

ANNUAL PERFORMANCE REPORT
FEDERAL AID IN SPORT FISH RESTORATION ACT

State: California

Grant Agreement: F-51-R-13

Grant Title: Inland and Anadromous Sport Fish Management and Research

Project No. 22: North Central District Salmon and Steelhead Management

Job No. 5: Evaluation of Hatchery Coho Releases

Period Covered: July 1, 1999 through June 30, 2000

- I. Summary: During a three year period (FY 95/96, FY 96/97, and FY 97/98), juvenile coho salmon were released in four Mendocino County streams. These four streams are but a few of many streams in Mendocino County that have lost all three year classes of coho salmon. The majority of the land within the basins of these streams is corporate timber land. Due to the Federal listing of coho salmon as a threatened species in the Central California ESU, the third year of planting was delayed as permits were issued by the National Marine Fisheries Service (NMFS). A permit was finally issued to the Department in December and the fish were then planted late in the year. This planting was several months later than was originally planned and this delay may have been detrimental to the imprinting process as it was very close to the time of fall/winter storms.

Over 185,000 juvenile coho salmon were planted in DeHaven Creek, Howard Creek, Wages Creek, and the Little North Fork of the Gualala River over a three year period. These fish came from eggs taken from the trapping facility on the South Fork Noyo River. They contain the genetic marker for central Mendocino stock, and were hatched and reared at Mad River Hatchery at Blue Lake California. Generally, fish ranged in size from 16 to 20 per pound upon release during the three year period of planting.

Surveys employed to monitor the hopeful return of coho salmon to these basins included; standard 30 meter electrofishing surveys, adult salmon spawning surveys, and out-migrant trapping.

Adult salmon spawner surveys (carcass surveys) were conducted in FY 99/00 to estimate the number of returning adults. Only one of the four streams revealed the presence of coho salmon.

None of the surveys returned encouraging results. No adult fish, or sign thereof, were observed on any of the spawning surveys. One juvenile coho salmon was collected at

the lower 30 meter transect on Wages Creek. Only 28 yearling coho were trapped at the Wages Creek out-migrant trap site.

The low number of returning adults and low juvenile densities are not encouraging. No habitat restoration has taken place in conjunction with the releases. Very little restoration has taken place on corporate timber land. This must be addressed in the near future.

Background: Coho salmon once occurred in nearly every coastal stream within the North Central District. However, with increasing demands for fish from both sport and commercial anglers and degradation of habitat, and stochastic weather events, these runs are now only remnants of what they once were.

Our management plan for restoring coho resources has included stricter angling regulations and increased watershed restoration efforts. At many sites where restoration has been initiated, the habitat has markedly increased. Where runs were lost, reintroduction has been proposed and implemented.

III. Objectives: To evaluate hatchery coho salmon releases as a means of reestablishing coho salmon in coastal streams that have lost runs.

IV. Procedures: The Department of Fish and Game planted three year classes of young-of-the-year coho salmon in four basins that have lost their runs. Young-of-the-year coho salmon of Noyo River stock, having the genetic marker for Mendocino stock, were selected as the source of fish to be reintroduced. The first planting took place in the fall of 1995 with subsequent releases taking place in 1996 and 1997. The return rates of adult salmon are to be evaluated by conducting carcass surveys during the fall-winter migration and spawning period for the full three years of the life cycle starting the fall/winter of 1997/98.

Juvenile standing crop surveys were conducted by electrofishing 30 meter transects to determine presence/absence and trends in density.

Out-migration of juvenile coho salmon was determined by installing a modified fyke/pipe trap near the mouth of Wages Creek. The trap fished from early March to early June, 2000.

V. Findings: Four streams, DeHaven Creek, Howard Creek, the Little North Fork of the Gualala River, and Wages Creek, were selected as streams for the evaluation study. During the FY 99/00 no adult coho were observed and no redds were observed on any of the four streams.

Carcass surveys have proven a poor method for obtaining population estimates in Mendocino County. This is due to several factors. These surveys depend on a mark/recapture protocol where recapture is an integral part. Unfortunately, Mendocino

County precipitation is often referred to as "flashy" which presents very real problems in recovered previously marked fish. Also, Mendocino County has abundant wildlife that has come to depend on the salmon runs. Bears, otters, mink, and eagles, are but a few of the species taking both live and dead salmon from the stream and its banks.

Table 1 summarizes the number of coho juveniles released in the four streams. This table also shows an expected number of adults returning to spawn. The rate chosen, one percent, is low compared to what we have seen through other programs. However, even one percent return, if achieved, would most likely be enough to maintain a small population. The average size of the fish released was between 150 and 165 mm, which is much bigger than what we find for wild populations at the time of smolting in Mendocino County.

The question arises as to why escapement has been so poor in these three streams. It may be a combination of several factors. One reason may be the released fish may not have imprinted fully. The timing of the last year's release was postponed a couple of months due to a red tape situation related to the listing of coho salmon. When they were finally released, Mendocino County had already experienced a few fall storm events which could very well have flushed the fish after only a day or two of residency. If these fish had not imprinted on the streams we could not expect a return. However, the releases conducted during the first two years were conducted when the Department thought it best, late summer/early fall.

Table 1. Number of coho released and expected escapement for four Mendocino County streams.

Stream	Date	Expected Escapement	
		Total #	at 1%
DeHaven Creek	FY 95/96	17600	176
	FY 96/97	12502	125
	FY 97/98	11500	115
Wages Creek	FY 95/96	16400	164
	FY 96/97	15040	150
	FY 97/98	17000	170
Howard Creek	FY 95/96	12000	120
	FY 96/97	8037	80
	FY 97/98	9500	95
LNF Gualala River	FY 95/96	20000	200
	FY 96/97	12480	125
	FY 97/98	12800	128

Juvenile surveys during FY 99/00 revealed a very disturbing situation. Only a single juvenile coho salmon was collected. This one fish was collected at the lower station on Wages Creek. Steelhead densities at all stations were within the range expected for coastal Mendocino streams. Steelhead densities ranged from 0.17 to 0.41 fish/m². It should be noted that absence of coho in the 30 meter transects does not equate to

absence from the basin. However, it is at least a good indicator that the coho population is small.

Downstream migrant trapping on Wages Creek revealed a small population of migrating juvenile coho salmon. Approximately, 30 juvenile coho salmon were captured between March and June 2000. The production estimate of coho for that year class was estimated at 378 coho using methodology and software conceived by Eric Bjorkstedt of the NMFS. The upper and lower 95% confidence limits for the population estimate was 635 and 121, respectively. Please see the Annual Performance Report, Project 22, Job No. 2, for more detail on out-migrant trapping and methodology employed. Even the upper limit is far less than what will be needed to maintain a population of coho salmon in Wages Creek. There's no reason to believe that any of the other streams planted are in any better shape than Wages Creek.

- VI. Recommendations: Continue monitoring and evaluating the release of juvenile coho salmon for two full generations for all three year classes. Continue downstream migrant trapping on Wages Creek. Compare juvenile coho salmon standing crop of the four planted streams to neighboring watersheds possessing coho salmon.

If time and personnel allow, conduct spawning surveys on the four study streams.

- VII. Estimated FY 99-00 Job Costs: \$22,361.00

- VIII. Preparer: Scott Harris, _____, Associate Fishery Biologist