State of California The Resources Agency

M e m o r a n d u m

To : FILES Date : September 15, 1989

From : **Department of Fish and Game --** Bill Cox

Subject : Fuller Creek, Sonoma County

On August 2 and 3, 1989 Ted Wooster and I electro-fished four stations on Fuller Creek tributary to the Wheatfield Fork of the Gualala River. Our intent was to collect baseline data to allow assessment of any impacts from the current logging upstream in the Fuller Creek watershed.

One electro-fishing station was located on the mainstem of Fuller Creek just upstream of the ford on the entrance road from the Hollowtree store and the county corporation yard. A second station was located on the South Fork of Fuller Creek upstream of the confluence of the North Fork. A third station was located on the South Fork just upstream of the falls (a complete barrier to the passage of Steelhead), and a forth station was located on the North Fork just upstream of the confluence with the South Fork.

In all the stations, except upstream of the falls on the South Fork, we found young-of-the-year and age 1+ steelhead, western roach, and three-spined stickleback. In the South Fork upstream of the North Fork we also found one prickly sculpin. Above the falls on the South Fork we found only resident, rainbow trout. Yellow legged frogs were abundant at all the stations as were a variety of aquatic invertebrates including freshwater snails, water striders, water pennies, stone flies, and caddis flies. Aquatic food production appeared to be very good.

Each station was sampled with a Smith-Root type XI electro-fisher using either the two-pass or three-pass removal method. Station description data, sampling data, and population estimates are included in the attached tables. No sampling data is included for the stickleback as they were too small to be captured effectively. The population estimates for the roach are not reliable as the roach were very abundant and many were too small to capture effectively. Most of the sampling effort went into the capture of steelhead/rainbow trout.

Throughout most of Fuller Creek the banks are relatively unstable and support very little riparian vegetation. Surveys in the early 1960's found a large number of logjams in the stream. Many of these jams apparently held trapped sediment deposits behind them. Most of the logjams have washed out or been removed and the trapped sediment in mid-channel has washed downstream. Much of the stream bank, however, still shows the signs of the trapped sediment which forms the unstable and sparsely vegetated bank.

The few remaining logs from the old jams now form the primary structure for fish habitat in the stream.

A significant feature of Fuller Creek is the old logging road which now provides the only access to the development in the Fuller Creek watershed. This road is built immediately adjacent to the bank of the creek and severely limits the potential for development of streamside vegetation. Maintenance of the road probably contributes significant quantities of fine sediment to the creek.

Water temperature in Fuller Creek was quite variable depending on solar exposure, depth, and rate of flow. The temperature in the mainstem sampling site was 64 degrees at noon, the South Fork site upstream of the North Fork was 66 degrees at 1500 hours, the South Fork above the falls was 66 degrees at 1530 hours, and the North Fork site was 61 degrees at 0930 hours. Some very exposed locations near the falls on the South Fork and on the mainstem at Annapolis Road ranged from 73 to 76 degrees in mid-afternoon. Locations with 73 degree water and 66 degree water could be very close together. Air temperature during the sampling period ranged from 62 degree at 0930 hours to 80 degrees at noon.

The steelhead population estimates, per 100 feet of stream, based on this survey are: 82.7 in the mainstem of Fuller Creek, 53.3 in the South Fork of Fuller Creek upstream of the North Fork confluence, 17.5 in the South Fork above the falls, and 82.2 in the North Fork just upstream of the South Fork confluence.

The captured steelhead fell into two distinct age classes, young-of-the-year and age H, as can be seen from the length frequency distribution. Some of the larger age 1+ fish could actually be age 24. The steelhead less than 100 mm fork length appear to be young-of-the-year, 100 mm is the normal separator between these to age classes. The percent of steelhead in the age 1+ class for each sampling site were: 9.8% in the mainstem of Fuller Creek, 7.5% in the South Fork of Fuller Creek upstream of the North Fork confluence, 15.1% in the South Fork above the falls, and 12.5% in the North Fork just upstream of the South Fork confluence.

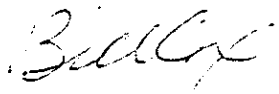
It is interesting to note that the sampling site in the South Fork upstream of the falls held the fewest fish per unit length of stream and the highest percentage of age 14 fish. From the length frequency distribution it can also be seen that the average size of the young-of-the-year fish was significantly smaller than in the other sampling sites. These differences may reflect a difference between resident rainbow trout and steelhead as well as a difference in the quality and quantity of habitat available to the fish.

These population data represent only the specific site sampled which may, or may not, be representative of the entire reach. It is also important to point out that the young steelhead were found mostly in close association with structural elements (usually large pieces of wood) which were found at irregular intervals along the stream. Most of the space between these structural elements were shallow, unshaded, and populated mainly by the western roach and stickleback. Any particular location could have more or less habitat than the sites chose for sampling.

Because of the importance of large woody debris as fish habitat (there is virtually no other fish habitat in Fuller Creek) and because of the benefits provided by the large woody debris in slowing the downstream movement of the trapped sediments and stabilizing the banks of the stream, very careful consideration should be given to the potential impacts of removing any "log jams".

On August 21 I visited the South Fork of Fuller Creek upstream of the falls with Jack Monschke, a "stream restoration person" hired by R and J Timber. My impression was that Mr. Monschke had some experience with revegetation and erosion control, but had no experience with fish or fish habitat. He also admitted to no local experience: all his experience was much further to the north in watersheds with much different soil and stream types. Several small "jams" in the uppermost part of the watershed had been modified to reduce bank erosion. I did not think that there was any significant benefit to this work, but neither did I think that any harm had been done. Further downstream, at approximately 0.6 miles above the falls. Mr. Monschke had completely removed a substantial logjam which had impounded 5 or 6 feet of sediment. He had tried to use the removed logs to restabilize the sediment, train the stream, and create some kind of fish habitat. Unfortunately much of the trapped sediment was fine material which will now wash downstream with the first big storms of winter. Monschke knew that he had made a big mistake in removing this logjam. I advised him to remove no more log jams.

I believe that this recently released fine sediment could move downstream and destroy the habitat for the resident trout above the falls. Habitat for steelhead downstream of the falls is also likely to be seriously impacted. Monschke's work was supposed to reduce the impact of the current logging and correct some problems from past logging, instead it may be a significant problem in itself and is likely to mask any problems caused by the current logging.



Bill Cox
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FULLER CREEK, SONOMA COUNTY ELECTRO-FISHING SURVEY, AUGUST 2 and 3, 1989

STEELHEAD / RAINBOW TROUT LENGTH FREQUENCY DISTRIBUTION

Length (mm)	FULLER	S.F. FULLER U/S N.F.	S.F. FULLER U/S FALLS	N.F. FULLER
<40				
40 – 49		1	9	
50 – 59	13	11	9	21
60 – 69	15	18	8	18
70 – 79	10	16		17
80 – 89	7	2		4
90 – 99	1	1		3
100 – 109				
110 – 119	2		1	4
120 – 129	2	1	1	2
130 – 139		2	1	
140 – 149		1		2
150 – 159	1		2	1
>159				
Total	51	53	31	72

ELECTRO-FISHING SURVEY RESULTS FULLER CREEK, TRIBUTARY TO WHEATFIELD FORK, GUALALA RIVER, SONOMA COUNTY
August 2 and 3, 1989 (station dimensions in feet)

Stream: **FULLER** — just above ford on main entrance road from Hollowtree
Species: **STEELHEAD**

Removal Pattern: 25 18 8
Total Catch = 51
Population Estimate = 62

Pop Est. Standard Err = 8.599
Lower Conf Interval = 51.000
Upper Conf Interval = 79.196

Station Length = 75
Population Estimate per 100 feet = 82.7
Mean Width = 11.9
Surface Area = 892.5
Population Estimate per 1000 square feet = 69.5
Mean Depth = .42
Station Volume = 374.7
Population Estimate per 1000 cubic feet = 165.5

Stream: **FULLER** — just above ford on main entrance, road from Hollowtree
Species: **WESTERN ROACH**

Removal Pattern: 35 26 5
Total Catch = 66
Population Estimate = 72

Pop Est Standard Err = 4.659
Lower Conf Interval = 66.000
Upper Conf Interval = 81.290

Station Length = 75
Population Estimate per 100 feet = 96
Mean Width = 11.9
Surface Area = 892.2
Population Estimate per 1000 square feet = 80.7
Mean Depth = .42
Station Volume = 374.7
Population Estimate per 1000 cubic feet = 192.1

Stream: **S.F. FULLER** — upstream of confluence with N.F.
Species: **STEELHEAD**

Removal Pattern: 21 24 8
Total Catch = 53
Population Estimate = 73

Pop Est Standard Err = 15.889
Lower Conf Interval = 53.000
Upper Conf Interval = 104.666

Station Length = 137
Population Estimate per 100 feet = 53.3
Mean Width = 7.3
Surface Area = 1000.1
Population Estimate per 1000 square feet = 73
Mean Depth = .23
Station Volume = 230
Population Estimate per 1000 cubic feet = 317.4

Stream: **S.F. FULLER** — upstream of confluence with N.F.
Species: **WESTERN ROACH**

Removal Pattern: 52 23 0
Total Catch = 75
Population Estimate = 76

Pop Est. Standard Err = 1.414
Lower Conf Interval = 75.000
Upper Conf Interval = 78.817

Station Length = 137
Population Estimate per 100 feet = 55.5
Mean Width = 7.3
Surface Area = 1000.1
Population Estimate per 1000 square feet 76
Mean Depth = .23
Station Volume = 230
Population Estimate per 1000 cubic feet 330.4

Stream: **S. F. FULLER** — just above falls
Species: **RESIDENT RAINBOW TROUT**

Removal Pattern: 22 9

Total Catch	= 31	
Population Estimate	= 35	
Pop Est Standard Err	= 4.698	
Lower Conf Interval	= 31.000	
Upper Conf Interval	= 44.546	
Station Length	= 200	
Population Estimate per 100 feet		= 17.5
Mean Width	= 4.25	
Surface Area	= 850	
Population Estimate per 1000 square feet		= 41.2
Mean Depth	= 0.24	
Station Volume	= 204	
Population Estimate per 1000 cubic feet		= 171.7

Stream: **N.F. FULLER** — just upstream of confluence with S.F.
Species: **STEELHEAD**

Removal Pattern: 60 12
Total Catch = 72
Population Estimate = 74

Pop Est Standard Err = 2.297
Lower Conf Interval = 72.000
Upper Conf Interval = 78.579

Station Length = 90
Population Estimate per 100 feet = 82.2
Mean Width = 9.2
Surface Area = 828
Population Estimate per 1000 square feet = 89.3
Mean Depth = .29
Station Volume = 240.1
Population Estimate per 1000 cubic feet = 307.9

Stream: **N.F. FULLER** — just upstream of confluence with S.F.
Species: **WESTERN ROACH**

Removal Pattern: 16 36
Total Catch = 52
Population: Estimate = 260

Pop Est Standard Err = 600.955
Lower Conf Interval = 52.000
Upper Conf Interval = 1,443.882

Station Length = 90
Population Estimate per 100 feet = 290
Mean Width = 9.2
Surface Area = 825
Population Estimate per 1000 square feet = 315
Mean Depth = .29
Station Volume = 240.1
Population Estimate per 1000 cubic feet = 1086

Run terminated at population estimate equal to 5 times the total catch.
Cause: irregular or non-descending removal pattern. Results should not be considered reliable.