SOUTH BRANCH OF THE NORTH FORK ELK RIVER

INTRODUCTION

A physical fish habitat inventory was completed on the South Branch of the North Fork Elk River, starting at the confluence with the North Fork Elk River, on July 2 through 11, 1990 by John Fredrick and Tony Sartori, California Conservation Corps (CCC), Technical Advisors. The objective of this survey was to collect baseline data as to the habitat available to anadromous salmonids and determine if stream restoration/enhancement work is warranted.

WATERSHED OVERVIEW

The South Branch of the North Fork Elk River is a tributary to the North Fork Elk River, a tributary to Elk River, a tributary to Humboldt Bay, in Humboldt County, California (Figure 1). The legal description at the confluence of the South Branch of the North Fork Elk River with the North Fork Elk River is T4N R1E S35. The total length of the stream surveyed is 7483 feet, with 466 feet of side channel. The total length of the stream is 1.3 miles. The total watershed area is 2.09 square miles. The survey was ended due to an increase in the gradient of the stream, possibly the end of the anadromous fish habitat. The South Branch of the North Fork Elk River is a first order stream.

The watershed is a second growth redwood forest, under the ownership of the Pacific Lumber Company and is managed for timber production. Vehicle access from the North Fork Elk River side is along the Wrigley Road. The bridge that crosses the South Branch of the North Fork Elk River is collapsed and not passable with a vehicle. Vehicle access is available through Yager Camp on Road 10 which runs along the ridge of the North Fork Elk River.

METHODS

The South Branch of the North Fork Elk River was habitat typed using the 24 habitat types classification (Mc Cain et al). The methodology follows the draft California Stream Restoration Manual (Flosi et al. In preparation). Channel typing was conducted according to the classification system of Rosgen (1985). Electrofishing was conducted to determine species composition and

distribution.

The minimum length of measured habitat unit was as long as the mean channel wetted width. Channel measurements were accomplished with range finders and tape measures. Habitat type measurements included mean length, mean width, mean depth, and maximum depth (to the nearest 0.1 foot). Depth of the pool tail crest at each pool habitat unit was measured at the thalweg.

A shelter rating was calculated for each habitat unit by multiplying shelter value and percent cover. A shelter value of 1 (low), 2 (medium), or 3 (high) was given according to the shelter complexity. An estimate on percent cover within each habitat unit was recorded. At each habitat unit 100% of the cover was classified into nine cover types.

The dominant and sub-dominant substrate was estimated using seven size classes of substrate composition and recorded for all habitat units. Embeddedness was optically estimated at the tail out of pool habitat units as 0 - 25% (value 1), 26 - 50% (value 2), 51 - 75% (value 3), 76 - 100% (value 4).

An estimate of the percent canopy was recorded for each habitat unit. The percent right and left bank covered with vegetation, and the dominant vegetation sub-type was estimated.

Time and temperature were recorded at every tenth habitat unit.

RESULTS

* ALL TABLES AND GRAPHS ARE LOCATED IN THE BACK OF THIS REPORT *

Nineteen of the 24 habitat types were identified, including one unit that was dry. The physical habitat data is summarized in Table 1A. The most frequent habitat types by percent occurrence were low gradient riffles 20.05%, lateral scour pools - log 17.34%, step runs 16.26%, and plunge pools 14.63% (Graph 1).

Table 2A summarizes the riffle, flatwater, and pool habitat types. The percent occurrence for these habitat types is pools 52.03%, flatwater 25.75%, and riffle 21.95% (Graph 2). Pool habitat types make up 39.34% of the percent total length. Flatwater habitat types make up 39% of the percent total length. Riffles make up 20.98% the percent total length (Graph 3).

Table 3A summarizes the pool habitat types. Scour pools occurred most often at 73.96% and comprised 77.5% of the total length (Graph 4). Scour pools also had the highest mean shelter rating at 63.35, backwater pools at 56.61, and main channel pools at 52.89.

Table 4A is a summary of maximum pool depths by pool habitat types. The maximum depth for 148 of the 192 pools was less than 2 feet. Three of the pools had a maximum depth of over 4 feet.
Table 5A is a summary of the dominant substrate by habitat type. Gravel was the dominant substrate in 129 or 35% of the units and sand was dominant in 116 or 31.5%.

Table 6A summarizes mean percent cover by habitat type. The majority of the cover consisted of boulders. Small and large woody debris was lacking as cover in most of the pools.

The South Branch of the North Fork Elk River is a B channel type for approximately 6835 feet. It then changes into an A3 channel type. From the confluence of the South Branch of the North Fork Elk River with the North Fork Elk River upstream approximately 907 feet is a B2 channel type. The stream becomes a B3 channel for approximately the next 5930 feet.

Table 1A summarizes mean percent right and left bank cover and mean percent canopy per habitat type. For the entire stream reach surveyed, the mean percent right bank cover was 65%. The mean percent left bank cover was 66%. The dominant streambank composition was grass 33.5% of the units, coniferous trees, primarily logs, 20.6%, brush 20.2%, bare soil 11.2%, bedrock/rock 7.7%, and deciduous trees 6.8%. The mean percent canopy was 61%.

Pool-tail embeddedness was estimated for 190 of the pools. Sixty or 31.6% rated 2, 53 or 27.9% rated 1, 53 or 27.9% rated 3, and 24 or 12.6% rated 4.

Air temperature ranged from 63 to 82 degrees fahrenheit. Water temperature ranged from 54 to 62 degrees fahrenheit.

The following problem sites were noted. All the distances are approximate and taken from the confluence of the South Branch of the North Fork Elk River with the North Fork Elk River:

* 482' Bridge collapsed - not a barrier to fish migration.

* 884' Natural log weir creating a 4' jump with a jump pool below of 2.2' maximum depth.

* 1195' Debris accumulation approximately 25'W X 5'L X 5'H. Gravel accumulated behind approximately 25'W X 100'L X 4"H.

* 1404' Debris accumulation 15'W X 3'L X 2'H.

* 1793' Debris accumulation 15'W X 10'L X 5'H.

* 2100' Natural log weir creating a 4 1/2' jump with a jump pool below of 2.5' maximum depth.

* 2716' Natural log weir creating a 3' jump with a jump pool below of 1.7' maximum depth.

* 2988' Slide on the left bank. Debris accumulation 25'L X 13'W X 6'H. Gravel accumulated behind 13'W X 70'L X3'H.

* 3259' Natural log weir creating a 4' jump with a jump pool below of 3.9' maximum depth.

* 3432' Right bank erosion.

• 3517' Right bank erosion.
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* 3867' Right bank erosion.

* 4236' Bank erosion.

* 4358' Right bank erosion.

* 4842' Left bank erosion.

* 5000' Right bank erosion.

* 5177' Debris accumulation 10'L X 25'W X 5'H. Gravel accumulation 40'L X 12'W X 3'H.

* 5510' Right bank erosion.

* 6144' 5' falls underneath stringer bridge. Possible barrier.

* 6346' Debris accumulation contributing to left bank erosion.

* 6400' Debris accumulation contributing to left bank erosion.

* 6522' Both banks slumping into creek.

* 6679' Debris accumulation 30'W X 15'L X 5'H contributing to left bank erosion. Possible barrier.

* 6830' Debris accumulation contributing to right bank erosion.

* 6986' Natural log weir 3' high retaining debris.

ELECTROFISHING RESULTS

Electrofishing was completed on August 8, 1990 by John Fredrick and Tony Sartori (CCC). Six habitat units were sampled. The results are as follows:

The first unit was a plunge pool approximately 795 feet from the confluence with the North Fork Elk River. The fish found consisted of 1 coho salmon 77 mm, and 10 steelhead trout ranging from 58 to 150 mm.

The second unit was a plunge pool approximately 1283 feet from the confluence of the North Fork Elk River. A total of 3 steelhead from 51 to 160 mm were found.

The third unit was a plunge pool approximately 2097 feet from the confluence of the North Fork Elk River. One steelhead 116 mm was found.

The fourth unit was a lateral scour pool log approximately 2287 feet from the confluence of the North Fork Elk River. Three steelhead ranging from 65 to 125 mm were found.

The fifth unit was a plunge pool approximately 2887 feet from the confluence of the North Fork Elk River. Four steelhead from 95 to 163 mm were found.

The sixth unit was a mid-channel pool approximately 3059 feet from the confluence of the North Fork Elk River. One steelhead 89 mm was found.

RECOMMENDATIONS

1) The South Branch of the North Fork Elk River should be managed as an anadromous, natural production stream.

2) Modify debris accumulations and jumps created by natural log weirs. Remove only the wood necessary to provide fish passage.

3) Stabilize bank erosion sites. Include revegetation where necessary.

4) Increase woody cover in the pools. Cover in the pools is composed primarily of boulders. There is a lack of woody debris to provide cover throughout this stream.