

The New River tributaries of Virgin and Slide Creeks (including Eagle Creek) were visually surveyed on foot and by skin diving during the period of September 13-14, 1984.

The purpose of the survey was to assess summer steelhead habitat conditions, population abundance and distribution patterns. Two survey crews participated: Crew A - Kenneth Coop, Forest Fish & Wildlife Staff Officer: Joe Zustak, Fisheries Biologist: Crew B - Mary Coburn, Fisheries Biologist: Erib Gerstung, California Department of Fish and Game Biologist: Steven Coburn, Volunteer.

On September 12, 1984, Crew A surveyed the stream reach of Virgin Creek extending from Four Mile Creek downstream to New River. A total of 31 adult summer steelhead were counted, 25 of which were in a single deep pool (see attached map). Numerous juvenile rainbow trout - steelhead were seen in each pool, ranging from 3-12 inches in length, averaging about 4 inches length. Crew B surveyed approximately 1.5 miles of stream reach on Virgin Creek from Six Mile Creek upstream to a point below Soldier Creek, where an enormous log jam (25-30 feet high) was encountered. The log jam may be a complete barrier to upstream anadromous fish migration. A reconnaissance trip should be scheduled to assess the barrier to determine whether removal is warranted and feasible. Aerial photos indicate the two partial bedrock/boulder barriers, approximately 4-6 feet high (see attached map) should also be assessed to determine the desirability of removal. Crew B inspected about ten pools by faceplate and sighted one 17 inch adult summer steelhead, one 12 inch fish (possible half-pounder) and abundant juvenile rainbow trout - steelhead, similar in size to those noted by Crew A.

On September 13, 1984, Crew A surveyed a 2,000 ft. reach of Eagle Creek (see attached map). One pool in the reach was examined by faceplate. Several juvenile rainbow trout-steelhead were observed and no adult steelhead were seen. Crew B surveyed Slide Creek from its confluence with Eagle Creek to a point upstream approximately 1 mile (to a point 0.3 miles below the mouth of Brushy Creek). About 18 pools, 3-6 ft. deep, averaging about 4 ft. deep, were examined with a face mask. One 12 inch rainbow trout - steelhead (possibly a half-pounder) was observed. Juvenile rainbow trout - steelhead (average 4 inches) were common (approximately 5-10 per pool), indicating that the area is used as nursery habitat.

The information from the aforementioned survey will be combined with data collected by the California Department of Fish and Game to estimate the total 1984 run of adult summer steelhead in the New River drainage.

The New River summer steelhead population appears to be the second largest in California, only surpassed by the Middle Fork Eel River population of approximately 2,000 adults per year. Because of its significance to summer steelhead, a Forest Service Region 5 sensitive species, New River should be monitored annually to assess habitat, population numbers, management concerns, and opportunities to restore and enhance the population through habitat improvement projects such as fish barrier removals.

Mary E. Coburn

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Big Bar Ranger District
Eagle Ck., T8N R7E Sec. 24
Oct. 2, 1985
Surveyors: R. Feranna, P. Renoud, J. Zustak

Eagle Ck. was surveyed visually by walking upstream approximately 2.6 miles to Battle Ck. Reach I includes the stream section from Slide Ck upstream to the North Fork. Reach II extends from the North Fork upstream to Battle Ck. Eagle Ck. is a class I **stream** that provides excellent water quality and significant flow for anadromous fish for spawning, rearing, and nursery habitat. It also supports adult steelhead in the deeper pools during summer months, in this case, above a formidable 15 foot bedrock falls(B-1). This stream had not been previously surveyed.

This medium size perennial stream originates in the upper Trinity Alps Wilderness along the Salmon Mountain divide. It flows southerly through precipitous topography with deeply incised canyons that is characteristic of the region. Lower order stream gradients are slight however, ranging 2% for reach I and 3% for reach II. Channel width averaged 25-30 feet for reach I and II, respectively.

Old growth Douglas-fir stands predominate on northern exposures while southern exposures host fewer Douglas-fir intermixed with oak, madrone and brush species. The stream corridor contains a mixture of Douglas-fir, yew, maple, alder, and dogwood. Except however in reach II where alder predominates on portions of the stream corridor. The shade canopy was estimated at 30% for reach I and 65% for reach II.

Fish habitat was rated good to excellent, with a pool:riffle ratio of 3:2 for reach I and 1:3 for reach II. Reach I contained many deep pools with excellent in-pool shelter provided by overhanging angular bedrock, boulders, and rock ledges. These and other features are identified on the attached 1980 aerial photo overlay (FL 20 #1480-53). Reach I contained 40% class A and 50% class B pools while reach II contained 2% class A and 30% class B pools. Spawning habitat for steelhead appeared adequate in the tailouts of pools, in riffles, and along the-channel margin. Because reach I is largely dominated by bedrock pocket gravels also provide spawning habitat. More extensive spawning riffles and gravelly tailouts are available in reach II.

Overall, productivity was considered good-excellent when taking into account the time of the year for invertebrates abundance estimates. total aquatic fish food abundance was estimated at 36 ft² for reach I and 33 ft² for reach II with mayfly dominating throughout. Caddisfly was also commonly noted as were a few stonefly, riffle beetles and snails. Aquatic vegetation commonly observed includes Peltiphyllum(Damera), Araliq, Nostoc, sedge, moss, and green algae.

Reproduction appeared good-excellent. Reach I contained about 20 rainbow-steelhead trout per hundred feet of stream ranging from 2-8 inches in length, averaging 2.5 inches. Reach II had about 12 rainbow-steelhead trout per hundred of the same species and size.

Water quality was excellent with no turbidity. A fine layer of silt was

noticeable along the bottom of the pools however, and evidence of previous dredge mining activities was obvious in places. Bank and channel stability was excellent due to the prevalence of bedrock and vegetation. The stream flow was estimated at 3.5 cfs with a velocity of 1ft per second.

Six tributaries, two springs, and two barriers were noted and no diversions were seen.

TRIBUTARIES

T-1 is a small perennial stream located on the west bank about 2,200 feet above the mouth. Its flow was estimated at .05 cfs at 53 F. Class IV --no fishery potential.

T-2 is a small perennial stream located on **the** west bank about 100 feet above T-1. Its flow was estimated at .05 cfs at 53^oF. Class IV --no fishery potential .

T-3 is a small perennial stream located on the west **bank** about 3,700 feet above the mouth. Its flow was less than .05 cfs at 52 F. Class IV --no fishery potential.

T-4 is the North Fork, which is located about 6,200 feet above the mouth. Its flow was about 1.5 afs at 52 F. The North Fork was considered a class II stream, although it was not surveyed. And even though fish would have to ascend (B-1) a 15 foot falls to reach the North Fork, the observation of adult and moderate numbers of juvenile steelhead above B-1 suggests that the North Fork is utilized by steelhead for spawning and rearing.

T-5 is a small perennial stream on the east bank about 10,000 feet above the mouth. Its flow was less than .05 cfs at 50^oF. Class IV --no fishery potential.

T-6 is Battle Ck. Its flow was estimated at 1 ofcs at 53^oF. This survey ended at Battle Ck. It is also considered a class II stream, although it was not surveyed, because, like the North Fork, it is a major tributary **stream** accessible to steelhead in the upper drainage basin.

SPRINGS

S-1 was 55^oF, **located** on the west bank between T 2-T 3.

S-2 was 50^oF, located on the west bank between T 2-T 3.

BARRIERS

B-1 is a 15 foot verticle bedrock falls. It represents a formidable barrier to fish migration at low flows; however, it is ascendible at high flows, as evidenced by the sighting of adult steelhead in the deep pool below B-2. Unquestionably this barrier impedes the migration of fish into upper Eagle Ck., the North Fork, and Battle Ck. Two ideas come to mind to modify the falls to allow easier passage over the falls at at low-moderate flows: (1)sculpture further an existing overflow channel in the bedrock to reduce the gradient

thereby allowing water to flow through at low-moderate flows; (2)remove the overhanging bedrock at the top of the falls and remove a couple of feet from the top of the falls. A deep jump pool exists below the falls.

B-2 is a velocity barrier created by a bedrock shut with a 10 foot drop over 15 feet of stream, with a 15 foot deep pool below. This is probably a barrier only and low flow.

MANAGEMENT RECOMMENDATION

Manage for anadromous fishery with emphasis on habitat for summer steelhead. Modify barriers to allow more utilization of upper Eagle Ck., the North Fork, and Battle Ck. by spawning winter- and summer-run steelhead. Budget for FY 86 to survey the physical and biological condition of the above major tributaries to Eagle Ck. In particular, the North Fork appears somewhat pristine and significant in that human activities are minimal because no trail exists along it and since it includes a large drainage basin that contributes excellent water quality and significant flow.

Randy Feranna
Biological Tech., Fisheries

STREAM SURVEY

FOREST Shasta-T	DISTRICT Big Bar
1. NAME OF STREAM Eagle CK.	2. RIVER SYSTEM New River
3. TRIBUTARY TO Slide CK	4. TOTAL LENGTH
3. STREAM SECTION FROM Eagle-Slide CK confluence upstream TO Eagle-Battle CK. confluence	
4. LOCATION OF MOUTH OR LOWERMOST POINT TOWNSHIP T8N RANGE R7E SECTION Ec 24	
7. DESCRIPTION OF STREAM. (USE PAGE 1 OR SEPARATE SHEET TO RECORD NOTES MADE DURING SURVEY)	

SECTION DATA

8. LOCATION	LOWER			MIDDLE			UPPER							
	TWP 8N	RG 7E	SEC 24	TWP	RG	SEC.	TWP 8N	RG 7E	SEC 12 (SE 1/4)					
9. ALTITUDE RANGE	2350 FT TO 2400 FT.			FT. TO FT.			2400 FT TO 2780 FT.							
10. WIDTH OF STREAM	RANGE 3-30 FT. AVE 15 FT			RANGE FT. AVE FT			RANGE 3-25 FT. AVE 15 FT							
11. DEPTH	RANGE FT. AVE FT			RANGE FT. AVE FT			RANGE FT. AVE FT							
12. FLOW	3.5 cfs			cfs			2.0 cfs							
13. VELOCITY	.5 fps						.7							
14. AIR TEMPERATURE	52 °F						53 °F							
15. WATER TEMPERATURE	51 °F						52 °F							
16. HOUR AND SKY	HOUR 1000 SKY CLR			HOUR SKY			HOUR 1300 SKY CLR.							
17. POOLS-ABUNDANCE	40% A 50% B						2% A 30% B							
a. Size (diameter)	RANGE 3-35 FT. AVE 20 FT			RANGE FT. AVE FT			RANGE 4-20 FT. AVE 10 FT							
b. Formed by	Boulders, Bedrock, Falls						Same							
c. Shelter	Good - moderate						moderate							
18. RIFFLES-ABUNDANCE	P:R 3:2						1:3							
19. BOTTOM TYPE	Bedrock Boulders Rocks Rubble Gravel Sand Silt Mud			Bedrock Boulders Rocks Rubble Gravel Sand Silt Mud			Bedrock Boulders Rocks Rubble Gravel Sand Silt Mud							
a. Pools	30	5	25	23	13	2	2	10	5	33	35	15	2	0
b. Riffles	30	10	30	29	10	1		10	5	40	30	10	1	
20. SHADE CANOPY	30%						65							
a. Species	Dox, Fir, maple, alder, Dogwood						Alder + same							
21. AQUATIC VEGETATION	Common						Few							
a. Species	Delta, Nettle, Apatia moss, Algal						Same							
22. AQUATIC FOOD ORGANISMS	Common						Common							
a. Caddisflies	10 / ft ²						10 / ft ²							
b. Mayflies	25 "						20 "							
c. Stoneflies	1 "						2 "							
d. Diptera														
e. Beetles														
f. Other Insects														
g. Crustacea														
h. Others														
23. OVERALL AQUATIC FOODS	36 / ft ²						33 / ft ²							
24. FISHES PRESENT														
a. All Species Combined														
b. Species	RT-SH						RT-SH							
(1) Abundance														
(2) Ave. No. per 100 ft	20						12							
(3) Length Range	2-8		INCHES			INCHES	2-6		INCHES					
(4) Ave. Length	2.5		INCHES			INCHES	2.5		INCHES					

c. Species <u>N.S.</u>		LOWER	MIDDLE	UPPER
(1)				
(2) Ave. No. per 100 ft.				
(3) Length range				
(4) Ave. length				
d. Species 3				
(1) Abundance				
(2) Ave. No. per 100 ft.				
(3) Length range				
(4) Ave. length				
e. Species 4				
(1) Abundance				
(2) Ave. No. per 100 ft.				
(3) Length range				
(4) Ave. length				
25. REPRODUCTION				
a. Species 1	Good			Fair
b. Species 2				
c. Species 3				
d. Species 4				
26. FISH PREDATORS				
a. Birds <u>N.S.</u>				
b. Snakes				
27. CHARACTER OF WATERSHED	Mountainous			Mountainous
28. WATERSHED SOIL STABILITY	stable			stable
29. STREAM CHANNEL STABILITY				
30. STREAM FLOW CONDITION	low			low
31. STREAM GRADIENT	Slight			Slight
32. BARRIERS	B-1			B-2
33. DIVERSIONS <u>N.S.</u>				
34. SPRINGS	S-1, S-2 50°F, 50°F			
35. TRIBUTARIES	T-1 53°F .05 cfs T-2 53°F .05 cfs T-3 52°F 2.05 cfs T-4 (N.F.R.) 52°F 1.5 cfs			T-5 50°F 2.05 cfs T-6 (Bottle CK) 53°F 1 cfs
36. WATER QUALITY				
a. Turbidity	low			low
b. Nature of Turbidity				
c. Other Pollution				
37. ACCESSIBILITY	poor			poor
a. Car or Trail				
38. FISHING USE				
a. Est. Fisherman days		Per Year	Per Year	Per Year
b. Est. ave. hours fished per day				

SUMMARY-ENTIRE STREAM

39. STREAM CLASSIFICATION:	LOWER <i>Reach I</i>	MIDDLE	UPPER <i>Reach II</i>
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REMARKS:

40. STREAM CHARACTERISTICS AND REMARKS

41. FISH STOCKING PROGRAM

42. MANAGEMENT RECOMMENDATIONS:

Money for anadromous fishery w/ emphasis on habitat for summer stocked. Modify barriers to allow more utilization of upper Eazade the North Fork and Battle Ck for spawning. Plan and budget for FY 86 field stream surveys of above tributaries

42. DATE OF SURVEY *10/2/85*

43. SURVEY MADE BY *R. F. Ham*

STREAM MANAGEMENT ANALYSIS (May be filled out at Office)

1. TYPE OF FISHERY <i>cold</i>		2. PRIMARY SPECIES <i>RT-317</i>	
3. OVERALL PRESENT FISHERY RATING <i>Excellent</i>	2. Size of Stream <i>Small</i>	b. Fishing Use	
c. Other Uses	d. Productivity <i>Med-med.</i>	e. Habitat Condition <i>Excellent</i>	
4. IMPROVEMENT POTENTIAL <i>modify Barriers</i>			

5. FISH MANAGEMENT RECOMMENDATIONS:

- a. Chemical Rehabilitation
- b. Fishery Regulation
- c. Regulation of Other Activities
- d. Introduction of Exotic Fish Species
- e. Maintenance Stocking of Established Fish Species
- f. Others

6. HABITAT MANAGEMENT:

- a. Watershed Management
- b. Stream Protection Belt Management
- c. Water Quality Management
- d. Physical Corrective Measures
- e. Others

7. PUBLIC ACCESS AND LAND ACQUISITION

8. PUBLIC USE FACILITIES

7-7-80

USDA

E220 1480-53

B-1 is a 12-15' wide/cir
 bottom fall. ~~catch~~
 basin of summer-run SW;
 partial to winter-run SW.
 B-2 is a low flow partial
 basin create by obstack
 that w/ a 10' drop over 150
 and 15' deep pool below
 w/ a depth of SW obs'd.
 velocity between
 O - Class A pools

