



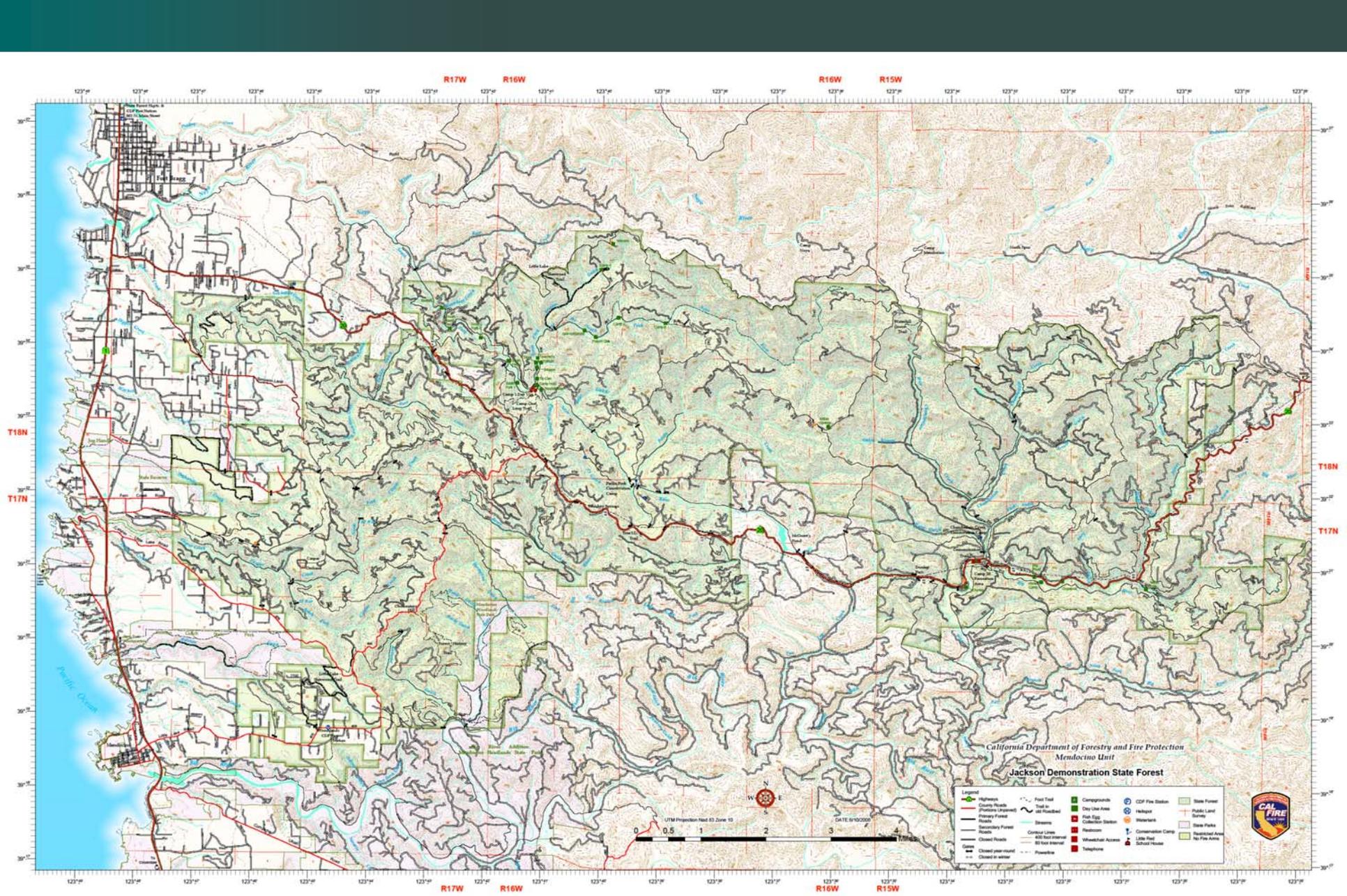
JACKSON DEMONSTRATION STATE FOREST



**Introductions
to the Forest**

**History &
Programs**





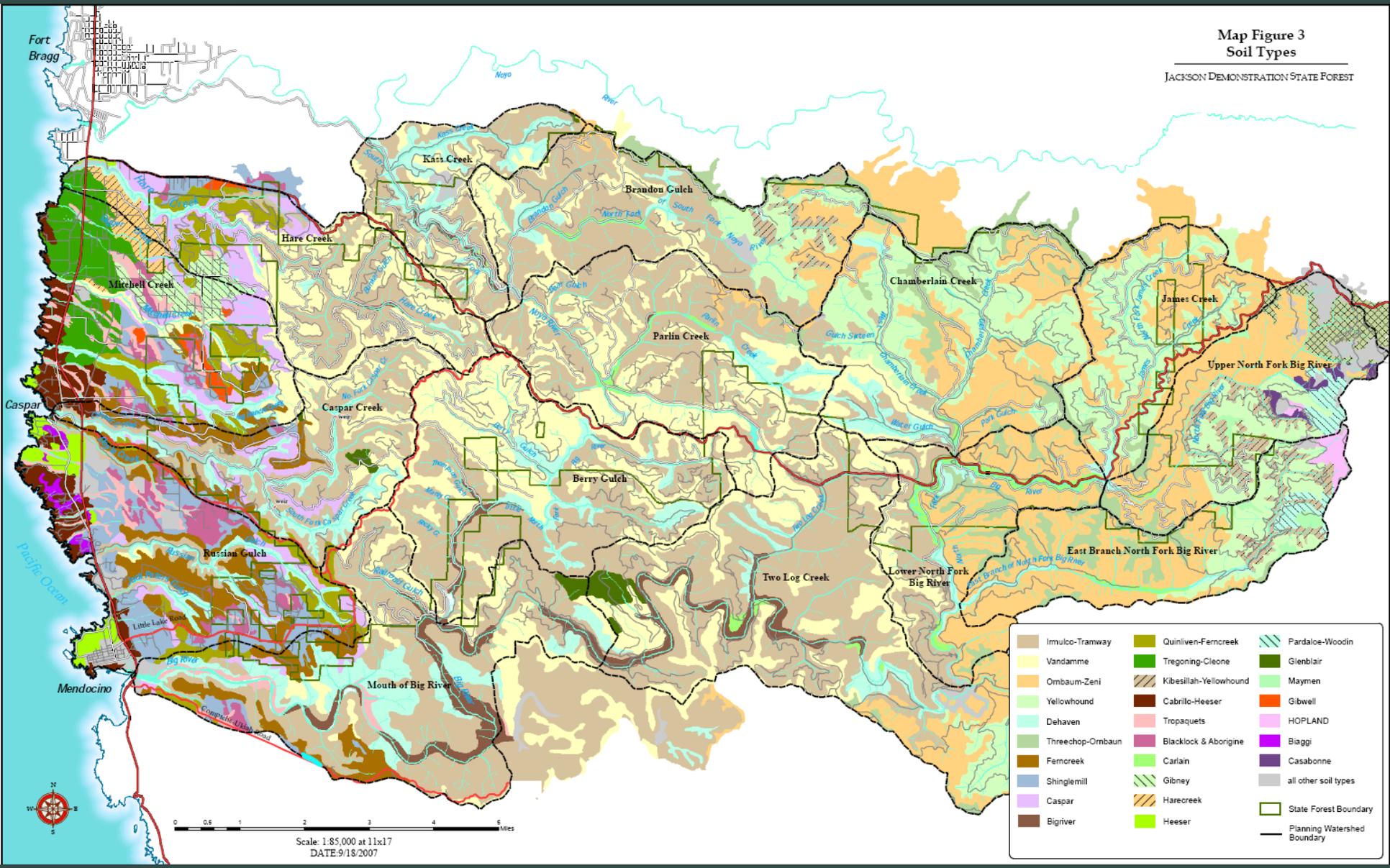
48,652 acres along Highway 20 between Willits and Fort Bragg

Soils and Productivity

- soil types

Map Figure 3
Soil Types

JACKSON DEMONSTRATION STATE FOREST



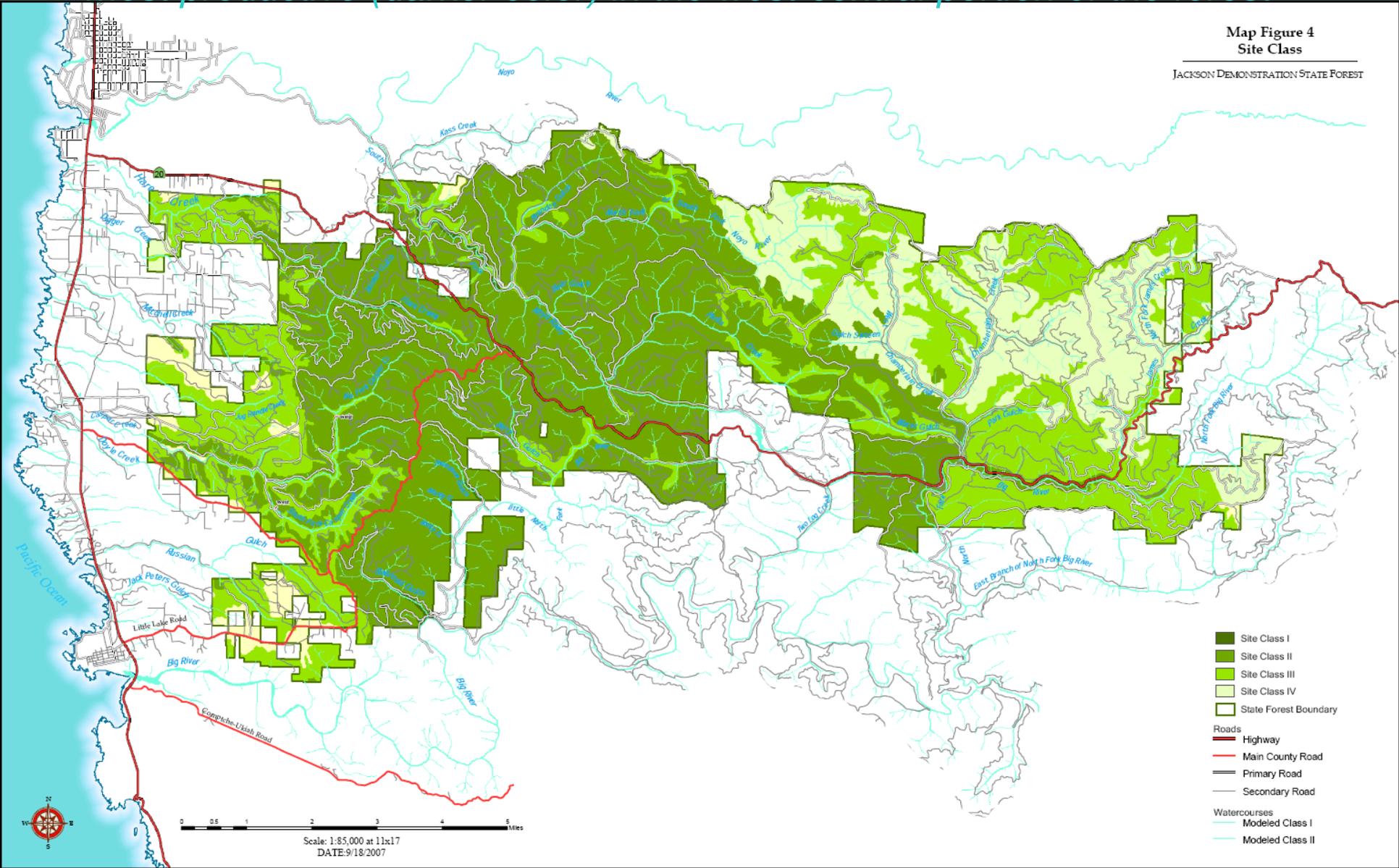
Soils and Productivity

- site class

most productive (darker color) in the west-central portion of the forest

Map Figure 4
Site Class

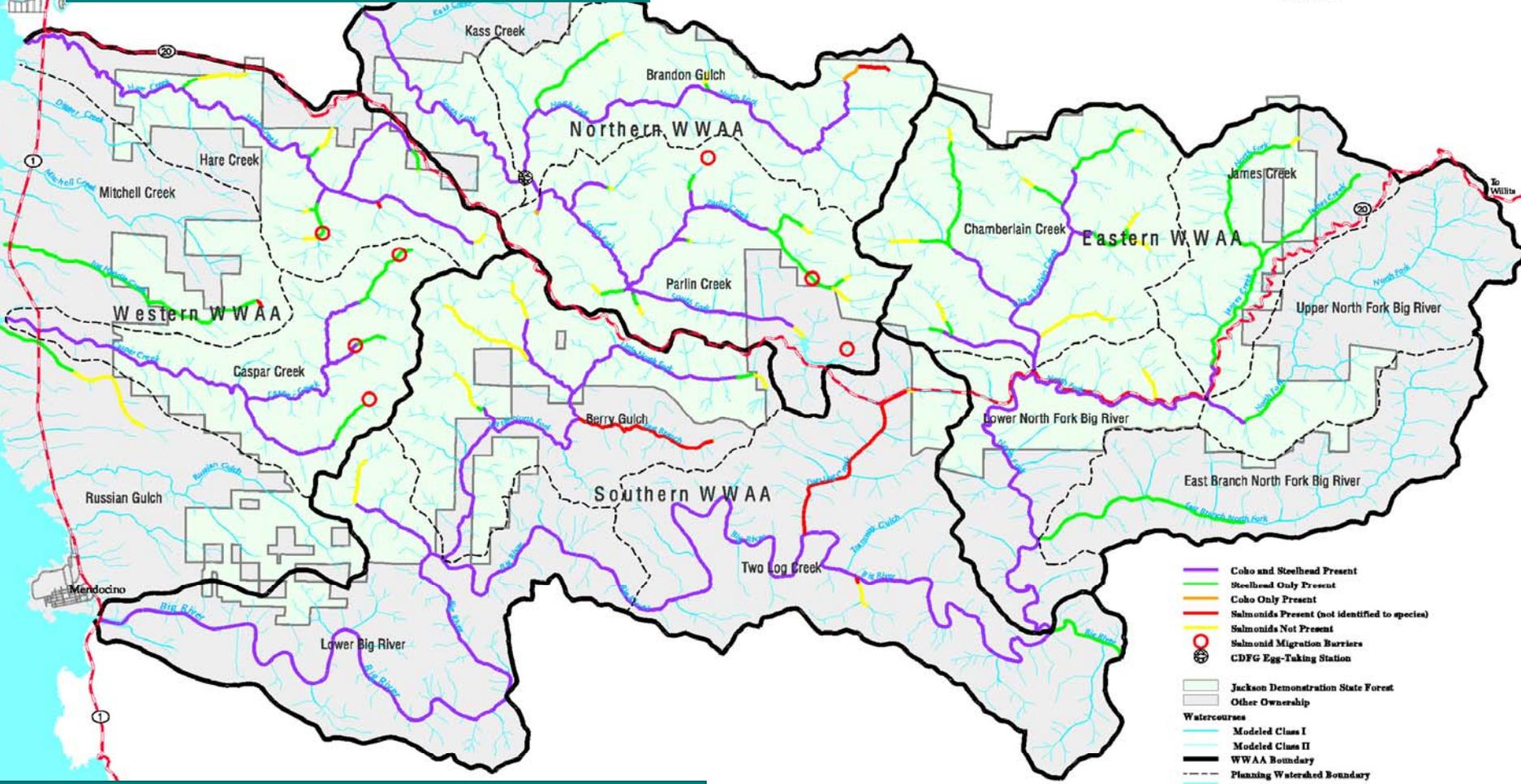
JACKSON DEMONSTRATION STATE FOREST



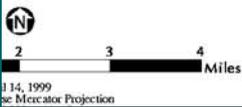
Aquatic Resources

Watersheds and Salmonid distribution

Map 8
Salmonid Distribution
Jackson Demonstration State Forest
HCP/SYP



JDSF lies within two major watersheds, Noyo and Big River. Within JDSF there are several small coastal watersheds including Caspar Creek. The majority of the Caspar Creek watershed is managed by JDSF.



Data Source:
State Forest GIS database



Coho salmon

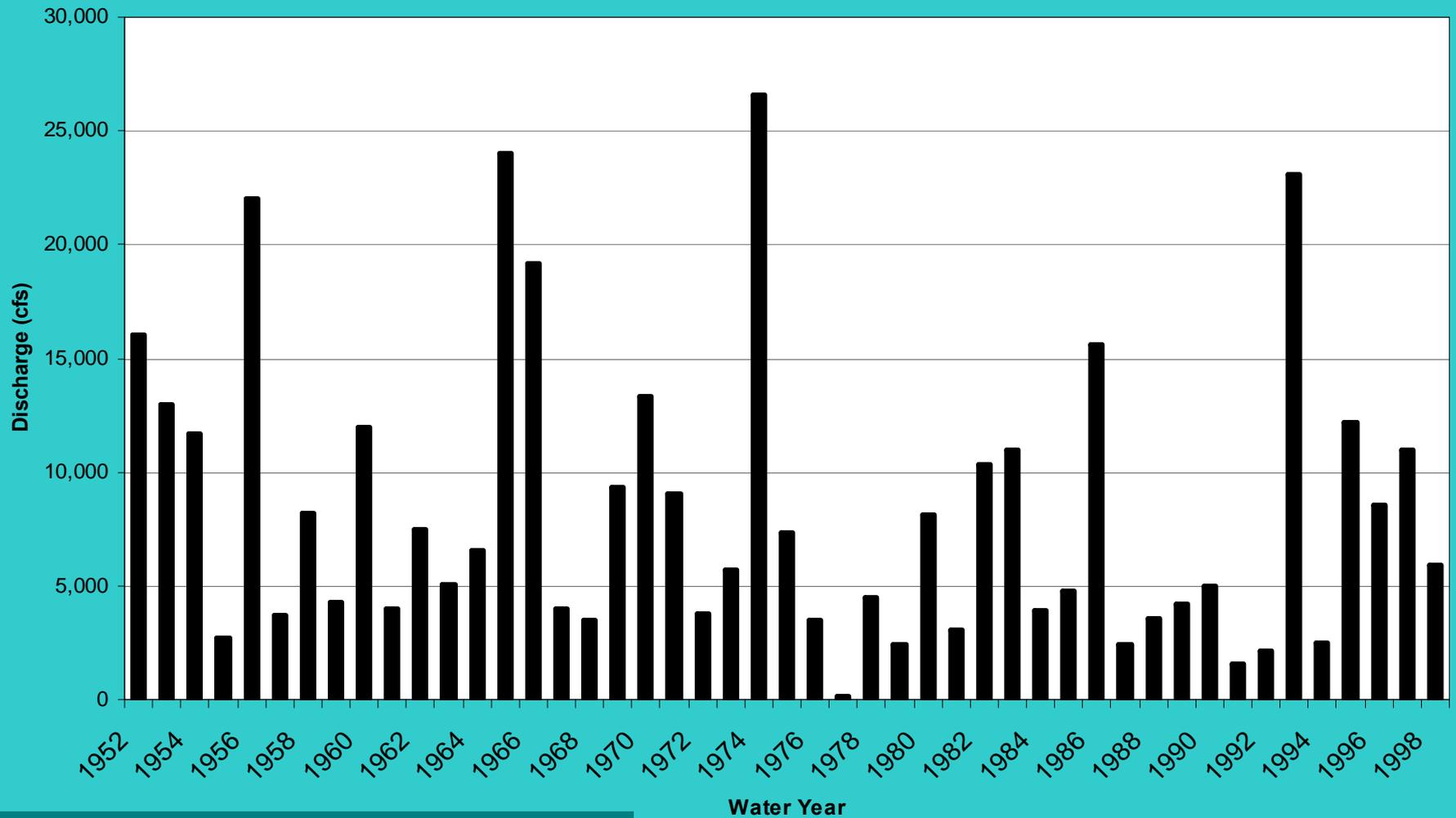




Watershed Resources

- Water
- Slopes
- Soils
- Channels

Noyo River -- Annual Peak Discharge

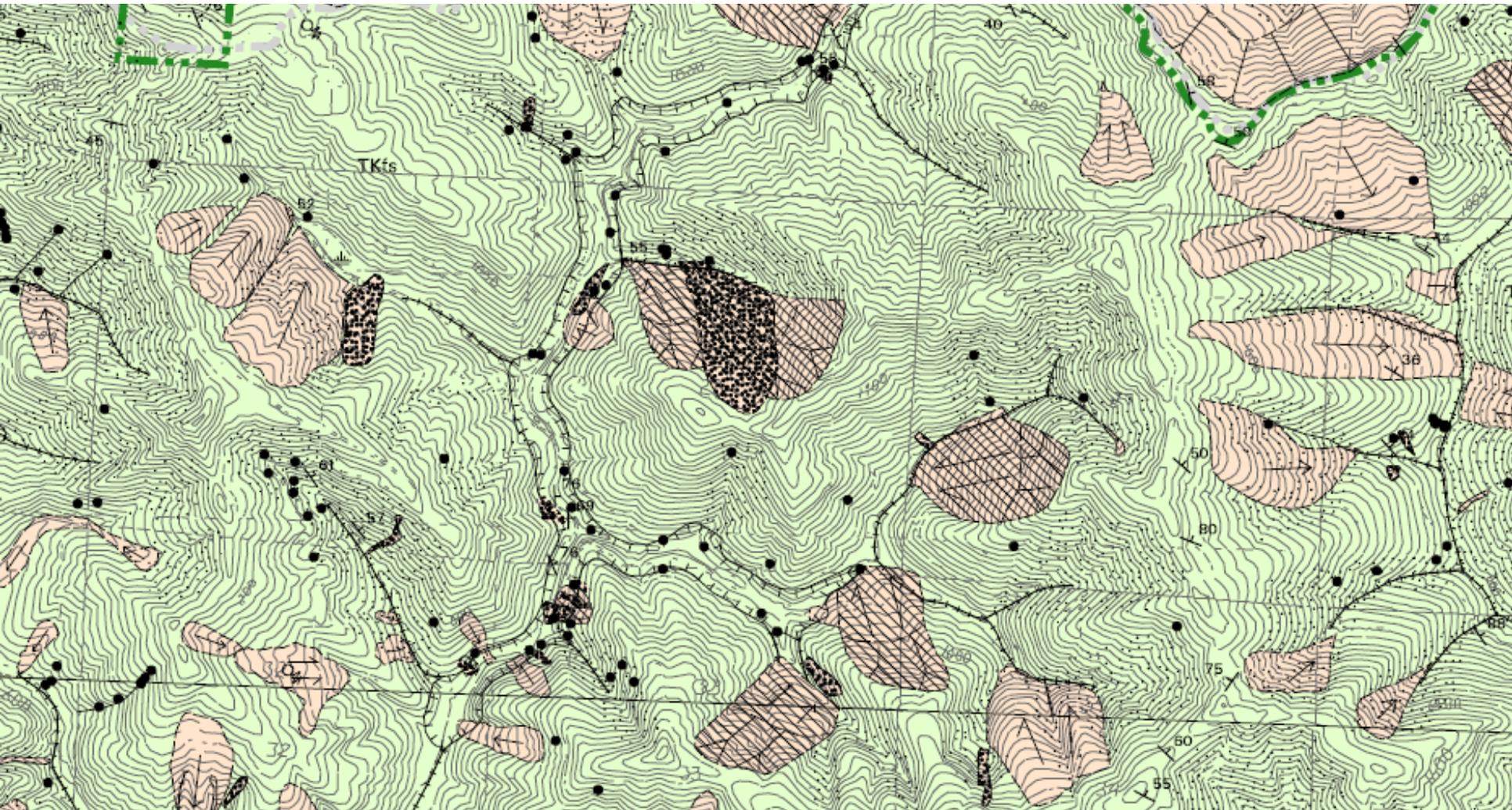


Note how variable annual flows are.

PRELIMINARY MAP OF GEOLOGIC AND GEOMORPHIC FEATURES RELATED TO LANDSLIDING JACKSON DEMONSTRATION STATE FOREST, MENDOCINO COUNTY, CALIFORNIA

Compiled by William R. Short, and Thomas E. Spittler *

April 2002



Historic landslides and erosion processes in watercourses are mapped.



Terrestrial Wildlife

- Northern spotted owl
- Cooper's hawk
- Sharp-shinned hawk
- Osprey
- Marbled murrelet (nearby)
- Sonoma vole

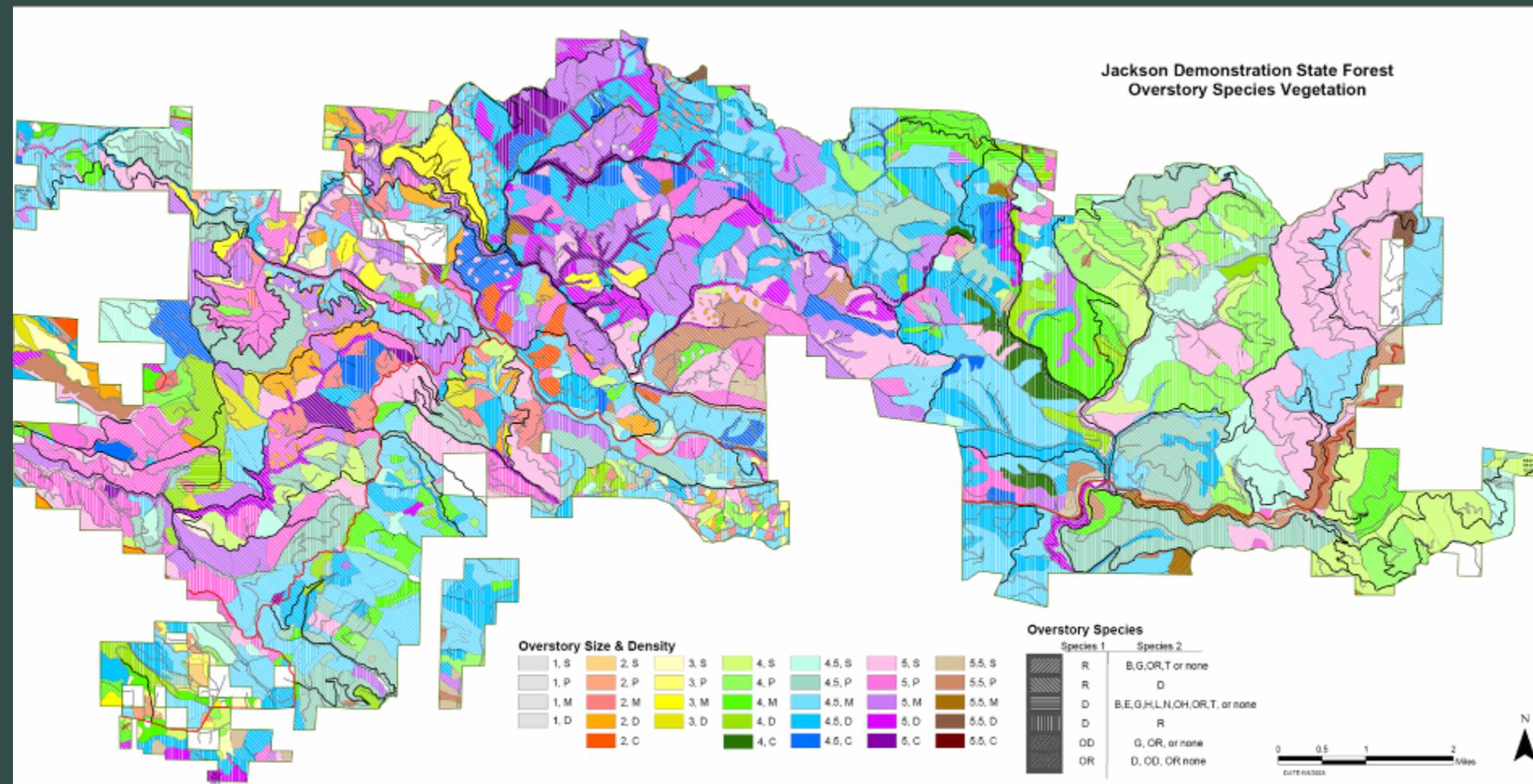


Northern spotted owl



Pacific Giant Salamander

Vegetation



The range of tree size and density classes across the forest creates a rich experimental template.



Redwood Forest

Individual and Small Stands of Old Growth





Redwood - Douglas-fir



Redwood - Douglas-fir - Tanoak

Vegetation with Limited Distribution on JDSF

Lost Lake



Chaparral

Bob Woods Meadow



Pygmy Forest

Bolander Pine & Pygmy Cypress

Unique Soils and Flora





Bishop Pine Forest



Red Alder - Riparian



Heritage Resources

- Native American
- Historic

Native American Village Site

House Pit



Railroad Trestle ca 1923



Forest Management History

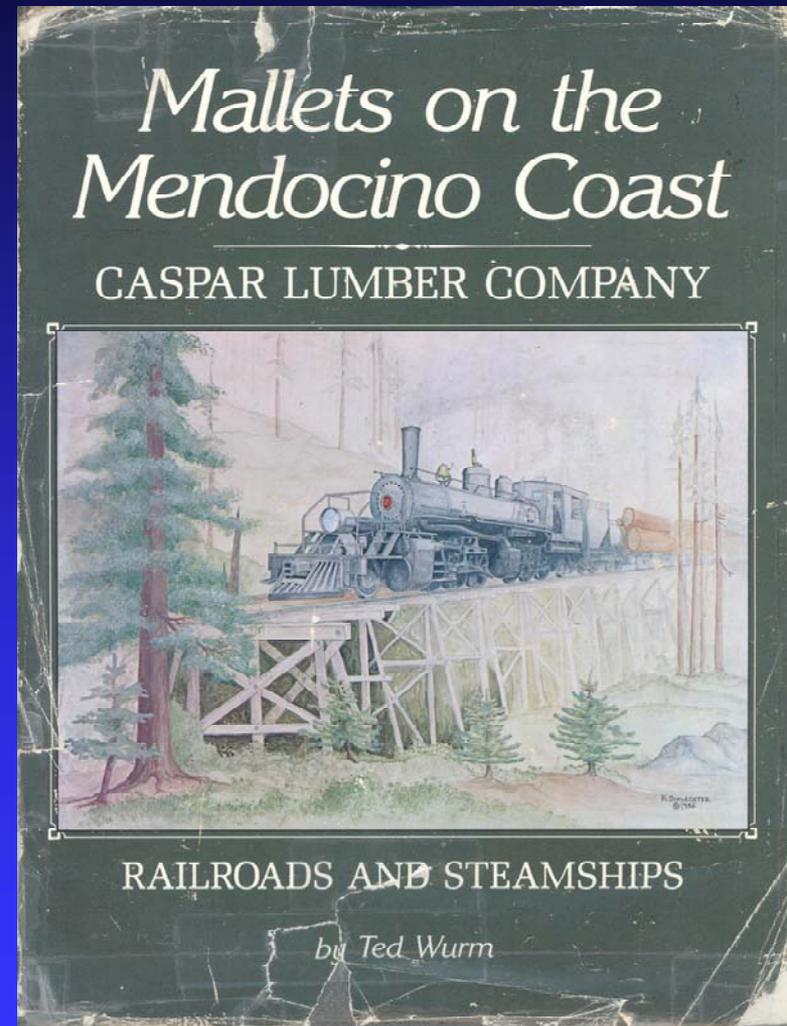
- River transport (1850-1900, except Big R)
- Railroad & steam donkey (1890-1940)
- Tractor on all slopes (1940-1970)
- Cable skyline and tractor (1970-present)
- Helicopter, infrequent (1990-present)

Pre-JDSF History - Caspar Lumber Company

- 1860 Siegfried Caspar settled in area of Caspar
- 1861 William Kelley purchased land, built sawmill
- 1864 Jacob Green Jackson purchased mill



Jacob Green Jackson, founder of the Caspar Lumber Co.
Courtesy Caspar Lumber Co.

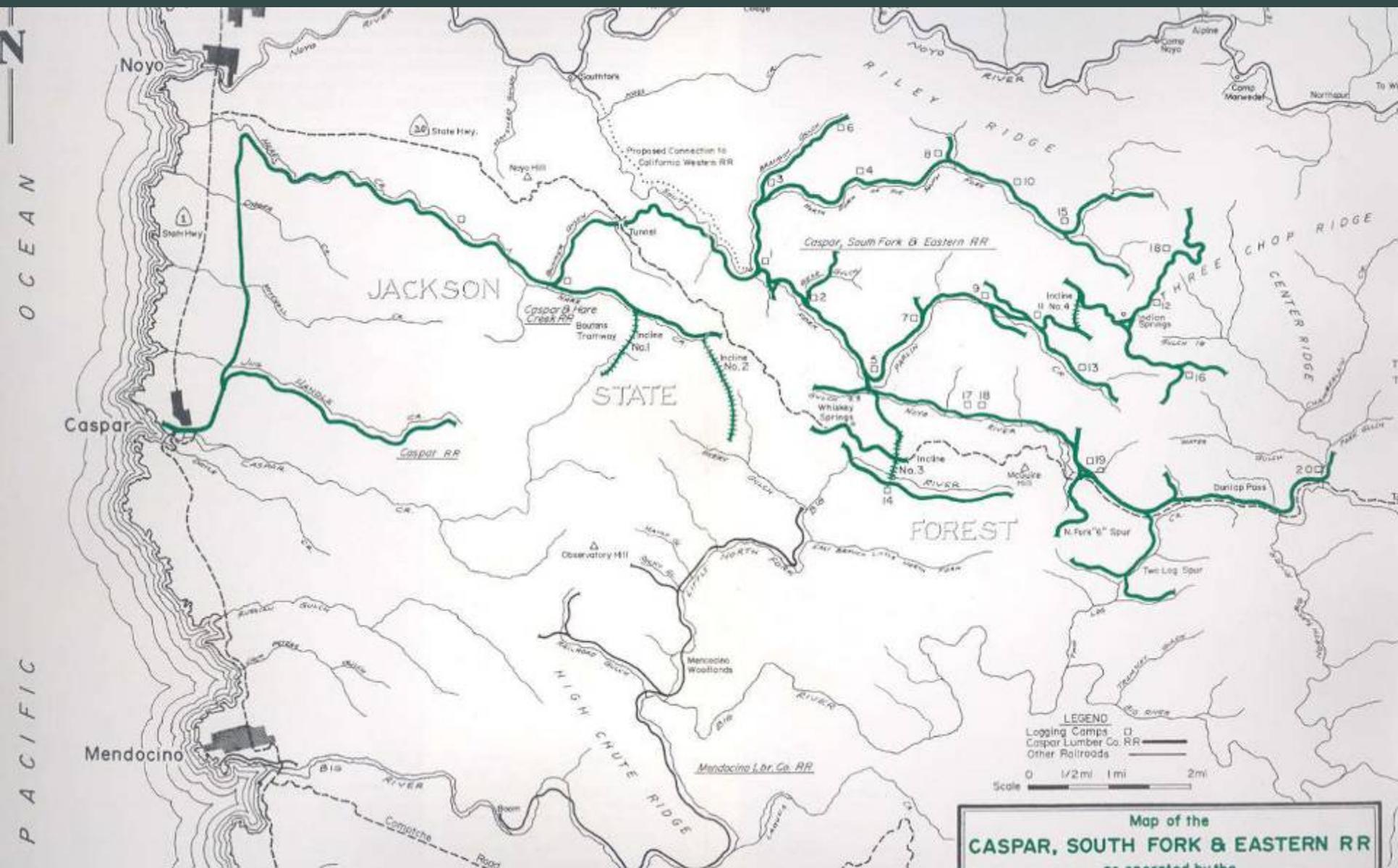


Historic photos from book by Ted Wurm



Splash Dam on
South Fork Caspar

Caspar Lumber Company Railroad Logging Early 1900s



Legacy Issues – Before and After



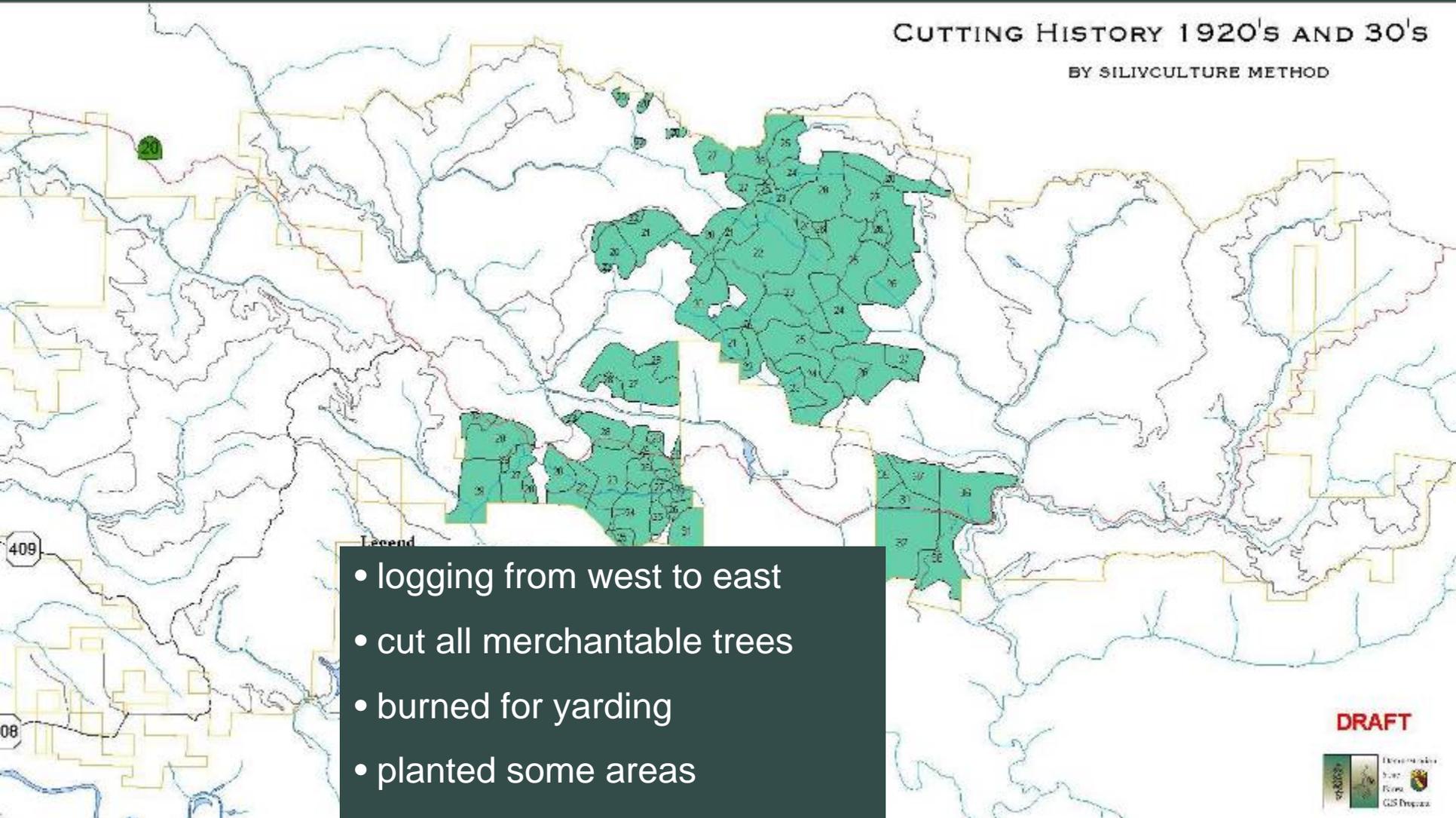
Camp One (Egg Collecting Station) -
1904

Same area - now



CUTTING HISTORY 1920'S AND 30'S

BY SILVICULTURE METHOD



- logging from west to east
- cut all merchantable trees
- burned for yarding
- planted some areas

DRAFT

North Fork of the South Fork Noyo River



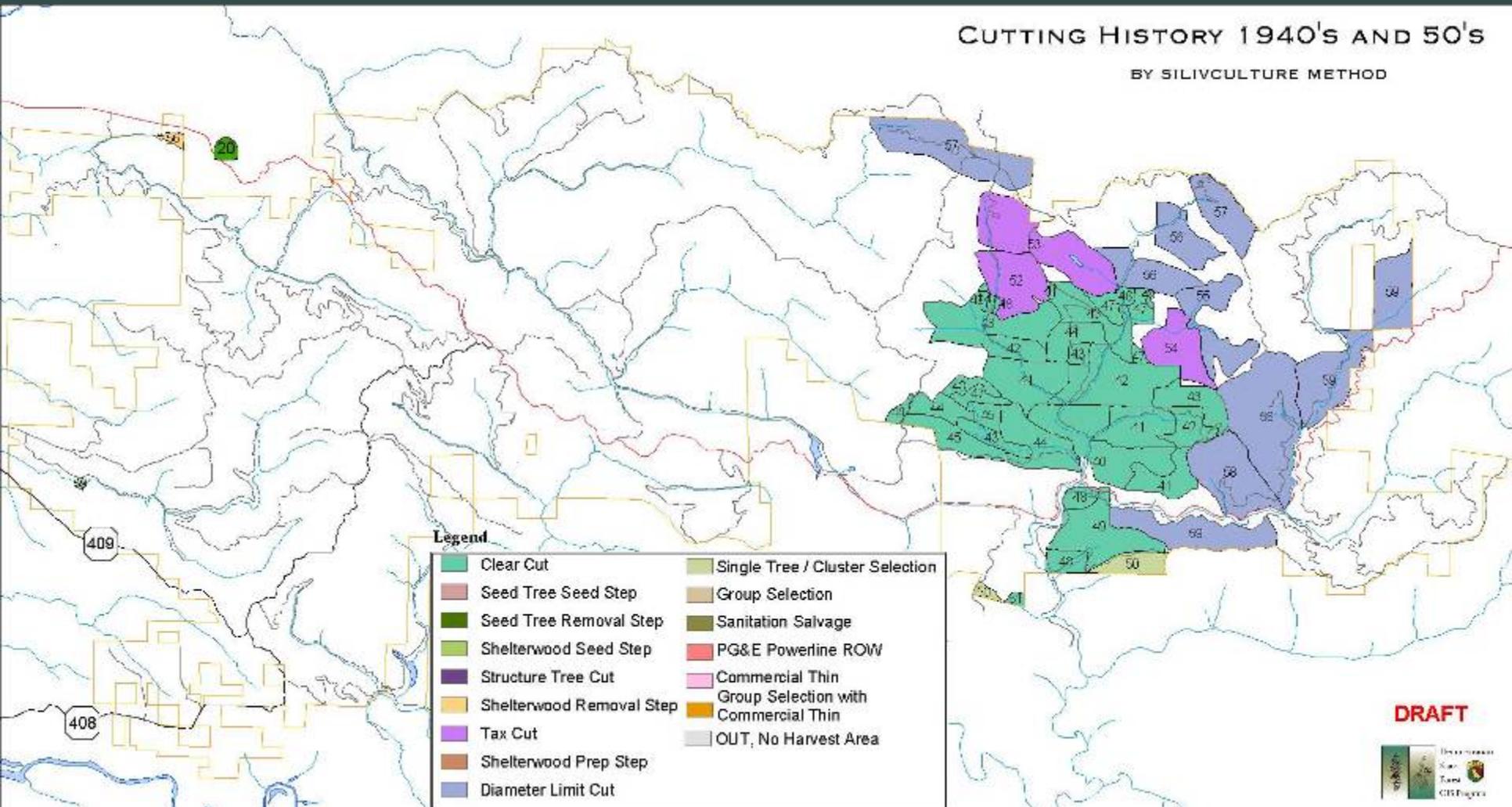
Railroad-steam
donkey logging
~ 1920's



Same area,
80 years later

CUTTING HISTORY 1940's AND 50's

BY SILVICULTURE METHOD

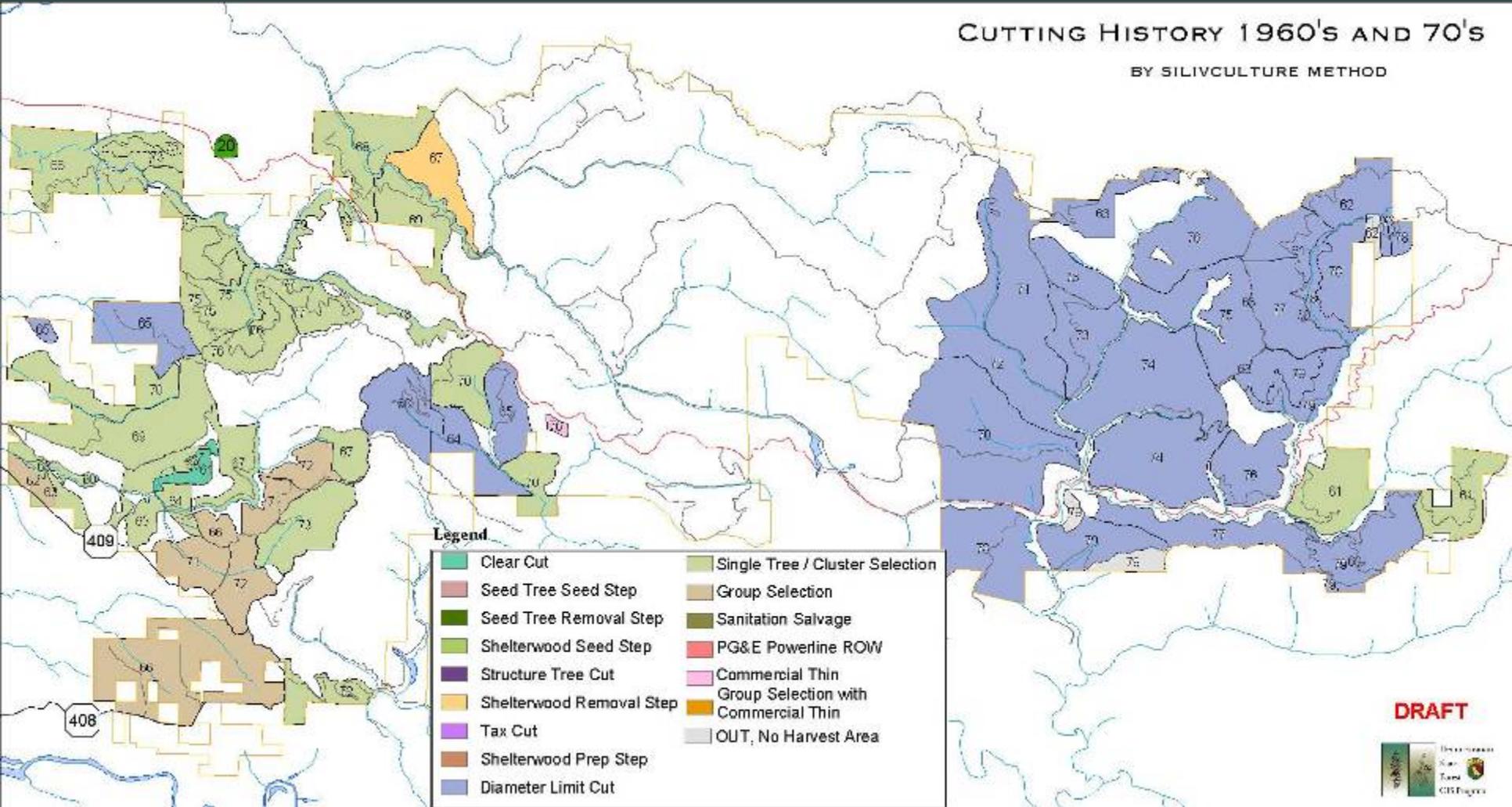


DRAFT



CUTTING HISTORY 1960's AND 70's

BY SILVICULTURE METHOD

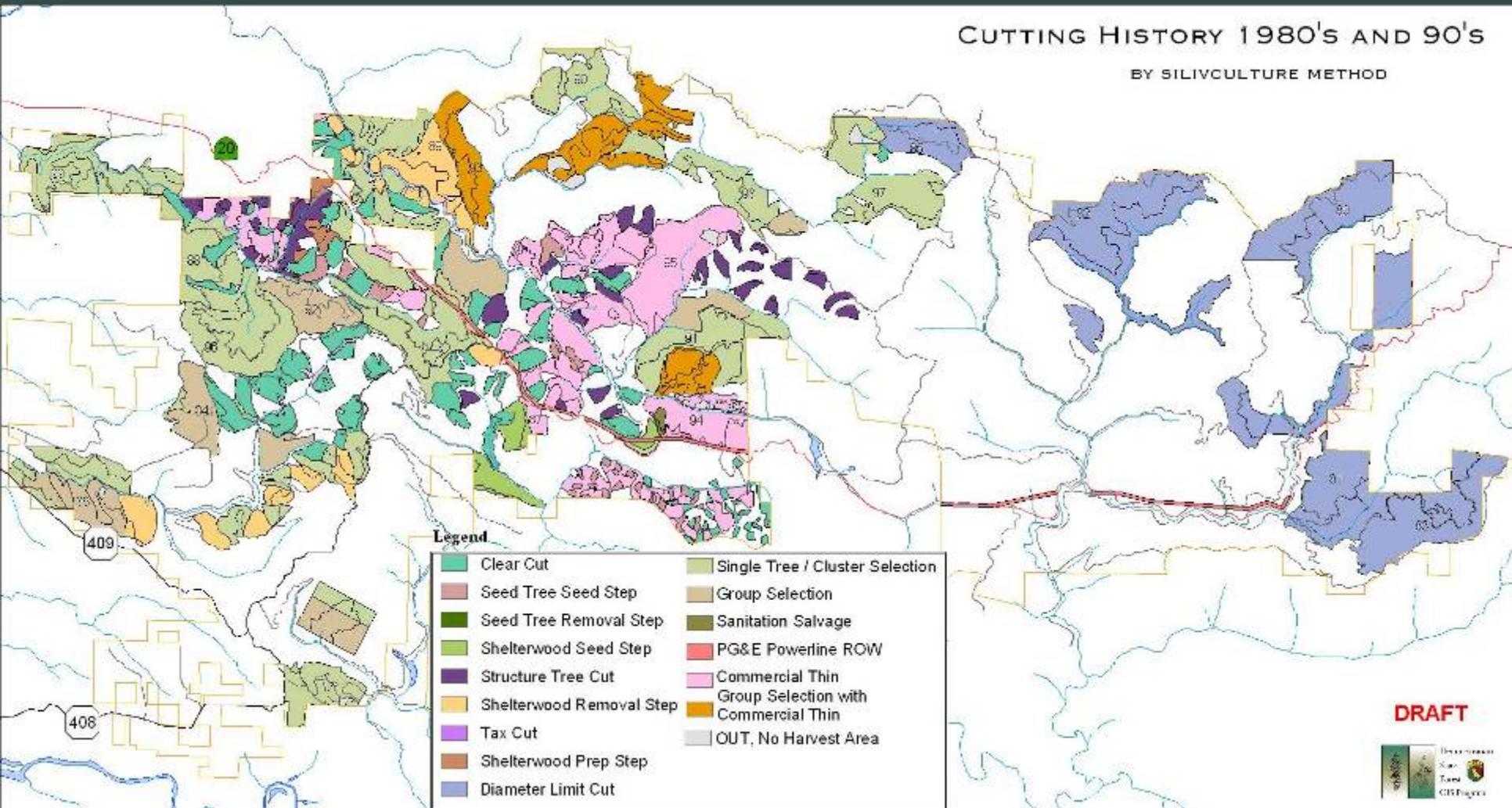


DRAFT



CUTTING HISTORY 1980's AND 90's

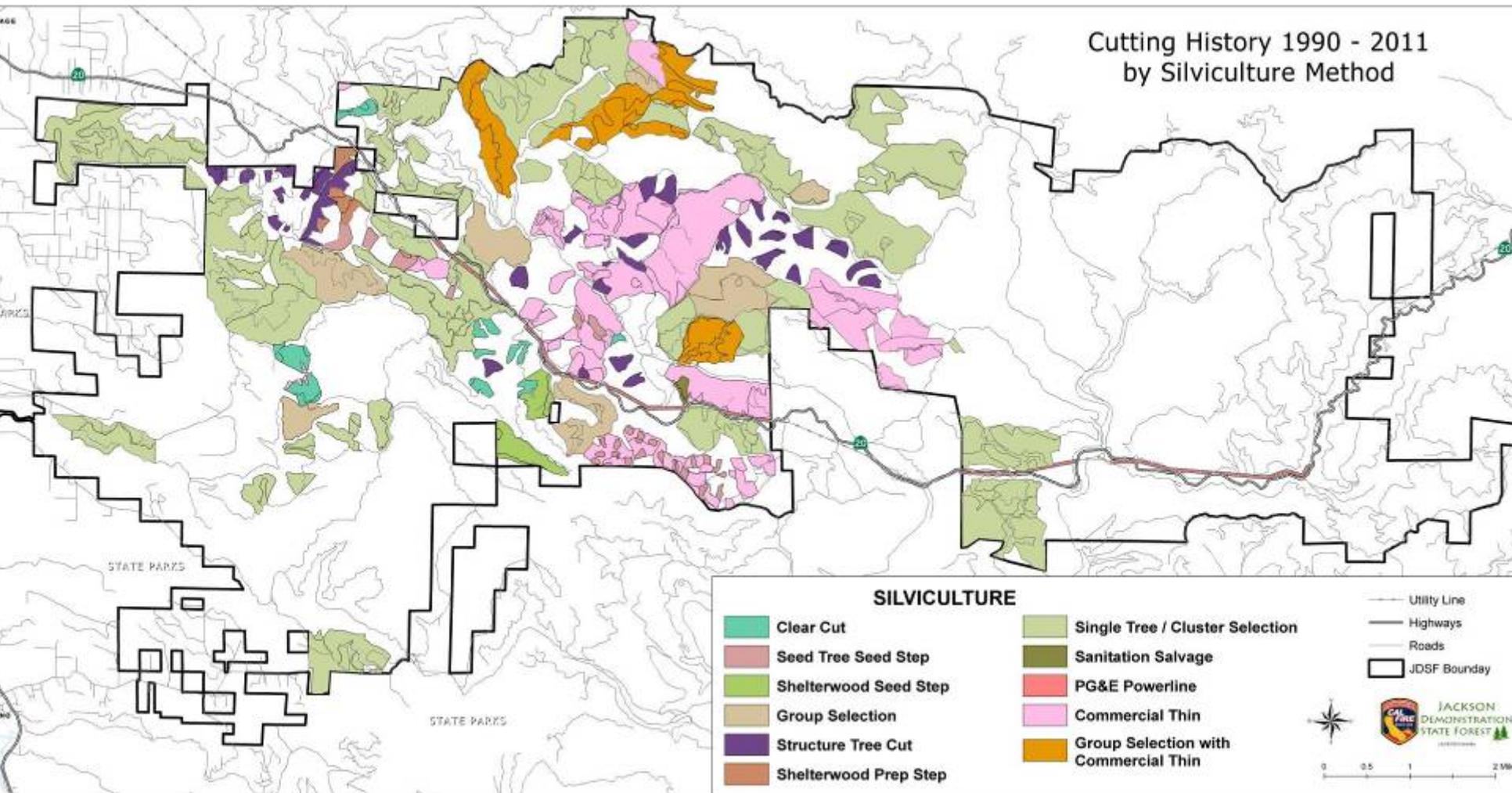
BY SILVICULTURE METHOD



DRAFT



Cutting History 1990 - 2011 by Silviculture Method



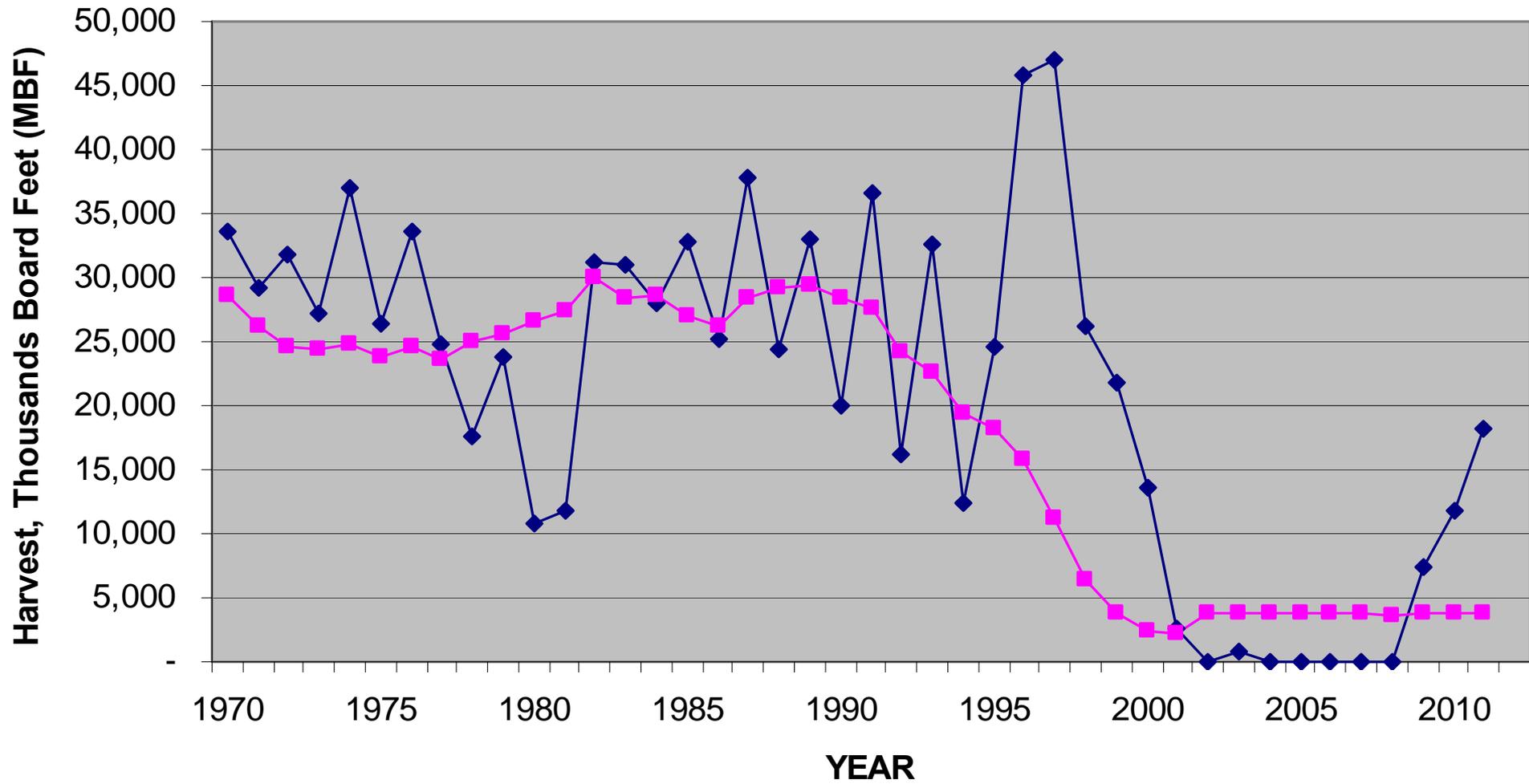


Skyline yarding (above)
Sorting logs (below)
Helicopter logging (right)





Yarder/loader in Brandon Gulch



Forest Stand Management

Uneven-aged Management, forms or silvicultural systems

- single tree (very small canopy gaps)
- cluster selection (openings up to 0.25 acre)
- group selection (0.25 to 2.5 acre openings)

Stand Variables and Considerations

- tree sizes
- stocking levels
- species composition
- cutting cycle
- regeneration
- competition between species and with regeneration
- site productivity

Even-aged Management

Forms or silvicultural systems

- Clearcut
- Variable Retention
- Seed Tree
- Shelterwood

Other Stand Considerations

- Regeneration
- Competition with regeneration
- Maintaining free-to-grow conditions
- Rotation age
- Species composition

NOTE: Even aged management was used in the past and associated with our largest research project (NF Caspar Creek). The details are included for that reason. Currently, even-aged silviculture is not considered unless a research project requires it.

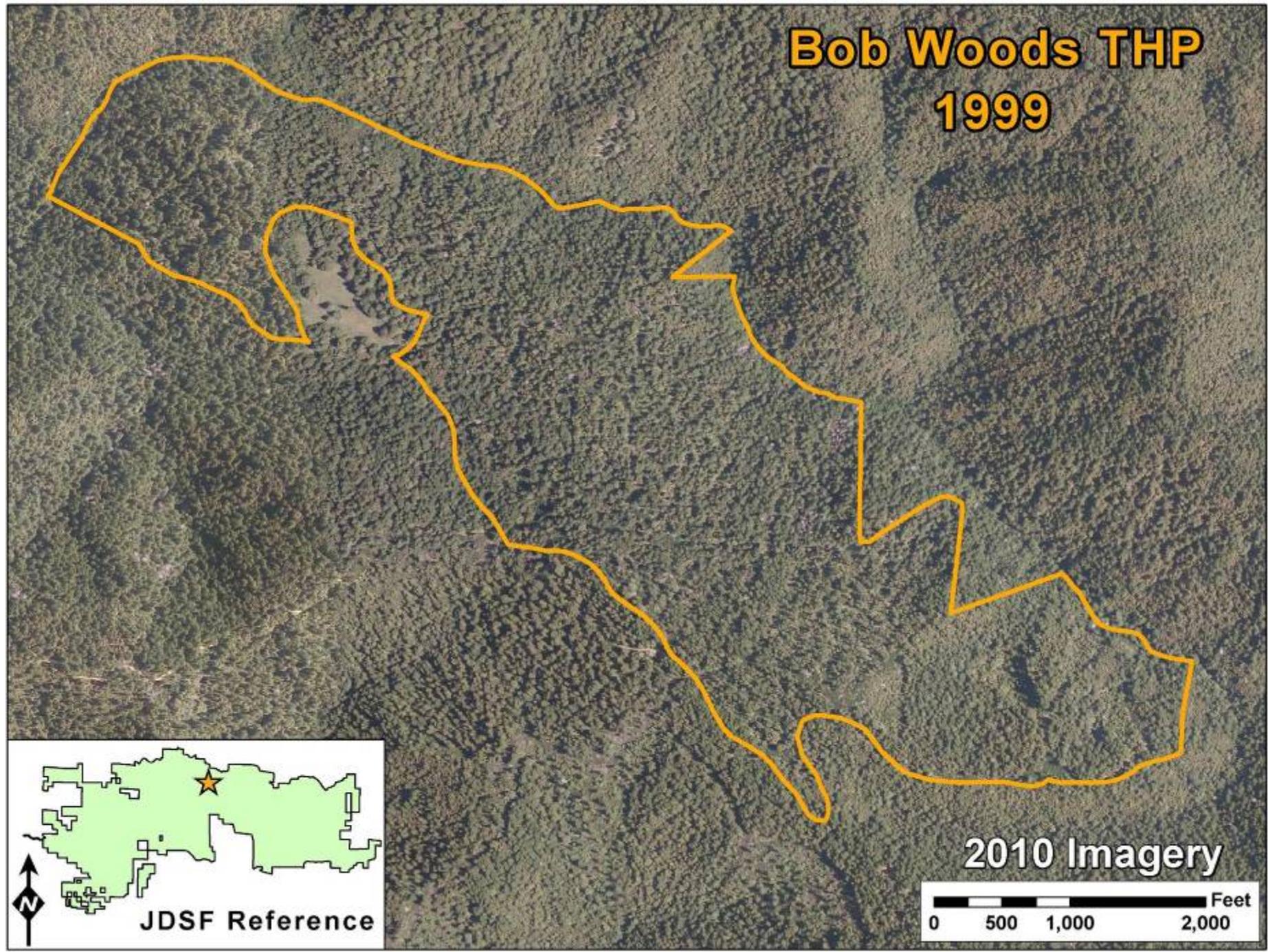
**Bob Woods Sale: Selection and Group Selection
Harvested 1999-00**

Natural Grassland
Bob Woods Meadow

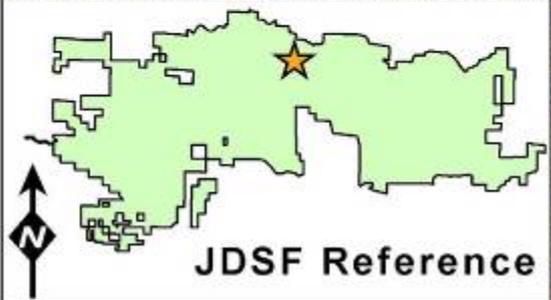
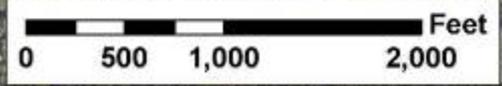
2005 Imagery



Bob Woods THP 1999

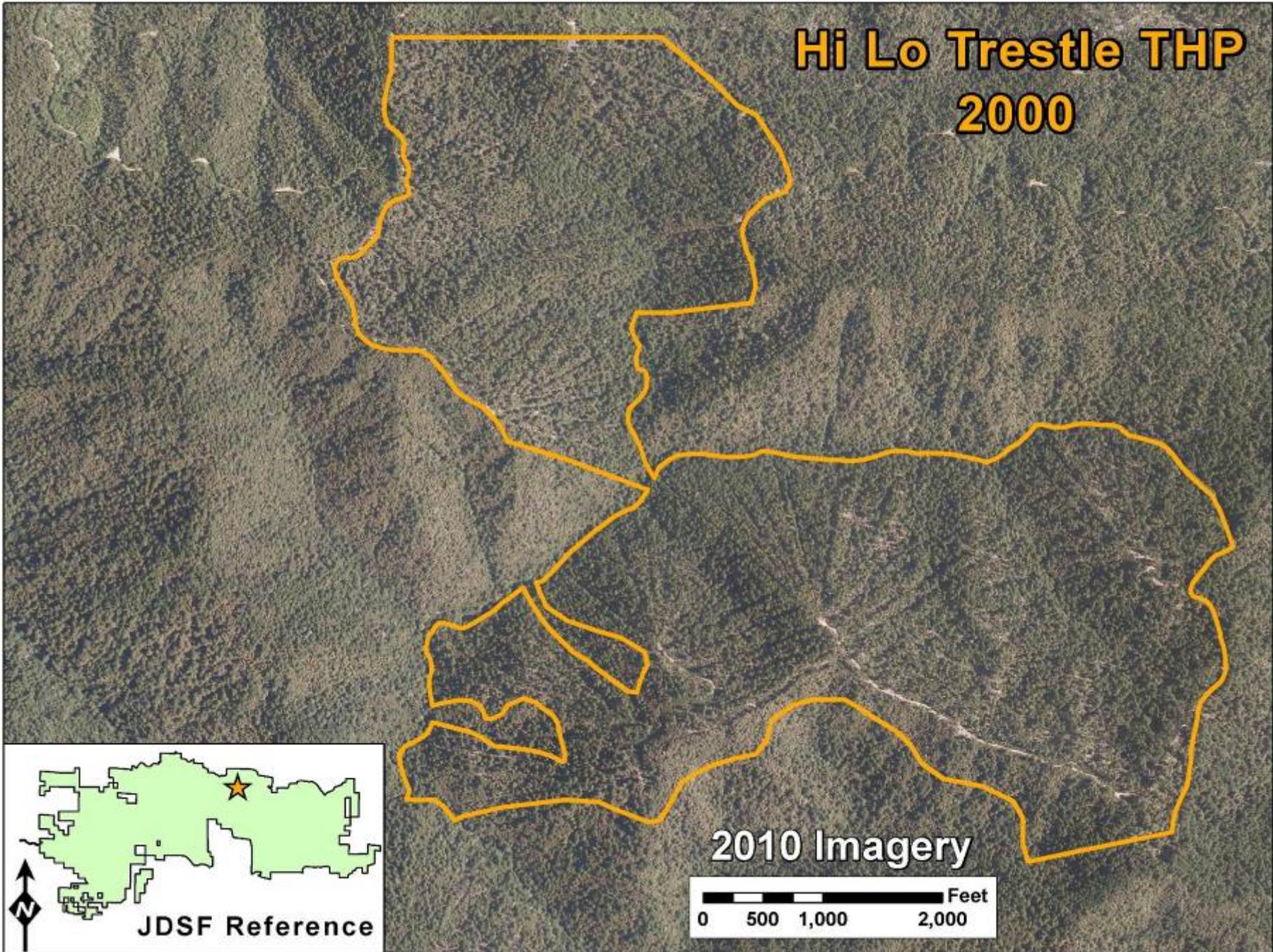


2010 Imagery

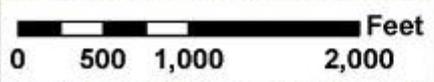


JDSF Reference

Hi Lo Trestle THP 2000

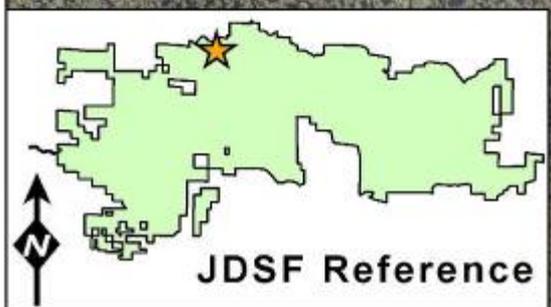
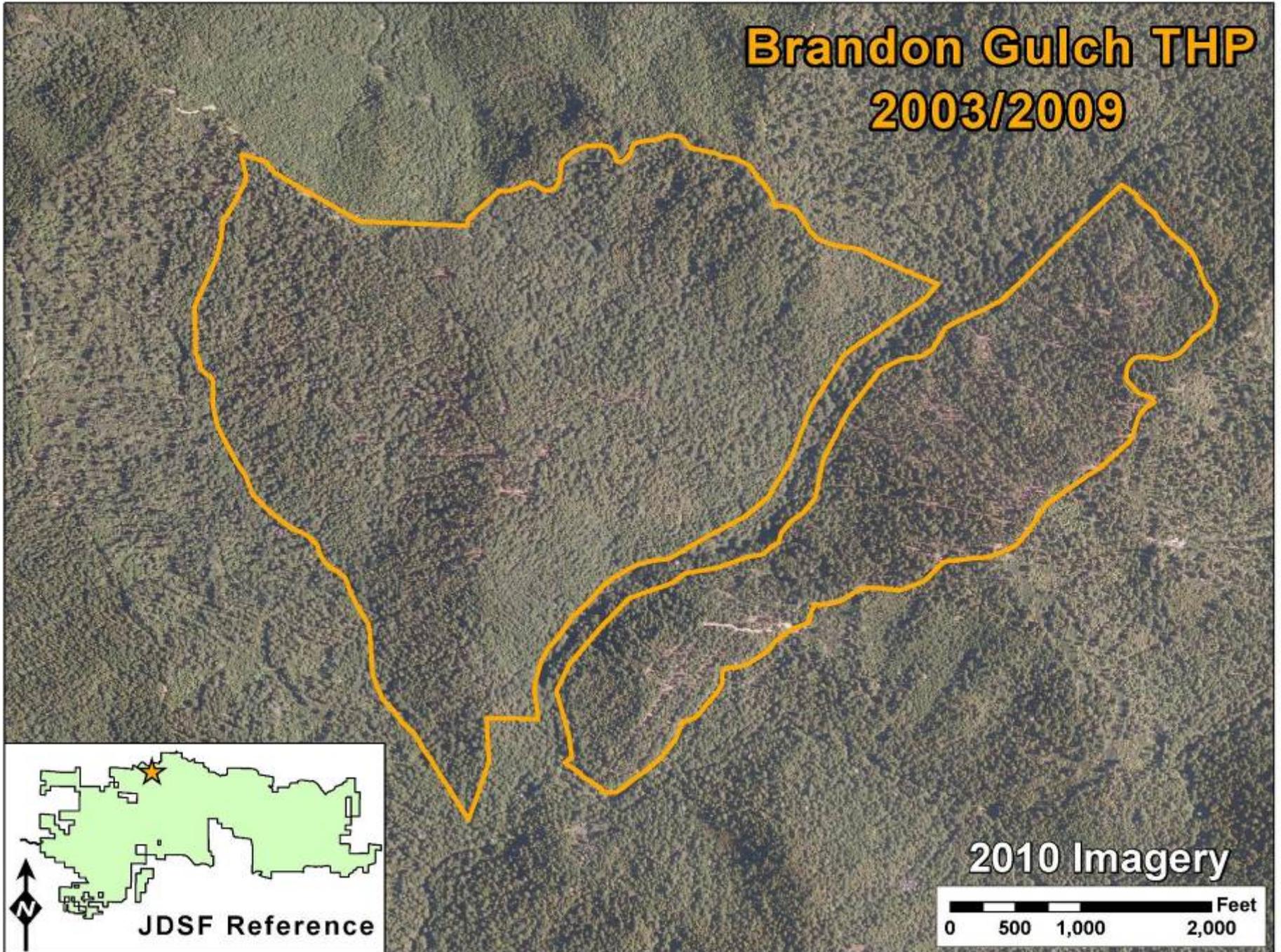


2010 Imagery

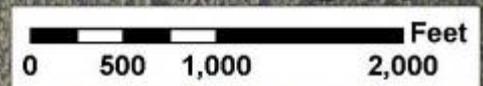


JDSF Reference

Brandon Gulch THP 2003/2009



2010 Imagery



Timber Sale Program

- Normally 2 to 5 sales per year
- Size varies from 2 to 10mmbf
- Sold to single purchaser
- Single price per mbf for each conifer species
- Purchaser subcontracts with LTO
- JDSF staff administers contract

Timber Sale Program – Sale preparation process*

Estimated Time (Review and Preparation)	Activity/Work Description
2 years minimum	Biological Surveys – avian (NSO, MAMU)
6 - 8 months	THP preparation and Review Archaeological assessment/consultation Watercourse assessment Botanical surveys Geologic assessment Roads – old and proposed Cumulative Impacts Assessment Timber cruising/forest inventory
7 days (60 days if outside THP process)	DFG 1600 permit drafting, crossing repair, replacement, removal
5 days	Water Quality permit
Unknown	Spotted Owl consultation
2-3 months	Contract preparation/approval
1 month	Advertisement and Bid
14 days	Award Timber Sale, meet with Purchaser
2 years	Timber Operations

**Timeframe assumptions: Adequate JDSF staffing, review process not prolonged, sale awarded at first bid opening*

CLASS I SALES

Sales of forest products without advertised bids for **items not exceeding \$10,000** in value or 100,000 board feet, whichever is greater. However, depending on stumpage price (>\$250/Mbf), a \$25,000 limit applies for noncompetitive sales.

These sales must be miscellaneous and noncompetitive in nature.

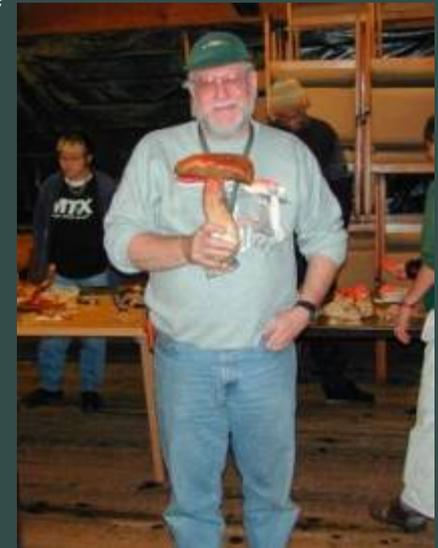
Commercial and personal-use firewood permit and commercial mushroom permits are example of Class I sales.

Historically, an average of 250 Class I Sale permits have been issued annually. The sale of Public firewood permits resumed in 2010 after cessation during the period of no harvest activity. Revenue generated annually ~\$4,000 - \$12,000.

CLASS III SALES

Sales of forest products **exceeding \$10,000 in value** or 100,000 board feet. Timber sales are Class III sales.

Approximately 5 timber sales per year were sold from 1985 to 2000. The expectation in the future is for 5 sales per year as well.



Class III Timber Sale Summary - 2011

Sale Name	Volume Harvested (MBF)	Revenue <i>(not fiscal year)</i>	Silviculture	Acres	Yarding System	Acres	Road Construction	Miles	Road Abandonment
Upper Parlin IG	1,274.41	\$353,678	Commercial thin	588	cable/tractor	524/64	seasonal	3.7	
Camp 6	2,446.46	\$771,953	Comm thin, Sel, Group sel	224	cable/tractor	138/86	seasonal	0.38	
Hare Creek	1,963.02	\$492,095	Selection	276	tractor/cable	209/67	permanent	0.34	1.4 miles
14 Gulch North	2,270.64	\$357,507	Selection, Cluster sel	235	cable/tractor	170/65	seasonal	1.7	0.8 mile
Dunlap South	4,379.39	\$1,006,210	Selection	486	cable/tractor	365/121	seasonal	3.46	2.0 miles
South Whiskey Springs	3,222.01	\$800,208	Selection, Group sel	212	cable/tractor	149/63	seasonal	1.52	0.2 mile
Waldo	2,827.66	\$1,031,905	Selection	507	cable/tractor	395/112			
TOTALS	18,383.59	\$4,813,556							



Forest Recreation

Day use

- Hiking
- Horseback riding
- Bicycling
- Picnicking
- Motor vehicle
- Hunting
- Shooting
- Mushroom collection

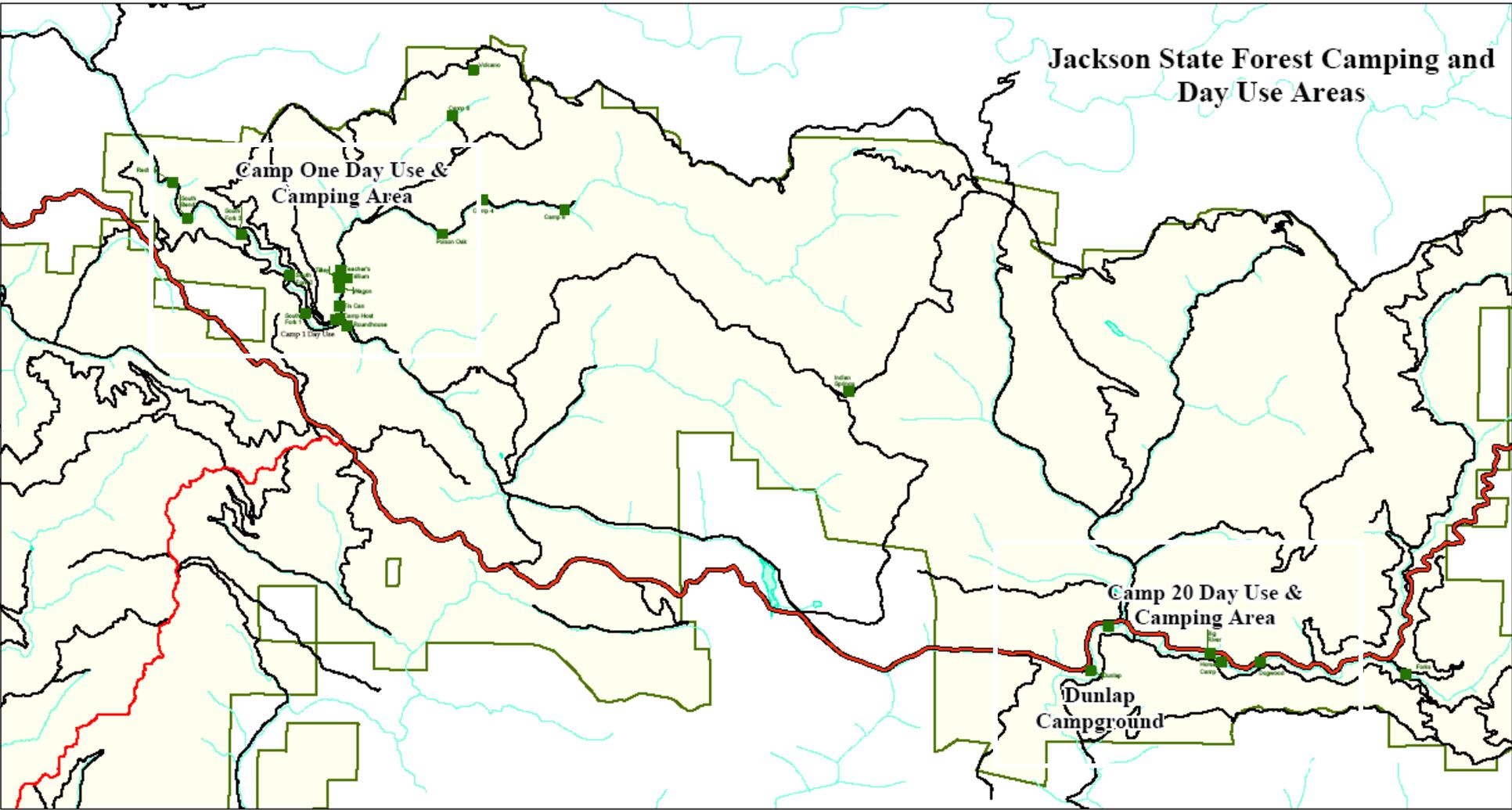
Camping

Jackson State Forest Camping and Day Use Areas

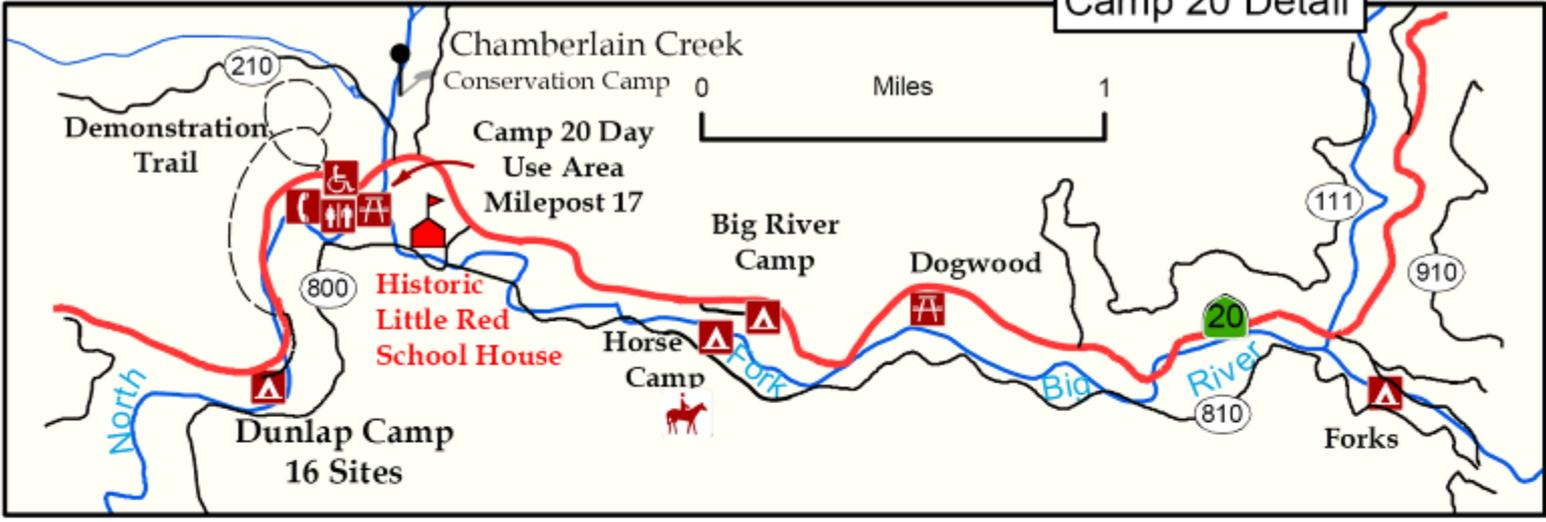
Camp One Day Use & Camping Area

Camp 20 Day Use & Camping Area

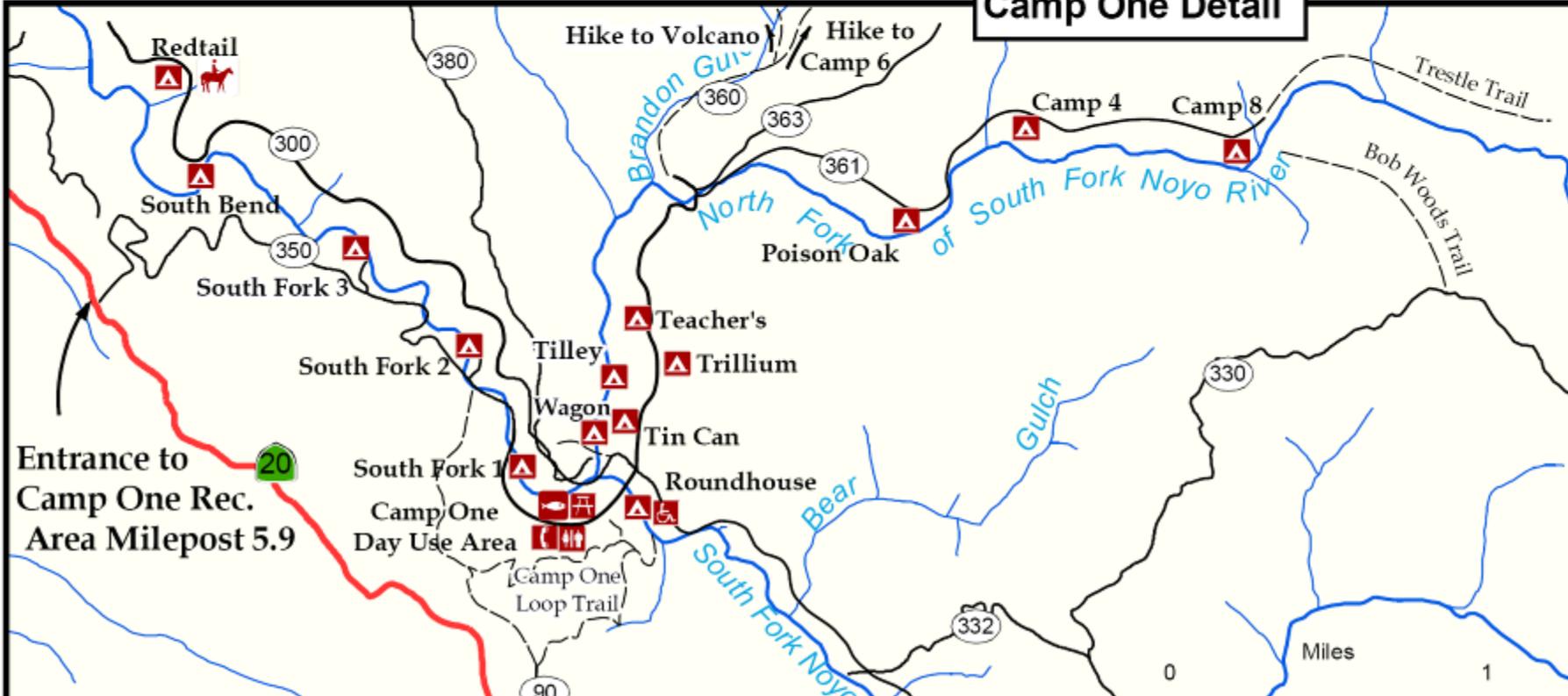
Dunlap Campground



Camp 20 Detail



Camp One Detail





Campsite at Dunlap Campground





Bob Woods Trail

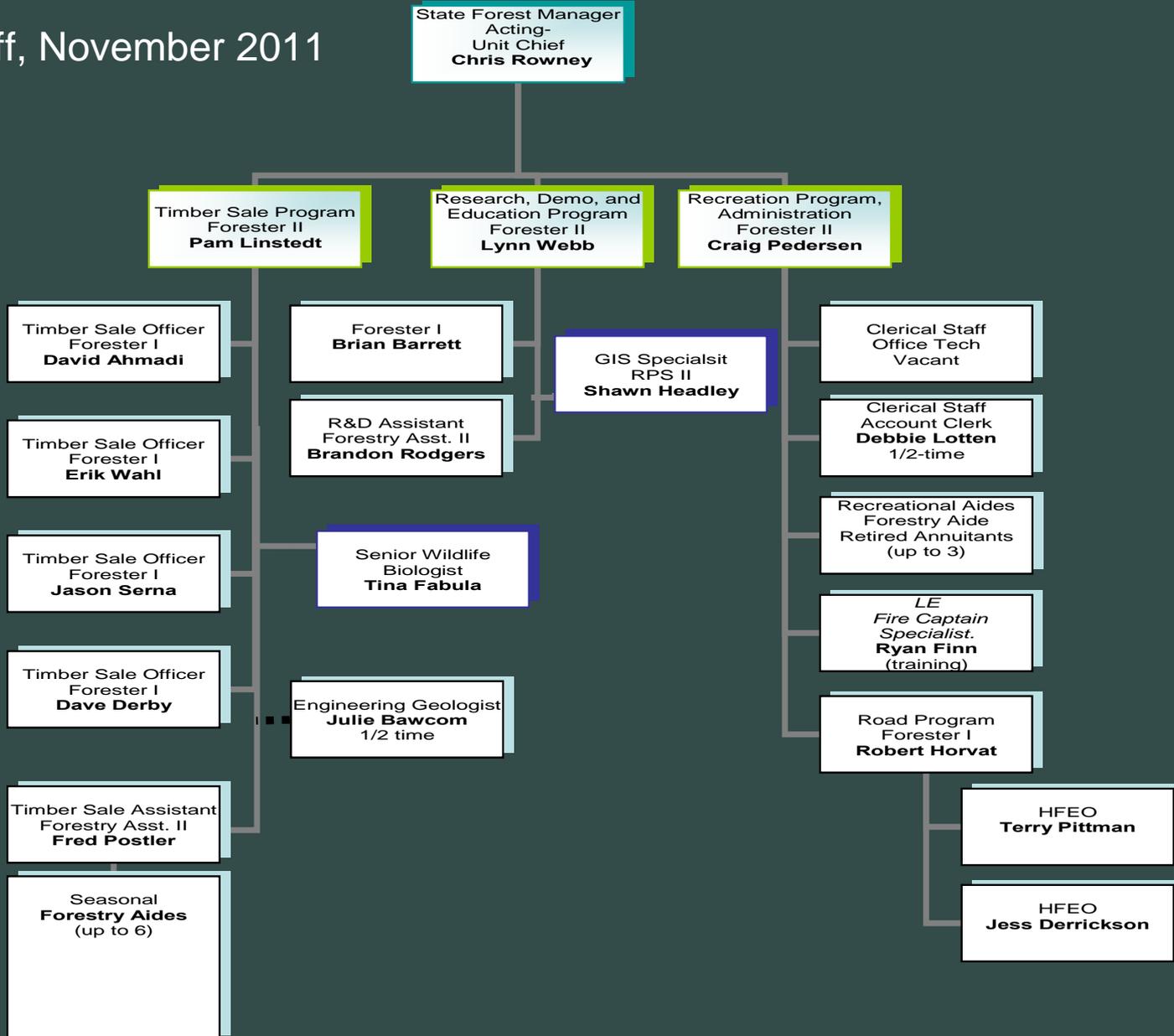


Edible mushrooms

Staffing and Budget

- Staffing and budget reductions
- Proposal to restore lost positions
- Proposal for further augmentation
- Need substantial increase in funds for:
 - road program
 - research, demonstration, education, monitoring efforts (in-house and outside)
 - increase range of expertise
 - law enforcement

JDSF Staff, November 2011



BUDGET

Personnel Budget

- The annual budget for fiscal year 2011-2012 to support personnel on JDSF is approximately \$2.11 million. This figure includes approximately \$220,500 to support seasonal employees.

Operating Budget

- The State Forest was allocated approximately \$520,000 for the current fiscal year (2011/12) to fund Forest operations.

Additional Research, Demonstration, and Monitoring Funds

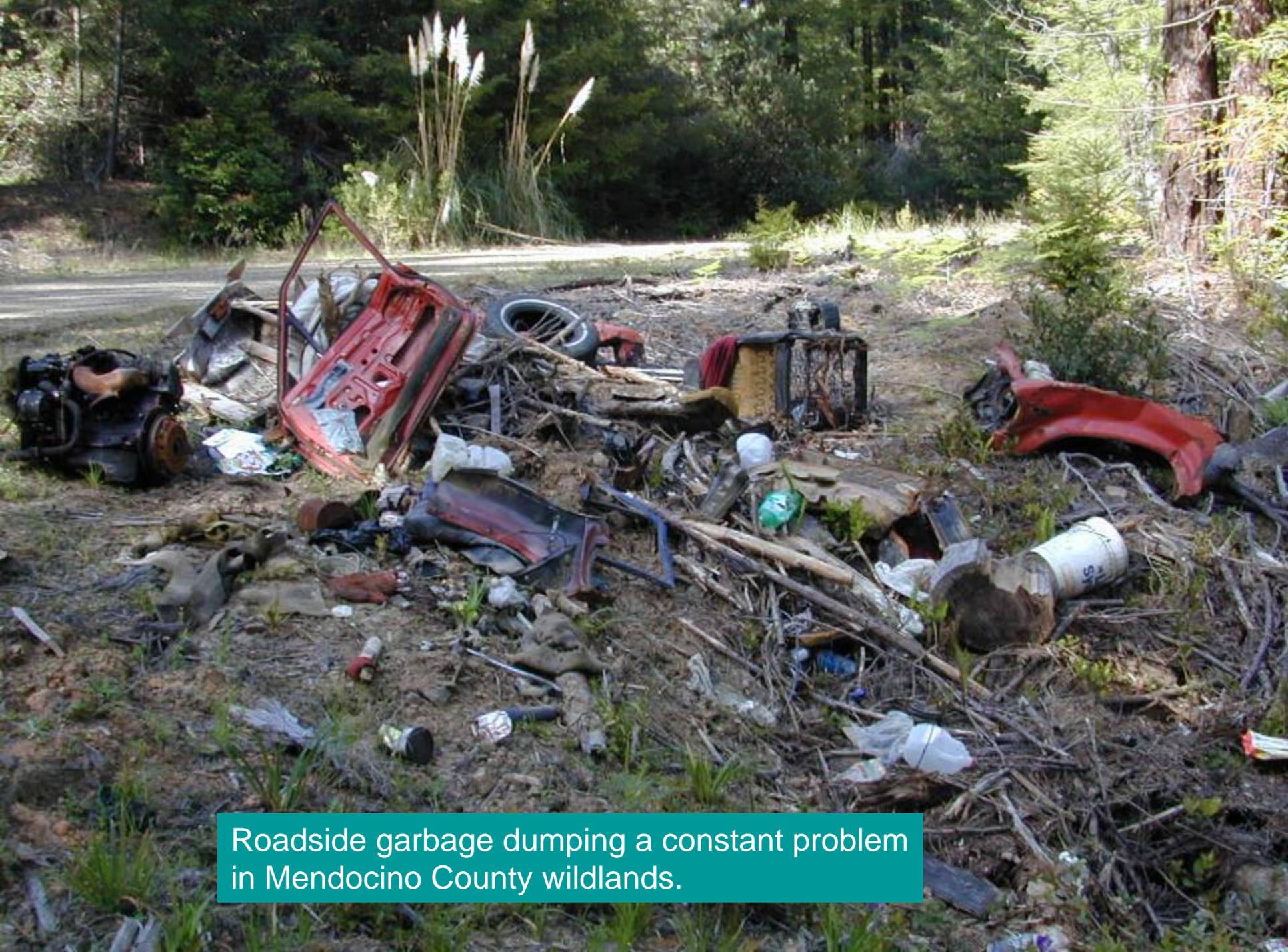
- JDSF shares available funds with the other state forests for purposes of financing grants for research and demonstration and to conduct monitoring projects.
- Grant funds have also been used for specific project funding. For example, road decommissioning, and large wood placement (2010-2011).

Public Use Challenges

- Vandalism of State Forest property
- Dumping throughout the Forest including abandoned vehicles
- Road and trail damage from illegal ATV and 4X4 vehicle use
- Wood theft
- Illegal camping
- Invasive weed dumping



Redwood burl illegally excavated, killing tree.



Roadside garbage dumping a constant problem in Mendocino County wildlands.



Site behind a locked gate with illegal camping, garbage and abandoned vehicle.



Invasive Weeds, French Broom and Jubata (Pampas) Grass

Other Resources on JDSF
Parlin Fork Conservation Camp





Chamberlain Creek Conservation Camp

Department of Corrections and Rehabilitation crews managed by CAL FIRE staff work on roads, trails and campgrounds on JDSF.



JDSF Research

Past research

- Trees
- Watershed
- Fisheries
- Wildlife
- Botany



History of Research & Demonstration on JDSF Lands

Caspar Lumber Company
reforestation map
including experimental
plantings in 1920-30's



Early work focused on how trees grow

CALIFORNIA DIVISION OF FORESTRY
DEPARTMENT OF NATURAL RESOURCES



STATE FOREST NO.

Office of the State Forester
Sacramento 14

January

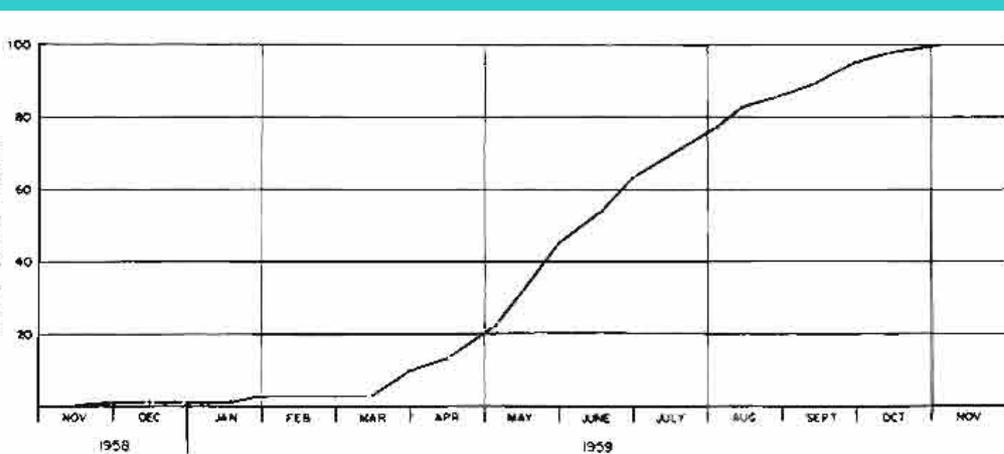


Fig. 2. Cumulative percent of total radial growth for one year all species and all plots - 44 trees.

GROWTH IN TREES ON JACKSON STATE FOREST

Robert J. Hubbell, and David M. Burns

Introduction

When does the period of seasonal diameter growth begin and end for important timber species on the Jackson State Forest near Fort Bragg in Mendocino County, California? What months would be preferable for taking tree measurements?

Who does Research at JDSF?

- **CAL FIRE**
- **Universities**
- **USDA Forest Service**
- **Other Federal Agencies**
- **Calif. Dep. of Fish and Game**
- **CAL TRANS & other State Agencies**
- **Grant Program Recipients**
- **Research Organizations**
- **Natural Resource Consultants**
- **Forest Management Firms**
- *Foresters and other CAL FIRE Employees*
- *Graduate Students*
- *Research Station Scientists*
- *Professors and Instructors*
- *Resource Agencies Professionals*
- *Natural Resource Professionals and Technicians*
- *UC Extension Scientists*

Whiskey Springs Commercial Thinning Study

- 1930 Stand Origin
- 1970 thinning study established
 - Basal area retention
 - 25%
 - 50%
 - 75%
 - control
 - Re-measurements 1975, 1980, 1985, 1990, 1999, 2005
 - Expanded study to examine redwood sprout growth



Jim Lindquist at 50% retention plot in 2003



25% Retention plot with thinned regeneration in 2006

Caspar Creek Watershed Study

- Cooperative
- State-of-the-Art Science
- Long-term
- Process Focus
- Unique in the Western United States
- Over 150 publications



Paired Watershed Design

▪ Stream flow:

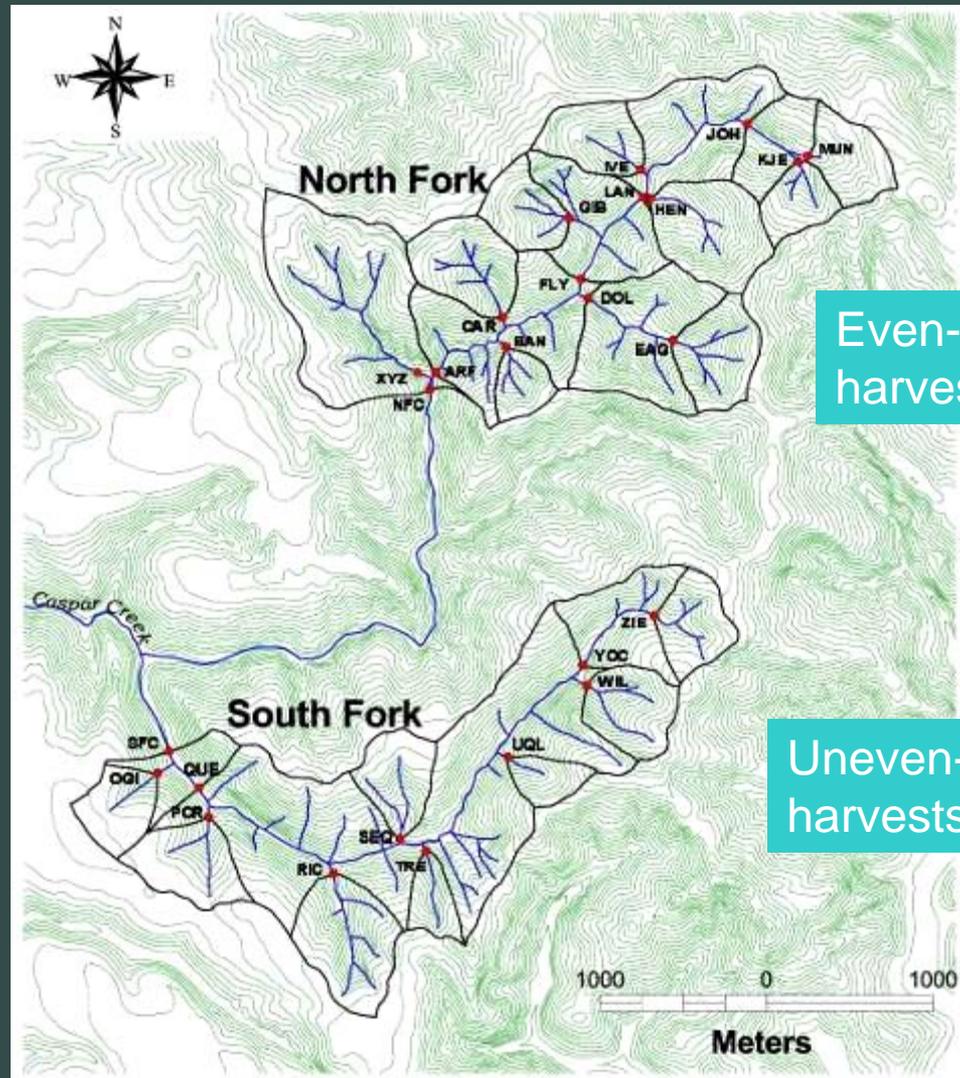
- Peak flows
- storm volumes
- annual yield
- Low flows

▪ Sediment:

- suspended load
- bedload
- Deposition

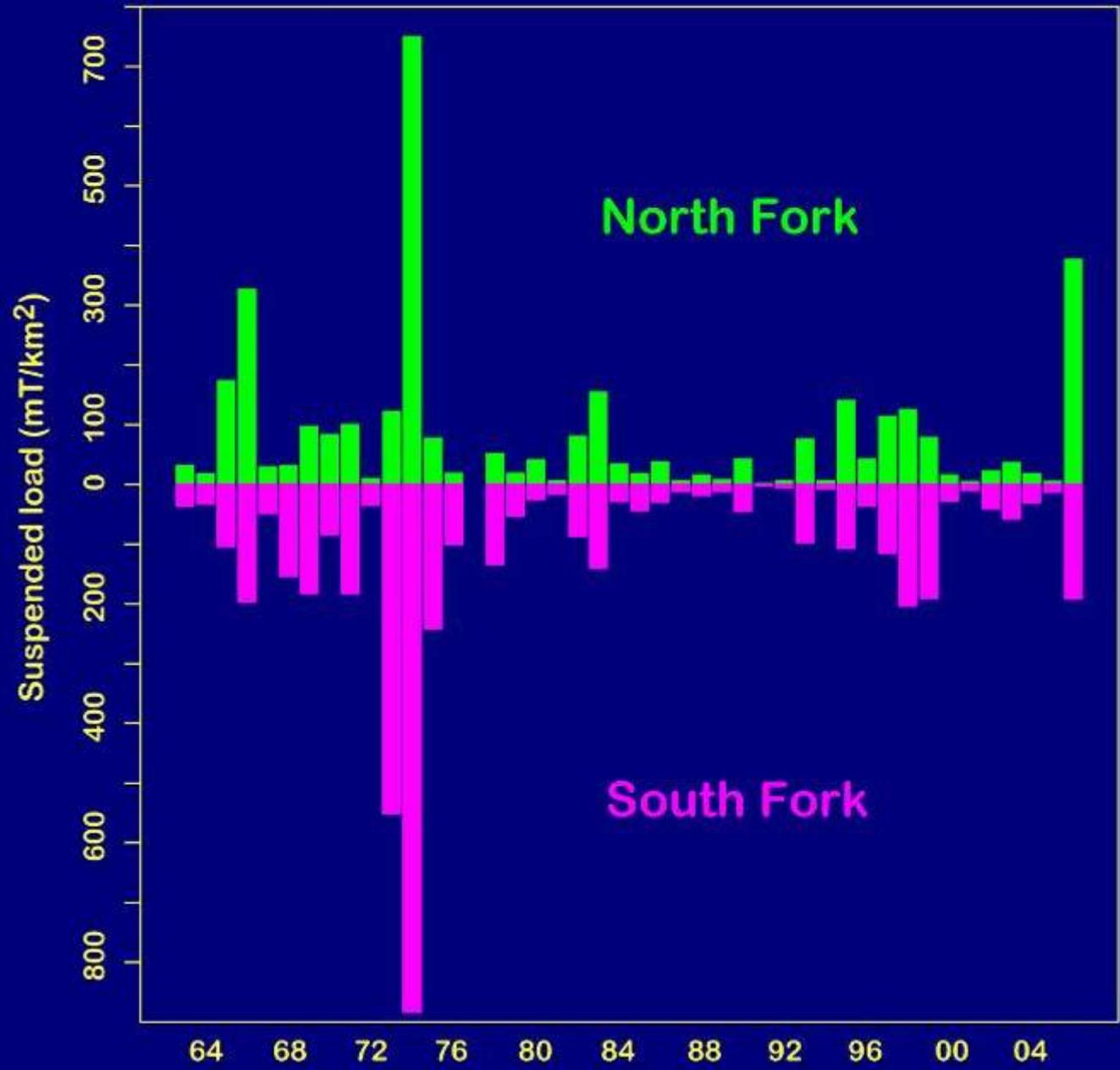
▪ Erosion:

- landslides
- gully erosion
- bank failures



Suspended Sediment 1963-2006

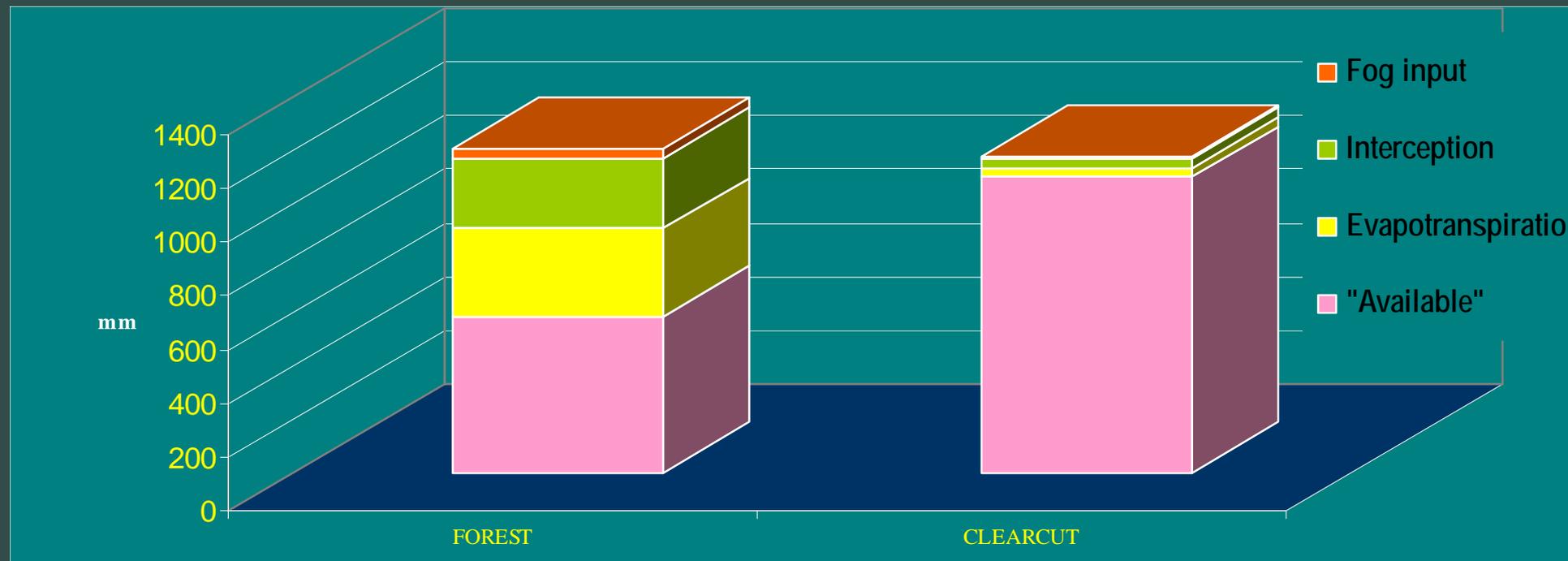
The long-term Caspar Creek watershed study can identify the effects of the natural annual variations in rainfall as well as management effects.



Examples of Caspar Watershed Research

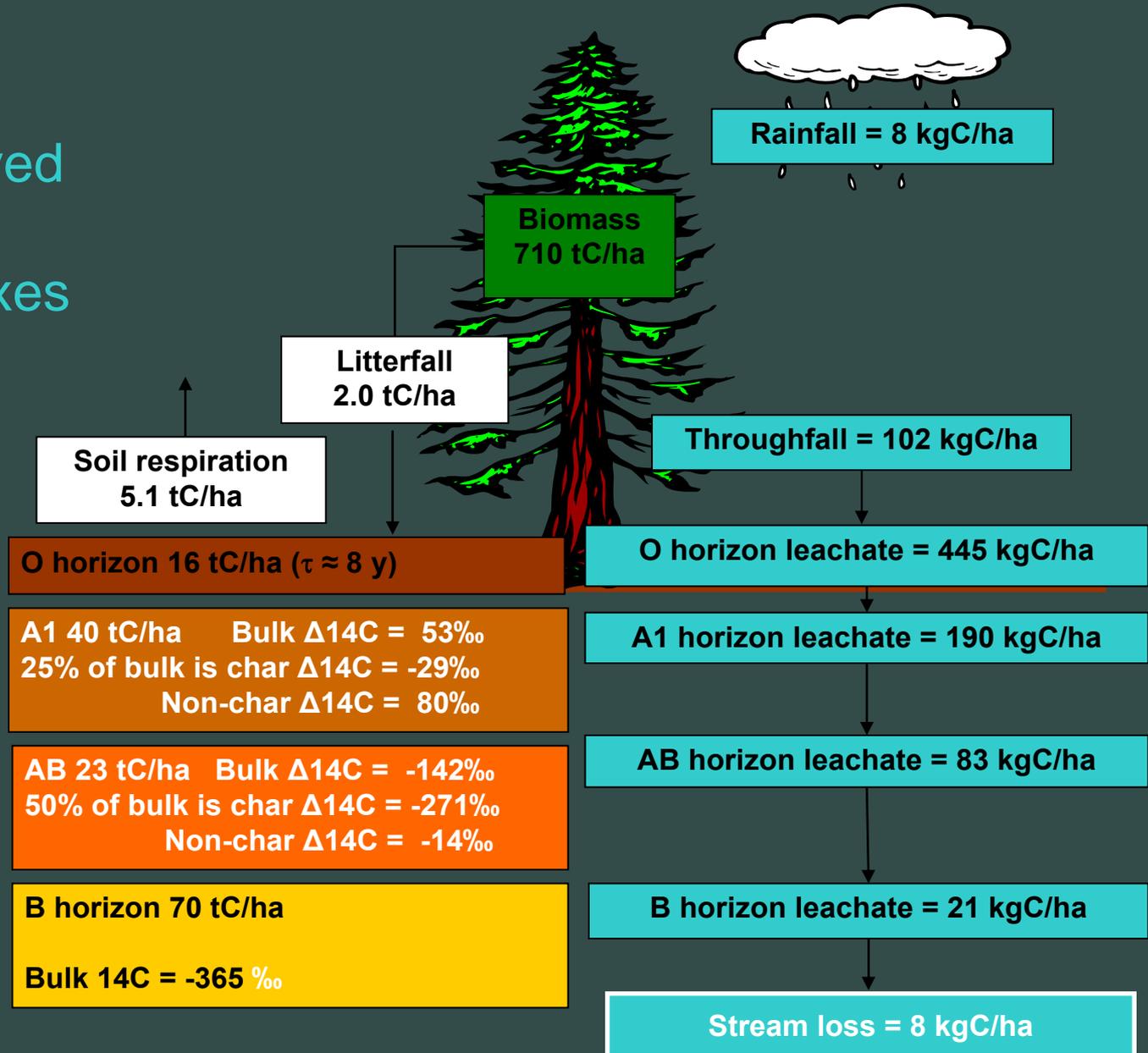
For more information see <http://www.fs.fed.us/psw/topics/water/caspar/>

Forest Structure Influences- Water Throughfall and Evapotranspiration



Caspar Infrastructure and Expertise Fosters Diverse Research

Soil Dissolved Organic Carbon Fluxes



Jonathan Sanderman, UC Berkeley

Ronald Amundson, UC Berkeley

Jeffrey Baldock, CSIRO, Adelaide, Australia

David L. Brown, CSU Chico

Marc Mangahas, College of the Redwoods, Ft. Bragg

Continuum in Caspar Creek Watershed

Experiment > Monitoring > Demonstration > Operations

Road

Decommissioning

- Caspar Creek SF (Road 600) 1998 - 3 miles
 - Answer both operational and experimental questions
- Road 630 and 610 2006 and 2009
 - Operational and monitoring
- Ziemer mid slope road 2011
 - Operational and Experimental monitoring
 - First step in next phase experiment in Caspar Watershed



Large Woody Debris in Parlin Creek

Motioning and study - DFG
Active recruitment to improve
fish habitat

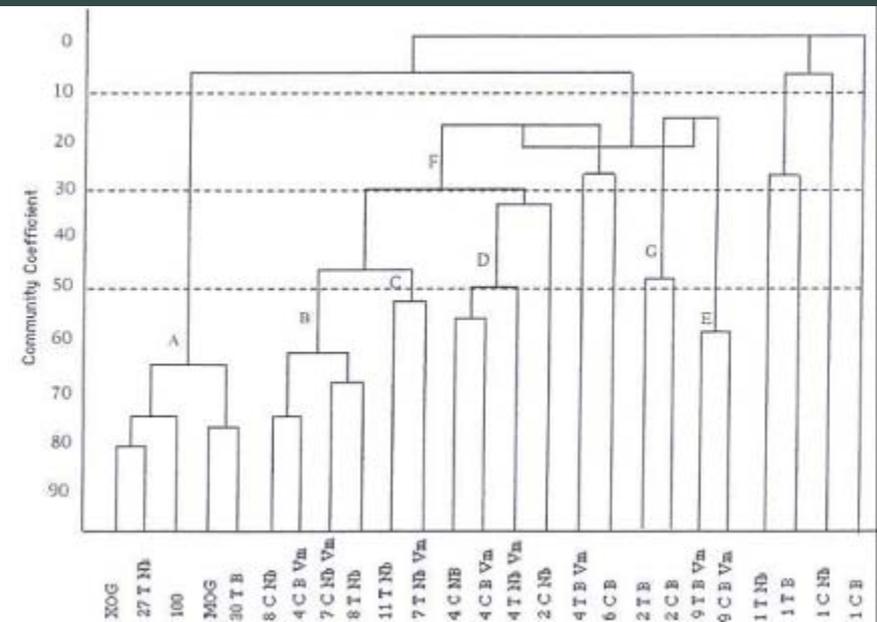
Year	No. LWD Observed	Mean Distance Between Pieces
1996	162	71.0
1997	221	52.0
1999	380	30.3



Vegetation Community Analysis In Both Uneven-age and Even-Age Stands

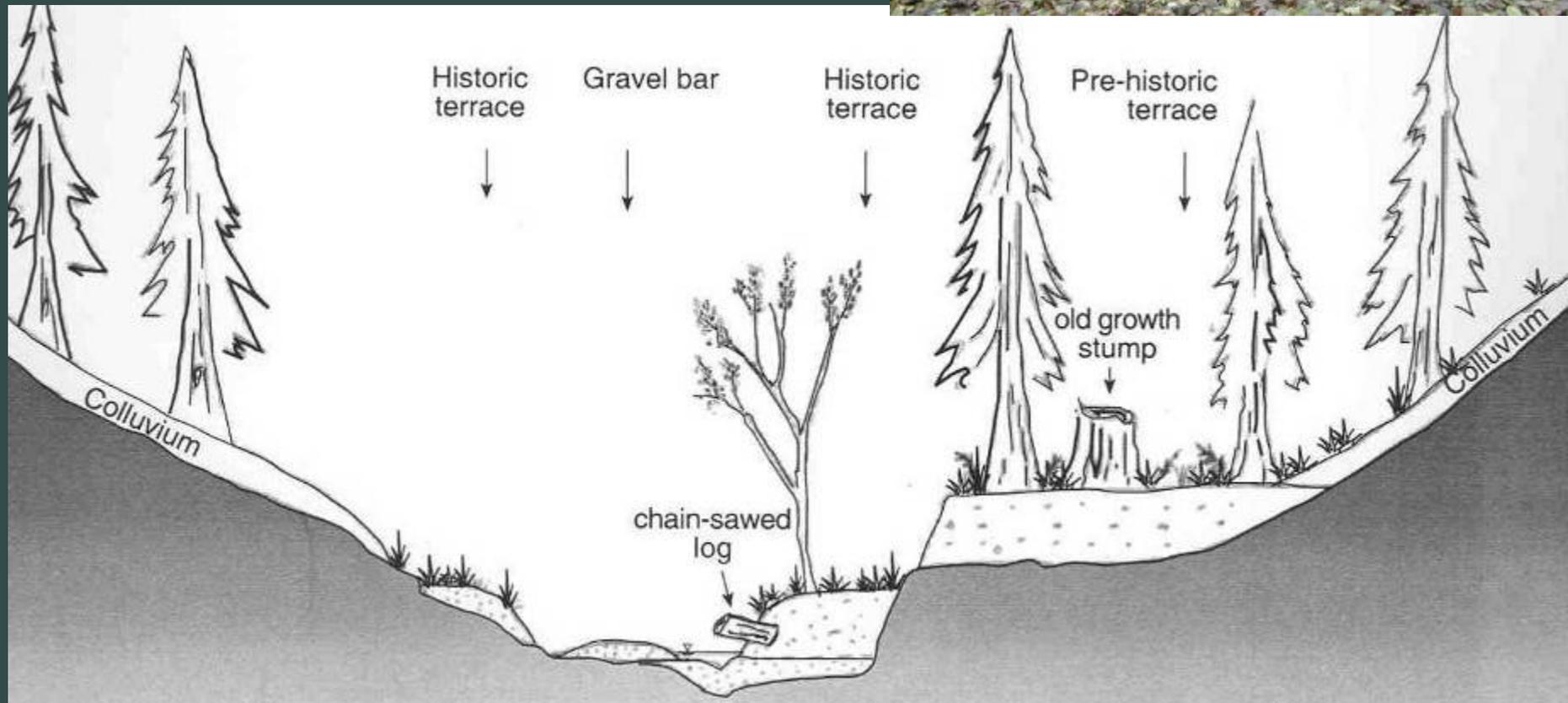
Table 4. Understory percent cover (relative cover in parenthesis) by plant group for three coastal redwood stands partially harvested by tractor. The stands had different amounts of conifer basal area removed, but were harvested in nearly similar years. An adjacent unlogged area is shown for comparison. Means with like alphabetic coefficients are not statistically different ($P < 0.05$).

	STANDS			
	1971	1972	1973	UNLOGGED
Hardwood	2.9 (4.1) a	13.9 (20.1)	8.5 (12.2)	3.8 (23.3) a
Grass	4.9 (6.9) b	3.3 (4.8) b	4.2 (6.1) b	0.2 (1.2)
Forb	18.9 (26.8) c	16.7 (24.1) c	1.1 (26.1) c	1.2 (7.4)
Fern	10.2 (14.4) d	6.6 (9.5)	11.1 (16.0) d	9.1 (55.9) d
Shrub	16.7 (23.7) e	17.1 (24.7) e	9.7 (14.0)	1.0 (6.1)
Other	17.1 (24.1) f	11.6 (16.8) f	17.8 (25.6) f	1.0 (6.1)
TOTAL	70.6 g	69.2 g	69.4 g	16.3



Sediment Storage and Transport in the SF Noyo River

Lettis and Assoc.



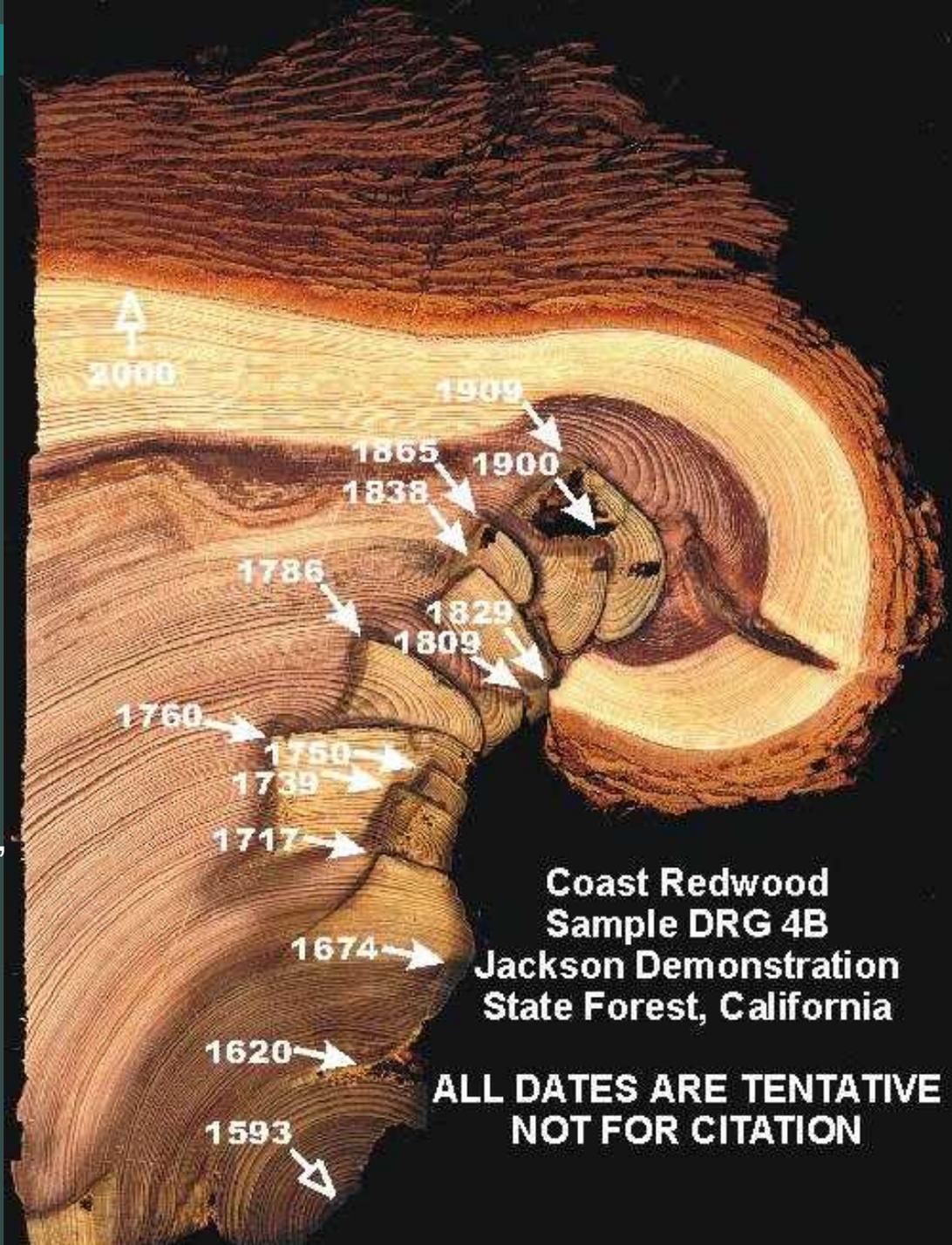
Fire History

in Coast Redwood Forests of Jackson Demonstration State Forest

- Found fire return interval of 6 to 25 years
- Interior and Coastal samples had similar fire return interval

Rocky Mountain Tree-Ring Research, Inc. Peter Brown

Presented at Redwood Region Forest Science Symposium, Rohnert Park, Ca., March 2004.



Northern Spotted Owl

Radio Telemetry, NCASI

- Telemetry on selected owl pairs
- Monitor all year, not just nesting season
- Cooperative sites both JDSF and neighboring forest lands



NSO Telemetry Results Overlay on Relevant Harvest History



Importance of Legacy Trees in the Maintenance of Biodiversity in Redwood Forests Managed for Multiple Uses

M.J. Mazurek. USFS, PSW- RSL

- Assessed wildlife use large trees
- Compared to second growth to legacy trees



Forest Learning Center; *resource for researchers*



Education: JDSF is a Living Laboratory

for professionals (lower right)
the public (right)
forest land owners (below)



Education: JDSF is a Living Laboratory

for younger students



Education: JDSF is a Living Laboratory

for community colleges

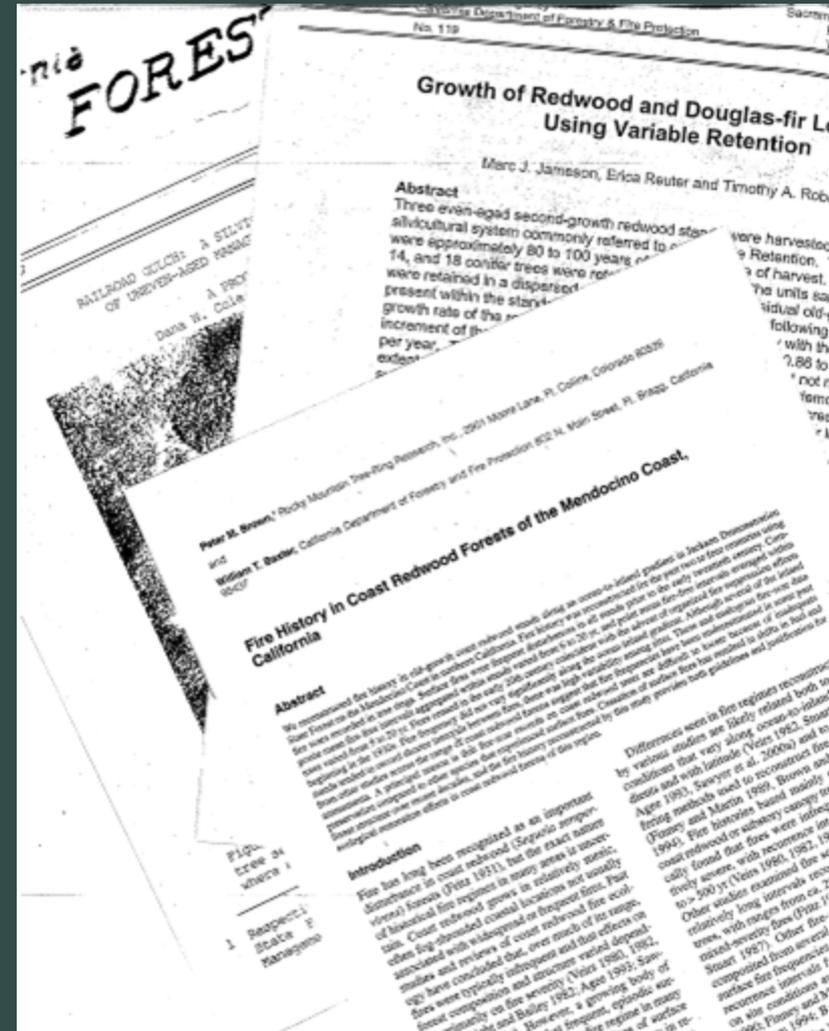


■ for universities & colleges



By the numbers:

- 97 reports from JDSF in database on line
- 80 projects with University and College involvement
- Exceeds 150: Caspar Watershed project publications
- 1965 Stream Ecology report: Humboldt
- 1973 Soils and Pygmy Forest UC Berkeley



Restoration

Forest structure

- Habitat elements (large trees, snags, down logs, cavities, limbs, diversity, under-burning, etc)

Watershed

Sediment reduction

- Road drainage improvements
- Road decommissioning
- Stream crossing upgrades

Slope stability

- Road location
- Yarding methods

Streams

- Large woody debris augmentation
- Shade canopy development
- Fish passage

Large Woody Debris – *Important to improving fish habitat*

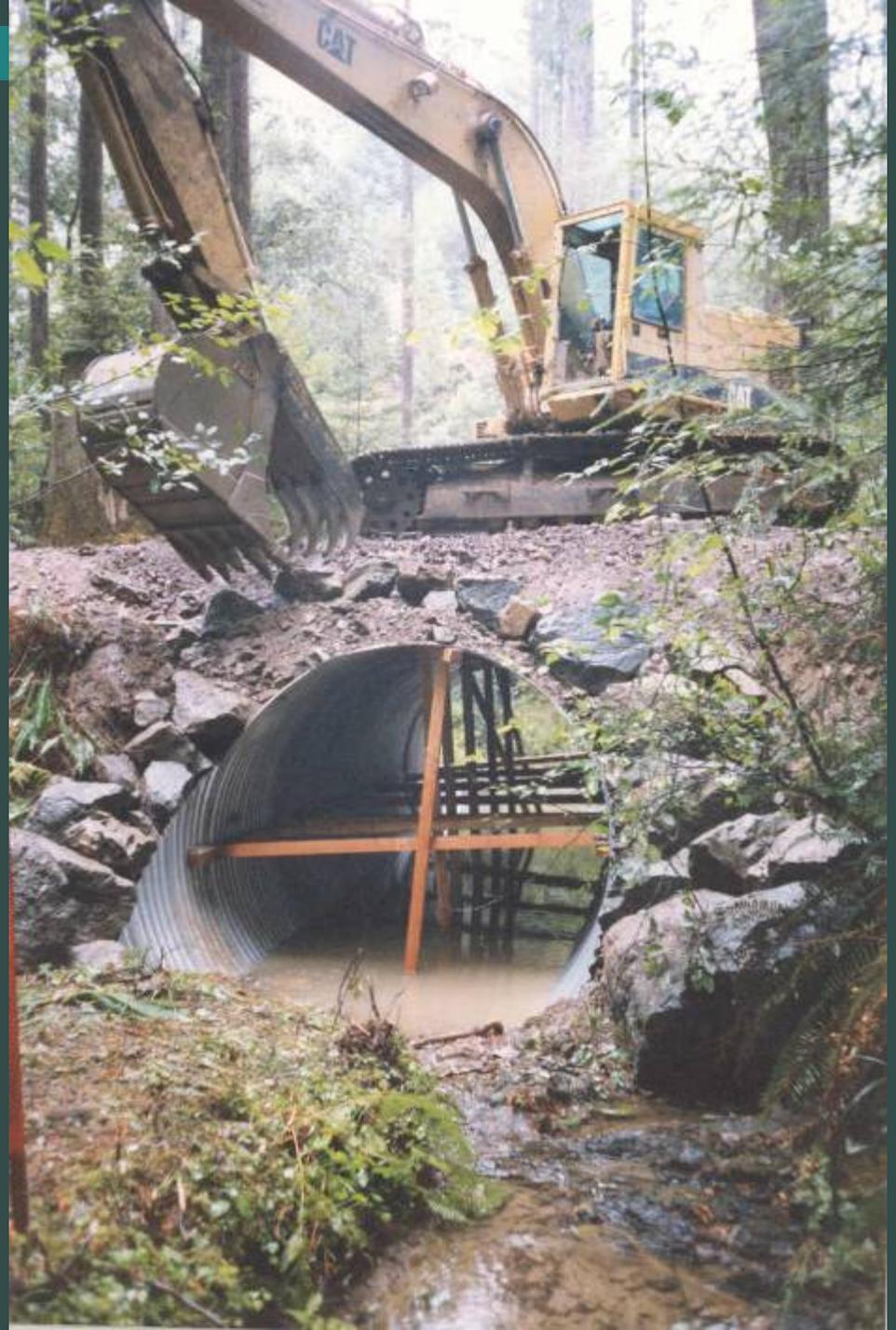
At JDSF early studies have aided today's efforts to help endangered salmonids by adding LWD to forest streams in cooperation with Department of Fish and Game.



Restoring Fish Passage

Culverts can be barriers.

Improved design aids fish and stream





Award winning fish passage structure for research

Pit tag reader monitors fish passage through the structure.

SF Caspar Creek Fish Ladder Dedication 2008



Road Decommissioning

