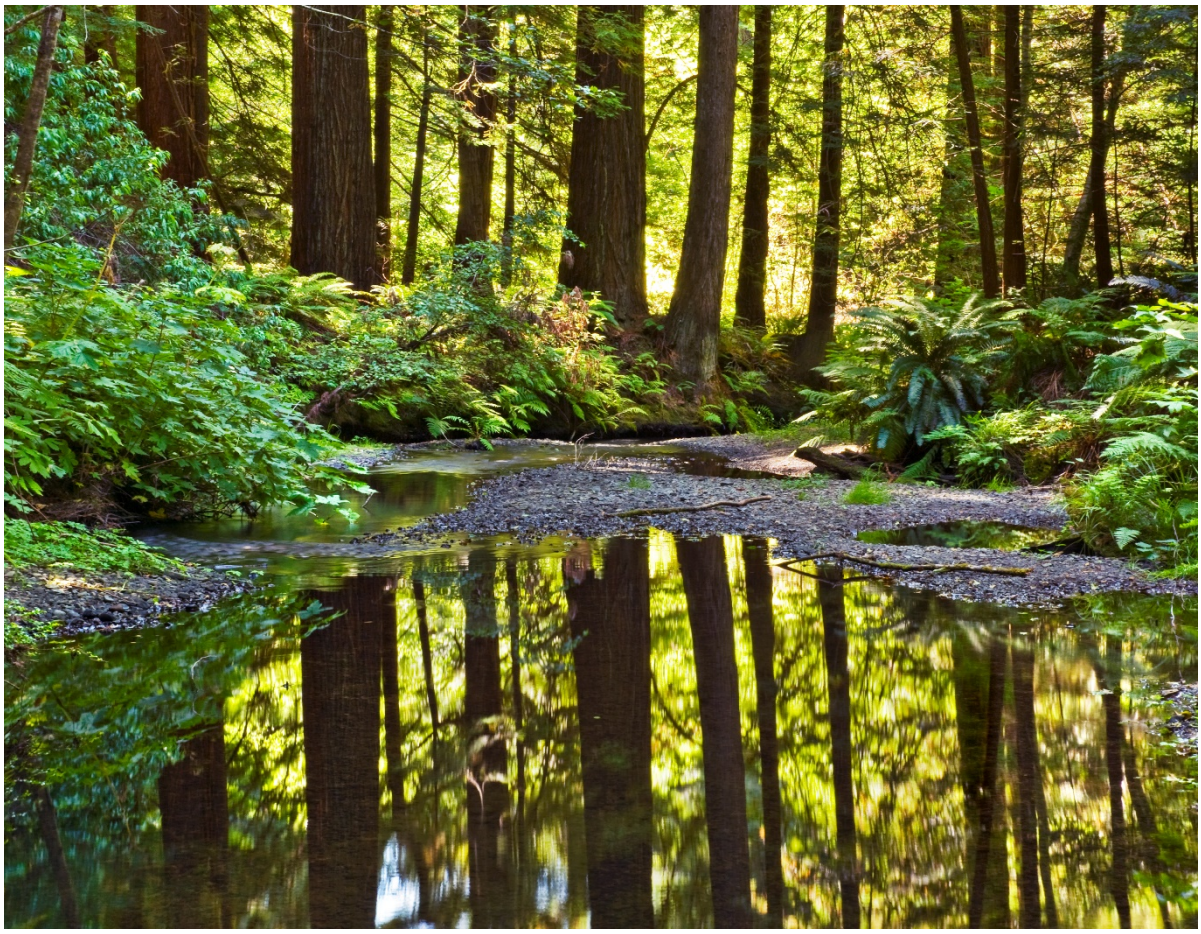
High Conservation Value Forest Assessment
Mendocino-Humboldt Redwood Companies



Contents

Introduction

This High Conservation Value Forest (HCVF) assessment was prepared by staff of Mendocino and Humboldt Redwood Company Forest Management Companies to meet the requirements of the FSC-US standard (July 8, 2010, v1.0) and the FSC-US HCVF draft framework, revised July 7, 2010. High Conservation Value Forests are defined in the FSC-US standard (page 93).

"High Conservation Value Forests possess one or more of the following attributes:

1. Forest areas containing globally, regionally or nationally significant concentrations of biodiversity values (e.g., endemism, endangered species, refugia).
2. Forest areas containing globally, regionally or nationally significant large landscape level forests, contained within, or containing the management unit, where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance.
3. Forest areas that are in or contain rare, threatened or endangered ecosystems.
4. Forest areas that provide basic services of nature in critical situations (e.g., watershed protection, erosion control)
5. Forest areas fundamental to meeting basic needs of local communities (e.g., subsistence, health).
6. Forest areas critical to local communities' traditional cultural identity (areas of cultural, ecological, economic or religious significance identified in cooperation with such local communities)."

Scope

This assessment has been prepared to provide HCVF-specific detail for the Mendocino Redwood Company (MRC) and Humboldt Redwood Company (HRC) forest management units. Both MRC and HRC (together Companies) management plans provide relevant detail for management process and landscape planning for Companies forestlands:

(1) MRC Management Plan - https://www.hrcllc.com/sites/default/files/inline-files/MP_Rev007.pdf
(2) HRC Management Plan --https://www.hrcllc.com/sites/default/files/inline-files/COMPANIES-Management-Plan_7_2016.pdf

Additional planning documents and assessments have been completed to support Companies management planning processes, including:

(1) Companies Vegetation Management Policy - https://www.hrcllc.com/sites/default/files/inline-files/Redwood%20Company%20Vegetation%20Management%20Policy_v1_1.pdf
(2) MRC's Option A 2008 - https://www.hrcllc.com/pdf/MRC_Option_A.pdf
(3) Humboldt Redwood Company Sustainability Analysis - https://www.hrcllc.com/wp-content/uploads/2012/01/SustainabilityAnalysis_draft11_Mar29_2016b.pdf

This report provides an in-depth review of the two forestlands' recently revised HCVF assessment to: (1) consolidate and build on previous reports and assessments, (2) report on the synthesis of this work, and (3) revise with any new information. Our intent is to communicate the results as they relate to the FSC-US Forest Management standard.

Context

Together, Companies forestlands cover 418,100 acres of timberlands (228,800 at MRC and 209,300 at HRC). MRC forestlands are located in the following watersheds: Albion River, Alder Creek, Big River, Elk Creek, Garcia River, Greenwood Creek, Hollow Tree Creek, Navarro River, Noyo River, Cottaneva Creek, Juan Creek, Russian River, and Willow Creek. HRC forestlands are located in the following watersheds: Mad River, Freshwater Creek, Elk River, Strongs Creek, Yager Creek, Van Duzen River, Shively Creek, Larabee Creek, Eel River, McCann Creek, Bear River, Mattole River, and Lawrence Creek.

A significant portion of Companies forestland ownership is established as either no harvest (10%) or limited harvest (12%). Table 1 depicts acres of prohibited and limited harvest by each timberland.

Table 1. Prohibited and limited harvest acres within Companies timberlands.

Timberland	Total	Harvest prohibited	Harvest limited	Unconstrained
HRC	209,359	31,048	26,794	151,516
MRC	229,445	12,938	25,915	190,592
Total	438,804	43,986	52,709	342,108

In addition to the protections in the table above, Companies maintain requirements within unconstrained forestlands for protecting key forest attributes, including:

(1) Protection of all individual old growth trees meeting the company's old growth policy (see both Management Plans).
(2) Retention of 10% of pre-existing hardwood trees within a forest stand (see Companies Vegetation Management Policy).
(3) The high value wildlife tree (HVWT) retention is part of HRC's Habitat Conservation Plan 6.11, **MEASURES TO CONSERVE HABITAT DIVERSITY AND STRUCTURAL COMPONENTS**.
(4) HRC's Habit Conservation Plan requires reporting every five years on HRC's management goal to develop or maintain 10% of forestlands in each Watershed Assessment Area in late seral forest; as well as 5% mid-successional; 5% young forest; and 5 % forest openings (HCP 6.11.2.1).
(5) Avoid planting of coastal prairies/grasslands with Douglas-fir or redwood.

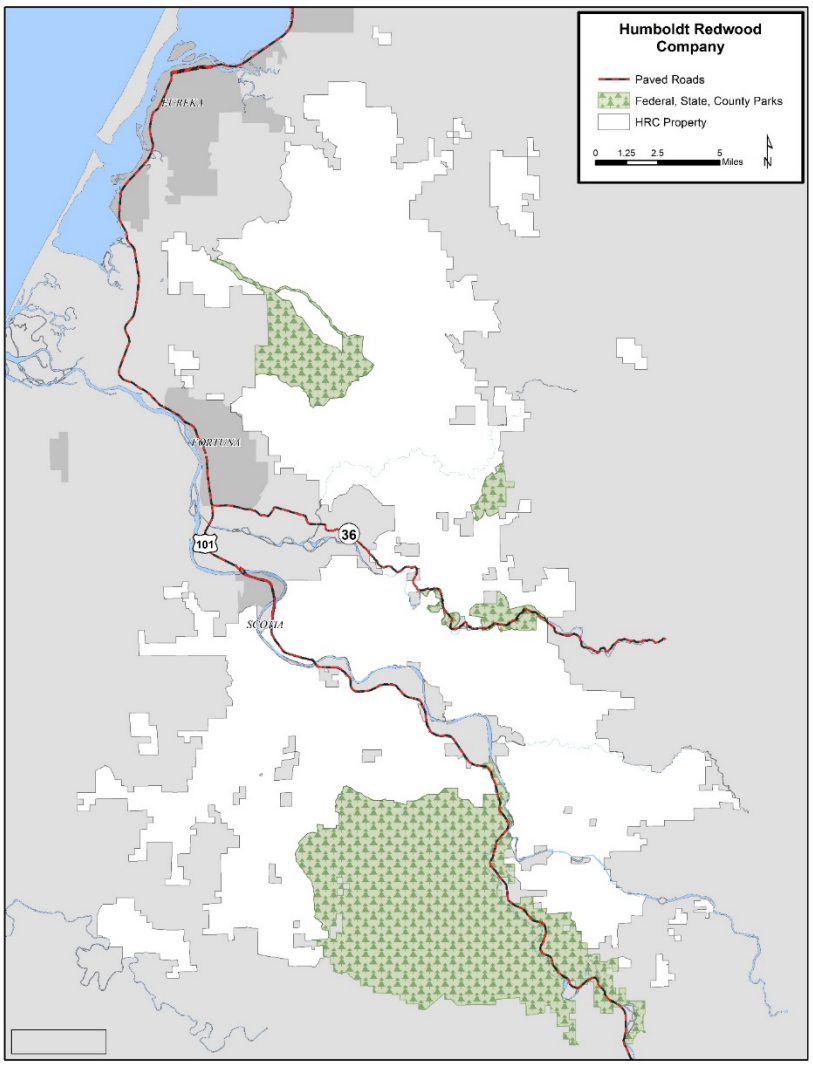


Figure 1. Humboldt Redwood Company timberland holdings (shown in white).

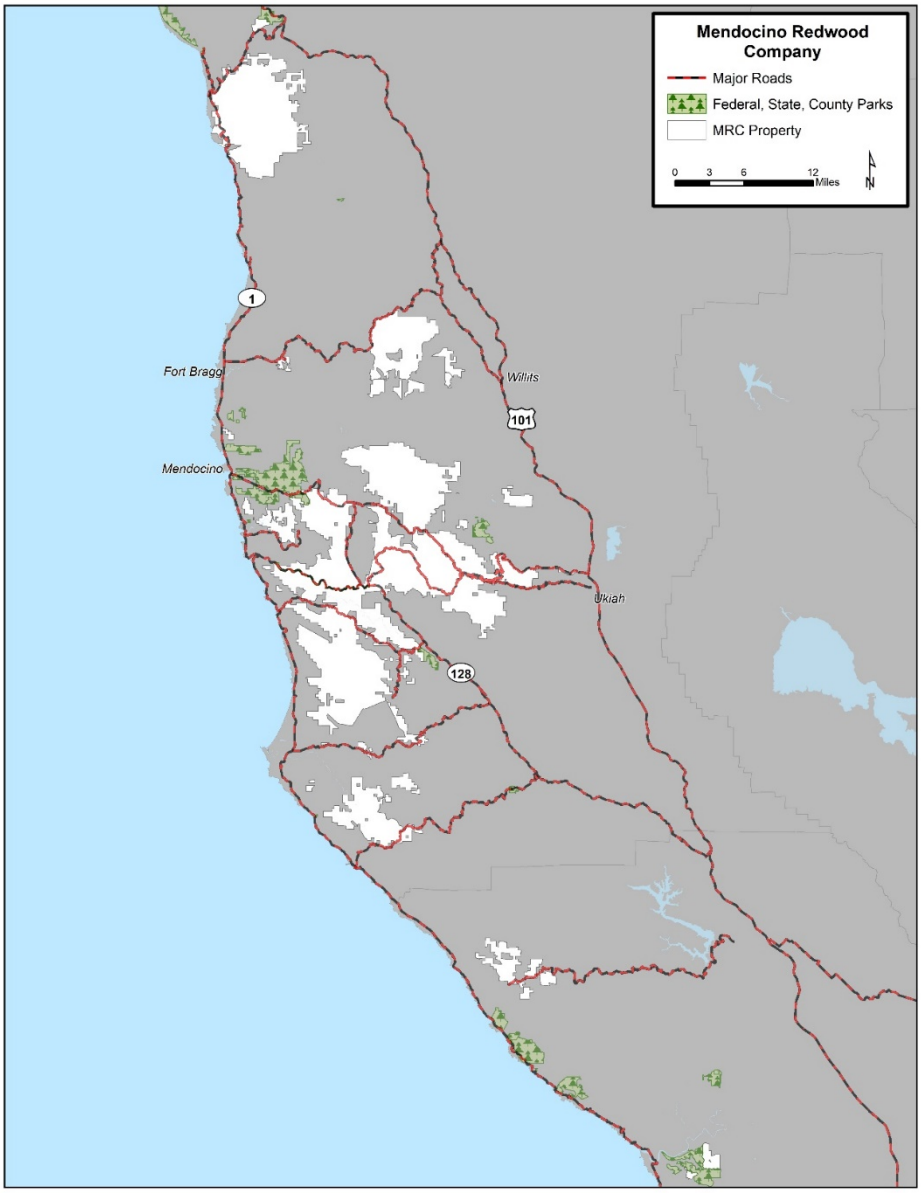


Figure 2. Mendocino Redwood Company timberland holdings (shown in white).

HCVF Definition

High Conservation Value Forests (HCVF); as defined in the FSC-US Forest Management Standard (2010, p. 93),

> "High Conservation Value Forests possess one or more of the following attributes:
>
> 1. Forest areas containing globally, regionally or nationally significant concentrations of biodiversity values (e.g., endemism, endangered species, refugia).
> 2. Forest areas containing globally, regionally or nationally significant large landscape level forests, contained within, or containing the management unit, where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance.
> 3. Forest areas that are in or contain rare, threatened or endangered ecosystems.
> 4. Forest areas that provide basic services of nature in critical situations (e.g., watershed protection, erosion control)
> 5. Forest areas fundamental to meeting basic needs of local communities (e.g., subsistence, health).
> 6. Forest areas critical to local communities' traditional cultural identity (areas of cultural, ecological, economic or religious significance identified in cooperation with such local communities).
>
> Definitions and methods of identifying forest areas with the preceding HCV attributes are included in Appendix F and the FSC-US National HCVF Assessment Framework (available on the Forest Management Standard page of the FSC-US website, www.fscus.org)"

This assessment was completed consistent with and to satisfy the requirements of the HCVF Assessment Framework. Additionally, Companies utilized draft Best Available Information from the updated HCVF Assessment Framework currently in development (attached as Appendix A to this assessment). This assessment focuses on determining whether any forest stands within Companies holdings meet the six attributes listed above. Regardless of HCVF status, Companies manage all forestlands with a high degree of environmental stewardship. All forestlands are managed to meet the standards of the California Forest Practice Rules, FSC-US Forest Management Standards, and additionally, HRC's forestlands will be managed to meet HRC's Habitat Conservation Plan.

Methodology

This HCVF assessment was completed consistent with the FSC-US HCVF Assessment Framework. Companies utilized sources listed within the HCVF framework whenever possible. Companies additionally utilized the Best Available Information from the revised HCVF Framework in development at FSC-US, Controlled Wood Risk Assessment for the US (FSC-NRA-US V1-0), and publicly available LiDAR data to create a canopy height model for assessment of old growth stands that may have been missed in our initial assessment. Stakeholder and expert input on this HCVF assessment has been ongoing during Companies' FSC certification. Companies reviewed our previous HCVF assessments (completed independently at each FMU) and other regional FSC certificate-holders' assessments to determine if any HCVF was missed in our initial filter. We utilized maps and information presented by various stakeholders and experts to review potential areas for HCVF designation our designation of HCVF in these forests. Staff of both Companies worked diligently to review maps, data, policies, and on the ground conditions to deliver the current assessment of existing HCVFs on Companies timberlands.

Results

Results are presented in Table 2 below. Narratives of the assessment process are presented following the table for each HCVF attribute.

Table 2. Results of Companies' HCVF assessment.

HCVF Number	Question	HCVF Present?	Acres	Rationale
1. Forest areas containing globally, regionally, or nationally significant concentrations of biodiversity	1.1 Does all or part of the FMU contain an area that is legally protected or managed primarily for concentrations of biodiversity values that are significant at an ecoregion or larger scale, or is such an area proposed for protection	No	0	Rare, threatened, and endangered species and communities are found throughout the ecoregion and thus not considered significant at the ecoregional scale.
	1.2 Does all or part of the FMU contain an area with significant concentrations of rare, threatened, or endangered species or rare ecological communities, endemic (range restricted) species and/or natural communities that are significant at an ecoregional scale	Yes	39,747[1]	Riparian management zones for Class 1 and 2 streams with anadromous salmonids, pygmy forest, oak woodlands, marbled murrelet habitat, Northern spotted owl protected areas, Point Arena mountain beaver habitat.
2 Forest areas containing globally, regionally, or nationally	2.1 Does all or part of the FMU contain a globally, regionally or nationally significant large landscape-scale forest where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance? What would happen to	Yes	203	Companies designated a natural forest on Long Ridge as HCVF 2 that experienced less levels of human disturbance – this appears to be the only example of this type of habitat formed NOT as a result of fire

[1] These acres may include overlap, they are not necessarily indicative of a unique total number of acres. Figures 3-8 show how the HCVFs are distributed across the two Forest Management Units.

HCVF Number	Question	HCVF Present?	Acres	Rationale
significant large landscape level forests, contained within, or containing the management unit, where viable population of most, if not all naturally occurring species exist in natural patterns of distribution and abundance.	ecoregional biodiversity if the characteristics of this forest (e.g., age class structure or relative abundance) were significantly altered?			exclusion due to its north facing slope.
	2.2 Does all or part of the FMU contain a landscape-scale forest recognized as being significant to biodiversity conservation at the ecoregion scale because it contains landscape-scale biodiversity values that are not present on other forests due to landscape-scale habitat modifications on surrounding lands, (such as land use conversion or forest management practices that have significantly altered forest biodiversity values)? What would happen to regional biodiversity if the characteristics of this forest (e.g., age class structure or relative species abundance) were significantly altered?	No	0	There are no forest areas that are recognized as regionally significant in the ecoregion.
3. Forest areas that are in or contain rare, threatened, or endangered ecosystems.	3.1 Does the FMU contain old growth stands?	Yes	3,795	Identified through reviewing inventory, canopy height model derived from LiDAR, and boots on the ground review.
	3.2. Does the FMU contain or is it part of a roadless area >500 acres in size or that has unique roadless area characteristics?	No	0	See discussion below for methods of assessment.
	3.3. Does the FMU contain any other rare, threatened, or endangered ecosystem?	Yes	66	Yes – one additional rare ecosystem was identified in this process – salt marsh on MRC timberlands.
4. Forest areas that provide basic services of nature in critical	4.1 Is all or part of the FMU owned or managed for the primary purpose of providing a source of community drinking water?	Yes	23	One community drinking source is found on Companies timberlands in the southern portion of MRC timberlands.
	4.2 Does all of part of the FMU play a critical watershed	No	0	The watershed does not play a critical role

HCVF Number	Question	HCVF Present?	Acres	Rationale
situations (e.g., watershed protection, erosion control).	role in protecting community drinking water supplies?			in protecting community drinking water supplies.
	4.3 Does all or part of the FMU include extensive floodplain or wetland forests that are critical to mediating flooding or in controlling stream flow regulation and water quality?	No	0	These types of forests are not located within Companies timberlands.
	4.4 Is all or part of the FMU critical to control erosion, landslides, or avalanches that would threaten local communities?	No	0	There are very limited local communities in this area, and none affected directly by Companies forest management activities.
5. Forest areas fundamental to meeting basic needs of local communities (e.g. subsistence, health, well-being)	5.1. Is all of part of the FMU fundamental to the basic needs of the local community?	No	0	Companies assessed tenure and use rights for local community members and Native Americans and assessed that since the property has been closed to the public since at least the 1950s – it is not fundamental to the basic fundamental needs of the community (these needs are defined as critical resources such as food supply, building materials, or medicinal plants).
6. Forest areas critical to local communities' traditional cultural identity (areas of cultural, ecological, economic, or religious significance	6.1 Does all or part of the FMU contain specific forest area that is critical to the tribe and local community's cultural identity?	No	0	Companies assessed tenure and use rights for local community members and Native Americans and assessed that since the property has been closed to the public since the 1950s – it does not contain specific forest area critical to the local community's cultural identity. More specific evidence is provided regarding tribal interests in the area in the detailed assessment section.
	6.2 Are significant cultural features created intentionally	No	0	There are no significant cultural features in

HCVF Number	Question	HCVF Present?	Acres	Rationale
identified in cooperation with such local communities).	by humans present?			the Companies forestlands There are, however; many prehistoric sites that are provided protection in consultation with any interested tribal entities.
	6.3 Are outstanding natural landscapes present that have evolved as a result of social, economic, administrative, or religious imperative?	No	0	There are no outstanding natural landscapes present that have evolved as a result of social, economic, administrative, or religious imperative.

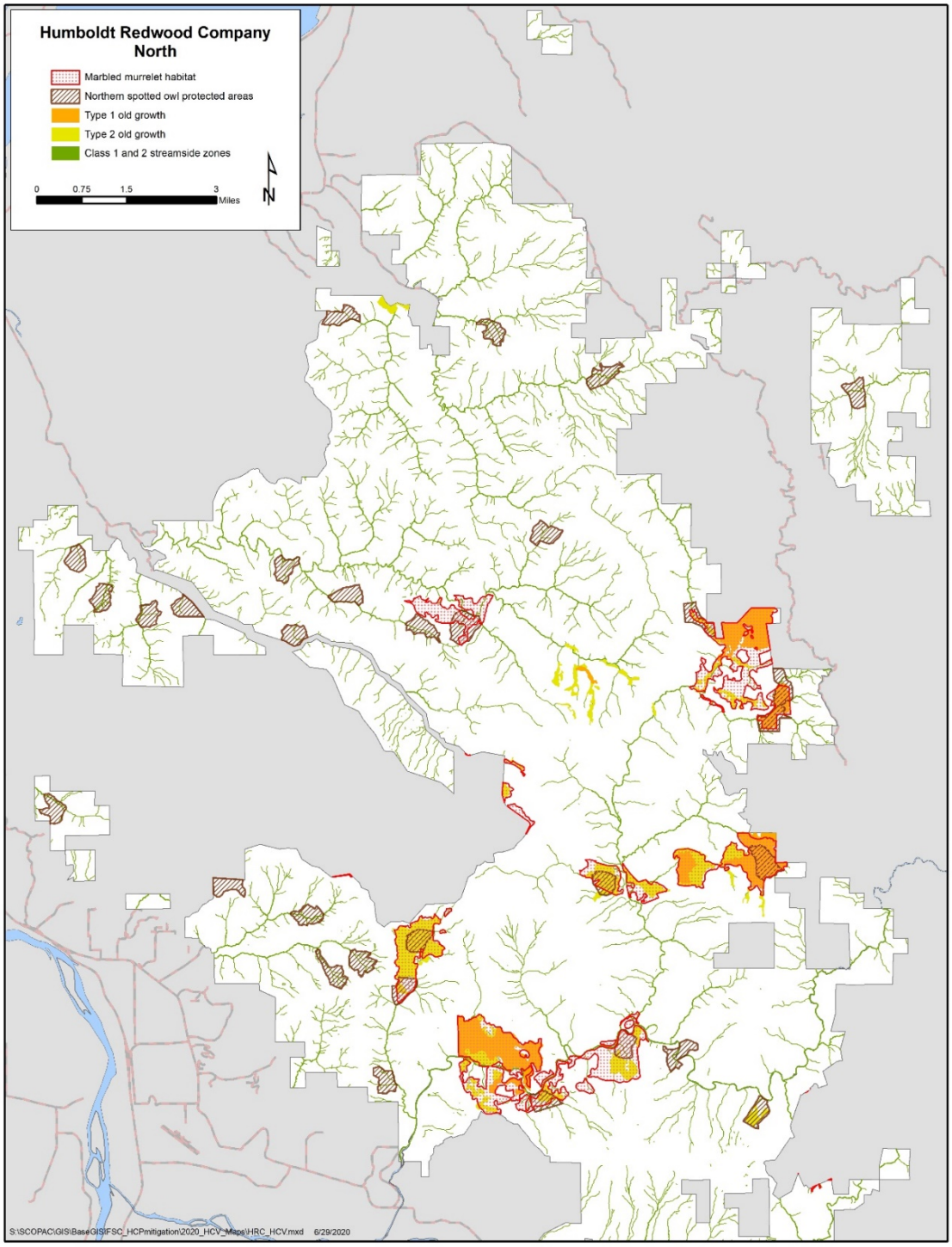


Figure 3. Identified HCVF areas in the northern portion of HRC timberlands.

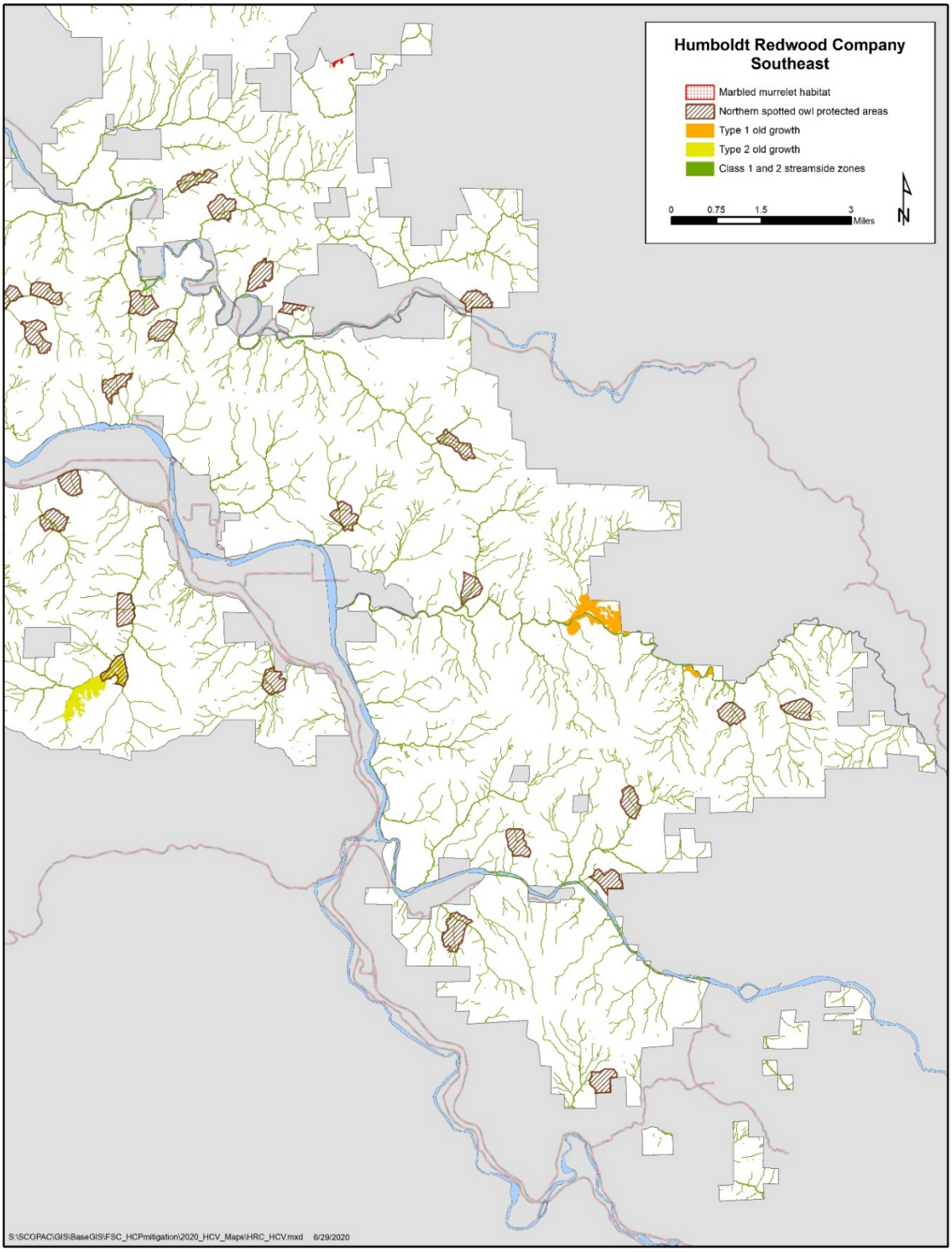


Figure 4. Identified HCVF areas in the Southeast portion of HRC's timberlands.

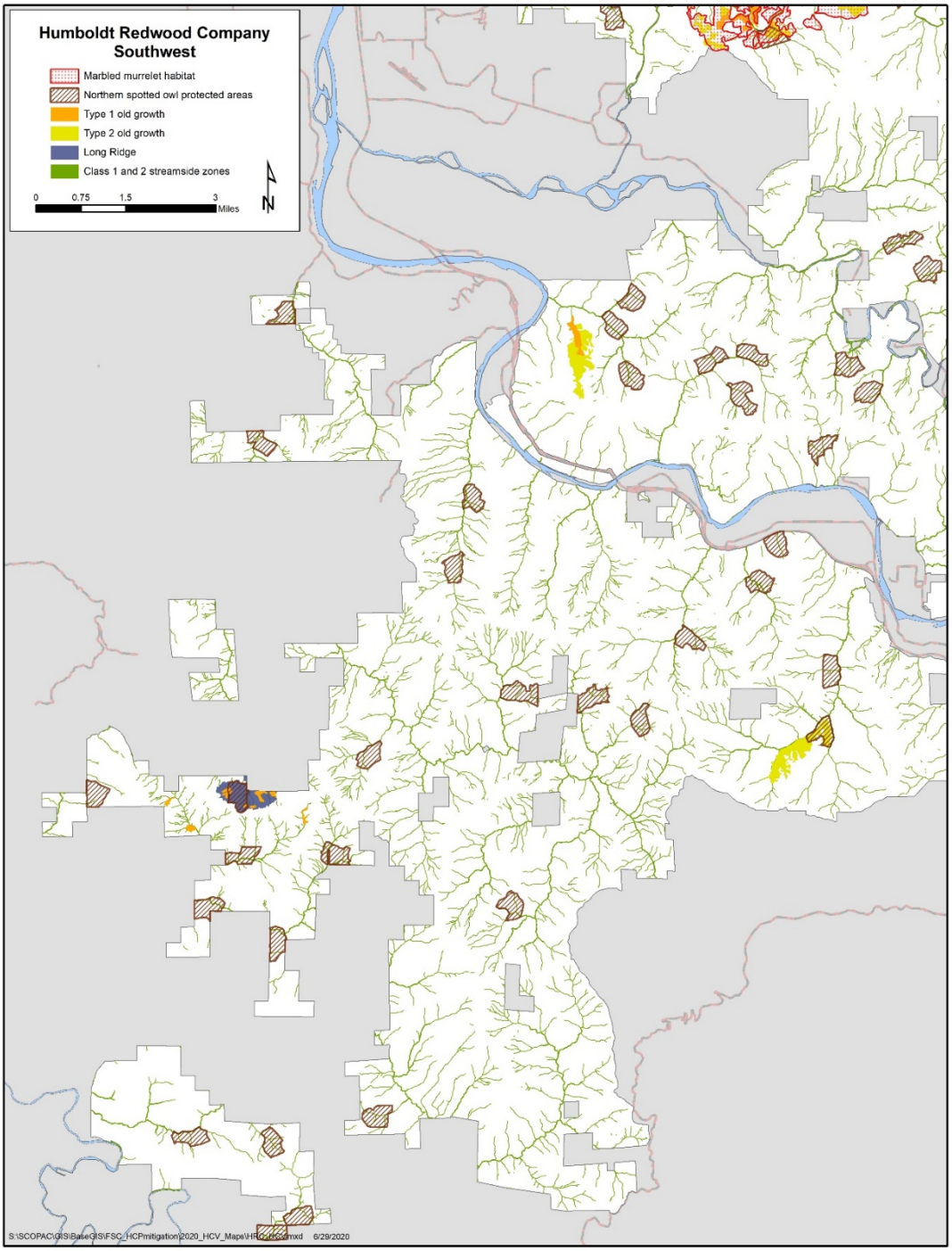


Figure 5. Identified HCVF areas in the Southwest portion of HRC's timberlands.

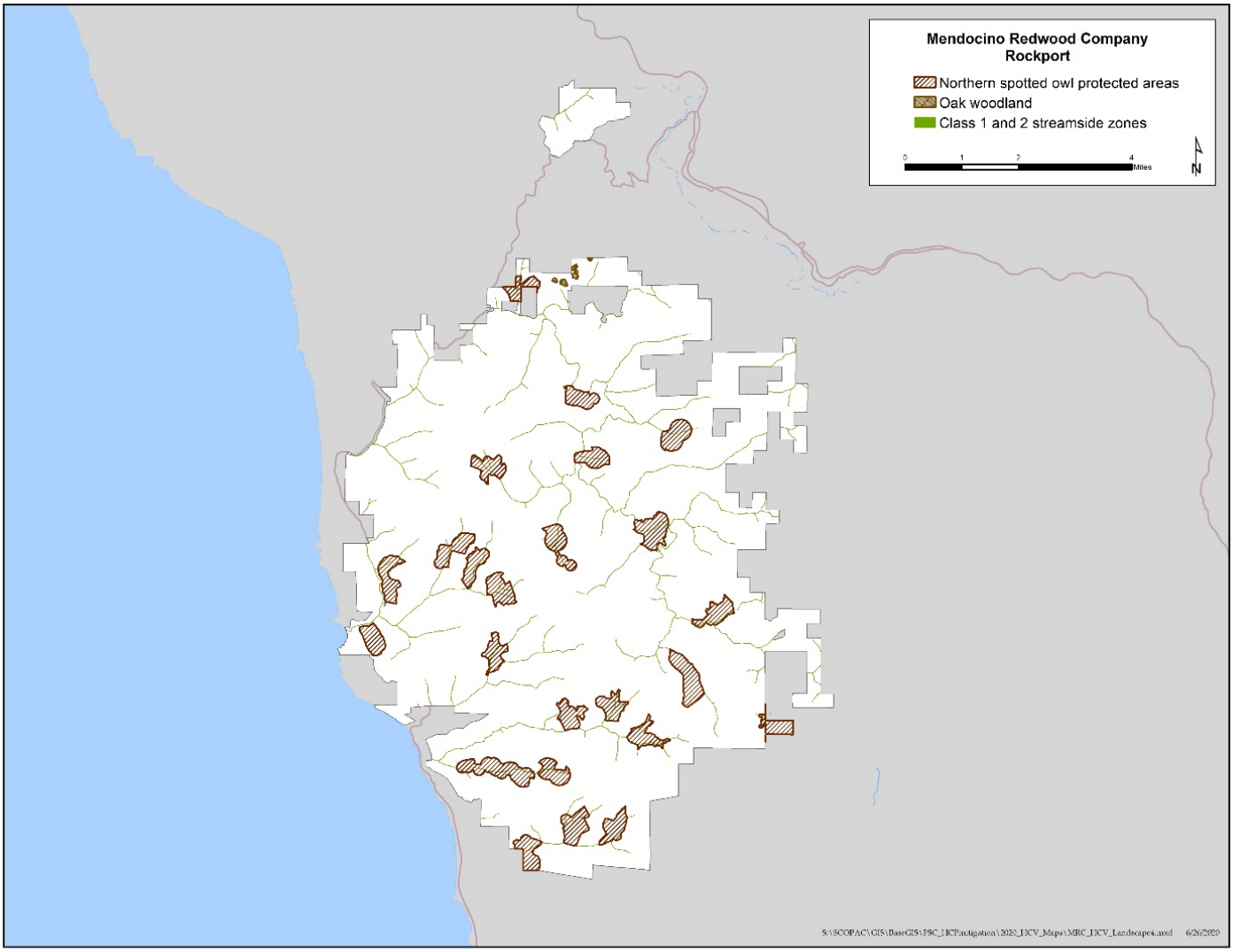


Figure 6. Identified HCVF areas in the Rockport portion of MRC's timberlands.

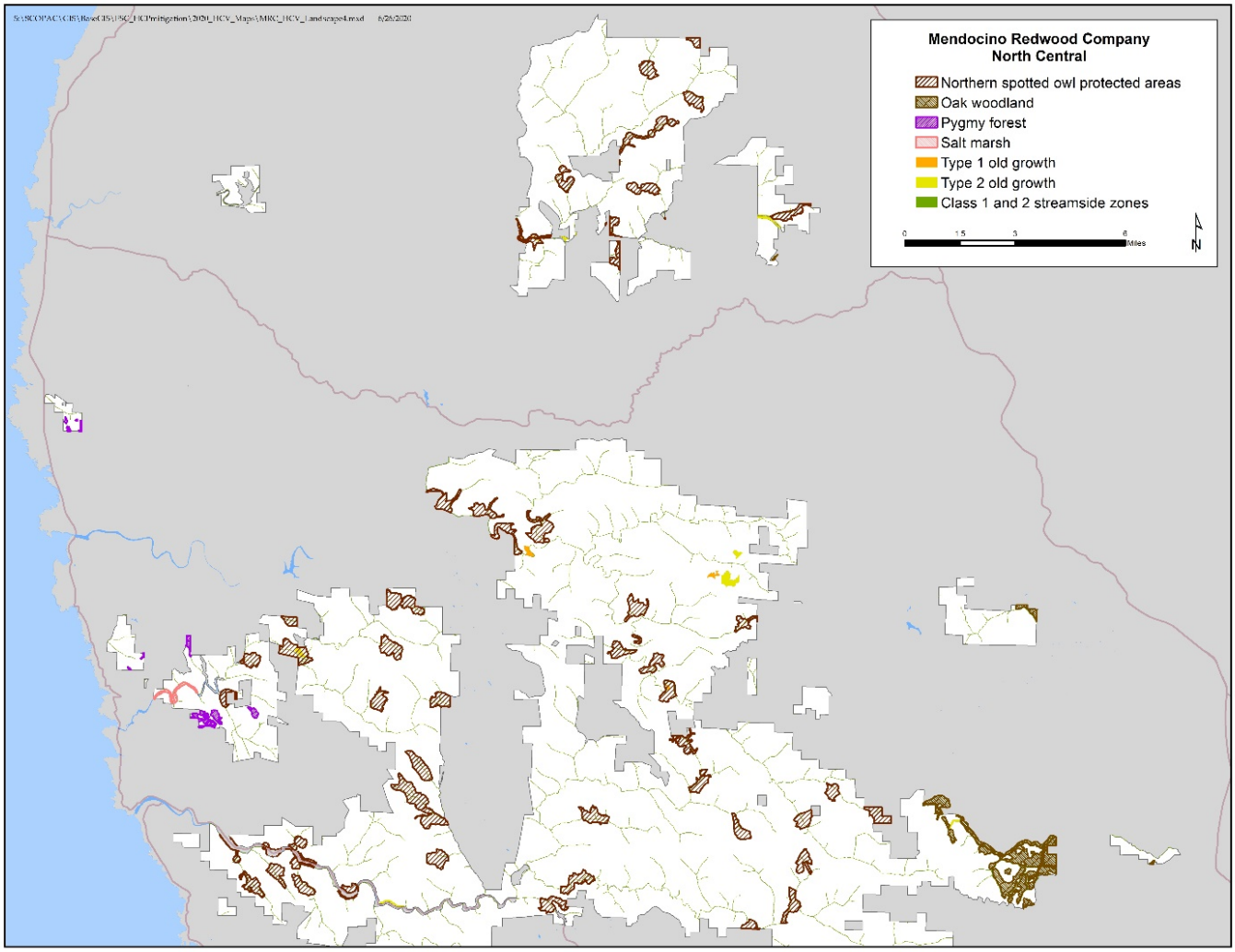


Figure 7. Identified HCVF areas in the north central portion of MRC's timberlands.

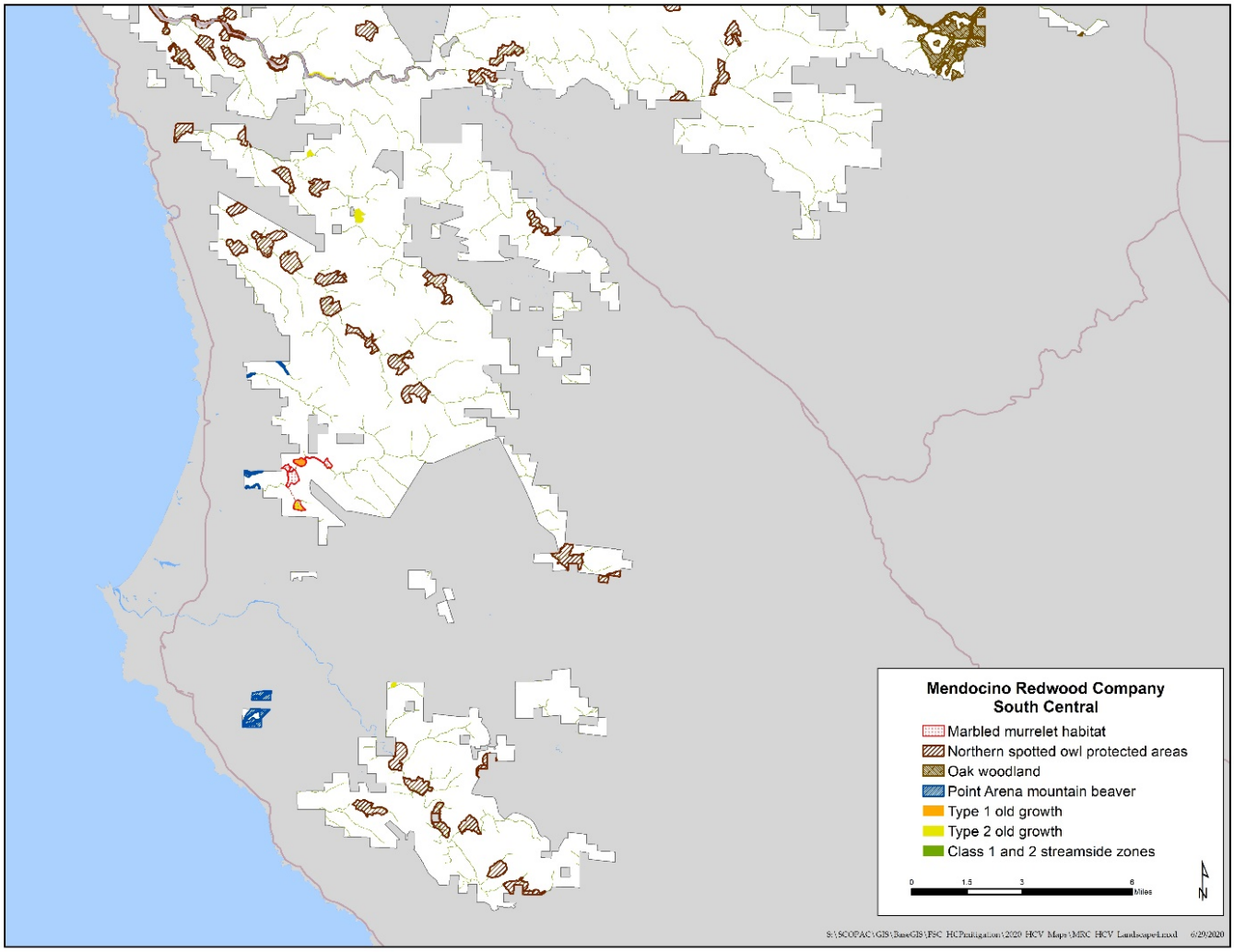


Figure 8. Identified HCVF areas in the south central portion of MRC's timberlands.

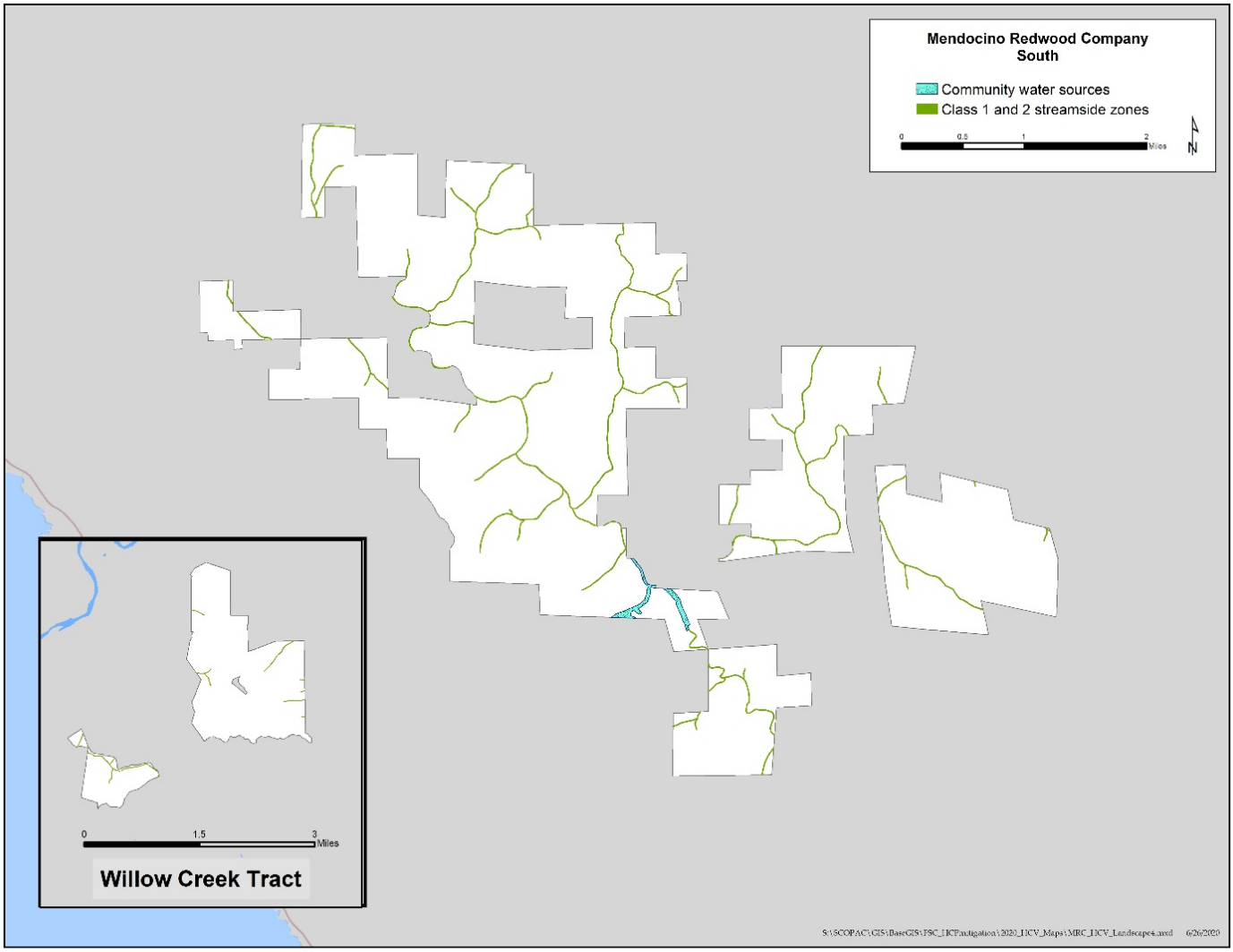


Figure 9. Identified HCVF areas in the southern portion of MRC's timberlands.

Structure of this assessment

This document is divided into sections covering each of the 6 High Conservation Value Forest types identified in the FSC-US Standard. It is further divided into subsections based on questions in the HCVF draft framework to address sub-categories of each HCVF. Each subsection begins with repeating the question in the framework and is further divided into 5 subsections: information sources, assessment process, results, management prescriptions and monitoring (the last two only included in sections where HCVFs were identified). Information sources list the sources of information utilized to answer the question listed while assessment process describes how that information was filtered to determine the outcome. Results are provided after the assessment process and are followed by management prescriptions and monitoring plan if a HCVF is identified for that question. At the end of the document, Appendix B summarizes and extracts all identified HCVFs in one location with their associated management prescriptions and monitoring plans for ease of review and access.

1 Forest areas containing globally, regionally, or nationally significant concentrations of biodiversity

1.1 Question: Does all or part of the FMU contain an area that is legally protected or managed primarily for concentrations of biodiversity values that are significant at an ecoregion or larger scale, or is such an area proposed for protection?

Information sources

Defining the ecoregion within which Companies timberlands are located - Companies timberlands are located within ecoregion 263 – California Coastal Steppe, Mixed Forest, and Redwood Forest Province, further divided into the North Coast and Klamath Province (although a small area of MRC's timberlands fall outside the Klamath Province).

California Department of Fish and Wildlife, List of Sensitive Communities (https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=153609&inline (Accessed: 3/24/2020)

California State Wildlife Action Plan, 2015 (https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109207&inline (Accessed: 3/24/2020)

NatureServe. 2019. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1 NatureServe, Arlington, Virginia. Available http://explorer.natureserve.org. (Accessed: 3/24/2020).

US Forest Service Ecoregions https://www.fs.fed.us/rm/ecoregions/products/map-ecoregions-united-states/# (Accessed: 3/24/2020)

Endangered and Threatened Wildlife and Plants; Designation of Revised Critical Habitat for the Northern Spotted Owl; Final Rule 77 Federal Register 233 (December 4, 2012).

Endangered and Threatened Wildlife and Plants; Revised Critical Habitat for the Marbled Murrelet 76 Federal Register 193 (October 5, 2011).

Endangered and Threatened Wildlife and Plants; Revised Designation of Critical Habitat for the California Red-Legged Frog 75 Federal Register 51 (March 17, 2010).

Protected Areas Database of the US. Accessed at: https://maps.usgs.gov/padus/ by S. Billig on 5/6/2020

NatureServe Rarity-Weighted Richness Model of Critically Imperiled and Imperiled Species in the United States. Accessed at: https://www.natureserve.org/sites/default/files/natureserve_rwr_hotspots_2013_final.jpg by S. Billig on 5/6/2020.

NatureServe Richness of Imperiled Species in the United States. Accessed at: https://www.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=6e90cefddb634e6a949838e7efff55fb by S. Billig on 5/6/2020.

The Nature Conservancy Eccoregional Assessment – accessed at: http://maps.tnc.org/ by S. Billig on 5/6/2020.

Assessment process

Data sources were filtered to identify any biodiversity issues within Companies timberlands by watershed and identify any legal protections for species at risk. Significant concentrations of biodiversity values is defined as “areas that contain concentrations of rare/threatened/endangered species, natural communities, or other biodiversity values that occur in numbers, frequency, quality, and/or density that are sufficiently outstanding to be considered unique or highly important in comparison with other areas within the ecoregion within which the FMU is located.” (FSC-US HCVF assessment Framework, 2010).

Results

Areas that are legally protected or managed primarily for concentrations of biodiversity values that are significant at an ecoregion or large scale or is proposed for such protection exist only outside the Forest

Management Units. To arrive at this conclusion, staff reviewed: (1) critical habitat designations for endangered and threatened species; (2) the Protected Areas Database for the US; (3) the Nature Serve map of critically imperiled species and richness of imperiled species; and (4) The Nature Conservancy Ecoregional Assessment.

(1) Critical habitat has been designated for three federally-listed species – northern spotted owl, marbled murrelet, and California red-legged frog; while critical habitat has not yet been designated for the Point Arena Mountain Beaver (https://www.fws.gov/arcata/es/mammals/mtnBeaver/mtnbeaver.html viewed by S. Billig 5/6/2020). The identified critical habitat for northern spotted owl and marbled murrelet is outside both timberlands while the California red-legged frog critical habitat designation contains a polygon overlapping MRC timberlands. MRC provides protections for red-legged frogs associated with their riparian habitat and did not assess a need for additional HCVF designation in addition to riparian habitat (see Question 1.2).
(2) Staff reviewed the Protected Areas Database of the US online – this resource provided limited additional or new information about potential resources on the two timberlands.
(3) The Nature Serve map of critically imperiled species did provide validation for designations under Question 1.2 below (indicating high levels of critically imperiled or imperiled species biodiversity in the region of the FMU). Staff also reviewed the NatureServe richness of imperiled species map and assessed that the richness of imperiled species is relatively low compared to southern California, the southeastern US, and the Appalachian Mountains.
(4) The Nature Conservancy Ecoregional Assessment did not identify any potential additional HCVF areas.

No HCVF designations were identified.

1.2 Question: Does all or part of the FMU contain an area with significant concentrations of rare, threatened, or endangered species or rare ecological communities, endemic (range restricted) species and/or natural communities that are significant at an ecoregional scale?

Information sources

Defining the ecoregion within which the Companies are located was completed above.

California Department of Fish and Wildlife, List of Sensitive Communities (https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=153609&inline (Accessed: 3/24/2020)

California State Wildlife Action Plan, 2015 (https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109207&inline (Accessed: 3/24/2020)

NatureServe. 2019. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1 NatureServe, Arlington, Virginia. Available http://explorer.natureserve.org. (Accessed: 3/24/2020).

US Forest Service Ecoregions https://www.fs.fed.us/land/ecosysmgmt/colorimagemap/ecoreg1_provinces.html (Accessed: 3/24/2020)

Companies watershed analyses.

Assessment process

Staff reviewed NatureServe rankings of G1 – G3, T1-T3 or federal or state listing of endangered or threatened were considered for this assessment (G1 = critically imperiled; G2 = imperiled; G3 = vulnerable, T rankings follow the numerical ranks of G rankings). This assessment was further refinement was added by searching NatureServe watershed map of G1, G2, G3, T1, T2, or T3 species within watersheds that contain Companies timberlands. Staff also reviewed other regional FSC-certificate holders HCVF assessments including Green Diamond, Redwood Forest Foundation Inc., and The Conservation Fund.

Table 3. Animal Species with Nature Serve rankings reported within the watersheds containing the timberlands.

Scientific name	Common name	Status (NatureServe, listing)
Atractelmis wawona	Wawona Riffle Beetle	G2
Bombus calignosus	Obscure Bumble Bee	G2
Bombus crotchii	Crotch Bumble Bee	G2
Onchorhynchus kisutch	Coho salmon	G5, federally threatened, state threatened
Onchorhynchus mykiss	Steelhead trout	T2, federal candidate species
Onchoryhnchus tshawytscha	Chinook salmon	T3, state and federal endangered
Ambystoma californiense	California tiger salamander	G2, federally endangered
Rana boylii	Foothill yellow-legged frog	T3
Rana draytonii	California red-legged frog	G2
Taricha rivularis	Red-bellied newt	G2
Rhyacotriton variegatus	Southern torrent salamander	G3
Arborimus pomo	Sonoma tree vole	G3
Aplodontia rufa nigra	Point Arena mountain beaver	T1, federally endangered

Martes caurina humboldtensis	Humboldt Marten	T1, Proposed federally threatened
Pekani pennant	Fisher	S2
Strix occidentalis caurina	Northern spotted owl	G3, federally threatened, state threatened
Brachyramphus marmoratus	Marbled murrelet	G3, federally threatened, state endangered
Charadrius nivosus	Snowy Plover	G3, federally threatened
Agelaius tricolor	Tricolored blackbird	G1
Coccyzus americanus occidentalis	Western yellow-billed Cuckoo	T2
Actinemys maromorata	Western pond turtle	G3
Juga orickensis	Redwood Juga	G2
Coelus globosus	Globose dune beetle	G1
Linderiella occidentalis	California fairy shrimp	G2
Stygobromus cherylae	Barr's amphipod	G1
Syncaris pacifica	California freshwater shrimp	G1, Endangered
Trachykele hartmani	Serpentine cypress wood-boring beetle	G1
Plabejus anna lotis	Lotis blue	TH, federally endangered
Speyeria zerene behrensii	Behren's fritillary	T1
Speyeria zerene mytleae sensu lato	Myrtle's silvespot	T1
Helminthoglypta arrosa	Bronze shoulderband	T2
Noyo intersessa	Ten Mile shoulderband	G2
Trilobopsis tehamana	Tehama chaparral	G1

Table 4 Natural communities with Nature Serve Rankings reported within the timberlands (G1-G3)

Scientific name	Common name	Status (Nature Serve, listing)
Pseudotsuga menziesii/Quercus chrysolepis Forest	Douglas-fir/Canyon Live Oak Forest	G3
Pinus muricata/Pinus radiata	Bishop pine/Monterey Pine Alliance	G3
Hesperocyparis pigmea scrub	Pygmy cypress scrub	G2
Pseudotsuga menziesii/Chrysolepis chysophylla/Notholithocarpus densiflorus	Douglas-fir/Chinquapin/Tanoak	G3
Pseudotsuga menziesii/Notholithocarpus densiflorus	Douglas-fir/Tanoak	G3

Table 5 Plant species with Nature Serve Rankings reported within the watersheds overlapping with the timberlands (G1-3, T1-3).

Scientific name	Common name	Status (Nature Serve, listing)
Agrostis bladalei	Cliff bentgrass	G2
Alopercus aequalist var. *sonomensis*	Sonoma shortawn foxtail	T1, Federally endangered
Arabis macdonaldiana	Red Mountain Rockcress	G3, Federally endangered
Arctostaphylos bakeri ssp. *Bakeri*	Baker's manzanita	T1
Arctostaphylos bakeri ssp. *Sublaevis*	The Cedars Manzanita	T2
Arctostaphylos densiflora	Vine Hill Manzanita	G1
Astragalus agnicudus	Humboldt milk-vetch	G2
Astragalus clarianus	Napa Milkvetch	G1
Astragalus pycnotachyus var. *pynostachyus*	Marsh milkvetch	G2
Blennosperma bakeri	Baker's Blennosperma	G1
Calachortus raichei	The Cedars Fairylantern	G2
Calycadenia micrantha	Small-flower Calycadenia	G2
Carex saliniformis	Santa Cruz sedge	G2
Castilleja mendocinensis	Mendocino Coast Indian-paintbrush	G2
Ceanothus confusus	Rincon Ridge Ceanothus	G1
Ceanothus raichei	The Cedars Fairylantern	G2
Ceanothus divergens	Calistoga Ceanothus	G2
Ceanothus sonomensis	Sonoma Ceanohtus	G2
Chorizanthe howellii	Howell's chorizanthe	G1, Federally endangered
Clarkia imbricate	Vine Hill Clarkia	G1
Collinsia corymbose	Round-head Blue-eye Mary	G1
Cordylanthus tenuis ssp. *Cappillaris*	Pennell's Bird's Beak	T1
Cupressus governiana spp. *Pygmaea*	Pygmy cypress	G2
Epilobium oreganum	Oregon Willowherb	G2
Epliboium nivium	Snow mountain willoherb	G2
Erigonum kelloggii	Kellogg's buckwheat	G2
Erigeron manipotamicus	Mad Riber Felabane Daisy	G2
Erigeron supplex	Supple daisy	G2
Erigeron serpentinus	Serpentine Fleabane	G2

Erigonum cedrorum	The Cedars buckwheat	G1
Erigonum nervulosum	Snow Mountain Buckwheat	G2
Eryngium constancei	Loch Lomond Button-celery	G1
Erysimum menziesii	Menzies Wallflower	G1, Federally endangered
Entosthodon kochii	Koch's Cord-moss	G1
Fritillaria grayana	Gray's fritillary	G1
Fritillaria liliacea	Fragrant fritillary	G2
Gentiana setigera	Elegant Gentian	G2
Gilla millefoliata	Dark-eyed Gilia	G2
Gratiola hetersepala	Boggs Lake Hedge-hyssop	G2
Grimmia torenii	Moss	G2
Harmonia guggolziorum	Guggolz's Tarplant	G1
Hesperiolinon adenophyllum	Glandular western flax	G2
Hesperolinon bicarpellatum	Two-carpel dwarf flax	G2
Horkelia bolanderi	Bolander's horkelia	G1
Horkelia marinensis	Pt. Reyes horkelia	G2
Horkelia tenuiloba	Santa Rosa oceanspray	G2
Lasthenia burkei	Burke's goldfields	G1
Lathyrus biflorus	Two-flower pea	G1
Layia septentrionalis	Colusa Tidy-tips	G2
Layia carnosa	Beach Tidy-Tips	G2, Federally endangered
Legenere limosa	False-Venus-looking-glass	G2
Lillium martimum	Coast lily	G2
Lilium occidentale	Western Lily	G1, Federally endangered
Lilium pardalinum ssp. *Pitkinense*	Pitkin marsh lily	T1
Limnanthes bakeri	Baker's meadowfoam	G1
Limnanthes vinculans	Sebastopol meadowfoam	G1
Lotus yollabolliensis	Yolla Bolly Mountain's Birds-foot-trefoil	G2
Lupinus constancei	Lassicus lupine	G1
Lupinus elmeri	Elmer's lupine	G2
Lupinus sericatus	Cobb Mountain lupine	G2
Lupinus tidestromii	Tidestrom lupine	G1
Microseris paludosa	Marsh silverpuffs	G2
Minuartia decumbens	The Lassics Sandwort	G1
Navarretia luecocephala ssp *plieantha*	Many-flower navarretia	T1
Oenothera wolfii	Wolf's Evening-primrose	G2
Phacellus insularis var. *continentis*	North coast phacella	T2

Pleuropogon hooverianus	North Coast False Semaphore Grass	G2
Rhynchospora californica	California beakrush	G1
Sidalcea oregana ssp*. valida*	Kenwood marsh checker-mallow	T1
Streptanthus brachiatus	Socrates mine streptanthus	G2
Streptanthus brachiatus ssp *brachiatus*	Socrates mine jewelflower	T1
Streptanthus brachiatus ssp*. hoffmanii*	Freed's jewelflower	T2
Streptanthus morrisonii	Morrison's jewelflower	G2
Streptanthus morisonii ssp*. hirtiflorus*	Dorr's Cabin jewleflower	T1
Streptanthus morrisonii ssp*. morrisonii*	Morrison's jewelflower	T2
Thermopsis robusta	Showy Golden-banner	G2
Thlaspi californicum	Kneeland Prairie Pennycress	G1, Federally endangered
Tracyina rostrate	Beaked tracyina	G2
Trifolium buckwestiorum	Santa Cruz clover	G2
Trifolium trichocalyx	Monterey clover	G1, Federally endangered
Triquetrella californica	California triquetrella moss	G2

The globally ranked plants included in the table above represent only those species found throughout the watersheds containing the timberlands. Companies botany departments conduct surveys for a host of plants considered globally, regionally, and locally sensitive or significant, such as those given a California Rare Plant Rank (CRPR) by the California Native Plant Society (CNPS), for all harvest efforts on Companies property. These surveys have resulted in the detection of several other sensitive plants for which Companies will provide protection during timber harvest and land management activities in the timberlands.

Results

Staff reviewed the pertinent data sources and the lists above. While the Companies holdings in the timberlands do contain some of these communities and species, Companies Management Plans and HRC's Habitat Conservation Plan and federal and state law provide protections for those that occur on the property. Additionally, these species are not considered significant at the ecoregional scale as validated by various organizations and mapping efforts listed in the HCVF framework have not publishing data indicating there is HCVF 1 on the timberlands. Companies did review Green Diamond, Redwood Forest Foundation Inc., and The Conservation Fund North Coast HCVF assessments.

In review of other regional assessments and the list above, however, Companies find that the following habitat or areas should be classified as HCVF 1.2:

(1) Class 1 and 2 streamside zones on HRC and Class I and II-Large streamside zones on MRC provide or contribute to key habitat for anadromous salmonid species, such as the coho salmon listed above.
(2) Northern spotted owl topographical core areas at MRC and Habitat Retention Areas (HRAs) at HRC provide protections for this federally threatened species.
(3) Pygmy scrub (pygmy forest) in the Mendocino county timberlands – this timber type is internationally recognized as exceedingly rare and threatened.
(4) Rare oak woodland type on Mendocino Redwood Company protected for its greater wildlife and plant species value (several populations of Hoover's semaphore grass are found within these areas as well as numerous and diverse wildlife species).
(5) Areas home to the state endangered marbled murrelet on both timberlands.
(6) Burrow systems of the federally endangered rodent known as the Point Arena mountain beaver which is found in a limited range within Mendocino County.

Further description of each designated HCVF for this type is located below.

Class I and II stream zones

Class I stream zones are prescribed to protect riparian corridors around Class I streams (those that bear fish or could be restored to fish-bearing condition). These riparian stands usually have late seral stand conditions; if not, these conditions will develop over time due to the high tree retention prescriptions. Class II stream zones are prescribed to protect riparian corridors around Class II streams (streams bearing non-fish aquatic life), and to contribute to the improvement of aquatic conditions in downstream Class I streams. Class II stream zones are also prescribed to protect lakes, ponds, wetlands, and springs. Over time, these riparian stands will develop late seral conditions. These HCVFs will serve multiple functions including protecting habitat for threatened salmonids; they will also develop or be maintained as late seral and eventually, old growth forests.

Northern spotted owls

Northern spotted owls receive different types of protections on each of the timberlands. On MRC, areas where spotted owls are located during the daytime are provided a large core area, often defined by topographic features (e.g., ridgelines, streams) as approved by the state and federal Wildlife Agencies to protect northern spotted owls. These core areas are defined to protect the owls' activities during the breeding season and ensure habitat remains intact in those areas. HRC maintains a Habitat Conservation Plan with the federal and state wildlife

agencies that establish site-specific protections, specifically, Northern spotted owl habitat retention areas to protect activities during the breeding season and provide habitat protection for spotted owl populations.

Pygmy forest

Pygmy forest (or pygmy scrub) is naturally rare, occurring only in close proximity to the coast. The dominant canopy species are pygmy cypress (*Hesperocyparis pygmaea*), Bolander pine (*Pinus contorta* ssp*. bolanderi),* and dwarfed Bishop pine (*Pinus muricata*). Pygmy forest is located on thin acidic soils where many trees and shrubs, having adapted to suboptimal growing conditions, are limited in stature. Even the oldest trees reach only limited heights. In these areas, dwarf trees make up more than 75% of a stand. Several species are characteristic of pygmy forest on MRC land, including pygmy cypress, Bolander's pine, pygmy manzanita, Bishop pine, and California sedge (Sholars 1997, CNDDB 2002, CNPS 2002). Other plants occur in or near pygmy forests, including coast trefoil,, suspected food plant of lotis blue butterfly larvae. Pygmy forest is a rare and unique ecosystem in California (Sholars 1984). Most of the pygmy forest in the world is found in Mendocino County. This ecosystem is the result of hundreds of thousands of years of interaction between soil and vegetation (Sholars 1984). Soils in pygmy forest are derived from materials deposited on 5 marine terraces from 115,000 to 1.2 million years ago (Aitken and Libby 1994). Leaching of soil on the terraces has led to nutrient-poor, acidic soils. Underneath the soil surface of pygmy forest, a shallow hardpan makes it difficult for trees with deep roots to survive (Aitken and Libby 1994). This identified HCVF will serve to protect an extremely rare ecosystem with limited distribution and provide habitat for many rare and uncommon species.

Oak woodland

Oak woodland occurs where precipitation falls mostly in the winter, followed by warm-to-hot dry summers (Mayer and Laudenslayer 1988). Oak woodlands are not limited by soil type or parent material (Mayer and Laudenslayer 1988), but generally occur on moderate-to-well drained soils that are also moderately deep. In oak woodland stands, the overstory usually consists of hardwoods with scattered conifers. On mesic sites, trees form a dense, closed canopy; on dry sites, trees are more widely spaced. Typical oaks of this natural community include Oregon white oak, California black oak, and canyon live oak. Understory plants in oak woodlands can include a very diverse group of species. In drier areas, shrubs may include manzanita. Regionally, several factors have decreased oak woodlands. One of the most important threats is the conversion of oak woodlands to development or vineyards (CalPIF 2002). This threat is compounded by sudden oak death (SOD), a pathogen that began attacking oaks in 1985. In addition, oak woodlands struggle to regenerate naturally due to several causes,

including fire suppression, overgrazing, Douglas fir forest encroachment, and invasion of non-native plants (CalPIF 2002). Companies have several large areas of oak woodland on MRC timberlands that have been designated as HCVF.

Marbled murrelet

The marbled murrelet is a federally threatened, state endangered seabird that feeds on the ocean and nests inland on large branches. Historical estimates indicate that 60,000 marbled murrelets once nested on the California coast (Larsen 1991, as cited in Cooperrider et al. 2000). The current California breeding population is estimated at approximately 2,000 (Carter and Erickson 1992, Carter et al. 1992; both as cited in USFWS 1997c), with a state total of approximately 6,000 breeding and non-breeding birds (Ralph and Miller 1995, as cited in Cooperrider et al. 2000). Marbled murrelet populations are estimated to be declining by 4–7% per year (Beissinger 1995, as cited in Cooperrider et al. 2000), primarily due to habitat loss and fragmentation from timber harvesting activities, urban development, and periodic events such as oil spills and El Niño occurrences (Cooperrider et al. 2000). The production of only 1 egg per year, combined with a low recruitment rate complicates recovery efforts for this species. Most experts consider that at least 100 to 200 years will be necessary for marbled murrelet populations to recover to sustainable population levels because that is the time period necessary for second-growth forests to grow trees large enough to provide appropriate nesting habitat. For nesting in California, marbled murrelets generally require old-growth coniferous forest located close to ocean waters, typically within 10 km (6.5 mi), with abundant near-shore food resources (Miller et al. 1995). MRC has one known nesting area – the Lower Alder Creek Management Area, while HRC has multiple known murrelet habitat areas that are used for nesting. Since this species is highly limited in its distribution and population within California, Companies have assessed these areas as HCVF as well.

Point Arena Mountain Beaver

Mountain beavers live in extensive underground burrow systems with multiple entrances (Camp 1918). Most nests are built 0.9 m (3 ft) or more below the surface in a dome-shaped chamber that is packed with vegetation. From the nest chamber, a series of tunnels radiate outward to other chambers used for caching food and depositing feces (Sleeper 1997). The Point Arena mountain beaver apparently occupies only a portion of its historical range (Steele 1989). The subspecies currently exists in small disjunctive sites separated by unsuitable habitat (Steele 1989). Habitat loss resulting from livestock grazing and urbanization is the most likely cause of this decline (Steele 1989). Although land use, such as forest logging, may have created suitable habitat, other land use, such as livestock grazing, has reduced coastal scrub habitat used by mountain beavers (Steele 1986), offsetting any gains from forest conversions. Furthermore,

urban development and associated activities, such as trash dumping, increased predation by pets, construction of roads, and off-trail hiking, have negative effects on Point Arena mountain beaver sites (USWFS 1998a). Due to urban development along the California coast, the potential for population declines from habitat loss is great (Steele 1989, USFWS 1998a). The Point Arena mountain beaver is listed as federally endangered and remains at risk due to continued recreation and management on the Mendocino coast. Companies have designated known burrow systems as HCVF, these are additionally protected under the Federal Endangered Species Act. These areas and acres are depicted as polygons, but it is important to note that mountain beavers will abandon burrow systems as the forest grows around them and it is expected that these polygons will move over time as active burrow systems move.

Management prescriptions

Management prescriptions for each identified HCVF are presented below.

Class I and II stream zones

For HRC:

Class I stream side zone management is intended to improve aquatic conditions, especially stream shading to maintain cool water for salmonids, and large woody debris recruitment to the stream bed for pool and riffle structure. The Streamside zone is made up of a no-harvest inner band. The width of this band varies by watershed (after watershed analysis) but for this analysis, the inner band was modelled at 50 feet.

Class II stream side zone management is intended to improve aquatic conditions by enhancing a multi-storied over-stream canopy which contributes to cool water flowing into Class I streams and produces organic debris as food for macro and micro invertebrates. The stream side zone is made up of a no-harvest inner band. The width of this band varies by watershed (after watershed analysis) but was modelled at 30 feet

For MRC:

Follow Anadromous Salmonid Rules from California Forest Practice Rules and accelerate completion of sediment control activities in these areas (the average distance for no-harvest was modelled at 30 feet).

Northern spotted owls:

For HRC:

The Habitat Retention Areas prohibited harvest within 500 feet with management in the rest of the Habitat Retention Area retaining roosting habitat.

For MRC:

Harvest is generally prohibited within the core area. Any proposal for harvest within core areas must be reviewed and approved by the responsible regulatory agency and must maintain NSO habitat.

Pygmy Forest:

Avoid conducting management activities in this area if feasible. Management activities to allow access to adjacent timber stands will occur only if other routes are infeasible. Consult with United States Fish and Wildlife Service for management activities which may impact the lotis blue butterfly. Seek opportunities to apply surrogates for natural disturbance agents (e.g. fire) within pygmy forest areas.

Oak Woodland:

Management activities within the oak woodland area type is implemented to maintain or enhance the oak woodland habitat type. Harvest encroaching Douglas-fir and avoid replanting the harvested area with conifers. Seek opportunities to apply surrogates for natural disturbance agents (e.g. fire) within oak woodland areas.

Marbled Murrelet Habitat Areas:

For HRC:

Prohibit management within these areas unless management is considered in the riparian connectors. Those areas must be managed according to HRC Habitat Conservation Plan restrictions including only managing to accelerate the growth of murrelet habitat.

For MRC:

Prohibit harvest within occupied areas in Lower Alder Creek. In other areas, harvest is implemented with the intention of maintaining or enhancing marbled murrelet habitat.

Point Arena Mountain Beaver:

No harvest activities within 200-foot buffer of known burrow systems (except use and maintenance of existing roads). Exclude most harvest activities within 500 feet of known burrow systems during breeding season.

Monitoring

Monitoring for each identified HCVF type is presented below.

Class I and II stream side zones

For HRC:

Monitor the values of stream side zones and report on habitat characteristics annually in the Aquatic Trends Monitoring Report. The report is available on the web at www.hrcllc.com. Additional aquatic and riparian monitoring is conducted in conjunction with watershed analysis which HRC considers an adequate risk assessment process (see the Habitat Conservation Plan Section 6.3.3.1). These reports are placed on the web site as they become available.

For MRC:

Monitoring efforts on Class I and II and salmonids will be compiled and assessed annually. The efforts may include monitoring for fish distribution, spawning, water temperature, water drafting information, or any other information collected in a given year. The type of information collected will vary but will provide an assessment of the effectiveness of protections in the riparian areas. Where possible, additional information on effectiveness of riparian areas will be collected throughout the ecoregion to include in the monitoring assessment.

Northern spotted owls

Staff at both timberlands conduct annual monitoring for northern spotted owls. A team of scientists completes both nocturnal surveys to determine presence of northern spotted owls and daytime surveys to determine their reproductive status. Both timberlands staff complete annual updates on survey efforts for northern spotted owls.

Pygmy Forest

When new aerial photos are ordered (typically every four years) forestry or inventory staff will review the pygmy stands on aerial photos to assess for unexpected change. If

any disturbance or unexpected outcome is detected, the stand(s) will be identified for a field visit to re-assess boundaries or review with on the ground reconnaissance.

Oak Woodland

When new aerial photos are ordered (typically every four years) forestry or inventory staff will review the oak woodland stands on aerial photos to assess for unexpected change. If any disturbance or unexpected outcome is detected, the stand(s) will be identified for a field visit to re-assess boundaries or review with on the ground reconnaissance.

Marbled Murrelet Habitat Areas

For HRC:

Staff review the annual marbled murrelet inland monitoring report for HCP compliance. This report provide information on murrelet surveys within core areas. The report will be analyzed for any key trends and potential needs for change in management practices.

For MRC:

When new aerial photos are ordered (typically every four years) forestry or inventory staff will review the murrelet habitat areas on aerial photos to assess for unexpected change. If any disturbance or unexpected outcome is detected, the stand(s) will be identified for a field visit to re-assess boundaries or review with on the ground reconnaissance.

Point Arena Mountain Beaver Areas

MRC staff will review recent surveys to determine if further action in these areas needs to be taken, though MRC is inhibited from management actions within the mountain beaver areas due to its status as an endangered species. Surveys are conducted as needed to understand potential impact of timber harvest plans. Anecdotal evidence indicates that extensive surveying has a negative impact on the burrow systems (e.g., trampling vegetation, making well-worn paths) so staff avoid surveys unless necessary to identify previously unknown systems.

2 Forest areas containing globally, regionally, or nationally significant large landscape level forests, contained within, or containing the management unit, where viable population of most, if not all naturally occurring species exist in natural patterns of distribution and abundance.

Question 2.1: Does all or part of the FMU contain a globally, regionally or nationally significant large landscape-scale forest where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance? What would happen to ecoregional biodiversity if the characteristics of this forest (e.g., age class structure or relative abundance) were significantly altered?

Information sources

From the HCVF framework document,

"*Areas with HCV 2 are less likely to be mapped than areas qualifying for HCV 1. When it is not clear if this value is present, then analysis of forest inventory and cover type data should be used to determine if HCV 2 occurs on the FMU. The general approach in assessing for HCV 2 is to compare forest characteristics (such as extent and intensity of harvest practices, forest communities, successional stages, structures, and species composition and abundance) with natural forests that have only been subject to natural disturbance processes or minimal human intervention. Aerial photography or satellite images of the surrounding landscape should also be considered.*"

Companies utilized internal data, on-the-ground reconnaissance, and local stakeholder input to assess this HCVF. Limited outside published data sources exist to assist in this analysis.

Companies utilized the following data sources to assess this HCVF:

(1) LiDAR data – developing a crown height model to assess the density and location of very tall trees that can serve as a surrogate for identifying potential old growth trees and stands.
(2) Forest inventory data to assess areas of larger and likely older trees that might indicate an old growth or unentered stand.
(3) Information provided by various stakeholders of areas of interest within the Companies timberlands that may contain HCVF.

While the most intensive assessment for this process occurred on the Mattole River Watershed of the HRC timberlands, a canopy height model was derived from publicly available LiDAR data and utilized to assess whether Companies had appropriately assessed all old growth stands. In addition, Companies have utilized local forester knowledge over the 22 years MRC has operated and the 12 years HRC has operated on the rest of the timberlands.

Assessment process

Mattole Watershed

Prior to this assessment, HRC identified a HCV2 stand in the Mattole Watershed. This designation was based primarily on stakeholder input related to future harvest planning in the Mattole. HRC was approached by outside stakeholders with a request to designate an old-growth Douglas-fir conservation area in the Mattole. The stakeholders pointed out that HRCs Habitat Conservation Plan required protections for old growth redwood but not specifically for old growth Douglas-fir. Based on this request, HRC reviewed the forests within the Mattole River Watershed within the context of the HCV framework of the Forest Stewardship Council. As a result, HRC designated a 203-acre area of the best available, intact Douglas-fir forest; interspersed with Type 1 old growth and smaller conifer and hardwood stands in the Bear-Mattole watershed. This area has been named the Long Ridge HCV2. Multiple stakeholder tours of the area confirmed its validity as the most contiguous area representing the highest value late-seral habitat within the Mattole watershed on HRC ownership. A tour on May 12, 2011 (highlighted in the Mattole Restoration News Newsletter, Summer/Fall 2011, Issue 36, page 3) attended by stakeholders including the Mattole Restoration Council, Mattole Salmon Group, Sanctuary Forest, and North Coast Forest Defenders led all to agree the area was correctly identified as HCVF. It was determined at the time to be the most intact, advanced late seral Douglas-fir forest type on HRC's ownership – including some areas within the HCVF that would late be assessed as Type 1 old growth. Representatives from The Environmental Protection Information Center were also consulted on this designation and the assessment of other areas within this watershed.

This assessment resulted in intensive examination of all areas of the Mattole watershed, including the previously established 203-acre HCV2 stand.

HRCs reconnaissance of areas within the Mattole watershed included an assortment of stand types located in the headwaters of Rogers Creek, Sulphur Creek, and Allwardt Creek, and the northern aspects of Taylor's Peak. These stand types included:

- 100-200-year-old age Douglas-fir cohort that includes scattered old growth Douglas-fir trees (>200 years of age; present 1800) as well at low densities
- These stands may also include a tanoak understory established following tanbark harvest from the early 20th century, and/or other hardwoods
- Younger prairie invasion cohort
- Older prairie invasion cohort
- Dry slope hardwood conifer
- Mature Douglas-fir stands 80-100 years old

While other areas evaluated contained localized old growth forest characteristics, the previously designated Long Ridge HCV2 contained the greatest frequency of large trees including high value wildlife trees, large snags, down wood; and Type 1 old growth forest stand pursuant to company policy. Furthermore, it was the most contiguous stand of this type not formed by fire exclusion (due to its north facing slope).

HRC also utilized forest inventory data to assess potential areas of HCVF within the Mattole watershed. HRC specifically identified Douglas-fir types DF6S and DF6P (large, with somewhat dense to more dense canopy) as stands requiring additional review. To refine and add smaller patches of potential old growth that might not be captured by the forest inventory stratification, HRC utilized the following methods to assess additional potential HCV using LiDAR and inventory data:

(1) Review our designated HCVF in Long Ridge as a baseline for ground crews and LiDAR/forest inventory modelling to assess other HCVF and old growth within the Mattole River Watershed (January-June 2019). This was also utilized as an opportunity to validate the LiDAR/inventory modelling which was well validated by our on the ground observations of staff.
(2) Use existing LiDAR data to develop a canopy height model for trees within the Mattole River Watershed. Use very tall trees (> 180 feet) as a surrogate for identifying potential old growth trees.
(3) Identify areas with greater densities of very tall trees with LiDAR data and review those areas for confirmation with forest inventory data and harvest history. Two such areas were identified on the forestlands in the Mattole. These areas were visited by foresters trained in identifying FSC Type 1 and 2 old growth. The foresters discovered pockets of old growth in both areas; neither area exhibited the same characteristics as the previously designated HCVF on Long Ridge. There is a clear lack of age distribution and stand complexity within the zones that have old growth trees. There are scattered old growth fir, a young (+/-40 years) component of tanoak in the mid-story, and huckleberry on the forest floor and a lack

of stand development. The rest of the Mattole River Watershed (on HRCs property) was determined as non HCV2 due to the lack of or low density of very large trees.

(4) Staff foresters visited all areas identified by the canopy height model as well as all areas of potential HCVF identified by local stakeholders/experts through personal communications and mapping efforts. HRC did identify and designate additional old growth stands as a result of these on the ground reviews; these additions are covered under HCVF 3 (the designation under which old growth stands are classified).

Companies timberlands outside the Mattole Watershed

Additionally, Companies have utilized 20+ years of stakeholder input, on the ground reviews, aerial photo and imagery reviews to assess the potential for HCVF 2 throughout the timberlands. This has been an ongoing process throughout Companies years of operation.

Results

As a result of the processes identified above, Companies identified a 203-acre HCVF 2 area on the north-side of Long Ridge in the Mattole Watershed.

Management prescriptions

Companies' prohibit management in this HCVF. However, staff may work with local experts and stakeholders to develop a management prescription that would accelerate and improve the characteristics of this stand (and protect it from catastrophic wildfire impacts.

Monitoring

Companies staff will utilize publicly available imagery to review the condition of this HCVF annually. Additionally, field staff will be instructed to review and visit this stand when they are in the area to ensure that field review occurs at a reasonable interval.

Question 2.2: Does all or part of the FMU contain a landscape-scale forest recognized as being significant to biodiversity conservation at the ecoregion scale because it contains landscape-scale biodiversity values that are not present on other forests due to landscape-scale habitat modifications on surrounding lands, (such as land use conversion or forest management practices that have significantly altered forest biodiversity values)? What would happen to regional biodiversity if the characteristics of this forest (e.g., age class structure or relative species abundance) were significantly altered?

Information sources

Mattole report 2016

Mattole HCVF assessment 2019

Watershed analyses for MRC and HRC

MRC and HRC management plans

Global Forest Watch Accessed at: https://www.globalforestwatch.org/map? By S. Billig 5/6/2020.

World Wildlife Fund data basin Top 200 ecoregions accessed at: https://databasin.org/maps/new#datasets=a5b34649cc69417ba52ac8e2dce34c3b by S. Billig 5/6/2020.

Assessment process

The HCVF framework document states, "HCVFs in this group are likely to be comparatively intact landscape-scale forests in developed regions (including regions where forests have been converted to agricultural use), relatively mature landscape-scale forests in regions where short-rotation forestry is the norm, and "island" forests isolated by agriculture or natural changes in vegetation (e.g., isolated mountain ranges surrounded by grassland)."

Companies have done extensive review on the ground and through aerial imagery of our forestlands and have assessed that there are no existing comparatively intact landscape-scale forests or relatively mature landscape-scale forests on the timberlands.

Results

Companies staff reviewed the pertinent data sources above and conclude there are no remaining undisturbed forests within the timberlands. Also, see answer to question 3.2 below which discusses the existence of roadless areas greater than 500 acres in size. Staff also accessed the Global Forest Watch data to assess the following: (1) primary forests; (2) intact forest landscapes; and (3) biodiversity hot spots. The feature did not indicate any primary forests or intact forest landscapes on the FMUs; though both FMUs are covered in their entirety by the California Floristic Province – considered a biodiversity hotspot. Since this was the only data source that indicated a biodiversity hotspot over the entire timberlands; Companies assessed the entire timberlands should not be considered an HCVF. The World Wildlife Fund data basin of Top 200 ecoregions also includes the Pacific Temperate Rainforest – covering the entirety of both FMUs. Similar to the assessment related to the California Floristic Province, Companies determined that the entire timberlands are not HCVF.

3. Forest areas that are in or contain rare, threatened, or endangered ecosystems

Question 3.1 Does the FMU contain old growth stands?

Information Sources

(1) Companies forest inventory data.
(2) Local stakeholder areas of concern.
(3) Crown height model developed from publicly available LiDAR data for the majority of both timberlands.
(4) Extensive coverage of both timberlands with boots on the ground reviews associated with 20 plus years of timber management activities.

Assessment process

Companies utilized over 20 years at MRC and 12 years at HRC of intensive boots on the ground coverage of timberlands for the development of timber harvest plans and forest management activities as the main assessment tool for old growth on the timberlands as a starting point. Further, Companies utilized newly available LiDAR imagery for most of Mendocino and Humboldt county to develop a canopy height model for areas of both timberlands covered by LiDAR. Similar to the Mattole process described above, we viewed trees 150-180 feet tall and trees >180 feet tall to visually assess for groupings of these trees that could indicate potential old growth stands. Polygons were created covering those groupings of trees and MRC and HRC forestry staff were assigned review of these areas. Review process included office review of previous harvests and querying of staff for on-the-ground knowledge of these areas – most stands were assessed via this process as not meeting old growth standards. Outstanding polygons were investigated on foot by experienced forestry staff. Existing Type 1 and 2 old growth stands were also reviewed to ensure they met existing FSC-US standards for those stands.

Additionally, as timber harvest plans are in the development stage, local communities are asked to provide input as part of the public participation process and often have provided information on potential old growth stands that may exist within areas for coverage. As a result of stakeholder feedback on the Rainbow Ridge plans in the Mattole Watershed, HRC assessed an additional 24 acres of Type 1 old growth. Additionally, when new imagery becomes available, company staff utilize that imagery to assess whether there are large groupings of Type 1 or Type 2 old growth per FSC US Forest Management Standards. While Companies staff have done their best to identify these stands, it remains possible that new stands (especially Type 1 stands close to 3 acres) may be discovered during future operational

planning. If these stands are discovered, Companies will assess those stands to ensure they meet the minimum requirements and add them to our HCVF assessment and maps when they are assessed. Companies also reviewed the FSC-US-NRA V1-0 for potential HCVF in Humboldt, Mendocino, and Sonoma counties that may overlay the timberlands. Only Type 1 and 2 old growth were identified as potentially existing HCVFs in the area of both FMUs.

Results

Companies staff identified the following acreages of Type 1 and 2 old growth stands:

MRC – Type 1: 86; Type 2: 366 Total: 452 acres
HRC – Type 1: 1,618 ; Type 2: 1,724 Total: 3,342 acres

Note – the HRC acreages include acreages also covered under the Marbled Murrelet Habitat areas. Also as a result of this some incorrectly classified acres of Type 1 and Type 2 old growth were removed from the original MRC assessment of these types because they were smaller than the 3 or 20 acre minimum size assessed in the FSC US Forest Management Standards (V1-0, 2010) or did not meet the minimum standards for that type.

Management prescriptions

Harvest is prohibited within Type 1 old growth stands. For Type 2 old growth stands - harvest using single-tree selection to maintain and increase mean stand diameter. Maintain screen trees for old growth trees and mark them so that they are retained during harvest. Preserve all individual old growth trees as defined by Companies policy.

Monitoring

When new aerial photos are ordered (typically every four years) forestry or inventory staff will review the old growth stands on aerial photos to identify unexpected change. If any disturbance or unexpected outcome is detected, stand will be identified for a field visit to re-assess boundaries or review with on the ground reconnaissance.

Question 3.2. Does the FMU contain or is it part of a roadless area >500 acres in size or that has unique roadless area characteristics?

Date Sources

Companies road and base geo-spatial data; including LiDAR data acquired in 2005 and 2018.

Assessment process

Staff analyzed the timberlands for any contiguous areas without roads or skids trails that were 500 acres or greater. Areas greater than 500 acres without existing roads do not exist. Utilizing LiDAR, staff visually searched for any areas without roads, attempting to define a contiguous undisturbed area. No such area was found.

Results

The description of the assessment also included the result that there are no remaining undisturbed forests that would qualify as roadless area HCVFs on the timberlands.

3.3. Does the FMU contain any other rare, threatened, or endangered ecosystem?

Information sources

The guidance for this question refers to old growth, roadless areas, and other ecosystems considered rare at the ecosystem level. Companies consider this question has mostly been addressed throughout the rest of this HCVF assessment – however, one rare ecosystem was discovered at MRC through scoping and review of a potential Natural Communities Conservation Plan – salt marsh. MRC has delineated and assessed 66 acres of salt marsh as HCVF on its timberlands.

Assessment process

While this question has mostly been addressed via other components of this assessment, when Companies considered work MRC staff did scoping for a potential draft Natural Communities Conservation Plan – staff identified one habitat type that had not been previously considered.

Results

Companies delineated and assessed 66 acres of salt marsh as HCVF on it's the Mendocino county timberlands.

Management prescriptions

Water drafting prohibited within the boundaries of the salt marsh. Maintain a 50-ft equipment exclusion zone (excluding existing roads) around a salt marsh. Provide Class I watercourse protections around watered areas of the marsh.

Monitoring

When new aerial photos are ordered (typically every four years) forestry or inventory staff will review the salt marsh area on aerial photos to identify unexpected change. If any disturbance or unexpected outcome is detected, stand will be identified for a field visit to re-assess boundaries or review with on the ground reconnaissance.

4. Forest areas that provide basic services of nature in critical situations (e.g., watershed protection, erosion control).

Question 4.1. Is all or part of the FMU owned or managed for the primary purpose of providing a source of community drinking water?

Information Sources

(1) Public responses to notification of harvest plans for landowners 1,000 feet downstream of harvest boundary
(2) Local forester knowledge of drinking water sources
(3) Watershed analyses
(4) Review of existing domestic water agreements

Assessment process

Companies utilized our local forester knowledge of drinking water sources, public response to notification of harvest plan preparation, Watershed Analyses, and existing domestic water sources to determine if either timberland provides a source of community drinking water.

Results

Based on the results of review of these data sources, one community water source was identified in the Annapolis tract close to the property boundary. The area included as HCV is the riparian buffer surrounding the water pump.

Management prescriptions

Maintain a riparian protection zone from the water source. Allowing limited timber harvest. Limit the use of herbicides within this zone – review any potential herbicide use with community that uses the water before implementing it. Utilize all seasonal protection measures on the road adjacent to the HCV 4 zone. Prohibit camping within the HCV identified zone to reduce the risk of human waste entering the waterway. Continue to discuss methods to protect the pump and water line with the users of the water.

Monitoring

When new aerial photos are ordered (typically every four years) forestry or inventory staff will review the Community Water Source area on aerial photos to identify unexpected changes. If any disturbance or unexpected outcome is detected, stand will be identified for a field visit to re-assess boundaries or review with on the ground reconnaissance.

Question 4.2. Does all of part of the FMU play a critical watershed role in protecting community drinking water supplies?

Information Sources

(1) Public responses to notification of harvest plans for landowners 1,000 feet downstream of harvest boundary
(2) Local forester knowledge of drinking water sources
(3) Watershed Analyses (soil, hydrology maps, etc.)
(4) Review of existing domestic water sources and their watershed.

Assessment process

Companies utilized our local forester knowledge of drinking water sources, public response to notification of harvest plan preparation, and Watershed Analyses to assess if any community drinking water sources occur within our timberlands. In addition, landowners within 1,000' downstream of a proposed harvest plan are notified if their ownership adjoins or includes watercourses that receive surface drainage from the THP. Companies also reviewed the agreement and potential usage of the existing community water supply compared to the size of the watershed in which it exists to determine if the watershed plays a critical role in protecting community drinking water supplies.

Results

Staff reviewed the community water source in the Annapolis as a potential critical watershed role in protecting community drinking water supplies. The source provides water for approximately 90 people and was granted as an easement in 1974. Eight acres of riparian area around the intake have been identified as HCVF 4.1 and could also serve as protection under 4.2. At the time of designation of this HCVF, MRC staff consulted with experts on the required protections to ensure the water source was protected and designated those management prescriptions as part of the designation of the HCVF. These protections were considered to be sufficient. At the time of this assessment in mid-summer, the Wheatfield Fork stream gage was at 1.96 feet with a discharge of 5.63 cubic feet per second (USGS current conditions, accessed at: https://waterdata.usgs.gov/ca/nwis/uv?site_no=11467553 by S. Billig on 6/30/2020). This water intake has been in use since 1974 and with the identification of riparian stands for its protection; staff assess no further watershed protection is necessary.

Question 4.3. Does all or part of the FMU include extensive floodplain or wetland forests that are critical to mediating flooding or in controlling stream flow regulation and water quality?

Information Sources

(1) Public responses to notification of harvest plans for landowners 1,000 feet downstream of harvest boundary; public input on timber harvest plans on the timberlands
(2) Local forester knowledge of the timberlands
(3) Watershed Analyses (soil, hydrology maps, etc.)

Assessment process

Companies utilized our local forester knowledge of the timberlands and our Watershed Analyses to determine if there are extensive floodplains or critical wetland forest that mediate flooding or control stream flow regulation and water quality.

Results

No HCVFs were identified for regulating flooding or stream flow.

Question 4.4. Is all or part of the FMU critical to control erosion, landslides, or avalanches that would threaten local communities?

Information Sources

(1) Public responses to notification of harvest plans for landowners 1,000 feet downstream of harvest boundary; public input on timber harvest plans in the timberlands
(2) Local forester knowledge of the timberlands
(3) Watershed Analyses (soil, hydrology maps, etc.)

Assessment process

Companies utilized our local forester knowledge of the timberlands, public responses to harvest operation planning, and our Watershed Analyses to identify areas of the FMU critical to control erosion, landslides, or avalanches that would threaten local communities. Companies staff carefully reviewed the wildlife agency approved watershed analyses for our timberlands and searched for any stakeholder concern regarding erosion, landslides, or avalanches that would threaten local communities. Companies did not identify any such areas.

Results

Companies did not identify any areas of our holdings that are critical to control of erosion, landslides, or avalanches that would threaten local communities.

5. Forest areas fundamental to meeting basic needs of local communities (e.g. subsistence, health, well-being)

Question: 5.1. Is all of part of the FMU fundamental to the basic needs of the local community?

Information Sources

(1) Public input on timber harvest plans in the timberlands
(2) Local forester knowledge of the timberlands
(3) Stakeholder interactions

Assessment process

Companies utilized our local forester knowledge of the timberlands, public responses to harvest operation planning, and stakeholder interactions to identify areas of the FMU fundamental to basic needs of the local community. The guidance in the framework indicates that means that local people use the area to obtain resources such as food and building materials on which they are critically dependent. Since this area has been closed to public use since at least the 1950s and with our own knowledge of the timberlands including receipt of stakeholder input on management of the timberlands we did not identify any areas of the timberlands fundamental to the basic needs of the local community.

Results

No HCVF was identified as a result of Question 5.1

6. Forest areas critical to local communities' traditional cultural identity (areas of cultural, ecological, economic, or religious significance identified in cooperation with such local communities)

Question 6.1 Does all or part of the FMU contain specific forest area that is critical to the tribe and local community's cultural identity?

Question 6.2 Are significant cultural features created intentionally by humans present?

Question 6.3 Are outstanding natural landscapes present that have evolved as a result of social, economic, administrative, or religious imperative?

Information Sources

(1) Tribal input on timber harvest plans in the timberlands
(2) Other tribal input to forest management processes received through public meetings and other venues.
(3) Stakeholder input throughout discussion of Companies management in the timberlands.

Assessment process

As a requirement of timber harvest planning, foresters must outreach to local tribes that have a historic interest in the area represented. During the submission period of 2018-2019, HRC and MRC tracked letters, responses and visits to sites from tribes with historical interest in the area. HRC staff sent 89 letters during that timeframe with 21 responses from tribes and 0 visits to sites while MRC staff sent letters for 22 Timber Harvest Plans with 9 responses and 0 visits to sites. Based on the tribal interactions related to timber harvest plans, companies have not identified any HCV6 areas on the timberlands.

Further, staff complete archaeological surveys during timber harvest plan preparation and no significant prehistoric sites have been discovered on the timberlands during those investigations, a property-wide record check was completed in 2015 by Evans and DeShazo LLC (these record checks are to ensure that the all company reported data are included in archaeological records) for HRC and in 2015 by MRC staff for MRC.

Results

No HCVF was identified as a result of Questions 6.1, 6.2, or 6.3

Conclusion

As a result of Companies HCVF assessment in the timberlands; the HCVFs identified in Table 7 were identified.

Table 7 All HCVFs identified on Companies timberlands.

HCV #	HCVF TYPE	HCVF ACRES
1.2	Class 1 and 2 stream side zones	16,381
1.2	Northern spotted owl protected areas	17,596
1.2	Pygmy forest	159
1.2	Oak woodland	1,101
1.2	Marbled murrelet habitat	3,992
1.2	Point Arena mountain beaver	246
2.1	Long Ridge	203
3.1	Type 1 and 2 old growth	3,794
3.3	Salt marsh	66
4.1	Community water source	23
TOTAL		43,561

While much of the forest in the timberlands was designated as non-HCVF; a large amount, 43,561 acres (10% of the total), of the forestlands in Companies holdings designated as HCVF. Of the 96,695 acres on both timberlands designated as either no-harvest or limited harvest, 48% of that was designated as HCVF. Companies have worked diligently with community and stakeholder input since MRC's inception in 1998 and HRC's inception in 2009 to designate and identify HCVF appropriately within the timberlands and is now seeking additional stakeholder input on these designations, management prescriptions, and monitoring plans.

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Appendix A – Best Available Information

The following is a summary of potential best information sources taken from draft materials associated with development of an HCV Framework for the FSC US National Forest Stewardship Standard.

Best Available Information for Identifying and Assessing HCVs (applicable to all HCV)

- Data, facts, documents, expert opinions, and results of field surveys or consultations with stakeholders that are most credible, accurate, complete, and/or pertinent and that can be obtained through reasonable effort and cost, subject to the scale and intensity of the management activities. (Normative)
- Data gathered to address rare or important ecological features associated with Criteria 6.1, 6.2, 6.3, and 6.4
- High Conservation Value surveys of the Management Unit; relevant databases and maps; culturally appropriate engagement with Indigenous Peoples, affected rights holders, affected and interested stakeholders(Normative); FSC US Guidance on Free Prior and Informed Consent (US NFSS, Annex X).
- Existing assessments of environmental and social values undertaken by public agencies and/or other conservation groups, including State Wildlife Action Plans and NatureServe.
- Existing assessments of environmental and social values undertaken on adjacent landownerships.
  NOTE: If the MU has not been surveyed for social or environmental values, but is adjacent to an area with known significant values, then consultation with a qualified expert may be critical for determining if the values also occur on the MU and should be considered HCVs.
- Initial consultation for HCVs 1-3 is generally with state Natural Heritage Programs, state wildlife agencies, the US Fish and Wildlife Service (USFWS), and National Marine Fisheries Service (NMFS).
- On large MUs, for HCVs 1-4, an MU-specific assessment including on-site review may be appropriate if the MU has not been assessed by a qualified ecologist and the weight of evidence suggests that HCVs may be present.
- For relevant elements of HCV 5 and 6, engagement with local communities and Native Americans (per Indicator x.x.x)(Normative)
- *Common Guidance for the Identification of High Conservation Values: A Good Practice Guide for Identifying HCVs Across Different Ecosystems and Production Systems. HCV Network. September 2017.*
- *High Conservation Value Guidance for Forest Managers (FSC-GUI-30-009) Forest Stewardship Council. 2020.*

Information Sources for Specific HCVs

- Intact Forest Landscapes: Global Forest Watch (www.globalforestwatch.org) and/or other maps based on a more recent and accurate Intact Forest Landscapes inventory using a more refined methodology, shall be used to identify IFL. Areas identified by Global Forest Watch shall be

considered IFL unless credible assessments determine that the area does not meet the definition of IFL and designation as such is not warranted.

- National Wilderness Preservation System
- Drinking Water Supply Management Zone information from local municipalities
- National Register of Historic Places
- UNESCO World Heritage Sites

Information Sources by HCV Type

- HCV 1:
    - Critical Habitat for Federally listed species (if representing a concentration of biodiversity and is regionally significant)
    - Areas placed in the federal Protected Areas Database (PAD) as concentrations of biological diversity
    - NatureServe Maps of Biodiversity Hotspots and Biodiversity Importance
    - Areas identified through TNC's Ecoregional Assessments as having significant concentrations of biodiversity
    - Sources such as the IUCN Red List that provide information on how critically imperiled a species is and therefore how significant individual occurrences may be.
- HCV 2:
    - Aerial photography, LiDAR data, and/or satellite imagery
    - Reports and analyses from Natural Heritage Programs, NatureServe, IUCN Red List, USFWS, The Nature Conservancy, Global Forest Watch, WWF, and others
    - Consultation with topic area experts
- HCV 3:
    - Databases for rare, threatened and endangered ecosystems, such as EPA's EnviroAtlas and NatureServe
    - State Wildlife Action Plans
    - Experts and stakeholders, including State and federal natural resource agencies or similar agencies, Natural Heritage Programs, Academic experts, Appropriate local, state, and regional professional organizations, and NGOs with knowledge regarding rare, threatened, or endangered ecosystems (e.g., The Nature Conservancy; World Wildlife Fund).
- HCV 4
    - For watersheds surrounding surface waters used for public drinking water:
        - Consultation with municipal, county, and regional water supply agencies.
        - Review of available maps and databases of public drinking water supplies.
        - Maps and databases related to soil erosion potential or the potential for slope failure.
    - For slopes rated as high-hazard for slope failure:

        - Review of available maps and databases.
        - Consultation with appropriate municipal, county, regional, and state agencies.
    - For soils vulnerable to erosion:
        - County soil surveys (https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm).
        - Consultation with county and state soil scientists
    - For other ecosystem services, including flood control and attenuation:
        - Review of available maps and databases, including FEMA flood maps.
        - Consultation with appropriate municipal, county, regional, and state agencies
- HCV 5
    - Consultation with local communities and/or Native American groups
- HCV 6
    - Consultation with local communities and/or Native American groups
    - State, federal and regional databases with information about places that are globally or nationally significant cultural, archaeological or historical importance.

Consultation with the State Historic Preservation Office

Appendix B – List of all identified HCVFs, management prescriptions, and monitoring plans

HCV 1.2: Class 1 and 2 streamside zones.

Description: Class I stream zones are prescribed to protect riparian corridors around Class I streams (those that bear fish or could be restored to fish-bearing condition). These riparian stands usually have late seral stand conditions; if not, these conditions will develop over time due to the high tree retention prescriptions. Class II stream zones are prescribed to protect riparian corridors around Class II streams (streams bearing non-fish aquatic life), and to contribute to the improvement of aquatic conditions in downstream Class I streams. Class II stream zones are also prescribed to protect lakes, ponds, wetlands, and springs. Over time, these riparian stands will develop late seral conditions. These HCVFs will serve multiple functions including protecting habitat for threatened salmonids; they will also develop or be maintained as late seral and eventually, old growth forests.

Acres delineated: 16,381

Management prescriptions:

For HRC:

Class I stream side zone management is intended to improve aquatic conditions, especially stream shading to maintain cool water for salmonids, and large woody debris recruitment to the stream bed for pool and riffle structure. The Streamside zone is made up of a no-harvest inner band. The width of this band varies by watershed (after watershed analysis) but for this analysis, the inner band was modelled at 50 feet.

Class II stream side zone management is intended to improve aquatic conditions by enhancing a multi-storied over-stream canopy which contributes to cool water flowing into Class I streams and produces organic debris as food for macro and micro invertebrates. The stream side zone is made up of a no-harvest inner band. The width of this band varies by watershed (after watershed analysis) but was modelled at 30 feet

For MRC:

Follow Anadromous Salmonid Rules from California Forest Practice Rules and accelerate completion of sediment control activities in these areas (the average distance for no-harvest was modelled at 30 feet).

Monitoring:

For HRC:

Monitor the values of stream side zones and report on habitat characteristics annually in the Aquatic Trends Monitoring Report. The report is available on the web at www.hrcllc.com. Additional aquatic and riparian monitoring is conducted in conjunction with watershed analysis which HRC considers an adequate risk assessment process (see the Habitat Conservation Plan Section 6.3.3.1). These reports are placed on the web site as they become available.

For MRC:

Monitoring efforts on Class I and II and salmonids will be compiled and assessed annually. The efforts may include monitoring for fish distribution, spawning, water temperature, water drafting information, or any other information collected in a given year. The type of information collected will vary but will provide an assessment of the effectiveness of protections in the riparian areas. Where possible, additional information on effectiveness of riparian areas will be collected throughout the ecoregion to include in the monitoring assessment.

HCV 1.2: Northern spotted owl protected areas

Description: Northern spotted owls receive different types of protections on each of the timberlands. On MRC, areas where spotted owls are located during the daytime are provided a large core area, often defined by topographic features (e.g., ridgelines, streams) as approved by the state and federal Wildlife Agencies to protect northern spotted owls. These core areas are defined to protect the owls' activities during the breeding season and ensure habitat remains intact in those areas. HRC maintains a Habitat Conservation Plan with the federal and state wildlife agencies that establish site-specific protections, specifically, Northern spotted owl habitat retention areas to protect activities during the breeding season and provide habitat protection for spotted owl populations.

Acres delineated: 17,596

Management prescriptions:

For HRC:

The Habitat Retention Areas prohibited harvest within 500 feet with management in the rest of the Habitat Retention Area retaining roosting habitat.

For MRC:

Harvest is generally prohibited within the core area. Any proposal for harvest within core areas must be reviewed and approved by the responsible regulatory agency and must maintain NSO habitat.

Monitoring: Staff at both timberlands conduct annual monitoring for northern spotted owls. A team of scientists completes both nocturnal surveys to determine presence of northern spotted owls and daytime surveys to determine their reproductive status. Both timberlands staff complete annual updates on survey efforts for northern spotted owls.

HCV 1.2: Pygmy forest

Description: Pygmy forest (or pygmy scrub) is naturally rare, occurring only in close proximity to the coast. The dominant canopy species are pygmy cypress (*Hesperocyparis pygmaea*), Bolander pine (*Pinus contorta* ssp*. bolanderi),* and dwarfed Bishop pine (*Pinus muricata*). Pygmy forest is located on thin acidic soils where many trees and shrubs, having adapted to suboptimal growing conditions, are limited in stature. Even the oldest trees reach only limited heights. In these areas, dwarf trees make up more than 75% of a stand. Several species are characteristic of pygmy forest on MRC land, including pygmy cypress, Bolander's pine, pygmy manzanita, Bishop pine, and California sedge (Sholars 1997, CNDDB 2002, CNPS 2002). Other plants occur in or near pygmy forests, including coast trefoil,, suspected food plant of lotis blue butterfly larvae. Pygmy forest is a rare and unique ecosystem in California (Sholars 1984). Most of the pygmy forest in the world is found in Mendocino County. This ecosystem is the result of hundreds of thousands of years of interaction between soil and vegetation (Sholars 1984). Soils in pygmy forest are derived from materials deposited on 5 marine terraces from 115,000 to 1.2 million years ago (Aitken and Libby 1994). Leaching of soil on the terraces has led to nutrient-poor, acidic soils. Underneath the soil surface of pygmy forest, a shallow hardpan makes it difficult for trees with deep roots to survive (Aitken and Libby 1994). This identified HCVF will serve to protect an extremely rare ecosystem with limited distribution and provide habitat for many rare and uncommon species.

Acres delineated: 159

Management prescriptions: Avoid conducting management activities in this area if feasible. Management activities to allow access to adjacent timber stands will occur only if other routes are infeasible. Consult with United States Fish and Wildlife Service for management activities which may impact the lotis blue butterfly. Seek opportunities to apply surrogates for natural disturbance agents (e.g. fire) within pygmy forest areas.

Monitoring: When new aerial photos are ordered (typically every four years) forestry or inventory staff will review the pygmy stands on aerial photos to assess for unexpected change. If any disturbance or unexpected outcome is detected, the stand(s) will be identified for a field visit to re-assess boundaries or review with on the ground reconnaissance.

HCV 1.2 Oak woodland

Description: Oak woodland occurs where precipitation falls mostly in the winter, followed by warm-to-hot dry summers (Mayer and Laudenslayer 1988). Oak woodlands are not limited by soil type or parent material (Mayer and Laudenslayer 1988), but generally occur on moderate-to-well drained soils that are also moderately deep. In oak woodland stands, the overstory usually consists of hardwoods with scattered conifers. On mesic sites, trees form a dense, closed canopy; on dry sites, trees are more widely spaced. Typical oaks of this natural community include Oregon white oak, California black oak, and canyon live oak. Understory plants in oak woodlands can include a very diverse group of species. In drier areas, shrubs may include manzanita. Regionally, several factors have decreased oak woodlands. One of the most important threats is the conversion of oak woodlands to development or vineyards (CalPIF 2002). This threat is compounded by sudden oak death (SOD), a pathogen that began attacking oaks in 1985. In addition, oak woodlands struggle to regenerate naturally due to several causes, including fire suppression, overgrazing, Douglas fir forest encroachment, and invasion of non-native plants (CalPIF 2002). Companies have several large areas of oak woodland on MRC timberlands that have been designated as HCVF.

Acres delineated: 1,101

Management prescriptions: Management activities within the oak woodland area type is implemented to maintain or enhance the oak woodland habitat type. Harvest encroaching Douglas-fir and avoid replanting the harvested area with conifers. Seek opportunities to apply surrogates for natural disturbance agents (e.g. fire) within oak woodland areas.

Monitoring: When new aerial photos are ordered (typically every four years) forestry or inventory staff will review the oak woodland stands on aerial photos to assess for unexpected change. If any disturbance or unexpected outcome is detected, the stand(s) will be identified for a field visit to re-assess boundaries or review with on the ground reconnaissance.

HCV 1.2 Marbled murrelet habitat

Description: The marbled murrelet is a federally threatened, state endangered seabird that feeds on the ocean and nests inland on large branches. Historical estimates indicate that 60,000

marbled murrelets once nested on the California coast (Larsen 1991, as cited in Cooperrider et al. 2000). The current California breeding population is estimated at approximately 2,000 (Carter and Erickson 1992, Carter et al. 1992; both as cited in USFWS 1997c), with a state total of approximately 6,000 breeding and non-breeding birds (Ralph and Miller 1995, as cited in Cooperrider et al. 2000). Marbled murrelet populations are estimated to be declining by 4–7% per year (Beissinger 1995, as cited in Cooperrider et al. 2000), primarily due to habitat loss and fragmentation from timber harvesting activities, urban development, and periodic events such as oil spills and El Niño occurrences (Cooperrider et al. 2000). The production of only 1 egg per year, combined with a low recruitment rate complicates recovery efforts for this species. Most experts consider that at least 100 to 200 years will be necessary for marbled murrelet populations to recover to sustainable population levels because that is the time period necessary for second-growth forests to grow trees large enough to provide appropriate nesting habitat. For nesting in California, marbled murrelets generally require old-growth coniferous forest located close to ocean waters, typically within 10 km (6.5 mi), with abundant near-shore food resources (Miller et al. 1995). MRC has one known nesting area – the Lower Alder Creek Management Area, while HRC has multiple known murrelet habitat areas that are used for nesting. Since this species is highly limited in its distribution and population within California, Companies have assessed these areas as HCVF as well.

Management prescriptions:

For HRC:

Prohibit management within these areas unless management is considered in the riparian connectors. Those areas must be managed according to HRC Habitat Conservation Plan restrictions including only managing to accelerate the growth of murrelet habitat.

For MRC:

Prohibit harvest within occupied areas in Lower Alder Creek. In other areas, harvest is implemented with the intention of maintaining or enhancing marbled murrelet habitat.

Monitoring:

For HRC:

Staff review the annual marbled murrelet inland monitoring report for HCP compliance. This report provide information on murrelet surveys within core areas. The report will be analyzed for any key trends and potential needs for change in management practices.

For MRC:

When new aerial photos are ordered (typically every four years) forestry or inventory staff will review the murrelet habitat areas on aerial photos to assess for unexpected change. If any disturbance or unexpected outcome is detected, the stand(s) will be identified for a field visit to re-assess boundaries or review with on the ground reconnaissance.

HCV 1.2 Point Arena mountain beaver

Description: Mountain beavers live in extensive underground burrow systems with multiple entrances (Camp 1918). Most nests are built 0.9 m (3 ft) or more below the surface in a dome-shaped chamber that is packed with vegetation. From the nest chamber, a series of tunnels radiate outward to other chambers used for caching food and depositing feces (Sleeper 1997). The Point Arena mountain beaver apparently occupies only a portion of its historical range (Steele 1989). The subspecies currently exists in small disjunctive sites separated by unsuitable habitat (Steele 1989). Habitat loss resulting from livestock grazing and urbanization is the most likely cause of this decline (Steele 1989). Although land use, such as forest logging, may have created suitable habitat, other land use, such as livestock grazing, has reduced coastal scrub habitat used by mountain beavers (Steele 1986), offsetting any gains from forest conversions. Furthermore, urban development and associated activities, such as trash dumping, increased predation by pets, construction of roads, and off-trail hiking, have negative effects on Point Arena mountain beaver sites (USWFS 1998a). Due to urban development along the California coast, the potential for population declines from habitat loss is great (Steele 1989, USFWS 1998a). The Point Arena mountain beaver is listed as federally endangered and remains at risk due to continued recreation and management on the Mendocino coast. Companies have designated known burrow systems as HCVF, these are additionally protected under the Federal Endangered Species Act. These areas and acres are depicted as polygons, but it is important to note that mountain beavers will abandon burrow systems as the forest grows around them and it is expected that these polygons will move over time as active burrow systems move.

Management prescriptions: No harvest activities within 200-foot buffer of known burrow systems (except use and maintenance of existing roads). Exclude most harvest activities within 500 feet of known burrow systems during breeding season.

Monitoring: MRC staff will review recent surveys to determine if further action in these areas needs to be taken; though MRC is inhibited from management actions within the mountain beaver areas due to its status as an endangered species. Surveys are conducted as needed to understand potential impact of timber harvest plans. Anecdotal evidence indicates that extensive surveying has a negative impact on the burrow systems (e.g., trampling vegetation;

making well-worn paths) so staff avoid surveys unless necessary to identify previously unknown systems.

HCV 2.1 Long Ridge

Description: HRC designated a 203-acre area of the best available, intact Douglas-fir forest; interspersed with Type 1 old growth and smaller conifer and hardwood stands in the Bear-Mattole watershed. This area has been named the Long Ridge HCV2. Multiple stakeholder tours of the area confirmed its validity as the most contiguous area representing the highest value late-seral habitat within the Mattole watershed on HRC ownership. A tour on May 12, 2011 (highlighted in the Mattole Restoration News Newsletter, Summer/Fall 2011, Issue 36, page 3) attended by stakeholders including the Mattole Restoration Council, Mattole Salmon Group, Sanctuary Forest, and North Coast Forest Defenders led all to agree the area was correctly identified as HCVF. It was determined at the time to be the most intact, advanced late seral Douglas-fir forest type on HRC's ownership – including some areas within the HCVF that would late be assessed as Type 1 old growth. Representatives from The Environmental Protection Information Center were also consulted on this designation and the assessment of other areas within this watershed.

Acres delineated: 203

Management prescriptions: Companies' prohibit management in this HCVF. However, staff may work with local experts and stakeholders to develop a management prescription that would accelerate and improve the characteristics of this stand (and protect it from catastrophic wildfire impacts.

Monitoring: Companies staff will utilize publicly available imagery to review the condition of this HCVF annually. Additionally, field staff will be instructed to review and visit this stand when they are in the area to ensure that field review occurs at a reasonable interval.

HCV 3.1 Type 1 and 2 old growth

Description: Type 1 old growth stands are 3 acres or more of previously unharvested old growth while Type 2 old growth stands are 20 acres or more of previously harvested old growth maintaining the characteristics of old growth stands.

Acres delineated: 3,992

Management prescriptions: Harvest is prohibited within Type 1 old growth stands. For Type 2 old growth stands - harvest using single-tree selection to maintain and increase mean stand

diameter. Maintain screen trees for old growth trees and mark them so that they are retained during harvest. Preserve all individual old growth trees as defined by Companies policy.

Monitoring: When new aerial photos are ordered (typically every four years) forestry or inventory staff will review the old growth stands on aerial photos to identify unexpected change. If any disturbance or unexpected outcome is detected, stand will be identified for a field visit to re-assess boundaries or review with on the ground reconnaissance.

HCV 3.3 Salt marsh

Description: Wetlands that are flooded and drained by salt water brough in by the tides – they are essential for health fisheries and coastlines.

Acres delineated: 66

Management prescriptions: Water drafting prohibited within the boundaries of the salt marsh. Maintain a 50-ft equipment exclusion zone (excluding existing roads) around a salt marsh. Provide Class I watercourse protections around watered areas of the marsh.

Monitoring: When new aerial photos are ordered (typically every four years) forestry or inventory staff will review the salt marsh area on aerial photos to identify unexpected change. If any disturbance or unexpected outcome is detected, stand will be identified for a field visit to re-assess boundaries or review with on the ground reconnaissance.

HCV 4.1 Community water sources

Description: Based on the results of review of these data sources, one community water source was identified in the Annapolis tract close to the property boundary. The area included as HCV is the riparian buffer surrounding the water pump.

Acres delineated: 23

Management prescriptions: Maintain a riparian protection zone from the water source. Allowing limited timber harvest. Limit the use of herbicides within this zone – review any potential herbicide use with community that uses the water before implementing it. Utilize all seasonal protection measures on the road adjacent to the HCV 4 zone. Prohibit camping within the HCV identified zone to reduce the risk of human waste entering the waterway. Continue to discuss methods to protect the pump and water line with the users of the water.

Monitoring: When new aerial photos are ordered (typically every four years) forestry or inventory staff will review the Community Water Source area on aerial photos to identify

unexpected changes. If any disturbance or unexpected outcome is detected, stand will be identified for a field visit to re-assess boundaries or review with on the ground reconnaissance.