STREAM INVENTORY REPORT

SLIDE CREEK

INTRODUCTION

A stream inventory was conducted during the summer of 1992 on Slide Creek to assess habitat conditions for anadromous salmonids. The inventory was conducted in two parts: habitat inventory and biological inventory. The objective of the habitat inventory was to document the habitat available to anadromous salmonids in Slide Creek. The objective of the biological inventory was to document the salmonid species present and their distribution. After analysis of the information and data gathered, stream restoration and enhancement recommendations are presented.

There is no known record of adult spawning surveys having been conducted on Slide Creek. The objective of this report is to document the current habitat conditions, and recommend options for the potential enhancement of habitat for chinook salmon, coho salmon and steelhead trout.

WATERSHED OVERVIEW

Slide Creek is tributary to Bull Creek, tributary to the South Fork Eel River, tributary to the Eel River, located in Humboldt County, California (Figure 1). Slide Creek's legal description at the confluence with Bull Creek is T2S R1E S11. Its location is 40°18'22" N. latitude and 124°01'46" W. longitude. Slide Creek is a first order stream and has approximately 1.5 miles of blue line stream, according to the USGS Bull Creek 7.5 minute quadrangle. Slide Creek drains a watershed of approximately 1.2 square miles. Elevations range from about 720 feet at the mouth of the creek to 2,400 feet in the headwater areas. Redwood and hardwood forest dominates the watershed. The watershed is owned by the State of California and is managed by Humboldt Redwoods State Parks. Vehicle access exists from U.S. Highway 101 at Dyerville, via the Bull Creek Road. At marker B. C. 120+16, follow the gully down to Bull Creek, and walk downstream to the first tributary on the left.

METHODS

The habitat inventory conducted in Slide Creek follows the methodology presented in the California Salmonid Stream Habitat Restoration Manual (Flosi and Reynolds, 1991). The California Conservation Corps (CCC) and contract seasonal Technical Advisors that conducted the inventory were trained in standardized habitat

inventory methods by the California Department of Fish and Game (DFG). Slide Creek personnel were trained in May and June, 1991, by Gary Flosi and Scott Downie. This inventory was conducted by two person teams.

HABITAT INVENTORY COMPONENTS

A standardized habitat inventory form has been developed for use in California stream surveys and can be found in the California Salmonid Stream Habitat Restoration Manual. This form was used in Slide Creek to record measurements and observations. There are nine components to the inventory form. For specific information on the methods used, see the Upper Bull Creek report.

BIOLOGICAL INVENTORY

Biological sampling during stream inventory is used to determine fish species and their distribution in the stream. Biological inventory is conducted using one or more of three basic methods: 1) stream bank observation, 2) underwater observation, 3) electrofishing. These sampling techniques are discussed in the California Salmonid Stream Habitat Restoration Manual.

Biological inventory was conducted in Slide Creek to document the fish species composition and distribution. Three sites were electrofished in Slide Creek using one Smith Root Model 12 electrofisher. Each site was end-blocked with nets to contain the fish within the sample reach. Fish from each site were counted by species, measured, and returned to the stream.

DATA ANALYSIS

Data from the habitat inventory form are entered into Runtime, a dBASE 4.1 data entry program developed by the Department of Fish and Game. This program processes and summarizes the data.

The Runtime program produces the following summary tables:

- Riffle, flatwater, and pool habitat types
- Habitat types and measured parameters
- Pool types
- Maximum pool depths by habitat types
- Dominant substrates by habitat types
- Mean percent shelter by habitat types

Graphics are produced from the tables using Lotus 1,2,3. Graphics developed for Slide Creek include:

- Riffle, flatwater, pool habitats by percent occurrence
- Riffle, flatwater, pool habitats by total length
- Total habitat types by percent occurrence
- Pool types by percent occurrence
- Total pools by maximum depths
- Embeddedness
- Pool cover by cover type
- Dominant substrate in low gradient riffles
- Percent canopy
- Bank composition by composition type

HABITAT INVENTORY RESULTS

* ALL TABLES AND GRAPHS ARE LOCATED AT THE END OF THE REPORT *

The habitat inventory of May 18 & 19, 1992, was conducted by Tony Sartori, Chris Coyle, and Shea Monroe (CCC). The total length of the stream surveyed was 3,349 feet, with an additional 190 feet of side channel.

Flow was measured at the bottom of the survey reach with a Marsh-McBirney Model 2000 flowmeter at 0.74 cfs on June 1, 1992.

Slide Creek is a A3 channel type for the entire 3,349 feet of stream reach surveyed. A3 channels are high gradient streams (4.0-10%), have steep, erodible watersheds, coarse grained channels and a high sediment supply.

Water temperatures ranged from 54 to 57 degrees fahrenheit. Air temperatures ranged from 58 to 75 degrees fahrenheit.

Table 1 summarizes the Level II riffle, flatwater, and pool habitat types. By percent **occurrence**, riffles made up 63.6%, flatwater types 22.7%, and pools 13.6% (Graph 1). Riffle habitat types made up 81.6% of the total survey **length**, flatwater 14.0%, and pools 4.4% (Graph 2).

Seven Level IV habitat types were identified. The data are summarized in Table 2. The most frequent habitat types by percent **occurrence** were high gradient riffles, 38.6%; and low gradient riffles, 18.2% (Graph 3). By percent total **length**, high gradient riffles made up 50.4%, and low gradient riffles 25.7%

Table 2).

Twelve pools were identified (Table 3). Scour pools were most often encountered at 66.7%, and comprised 53.2% of the total length of pools (Graph 4).

Table 4 is a summary of maximum pool depths by pool habitat types. Depth is an indicator of pool quality. Eight of the 12 pools (67%) had a depth of less than two feet (Graph 5).

The depth of cobble embeddedness was estimated at pool tail-outs. Of the 12 pool tail-outs measured, zero had a value of 1 (0.1%); 6 had a value of 2 (50.0%); 5 had a value of 3 (41.7%); and 1 had a value of 4 (8.2%). On this scale, a value of one is the best for fisheries (Graph 6).

A shelter rating was calculated for each habitat unit and expressed as a mean value for each habitat type within the survey using a scale of 0-300. Riffle habitat types had the highest shelter rating at 85.2. Pool habitats followed with a rating of 50.0 (Table 1). Of the pool types, the scour pools had the highest mean shelter rating at 52.5, and main channel pools rated 45.0 (Table 3).

Table 5 summarizes mean percent cover by habitat type. Boulders are the dominant cover type in Slide Creek and are extensive. White water was the next most common cover type. Graph 7 describes the pool cover in Slide Creek.

Table 6 summarizes the dominant substrate by habitat type. Gravel was the dominant substrate observed in 11 of the 16 low gradient riffles (68.8%). Boulder was the next most frequently observed dominant substrate type, and occurred in 18.8% of the low gradient riffles (Graph 8).

Eleven percent of the survey reach lacked shade canopy. Of the 89% of the stream covered with canopy, 97% was composed of deciduous trees, and 3% was composed of coniferous trees. Graph 9 describes the canopy in Slide Creek.

Table 2 summarizes the mean percentage of the right and left stream banks covered with vegetation by habitat type. For the stream reach surveyed, the mean percent right bank vegetated was 79.0%. The mean percent left bank vegetated was 79.8%. The dominant elements composing the structure of the stream banks consisted of 0.6% bedrock, 5.1% boulder, 2.8% bare soil, 6.8% grass, 2.3% brush. Additionally, 78.4% of the banks were covered

with deciduous trees, and 4.0% with coniferous trees, including downed trees, logs, and root wads (Graph 10).

BIOLOGICAL INVENTORY RESULTS

Three electrofishing sites were sampled on Slide Creek. The objective was to identify fish species and distribution. The units were sampled on July 7 & 8, 1992, by Chris Coyle and Craig Mesman (CCC). Each unit was end-blocked with nets to contain the fish within the sample reach. Three passes were conducted at each site, fork lengths measured and recorded, and the fish returned to the stream.

The first site sampled was a combination step run, run, boulder formed lateral scour pool, and high gradient riffle. Nine steelhead were sampled, ranging from 38 to 50mm.

The second site was habitat unit 056, a combination run and high gradient riffle, approximately 2,066 feet above the creek mouth. This site had an area of 184.8 sq ft, and a volume of 92.4 cu ft. Six steelhead were sampled. They ranged from 39 to 79mm.

The third site sampled was a combination run, plunge pool, and high gradient riffle, approximately 45' above the slide at 3349'. No fish were found.

DISCUSSION

The A3 channel type is unsuitable for most types of instream enhancement structures due to the high energy of the stream and the unstable stream banks.

The water temperatures recorded on the survey days May 18-19, 1992 ranged from 54° F to 57° F. Air temperatures ranged from 58° F to 75° F. This is a very good water temperature regime for salmonids. However, to make any further conclusions, temperatures would need to be monitored throughout the warm summer months, and more extensive biological sampling conducted.

Riffle habitat types comprised 81.6% of the total **length** of this survey, flatwater 14.0%, and pools only 4.4%. The pools are relatively shallow with only 4 of the 12 pools having a maximum depth greater than 2 feet. However, in coastal coho and steelhead streams, it is generally desirable to have primary pools comprise approximately 50% of total habitat. Therefore,

installing structures that will increase or deepen pool habitat is recommended.

Six of the 12 pool tail-outs measured had embeddedness ratings of 3 or 4. Zero had a 1 rating. Embeddedness in excess of 26%, a rating of 2 or more, is considered poor quality for fish habitat. In Slide Creek, sediment sources should be mapped and rated according to their potential sediment yields, and control measures taken.

The mean shelter rating for pools was moderate with a rating of 50.0. The shelter rating in the flatwater habitats was slightly lower at 47.3. However, a pool shelter rating of approximately 100 is desirable. The cover that now exists is being provided primarily by boulders and white water in all habitat types.

Eleven of the 16 low gradient riffles had gravel as the dominant substrate. This is generally considered good for spawning salmonids.

The mean percent canopy for the stream was 89%. This is a relatively high percentage of canopy, since 80 percent is generally considered optimum in these north coast streams. In areas of stream bank erosion, planting endemic species of coniferous and deciduous trees, in conjunction with bank stabilization, is recommended.

RECOMMENDATIONS

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

2)Inventory and map sources of stream bank erosion, and prioritize them according to present and potential sediment yield. Identified sites should then be treated to reduce the amount of fine sediments entering the stream.

3) Where feasible, design and engineer pool enhancement structures to increase the number of pools. This must be done where the banks are stable or in conjunction with stream bank armor to prevent erosion.

PROBLEM SITES AND LANDMARKS

The following landmarks and possible problem sites were noted. All the distances are approximate and taken from the beginning of the survey reach.

Slide Creek

0' Begin survey at confluence with Bull Creek. Channel type is a A3 for the entire survey reach.

767' Right bank erosion, revegetated with grass.

1786' Channel has changed course and is scouring against unprotected left bank. Resulting erosion is 50' high x 92' long, and contributing fines into the channel.

2741' Tributary enters from the right bank.

3239' Tributary enters from the left bank. Left bank erosion 50' high x 100' long.

3260' Log debris accumulation (LDA) 10' long x 4' high; possible barrier.

3349' Right and left bank active slides 50' high x 630' long. Major damage: fines and debris in channel, loss of canopy, unstable slopes. Stream has not yet cut down to original bed. Gradient steepens to a cascade. End of survey reach.