCS staff, partners, and landowners on pollinator habitat conservation techniques.

The following table lists links to national, regional, and State-specific NRCS guidance on pollinator conservation. NRCS administrative regions follow.

- West Region: AK, AZ, CA, CO, HI, ID, MT, NM, NV, OR, Pacific Islands Area, UT, WA, WY
- Central Region: IL, IN, IA, KS, MN, MO, NE, ND, OK, SD, TX, WI
- Northeast: CT, DC, DE, ME, MD, MA, MI, NH, NJ, NY, OH, PA, RI, VT, WV
- Southeast: AL, AR, Caribbean Area, FL, GA, KY, LA, MS, NC, SC, TN, VA

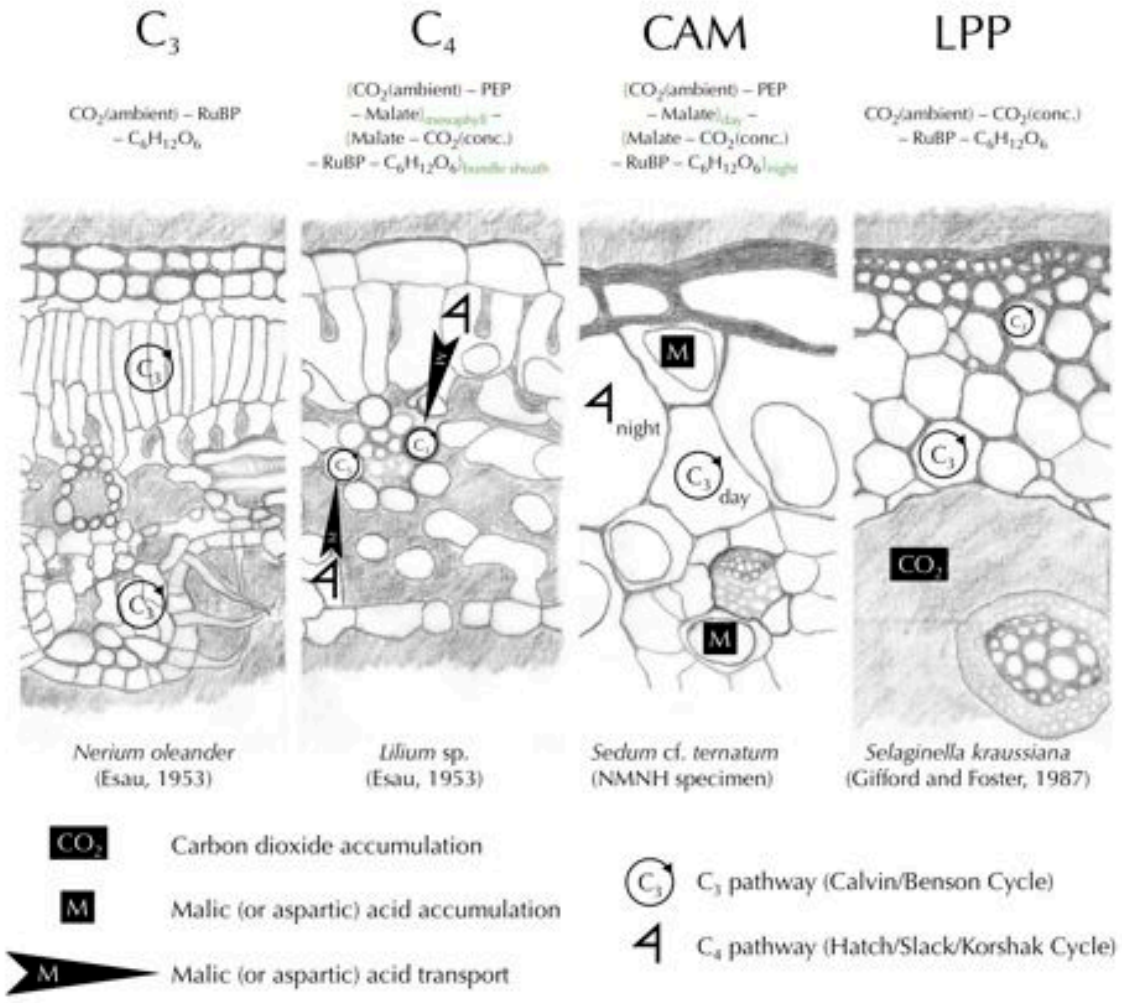
Click on the gray triangles to the right of each column heading to sort on that column. The upper triangle will sort the column in ascending order (0-9,a-z). The lower triangle will sort the column in descending order (z-a, 9-0).

Show 10 entries Search:

Region	State	NRCS Pollinator Resources	Job Sheets	Plant Lists	Fact Sheets	General Guidance	Webinar
Central	Central Region	Pollinator Plants of the Central United States: Native Milkweeds (Asclepias spp.) (June 2013)		x			
Central	IA	Job Sheet: Pollinator Habitat: Iowa Job Sheet (March 2011)	x				

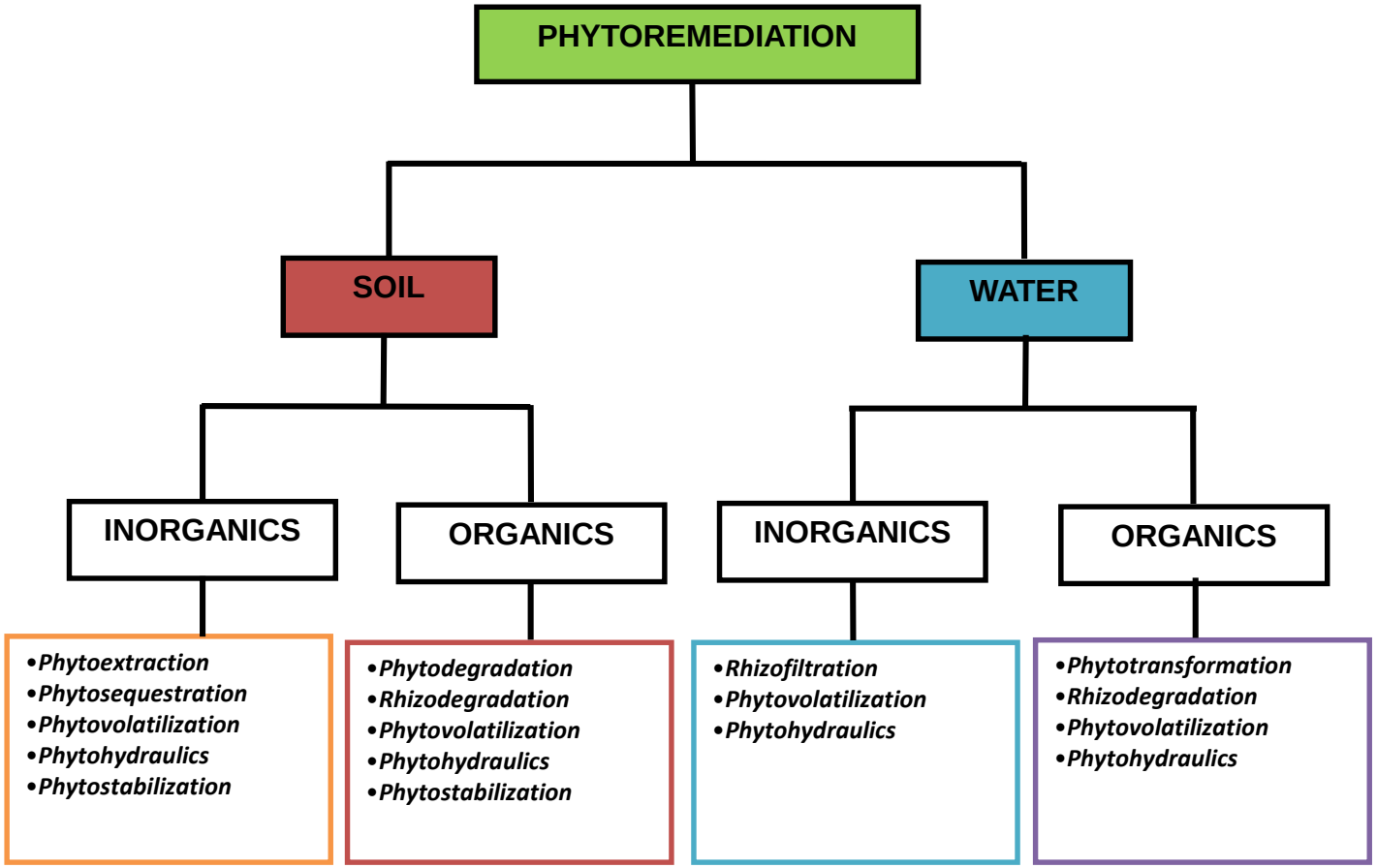
Source: http://plants.usda.gov/pollinators/nrcsdocuments.html

Photosynthetic Pathways



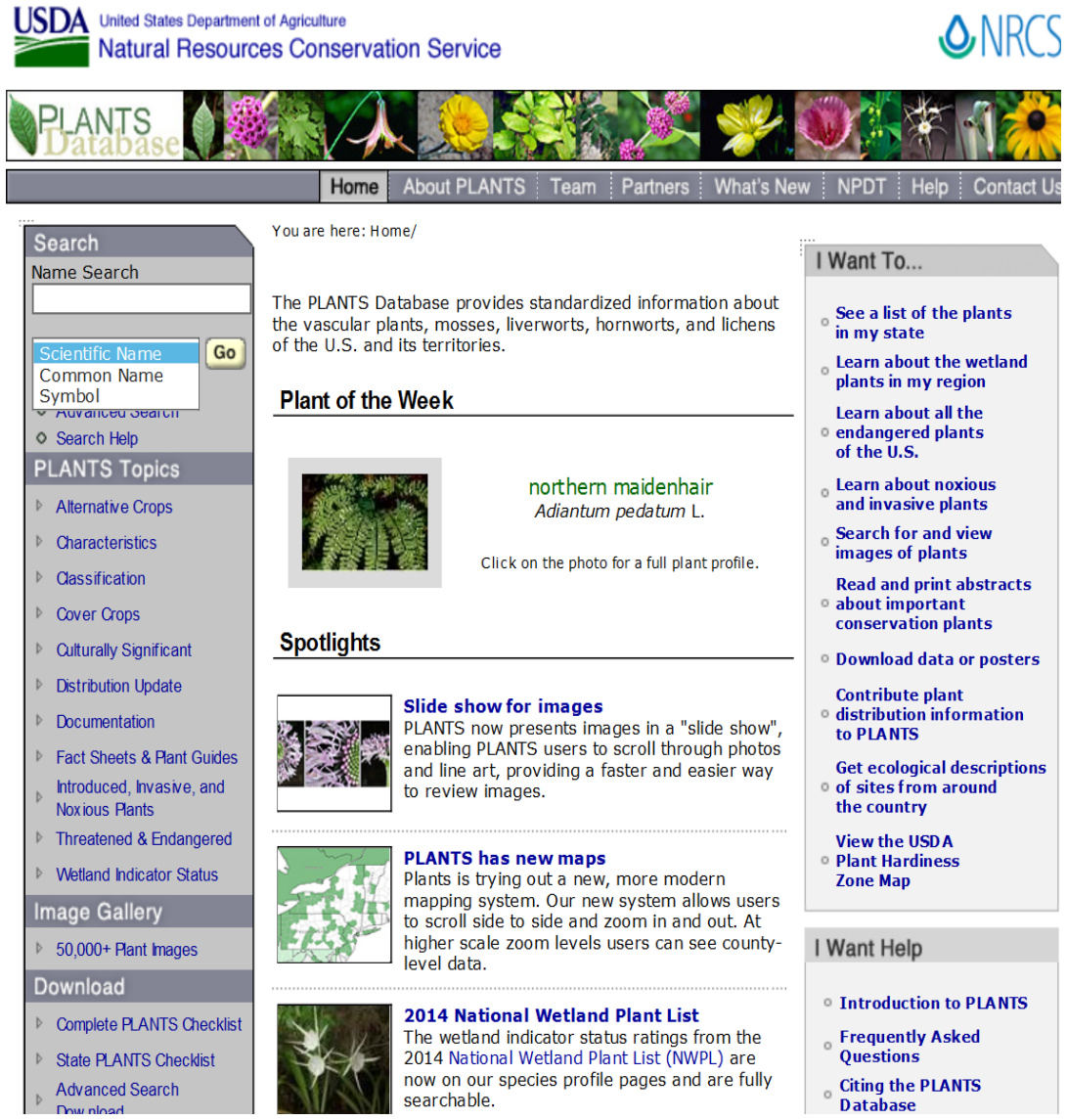
Source: Smithsonian Institution http://naturalhistory.si.edu/ETE/Coffee_Corner.html

Phytoremediation



Searching Plants

PLANTS Database – Searching (basic search)



PLANTS Database – Searching (state search)

State Search

Search the PLANTS database by Scientific Name, Common Name, Symbol, or Family, then filter by geography. This yields a fully synonymized checklist (with all synonyms shown).

1. Enter Search Criteria:

Scientific Name

Wildcards are permitted.

2. Filter by Geography:

Choose as many geographic areas as you like or leave blank to search all areas.

U.S. States

- Alabama
- Alaska
- Arizona
- Arkansas
- California
- Colorado
- Connecticut
- Delaware
- District of Columbia
- Florida
- Georgia
- Hawaii
- Idaho
- Illinois
- Indiana
- Iowa
- Kansas
- Kentucky
- Louisiana
- Maine
- Maryland
- Massachusetts
- Michigan
- Minnesota
- Mississippi
- Missouri
- Montana
- Nebraska
- Nevada
- New Hampshire
- New Jersey
- New Mexico
- New York
- North Carolina
- North Dakota
- Ohio
- Oklahoma
- Oregon
- Pennsylvania
- Rhode Island
- South Carolina
- South Dakota
- Tennessee
- Texas
- Utah
- Vermont
- Virginia
- Washington
- West Virginia
- Wisconsin
- Wyoming

U.S. Territories and Protectorates

- American Samoa
- Fed. States of Micronesia
- Guam
- Marshall Islands
- Northern Mariana Islands
- Palau
- Puerto Rico
- U.S. Minor Outlying Islands
- Virgin Islands

Canada

- Alberta
- British Columbia
- Newfoundland and Labrador
- Labrador
- Nova Scotia
- Nunavut
- Québec
- Saskatchewan

PLANTS Database – Searching (advanced search)

Advanced Search and Download

About the Advanced Search and Download

Part A: PLANTS Core Data

1. Distribution

PLANTS Floristic Area or Not — include:

- Any
- PLANTS Floristic Area
- --North America
- --Lower 48 U.S. States
- --Alaska
- --Canada

Display

Note: PLANTS Floristic Area or Not cannot be used with the next two search boxes.

State and Province — include:

- Any
- U.S. States
- --Alabama
- --Alaska
- --Arizona
- --Arkansas

Display

Note: County results are added to State and Province results. See About the Advanced Search and Download for details.

County Distribution (Select a maximum of 256) — include:

- Any
- Alabama:Autauga
- Alabama:Baldwin
- Alabama:Barbour
- Alabama:Bibb
- Alabama:Blount

Display

2. Taxonomy

Category — include:

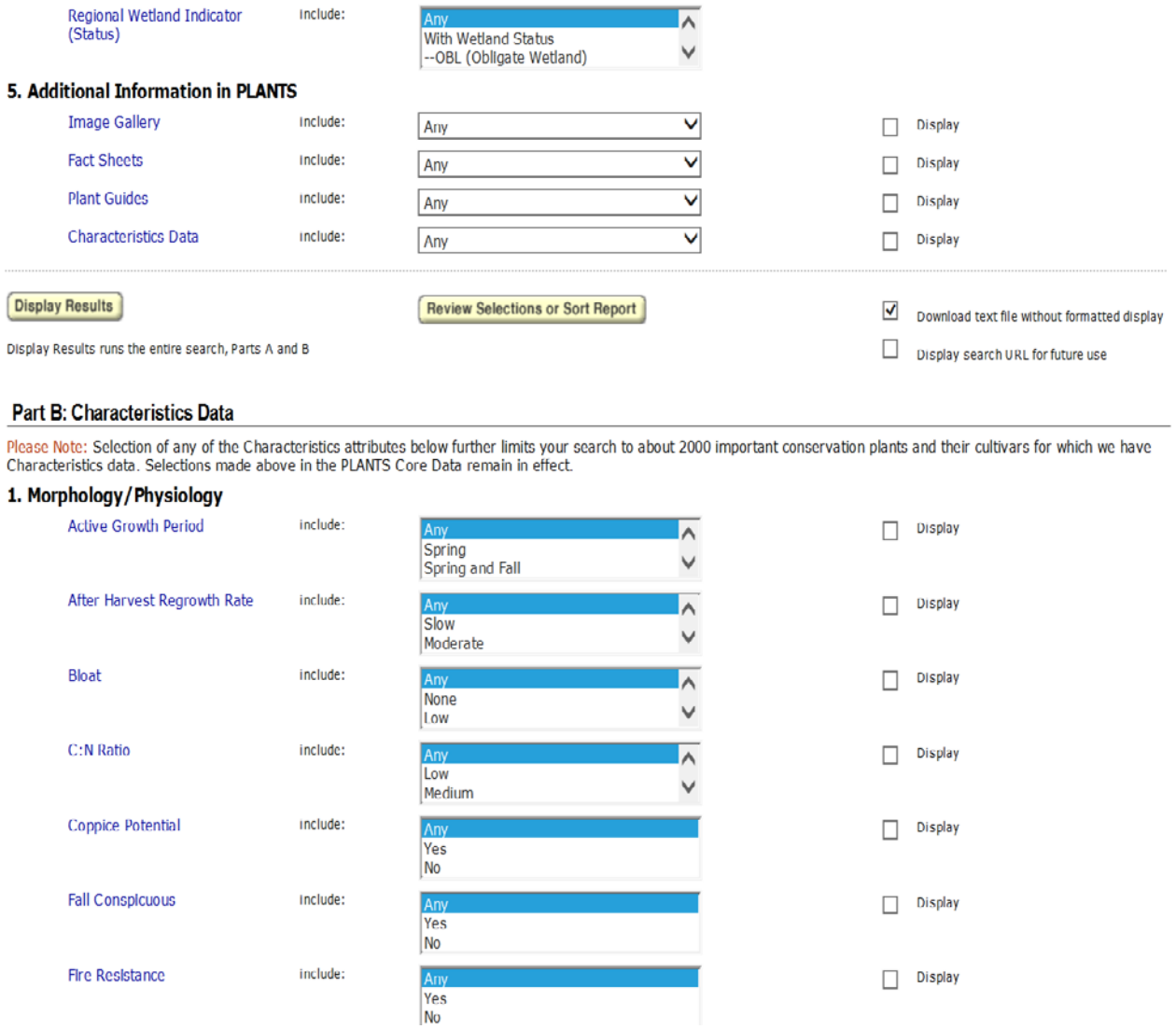
- Any
- Dicot
- Fern

Display

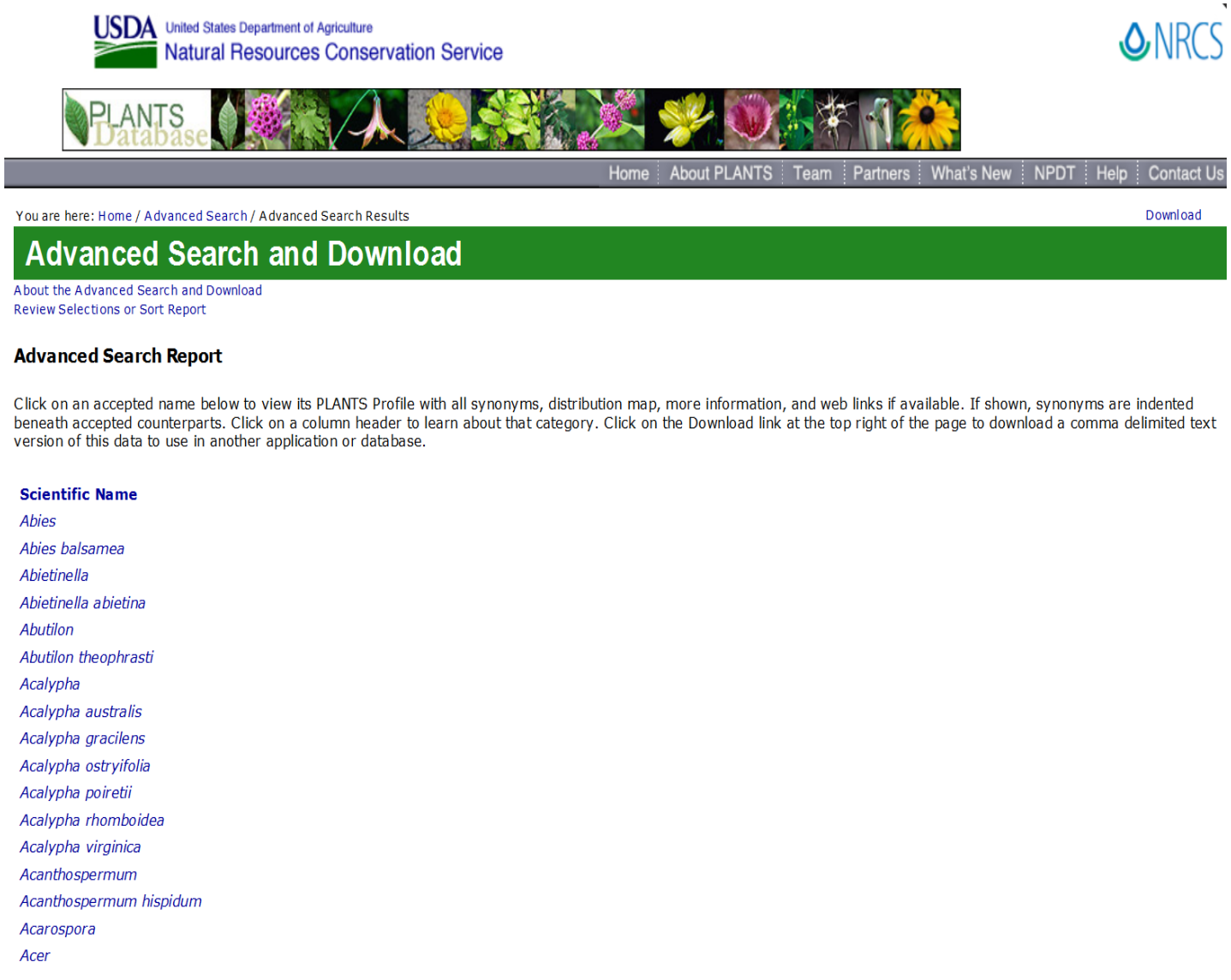
Symbol — include:

Display

PLANTS Database – Searching (advanced search)



PLANTS Database – Searching (advanced search)



PLANTS Database – Searching (advanced search)

```
"Accepted Symbol","Synonym Symbol","Scientific Name"
"ABIES","","Abies"
"ABBA","","Abies balsamea"
"ABIET","","Abietinella"
"ABAB70","","Abietinella abietina"
"ABUTI","","Abutilon"
"ABTH","","Abutilon theophrasti"
"ACALY","","Acalypha"
"ACAU6","","Acalypha australis"
"ACGR2","","Acalypha gracilens"
"ACOS","","Acalypha ostryifolia"
"ACPO","","Acalypha poiretii"
"ACRH","","Acalypha rhomboidea"
"ACVI","","Acalypha virginica"
"ACANT3","","Acanthospermum"
"ACHI","","Acanthospermum hispidum"
"ACARO2","","Acarospora"
"ACER","","Acer"
"ACCA5","","Acer campestre"
"ACGI","","Acer ginnala"
"ACJA2","","Acer japonicum"
"ACNE2","","Acer negundo"
"ACNEN","","Acer negundo var. negundo"
"ACNEV","","Acer negundo var. violaceum"
"ACNI5","","Acer nigrum"
"ACPA2","","Acer palmatum"
"ACPE","","Acer pensylvanicum"
"ACPL","","Acer platanoides"
"ACPS","","Acer pseudoplatanus"
"ACRU","","Acer rubrum"
"ACRUD","","Acer rubrum var. drummondii"
"ACRUR","","Acer rubrum var. rubrum"
"ACRUT","","Acer rubrum var. trilobum"
"ACSA2","","Acer saccharinum"
"ACSA3","","Acer saccharum"
"ACSAS","","Acer saccharum var. saccharum"
"ACSP2","","Acer spicatum"
"ACHIL","","Achillea"
"ACMI2","","Achillea millefolium"
"ACMIM2","","Achillea millefolium var. millefolium"
"ACMIO","","Achillea millefolium var. occidentalis"
"ACPT","","Achillea ptarmica"
```

PLANTS Database – Searching

Web Services

Updates to the PLANTS Website

Help Wanted

1. **Characteristics Data Set**
2. **Crop Nutrient Tool**
3. **Interactive Keys**
4. **Phytoremediation: Brooklyn College CESU**
5. **Pollinators Database**
6. **Photosynthetic Pathways**

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