

## Appendix P

### Natural Community Schemes





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## **P. NATURAL COMMUNITY SCHEMES**

A crosswalk is a table that maps relationships and equivalencies. Table P-1 is a crosswalk for various schemes of natural community designations. It shows the terms for natural communities that we use in our HCP/NCCP (section 1.11 and Table 3-20), along with schemes from P.A. Munoz and D.D. Keck (1968); K.E. Mayer and W.F. Laudenslayer (1988); N.H. Cheatham and J.R. Haller (1975); the California Natural Data Diversity Base (CNDDDB); and the California Native Plant Society (CNPS). Table P-2 shows the threats to natural communities in the HCP/NCCP plan area, the potential effects of MRC covered activities, and the proposed conservation strategies to counteract those effects.

**Table P-1 Crosswalk for Natural Community Schemes**

Crosswalk for Natural Community Schemes							
Current MRC HCP/NCCP	Community Types VegCAMP Code (CDFG 2010) <sup>1</sup>	Sensitive community?	CNDDDB (Holland 1986)	CNPS Rare Plant Inventory (2001)	Munz and Keck (1968)	Mayer and Laudenslayer (1988)	Cheatham and Haller (1975)
North Coast coniferous	redwood forest (86.100.00)	No, but may include sensitive associations	North Coast alluvial forest, upland redwood forest	North Coast coniferous forest	redwood forest	redwood forest	redwood forest
	Douglas-fir forest (82.200.00)	No, but may include sensitive assoc.	upland Douglas-fir forest	North Coast coniferous forest	Douglas-fir forest	Douglas-fir forest	Douglas-fir forest
broadleaved upland	Douglas-fir - tanoak forest (82.500.00)	Yes?					
	California bay forest (74.100.00)	No				montane hardwood	mixed evergreen forest
	madrone forest (73.200.00)	No					
closed cone coniferous	beach pine forest (87.060.00 )	Yes	close cone coniferous forest	closed cone coniferous forest	closed cone pine forest	closed cone pine-cypress	closed-cone coniferous forest
	Bishop pine forest (87.070.00)	Yes					

<sup>1</sup> See <http://www.dfg.ca.gov/biogeodata/vegcamp/pdfs/natcomlist.pdf> , accessed 05/09/2011.

**Crosswalk for Natural Community Schemes**

<b>Current MRC HCP/NCCP</b>	<b>Community Types VegCAMP Code (CDFG 2010)<sup>1</sup></b>	<b>Sensitive community?</b>	<b>CNDDDB (Holland 1986)</b>	<b>CNPS Rare Plant Inventory (2001)</b>	<b>Munz and Keck (1968)</b>	<b>Mayer and Laudenslayer (1988)</b>	<b>Cheatham and Haller (1975)</b>
oak woodlands	knobcone pine forest / woodland (87.100.00)	No					
	Mendocino pygmy cypress woodland (81.400.00)	Yes					
	Sargent cypress woodland (81.500.00)	Yes					
	tanoak forest (73.100.00)	Yes					northern oak woodland
	California black oak forest (71.010.00)	No, but may include sensitive associations	broadleaved upland forest	broadleaved upland forest, cismontane woodland			
	canyon live oak forest (71.050.00)	No, but may include sensitive associations	broadleaved upland forest				live oak forest
	interior live oak woodland (71.080.00)	No	mixed evergreen forest				

**Crosswalk for Natural Community Schemes**

<b>Current MRC HCP/NCCP</b>	<b>Community Types VegCAMP Code (CDFG 2010)<sup>1</sup></b>	<b>Sensitive community?</b>	<b>CNDDDB (Holland 1986)</b>	<b>CNPS Rare Plant Inventory (2001)</b>	<b>Munz and Keck (1968)</b>	<b>Mayer and Laudenslayer (1988)</b>	<b>Cheatham and Haller (1975)</b>
	coast live oak woodland (71.060.00)	No, but may include sensitive associations	riparian forest, broadleaved upland forest				coastal oak woodland
	blue oak woodland (71.020.00)	No	valley and foothill grasslands, broadleaved upland forest	broadleaved upland forest, valley and foothill grasslands	northern oak woodland	Coastal oak woodland	northern oak woodland
	Oregon white oak woodland (71.030.00)	Yes		broadleaved upland forest		montane hardwood	
	valley oak woodland (71.040.00)	Yes					
	ceanothus chaparral (37.200.00 series)	May include sensitive alliances	mixed chaparral	chaparral	chaparral	chaparral	chaparral
	manzanita chaparral (37.300.00 series)	May include sensitive alliances					

**Crosswalk for Natural Community Schemes**

<b>Current MRC HCP/NCCP</b>	<b>Community Types VegCAMP Code (CDFG 2010)<sup>1</sup></b>	<b>Sensitive community?</b>	<b>CNDDDB (Holland 1986)</b>	<b>CNPS Rare Plant Inventory (2001)</b>	<b>Munz and Keck (1968)</b>	<b>Mayer and Laudenslayer (1988)</b>	<b>Cheatham and Haller (1975)</b>
	oak chaparral (37.400.00 series)	No					
	native perennial grassland (several alliances could occur)	May include sensitive communities	coastal prairie, coastal terrace prairie	coastal prairie	coastal prairie	perennial grasslands	coastal prairie
	common velvet grass (42.050.00)	No					
	California annual grassland	No	valley and foothill grasslands	valley and foothill grasslands	valley grassland	annual grassland	valley and foothill grasslands
salt marsh	salt marsh (bulrush marshes) 52.112.00	Yes	marshes and swamps, meadows	meadows and seeps		wet meadow	meadows and swamps
deciduous riparian							
	black cottonwood forest (61.120.00)	Yes	riparian forest, riparian woodland	riparian forest, riparian woodland	riparian forest	valley foothill riparian	mixed riparian woodland
	Oregon ash groves (61.960.00)	Yes					

**Crosswalk for Natural Community Schemes**

<b>Current MRC HCP/NCCP</b>	<b>Community Types VegCAMP Code (CDFG 2010)<sup>1</sup></b>	<b>Sensitive community?</b>	<b>CNDDB (Holland 1986)</b>	<b>CNPS Rare Plant Inventory (2001)</b>	<b>Munz and Keck (1968)</b>	<b>Mayer and Laudenslayer (1988)</b>	<b>Cheatham and Haller (1975)</b>
	bingleaf maple forest (61.450.00)	Unknown at this time				valley foothill riparian, montane riparian	
	white alder groves (61.420.00)	No, but may include sensitive associations				montane riparian	
	red alder forest (61.410.00)	No, but may include sensitive associations				valley foothill riparian, montane riparian	red alder groves
	Willow riparian forest and scrub types (several alliances could occur)	Yes	riparian forest, riparian woodland, riparian scrub	riparian forest, riparian woodland, riparian scrub		valley foothill riparian, montane riparian	mixed riparian woodland, willow thickets
aquatic	meadows and seeps (45.000.00 series) (several alliances could occur)	May include sensitive alliances	marshes and swamps, meadows	meadows and seeps	freshwater marsh, valley grassland, coastal prairie	wet meadow	meadows and swamps

**Table P-2 Sensitive Natural Communities, Threats, and Effects of MRC Covered Activities**

Sensitive Natural Communities, Threats, and Effects of MRC Covered Activities			
HCP/NCCP Natural Communities	Sensitive Community Types (Table P-1)	Threats to Natural Community	Effects of MRC Covered Activities and Proposed Conservation Strategies
<ul style="list-style-type: none"> <li>▫ North Coast coniferous</li> </ul>			
<ul style="list-style-type: none"> <li>▫ Broadleaved upland</li> </ul>	<ul style="list-style-type: none"> <li>▫ tanoak woodland</li> </ul>	<p>Sudden Oak Death (SOD) (Standiford, R. 2000).</p> <p>Change in fire return frequency and intensity (Plumb &amp; McDonald 1981).</p> <p>Although tanoak does not depend on fire for regeneration, regular low-intensity fires may reduce populations of acorn and seedling predators, reduce competing vegetation, and decrease fuel loading that could increase fire intensity, killing seedlings and mature trees.</p> <p>Timber harvest and conversion to conifers (Griffin 1988,</p>	<p>There are records of Sudden Oak Death infections in Mendocino County, including on tanoak. Sudden Oak Death has been confirmed in 2 areas of MRC land in Sonoma County but not within the HCP/NCCP plan area (see 14.9). Silvicultural activities may spread Sudden Oak Death through the transfer of the pathogen by equipment or personnel. MRC has committed to a range of actions to combat SOD and other pathogen outbreaks that reach a specified threshold (see.14.9.2).</p> <p>Fire suppression for management of timberlands could alter the natural fire frequency within this natural community. MRC will only conduct emergency fire suppression. MRC vegetation management practices include prescribed burning to promote conifer growth. Burns will be small in scale and away from sensitive habitats.</p> <p>Currently, MRC conducts hardwood control, including tanoak removal, from conifer sites where hardwoods</p>

**Sensitive Natural Communities, Threats, and Effects of MRC Covered Activities**

<b>HCP/NCCP Natural Communities</b>	<b>Sensitive Community Types (Table P-1)</b>	<b>Threats to Natural Community</b>	<b>Effects of MRC Covered Activities and Proposed Conservation Strategies</b>
<ul style="list-style-type: none"> <li>▫ closed cone coniferous</li> </ul>	<ul style="list-style-type: none"> <li>▫ beach pine forest</li> <li>▫ Bishop pine forest</li> <li>▫ pygmy cypress dwarf woodland</li> <li>▫ Sargent cypress woodland</li> </ul>	<p>Barnhart et al 1996).</p> <p>Changes in fire-return interval, i.e., too long, too short (Barbour 2007, p. 297).</p> <p>Fragmentation of stands by access roads, mining, and development (Barbour 2007, p. 309).</p>	<p>interfere with conifer regeneration. MRC operational guidelines, however, prohibit elimination of all tanoak stands on covered lands. These guidelines exclude harvests from stands dominated by native hardwoods, including tanoak, which have never been managed for conifer timber production.</p> <p>Fire suppression for management of timberlands could alter the natural fire frequency that these community types depend on for successful reproduction and recruitment. MRC will work with the wildlife agencies to mimic natural disturbance within this natural community, including using controlled burns.</p> <p>Construction of new roads, landings, and skid trails could increase fragmentation of closed-cone coniferous forest. MRC will avoid construction of new facilities such as roads, landings, and skid trails in this natural community. MRC can only disturb, over the 80-year span of the HCP/NCCP, up to 5 ac of pygmy forest. MRC will work with the wildlife agencies to decommission, close, and revegetate historic roads within this natural community (see Appendix E, <i>Road, Landing, and Skid Trail Standards</i>, section E.2.1)..</p>

**Sensitive Natural Communities, Threats, and Effects of MRC Covered Activities**

<b>HCP/NCCP Natural Communities</b>	<b>Sensitive Community Types (Table P-1)</b>	<b>Threats to Natural Community</b>	<b>Effects of MRC Covered Activities and Proposed Conservation Strategies</b>
<ul style="list-style-type: none"> <li>▫ oak woodlands</li> </ul>	<ul style="list-style-type: none"> <li>▫ Oregon white oak woodland</li> <li>▫ valley oak woodland</li> <li>▫ grasslands</li> </ul>	<p>Timber harvest and conversion to conifers (Griffin 1988, Barnhart et al 1996).</p> <p>Poor regeneration caused by acorn or seedling damage by insects, livestock, deer, rodents (Biswell 1989, Swiecki et al. 1997).</p>	<p>Currently, MRC conducts hardwood control, including tanoak removal, from conifer sites where hardwoods interfere with conifer regeneration. MRC operational guidelines, however, prohibit elimination of all tanoak stands on covered lands. These guidelines exclude harvests from stands dominated by native hardwoods, including tanoak, which have never been managed for conifer timber production. MRC will maintain true oak stands, harvesting oak woodlands and true oak forests only to remove invasive conifers.</p> <p>MRC does not know whether timber harvests will change patterns of herbivory of oak acorns or seedlings on our land. Our conservation measures include retention of clusters of mast-producing hardwoods (C§9.3.3.2-4) and retention of all true oak trees and madrones &gt; 18 in. dbh unless it is necessary to remove them for safety, road right-of-way, or yarding corridors. (C§9.3.3.2-5).</p>

**Sensitive Natural Communities, Threats, and Effects of MRC Covered Activities**

<b>HCP/NCCP Natural Communities</b>	<b>Sensitive Community Types (Table P-1)</b>	<b>Threats to Natural Community</b>	<b>Effects of MRC Covered Activities and Proposed Conservation Strategies</b>
		<p>Change in fire return frequency and intensity (Biswell 1989, Bartolome et al 2002, Allen-Diaz et al. 2007).</p> <p>Oaks do not depend on fire for regeneration, however regular low-intensity fires may reduce populations of acorn and seedling predators, reduce competing vegetation, and decrease fuel loading that could increase fire intensity, killing seedlings and mature trees.</p> <p>Fire suppression may promote the invasion of oak woodlands by Douglas-fir (Barnhart et al. 1996).</p>	<p>Fire suppression for management of timberlands could alter the natural fire frequency within this natural community. MRC will only conduct emergency fire suppression. MRC vegetation management practices include prescribed burning to promote conifer growth. Burns will be small in scale and away from sensitive habitats.</p>
<ul style="list-style-type: none"> <li>▫ salt marsh</li> </ul>			<p>MRC will preserve 67 ac of salt marsh by limiting our activities within and adjacent to them. When covered activities must occur, there will be strict levels of protection in place. The location of this habitat makes it very unlikely that many activities will take place near or within them</p>

**Sensitive Natural Communities, Threats, and Effects of MRC Covered Activities**

<b>HCP/NCCP Natural Communities</b>	<b>Sensitive Community Types (Table P-1)</b>	<b>Threats to Natural Community</b>	<b>Effects of MRC Covered Activities and Proposed Conservation Strategies</b>
<ul style="list-style-type: none"> <li>▫ deciduous riparian forest</li> </ul>	<ul style="list-style-type: none"> <li>▫ black cottonwood riparian forest</li>   <li>▫ Oregon ash riparian forest</li> <li>▫ willow riparian forest and scrub</li> </ul>	<p>Alteration of flow regimes by dam construction, channelization and levee construction (Knopf et al. 1988).</p> <p>Introduction and spread of invasive plants (Knopf et al. 1988), e.g., eucalyptus invasion, displaces native trees, reduces diversity and abundance of understory, and increases fire risk (Bossard et al. 2000).</p>	<p>Improving in-stream habitat could impact adjacent riparian habitats. MRC will make improvements such as structure replacement, channel re-alignment, and bedload reduction as described in Chapter 8, <i>Conservation Measures for Aquatic Habitat</i>.</p> <p>By creating ground disturbance and opening canopy, timber harvest can increase the risk that non-native species will invade adjacent natural communities. MRC currently controls occurrences of invasive plant species when feasible, and will continue to do so after permit issuance. MRC will develop an Invasive Plant Control Program within the first 5 years of HCP/NCCP implementation. When MRC completes the program, we will incorporate elements of it into individual PTHPs and other site-specific projects. MRC and the wildlife agencies will evaluate and revise the program as needed or at least every 5 years.</p> <p>MRC will prevent, where feasible, the expansion of eucalyptus, a non-native tree which can invade riparian areas, and attempt to eradicate it.</p>

**Sensitive Natural Communities, Threats, and Effects of MRC Covered Activities**

HCP/NCCP Natural Communities	Sensitive Community Types (Table P-1)	Threats to Natural Community	Effects of MRC Covered Activities and Proposed Conservation Strategies
<ul style="list-style-type: none"> <li>▫ aquatic</li> </ul>	<ul style="list-style-type: none"> <li>▫ freshwater marsh</li> <li>▫ meadows and seeps</li> </ul>	<p>Clearing for timber harvest, road construction, gravel mining.</p> <p>Alteration of flow regimes (Mitsch and Gosselink 1993).</p> <p>Introduction and spread of invasive plants that displace native vegetation and reduce biodiversity (Bossard et al 2000).</p>	<p>Timber harvest and its associated operations, such as road building, could impact riparian habitat. MRC will not conduct timber harvest operations in naturally occurring deciduous riparian habitat. MRC has adopted <i>Road, Landing, and Skid Trail Standards</i> (Appendix E). The specific standards which apply to road drainage and stream crossings will protect riparian vegetation. Other standards cover rock pits and quarries. Improving in-stream habitat could impact adjacent riparian habitat. MRC will make improvements such as structure replacement, channel re-alignment, and bedload reduction as described in Chapter 8, <i>Conservation Measures for Aquatic Habitat</i>.</p> <p>Improving in-stream habitat could impact adjacent riparian habitat. MRC will make improvements such as structure replacement, channel re-alignment, and bedload reduction as described in Chapter 8, <i>Conservation Measures for Aquatic Habitat</i>.</p> <p>MRC currently controls occurrences of invasive plant species when feasible, and will continue to do so after permit issuance. MRC will develop an Invasive Plant Control Program within the first 5 years of HCP/NCCP implementation. When MRC completes the program, we will incorporate elements of it into individual PTHPs and other site-specific projects. MRC and the wildlife agencies will evaluate and revise the program as needed or at least every 5 years.</p>