STREAM INVENTORY REPORT

North Fork McCoy Creek

INTRODUCTION

A stream inventory was conducted during the summer of 1995 on North Fork McCoy Creek. 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 North Fork McCoy Creek. The objective of the biological inventory was to document the presence and distribution of juvenile salmonid species. There is no known record of adult spawning surveys having been conducted on North Fork McCoy 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. Recommendations for habitat improvement activities are based upon target habitat values suitable for salmonids in California's north coast streams.

WATERSHED OVERVIEW

North Fork McCoy Creek is tributary to McCoy Creek, tributary to the South Fork Eel River, located in Mendocino County, California. North Fork McCoy Creek's legal description at the confluence with McCoy Creek is T24N R17W S04. Its location is 39°57'35" north latitude and 123°44'50" west longitude. North Fork McCoy Creek is a second order stream and has approximately 4.2 miles of blue line stream according to the USGS Piercy and Noble Butte 7.5 minute quadrangles. North Fork McCoy Creek drains a watershed of approximately 4.6 square miles. Elevations range from about 840 feet at the mouth of the creek to 1400 feet in the headwater areas. Mixed conifer forest dominates the watershed. The watershed is privately owned and is managed for rural subdivision development and timber production. Vehicle access exists from Highway 101 via Highway 271 at Piercy south approximately 1.5 miles to the bridge across McCoy Creek. Hike up McCoy Creek to North Fork McCoy Creek.

METHODS

The habitat inventory conducted in North Fork McCoy Creek follows the methodology presented in the *California Salmonid Stream Habitat Restoration Manual* (Flosi and Reynolds, 1991 rev. 1994). The Watershed Stewards Project/AmeriCorps (WSP/AmeriCorps) members that conducted the inventory were trained in standardized habitat inventory methods by the California Department of Fish

and Game (DFG). North Fork McCoy Creek personnel were trained in May, 1995, by Scott Downie and Ruth Goodfield (DFG). This inventory was conducted by a two-person team.

SAMPLING STRATEGY

The inventory uses a method that samples approximately 10% of the habitat units within the survey reach (Hopelain, 1994). All habitat units included in the survey are classified according to habitat type and their lengths are measured. All pool units are measured for maximum depth. Habitat unit types encountered for the first time are further measured for all the parameters and characteristics on the field form. Additionally, from the ten habitat units on each field form page, one is randomly selected for complete measurement.

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 N.F.McCoy Creek to record measurements and observations. There are nine components to the inventory form. For specific information on the methods used refer to the McCoy Creek report.

HABITAT INVENTORY RESULTS

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

The habitat inventory of July 26, 1995, was conducted by Kyra Short and Jeffrey Jahn (AmeriCorps/WSP). The total length of the stream surveyed was 4,106 feet with an additional 34 feet of side channel.

Flows were not measured on North Fork McCoy Creek.

North Fork McCoy Creek is an F4 channel type for the entire 4,106 feet of stream reach surveyed. F4 channels are entrenched, meandering, riffle/pool channels on low gradients with high width/depth ratios and gravel-dominant substrates.

Water temperatures taken during the survey period ranged from 62 to 71 degrees Fahrenheit. Air temperatures ranged from 67 to 88 degrees Fahrenheit.

Table 1 summarizes the Level II riffle, flatwater, and pool

habitat types. Based on frequency of **occurrence** there were 44% riffle units, 34% flatwater units, and 22% pool units (Graph 1). Based on total **length** of Level II habitat types there were 55% riffle units, 29% flatwater units, and 16% pool units (Graph 2).

Six Level IV habitat types were identified (Table 2). The most frequent habitat types by percent **occurrence** were low gradient riffles, 44%; runs, 34%; and lateral scour bedrock pools, 12% (Graph 3). Based on percent total **length**, low gradient riffles made up 55%, runs 29%, and lateral scour bedrock pools 10%.

A total of 27 pools were identified (Table 3). Scour pools were most frequently encountered at 78% and comprised 82% of the total length of all pools (Graph 4).

Table 4 is a summary of maximum pool depths by pool habitat types. Pool quality for salmonids increases with depth. Ten of the 27 pools (38%) had a depth of two feet or greater (Graph 5).

The depth of cobble embeddedness was estimated at pool tail-outs. Of the 26 pool tail-outs measured, 3 had a value of 1 (11%); 15 had a value of 2 (58%); 8 had a value of 3 (31%); and none had a value of 4 (Graph 6). On this scale, a value of 1 indicates the highest quality of spawning substrate.

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 a mean shelter rating of 34, and riffle habitats had a mean shelter rating of 6 (Table 1). Of the pool types, the lateral scour root wad formed pools had the highest mean shelter rating at 100. Lateral scour log formed pools had a mean shelter rating of 95 (Table 3).

Table 5 summarizes mean percent cover by habitat type. Boulders are the dominant cover type in North Fork McCoy Creek and are extensive. Graph 7 describes the pool cover in North Fork McCoy Creek.

Table 6 summarizes the dominant substrate by habitat type. Small cobble was the dominant substrate observed in 6 of the 9 low gradient riffles measured (67%). Gravel was the next most frequently observed dominant substrate type and occurred in 33% of the low gradient riffles (Graph 8).

The mean percent canopy density for the stream reach surveyed was 71%. The mean percentages of deciduous and coniferous trees were 61% and 10%, respectively. Graph 9 describes the canopy in North Fork McCoy Creek.

For the stream reach surveyed, the mean percent right bank vegetated was 40%. The mean percent left bank vegetated was 38%. The dominant elements composing the structure of the stream banks consisted of 3% bedrock, 0% boulder, 58% cobble/gravel, and 39% sand/silt/clay (Graph 10). Lack of vegetation was observed in 84% of the units surveyed. Ten percent of the units surveyed had deciduous trees as the dominant vegetation type, and 1% had coniferous trees as the dominant vegetation, including down trees, logs, and root wads (Graph 11).

BIOLOGICAL INVENTORY RESULTS

Steelhead young of the year and juveniles observed from the streambank throughout the survey reach.

GRAVEL SAMPLING RESULTS

No gravel samples were taken on North Fork McCoy Creek.

DISCUSSION

North Fork McCoy Creek is an F4 channel type for the entire 4,106 feet of stream surveyed. The suitability of F4 channel types for fish habitat improvement structures is as follows: F4 channel types are good for bank-placed boulders; fair for low-stage weirs, single and opposing wing-deflectors, channel constrictors, and log cover; and poor for medium-stage weir and boulder clusters.

The water temperatures recorded on the survey day July 26, 1995, ranged from 62 to 71 degrees Fahrenheit. Air temperatures ranged from 67 to 88 degrees Fahrenheit. This is a poor water temperature range for salmonids. However, these temperatures levels, if sustained, are near the threshold stress level for salmonids. To make any further conclusions, temperatures would need to be monitored throughout the warm summer months, and more extensive biological sampling would need to be conducted.

Flatwater habitat types comprised 29% of the total **length** of this survey, riffles 55%, and pools 16%. The pools are relatively shallow, with only 10 of the 27 (38%) pools having a maximum depth greater than 2 feet. In general, pool enhancement projects are considered when primary pools comprise less than 40% of the length of total stream habitat. In first and second order

streams, a primary pool is defined to have a maximum depth of at least two feet, occupy at least half the width of the low flow channel, and be as long as the low flow channel width. Installing structures that will increase or deepen pool habitat is recommended for locations where their installation will not be threatened by high stream energy, or where their installation will not conflict with the modification of the numerous log debris accumulations (LDA's) in the stream. The LDA's in the system are retaining needed gravel. Any necessary modifications to them should be done with the intent of metering the gravel out to downstream reaches that will trap the gravel for future spawning use. Therefore, gravel retention features may need to be developed prior to any LDA modification.

Eight of the 26 pool tail-outs measured had embeddedness ratings of 3 or 4. Only 3 had a 1 rating. Cobble embeddedness measured to be 25% or less, a rating of 1, is considered to indicate good quality spawning substrate for salmon and steelhead. In North Fork McCoy Creek, sediment sources should be mapped and rated according to their potential sediment yields, and control measures should be taken.

The mean shelter rating for pools was low with a rating of 34. The shelter rating in the flatwater habitats was lower at 5. 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, root mass contributes 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.

All of the 9 low gradient riffles measured had gravel or small cobble as the dominant substrate. This is generally considered good for spawning salmonids.

The mean percent canopy density for the stream was 71%. This is a relatively moderate percentage of canopy. In general, re-vegetation projects are considered when canopy density is less than 80%.

The percentage of right and left bank covered with vegetation was low at 40% and 38%, respectively. In areas of stream bank erosion or where bank vegetation is not at acceptable levels, planting endemic species of coniferous and deciduous trees, in conjunction with bank stabilization, is recommended.

RECOMMENDATIONS

1)North Fork McCoy Creek should be managed as an anadromous, natural production stream.

2)The limited water temperature data available suggest that maximum temperatures are above the acceptable range for juvenile salmonids. To establish more complete and meaningful temperature regime information, 24-hour monitoring during the July and August temperature extreme period should be performed for 3 to 5 years.

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 locally available.

5)Increase the canopy on North Fork McCoy Creek by planting willow, alder, redwood, and Douglas fir along the stream where shade canopy is not at acceptable levels. The reaches above this survey section should be inventoried and treated as well, since the water flowing here is effected from upstream. In many cases, planting will need to be coordinated to follow bank stabilization or upslope erosion control projects.

PROBLEM SITES AND LANDMARKS

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

0'Begin survey at confluence with McCoy Creek. Channel type is F4.

1677'Blue flag, "summer dry period crossing".

1807'There is a 2' metal culvert instream, with a road crossing above it. There is also a generator pump present.

1857'Young-of-the-year present.

North Fork McCoy Creek

4106' A tributary enters the left bank. End of survey, unable to reach landowner for access permission.

References

Flosi, G., and F. Reynolds. 1994. California salmonid stream habitat restoration manual, 2nd edition. California Department of Fish and Game, Sacramento, California.

Hopelain, J. 1995. Sampling levels for fish habitat inventory, unpublished manuscript. California Department of Fish and Game, Inland Fisheries Division, Sacramento, California.

Valentine, B. 1995. Stream substrate quality for salmonids: guidelines for sampling, processing, and analysis, unpublished manuscript. California Department of Forestry and Fire Protection, Santa Rosa, California.