

State of California
The Resources Agency
DEPARTMENT OF FISH AND GAME

MERCED RIVER FISH FACILITY ANNUAL REPORT
1976-77

by

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Region 4 - Anadromous Fisheries

Anadromous Fisheries Branch
Administrative Report No. 78-6

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ABSTRACT

This report describes the operation of the Merced River Fish Facility from July 1, 1976 through June 30, 1977. The facility consists of a spawning channel and three rearing ponds.

Approximately 80,000 1975 broodyear king salmon (Oncorhynchus tshawytscha) yearlings were produced and released into the Merced River. An estimated 212,550 yearling silver salmon (O. kisutch) were planted in various locations.

An estimated 260 1976 broodyear fall-run female king salmon spawned in the channel, depositing approximately 1,305,000 eggs. We also trapped an estimated 126,000 Merced River king salmon fry which were to be held in the rearing ponds to be planted as yearlings next year. Because of drought conditions, these fish (approximately 75,000) were released in June 1977. The rearing pond program was completed with the introduction of 159,000 silver salmon fry for raising to yearlings.

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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 of the facility was down slightly from last year (Table 1).

SPAWNING CHANNEL PROGRAM

1976-77 Season

On November 3, 1976, the flow in the channel was increased to $4.6 \text{ m}^3/\text{sec}$ (165 cfs). This allowed 1976 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 November 5. Spawning was completed by January 20, 1977.

On January 16, 1977, the flow in the channel was reduced to $2.0 \text{ m}^3/\text{sec}$ (70 cfs).

Carcass Recovery and Redd Count

The channel was inspected for carcasses 5 days each week and 270 carcasses (184 females and 86 males) were recovered.

We counted 260 individual redds. The fact that only 184 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.

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

Table 1. Summary of Production, Merced River Fish Facility

Season	Females spawned	Eggs deposited	Yearlings released	Outmigrant fingerlings held		Merced R. fingerlings held		Silver salmon yearlings released		Silver salmon fingerlings held	
				held	held	held	held	released	released	held	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
1976-77	260	1,305,000	80,000	40,000**		86,000**		212,550			159,000
			75,000**								

* Fish destroyed because of disease.

** Released in June 1977 as advanced fingerlings because of warm water.

Creek Hatchery files). Therefore, we multiplied this figure by the estimated number of females that spawned in the channel (260) and derived an estimated potential deposition of 1,305,000 eggs.

KING SALMON REARING POND PROGRAM

1975 Brood Year

We released 80,000 1975 broodyear yearlings in the Merced River November 2, 1976.

1976 Brood Year

Fish for the yearling king salmon program were obtained from Merced River king salmon, utilizing two trapping stations. One trap was operated at a point directly below the entrance to the fishway of the spawning channel. A second trapping station was set up approximately 16 km (10 miles) downstream from the spawning channel (near Highway 59 bridge).

Sand bags were utilized in the streambed at the lower site to constrict the flow through the nets. Two fyke nets were fished parallel to each other, enabling us to capture most of the flow in the river. To minimize vandalism and man hours, a small trailer house was stationed near the trap site and occupied by a Seasonal Aid.

The traps were set in place at dusk each day and fished all night. All of the fish trapped were inventoried daily and transported directly to the rearing ponds. We trapped 126,000 king salmon fry at these two sites: approximately 40,000 from the spawning channel and 86,000 from the Highway 59 site (Figure 1).

On June 24, 1977, approximately 75,000 1976 broodyear king salmon fingerlings were released from the rearing ponds directly into the Merced River. The early release of the king salmon was due to warming water conditions in the ponds. It was hoped that most of these fish would remain in the pools of the upper river section until they could successfully migrate downstream in the fall.

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.

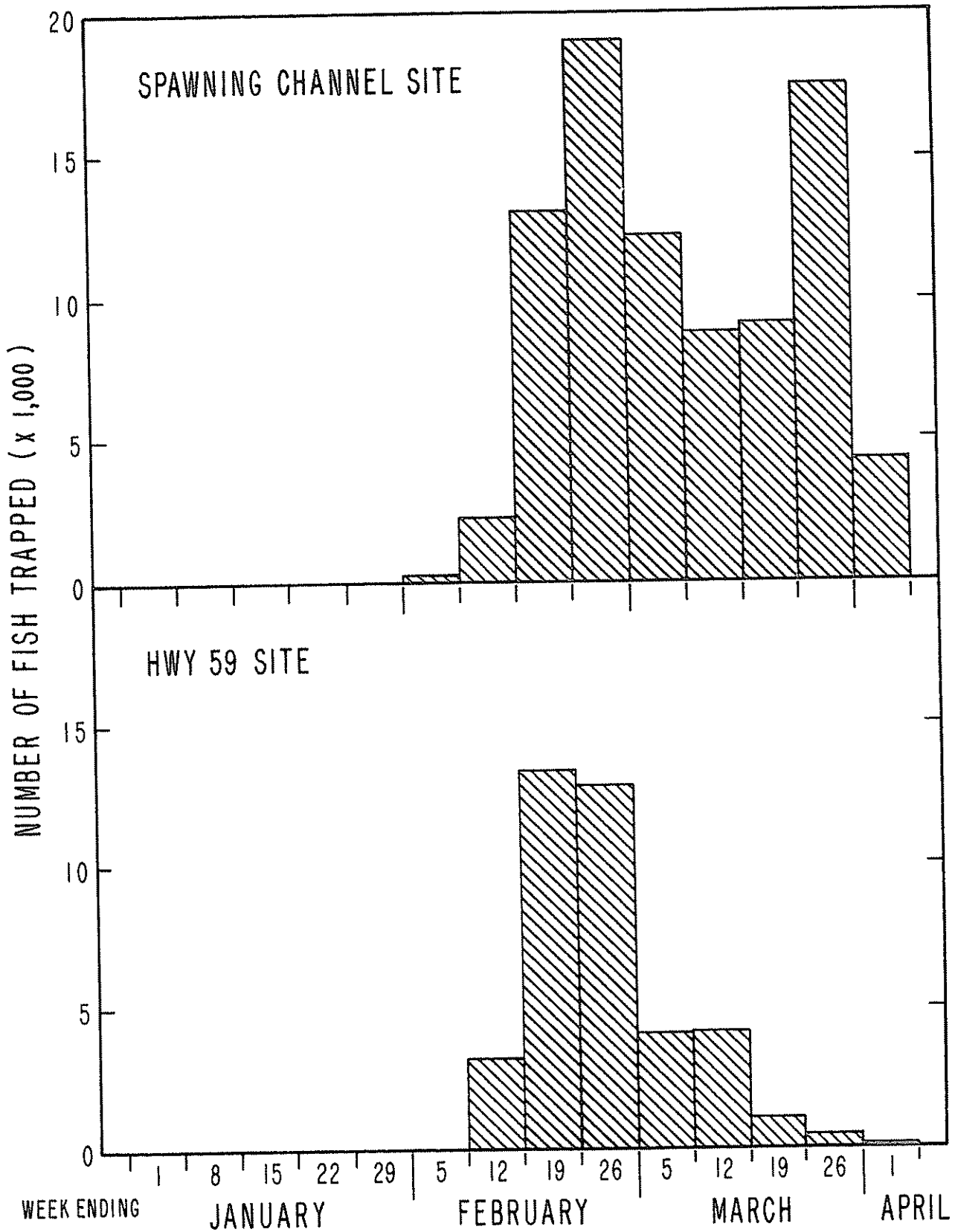


Figure 1. King salmon downstream migrant trapping, Merced River, 1977.

In January 1977, 212,550 silver salmon were distributed to various locations (Table 3).

Table 3. Silver Salmon Planting Summary

Date released	Strain	Number released	Average size	Release site
1/13,26/77	Green R., Wa; Noyo R. Ca.	100,750	45 g (10/lb)	Santa Margarita R., Culleguas Cr.
1/26/77	Green R. Noyo R.	35,000	45 g (10/lb)	Oroville Reservoir
1/26/77	Green R. Noyo R.	76,800	45 g (10/lb)	Don Pedro Reservoir

In spring 1977, 159,000 silver salmon fry from the Mad River were introduced to the rearing pond.

WATER TEMPERATURE

Water temperature in the channel was recorded twice daily (early morning and late afternoon) with a pocket thermometer at the upstream end of rearing pond No. 1 (Table 4). Temperatures in June 1977 were as much as 6.6 C (11.9 F) higher than the previous year.

Table 4. Water temperatures (C)* Merced River King Salmon Facilities, 1976-77 Season

Month (1976)	Max.	Min.	Month (1977)	Max.	Min.
July	18.9	13.3	January	10.6	7.8
August	18.9	13.9	February	14.4	8.3
September	20.6	14.4	March	16.7	10.6
October	22.2	15.0	April	18.3	12.8
November	17.8	12.2	May	18.9	14.4
December	12.8	9.4	June	20.6	15.6

* 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.