State of California
The Resources Agency
DEPARTMENT OF FISH AND GAME

FINAL REPORT
EVALUATION OF POND REARING OF CHINOOK SALMON
PROJECT (5.12)
(MODIFICATION NO. 1)

by

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FOR
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A. Abstract:

Totals of 37,655 and 31,807 adipose-fin clipped, coded-wire tagged (Ad+CWT) 1990 brood year (BY) fall chinook salmon were released from ponds on Indian and Elk creeks, respectively, in 1991. Numbers of fish in both ponds were inventoried and mark quality was checked shortly before the fish were released.

An additional 40,078 and 41,272 1991 BY chinook salmon were Ad+CWT and transferred to Bluff Creek and Indian Creek ponds, respectively in spring 1992. These fish will be released in October 1992.

B. Introduction:

Since 1979, the California Department of Fish and Game's Klamath River Project (KRP) has marked (Ad+CWT) various groups of fingerling chinook and yearling chinook and coho salmon at Iron Gate Hatchery (IGH), plus several cooperative pond-rearing program locations, prior to their release into the Klamath River and its tributaries. Fish for the pond-rearing program are hatched and reared at IGH. They are transferred to the rearing ponds in May or June as fingerlings, ranging in size from about 200 to 70 per pound. The purpose of this marking is to help evaluate the contributions these fish make to the ocean commercial and sport, river sport and net fisheries, and to spawning escapements. These evaluations are required for effective management of the Klamath River's salmon resources.

In state fiscal year (FY) 1988-89, increases in overhead and cost-of-living, reductions in available funds, and required increased efforts on higher-priority job segments, led the KRP to seek funding to mark (Ad+CWT) the chinook salmon production of the Klamath River Cooperative Rearing Ponds from the Klamath River Fishery Restoration Program (KRRP). This funding was granted through federal FY 1993.

In FY 1988-89, KRP personnel marked (Ad+CWT) over 205,500 1988 BY fall chinook salmon. These fish were raised at five different rearing sites and released as yearlings in October,

1989. A Final Report describing the work accomplished was submitted.

In FY 1989-90, Anadromous Fish Act funds became available to coded-wire-tag the 1989 BY chinook salmon for the Cooperative Rearing Pond Program. Slightly less than 90,500 fish were tagged and released. The following year, FY 1990-91, another Cooperative Agreement was entered into with the KRRP to tag the 1990 BY. Under this agreement, approximately 120,000 fish were tagged. These fish were released in October 1991.

To properly evaluate the contributions to the fisheries and spawning escapements of rearing pond fish, at least one additional tagged BY was required.

C. Description of Study Area:

The Klamath River system drains approximately 12,000 sq. mi. of northwestern California and southern Oregon. It is the second most important fall chinook salmon producer in California. Major chinook salmon spawning tributaries are the Trinity River, Salmon River, Scott River, Shasta River and Bogus Creek. Natural reproduction is augmented by two hatcheries, IGH at the foot of Iron Gate Dam on the Klamath River, and the Trinity River Hatchery, located at the base of Lewiston Dam on the Trinity River. Salmon rearing ponds are operated by local organizations on several smaller tributaries that historically had spawning runs of chinook salmon. Since 1978, the numbers of fall chinook salmon returning to the Klamath system have ranged from a low of about 34,200 in 1984 to a high of about 239,400 in 1986.

D. Methods and Materials:

Under the supervision of permanent KRP biologists, temporary employees marked (Ad+CWT) all or portions of the 1991 BY fall chinook salmon scheduled to be transferred in 1992 from IGH to several rearing ponds. Recoveries of returning sea-run fish will be made during ongoing investigations of the ocean and in-river fisheries, at Project weirs in various Klamath River tributaries, in spawning ground surveys and at the two basin hatcheries (these activities are not funded by this project). Recoveries from areas outside California will be obtained from other agencies collecting CWT fish.

E. Results and Discussion:

The final numbers of 1990 BY IGH fall chinook salmon produced in the rearing ponds on Indian and Elk creeks were estimated using the Peterson mark and recapture method prior to their

release. At the same time we conducted quality control tests to determine the numbers released that were correctly marked and tagged. Bear predation at the Bluff Creek site forced premature emergency release of fish being held there. We were not able to either inventory remaining fish or evaluate mark/tag retention before they were released. (Note: No mark/tag retention before they were released. (Note: No fish were transferred to Red Cap or Grider creeks in 1991 [Table 1]).

Table 1. Numbers of 1990 BY Fall Chinook Salmon Transferred, Tagged and Released from the Klamath River Rearing Ponds in 1991.

	Bluff Creek	Indian Creek	Elk Creek
No. transferred	80,096	81,447	41,166
No. tagged	40,028	41,272	41,166
Mortality (Untagged)	___	1,575	0
Tags shed	___	2,042	4,752
Tag Mortality	___	1,575	4,607
No. correctly tagged	___	37,655	31,807
Unmarked release	___	40,642	4,752
Total release	___	78,297	36,559

Totals of 40,078 and 41,272 1991 BY chinook salmon were Ad+CWT and transferred to Bluff Creek and Indian Creek ponds, respectively, in spring 1992. These fish will be released in October 1992 (Table 2).

Table 2. Numbers of 1991 BY Fall Chinook Salmon Tagged and Transferred to the Klamath River Rearing Ponds

	Bluff Creek	Indian Creek
No. transferred	80,681	80,032
No. tagged	40,078	41,272

No fish were transferred to ponds on Elk, Red Cap or Grider creeks in 1992.

Quality control tests on the marked (Ad+CWT) fish and estimates of the total numbers of fish in each pond will be conducted prior to their release in October 1992.

F. Summary and Conclusions:

During state FY 1990-91, 1990 BY marked (Ad+CWT) chinook salmon raised in rearing ponds were released into Bluff Creek, Indian Creek, and Elk Creek. Approximately 122,500 1991 BY fall chinook salmon from IGH were also marked (Ad+CWT) at the hatchery. These fish were subsequently transported to rearing ponds on Bluff and Indian creeks in May 1992 for rearing and release in fall 1992.

G. Summary of Expenditures:

Salary and wages	$ 5,696
Tags	8,400
Supplies	1,200
Travel	1,400
Vehicle operations	1,155
Admin. overhead	4,766
Total	$22,617

H. Supplemental Data: Not applicable to this project.

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