

State of California  
The Resources Agency  
DEPARTMENT OF FISH AND GAME

MERCED RIVER FISH FACILITY ANNUAL REPORT  
1975-76

by

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Region 4 - Anadromous Fisheries

Anadromous Fisheries Branch  
Administrative Report No. 78-5

1978

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ABSTRACT

This report describes the operation of the Merced River Fish Facility from July 1, 1975 through June 30, 1976. The facility consists of a spawning channel and three rearing ponds.

Because of an outbreak of infectious hemopoetic necrosis (IHN), the 1974 brood-year king salmon (Oncorhynchus tshawytscha) had to be destroyed and no yearling king salmon were planted during this production year. An estimated 170,020 yearling silver salmon were planted in various locations.

An estimated 300 1975 broodyear fall-run female king salmon spawned in the channel, depositing approximately 1,506,000 eggs. We also trapped an estimated 124,000 Merced River king salmon fry which were held in the rearing ponds to be planted as yearlings next year. The rearing pond program was completed with the introduction of 251,000 silver salmon fry for raising to yearlings.

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<sup>1/</sup> Anadromous Fisheries Branch Administrative Report No. 78-5.  
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## INTRODUCTION

The Merced River Fish Facility is located immediately downstream from Crocker-Huffman Dam on the Merced River (a tributary to the San Joaquin River) about 24 km (15 miles) northeast of Merced. It is the terminal point for salmon migrating up the Merced River.

The facility was built by the Merced Irrigation District (MID) with Davis-Grunsky Act funds. Operations began in the fall of 1970.

The facility is comprised of a 1,333 m (4,372 ft) long spawning channel (The Reuben E. Schmidt Spawning Channel) and three 84 x 9 m (275 x 30 ft) rearing ponds. Each rearing pond has the capacity for approximately 150,000 king salmon yearlings. Menchen (1972) described the facility in detail.

The installation is operated by the California Department of Fish and Game with operating assistance and maintenance costs provided by the MID.

### Production Summary

Use and production of the facility was down from last year (Table 1).

## SPAWNING CHANNEL PROGRAM

### 1975-76 Season

On September 30, 1975, the flow in the channel was increased to 4.6 m<sup>3</sup>/sec (165 cfs). This allowed 1975 fall-run adults access to the channel.

All adult salmon received in the channel entered voluntarily. No attempt was made to trap and count the fish as they entered. The number of spawners using the channel was estimated by recovering carcasses and counting redds.

The first salmon was seen entering the channel October 15, and spawning was completed by December 21, 1975. The spawning channel flow was reduced to 2.0 m<sup>3</sup>/sec (70 cfs) on January 9, 1976.

### Carcass Recovery and Redd Count

The channel was inspected for carcasses 5 days each week and 330 (231 females and 99 males) were recovered.

We counted 300 individual redds. The fact that only 231 female carcasses were observed was probably due to some carcasses being removed by predators or the spent females drifting out of the channel at night or on weekends when no observations were made.

Table 1. Summary of Production, Merced River Fish Facility

Season	Females spawned	Eggs deposited	Yearlings released	Outmigrant fingerlings held	Stanislaus R. fingerlings held	Merced R. fingerlings held	Silver salmon yearlings released	Silver salmon fingerlings held
1970-71	40	152,000			100,000			
1971-72	94	476,000	86,000	30,000	289,000			
1972-73	51	256,000	232,000	50,000+	325,000			
1973-74	150	753,000	336,000	34,000	126,000			226,800
1974-75	400	2,009,000	116,500	98,000*			92,920	294,000
1975-76	300	1,506,000	0*	43,000		81,000	170,020	251,000

\* Fish destroyed because of disease.

### Estimated Egg Deposition

We have no information on the fecundity of Merced River salmon. The Stanislaus River is in the same system (San Joaquin River drainage) as the Merced, and we have found that female fish in the Stanislaus average 5,020 eggs (Moccasin Creek Hatchery files). Therefore, we multiplied this figure by the estimated number of females that spawned in the channel (300) and derived an estimated potential deposition of 1,506,000 eggs.

### KING SALMON REARING POND PROGRAM

#### 1974 Brood Year

No yearling king salmon were released as the 1974 broodyear fish were destroyed in March 1975 following an outbreak of infectious hemopoetic necrosis (IHN).

#### 1975 Brood Year

King salmon fry for the rearing pond program were obtained from two locations on the Merced River. The upper trap was operated at a point directly below the entrance to the fishway of the spawning channel. The second trap was located approximately 16 km (10 miles) downstream, just below the Highway 59 bridge.

Each trap was made from a 15 m (16.4 yards) fyke net having a 91.4 x 152.4 cm (3 x 5 ft) opening and tapering to a 35 cm (1 foot) terminal end attached to a floating live box. These traps were anchored in midstream and fished overnight.

We trapped an estimated 124,000 king salmon fry from the two locations: 43,000 from the upper site; 81,000 from the lower (Figure 1). The greater number of fish trapped at the lower station was probably a result of extensive spawning directly upstream from the trap site.

#### Disease

No serious disease problems occurred during the 1975-76 production year.

### AGE ANALYSIS

During the 1975-76 spawning season, scale samples were taken from adult king salmon both in the spawning channel and in the Merced River. The scales were examined for age and to determine if the first annulus was formed in fresh or salt water. Six percent of the samples examined from river fish, and 84% of those from spawning channel fish had freshwater yearling annuli (Table 2).

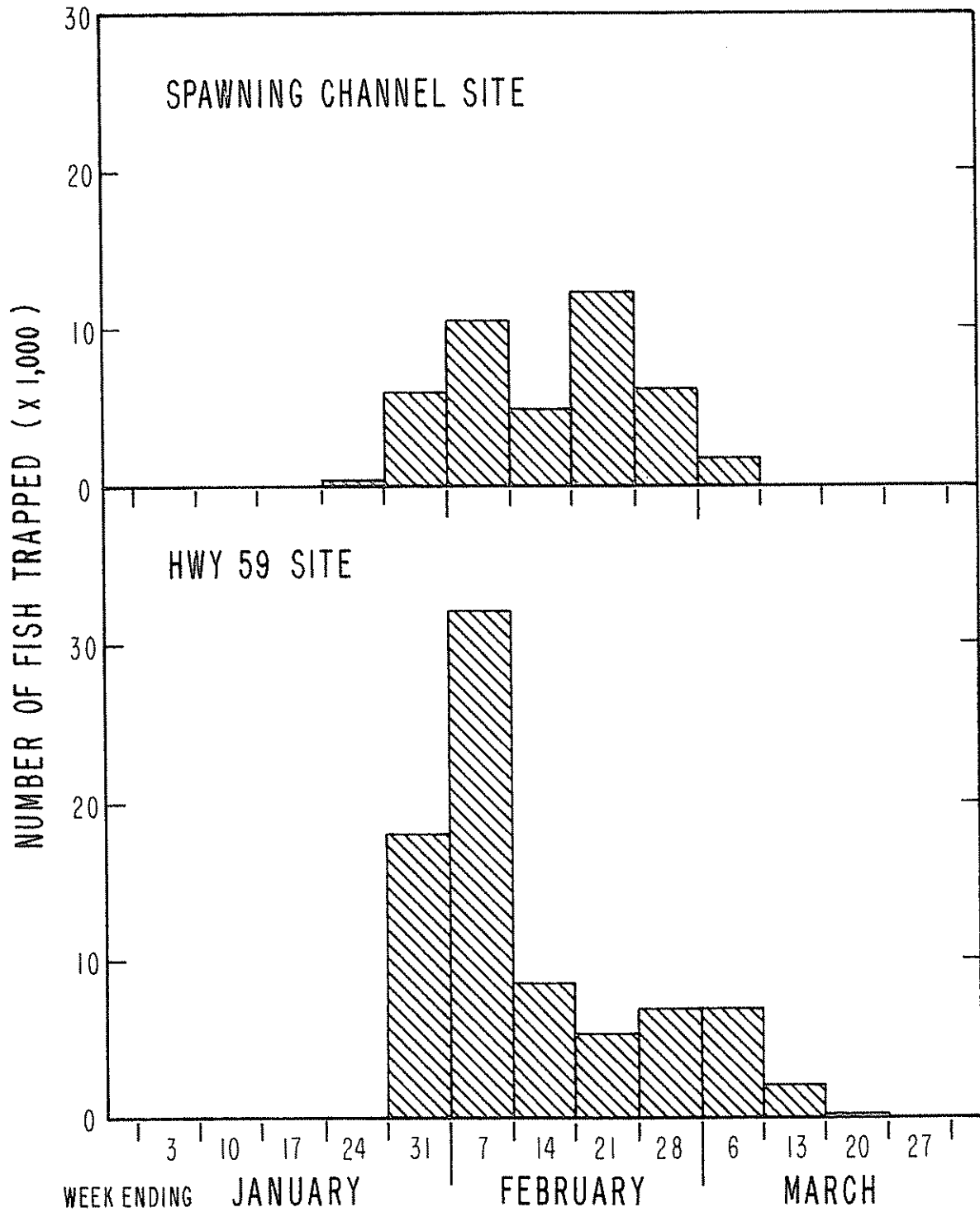


Figure 1. King salmon downstream migrant trapping, Merced River, 1976

Table 2. Analysis of Scale Samples from Merced River  
King Salmon, 1975-76

	Age				Combined
	2	3	4	5	
Number spawning channel scales	36	215	75	4	330
Number freshwater yearling annuli	17	186	71	4	278
% freshwater yearling annuli	47%	87%	95%	100%	84%
Number river scales	8	19	5		32
Number freshwater yearling annuli	1	0	1		2
% freshwater yearling annuli	12%	0%	20%		6%

SILVER SALMON REARING POND PROGRAM

On December 1, 1973 a cooperative agreement between the Department of Fish and Game and MID was made concerning the construction and operation of a third rearing pond for the purpose of raising silver salmon (*O. kisutch*). The agreement, which expires December 1, 1977, provides for construction and operation of the pond by the Department, with MID providing the land, water and power necessary for operation. The State retains the first 100,000 silver salmon produced for its management uses, and delivers the next 10,000 to McClure Reservoir for MID. The State fish are to be used in an experimental three-year program wherein yearling silver salmon are planted in various Southern California estuaries in an attempt to establish an offshore fishery for salmon.

In December 1975 and January 1976, 170,020 silver salmon were distributed (Table 3).

Table 3. Silver Salmon Planting Summary

Date released	Stream	Number released	Average size	Release site
12/29/75, 1/5/76	Alsea	159,900	59 g (81/lb)	Transferred to San Joaquin Hatchery*
1/5/76	Alsea	10,120	50 g (9/lb)	McClure Reservoir
* Redistributed as follows:				
1/76		60,520		Santa Margarita River
		29,930		National Marine Fisheries Service, Tiburon
2/76		46,420		Culleguas Creek
		16,000		Don Pedro Reservoir

In spring, 1976, 251,060 silver salmon fry from the Noyo River and Green River, Washington, were introduced into the rearing pond.

#### WATER TEMPERATURE

Water temperature was recorded with a pocket thermometer twice daily (early morning and late afternoon) at the upstream end of rearing pond No. 1 (Table 4).

Table 4. Water Temperatures (C)\* Merced River King Salmon Facilities, 1975-76 Season

Month (1975)	Max.	Min.	Month (1976)	Max.	Min.
July	18.9	13.3	January	11.1	8.9
August	17.8	12.8	February	12.2	8.9
September	17.2	12.2	March	13.3	10.6
October	14.4	11.1	April	15.6	11.1
November	14.4	10.6	May	16.7	12.2
December	12.2	10.0	June	18.3	12.2

\* Temperatures measured in F and later converted to C.

#### REFERENCE

Menchen, Robert S. 1972. Merced River King (Chinook) Salmon Spawning Channel annual report for 1970-71 season. Calif. Dep. Fish and Game, Anad. Fish. Admin. Rep. 72-6. 12 p.



