# BRIDGE CREEK

## INTRODUCTION

A physical fish habitat inventory was completed on Bridge Creek on July 2, 1990 by Gregg Moody, Michele Long, Tony Sartori, and John Fredrick, 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

Bridge Creek is a tributary to the North Fork Elk River, a tributary to Humboldt Bay, in Humboldt County, California (Figure 1). The legal description at the confluence with the North Fork Elk River is T4N R1E S33. The total length of the stream surveyed was 1944.5 feet. The survey was stopped due to a large log debris accumulation covering the stream bed for several hundred feet. The total length of the stream measured from a USGS quad is 1.8 miles. The watershed area of Bridge Creek is 2.31 sq. miles. It is a first order stream.

The entire watershed a second growth redwood forest, under the ownership of the Pacific Lumber Company and is managed for timber production. There are no roads paralleling the stream. The main haul road paralleling the North Fork Elk River crosses Bridge Creek approximately 550 ft. from its confluence.

## METHODS

Bridge Creek 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 *

Twelve of the 24 habitat types were identified, including six units that were dry. The physical habitat data is summarized in Table 1A. The most frequent habitat types by percent occurrence were low gradient riffles 14%, runs 16%, mid channel pools 12% and secondary channel pools 14% (Graph 1).

Table 2A summarizes the riffle, flatwater, and pool habitat types. Pools make up 52% of the habitat types by percent occurrence, and 43% of the total length. Flatwater habitat types make up 22% by percent occurrence, and 40% of the total length. Riffles were 14% by percent occurrence and 8.5% of the total length (Graph 2 and 3).

Table 3A summarizes the pool habitat types. Main channel pools occurred most often at 38.5% and comprised almost 50% of the total length (Graph 4). Main channel pools had the highest mean shelter rating at 148.5, backwater pools at 121.25, and scour pools at 55.63.

Table 4A is a summary of maximum pool depths by pool habitat types. The maximum depth for 14 of the 26 pools was between 1 and 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. Silt/clay was the dominant substrate in 54.5% of the units, sand was dominant in 16% and gravel in 14%.

Table 6A summarizes mean percent cover by habitat type. The majority of the cover consisted of small and large wood.

Bridge Creek is a B5 channel type.

Streambank stability was good. 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 68.4%. The mean percent left bank cover was 65.6%. The streambank composition consisted of primarily bare soil, grasses, and bedrock. The mean percent canopy was 73.4%.

For the 26 pools the pool tail embeddedness was estimated. Three pool tail outs or 11.5% had a value of 1, 3 pool tail outs had a value of 2, 18 pool tail outs or 69.2% had a value of 3, and 2 pool tail outs or 7.7% had a value of 4.

Air temperature ranged from 59 to 64 degrees fahrenheit. Water temperature ranged from 54 to 57 degrees fahrenheit.

Within the 1944 feet surveyed are 10 log debris accumulations. Many had gravel accumulations behind them creating subsurface flow. The road crossing consists of a four foot diameter, 65 foot long culvert.

## ELECTROFISHING RESULTS

Electrofishing was completed on August 6, 1990 by Gary Flosi (DFG), Gregg Moody and Steve Holzerland (CCC). Three pool habitats were sampled. The results are as follows:

The first unit was a lateral scour pool - bedrock below the first log debris accumulation, approximately 21 feet from the confluence with the North Fork Elk River. The fish found consisted of 23 coho salmon ranging from 42 to 97 mm, 3 coastal cutthroat trout ranging from 40 to 45 mm, and 20 stickleback.

The second unit was a trench pool, below the culvert, but above the first two log debris accumulations, approximately 270 feet from the confluence with the North Fork Elk River. A total of nine coastal cutthroat trout ranging from 42 to 52 mm were found.

The third unit was a mid channel pool above the culvert, approximately 736 feet from the confluence with the North Fork Elk River. A total of 8 coastal cutthroat trout ranging from 40 to 57 mm were found.

## RECOMMENDATIONS

Bridge Creek should be managed as an anadromous, natural production stream.

The log debris accumulations should be modified to allow for fish passage. This should be done carefully, leaving as much of the woody debris cover as possible for the coho and coastal cutthroat. This must be done over a period of years to allow the silt and clay accumulated behind the log debris to wash out a little at a time, lessening the impact of the sediment downstream.