

Flora of the University of California Natural Reserve System

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The UC Natural Reserve System (UC-NRS) was established in 1965 with seven University-owned sites as its first reserves. The UC-NRS has since developed into a network of 36 reserves covering over 135,000 acres across California's terrestrial and marine ecosystems – making it the world's largest university-operated system of natural reserves. Each of the reserves is managed by a UC campus and maintains a variety of research and teaching resources ranging from biological inventories and climatological data to herbaria, webcams, and observatories.

Although most reserves have generated species lists for plants and animals, the lists have never been combined into a system-wide data set. As a result, estimates of species diversity and richness across the UC-NRS have been unavailable, and the scope of research and education projects has been limited. Our motivation to create a comprehensive data set comprising the flora of the entire UC-NRS arose with the recent initiation of the California Phenology Project (CPP). Our aim was to provide a complete list of plants known to occur in at least one reserve and to offer a simple way of determining the number of reserves occupied by each species.

The California Phenology Project is a scientific research and education project designed to assess climate change response in National Parks throughout the state, and to inform resource management and land-use decision-making. With funding from the National Park Service (NPS) Climate Change Response Program – and in partnership with UC Santa Barbara, the USA National Phenology Network, and the US Geological Survey – the CPP aims to incorporate public education and outreach along with sound scientific practices and outcomes to inform natural resource management for 19 NPS units in California. During this project the CPP will develop protocols and tools that will support widespread participation in phenological monitoring throughout the state by the public and by a wide variety of governmental, academic, and non-governmental partners. Initially we are targeting plants, so floras were compiled for each NPS unit and each UC Natural Reserve (for which species lists were available) in order to facilitate the selection of species for targeted monitoring. To learn more about this selection process, the timeline and details of the project, and the broader scope of the California Phenology Project and the USA National Phenology Network, visit the websites listed below.

We have provided an initial summary of the flora for the California Phenology Project in the tables below, which describe species diversity by reserve (Table 1) and list the most widespread

species across reserves (Table 2). Other descriptions, summaries, and formal publication of the UC-NRS Flora are forthcoming.

In the process of combining species lists from each of the reserves, a significant effort was required to convert and format the different source file types (including Excel spreadsheets, text or tables in Word and PDF formats, and scanned images of publications) into a single spreadsheet. We identified many taxonomic and nomenclatural problems, and have taken care to identify, highlight, and correct misspelled taxon names (we used Jepson Interchange and CalFlora for reference). We left common names as they were reported in each original flora. Even with these efforts, we recognize that taxonomic problems do remain and we invite you to contact us as you detect them. Moreover, the many blank cells in the database reflect the highly variable content of each reserve’s species list (e.g., common names, native/exotic, habitat type, synonyms, bloom time). We hope to continue filling in this information in the near future and would welcome the help of interested reserve staff and undergraduate and graduate students.

Currently, the comprehensive data set contains 10,125 species occurrences (each subspecies and variety counted separately from the species they represent), including 3,330 unique species occurrences (subspecies and varieties not counted). Please note that these numbers may change slightly as taxonomic and nomenclatural problems are identified and resolved. The data set, which also includes basic climatic and physical attributes of each reserve, is available in spreadsheet format by contacting us directly or by visiting the following UC-NRS website: <http://nrs.ucop.edu/reserves/flora/flora.htm>

Contact us for more information, and visit the following websites to learn more:

- UC Natural Reserve System nrs.ucop.edu
- USA National Phenology Network www.usanpn.org
- California Phenology Project www.usanpn.org/cpp
- Other collaborative efforts between the USA-NPN
and the National Park Service www.usanpn.org/nps

Table 1. Number of plant species reported in each UC Natural Reserve; subspecies and varieties are not counted independently from the species that they represent. Each species may occur in one or more reserves. Plant lists are not available for four reserves (Box Springs, Emerson Oaks, Jenny Pygmy Forest, Yosemite Field Station).

UC Natural Reserve	# Species	Reserve Size (ha)
Año Nuevo Island Reserve (severe pinniped disturbance)	0	10
Santa Cruz Island Reserve (only endemics available)	42	18624
Kendall Frost Mission Bay Marsh Reserve	55	8
Younger Lagoon Reserve	87	11
Coal Oil Point Natural Reserve	150	69
Sierra Nevada Aquatic Research Lab (SNARL)	159	22
Fort Ord Natural Reserve	170	245
Kenneth S. Norris Rancho Marino Reserve	182	200
Motte Rimrock Reserve	193	289
Sagehen Creek Field Station	218	3237
James San Jacinto Mountains Reserve	238	12
Carpinteria Salt Marsh Reserve	252	49
San Joaquin Freshwater Marsh Reserve	258	82
Valentine Camp	254	62
Burns Piñon Ridge Reserve	264	124
Scripps Coastal Reserve	255	342
Quail Ridge Reserve	286	953
Stunt Ranch Santa Monica Mountains Reserve	296	125
Dawson Los Monos Canyon Reserve	280	95
Stebbins Cold Canyon Reserve	366	258
Jepson Prairie Reserve	383	634
Elliott Chaparral Reserve	357	43
Sedgwick Reserve	409	2388
Bodega Marine Reserve	425	221
Chickering American River Reserve	435	6829
Blue Oak Ranch Reserve	457	1319
Angelo Coast Range Reserve	459	1748
Landels Hill Big Creek Reserve	477	1584
Sweeney Granite Mountains Desert Research Center	486	3496
McLaughlin Natural Reserve	601	2853
Hastings Natural History Reservation	635	960
Boyd Deep Canyon Desert Research Center	639	6737
Box Springs Reserve	-	65
Emerson Oaks Reserve	-	98
Jenny Pygmy Forest Reserve	-	28
Yosemite Field Station	-	-
Total number of unique species across all reserves	3330	

Table 2. The most widespread plant species across UC Natural Reserves. The 171 species in this table all have been reported to occur in >10 reserves; subspecies and varieties are not counted independently from the species they represent. The complete list is found in the UC-NRS Flora data set, available by contacting Haggerty & Mazer or from the UC-NRS website: <http://nrs.ucop.edu/reserves/flora/flora.htm>

Reserve Count	Genus_Species	Common Name	Family
28	<i>Erodium cicutarium</i>	red-stemmed filaree	Geraniaceae
26	<i>Vulpia microstachys</i>	awned fescue	Poaceae
25	<i>Bromus madritensis</i>	foxtail chess	Poaceae
25	<i>Juncus bufonius</i>	common toad rush	Juncaceae
25	<i>Polypogon monspeliensis</i>	annual beard grass	Poaceae
24	<i>Bromus diandrus</i>	ripgut grass	Poaceae
24	<i>Vulpia myuros</i>	rattail fescue	Poaceae
23	<i>Dichelostemma capitatum</i>	desert blue-dicks	Liliaceae
22	<i>Amsinckia menziesii</i>	rancher's fireweed	Boraginaceae
22	<i>Galium aparine</i>	goose grass	Rubiaceae
22	<i>Mimulus guttatus</i>	seep monkeyflower	Scrophulariaceae
21	<i>Baccharis pilularis</i>	coyote brush	Asteraceae
21	<i>Bromus hordeaceus</i>	soft brome	Poaceae
21	<i>Salix lasiolepis</i>	arroyo willow	Salicaceae
20	<i>Anagallis arvensis</i>	scarlet pimpernel	Primulaceae
20	<i>Crassula connata</i>	pygmy weed	Crassulaceae
20	<i>Epilobium canum</i>	California fuchsia	Onagraceae
20	<i>Gnaphalium californicum</i>	California cudweed	Asteraceae
20	<i>Lotus scoparius</i>	deerweed	Fabaceae
20	<i>Mimulus aurantiacus</i>	sticky monkey flower	Scrophulariaceae
19	<i>Elymus glaucus</i>	blue wild rye	Poaceae
19	<i>Eriophyllum confertiflorum</i>	golden yarrow	Asteraceae
19	<i>Gnaphalium palustre</i>	lowland cudweed	Asteraceae
19	<i>Hordeum murinum</i>	farmer's foxtail	Poaceae
19	<i>Melica imperfecta</i>	small-flowered melica	Poaceae
19	<i>Scrophularia californica</i>	bee plant	Scrophulariaceae
18	<i>Avena barbata</i>	slender wild oat	Poaceae
18	<i>Bromus carinatus</i>	California brome grass	Poaceae
18	<i>Claytonia perfoliata</i>	miner's lettuce	Portulacaceae
18	<i>Conyza canadensis</i>	horseweed	Asteraceae
18	<i>Lupinus bicolor</i>	miniature lupine	Fabaceae
18	<i>Nassella pulchra</i>	purple needlegrass	Poaceae
18	<i>Silene gallica</i>	common catchfly	Caryophyllaceae
18	<i>Sisyrinchium bellum</i>	blue-eyed grass	Iridaceae
18	<i>Sonchus oleraceus</i>	common sow-thistle	Asteraceae

UC-NRS Flora – Summary for California Phenology Project

	<i>Toxicodendron</i>		
18	<i>diversilobum</i>	poison oak	Anacardiaceae
17	<i>Achillea millefolium</i>	yarrow	Asteraceae
17	<i>Avena fatua</i>	broad-leaved wild oat	Poaceae
17	<i>Eriogonum fasciculatum</i>	California buckwheat	Polygonaceae
17	<i>Eschscholzia californica</i>	California poppy	Papaveraceae
17	<i>Hypochaeris glabra</i>	smooth cat's ear	Asteraceae
17	<i>Lolium multiflorum</i>	Italian rye grass	Poaceae
17	<i>Medicago polymorpha</i>	bur clover	Fabaceae
17	<i>Melilotus indicus</i>	annual yellow sweetclover	Fabaceae
17	<i>Pentagramma triangularis</i>	Maxon's goldback fern	Pteridaceae
17	<i>Poa secunda</i>	one-sided bluegrass	Poaceae
17	<i>Sonchus asper</i>	prickly sow-thistle	Asteraceae
16	<i>Brassica nigra</i>	black mustard	Brassicaceae
16	<i>Capsella bursa-pastoris</i>	shepherd's purse	Brassicaceae
16	<i>Centaurea melitensis</i>	Maltese star thistle	Asteraceae
16	<i>Cirsium vulgare</i>	bull thistle	Asteraceae
16	<i>Epilobium ciliatum</i>	willow herb	Onagraceae
16	<i>Gastridium ventricosum</i>	nit grass	Poaceae
16	<i>Plantago erecta</i>	California plantain	Plantaginaceae
16	<i>Pterostegia drymarioides</i>	pterostegia	Polygonaceae
16	<i>Stellaria media</i>	chickweed	Caryophyllaceae
15	<i>Adenostoma fasciculatum</i>	chamise	Rosaceae
15	<i>Arctostaphylos glandulosa</i>	Eastwood manzanita	Ericaceae
15	<i>Artemisia californica</i>	California sagebrush	Asteraceae
15	<i>Artemisia douglasiana</i>	Douglas' mugwort	Asteraceae
15	<i>Calandrinia ciliata</i>	red maids	Portulacaceae
15	<i>Distichlis spicata</i>	saltgrass	Poaceae
15	<i>Eucrypta chrysanthemifolia</i>	small-flowered eucrypta	Hydrophyllaceae
15	<i>Heteromeles arbutifolia</i>	toyon	Rosaceae
15	<i>Lactuca serriola</i>	prickly lettuce	Asteraceae
15	<i>Leymus triticoides</i>	alkali rye grass	Poaceae
15	<i>Malva parviflora</i>	cheeseweed	Malvaceae
15	<i>Poa annua</i>	annual bluegrass	Poaceae
15	<i>Rumex crispus</i>	curly-leaved dock	Polygonaceae
15	<i>Rumex salicifolius</i>	willow-leaved dock	Polygonaceae
15	<i>Salvia columbariae</i>	chia	Lamiaceae
15	<i>Sanicula crassicaulis</i>	sanicle	Apiaceae
15	<i>Stephanomeria virgata</i>	tall stephanomeria	Asteraceae
15	<i>Trifolium microcephalum</i>	small-headed clover	Fabaceae
14	<i>Bromus tectorum</i>	cheat grass	Poaceae
14	<i>Calystegia macrostegia</i>	island morning glory	Convolvulaceae
14	<i>Cerastium glomeratum</i>	mouseear chickweed	Caryophyllaceae

UC-NRS Flora – Summary for California Phenology Project

14	<i>Chamomilla suaveolens</i>	pineapple weed	Asteraceae
14	<i>Chlorogalum pomeridianum</i>	soap plant	Liliaceae
14	<i>Claytonia parviflora</i>	narrow-leaved miner's lettuce	Portulacaceae
14	<i>Cuscuta californica</i>	California dodder	Cuscutaceae
14	<i>Erodium botrys</i>	long-beaked filaree	Geraniaceae
14	<i>Erodium moschatum</i>	white-stemmed filaree	Geraniaceae
14	<i>Filago californica</i>	California filago	Asteraceae
14	<i>Foeniculum vulgare</i>	fennel	Apiaceae
14	<i>Lathyrus vestitus</i>	pacific pea	Fabaceae
14	<i>Lotus strigosus</i>	strigose lotus	Fabaceae
14	<i>Marrubium vulgare</i>	white horehound	Lamiaceae
14	<i>Potentilla glandulosa</i>	common cinquefoil	Rosaceae
14	<i>Sambucus mexicana</i>	blue elderberry	Caprifoliaceae
14	<i>Stachys ajugoides</i>	Hedge Nettle	Lamiaceae
13	<i>Asclepias fascicularis</i>	narrow leaf milkweed	Asclepiadaceae
13	<i>Baccharis salicifolia</i>	mule fat	Asteraceae
13	<i>Brassica rapa</i>	field mustard	Brassicaceae
13	<i>Cercocarpus betuloides</i>	mountain mahogany	Rosaceae
13	<i>Cirsium occidentale</i>	western thistle	Asteraceae
13	<i>Clarkia purpurea</i>	winecup clarkia	Onagraceae
13	<i>Cyperus eragrostis</i>	tall cyperus	Cyperaceae
13	<i>Daucus pusillus</i>	wild carrot	Apiaceae
13	<i>Eremocarpus setigerus</i>	turkey mullein	Euphorbiaceae
13	<i>Filago gallica</i>	narrow-leaved filago	Asteraceae
13	<i>Gnaphalium luteo-album</i>	pearly everlasting	Asteraceae
13	<i>Gnaphalium stramineum</i>	cotton-batting plant	Asteraceae
13	<i>Hirschfeldia incana</i>	Mediterranean mustard	Brassicaceae
13	<i>Hordeum brachyantherum</i>	meadow barley	Poaceae
13	<i>Juncus xiphioides</i>	iris-leaved rush	Juncaceae
13	<i>Lotus purshianus</i>	Spanish lotus	Fabaceae
13	<i>Lupinus succulentus</i>	arroyo lupine	Fabaceae
13	<i>Nassella lepida</i>	small-flowered needlegrass	Poaceae
13	<i>Pellaea mucronata</i>	bird's-foot fern	Pteridaceae
13	<i>Plantago lanceolata</i>	English plantain	Plantaginaceae
13	<i>Polygonum arenastrum</i>	common knotweed	Polygonaceae
13	<i>Quercus agrifolia</i>	coast live oak	Fagaceae
13	<i>Quercus wislizeni</i>	interior live oak	Fagaceae
13	<i>Raphanus sativus</i>	wild radish	Brassicaceae
13	<i>Rosa californica</i>	California wild rose	Rosaceae
13	<i>Senecio vulgaris</i>	annual groundsel	Asteraceae
13	<i>Thysanocarpus curvipes</i>	narrow-leaved fringe pod	Brassicaceae

UC-NRS Flora – Summary for California Phenology Project

13	<i>Trifolium willdenovii</i>	tomcat clover	Fabaceae
13	<i>Uropappus lindleyi</i>	silver puffs	Asteraceae
13	<i>Urtica dioica</i>	stinging nettle	Urticaceae
12	<i>Agoseris grandiflora</i>	California dandelion	Asteraceae
12	<i>Apiastrum angustifolium</i>	wild celery	Apiaceae
12	<i>Cardamine californica</i>	bitter cress	Brassicaceae
12	<i>Chenopodium californicum</i>	perennial goosefoot	Chenopodiaceae
12	<i>Cressa truxillensis</i>	alkali weed	Convolvulaceae
12	<i>Cynodon dactylon</i>	crab grass	Poaceae
12	<i>Emmenanthe penduliflora</i>	yellow-flowered whispering bells	Hydrophyllaceae
12	<i>Guillenia lasiophylla</i>	California mustard	Brassicaceae
12	<i>Leymus condensatus</i>	giant rye grass	Poaceae
12	<i>Mimulus cardinalis</i>	cardinal monkey flower	Scrophulariaceae
12	<i>Nemophila menziesii</i>	southern baby blue-eyes	Hydrophyllaceae
12	<i>Plagiobothrys nothofulvus</i>	popcorn flower	Boraginaceae
12	<i>Rafinesquia californica</i>	California chicory	Asteraceae
12	<i>Rumex acetosella</i>	common sheep sorrel	Polygonaceae
12	<i>Salix laevigata</i>	red willow	Salicaceae
12	<i>Vicia sativa</i>	common vetch	Fabaceae
11	<i>Agrostis exarata</i>	Pacific bent grass	Poaceae
11	<i>Brickellia californica</i>	California brickellia	Asteraceae
11	<i>Briza minor</i>	little quaking grass	Poaceae
11	<i>Carduus pycnocephalus</i>	Italian thistle	Asteraceae
11	<i>Castilleja affinis</i>	paintbrush	Scrophulariaceae
11	<i>Castilleja exserta</i>	purple owl's clover	Scrophulariaceae
11	<i>Dryopteris arguta</i>	coastal wood fern	Dryopteridaceae
11	<i>Eleocharis macrostachya</i>	creeping spike rush	Cyperaceae
11	<i>Epilobium brachycarpum</i>	autumn willowweed	Onagraceae
11	<i>Equisetum laevigatum</i>	smooth horsetail	Equisetaceae
11	<i>Frankenia salina</i>	alkali heath	Frankeniaceae
11	<i>Geranium dissectum</i>	cranesbill	Geraniaceae
11	<i>Hemizonia congesta</i>	field tarweed	Asteraceae
11	<i>Hordeum marinum</i>	Mediterranean barley	Poaceae
11	<i>Juncus mexicanus</i>	Mexican rush	Juncaceae
11	<i>Lasthenia californica</i>	California goldfields	Asteraceae
11	<i>Lepidium nitidum</i>	shining pepper grass	Brassicaceae
11	<i>Lolium perenne</i>	English rye grass	Poaceae
11	<i>Lupinus microcarpus</i>	chick lupine	Fabaceae
11	<i>Phacelia distans</i>	common phacelia	Hydrophyllaceae
11	<i>Plantago major</i>	common plantain	Plantaginaceae
11	<i>Polypodium californicum</i>	California polypody	Polypodiaceae
11	<i>Populus fremontii</i>	Fremont cottonwood	Salicaceae

UC-NRS Flora – Summary for California Phenology Project

11	<i>Rhamnus californica</i>	cofffeeberry	Rhamnaceae
11	<i>Rhamnus ilicifolia</i>	holly-leaved redberry	Rhamnaceae
11	<i>Rubus ursinus</i>	blackberry	Rosaceae
11	<i>Salsola tragus</i>	Russian thistle	Chenopodiaceae
11	<i>Salvia mellifera</i>	black sage	Lamiaceae
11	<i>Silybum marianum</i>	milk thistle	Asteraceae
11	<i>Trifolium albopurpureum</i>	rancheria clover	Fabaceae
11	<i>Trifolium depauperatum</i>	dwarf sack clover	Fabaceae
11	<i>Umbellularia californica</i>	California bay laurel	Lauraceae
11	<i>Verbena lasiostachys</i>	western verbena	Verbenaceae
11	<i>Vulpia bromoides</i>	cheat fescue	Poaceae