TWIN CREEK

STREAM INVENTORY REPORT

INTRODUCTION

A physical fish habitat inventory was completed on Twin Creek, starting at the confluence with the Eel River, on October 25 & 26, 1990 by Steve Holzerland, and Greg Moody, California Conservation Corps (CCC), Technical Advisors. The purpose of this survey was to collect baseline data of the habitat available to anadromous salmonids and determine if stream restoration / enhancement work is warranted. Electrofishing was completed on October 31, 1990 to determine species composition and distribution.

WATERSHED OVERVIEW

Twin Creek is a tributary to the Eel River, in Humboldt County, California (Figure 1). The legal description at the confluence of the Eel River is T1N R1E S21. The total length of the stream surveyed was 5911 feet, with 19 feet of side channel. The total length of blue line stream according the USGS quadrangle is 2.35 miles. The total watershed area is 4.15 square miles. Additional anadromous fish habitat exists above where this survey ends. Twin Creek 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 is by taking the Stafford Road exit from Highway 101 and going west to the locked PALCO gate. The road crosses Twin Creek approximately 900 feet from the confluence of the Eel River.

METHODS

The survey methodology follows the California Salmonid Stream Habitat Restoration Manual (Flosi and Reynolds). Twin Creek was habitat typed using the 24 habitat types classification (Mc Cain et al). In preparation). Channel typing was conducted according to the classification system of Rosgen (1985).

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 0 (no shelter), 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 *

Table 1 summarizes the riffle, flatwater, and pool habitat types. By percent occurrence, riffles make up 44.12%, pools make up 43.38%, and flatwater habitat types make up 11.76% (Graph 1). Riffle habitat types make up 64.99% of the percent total length, pools 23.08%, flatwater habitat types make up 9.40% (Graph 2).

Seventeen of the 24 habitat types were identified. One unit was dry. The physical habitat data is summarized in Table 2. The most frequent habitat types by percent occurrence were high gradient riffles 21.32%, low gradient riffles 16.91%, plunge pools 12.50%, step runs 10.29% (Graph 3).

Table 3 summarizes the pool habitat types. Scour pools occurred most often at 62.71% and comprised 44.95% of the total length (Graph 4). Scour pools had the highest mean shelter rating at 72.16, backwater pools at 56.67, and main channel pools at 55.89.

Table 4 is a summary of maximum pool depths by pool habitat types. The maximum depth for 49 of the 59 pools was less than 2 feet.

Table 5 is a summary of the dominant substrate by habitat type.

Boulder was the dominant substrate in 87 of the 136 habitat units. Nineteen of the 23 low gradient riffles had a dominant substrate of boulder.

Table 6 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.

Twin Creek is a A2 channel type throughout the survey reach. Table 2 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 52.7%. The mean percent left bank cover was 50.25%. The stream bank composition consisted of 21.3% rock/bedrock, 7.0% coniferous trees (primarily downed trees or logs), 15.0% grasses, 11.0% deciduous trees, 31.0% brush, and 14.7% bare soil. The mean percent canopy was 46.5%.

For 52 of the pools, the pool tail embeddedness was estimated. Twenty-eight of the pool tail outs, or 53.8%, had a value of 4. Seventeen of the pool tail outs or 32.7% had a value of 3.

Air temperature ranged from 53 to 62 degrees fahrenheit. Water temperature ranged from 50 to 52 degrees fahrenheit.

The following landmarks and possible problem sites were noted. All the distances are approximate and taken from the confluence of Twin Creek with the Eel River.

* 390' Log debris accumulation 15' wide x 12' long.

* 900' Bridge crossing. Erosion on both banks.

* 1100' Waterfall 6.5' high.

* 1860' Bank erosion 14' high x 20' long.

* 2600' Bank erosion 30' long x 15' high.

* 3300' Tributary enters from the left bank.

* 5911' End of survey. Log debris accumulation 60' wide x 20 ' high x 40' long.

ELECTROFISHING RESULTS

Electrofishing was completed on October 31, 1990 by Greg Moody and Steve Holzerland (CCC). Three habitat units were sampled. The results are as follows:

The first unit was a lateral scour pool - log approximately 680 feet from the confluence of the Eel River. The fish found consisted of 3 steelhead ranging from 126 to 160 mm.

The second unit was at the base of first cascade approximately 1070 feet from the confluence of the Eel River. A total of 12 steelhead from 55 to 110 mm were found.

The third unit was a plunge pool approximately 1140 feet from the confluence of the Eel River. The fish found consisted of 3 steelhead ranging from 81 to 160 mm were found.

RECOMMENDATIONS

1) Twin Creek should be managed as an anadromous, natural production stream.

2) Stabilize the bank erosion at sites identified during the survey.

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

4) Twin Creek is lacking in pool habitat for summer rearing of steelhead. Pools make up 43.38% of the habitat by percent occurrence and 23.08% of the total length of the stream surveyed. Generally the A2 stream type is inappropriate for habitat structures due to the high gradient and boulder substrate. To create pool habitat, sites will need to be cautiously selected and the structures will need to be carefully engineered.