

INTRODUCTION.

The Management Indicator Species (MIS) CWHR Accounts in this document are based on the best known current information on habitat relationships, and past and present suitable habitat.

Habitat Status and Trend. The habitat relationship model used for some terrestrial MIS is from the California Wildlife Habitat Relationship System. Details of this System are discussed below. In addition, the methodology for how this model is applied to determine habitat status and trend is also discussed below.

CALIFORNIA WILDLIFE HABITAT RELATIONSHIPS (CWHR) MODELS

Reference: CWHR 2005. California Department of Fish and Game. California Interagency Wildlife Task Group. 2005. California Wildlife Habitat Relationships version 8.1 personal computer program. Sacramento, California.

CWHR Overview. The California Wildlife Habitat Relationship (CWHR) is a wildlife information system and predictive model for California's regularly-occurring birds, mammals, reptiles and amphibians and is considered “a state-of-the-art information system for California's wildlife.” It contains life history, geographic range, habitat relationships, and management information on 692 species of amphibians, reptiles, birds, and mammals known to occur in the state. It provides the most widely used habitat relationships models for California’s terrestrial vertebrate species. CWHR is operated and maintained by the California Department of Fish and Game in cooperation with the California Interagency Wildlife Task Group (CIWTG). CWHR Version 8.1 is used in the terrestrial MIS Accounts.

CWHR contains the following components:

- a complete species list of California’s 1000+ terrestrial vertebrates;
- life history information and geographic range data by season on 692 regularly-occurring species;
- a standardized habitat classification scheme for California, containing 59 habitats, structural stages for most habitats, and 124 special habitat elements (*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.*)
- a community-level matrix model associating 692 wildlife species to these standard habitats and stages and rating suitability for reproduction, cover, and feeding;
- A software application containing all system components.

CWHR Utility. CWHR has been used for several large wildlife resource conservation efforts including California's GAP effort, the Legislatively-authorized Timberland Task Force effort, and USDA Forest Service, Region 5 Sierra Nevada Framework and Forest

Plan Amendment efforts. It is one of the primary biological data sets used in an assessment of California's biodiversity for the "Atlas of the Biodiversity of California." CWHR is used in sustained yield planning efforts by several large private timber companies and is part of regulations adopted by the California Board of Forestry.

CWHR Validation. Information contained in CWHR is based on current published and unpublished biological information, and professional judgment by recognized experts on California's wildlife. Research to improve the CWHR System is ongoing and is focused in the areas of model and validation standards, field validation studies, and interpretation of model output. Some examples of these studies are presented below.

Model and Validation Standards

Barrett, R.H. and M. White (authors) and M. Parisi (editor). 1999. Guide for Designing Field Validation Studies of the California Wildlife Habitat Relationships System. Technical Report No. 30. California Wildlife Habitat Relationships System, California Department of Fish and Game. Sacramento, CA.

California Department of Fish and Game and California Interagency Wildlife Task Group. 2000. Standards and Guidelines for CWHR Species Models. Technical Report No. 31. California Wildlife Habitat Relationships System, California Department of Fish and Game. Sacramento, CA.

Field Validation Studies of CWHR Predictions

Avery, M.L. and C. Van Riper. 1990. Evaluation of wildlife-habitat relationships data base for predicting bird community composition in central California chaparral and blue oak woodlands. *California Fish and Game* 76(2):103-117.

Baad, M.F. 1992. Plant and Wildlife Resources Inventory of Boggs Mountain Demonstration State Forest, Lake County, California. Unpublished Report. California State University, Sacramento. Sacramento, CA. 69 pp.

Block, W.M., M.L. Morrison, J. Verner, and P.N. Manley. 1994. Assessing wildlife-habitat-relationships models: a case study with California oak woodlands. *Wildlife Society Bulletin* 22:549-561.

Dedon, M.F., S. A. Laymon, and R.H. Barrett. 1986. Evaluating models of wildlife-habitat relationships of birds in black oak and mixed-conifer habitats. *In* J. Verner, M.L. Morrison, and C.J. Ralph (editors). *Wildlife 2000: Modeling Habitat Relationships of Terrestrial Vertebrates*. University of Wisconsin Press. Madison, WI. 470 pp.

England, A.S. and D.W. Anderson. 1985. Avian Community Ecology in Northern California Chaparral: Evaluation of Wildlife-Habitat Relationship Matrix Models for Chamise-Redshank and Mixed Chaparral. Report prepared for USDA Forest Service Pacific Southwest Forest and Range Experiment Station under Agreement No. PSW-83-0022CA. Department of Wildlife and Fisheries Biology, University of California. Davis, CA..

Hejl, S.J. and J. Verner. 1988. Evaluating avian-habitat relationships in red fir forests of the Sierra Nevada. *Transactions of the Western Section of The Wildlife Society* 24:121-134.

Howell, J.A. 1993. *Wildlife Habitat Inventory and Monitoring, Golden Gate National Recreation Area, California: a Pilot Study*. Ph. D. Dissertation. University of California. Berkeley, CA. 195 pp.

Laymon, S.A. 1989. A test of the California Wildlife-Habitat Relationship System for breeding birds in valley-foothill riparian habitat. Pages 307-313 *in* Abell, D.A. (technical coordinator) USDA Forest Service Pacific Southwest Forest and Range Experiment Station Technical Report PSW-110, . 544 pp. Berkeley, CA

Purcell, K.L., S.J. Hejl, and T.A. Larson. 1992. Evaluating avian-habitat relationships models in mixed-conifer forests of the Sierra Nevada. *Transactions of the Western Section of The Wildlife Society* 28:120-136.

Raphael, M.G. and B.G. Marcot. 1986. Validation of a wildlife-habitat-relationships model: vertebrates in a Douglas-fir sere. Pages 129-138 *in* J. Verner, M.L. Morrison, and C.J. Ralph (editors). *Wildlife 2000: Modeling Habitat Relationships of Terrestrial Vertebrates*. University of Wisconsin Press. Madison, WI. 470 pp.

Verner, J. 1980. Bird communities of mixed-conifer forests of the Sierra Nevada. Pages 198-223 *in* DeGraff, R.M. (technical coordinator) USDA Forest Service Intermountain Forest and Range Experiment Station General Technical Report INT-86. Ogden, UT. 535 pp.

Welsh, H.H., Jr., and A.J. Lind. 1988. Old growth forests and the distribution of the terrestrial herpetofauna. Pages 439-455 *in* Szaro, R.C., K.E. Severson, and D.R. Patton (technical coordinators). USDA Forest Service Rocky Mountain Forest and Range Experiment Station General Technical Report RM-166. Fort Collins, CO. 458 pp.

Welsh, H.H., Jr., and A.J. Lind. 1991. The structure of the herpetofaunal assemblage in the Douglas-fir/hardwood forests of northwestern California and southwestern Oregon. Pages 394-413 *in* Ruggiero, L.F., K.B. Aubry, A.B. Carey, and M.H. Huff (technical coordinators). USDA Forest Service Pacific Northwest Forest and Range Experiment Station General Technical Report PNW-GTR-285. Portland, OR. 533 pp.

Interpretation of Model Output

Garrison, B.A. 1994. Determining the biological significance of changes in predicted habitat values from the California Wildlife Habitat Relationships System. *California Fish and Game* 80:150-160.

Garrison, B.A., R.A. Erickson, M.A. Patten and I.C. Timossi. 1999. California Wildlife Habitat Relationships System: effects of county attributes on prediction accuracy for bird species. *California Fish and Game* 85(3)87-101.

Garrison, B.A. and T. Lupo. 2002. Accuracy of bird range maps based on wildlife habitat relationships models. Pages 367-375 in Scott, J.M., P.J. Heglund, M.L. Morrison, J.B. Haufler, M.G. Raphael, W.A. Wall, and F.B. Samson (editors). *Predicting Species Occurrences: Issues of Accuracy and Scale*. Island Press. Washington, D.C.

CWHR Vegetation Classification System. There are 59 wildlife habitats in the CWHR System to be used with the predictive models for terrestrial vertebrate wildlife species (27 tree, 12 shrub, 6 herbaceous, 4 aquatic, 8 agricultural, 1 developed, and 1 non-vegetated) (Table 1). In addition, stages and special habitat elements are defined.

Stages are defined for virtually all habitats. A stage is a combination of size and cover class for tree-dominated habitats (Tables 2 and 3), 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.

CWHR Predictive Models. 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, as well as a composite rating:

High: Habitat suitability rating where habitat is optimal for species occurrence; habitat can support relatively high population densities at high frequencies. Suitability index value = 1.00.

Medium: Habitat suitability rating where habitat is suitable for species occurrence; habitat can support relatively moderate population densities at moderate frequencies. Suitability index value = 0.66.

Low: Habitat suitability rating where habitat is marginal for species occurrence; habitat can support relatively low population densities at low frequencies. Suitability index value = 0.33

Unsuitable: Habitat stage is unsuitable for species occurrence, and the species where habitat is rated unsuitable is not expected to reliably occur in the habitat. Suitability index value = 0.00.

For MIS accounts where CWHR is used, suitable habitat is considered the sum of all high and moderate quality habitats, using the composite index for reproduction, foraging, and cover habitat combined.

Table 1. CWHR Habitat Types (CWHR 2005).

Tree-Dominated Habitats
Subalpine Conifer (SCN)
Red Fir (RFR)
Lodgepole Pine (LPN)

Sierran Mixed Conifer (SMC)
White Fir (WFR)
Klamath Mixed Conifer (KMC)
Douglas Fir (DFR)
Jeffrey Pine (JPN)
Ponderosa Pine (PPN)
Eastside Pine (EPN)
Redwood (RDW)
Pinyon-Juniper (PJN)
Juniper (JUN)
Aspen (ASP)
Closed-Cone Pine-Cypress (CPC)
Montane Hardwood-Conifer (MHC)
Montane Hardwood (MHW)
Blue Oak Woodland (BOW)
Valley Oak Woodland (VOW)
Coastal Oak Woodland (COW)
Blue Oak-Foothill Pine (BOP)
Eucalyptus (EUC)
Montane Riparian (MRI)
Valley Foothill Riparian (VRI)
Desert Riparian (DRI)
Palm Oasis (POS)
Joshua Tree (JST)
Shrub-dominated Habitats
Alpine Dwarf-Shrub (ADS)
Low Sage (LSG)
Bitterbrush (BBR)
Sagebrush (SGB)
Montane Chaparral (MCP)
Mixed Chaparral (MCH)
Chamise-Redshank Chaparral (CRC)
Coastal Scrub (CSC)
Desert Succulent Shrub (DSS)
Desert Wash (DSW)
Desert Scrub (DSC)
Alkali Desert Scrub (ASC)
Herbaceous Dominated Habitats
Annual Grassland (AGS)
Perennial Grassland (PGS)
Wet Meadow (WTM)
Fresh Emergent Wetland (FEW)
Saline Emergent Wetland (SEW)
Pasture (PAS)
Aquatic Habitats
Lacustrine (LAC)
Estuarine (EST)
Marine (MAR)
Developed Habitats
Cropland (CRP)
Dryland Grain Crops (DGR)
Irrigated Grain Crops (IGR)
Irrigated Hayfield (IRH)
Irrigated Row and Field Crops (IRF)

Rice (RIC)
Orchard - Vineyard (OVN)
Deciduous Orchard (DOR)
Evergreen Orchard (EOR)
Vineyard (VIN)
Urban (URB)
Non-vegetated Habitats
Barren (BAR)

Table 2. Size Class Breakdown for Tree Habitat Types (excluding Desert Riparian, Joshua Tree, Palm Oasis, and Orchard types).

CHWR Size Class	CWHR Code	Conifer Crown Diameter (ft.)	Hardwood Crown Diameter (ft.)	Quadratic Mean dbh (inches)
Seedling Tree	1	n/a	n/a	<1.0"
Sapling Tree	2	n/a	<15.0'	1.0"-5.9"
Pole Tree	3	<12.0'	15.0'-29.9'	6.0"-10.9"
Small Tree	4	12.0'-23.9'	30.0'-44.9'	11.0"-23.9"
Medium/large Tree	5	≥ 24.0'	≥ 45.0'	≥ 24.0"
Multi-layered Tree	6	A distinct layer of size class 5 trees over a distinct layer of size class 4 and/or 3 trees, and total tree canopy closure of the layers ≥60.0% (layers must have ≥10.0% canopy cover and distinct height separation)		

Table 3. Canopy Closure Classes for Tree and Shrub Terrestrial Habitats (excluding desert-tree and desert-shrub habitat types).

CWHR Canopy Closure Class	CWHR Code	Vegetation Canopy Closure
Sparse Cover	S	10.0% - 24.9%
Open Cover	P	25.0% - 39.9%
Moderate Cover	M	40.0% - 59.9%
Dense cover	D	≥ 60.0%

REGION 5: MANAGEMENT INDICATOR SPECIES ANALYSIS USING CALIFORNIA WILDLIFE HABITAT RELATIONSHIPS (CWHR) SYSTEM DATA

Sources of Data and Metadata:

- CWHR version 8.1 (April 2006). Raw data files (Habitat.dbf, Species.dbf, Location.dbf, Habcodes.dbf, and LocNames.dbf) were used in custom Microsoft Access queries. CWHR available at: <http://www.dfg.ca.gov/whdab/html/cwahr.html>.

Plumas National Forest CWHR Analysis for MIS.

Bald Eagle:

I. Habitat Relationships

Habitat relationships for the Bald Eagle are defined by the California Wildlife Habitat Relationships (CWHR) models, which model habitat suitability for California's terrestrial vertebrates (CWHR 2005) (see Introduction section above for details on these models). Specifically, high and moderate capability habitat is listed in Table 1.

Table 1. CWHR high and moderate capability habitat for bald eagle (CWHR 2005).

CWHR Habitats	CWHR Specific High and Moderate Capability Size, Canopy Cover, and Substrate Classes
DESERT RIPARIAN	1, 2S, 2P, 2M, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D
EASTSIDE PINE	1, 2S, 2P, 2M, 3S, 3P, 3M, 4S, 4P, 4M, 5S, 5P, 5M, 5D
ESTUARINE	1, 2O, 2M, 2S, 2G, 2R, 2B, 3O, 3M, 3S, 3G, 3R, 3B
FRESH EMERGENT WETLAND	1S, 1P, 1M, 1D, 2S, 2P, 2M, 2D
JUNIPER	1, 2S, 2P, 2M, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 5S, 5P, 5M
KLAMATH MIXED CONIFER	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D, 6
LACUSTRINE	1, 2O, 2M, 2S, 2G, 2R, 2B, 4O, 4M, 4S, 4G, 4R, 4B
MARINE	1, 2O, 2M, 2S, 2G, 2R, 2B, 3O, 3M, 3S, 3G, 3R, 3B
MONTANE HARDWOOD	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M
MONTANE HARDWOOD-CONIFER	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M
MONTANE RIPARIAN	1, 2S, 2P, 2M, 3S, 3P, 3M, 4S, 4P, 4M, 5S, 5P, 5M
PINYON-JUNIPER	1, 2S, 2P, 2M, 3S, 3P, 3M, 4S, 4P, 4M, 5S, 5P, 5M
PONDEROSA PINE	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
RIVERINE	1, 2O, 2M, 2S, 2G, 2R, 2B, 4O, 4M, 4S, 4G, 4R, 4B
SALINE EMERGENT WETLAND	1S, 1P, 1M, 1D, 2S, 2P, 2M, 2D
SIERRAN MIXED CONIFER	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D, 6
VALLEY FOOTHILL RIPARIAN	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
WET MEADOW	1S, 1P, 1M, 1D, 2S, 2P, 2M, 2D
WHITE FIR	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D, 6

Canada Goose:

I. Habitat Relationships

Habitat relationships for this species are defined by the California Wildlife Habitat Relationships (CWHR) models, which model habitat suitability for California's terrestrial vertebrates (CWHR 2005) (see Introduction section above for details on these models). Based on the CWHR model (GTR PSW-37), early seral habitat (CWHR 1 & 2) for ponderosa pine, oak woodland, sierra mixed conifer, and Jeffrey pine provide feeding and resting habitat when adjacent to wetlands, lakes, reservoirs, and wet meadows.

Mule Deer:

I. Habitat Relationships

Habitat relationships for this species are defined by the California Wildlife Habitat Relationships (CWHR) models, which model habitat suitability for California's terrestrial vertebrates (CWHR 2005) (see Introduction for details on these models). Specifically, high and moderate capability habitat is listed in Table 8.

Table 8. CWHR high and moderate capability habitat for mule deer (CWHR 2005).

CWHR Habitats	CWHR Specific High and Moderate Capability Size, Canopy Cover, and Substrate Classes
ALPINE DWARF-SHRUB	2P, 2M, 3S, 3P, 3M, 4S, 4P, 4M
ANNUAL GRASSLAND	1M, 1D, 2P, 2M, 2D
ASPEN	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D, 6
BITTERBRUSH	2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D
BLUE OAK WOODLAND	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
BLUE OAK-FOOTHILL PINE	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
CHAMISE-REDSHANK CHAPARRAL	2S, 2P, 2M, 2D, 3P, 3M, 3D, 4P, 4M, 4D
CLOSED-CONE PINE-CYPRESS	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5D
COASTAL OAK WOODLAND	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
COASTAL SCRUB	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D
DECIDUOUS ORCHARD	1
DESERT RIPARIAN	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D
DOUGLAS-FIR	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D, 6
DRYLAND GRAIN CROPS	1
EASTSIDE PINE	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5D
EUCALYPTUS	1, 2S, 2P, 3S, 3P, 4S, 4P, 5S, 5P
EVERGREEN ORCHARD	1
IRRIGATED GRAIN CROPS	1
IRRIGATED HAYFIELD	1
IRRIGATED ROW & FIELD CROPS	1
JEFFREY PINE	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5D
JUNIPER	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
KLAMATH MIXED CONIFER	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D, 6
LODGEPOLE PINE	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5D
LOW SAGE	2S, 2P, 2M, 3S, 3P, 3M, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
MIXED CHAPARRAL	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D
MONTANE CHARARRAL	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D
MONTANE HARDWOOD	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D

MONTANE HARDWOOD-CONIFER	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D, 6
MONTANE RIPARIAN	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D, 6
PASTURE	1
PERENNIAL GRASSLAND	1M, 1D, 2P, 2M, 2D
PINYON-JUNIPER	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
PONDEROSA PINE	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
RED FIR	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5D
REDWOOD	2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 6
SAGEBRUSH	2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D
SIERRAN MIXED CONIFER	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D, 6
SUBAPLINE CONIFER	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5D
URBAN	1
VALLEY FOOTHILL RIPARIAN	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5D
VALLEY OAK WOODLAND	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
VINEYARD	1
WET MEADOW	1M, 1D, 2P, 2M, 2D
WHITE FIR	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D, 6

In addition, the Lassen NF LRMP uses a model developed by Shimamoto to delineate habitat capability for mule deer in Northeast California. This model, which applies to Rocky Mountain Mule Deer, Columbian Black-tailed Deer, and hybrids between the two, identifies High and Medium capability mule deer cover and forage habitat by CWHR:

Habitat Variable	High (CWHR) ¹	Medium (CWHR) ¹
Cover	PPN – 3M, 3D, 4M, 4D, 5M, 5D, 6 SMC - 3M, 3D, 4M, 4D, 5M, 5D, 6 RFR - 3M, 3D, 4M, 4D, 5M, 5D, 6 JUN, MRI, ASP, SGB,	LPN – 3P, 4P, 5P PPN – 3P, 4P, 5P SMC – 3P, 4P, 5P RFR – 3P, 4P, 5P MHW, MCP, BBR
Forage	MRI, MHW, ASP, BBR, WTM, PGS, AGS, PPN 1, 2; SMC 1, 2; RFR 1, 2; LPN 1, 2	SGB, LSG, JUN PPN 3P, 4M, 5P; RFR 3P, 4P, 5P, SMC 3P, 4P, 5P,

¹ See the Introduction section for CWHR definitions

Marten:

I. Habitat Relationships

Habitat relationships for this species are defined by the California Wildlife Habitat Relationships (CWHR) models, which model habitat suitability for California's terrestrial vertebrates (CWHR 2005) (see Introduction section above for details on these models). The CWHR habitat stages that are moderately to highly important for the marten are:

4M, 4D, 5M, 5D, and 6, particularly within red fir, lodgepole pine, subalpine conifer, mixed conifer-fir, Jeffrey pine, and eastside pine (CWHR 2005). Specifically, high and moderate capability habitat is listed in Table 12.

Table 12. CWHR high and moderate capability habitat for American marten (CWHR 2005).

CWHR Habitats	CWHR Specific High and Moderate Capability Size, Canopy Cover, and Substrate Classes
ASPEN	4M, 4D, 5M, 5D, 6
BARREN	1
DOUGLAS-FIR	3S, 4S, 4P, 4M, 4D, 5P, 5M, 5D, 6
EASTSIDE PINE	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
JEFFREY PINE	4M, 4D, 5M, 5D
KLAMATH MIXED CONIFER	4M, 4D, 5M, 5D, 6
LODGEPOLE PINE	3S, 3P, 4S, 4P, 4M, 4D, 5P, 5M, 5D
MONTANE HARDWOOD-CONIFER	4P, 4M, 4D, 5P, 5M, 5D, 6
MONTANE RIPARIAN	4M, 4D, 5M, 5D, 6
PASTURE	1
PERENNIAL GRASSLAND	1S, 1P, 1M, 1D, 2S, 2P, 2M, 2D
PONDEROSA PINE	4M, 4D, 5P, 5M, 5D
RED FIR	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
SIERRAN MIXED CONIFER	4M, 4D, 5M, 5D, 6
SUBAPLINE CONIFER	3S, 3P, 4S, 4P, 4M, 4D, 5P, 5M, 5D
WET MEADOW	1S, 1P, 1M, 1D, 2S, 2P, 2M, 2D
WHITE FIR	4M, 4D, 5M, 5D, 6

Golden Eagle:

I. Habitat Relationships

Habitat relationships for this species are defined by the California Wildlife Habitat Relationships (CWHR) models, which model habitat suitability for California's terrestrial vertebrates (CWHR 2005) (see Introduction section above for details on these models). Specifically, high and moderate capability habitat is listed in Table 16.

Table 1. CWHR high and moderate capability habitat for Golden eagle (CWHR 2005).

CWHR Habitats	CWHR Specific High and Moderate Capability Size, Canopy Cover, and Substrate Classes
ALKALI DESERT SCRUB	1, 2S, 2P, 2M, 3S, 3P, 3M, 4S, 4P, 4M
ALPINE DWARF-SHRUB	1, 2S, 2P, 2M, 3S, 3P, 3M, 4S, 4P, 4M
ANNUAL GRASSLAND	1S, 1P, 1M, 1D, 2S, 2P, 2M, 2D
BARREN	1
BITTERBRUSH	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D
BLUE OAK WOODLAND	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
BLUE OAK-FOOTHILL PINE	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
CHAMISE-REDSHANK CHAPARRAL	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
COASTAL OAK WOODLAND	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
COASTAL SCRUB	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D
DESERT RIPARIAN	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D
DESERT SCRUB	1, 2S, 2P, 2M, 3S, 3P, 3M, 4S, 4P, 4M

DESERT SUCCULENT SHRUB	1, 2S, 2P,D 2M, 3S, 3P, 3M, 4S, 4P, 4M
DESERT WASH	1, 2S, 2P, 3S, 3P, 4S, 4P
DOUGLAS-FIR	1, 2S, 2P, 2M, 2D, 3S, 3P, 4S, 4P, 5S, 5P, 6
EASTSIDE PINE	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
EUCALYPTUS	1, 3S, 4S, 4P, 5S, 5P
FRESH EMERGENT WETLAND	1S, 1P, 1M, 1D, 2S, 2P, 2M, 2D
IRRIGATED HAYFIELD	1
JEFFREY PINE	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
JUNIPER	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
KLAMATH MIXED CONIFER	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D, 6
LOGEPOLE PINE	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
LOW SAGE	1, 2S, 2P, 2M, 3S, 3P, 3M, 4S, 4P, 4M
MIXED CHAPARRAL	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D
MONTANE CHARARRAL	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D
MONTANE HARDWOOD	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
MONTANE HARDWOOD-CONIFER	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D, 6
MONTANE RIPARIAN	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
PASTURE	1
PERENNIAL GRASSLAND	1S, 1P, 1M, 1D, 2S, 2P, 2M, 2D
PINYON-JUNIPER	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
PONDEROSA PINE	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
RED FIR	1, 2S, 2P, 2M, 2D, 3S, 3P, 4S, 4P, 5S, 5P
REDWOOD	1, 2S, 2P, 2M, 2D, 3S, 3P, 4S, 4P, 5S, 5P
RICE	1A, 1B
SAGEBRUSH	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D
SIERRAN MIXED CONIFER	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D, 6
SUBAPLINE CONIFER	1, 2S, 3S, 4S, 5S
VALLEY FOOTHILL RIPARIAN	1, 2D, 3D, 4D, 5D
VALLEY OAK WOODLAND	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
WET MEADOW	1S, 1P, 1M, 1D, 2S, 2P, 2M, 2D
WHITE FIR	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D, 6

Prairie Falcon:

I. Habitat Relationships

Habitat relationships for this species are defined by the California Wildlife Habitat Relationships (CWHR) models, which model habitat suitability for California's terrestrial vertebrates (CWHR 2005) (see Introduction section above for details on these models). Specifically, high and moderate capability habitat is listed in Table 20.

Table 20. CWHR high and moderate capability habitat for Prairie Falcon (CWHR 2005).

CWHR Habitats	CWHR Specific High and Moderate Capability Size, Canopy Cover, and Substrate Classes
ANNUAL GRASSLAND	1S, 1P, 1M, 1D, 2S, 2P, 2M, 2D
BARREN	1
BITTERBRUSH	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D
BLUE OAK WOODLAND	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
BLUE OAK-FOOTHILL PINE	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
CHAMISE-REDSHANK CHAPARRAL	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D
COASTAL OAK WOODLAND	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D

COASTAL SCRUB	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D
DESERT SUCCULENT SHRUB	1, 2S, 2P, 2M, 3S, 3P, 3M, 4S, 4P, 4M
DESERT WASH	1, 2S, 2P
DOUGLAS-FIR	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D, 6
DRYLAND GRAIN CROPS	1
EASTSIDE PINE	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
EUCALYPTUS	1S, 2S, 3S, 4S
IRRIGATED GRAIN CROPS	1
IRRIGATED HAYFIELD	1
JEFFREY PINE	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
JUNIPER	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
KLAMATH MIXED CONIFER	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D, 6
LODGEPOLE PINE	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
LOW SAGE	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D
MIXED CHAPARRAL	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D
MONTANE CHARARRAL	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
MONTANE HARDWOOD	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
MONTANE HARDWOOD-CONIFER	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D, 6
MONTANE RIPARIAN	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D, 6
PERENNIAL GRASSLAND	1S, 1P, 1M, 1D, 2S, 2P, 2M, 2D
PINYON-JUNIPER	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
PONDEROSA PINE	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
RED FIR	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
RICE	1A, 1B
SAGEBRUSH	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D
SIERRAN MIXED CONIFER	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D, 6
URBAN	1
VALLEY FOOTHILL RIPARIAN	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
VALLEY OAK WOODLAND	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
WET MEADOW	1S, 1P, 1M, 1D, 2S, 2P, 2M, 2D
WHITE FIR	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D, 6

Peregrine Falcon:

I. Habitat Relationships

Habitat relationships for this species are defined by the California Wildlife Habitat Relationships (CWHR) models, which model habitat suitability for California's terrestrial vertebrates (CWHR 2005) (see Introduction section above for details on these models). Specifically, high and moderate capability habitat is listed in Table 24.

Table 24. CWHR high and moderate capability habitat for Peregrine Falcon (CWHR 2005).

CWHR Habitats	CWHR Specific High and Moderate Capability Size, Canopy Cover, and Substrate Classes
ANNUAL GRASSLAND	1S, 1P, 1M, 1D, 2S, 2P, 2M, 2D
BARREN	1
BITTERBRUSH	1, 2S, 2P, 2M, 3S, 3P, 3M
BLUE OAK WOODLAND	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
BLUE OAK-FOOTHILL PINE	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
CHAMISE-REDSHANK CHAPARRAL	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D

CLOSED-CONE PINE-CYPRESS	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
COASTAL OAK WOODLAND	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
COASTAL SCRUB	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D
DESERT RIPARIAN	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D
DOUGLAS-FIR	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D, 6
EASTSIDE PINE	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
ESTUARINE	1, 2O, 2M, 2S, 2G, 2R, 2B, 3O, 3M, 3S, 3G, 3R, 3B, 4O, 4M, 4S, 4G, 4R, 4B
FRESH EMERGENT WETLAND	1S, 1P, 1M, 1D, 2S, 2P, 2M, 2D
IRRIGATED GRAIN CROPS	1
IRRIGATED HAYFIELD	1
JEFFREY PINE	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
JUNIPER	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
KLAMATH MIXED CONIFER	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D, 6
LACUSTRINE	1, 2O, 2M, 2S, 2G, 2R, 2B, 3O, 3M, 3S, 3G, 3R, 3B, 4O, 4M, 4S, 4G, 4R, 4B
LODGEPOLE PINE	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
LOW SAGE	1, 2S, 2P, 2M, 3S, 3P, 3M, 4S, 4P, 4M
MARINE	1, 2O, 2M, 2S, 2G, 2R, 2B, 3O, 3M, 3S, 3G, 3R, 3B, 4O, 4M, 4S, 4G, 4R, 4B
MIXED CHAPARRAL	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D
MONTANE CHARARRAL	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D
MONTANE HARDWOOD	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
MONTANE HARDWOOD-CONIFER	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D, 6
MONTANE RIPARIAN	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D, 6
PERENNIAL GRASSLAND	1S, 1P, 1M, 1D, 2S, 2P, 2M, 2D
PINYON-JUNIPER	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
PONDEROSA PINE	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
RED FIR	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
RICE	2D, 2M, 2S
RIVERINE	1, 2O, 2M, 2S, 2G, 2R, 2B, 3O, 3M, 3S, 3G, 3R, 3B, 4O, 4M, 4S, 4G, 4R, 4B
SAGEBRUSH	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D
SALINE EMERGENT WETLAND	1S, 1P, 1M, 1D, 2S, 2P, 2M, 2D
SIERRAN MIXED CONIFER	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D, 6
URBAN	1
VALLEY FOOTHILL RIPARIAN	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
VALLEY OAK WOODLAND	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
WET MEADOW	1S, 1P, 1M, 1D, 2S, 2P, 2M, 2D
WHITE FIR	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D, 6

Goshawk:

I. Habitat Relationships

Available evidence suggests that two important resources, food and nest habitat, are the principle mechanisms limiting goshawk densities (Newton 1989, 1991). Specifically, populations may be limited by shortage of nest sites; and where nest sites are readily available, densities may be limited by food abundance and availability (Newton 1991).

Habitat relationships for this species are defined by the California Wildlife Habitat Relationships (CWHR) models, which model habitat suitability for California's terrestrial

vertebrates (CWHR 2005) (see Introduction section above for details on these models). Specifically, high and moderate capability habitat is listed in Table 28.

Table 28. CWHR high and moderate capability habitat for Northern goshawk (CWHR 2005).

CWHR Habitats	CWHR Specific High and Moderate Capability Size, Canopy Cover, and Substrate Classes
ALPINE DWARF-SHRUB	1, 2S, 2P, 2M, 3S, 3P, 3M, 4S, 4P, 4M
ASPEN	3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D, 6
DOUGLAS-FIR	3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D, 6
EASTSIDE PINE	1, 2S, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
JEFFREY PINE	1, 2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
JUNIPER	3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
KLAMATH MIXED CONIFER	2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D, 6
LOGEPOLE PINE	1, 2S, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
MONTANE HARDWOOD	2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
MONTANE HARDWOOD-CONIFER	2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D, 6
MONTANE RIPARIAN	1, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D, 6
PINYON-JUNIPER	3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
PONDEROSA PINE	2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
RED FIR	3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
REDWOOD	2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D, 6
SIERRAN MIXED CONIFER	1, 2S, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
VALLEY FOOTHILL RIPARIAN	3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D
WHITE FIR	2S, 2P, 2M, 2D, 3S, 3P, 3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D, 6

California Spotted Owl:

I. Habitat Relationships

Habitat relationships for this species are defined by the California Wildlife Habitat Relationships (CWHR) models, which model habitat suitability for California's terrestrial vertebrates (CWHR 2005) (see Introduction for details on these models). Specifically, high and moderate capability habitat is listed in Table 32.

Table 32. CWHR high and moderate capability habitat for spotted owl (CWHR 2005).

CWHR Habitats	CWHR Specific High and Moderate Capability Size, Canopy Cover, and Substrate Classes
BLUE OAK WOODLAND	4M, 4D, 5S, 5P, 5M, 5D
COASTAL OAK WOODLAND	5M, 5D
DOUGLAS-FIR	4M, 4D, 5S, 5P, 5M, 5D, 6
EASTSIDE PINE	5M, 5D
KLAMATH MIXED CONIFER	4M, 4D, 5S, 5P, 5M, 5D, 6
LOGEPOLE PINE	5M, 5D
MONTANE HARDWOOD	4M, 4D, 5M, 5D
MONTANE HARDWOOD-CONIFER	4M, 4D, 5S, 5P, 5M, 5D, 6
MONTANE RIPARIAN	3M, 3D, 4M, 4D, 5S, 5P, 5M, 5D, 6
PONDEROSA PINE	4M, 4D, 5S, 5P, 5M, 5D
RED FIR	4M, 4D, 5S, 5P, 5M, 5D
REDWOOD	3M, 3D, 4S, 4P, 4M, 4D, 5S, 5P, 5M, 5D, 6

SIERRAN MIXED CONIFER	4M, 4D, 5S, 5P, 5M, 5D, 6
VALLEY FOOTHILL RIPARIAN	5M, 5D
WHITE FIR	4M, 4D, 5S, 5P, 5M, 5D, 6