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Wildlife Habitats — California Wildlife Habitat Relationships System

About the CWHR Habitat Classification Scheme

The CWHR habitat classification scheme has been developed to support the CWHR System, a wildlife information system and predictive model for California's regularly-occurring birds, mammals, reptiles and amphibians. When first published in 1988, the classification scheme had 53 habitats. These habitats -- except the non-vegetated Barren habitat -- are described in detail in the CWHR publication entitled:

A Guide to Wildlife Habitats of California. 1988.

Edited by Kenneth E. Mayer and William F. Laudenslayer, Jr.
State of California, Resources Agency,
Department of Fish and Game
Sacramento, CA. 166 pp.

[Link to order form.](#)

Now online with updates -- see below!

At present, there are 59 wildlife habitats in the CWHR System: [27 tree](#), [12 shrub](#), [6 herbaceous](#), [4 aquatic](#), [8 agricultural](#), [1 developed](#), and [1 non-vegetated](#). Please note: The 59 habitats described below were designed for use with a predictive model for terrestrial vertebrate wildlife species. They do not represent a comprehensive classification scheme for the conservation and mapping of California's terrestrial vegetation* or its marine and estuarine habitats**.

Stages are defined for virtually all habitats. A stage is a combination of size and cover class for tree-dominated habitats, age and cover class for shrub habitats, height and cover class for herb habitats, and depth and substrate for aquatic habitats. A field sampling protocol is well-established for determining stages in all vegetated habitats. **Special habitat elements** are also defined. They include live and decadent vegetation elements such as snags, physical elements such as banks and burrows, aquatic elements, vegetative and animal diet elements and human-made elements.

The predictive model for each species has expert-applied suitability ratings for three life-requisites - breeding, cover and feeding. For each species, each habitat stage is rated as high, medium, low or unsuitable for each of these life requirements. Each special habitat element is also assessed as essential, secondarily essential, preferred or not rated for the species.



* Notes on Classification and Mapping of Terrestrial Vegetation in California

Information on classification and mapping of terrestrial vegetation is available from the Vegetation Classification and Mapping Program (VegCAMP), Biogeographic Data Branch, California Department of Fish and Game at <http://www.dfg.ca.gov/biogeodata/vegcamp/>.

Field sampling for CWHR habitat stages has been incorporated into the California Native Plant Society (CNPS) Rapid Assessment Protocol, to increase the utility of the resulting vegetation maps for wildlife modeling and conservation. Information and links to field forms are available at <http://www.cnps.org/cnps/vegetation/protocol.php>.

Crosswalks to the CWHR habitat classification scheme are included in all of California's major vegetation and land cover mapping efforts. Cooperation through a [Vegetation MOU \(Memorandum of Understanding\)](#) signed by member organizations of the California Biodiversity Council is ongoing.

** Notes on Classification of Marine and Estuarine Habitats in California

























A classification scheme for the conservation and management of marine and estuarine habitats was developed in cooperation with the CWHR Program in 2002. It includes descriptions for 22 marine and 19 estuarine habitats. At present, it does not include suitability ratings to habitat stages or special habitat elements for the terrestrial amphibians, reptiles, birds and mammals currently in the CWHR System.

















































The new classification includes crosswalks to other important, recent classifications regarding coastal waters. Included are crosswalks to *Wetlands of the Central and Southern California Coast and Coastal Watersheds; a methodology for their classification and description* (Ferren et al., 1996), *Baylands Ecosystem Habitat Goals: a report of habitat recommendations* (U.S. Environmental Protection Agency, 1999), *A classification scheme for deep sea floor habitats* (Greene et al., 1999), and *Wildlife-habitat relationships in Oregon and Washington* (Johnson and O'Neil, 2001). Also included are crosswalks to a national scheme for marine and estuarine ecosystems and habitat classification published by the National Oceanic and Atmospheric Administration (NOAA) in 2002 and a classification for habitats of the Channel Islands drafted in 2000 by the Channel Island National Marine Sanctuary (CINMS). (See link below.)














































[Revision to Marine and Estuarine Habitats of the California Wildlife Habitat Relationships System \(2002\)](#)


































A Guide to Wildlife Habitats of California. 1988.	Updates
Contributing Authors, Acknowledgements, and Preface (950 kb)	
Introduction and Scope (2,594 kb) How to Use the Guide How to Classify Habitats Special Habitat Elements Available Habitat Stages	Revised Classification Rules (2005) Wooded Habitat Sampling Datasheet Analysis of Wooded Habitat Sampling Data Non-Wooded Habitat Sampling Datasheet Analysis of Non-Wooded Habitat Sampling Data Habitat Element Checklist Available Habitat Stages for







	Agricultural Habitats Definition of Added Human Element- Mine
Crosswalk Between WHR and California Vegetation Classifications (2,960 kb)	CWHR Crosswalked with CNPS Vegetation Classification (2005) CWHR Crosswalked with CalVeg Classification (2005) UNESCO Formations Within CWHR (1998) CWHR Crosswalked with DWR Land Use Types (2008)
Literature Cited (1,289 kb) Plants and Animals Referenced in Text (622 kb)	

HABITAT	PRIMARY SPECIES REFERENCED IN TEXT		
	1988 Text Account	Range Map	Photo
UPDATES			
Tree Dominated Habitats Back to Top of Page			
Subalpine Conifer (SCN)	Engelmann Spruce, Subalpine Fir, Mountain Hemlock	  	
Red Fir (RFR)	Red Fir, White Fir, Lodgepole Pine	  	
Lodgepole Pine (LPN)	Lodgepole Pine, Aspen, Mountain Hemlock	  	
Sierran Mixed Conifer (SMC)	Douglas Fir, Ponderosa Pine, White Fir	  	NEW updated description of range
White Fir (WFR)	White Fir, Douglas Fir, Sugar Pine	  	NEW corrected range map
Klamath Mixed Conifer (KMC)	White Fir, Douglas-Fir, Ponderosa Pine	  	NEW updated description
Douglas Fir (DFR)	Douglas Fir, Tanoak, Ponderosa Pine	  	
Jeffrey Pine (JPN)	Jeffrey Pine, Ponderosa Pine, Sugar Pine	  	

Ponderosa Pine (PPN)	Ponderosa Pine, Jeffrey Pine, Douglas Fir	  	
Eastside Pine (EPN)	Ponderosa Pine, Jeffrey Pine, White Fir	  	
Redwood (RDW)	Redwood, Grand Fir, Sitka Spruce	  	
Pinyon-Juniper (PJN)	Pinyon Species, Juniper Species, Mountain Mahogany Species	  	
Juniper (JUN)	Juniper Species, White Fir, Jeffrey Pine	  	
Aspen (ASP)	Aspen, Willows, Alders	  	
Closed-Cone Pine-Cypress (CPC)	Sargent Cypress, Monterey Cypress, Monterey Pine	  	
Montane Hardwood-Conifer (MHC)	Ponderosa Pine, Incense Cedar, California Black Oak	  	
Montane Hardwood (MHW)	Canyon Live Oak, California Black Oak, Oregon White Oak	  	
Blue Oak Woodland (BOW)	Blue Oak, Interior Live Oak, California Buckeye	  	
Valley Oak Woodland (VOW)	Valley Oak, California Walnut, California Sycamore	  	
Coastal Oak Woodland (COW)	Coast Live Oak, Engelmann Oak, Island Oak	  	
			NEW updated description of dominants
Blue Oak-Foothill Pine (BOP)	Foothill Pine, Blue Oak, Interior Live Oak	  	
Eucalyptus (EUC)	Blue Gum, Red Gum	  	
Montane Riparian (MRI)	Black Cottonwood, Bigleaf Maple, White Alder	  	
Valley Foothill Riparian (VRI)	Cottonwood, Sycamore, Valley Oak	  	
Desert Riparian (DRI)	Tamarisk, Mesquite, Fremont Cottonwood		

	  	
Palm Oasis (POS)	Fan Palm, Velvet Ash, California Sycamore	
	  	
Joshua Tree (JST)	Joshua Tree, Juniper Species, Mojave Yucca	
	  	
Shrub Dominated Habitats		
		Back to Top of Page
Alpine Dwarf-Shrub (ADS)	Oceanspray, Greene Goldenweed, Mountain Heather	
	  	
Low Sage (LSG)	Low Sagebrush, Black Sagebrush, Rabbitbrush Species	
	  	
Bitterbrush (BBR)	Bitterbrush Species, Big Sagebrush, Rubber Rabbitbrush	
	  	
Sagebrush (SGB)	Sagebrush Species, Rabbitbrush Species, Horsebrush	
	  	
Montane Chaparral (MCP)	Ceanothus Species, Manzanita Species, Bitter Cherry	
	  	
Mixed Chaparral (MCH)	Scrub Oak, Ceanothus Species, Manzanita Species	
	  	
Chamise-Redshank Chaparral (CRC)	Chamise, Redshank, Ceanothus Species	
	  	
Coastal Scrub (CSC)	Coyotebush, California Buckwheat, Sage Species	
	  	
Desert Succulent Shrub (DSS)	Octillo, Mojave Yucca, Desert Agave	
	  	
Desert Wash (DSW)	Paloverde Species, Desert Ironwood, Mesquite	
	  	
Desert Scrub (DSC)	Creosotebush, Catclaw Acacia, Desert Agave	
	  	
Alkali Desert Scrub (ASC)	Allscale, Saltbush Species, Shadscale	
	  	
Herbaceous Dominated Habitats		
		Back to Top of Page

Annual Grassland (AGS)	Wild Oats, Soft Chess, Brome Species	   NEW updated range map and description of range
Perennial Grassland (PGS)	California Oatgrass, Hairgrass, Sweet Vernalgrass	   NEW updated range map and description of range
Wet Meadow (WTM)	Sedge Species, Rush Species, Tufted Hairgrass	  
Fresh Emergent Wetland (FEW)	Cattail, Bulrush, Redroot Nutgrass	  
Saline Emergent Wetland (SEW)	Cordgrass, Pickleweed, Bulrush	  
Pasture (PAS)	Bermuda Grass, Ryegrass, Tall Fescue	  
Aquatic Habitats Back to Top of Page (** See also " Notes Classification of Marine and Estuarine Habitats ")		
Riverine (RIV)	Water Moss, Algae, Duckweed	  
Lacustrine (LAC)	Plankton, Duckweed, Water Lilies	  
Estuarine (EST)	Plankton, Algae, Eel Grass	  
Marine (MAR)	Plankton, Algae, Kelp	  
Developed Habitats Back to Top of Page		
Cropland (CRP)	Tomatoes, Corn, Wheat	   Replaced by DGR, IGR, IRH, IRF, RIC
Dryland Grain Crops (DGR)	Cereal Rye, Barley, Wheat	Text Account (1999) Range Map (1999) Photo
Irrigated Grain Crops (IGR)	Corn, Dry Beans, Safflower	Text Account (1999) Range Map (1999) Photo
Irrigated Hayfield (IRH)	Alfalfa, Hay	Text Account (1999)

		Range Map (2002) Photo
Irrigated Row and Field Crops (IRF)	Tomatoes, Cotton, Lettuce	
		Text Account (1999) Range Map (1999) Photo
Rice (RIC)	Rice	
		Text Account (1999) Range Map (1999) Photo
Orchard - Vineyard (OVN)	Apples, Oranges, Grapes	
	  	Replaced by DOR, EOR, VIN
Deciduous Orchard (DOR)	Almonds, Walnuts, Peaches	
		Text Account (1999) Range Map (1999) Photo
Evergreen Orchard (EOR)	Oranges, Avocados, Lemons	
		Text Account (1999) Range Map (1999) Photo
Vineyard (VIN)	Grapes, Kiwi Fruit, Boysenberries	
		Text Account (1999) Range Map (1999) Photo
Urban (URB)	Grass Lawns, Ornamental Trees, Hedges	
	  	
Non-vegetated Habitats Back to Top of Page		
Barren (BAR)	Rock, Gravel, Soil	
		Text Account (1999) Range Map (1999) Photo 1 Photo 2

[Link to a list of habitats by county.](#)

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