

**An Assessment of Potential Effects on the Timber Economy of Trinity County, CA  
and the Risk and Severity of Fire in Trinity National Forest from Passage of the  
California Wild Heritage Act**

**Prepared by**

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October 28, 2003**

## Table of Contents

An Assessment of Potential Effects on the Timber Economy of Trinity County, CA and the Risk and Severity of Fire in Trinity National Forest from Passage of the California Wild Heritage Act . . . . .	1
Chart: Shasta-Trinity NF LRMP Land Allocations in Areas Proposed for Wilderness or as Salmon Restoration Areas in the California Wild Heritage Act . . . . .	4
Chart: Land Allocations Available for Regulated Timber Production . . . . .	5
Chart: Area in Available Land Allocations Suitable for Regulated Timber Production .	5
Chart: Vegetation Strata in Areas Suitable for Scheduled Timber Production (CAS Lands) . . . . .	6
Chart: Timber Strata Suitable for Timber Production in CAS Lands . . . . .	6
Chart: Volumes & Annual Growth of Timber Strata on CAS Lands . . . . .	7
Chart: Total Annual Growth of Timber Strata Suitable for Timber Production on CAS Lands . . . . .	8
Map: Proposed Pattison Salmon Restoration Area, Lands Available for Timber Production . . . . .	9
Map: Proposed Pattison Salmon Restoration Area, Management Limitations on Lands Capable, Available, and Suitable for Timber Production . . . . .	10
Map: Proposed Pattison Salmon Restoration Area, Fire History/Forest Canopy Closure . . . . .	11
Map: Fire History, Trinity County & Vicinity . . . . .	12

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There are legitimate concerns that passage of the California Wild Heritage Act would adversely effect the timber economy of California and would increase the risk of wildfire and the severity of its impacts on managed forests, watersheds, and communities. To assess these concerns, the author of this document undertook a study of some likely consequences, in Trinity County, of its passage. The attached charts portray an assessment of the areas in the Trinity National Forest proposed for inclusion in the Act [Chinquapin Salmon Restoration Area (SRA), South Fork Trinity SRA, Pattison SRA, Yolla Bolly-Middle Eel Wilderness Additions, Trinity Alps Wilderness Additions, and Underwood Wilderness Area]. Due to time and funding limitations, only one proposed area, the Pattison SRA, was mapped in detail. This area is representative of conditions found in many of the other areas. The following is a summary of the findings of this study.

### **Economy**

1. The reduction in the Trinity NF timber base and Annual Allowable Sale Quantity from designating the proposed areas as Wilderness or Salmon Restoration Areas is minimal due to 1) existing land allocations and management objectives that preclude all but incidental timber harvesting, 2) unproductive or poor growing site conditions, 2) steep slopes, and/or 4) economic unfeasibility.
  - Seventy-five percent of the proposed areas are already reserved from regulated harvesting (see chart pg. 4, “Shasta-Trinity NF LRMP Land Allocations in Areas Proposed for Wilderness or as Salmon Restoration Areas in the California Wild Heritage Act” and map, “Fire History, Trinity County & Vicinity”).
  - Of those lands available for regulated harvesting, 54% are unsuitable for timber production due to unregenerable and/or unproductive soils (see chart pg. 5, “Area in Available Land Allocations Suitable for Regulated Timber Production” and map, “Proposed Pattison Salmon Restoration Area, Lands Available for Timber Production”).
  - Only 11.5% of the proposed areas are capable, available, and suitable (CAS) for timber production (see chart pg. 5, “Area in Available Land Allocations Suitable for Regulated Timber Production”).
  - Over half of these CAS lands are marginally suitable for timber production due to low soil productivity or steep slopes that require more costly logging systems (see map, “Proposed Pattison Salmon Restoration Area, Management Limitations on Lands Capable, Available, and Suitable for Timber Production”).
  - The proposed areas are primarily in inventoried Roadless Areas. All but two of the proposed areas (Underwood WA and Pattison SRA) are in Key Watersheds (Canyon Creek, New River, & South Fork of the Trinity River upstream from Hayfork Creek). Under the Aquatic Conservation Strategy, new road construction is prohibited in Roadless Areas in Key Watersheds and a reduction of roads, or at least no net increase in road mileage, is required in the watersheds. Tractor and cable logging would thus be limited to areas adjacent to existing roads, which are few to nonexistent. Logging would generally require helicopters and longer flying distances, which would limit its economic feasibility.
2. Timber harvesting was once a significant portion of the economy in California and Trinity County but has declined significantly since the mid 1950s.
  - From '55 to '93, timber harvests from all lands in California declined by about 50% (from 6.02 to 2.89 billion board feet) while harvests from National Forests declined about 45% (from 1.03 to 0.58 billion board feet).

- During the '80s, National Forests provided about 40% of California's timber harvests. From '89 to '93 this dropped to 35%. By the end of the '90s it dropped to 25%.
  - Shasta-Trinity NF provided about 0.7% of California's timber harvest in '89-'93. Trinity NF's share was about 0.3%.
  - California is a net importer of forest products, importing 75% of what it consumed in '95. This trend continues today, with even the last remaining mill in Trinity County importing logs from Canada.
  - Most timber related work (logging, hauling, processing, reforestation, and timber stand improvement) in Trinity County is done by out of county firms. Trinity County derives only limited benefits from these activities.
  - Multi agency studies estimate that 10-20 person years of employment statewide are generated for every one million board feet of timber harvest. The level of employment in the timber industry has been declining and will continue to decline due to changes in technology in logging, processing, and manufacturing. This assessment estimates that no more than one million board feet of annual harvest would be foregone with passage of the Act, which translates into a loss of 10-20 person years of employment.
3. Practically the only old-growth forest left in Trinity County, and the only significant contiguous old-growth, is in existing Wilderness and Roadless Areas in the Trinity River and South Fork of the Trinity River watersheds. In either direction, to the Pacific Ocean to the west and to the Central Valley to the east, forests have been intensively harvested, mostly by clearcutting, and/or burned, leaving only scattered pockets of old-growth forest (for example, see the aerial photo background of the map, "Proposed Pattison Salmon Restoration Area, Lands Available for Timber Production"). The Roadless Areas are therefore critical as habitat for old-growth dependent species. The opportunity to visit these areas and view the forest and wildlife will continue to draw visitors to Trinity County, diversifying the local economy.

## Fire

1. The risk of fire ignitions is less in the areas proposed for inclusion in the Act than in roaded areas.
  - Historical fire ignitions are found in both roaded and unroaded areas.
  - Most of the fires ignited by humans in Trinity County (71 in the proposed areas in the past 90 years) are associated with roads, trails, campgrounds, and human habitation (see maps, "Fire History, Trinity County & Vicinity" and "Proposed Pattison Salmon Restoration Area, Fire History/Forest Canopy Closure"). Lightning ignitions (251 in the proposed areas in the past 90 years) are scattered throughout the county, but are locally concentrated, primarily outside of the proposed areas.
  - Most of the large fires that burned into or threatened communities and forest management areas in Trinity County in recent decades were ignited in roaded areas by humans.
2. With the exception of localized areas of fuel concentrations, fire severity is likely to be lower in the proposed areas than in managed areas.
  - Studies of the '87 fires in Trinity County found that damage to plantations was greater where adjacent forests had been logged and logging slash had not been treated than where no logging had occurred.
  - Young-growth forests and plantations are more susceptible to damage due to smaller, less resistant trees that have more foliage closer to the ground and more undergrowth in early development stages.
  - Old-growth forests are more resistant to damage as the distances from the ground fuels to tree canopies are greater and there are more large, fire resistant trees. Conifer forests in the proposed areas are composed of larger trees [72,781 acres (51%) 11-24.9" diameter] and [38,342 acres (27%) 25-40" diameter].

- Conifer forests in the proposed areas are primarily composed of larger trees, with open canopies (less than 40% crown closure) in 28% of these forests. There are also substantial areas that are sparsely vegetated. These conditions reduce the likelihood of severe damage from fires or of catastrophic crown fires developing and moving out of the areas.

3. The highest human values at risk from fire are primarily located in communities and managed forest areas.

- Communities, which are located outside of the proposed areas, have the highest human values at risk. In the past two decades, fire has threatened or burned into most of the communities in Trinity County.
- Young-growth, managed forests and plantations represent a substantial investment by the Forest Service and the taxpayer. The Annual Allowable Sale Quantity (ASQ) is based on the plantations growing at an accelerated rate over natural or selectively harvested forests. Whenever fire burns these plantations, which are more susceptible to damage due to smaller, less resistant trees, additional investments are required and downward adjustments in the ASQ are necessary.

4. The most efficient use of scarce State and Federal fire suppression and pre-suppression dollars is in protection of the highest human values at risk.

- Pre-suppression efforts should be concentrated on projects designed to protect communities and managed forest areas. Areas proposed for inclusion in the Act are remote, steep, and inaccessible and are neither suited to pre-suppression project work nor located where such work is a priority.
- Fire suppression efforts are better concentrated in areas where there are the highest values at risk.
- Fire suppression, using all means available, is authorized in Wilderness and Roadless Areas (and the proposed Salmon Restoration Areas) and has been done in these areas in Trinity County in the past.

**Shasta-Trinity NF LRMP Land Allocations in Areas Proposed for Wilderness  
or as Salmon Restoration Areas in the California Wild Heritage Act**

Land Allocation	Area (acres)	Primary Function(s) and Management Objectives	Permitted Uses		
			Timber Production		Fire Suppression
			Regulated*	Type & Intensity	
Late-Successional Reserve (LSR)	65,038.79	habitat for old-growth dependent species - managed to maintain late-successional & old-growth ecosystem characteristics & function	No	thinning & salvage to enhance or protect late-seral characteristics	Yes
Administratively Withdrawn Area (AWA)	37,936.94	semi-primitive, non-motorized recreation in unroaded areas - managed to maintain natural-appearance with only subtle modification	No	sanitation & salvage to meet recreation, wildlife, & forest health objectives	Yes
Adaptive Management Area (AMA)	28,437.62	ecosystem management to achieve objectives of multiple allocations	Yes	all silvicultural systems minimal to intensive cut^ 20-95% of potential growth	Yes
Matrix (MAT)	11,685.55	timber production, roaded recreation, & wildlife habitat management	Yes	all silvicultural systems minimal to intensive cut^ 20-95% of potential growth	Yes
Riparian Reserve (RR)	~14,310# included within other allocations	protection & maintenance of aquatic ecosystems and watersheds - managed to maintain or enhance riparian areas, wildlife & fisheries habitat, & water quality	No	salvage & firewood only to achieve ACS objectives	Yes
<b>Total</b>	<b>143,098.90</b>				

\* Regulated timber production is scheduled & included in the Annual Allowable Sale Quantity (ASQ). Unregulated timber production is unscheduled & not chargeable to the ASQ.

Unregulated harvests are incidental and generally of low volume, unless salvage following a large-scale catastrophic event occurs.

^ Rx VIII, Commercial Wood Products Emphasis, has most of the potential growth scheduled for harvest. Rx III, Roaded Recreation has 70-80% scheduled for harvest. Rx VI, Wildlife Habitat Management, has 20% scheduled for harvest.

# Typically, this allocation is found on approximately 10% of each area and overlays other allocations. A total of 14,310 acres would be in the RR allocation and the proportionate share should be subtracted from each allocation.

<b>Land Allocations Available for Regulated Timber Production</b>	
Land Allocation	Area (acres)
Adaptive Management Area (AMA)	28,437.62
Matrix (MAT)	11,685.55
<b>Total</b>	<b>40,123.17*</b>

\* This figure doesn't include the Riparian Reserve allocation, which overlays approximately 10% of AMA and MATRIX allocations (4012 acres). Subtracting the RR allocation would decrease the total acreage available for regulated timber production to 36,111 acres.

<b>Area in Available Land Allocations Suitable for Regulated Timber Production</b>	
Land Allocation	Area (acres)
Unsuitable	21,780.72
Suitable (CAS Lands)	18,335.54^
<b>Total</b>	<b>40,116.26</b>

^ This figure doesn't include the Riparian Reserve allocation, which overlays approximately 10% (1834 acres) of suitable (CAS) lands. Subtracting the RR allocation would decrease the total acreage available for regulated timber production to 16,502 acres.

<b>Vegetation Strata in Areas Suitable for Scheduled Timber Production (CAS Lands)</b>	
Vegetation Strata	Acres
D3G (Douglas-fir, 11-24.9" dia., 40-100% canopy)	10.56
HCO (Mixed Hardwoods/Conifers)	29.70
HNC (Hardwoods)	775.67
KPX (Non-commercial Knobcone Pine)	17.08
M2G (Mixed Conifer, 6-10.9" dia., 40-100% canopy)	476.18
M2P (Mixed Conifer, 6-10.9" dia., 0-39% canopy)	34.90
M3G (Mixed Conifer, 11-24.9" dia., 40-100% canopy)	9702.58
M3P (Mixed Conifer, 11-24.9" dia., 0-39% canopy)	4773.90
M4G (Mixed Conifer, 25-40" dia., 40-100% canopy)	2321.01
M6G (Mixed Conifer, two-storied, 40-100% canopy)	34.33
NF (Non-Forested)	0.64
SX (Shrubs)	116.84
XX1 (0-18 year old plantations)	12.27
XX2 (19-28 year old plantations)	19.72
XX3 (29-38 year old plantations)	10.15
Total	18335.53*

\* This figure doesn't include the Riparian Reserve allocation, which overlays approximately 10% (1834 acres) of suitable (CAS) lands. Subtracting the RR allocation would decrease the total CAS acreage to 16,502 acres.

<b>Timber Strata Suitable for Timber Production in CAS Lands</b>	
Timber Strata	Acres
M2G (Mixed Conifer, 6-10.9" dia., 40-100% canopy)	10.56
M2P (Mixed Conifer, 6-10.9" dia., 0-39% canopy)	476.18
M3G (Mixed Conifer, 11-24.9" dia., 40-100% canopy)	34.90
M3P (Mixed Conifer, 11-24.9" dia., 0-39% canopy)	9,702.58
M4G (Mixed Conifer, 25-40" dia., 40-100% canopy)	4,773.90
M6G (Mixed Conifer, two-storied, 40-100% canopy)	2,321.01
M2G (Mixed Conifer, 6-10.9" dia., 40-100% canopy)	34.33
XX1 (0-18 year old plantations)	12.27
XX2 (19-28 year old plantations)	19.72
XX3 (29-38 year old plantations)	10.15
Total	17,395.60^

^ This figure doesn't include the Riparian Reserve allocation, which overlays approximately 10% (1740 acres) of the timber strata suitable for timber production. Subtracting the RR allocation would decrease the total acreage of suitable timber strata to 15,656 acres.



### Volumes & Annual Growth of Timber Strata on CAS Lands

Timber Strata	Acres#	Avg. Conifer Volume/Acre* (MBF)	Estimated Total Volume (MBF)	Avg. Basal Area Weighted Age (Years)*	Annual Growth (/Ac./Yr.)	
					(Cu. Ft.)*	(Bd. Ft.)^
D3G (Douglas-fir, 11-24.9" dia., 40-100% canopy)	9.50	35.7	339	160	68	374
M2G (Mixed Conifer, 6-10.9" dia., 40-100% canopy)	428.56	22.4	9,600	90	58	290
M2P (Mixed Conifer, 6-10.9" dia., 0-39% canopy)	31.41	8.2	258	140	14	70
M3G (Mixed Conifer, 11-24.9" dia., 40-100% canopy)	8,732.32	28.9	252,364	180	40	220
M3P (Mixed Conifer, 11-24.9" dia., 0-39% canopy)	4,296.51	16.8	72,181	80	34	187
M4G (Mixed Conifer, 25-40" dia., 40-100% canopy)	2,088.91	28.9	60,369	180	no info	no info
M6G (Mixed Conifer, two-storied, 40-100% canopy)	30.90	no info	no info	no info	no info	no info
XX1 (0-18 year old plantations)	11.04	0	0	14	no info	0
XX2 (19-28 year old plantations)	17.75	0	0	24	no info	no info
XX3 (29-38 year old plantations)	9.14	0	0	34	no info	no info
<b>Totals</b>	<b>15,656.04</b>		<b>395,111</b>			

\* From Shasta-Trinity NF Land & Resource Management Plan, Appendix D




^ Calculated from cubic foot data as follows: for size class 2 strata, 1 cu ft = 5 bd ft; for size class 3, 1 cu ft = 5.5 bd ft.

# These acreages are the timber strata on CAS lands minus the Riparian Reserves, which overlay approximately 10% (1740 acres) of the timber strata.






<b>Total Annual Growth of Timber Strata Suitable for Timber Production on CAS Lands</b>						
Timber Strata	Acres@	Avg. Conifer Volume/Acre* (MBF)	Est. Total Volume (MBF)	Annual Growth (/Ac./Yr.)		Estimated Total Annual Growth# (MBF/Ac./Yr.)
				(Cu. Ft.)*	(Bd. Ft.)^	
D3G (Douglas-fir, 11-24.9" dia., 40-100% canopy)	9.50	35.7	339	68	374	3.55
M2G (Mixed Conifer, 6-10.9" dia., 40-100% canopy)	428.56	22.4	9,600	58	290	124.28
M2P (Mixed Conifer, 6-10.9" dia., 0-39% canopy)	31.41	8.2	258	14	70	2.20
M3G (Mixed Conifer, 11-24.9" dia., 40-100% canopy)	8,732.32	28.9	252,364	40	220	1,921.11
M3P (Mixed Conifer, 11-24.9" dia., 0-39% canopy)	4,296.51	16.8	72,181	34	187	803.45
M4G (Mixed Conifer, 25-40" dia., 40-100% canopy)	2,088.91	28.9	60,369	no info	no info	No info
M6G (Mixed Conifer, two-storied, 40-100% canopy)	30.90	no info	no info	no info	no info	No info
XX1 (0-18 year old plantations)	11.04	0	0	no info	0	0.00
XX2 (19-28 year old plantations)	17.75	0	0	no info	no info	no info
XX3 (29-38 year old plantations)	9.14	0	0	no info	no info	no info
<b>Total</b>	<b>15,656.04</b>		<b>395,111</b>			
<p>* From Shasta-Trinity NF Land &amp; Resource Management Plan, Appendix D</p> <p>^ Calculated from cubic foot data as follows: for size class 2 strata, 1 cu ft = 5 bd ft; for size class 3, 1 cu ft = 5.5 bd ft.</p> <p># Calculated from strata acres times annual board foot growth/acre</p> <p>@ These acreages are the timber strata on CAS lands minus the Riparian Reserves, which overlay approximately 10% (1740 acres) of the timber strata.</p> <p>Note: Timber strata acres, volumes, and growth rates have not been adjusted for low productivity areas (Dunning Site IV &amp; V), found on approximately 50% of the CAS lands or for economic unfeasibility.</p>						

# Proposed Pattison Salmon Restoration Area Lands Available for Timber Production

## Lands Available for Timber Production

-  Capable and Suitable
-  Not Capable and/or Unsuitable
-  Proposed Area Boundary

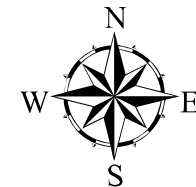
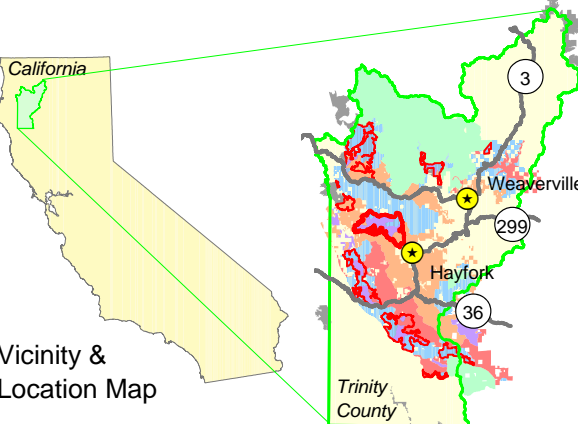
## Roads

-  Highway
-  Paved
-  Rocked
-  Native
-  Trail/Undrivable

## Streams

-  Perennial
-  Intermittent

All data provided by US Forest Service

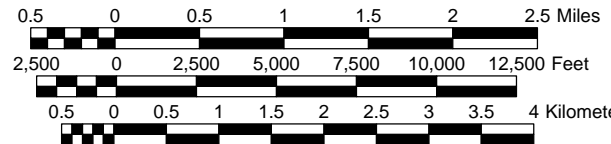


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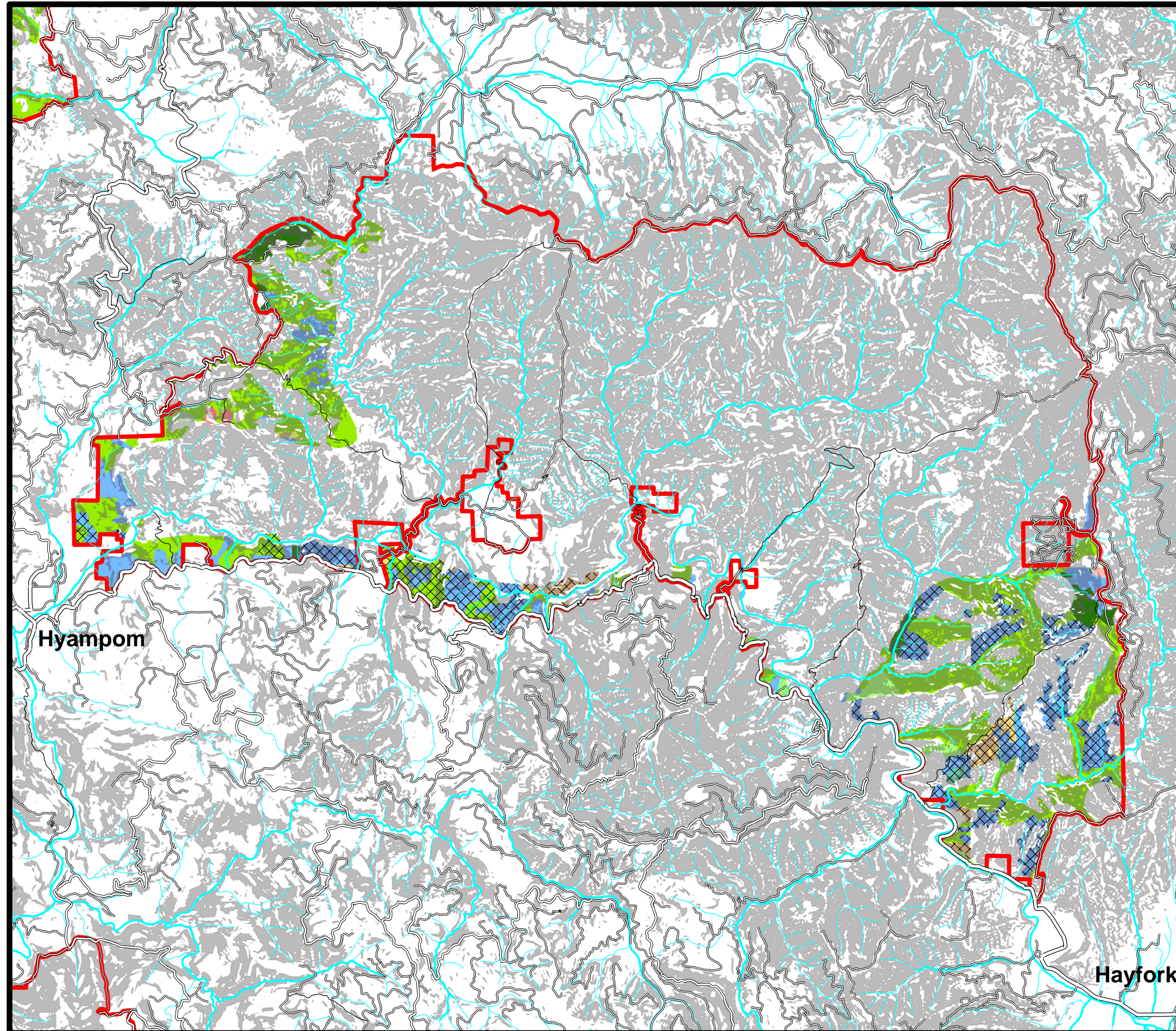
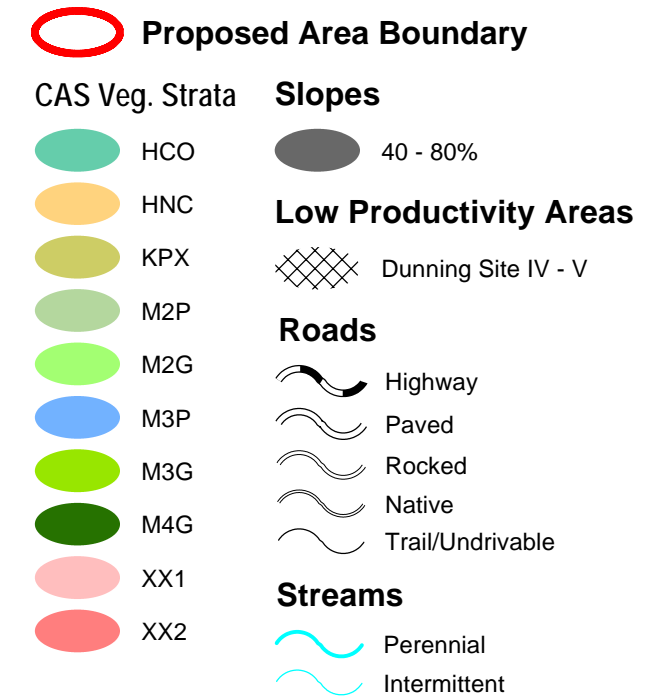
October 30, 2003

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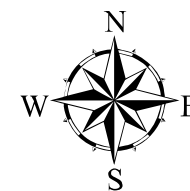
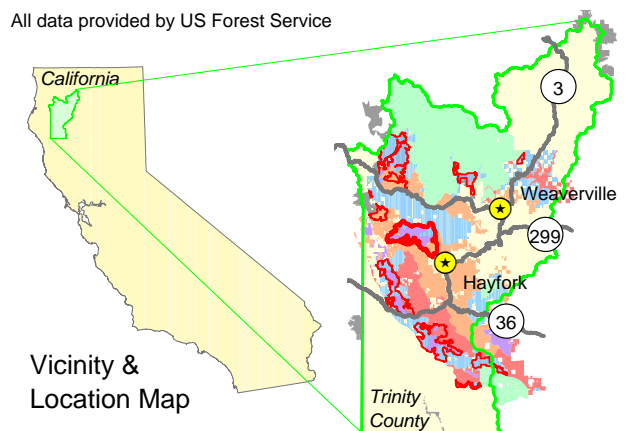


# Proposed Pattison Salmon Restoration Area

## Management Limitations on Lands Capable, Available, & Suitable for Timber Production



All data provided by US Forest Service

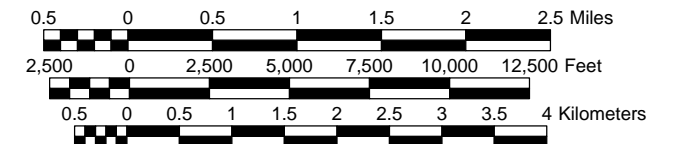


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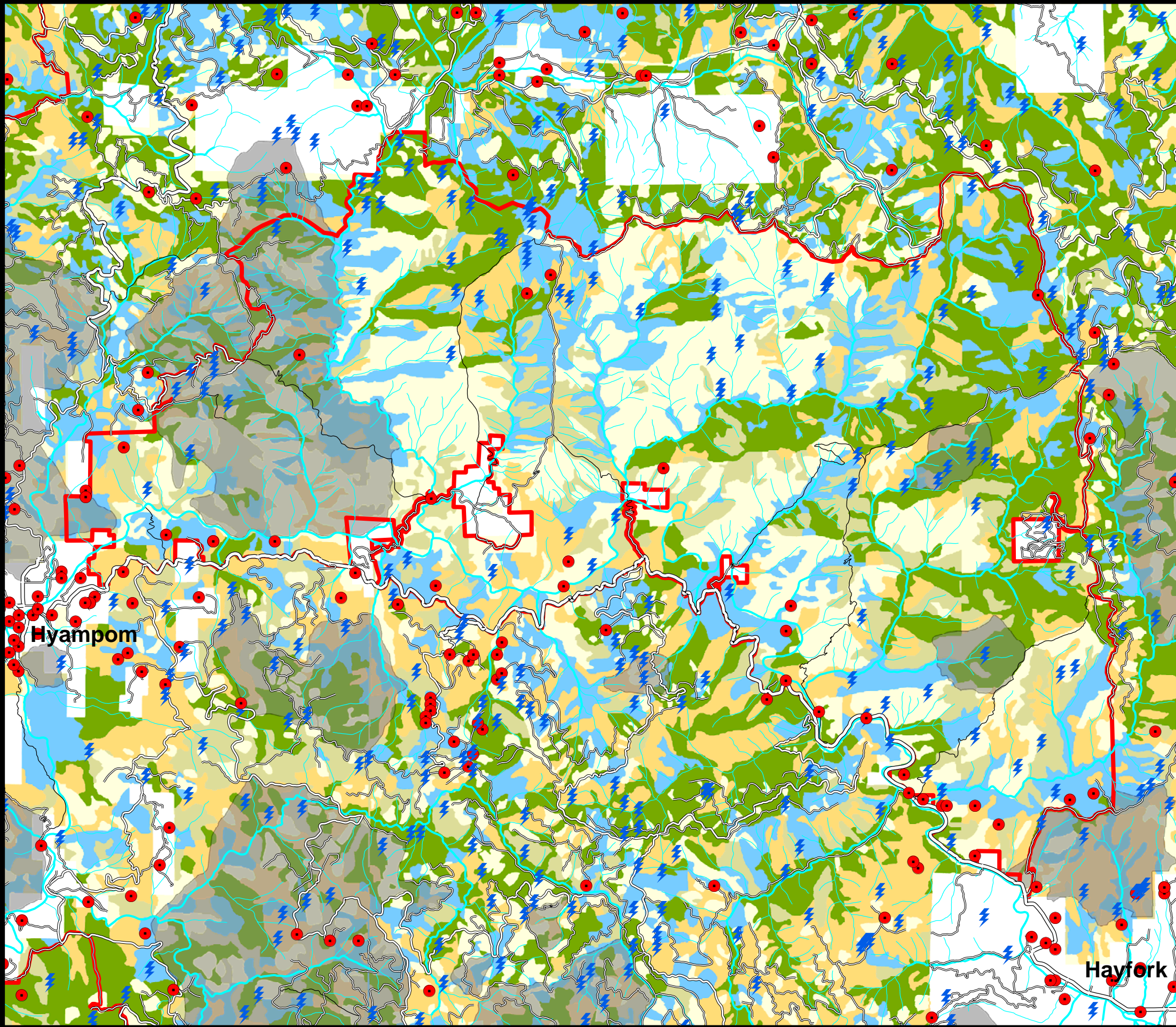
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Scale: 1 = 72,000



# Proposed Pattison Salmon Restoration Area Fire History (1910-2001) & Forest Canopy Closure



**Proposed Area Boundary**

**Canopy Closure**

- Non-Timber
- < 20%
- 20 - 39%
- 40 - 69%
- >= 70%

**Roads**

- Highway
- Paved
- Rocked
- Native
- Trail/Undrivable

**Streams**

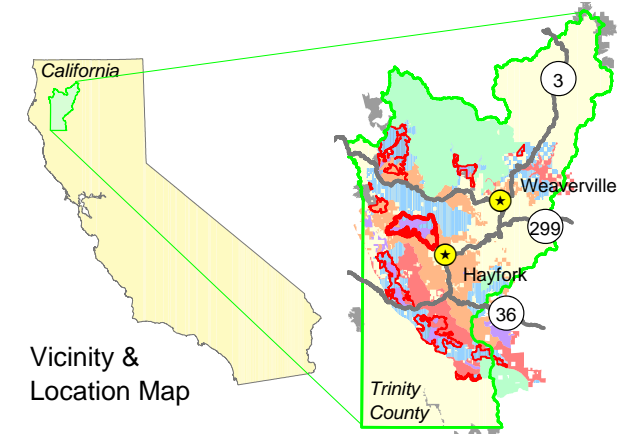
- Perennial
- Intermittent

**Fire Starts (<100 Ac.)**

- Human
- Lightning

**Fire Areas (>100 Ac.)**

All data provided by US Forest Service



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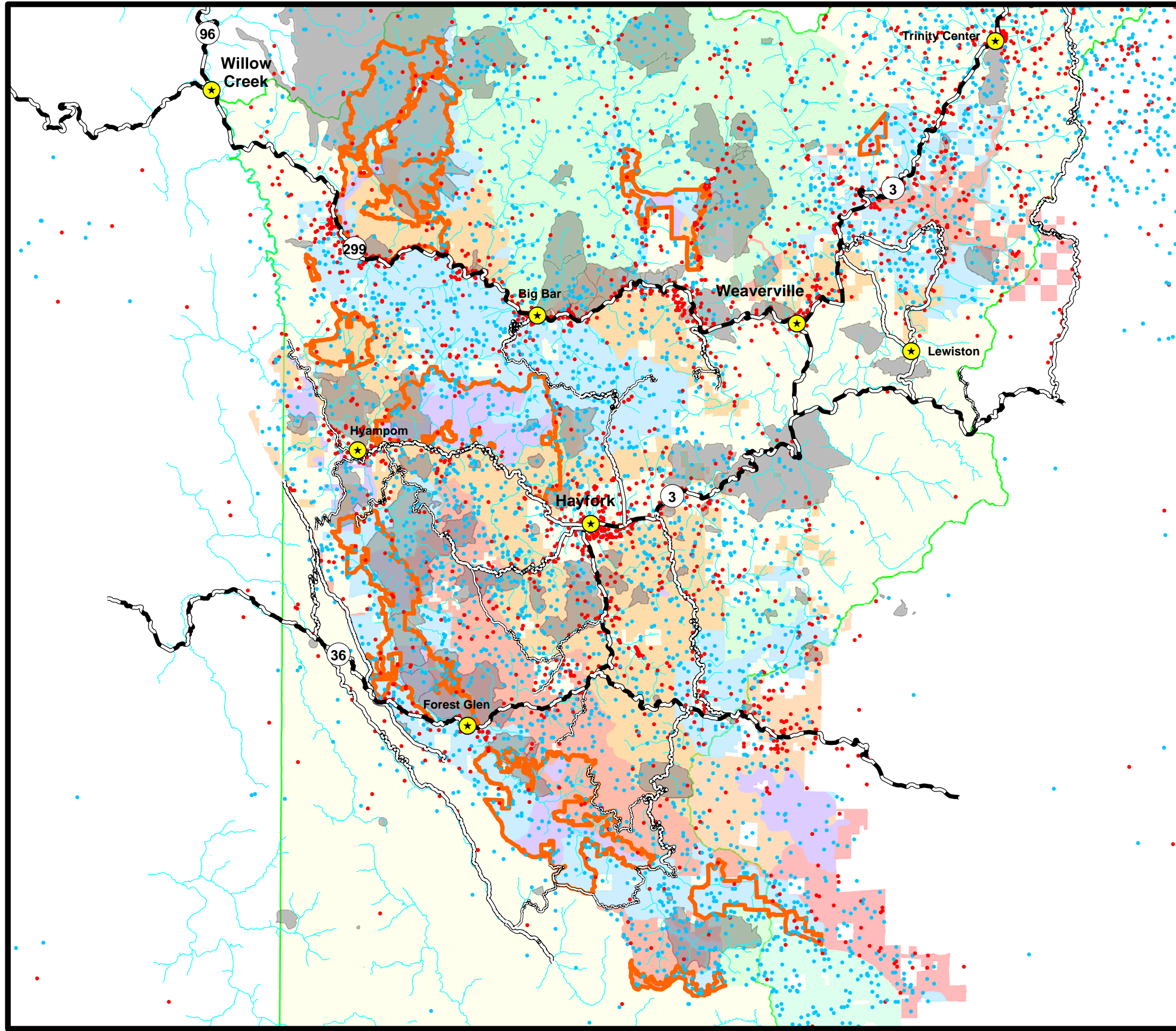
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Scale: 1 = 72,000

0.5 0 0.5 1 1.5 2 2.5 Miles  
 2,500 0 2,500 5,000 7,500 10,000 12,500 Feet  
 0.5 0 0.5 1 1.5 2 2.5 3 3.5 4 Kilometers

KDS

# Fire History (1910-2001) Trinity County & Vicinity



Proposed Area Boundaries

### Fire Starts (<100 Ac.)

- Human
- Lightning

Fire Areas (>100 Ac.)

### USFS Land Allocations

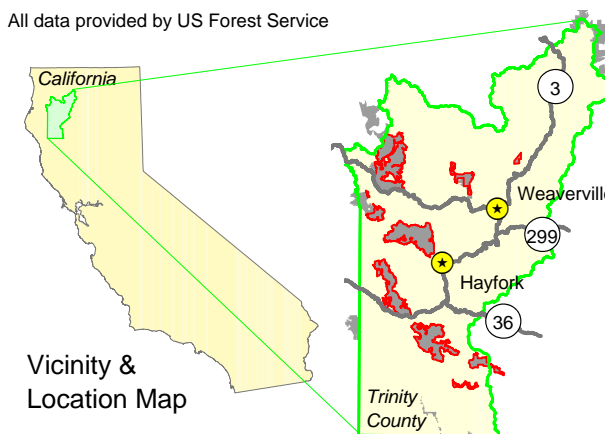
- Adaptive Management Area
- Matrix
- Administratively Withdrawn Area
- Congressionally Withdrawn Area
- Late Successional Reserve

### Major Roads

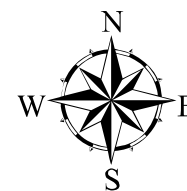
- Highway
- Paved
- Rocked

Trinity County Boundary

All data provided by US Forest Service



Vicinity & Location Map



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Scale: 1 = 400,000

