STREAM INVENTORY REPORT

ISLAM JOHN CREEK

INTRODUCTION

A stream inventory was conducted during the summer of 1992 on Islam John 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 Islam John 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 Islam John 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

Islam John Creek is tributary to Hollow Tree Creek, tributary to the South Fork Eel River, tributary to the Eel River, located in Mendocino County, California (Figure 1). Islam John Creek's legal description at the confluence with Hollow Tree Creek is T23N R17W S33. Its location is 39°47'58" N. latitude and 123°44'34" W. longitude. Islam John Creek is a first order stream and has approximately 1.7 miles of blue line stream, according to the USGS Leggett 7.5 minute quadrangle. Islam John Creek drains a watershed of approximately 1.0 square mile. Elevations range from about 1,040 feet at the mouth of the creek to 2,000 feet in the headwater areas. Redwood forest dominates the watershed. The watershed is owned by the Louisiana-Pacific Corporation and is managed for timber production. Vehicle access exists from State Highway 1, via Westside Road to Eastside Road.

METHODS

The habitat inventory conducted in Islam John 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). Islam John Creek personnel were trained in May and June, 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 Islam John Creek to record measurements and observations. There are nine components to the inventory form. For specific information on the methods used, see the Hollow Tree 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 Islam John Creek to document the fish species composition and distribution. Two sites were electrofished in Islam John 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 Islam John 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 July 13 & 14, 1992, was conducted by Erick Elliot and Jason Cleckler (CCC and contract seasonal). The total length of the stream surveyed was 2,428 feet.

Islam John Creek is an B1-1 channel type for the entire 2,428 feet of stream reach surveyed. B1-1 channels are moderate gradient (1.5-4.0%), moderately confined streams, with bedrock channels.

Water temperatures ranged from 58 to 64 degrees fahrenheit. Air temperatures ranged from 62 to 81 degrees fahrenheit.

Table 1 summarizes the Level II riffle, flatwater, and pool habitat types. By percent **occurrence**, riffles made up 45.0%, flatwater types 30.0%, and pools 21.0% (Graph 1). Riffles made up 37.3% of the total survey **length**, flatwater habitats 35.8%, and pools 12.1% (Graph 2).

Eleven Level IV habitat types were identified. The data are summarized in Table 2. The most frequent habitat types by percent **occurrence** were low gradient riffles, 36.0%; runs, 18.0%; mid-channel pools, 13.0%; and step runs, 10.0% (Graph 3). By percent total **length**, low gradient riffles made up 30.4%, step runs 18.8%, runs 13.1%, and mid-channel pools 7.2% (Table 2).

Twenty-one pools were identified (Table 3). Main channel pools were most often encountered at 76.2%, and comprised 83.3% 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. Eighteen of the 21 pools (86%) had a depth of less than two feet (Graph 5).

The depth of cobble embeddedness was estimated at pool tail-outs. Of the 19 pool tail-outs measured, zero had a value of 1 (0.0%); 5 had a value of 2 (26.3%); 10 had a value of 3 (52.6%); and 4 had a value of 4 (21.1%). 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. Pool habitat types had the highest shelter rating at 51.0. Flatwater habitats followed with a rating of 23.5 (Table 1). Of the pool types, the scour pools had the highest mean shelter rating at 53.8, main channel pools had a rating of 51.6,

and backwater pools rated 30.0 (Table 3).

Table 5 summarizes mean percent cover by habitat type. Boulders are the dominant cover type in Islam John Creek and are extensive. Large and small woody debris also provide a small amount of cover. Graph 7 describes the pool cover in Islam John Creek.

Table 6 summarizes the dominant substrate by habitat type. Small cobble was the dominant substrate observed in 18 of the 36 low gradient riffles (50.0%). Gravel was the next most frequently observed dominant substrate type, and occurred in 27.8% of the low gradient riffles (Graph 8).

Fifty-four percent of the survey reach lacked shade canopy. Of the 46% of the stream covered with canopy, 72% was composed of deciduous trees, and 28% was composed of coniferous trees. Graph 9 describes the canopy in Islam John 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 22.7%. The mean percent left bank vegetated was 20.9%. The dominant elements composing the structure of the stream banks consisted of 38.0% bedrock, 3.0% boulder, 24.0% cobble/gravel, 13.0% bare soil, 0.5% grass, 4.5% brush. Additionally, 5.5% of the banks were covered with deciduous trees, and 11.5% with coniferous trees, including downed trees, logs, and root wads (Graph 10).

BIOLOGICAL INVENTORY RESULTS

Two electrofishing sites were sampled on Islam John Creek. The objective was to identify fish species and distribution. The units were sampled on July 22, 1992 by Shea Monroe (CCC), and Jason Cleckler. Each unit was end-blocked with nets to contain the fish within the sample reach. Two passes were conducted at each site, fork lengths (FL) measured and recorded, and the fish returned to the stream.

The first site sampled was habitat unit #4, a plunge pool, approximately 38 feet from the confluence with Hollow Tree Creek. This site had a surface area of 50 sq ft, and a volume of 50 cu ft. The unit yielded 8 steelhead, ranging from 52 to 144 mm FL.

The second site was habitat unit #52, a mid-channel pool, approximately 1120 feet above the confluence with Hollow Tree Creek. This site had a surface area of 96 sq ft, and a volume of 76.8 cu ft. No fish were sampled.

DISCUSSION

B1-1 channels are generally not suitable for fish habitat improvement structures. However, bank placed boulders, shelter structures, bank cover, log cover, and spawning weirs are often appropriate in these reaches.

The water temperatures recorded on the survey days July 13 & 14, 1992 ranged from 58° F to 64° F. Air temperatures ranged from 62° F to 81° 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.

Flatwater habitat types comprised 35.8% of the total **length** of this survey, riffles 37.3%, and pools 12.1%. The pools are relatively shallow with only 3 of the 21 pools having a maximum depth of two feet or greater. 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 for locations where their installation will not conflict with the modification of the numerous log debris accumulations (LDA's) in the stream.

Fourteen of the 19 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 Islam John 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 51.0. The shelter rating in the flatwater habitats was lower at 23.5. However, a pool shelter rating of approximately 100 is desirable. The relatively small amount of cover that now exists is being provided primarily by boulders in all habitat types. Additionally, large and small woody debris contribute a small amount. Log and root wad cover structures in the pool and flatwater habitats are needed to improve both summer and winter salmonid habitat. Log cover structure provides rearing fry with protection from predation, rest from water velocity, and also divides territorial units to reduce density related competition.

Twenty-eight of the 36 low gradient riffles had gravel or small cobble as the dominant substrate. This is generally considered good for spawning salmonids.

The mean percent canopy for the stream was 46%. This is a relatively low percentage of canopy, since 80 percent is generally considered optimum in these north coast streams. Water temperatures could be reduced by increasing stream canopy. In areas of stream bank erosion, planting endemic species of coniferous and deciduous trees, in conjunction with bank stabilization, is recommended.

RECOMMENDATIONS

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

2) The bedrock plunge located 38 feet from the confluence with Hollow Tree Creek appears to be a barrier to anadromous salmonids. The feasibility of modifying this barrier needs

to be determined before any of the following recommendations are considered.

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.

4) Increase woody cover in the pools and flatwater habitat units. Most of the existing cover is from boulders. Adding high quality complexity with woody cover is desirable and in some areas the material is at hand.

5) There are several log debris accumulations present on Islam John Creek that are retaining large quantities of fine sediment. The modification of these debris accumulations is desirable, but must be done carefully over time to avoid excessive sediment loading in downstream reaches.

6) 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.

7) Increase the canopy on Islam John Creek by planting willow, alder, redwood, and Douglas fir along the stream where shade canopy is not at acceptable levels. The reaches above this inventory section must be treated as well, since the water being delivered here is being warmed above. In many cases, planting will need to be coordinated to follow bank stabilization or upstream erosion control projects.

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 Hollow Tree Creek. Channel type is a B1-1 for the entire survey reach.

38' 9' high plunge; probable barrier.

323' Bank erosion 70' high x 70' long, contributing gravel and silt into the channel.

495' 4' diameter log in the channel, retaining gravel 5' high.

511' Log and debris accumulation (LDA) 20' long x 30' wide x 6' high; no apparent barrier.

841' LDA 23' long x 15' wide x 5' high.

1069' LDA 20' long x 9' wide x 8' high; no apparent barrier.

1086' Bank erosion 80' high x 90' long.

1258' LDA 19' long x 15' wide x 6' high. Plunge 4.5' high; no apparent barrier.

1445' LDA 45' long x 40' wide x 18' high, retaining gravel. Channel is dry for the next 141'.

1860' LDA 28' long x 30' wide x 9' high.

2262' Collapsed bridge on the left bank.

2428' End of survey.