

Interior Timberland Planning



Hardwood Communities

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Significance

Hardwood plant communities and oak woodlands in particular, have the richest wildlife species abundance of any habitat in California. More than 330 species of birds, mammals, reptiles, and amphibians depend upon oak woodland at some stage in their life cycle. California hardwood and oak woodlands rank among the top three habitat types in North America for bird richness. Hardwood plant communities sustain abundant wildlife diversity primarily because they produce high quality and frequently copious foraging opportunities, including mast crops (acorns). Additionally, hardwood plant communities in general provide important habitat shelter and cavities for nesting species.

Purpose and Need

There are several major threats to hardwood plant communities and oak woodlands: (1) Loss of hardwood plant communities to urbanization and intensive agriculture (vineyards); (2) Reduced natural regeneration of young trees and diverse age structure; and (3) Sudden Oak Death (SOD). Existing hardwood plant communities in many instances are not regenerating naturally (i.e. young trees are not establishing to replace older trees as they senesce and die). Causes of lack of natural regeneration are (1) fire suppression and (2) overgrazing. These factors contribute to invasion of non-native annual grasses and cause long-term changes in habitat structure. Annual grasses tend to out-compete native perennials and young hardwood seedlings for soil moisture, whereas herbivory by cattle can also stymie sapling development. SOD is the newest threat to California's oak woodlands. Oaks of many species infected with SOD die quickly, and there are currently no known cures or prophylactic measures for stopping the disease. The disease is currently present over more than 350 miles of California coastal forests (and into southern Oregon) and will most likely continue to spread (it has recently spread to big-leaf maples in the Sierras). Lack of recruitment of young oaks combined with the SOD epidemic affect 7 of the 10 acorn-bearing species of oak tree in California.

Regulatory standards that apply to hardwoods for the purpose of commercial timber harvesting on non-federal lands in California are developed in the Z'berg- Nejedly California Forest Practice Act. The Act addresses silvicultural systems, yarding methods, and a variety of other issues. Although Forest Practice Rules emphasize growth and harvest of conifer tree species, a number of Rules provide a basis for hardwood retention: Title 14, California Code of Regulations Sections 897, 898, 912.9, 916, 919, 919.4, and PRC 4513. Additionally, Forest Practice Rules require retention of trees of each native commercial species; in order "to maintain and improve tree species diversity, genetic material and seed production" (Title 14 CCR 913.2(d)). Furthermore,

"these leave trees shall be representative of the best phenotypes available in the pre-harvest stand." Commercial tree retention standards do not apply to California hardwoods. In fact, hardwood retention may not be required at a specific harvest site if a Sustained Yield Plan (SYP) has been approved, or when the registered professional forester (RPF) has proposed a specific plan that protects existing regeneration or provides for regeneration. Hardwood retention is evaluated in these long-term plans on an ownership or watershed scale.

Retention of Trees of Each Native Commercial Species

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Goals

1. Conserve, enhance, and protect natural woodland processes and characteristics within these hardwood communities.
2. Educate the public on the value conserving functional hardwood communities and retention of individual hardwood elements.
3. Maintain, recruit habitat, and promote conservation and restoration of hardwood community habitat, particularly oaks, to support long-term viability and recovery of native species of wildlife and fish on private commercially managed forests.

Objectives

1. Support, inform, and promote conservation efforts to increase acreage and quality (ecosystem structure and function) of hardwood and oak woodland habitat in private sector during the THP process.
2. Define conservation implications of key problems facing northern California's hardwood communities: (a) Loss of hardwood and oak woodland habitats, (b) Long-term lack of recruitment, and (c) New pathogen that causes SOD.
3. Collaborate with timber companies to collect hardwood data, create a baseline inventory of hardwood resources, and develop programmatic strategies to maintain hardwood distribution and diversity on private timber lands.
4. Collect data and analyze existing scientific information in support of conservation recommendations for hardwood and oak woodland management.

Suggested Measures

Below are prescription specifics including a prescription for a “pure oak release.”

1. Hardwood (Oak) release

- Objective – Remove all competition from conifer trees within oak woodland community.
 - Remove all conifer trees to release oak trees, oak brush, and associated desirable shrubs to develop a pure oak woodland community.
 - Retain all snags (conifer, oak, etc.).
 - Develop a secondary shrub multiple canopy cover with diversified structure and species composition of dead and live wood.
 - Establish well developed duff on ground for establishment of acorns and young trees.
2. Timber stands with <20% hardwoods (oak)
- Objective - Thin stand from 35% to 40% canopy cover (CC).
 - Remove all trees around oaks up to one tree length (1/2 acre).
 - Exceptions will be made where healthy sugar pine is adjacent to oaks.
 - Do not count openings (created around oaks) toward overall CC goal of 40%.
 - Prefer retention of ponderosa pine to other species (LPP, BO, SP, PP,DF, IC, WF)
 - All snags will be retained (>15 inches x 20 feet).
 - No oak would be removed.

3. Timber stands with >20% hardwood (oak)

- Objective -Thin conifer cover 20% to 30%, marking based on removing competing conifers from around oaks and pine.
- Mark to enhance vertical and horizontal structure.
- All snags will be retained (>15 inches x 20 feet).
- Very few oaks would be taken. Only as needed to reduce competition between other (healthier) oaks.

4. Maintain existing large hardwoods >18 inches dbh within clearcuts where hardwood (oak) dominates the stand

- Objective - retain existing pine and move stand to a pine/oak montane woodland.
- Reduce competition between conifers and thin white fir (leaving pine).
- Remove oaks leaving ¼ - ½ acre openings, plant in pine.

Monitoring

There are major gaps in our knowledge about the importance of hardwood communities and elements for wildlife habitat. Demographic studies of species before and after removal of various hardwoods are needed to establish causal links between wildlife populations and the ratio of hardwood to conifer trees; however, until such studies are completed, available evidence is sufficient to recommend retaining mature hardwoods of all species in forest stands. Below are examples of some important questions that need to be addressed as part of effectiveness monitoring and research:

1. What is the distribution, abundance, and species composition of hardwoods in both the timber harvest project area and surrounding planning watershed?
2. Are these surrounding areas with hardwoods connected through water course set asides or other covering corridors within the watershed?
3. How does individual variation within a species and species composition of hardwood communities and age class distribution influence wildlife populations?
4. Is adequate mast production correlated with unique structural components needed by wildlife?
5. What species of wildlife should be primary targets (indicator taxa) for conservation?
6. What habitat patch size (retention island) is critical to support various target species?
7. How do landscape and watershed habitat mosaic patterns influence species abundance and distribution within the watershed?
8. Will a sufficient number of hardwood trees (oak aspens) be retained or recruited to provide food for resident and migratory birds?
9. Are large hardwoods (>18 inches dbh) being retained for acorn production and wildlife structure?
10. Are trees in smaller size classes (<18 inches dbh) being maintained to provide mature trees over a longer time frame?
11. Are trees with cavities being retained?
12. Are snags and downed woody material being retained for cover and habitat?
13. What is the link between hardwood plant communities and those other wildlife habitat elements (i.e. snags and downed woody material)?
14. Are clumps of smaller hardwoods being retained around larger trees for small bird and mammal habitat?
15. ?What landscape-level analyses are being developed to enable impact forecasts of various hardwood management scenarios based on current forest cover?
16. How can landscape/watershed spatial analyses being used to assess relative impacts of desired silvicultural practices on a site by site basis – allows flexible regulation not just single standard policy?
17. What is the best method for analysis of past land conversion to calculate future forest composition?
18. What is the best method for using historical satellite imagery to detect changes in forest composition and cover over time. Results of past changes could be used to extrapolate future density, composition, and crown closure given different management scenarios.

Programmatic Opportunities

Important and desirable linkage with: (1) Wildlife Trees, (2) Snags and Danger Trees, and (3) Aspen Communities (PDF) in the context of retention of individual hardwood structural elements and structure and function of hardwood communities.

Authority

1. Fish and Game Code Section 711.7 and 1802
2. 14 CCR Section 15386
3. California Endangered Species Act (CESA) (Fish and Game Code sections 2050 et seq.
4. Public Resources Code Section 21104.2
5. California Forest Practice Rules Section 939.2(d) and 939.3(a).

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