STREAM INVENTORY REPORT

SWIFT CREEK

INTRODUCTION

A stream inventory was conducted during the summer of 1992 on Swift Creek to assess habitat conditions for anadromous salmonids. Stream inventories are 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 Swift 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 Swift 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

Swift Creek is tributary to Butte Creek, tributary to the Little Van Duzen River (South Fork Van Duzen), tributary to the Van Duzen River, tributary to the Eel River, located in Humboldt County, California. Swift Creek's legal description at the confluence with the Little Van Duzen River is T1N R4E S25. Its location is 40°25'46" N. latitude and 123°40'18" W. longitude. Swift Creek is a first order stream and has approximately 2.3 miles of blue line stream, according to the USGS Larabee Valley 7.5 minute quadrangle. Swift Creek drains a watershed of approximately 1.4 square miles. Elevations range from about 2,200 feet at the mouth of the creek to 3,600 feet in the headwater areas. Grass, oak, and Douglas fir forest dominate the watershed. The watershed is privately owned and is managed for rangeland and timber production. Vehicle access exists via State Highway 36, approximately 31 miles east from Alton and Highway 101, and then south approximately one mile on Butte Creek Road.

METHODS

The habitat inventory conducted in Swift Creek follows the methodology presented in the California Salmonid Stream Habitat Restoration Manual (Flosi and Reynolds, 1991). The contract seasonal aides that conducted the inventory were trained in standardized habitat inventory methods by the California Department of Fish and Game (DFG). Swift Creek personnel were trained in May, 1992, by Gary Flosi and Scott Downie. This inventory was conducted by a two person team.

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 Swift Creek to record measurements and observations. There are nine components to the inventory form. For specific information on the methods used, see the Little Van Duzen River 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.

DATA ANALYSIS

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

The Habitat Runtime program produces the following 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 were not developed for Swift Creek.

HABITAT INVENTORY RESULTS

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

The habitat inventory of August 21, 1992, was conducted by Jason Cleckler and Michelle Rose (contract seasonals). The total length of the stream surveyed was 2,235 feet.

Flows were not measured on Swift Creek; the stream was intermittent at the time of the survey.

Swift Creek is an A2 channel type for the entire 2,235 feet of

stream reach surveyed. A2 channels are steep (4-10% gradient), very well confined streams, with stable stream banks.

Water temperature was 52 degrees Fahrenheit. Air temperature was 74 degrees Fahrenheit.

Table 1 summarizes the Level II riffle, flatwater, and pool habitat types. By percent **occurrence**, pools made up 25.0%, flatwater types 12.5%, and riffles 12.5% (Graph 1). Flatwater habitat types made up 3.8% of the total survey **length**, riffles 3.4%, and pools 0.8%. At the time of the survey, 50.0% of the habitat units were dry. These dry habitat units comprised 92.1% of the total survey length.

Two pools were identified (Table 3). Both of these were mid-channel pools with depths of less than one foot (Table 4).

The depth of cobble embeddedness was estimated at pool tail-outs. Both of the two pool tail-outs measured had a value of 3. On this scale, a value of one is the best for fisheries.

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. Pool habitat types had the highest shelter rating at 20.0. Flatwater habitats followed with a rating of 10.0 (Table 1).

Table 5 summarizes mean percent cover by habitat type. Boulders are the dominant cover type in Swift Creek. All other cover types are lacking.

Table 6 summarizes the dominant substrate by habitat type. Gravel was the dominant substrate observed.

Fifty-five percent of the survey reach lacked shade canopy. Of the 45% of the stream covered with canopy, 77% was composed of deciduous trees, and 23% was composed of coniferous trees.

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 17.5%. The mean percent left bank vegetated was 18.1%. The dominant elements composing the structure of the stream banks consisted of 6.3% bedrock, 12.5% boulder, 18.7% bare soil. Additionally, 12.5% of the banks were covered with deciduous trees, including downed trees, logs, and root wads.

Swift Creek

BIOLOGICAL INVENTORY RESULTS

Electrofishing was not conducted in Swift Creek. Young of the year and 1+ salmonid fry were observed during the survey. Based upon the results of electrofishing in Butte Creek, the observed fish in Swift Creek were probably steelhead.

DISCUSSION

The A2 channel type is generally not suitable for fish habitat improvement structures. A2 channels are found in high energy, steep gradient stream reaches. They have channels dominated by boulders, do not retain gravels very well, but do have stable stream banks. Usually within the A2 channel there are zones of lower gradient where structures designed to trap gravels can be constructed. This seems to be the case in Swift Creek, but any structure sites must be selected with care because of the high stream energy which can create problems with stream bank erosion and structure stability.

The water temperature recorded on the survey day August 21, 1992, was 52° F, and the air temperature was 74° F. This is a very good water temperature for salmonids. Swift Creek seems to have temperatures favorable to salmonids, which is a product of the high percentage of canopy found in the survey (c. 90%). To make any further conclusions, temperatures would need to be monitored throughout the warm summer months, and more extensive biological sampling conducted.

Because of the low flow at the time of our survey, and the few habitat units surveyed, most analysis of the stream habitat has not been conducted on Swift Creek data. Therefore, firm conclusions and recommendations cannot be made without additional survey during periods of higher flow in Swift Creek.

RECOMMENDATIONS

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

2) Swift Creek should be surveyed during periods of higher flow in a more typical water year to determine the stream's significance to salmonids.

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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.

0'	Begin survey at confluence with Butte Creek. Channel is dry for the first 753'.
150'	Road crosses stream. Culvert is not a barrier to fish.
837'	Young of the year salmonids observed in the upper part of this unit, a step run 84' long. These are probably steelhead based upon the results of electrofishing in Butte Creek.
941'	Several 1+ fish observed in this unit, a mid-channel pool 9' x 4' x 0.7'.
950'	Stream is dry for 426'.
1368'	No fish observed in this unit, a mid-channel pool 8' x 3' x 0.8'.
1376'	Stream is dry for c 860'.
1535'	LDA and boulder accumulation. Channel is very steep and well confined for the next 150'; probable barrier.
1629'	Dirt road fords the channel.
2235'	Channel splits around large boulder 40' wide x 30' high. Gradient is very steep for the next 200'; probable fish barrier. End of survey.