

**BURNED AREA EMERGENCY RESPONSE  
IRON COMPLEX FIRES  
FISHERIES ASSESSMENT**

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**SUMMARY**

The values at risk considered were coho salmon critical habitat and effects of increased sediment (water quality) on depressed fish stocks in the Trinity River Basin. The Zeigler, Ironside and Granite fires produced no specific fisheries issues requiring emergency BAER efforts. There are a few isolated areas of high severity burn in the Cedar, Buckhorn and Eagle fires, which will result in erosion and sedimentation to fish bearing streams, including the Trinity River. BAER treatment opportunities across the landscape are limited due to slope steepness (>60 percent) and inner gorge areas. Treatable acres for fisheries were limited to the Big Creek drainage (tributary to Hayfork Creek) due to its importance as a domestic water source and coho critical habitat. In all other affected burn areas, too few treatable acres were identified to make a significant or cost effective difference in post-fire projected sediment yields. Emergency BAER treatments were identified for roads in the Cedar and Eagle fires. No in channel treatments were prescribed for affected Iron complex streams due to the steepness of side slopes (>60 percent) and instability of inner gorge areas.

**GENERAL BACKGROUND**

- Assessment area - “Iron Complex”, Trinity County. CA. Includes the Ziegler, Ironside, Cedar, Eagle, Cary and Granite fires.
- Public (USFS and BLM) and private lands are included in this assessment.

**I. OBJECTIVES**

- Assess immediate impacts of the Ironside Complex fires on fisheries and aquatic resources within and directly downstream of burned areas and determine what emergency response is necessary.

**II. ISSUES**

- Coho salmon critical habitat
- Effects of increase sediment (water quality) on depressed fish stocks

**III. OBSERVATIONS**

Background

Known native fishes affected by Iron Complex fires include “anadromous fall chinook salmon (Oncorhynchus tshawytscha), coho salmon (Oncorhynchus kisutch), winter steelhead trout (Oncorhynchus mykiss), Pacific lamprey (Lampetra tridentata), resident rainbow trout (Oncorhynchus mykiss), speckled dace (Rhinichthys osculus), Klamath small scale sucker (Catostomus rimitulus), prickly sculpin (Cottus asper), and riffle sculpin (Cottus gulosus).

Naturally produced anadromous salmonid populations are clearly below historic levels and the goals set by the Trinity River Restoration Plan (TRRP). Certain subwatersheds (i.e. North Fork, New River) appear to be supporting stable or recovering populations of salmonids. Population estimates for adult salmonid escapement and juvenile outmigration have varied widely over the past 20 years. The relatively low returns of naturally produced fish, compared to hatchery produced, are likely indicative of low survival rates of young freshwater life stages (eggs, fry and/or juvenile fish).

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2001-2005 Shasta-Trinity NF. Hayfork RD.

Coho salmon and their habitat have been listed under the Endangered Species Act (ESA). The Trinity River mainstem and tributaries supporting anadromous fish are designated critical habitat for the threatened Southern Oregon/Northern California Evolutionary Significant Unit (ESU) coho salmon. Due to the long-term decline of chinook and steelhead runs in the Trinity sub-basin, the Pacific Southwest Region of the Forest Service has put these two species on a regional sensitive species list to help ensure that Forest Service activities do not result in a trend towards listing under the ESA.”

SONCC coho salmon critical habitat consists of the water, substrate, and adjacent riparian zone of estuarine and riverine reaches (including off-channel habitats). Accessible reaches are those within the historical range of the ESU that can still be occupied by any life stage of coho salmon. In addition to being listed under the Endangered Species Act, SONCC coho salmon are also managed under the Magnuson-Stevens Fishery Conservation Management Act (MSFCMA), as amended by the Sustainable Fisheries Act of 1996 (public Law 104-297). The MSFCMA defines Essential Fish Habitat (EFH) as those waters and substrate necessary to fish for spawning, breeding, feeding, and growth to maturity. Similarly, EFH consideration is required under the MSFCMA as needed for Upper Klamath-Trinity Rivers (UKTR) Chinook salmon (*Oncorhynchus tshawytscha*) habitat, even if they are not listed under ESA.

Coho streams on the Upper Trinity River within the boundary of the STNF include the New River and tribs, Big French Creek, Price Creek, Manzanita Creek, North Fork Trinity River and tribs, Canyon Creek, Oregon Gulch, Soldier Creek, Dutch Creek, Browns Creek, Weaver Creek and tribs, Rush Creek and Deadwood Creek. Coho use of Reading Creek, Indian Creek, and Grass Valley Creek is suspected, but suitable habitat is located off of National Forest lands.

#### **Upper Klamath-Trinity Rivers (UKTR) Chinook salmon:**

Spring-run Chinook in the Klamath-Trinity system are on the verge of disappearing (Moyle 2002<sup>2</sup>). They are lumped in with fall-run and late-fall-run fish in the UKTR ESU by NOAA because of genetic similarities (Meyers et al. 1998<sup>3</sup>). In the Klamath drainage the principle run is in the north and south forks of the Salmon River and in Wooley Creek, tributary to the Salmon River (Moyle 2002). The north and south fork of the Trinity River, and possibly New River, also support a few fish (CDFG 1990, in Moyle 2002).

**MIS fish species** on the Shasta-Trinity National Forest are the anadromous and resident forms of coastal *Oncorhynchus mykiss*, commonly referred to as “coastal steelhead” and “coastal rainbow trout”, respectively. Trinity River Basin steelhead and rainbow trout are within the Klamath Mountains Province (KMP) ESU. Within the KMP ESU, steelhead have two life-history types, the summer-run and winter-run fish. Winter-run steelhead are an STNF MIS fish species (LRMP<sup>4</sup> Final EIS, pp. G-3). Summer-run steelhead however, are a Forest Service Sensitive fish (LRMP Final EIS, pp. G-5). Adults of the two run types are differentiated by their timing and duration of their spawning migration and the state of their sexual maturity at the time of their return to freshwater. Summer-run steelhead return to freshwater between May and October, in a sexually immature condition, their gonads mature over several months and they spawn in the winter through early-spring. Adult winter-run steelhead enter freshwater between November and April with well-developed gonads and spawn shortly thereafter.

#### Reconnaissance Method

All field reconnaissance was completed by vehicle, foot access or by helicopter. The following list includes the date(s) the fire was visited. Areas of high and moderate burn severity as depicted on BARC maps were priority areas.

- 08/27/08- Determined via BARC map and geology that the Ziegler and Ironside fires pose no significant threats to the aquatic environment and do not require BAER treatments.
- 08/27/08- West Cedar (Cedar Flat Cr, Stetson Cr., Rowdy Cr.) by vehicle;

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2 Moyle, P. 2002. Inland Fishes of California, 2nd Ed. University of California Press. Berkeley, CA.

3 Meyers, J.M. R.G. Kope, G.J. Bryant, D.Teel, L.J. Lierheimer, T.C. Wainwright, W. S. Grant, F. W. Waknitz, K. Neely, S.T. Lindley, and R.S. Waples. 1998. Status Review of Chinook salmon of Washington, Idaho, Oregon and California. USDC NOAA Technical Memorandum NMFS-NWFSC-35.

4 USDA Forest Service. 1995. Land and Resource Management Plan. Shasta-Trinity National Forest, Redding CA.

- 08/28/08- Helicopter: (Whole Iron Complex)
- 08/28/08 – Vehicle to West Cedar (Canadian Cr, Panther Cr., Rock Bar, Monkey Cr., and Deer Cr.) from Eagle rock are
- 08/29/08 – Buckhorn Fire. Prairie Cr. and Treloar Cr. property owners
- 08/30/08 – Eagle Fire (NE Section; Miller Creek, No Name drainage, and drainages adjacent to HWY 299)
- 08/3-10/08 – Eagle Fire (SE Section: Soldier Cr., upper Conner Cr. , Upper Big Creek (tributary to Hayfork Creek; NW section: Big Bar Creek)
- 08/3-10/08 – Cedar Fire – lower most section of Rowdy Bar and Stetson creeks.

#### Findings/Description of Emergency

The fires composing the Iron Complex had a mostly positive effect on the landscape. The Zeigler, Ironside and Granite fires produced no specific fisheries issues requiring emergency BAER efforts.

There are a few isolated areas of high severity burn and will likely result in erosion and sedimentation to fish bearing streams. Maps 1-4 depict fire perimeter, affected tributary streams, proximity to the Trinity River, burn severity (soils) map and distribution of anadromous and resident fish habitat within and adjacent to each fire.

#### **CEDAR FIRE**

The Cedar fire burned approximately 25,373 acres. The western extent of the fire is Mill Creek near Cedar Flat day use area. The eastern extent is approximately the community of Big Bar, CA. The fire is bordered on the north by the Trinity River and to the south by the 4N16 (16) road. A relatively small portion of the fire sloped over into the Corral Creek watershed (Hayfork Ranger District) and included the East and West branches of Hayshed Creek, and Bidden and Hawk creeks.

The Cedar fire produced a few isolated areas of high severity burn. The Rowdy Bar and Stetson creek watersheds were particularly hard hit and will deliver large quantities of sediment to the Trinity River. However, the vast majority of salmon spawning habitat in the mainstem Trinity River occurs upstream of Rowdy Bar Creek. Landscape type BAER treatment opportunities in the Cedar Fire are limited due to slope steepness (>60 percent) and untreatable inner gorge areas. Treatable areas considered were for the benefit of Late Successional Reserves (LSR) to help preserve soil and soil productivity and will benefit fisheries. Stetson and Rowdy Bar Creek occur in LSR. Upstream tributaries routing relatively low quantities of sediment into the Trinity River would have a large cumulative effect on water quality downstream.

There are deficiencies in the size and condition of some existing culverts to accommodate anticipated increased flows (see engineers report). These situations constitute an emergency BAER response.

#### **BUCKHORN FIRE**

The Buckhorn fire was 28,517 acres and produced isolated high severity burn areas (headwall of Big French, Prairie, Denny and Treloar creeks). Big French Creek and Manzanita Creek are tributary watersheds to the Trinity River described as “properly functioning”. One important attribute of a properly functioning watershed is that it is in equilibrium with sediment input and output and maintains quality fish habitat over time. Big French Creek received moderate to low intensity burns throughout the watershed with high burn severity burns occurring in headwall brush fields. BAER treatments are not warranted for Big French Creek. Prairie Creek received moderate to low intensity burns throughout the watershed with high burn severity burns occurring in mixed conifer/hardwood and headwall brush fields. BAER treatments are not warranted for Prairie Creek. Denny and Treloar creeks are relatively small tributaries that flow into the Trinity River upstream of relatively good spawning habitat for Fall-run Chinook and coho salmon.

Treloar Creek soils include highly erosive types and were considered for Emergency BAER treatment due its proximity to the Trinity River and nearby tributaries used by coho salmon and steelhead. However, treatable acres are limited due to slope steepness (>60 percent) and inner gorge areas. Treatable acres were too few to make a significant or cost effective difference in projected sediment yields post-fire.

No emergency road needs were identified in the Buckhorn Fire.

### **EAGLE FIRE**

The Eagle fire occurred on 32,059 acres and produced isolated high severity burn areas in Price, Big Bar, Sailor Bar, Eagle, Miller and Conner creeks, all important tributaries to the Trinity River. In general, high severity burns in these tributaries occurred in localized areas and did not constitute large areas. The size and overall condition of these drainages are sufficient store and meter eroded soils over time and do not require an emergency response to help buffer eroded soils and sediment delivery to the Trinity River. Price Creek and near by small facial drainages are used as a domestic water source by approximately nine residents. A small impound dam is utilized. Only one resident has a special use permit for water withdraw in the area. BAER treatments were consider but not recommended due to a pre-existing infra-structure, for which BAER can not alleviate or offer a cost affective remedy. Big Creek, a tributary to Hayfork Creek also received high severity burns in the headwall portions. Big Creek is a municipal water source for the community of Hayfork and is coho salmon critical habitat. Although the proportion of the drainage affected is relatively small, the burn area is hydrophobic down to 6- to 8-inches and the slopes are steep. Due to its importance as a domestic waters source and fish habitat, BAER treatments are warranted in Big Creek.

Hayfork Creek supports a remnant run of spring Chinook salmon. Historically, spring Chinook salmon utilized the lower reaches of Salt Creek, Big Creek, Tule Creek, and the East Fork Hayfork Creek (PWA, 1994). The current distribution due to poor returning adult numbers is approximately the boundary between the Lower and Middle Hayfork Creek 5th field watersheds. Steelhead utilize most of the major tributaries in the Middle Hayfork 5th field watershed, including approximately 7 miles of the Big Creek mainstem and ½ mile of the East Fork Big Creek.

Fisheries resources in Big Creek are currently limited to winter-run steelhead and resident coastal rainbow trout. Big Creek was habitat-typed by the Forest Service in 1989 and the survey included extensive snorkel surveys that documented only juvenile steelhead/coastal rainbow trout (USDA-FS 1989<sup>5</sup>). The report indicated that salmon have may historically utilized lower Big Creek for spawning, but no recent evidence has confirmed the presence of Chinook or coho salmon.

The 1989 habitat typing survey also indicated that pools comprised nearly 25% of the total habitat units; however there was a general lack of cover and complexity within these pools. LWD was generally lacking in all habitat types, with bedrock forming a majority of the pools. Spawning habitat for steelhead was abundant and the gravels were described as “moderately impacted with fine sediments”.

There are deficiencies in the size and condition of some existing culverts to accommodate anticipated increased flows within the perimeter of the Eagle fire. These situations constitute an emergency B AER response.

## **IV. TREATMENT RECOMMENDATIONS**

A summary of findings and emergency BAER response are summarized in Table 1.

### **a. Management Treatments**

The primary oppotunities for BAER are Road treatments (upgrading culverts, constructing rolling dips and or critical dips, and berm removal road shoulders.

**Zeigler, Ironside and Granite fires** - No immediate fisheries related treatments are proposed in these areas. No Land, Road or Channel treatments are prescribed. Erosion issues would be negligible.

### **CEDAR FIRE**

Land – No treatment acres were identified specifically to benefit fisheries and aquatic resources. Areas within the Stetson and Rowdy Creek drainages are in LSR and were prescribed heli-mulching on treatable ground for soil retention and soil productivity. Mulching will provide a measured benefit to fisheries resources by reducing soil erosion.

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5 USDA Forest Service, 1989. Habitat typing report – Big Creek 1989. Prepared by the USDA Forest Service, Shasta-Trinity National Forests. 8 pp.

Channel – No in channel structure treatment were prescribed.

Roads - The following generalized treatments are proposed to minimize impacts to fisheries and aquatic resources at a large scale. Individual treatments for specific road sections will need to be designed and proposed by the proper resource specialists (i.e. hydrology, soils and engineering). A range of generalized treatments that would minimize impacts to aquatic resources follows: 1) temporarily close roads for first wet season, 2) provide adequate road drainage features (i.e. rolling dips, critical dips, armoring, outsloping, appropriately sized culverts, removal of berm on outside/downhill side of road), 3) storm patrol during precipitation events for 1-3 seasons following the fire, and 4) proper signage of road indicating closure or, hazards if road is not completely closed. These proposed treatments are not meant to be mutually exclusive, rather they are meant to provide a range of alternative treatment combinations with differing levels of protection for aquatic resources.

### **BUCKHORN FIRE**

Land – No treatment acres were identified specifically to benefit fisheries and aquatic resources.

Channel – No in channel structure treatment were prescribed.

Roads - No road concerns were prescribed.

### **EAGLE FIRE**

Land - A large proportion of the Eagle fire that occurred on the Weaverville Ranger District occurred in Wilderness Area, no cost effective treatments were identified. A portion of the Big Creek drainage on the Hayfork Ranger District occurs in LSR. Heli-mulching was prescribed for soil retention and soil productivity, and will have a measured benefit to water quality in Big Creek benefiting municipal water use and coho critical habitat..

Roads - The following generalized treatments are proposed to minimize impacts to fisheries and aquatic resources at a large scale. Individual treatments for specific road sections will need to be designed and proposed by the proper resource specialists (i.e. hydrology, soils and engineering). A range of generalized treatments that would minimize impacts to aquatic resources follows: 1) temporarily close roads for first wet season, 2) provide adequate road drainage features (i.e. rolling dips, critical dips, armoring, outsloping, appropriately sized culverts, removal of berm on outside/downhill side of road), 3) storm patrol during precipitation events for 1-3 seasons following the fire, and 4) proper signage of road indicating closure or, hazards if road is not completely closed. These proposed treatments are not meant to be mutually exclusive, rather they are meant to provide a range of alternative treatment combinations with differing levels of protection for aquatic resources. We feel that the most protective option will include specific elements of all the points listed above, at appropriate locations.

Channel – No in channel structure treatment were prescribed.

#### **b. Monitoring**

No immediate fisheries related monitoring is proposed.

#### **c. Long-term project proposals / NFP**

Affected Iron Complex watersheds – Support the continuation of long-term monitoring projects conducted by all federal, state and private groups. At this time we do not anticipate requesting any fisheries-specific funding.

## **V. CONSULTATION**

At this time, no consultation with the National Marine Fisheries Service (NMFS) has been initiated, as it is not required by an assessment team. Future activities (including BAER implementation) will require indirect consultation through the National Fire Plan Counterpart Regulations or through personnel of the National Marine Fisheries Service office in Arcata, CA.

## **VI. MAPS**

Buckhorn Fire Fish Distribution

Cedar Fire Fish Distribution

Eagle Fire Fish Distribution

Granite Fire Fish Distribution

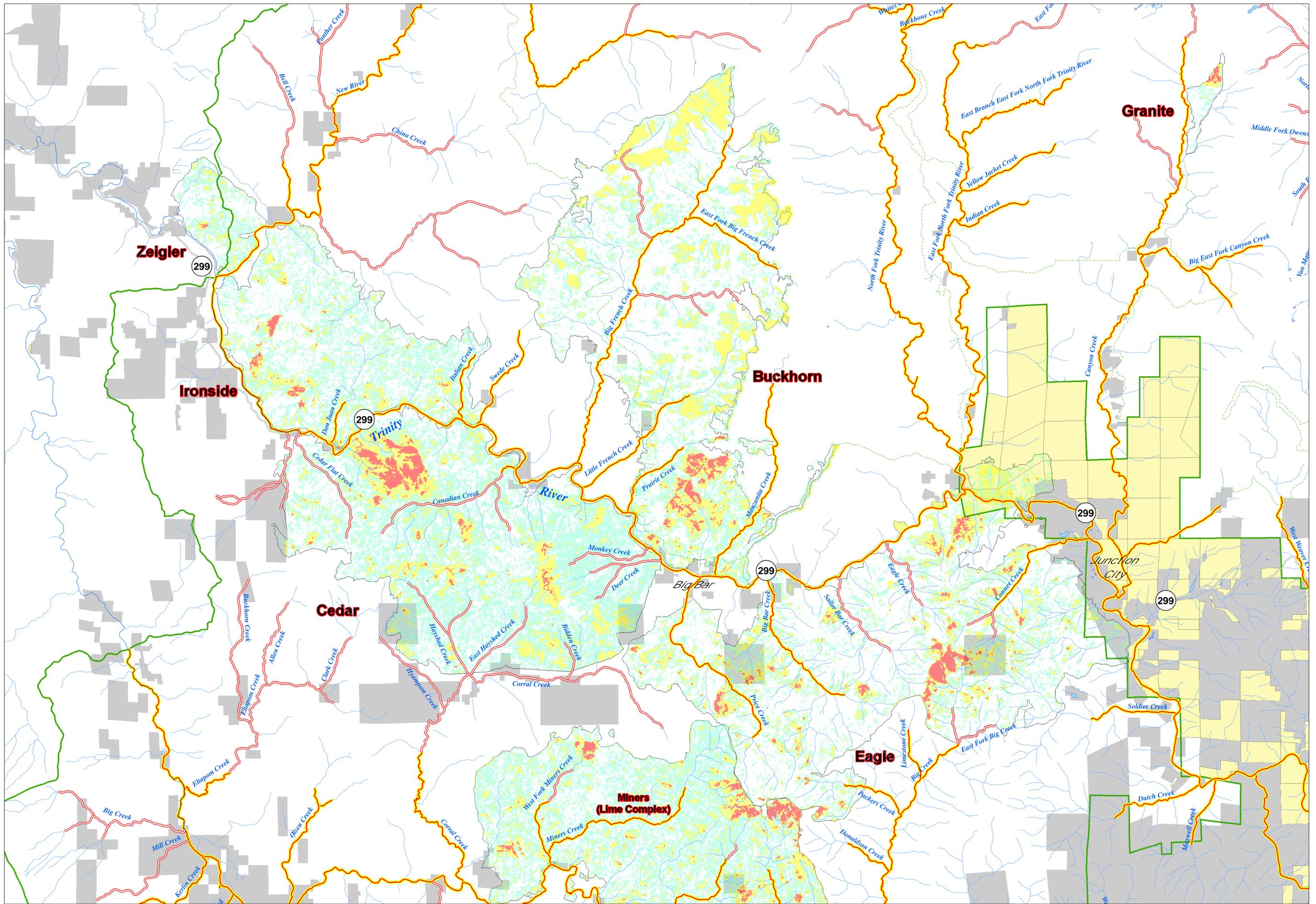
Ironside and Zeigler Fish Distribution Table 1. Summary of findings and Emergency Response Recommendations (Iron Complex fires).

Iron/Alps Complex BAER – Fisheries Information

RKM	Watersheds	Est. overall burn severity rating	Redd Frequency observed mainstem TR	Fish Distribution	FIRE	LAND ALLOCATIONS	TREATMENTS		
							Land	Channel	Roads
Trinity River			13%						
137.1	Soilder Cr.				Eagle	AMA/LSR			
	Deep Gulch				Eagle	AMA			
	Mill Cr.				Eagle	AMA			
	McKinney Gulch				Eagle	AMA			
	Conner Cr.			1.5 mi.	Eagle	AMA			See Engineer Report
	Unnamed Trib				Eagle	AMA			See Engineer Report
118.3	NF Trinity R.								
116.1	Miller Cr.				Eagle	AMA			
	Logan Gulch				Eagle	AMA			
113.2	Eagle Cr.				Eagle	AMA			
	Sailor Bar Cr.				Eagle	LSR/AMA			
	Wheel Gulch				Eagle	AMA			
107.3	Big Bar Cr.				Eagle	LSR			See Engineer Report
	Bordy Cr.				Eagle	LSR			
104.8	Manzanita Cr.				Buckhorn	WILDERNESS			
104.2	Price Cr.				Eagle	LSR			See Engineer Report
104.1	Treloar Cr.				Buckhorn	WILDERNESS			
103.0	Denny Cr.				Buckhorn	WILDERNESS			
102.4	Deer Cr.				Cedar	LSR			
101.6	Monkey Cr.				Cedar	LSR			
99.8	Whites Bar Cr.				Buckhorn	WILDERNESS			
99.5	Prairie Cr.				Buckhorn	WILDERNESS			
98.1	Rock Bar Cr.				Cedar	LSR			
96.8	Little French Cr.				Buckhorn	AMA/WILDERNESS			
95.3	Big French Cr.				Buckhorn	AMA/WILDERNESS			
92.1	Canadian Cr.				Cedar	LSR			
	Panther Cr.				Cedar	AMA			
91.6	Pelleteau Cr.				-	AMA			
88.6	Little Swede Cr.				-	AMA			
88.1	Swede. Cr.				IronSide	AMA			
87.3	Italian Cr.				IronSide	AMA			
84.8	Little Sandy Bar Cr.				IronSide	AMA			
82.4	Rowdy Bar Cr.				Cedar	LSR			
81.5	Stetson Cr.				Cedar	LSR			
80.4	Don Juan Cr.				IronSide	AMA			
79.0	Cedar Flat Cr.				IronSide	LSR			
	Mill Cr.				IronSide	LSR			
	Dixon Bar. Cr.				IronSide	AMA			
	Eagle Cr./Slide Cr.				Carey	WILDERNESS			
	Cow Cr.				Zeigler				
<b>Hayfork Creek</b>									
	Big Creek				Eagle		Heli-mulch		
	Packers Cr.				Eagle				See Engineer Report
	Corral Creek				Cedar	LSR			
	Bidden Cr.				Cedar	LSR			
	Hawk Cr.				Cedar	LSR			
	Haypress Cr.				Cedar	LSR			See Engineer Report

BURN SEVERITY	
PROPERLY FUNCTIONING WATERSHED	NO BURN
	Low
	Moderate
	High

Fish Distribution
NO FISH
Res. fish only
Andro/resident & coho CH



**FISH DISTRIBUTION & BURN SEVERITY  
IRON COMPLEX  
9/03**

**Fish Distribution**

- Resident & Anadromous
- Resident

*Legend*

**Severity Classes**

- Unburned/Very Low
- Low
- Moderate
- High

**Ownership**

- Other Government
- Private

**National Forest Boundaries**

- Proclaimed Forest Boundary
- Wilderness



1:45,000

