STATE OF CALIFORNIA
The Resources Agency
DEPARTMENT OF FISH AND GAME

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STANDING CROPS AND DISTRIBUTION OF FISHES IN SELECTED REACHES OF THE MATTOLE RIVER SYSTEM

by

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STANDING STOCK ESTIMATES FOR MATTOLE RIVER SALMONIDS July-August 1973

Introduction

Estimates of the abundance and distribution of Juvenile salmonids in the Mattole River drainage were made to determine the effect a proposed dam would have on the salmonid resources of that river and its tributaries.

Methods

Standing stocks were estimated at 24 stations in the Mattole River drainage. Eighteen stations were above the proposed Nooning Creek Dam site (Figure l) and six were below Nooning Creek (Figure 2). Each sampling station was 100 feet long. Fish were captured from seine-blocked stream sections by means of a battery-powered backpack electro-shocker. Each station was sampled once between July and August 1972. Average stream width and streamflow were measured at each station. Standing stocks were estimated using the Seber and LeCren two-catch method (1967).

Results

Populations at seven stations above the proposed Nooning Creek Dam site ranged from 30 to 151 juvenile salmonids per 100 feet or, in terms of surface area, from 0.32 to 0.95 salmonids per square yard. Young-of-the-year steelhead rainbow trout predominated at all stations. Trout 1 year old or older comprised from 2 to 18 percent of the population. Silver salmon (fry) were found only at one station (Table 1). Flows during sampling varied from 0.8 cfs at the upper station to 3.0 cfs at the lowest station.

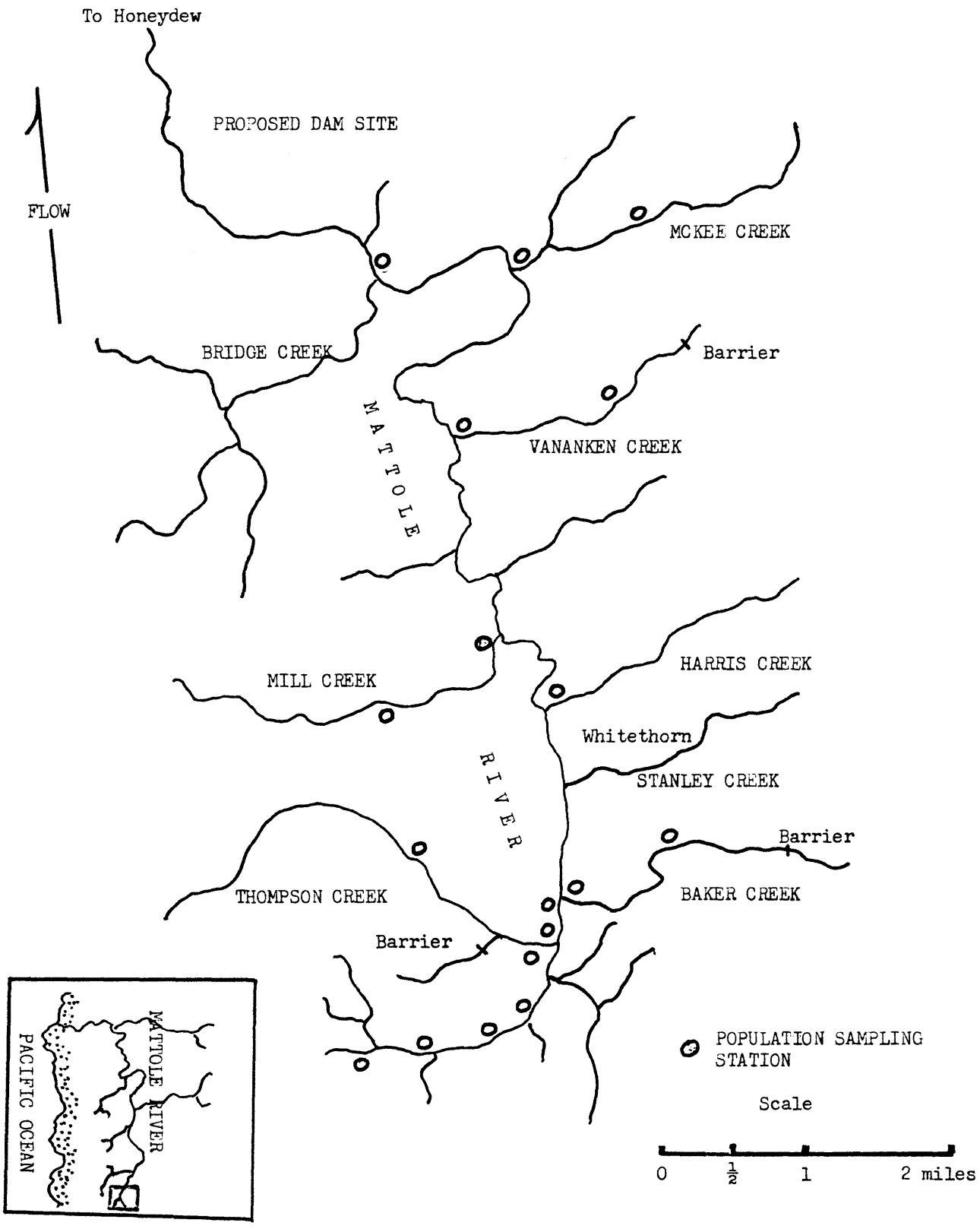

FIGURE 1.- Population sampling stations on upper Mattole River, July and August 1972.

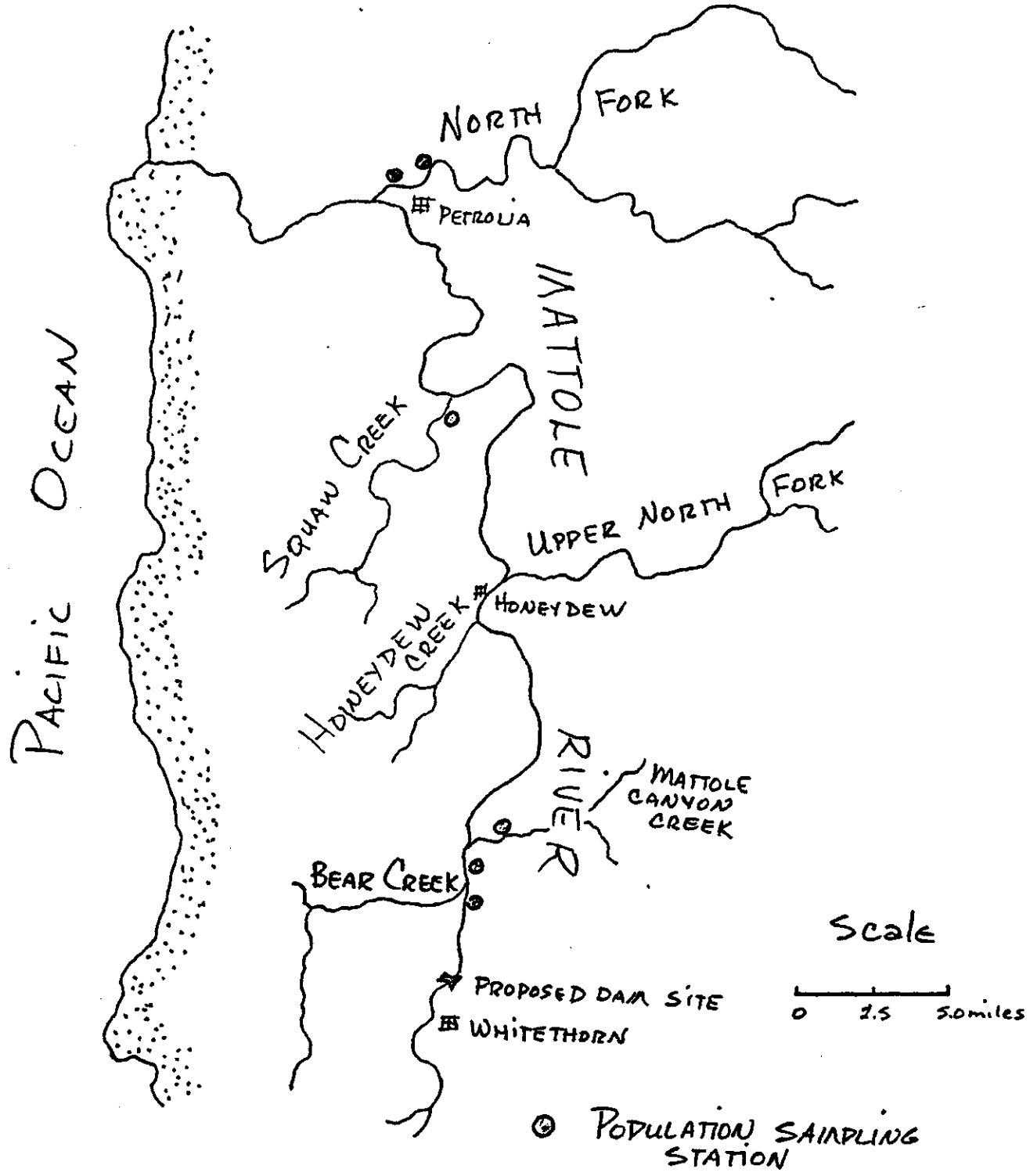

FIGURE 2, - Population sampling stations on lower Mattole River, August 1972.

TABLE 1
ESTIMATES OF SALMONID POPULATIONS AT 100-ft SAMPLING STATIONS
ON MATTOLE RIVER ABOVE THE PROPOSED NOONING CREEK DAMSITE
July – August 1972

Location	100ft Section Population Estimate (95% Confidence Interval)	Station Surface Area ($Yds.^2$)	Number of Salmonids Per $Yd.^2$	Species Composition — %		
				Steelhead / Rainbow Trout		Silver Salmon
				Young-of-the-Year	Yearling & Older	
100 Yards Downstream from Bridge Creek	151 (138-164)	276.4	0.55	*	*	0
10 Yards Upstream from Baker Creek	45 (43-47)	136.5	0.33	98	2	0
0.5 Miles Upstream from Baker Creek	98 (79-117)	153.2	0.64	84	16	0
1.0 Miles Upstream from Baker Creek	33 (31-35)	103.2	0.32	8l	13	6
0.5 Miles Upstream from Thompson Creek	127 (113-l41)	133.2	0.95	92	8	0
1.5 Miles Upstream from Thompson Creek	30 (21-39)	50.0	0.60	85	15	0
2.0 Miles Upstream from Thompson Creek	35 (31-39)	109.9	0.32	82	18	0

* Juvenile steelhead not separated by age at this station.

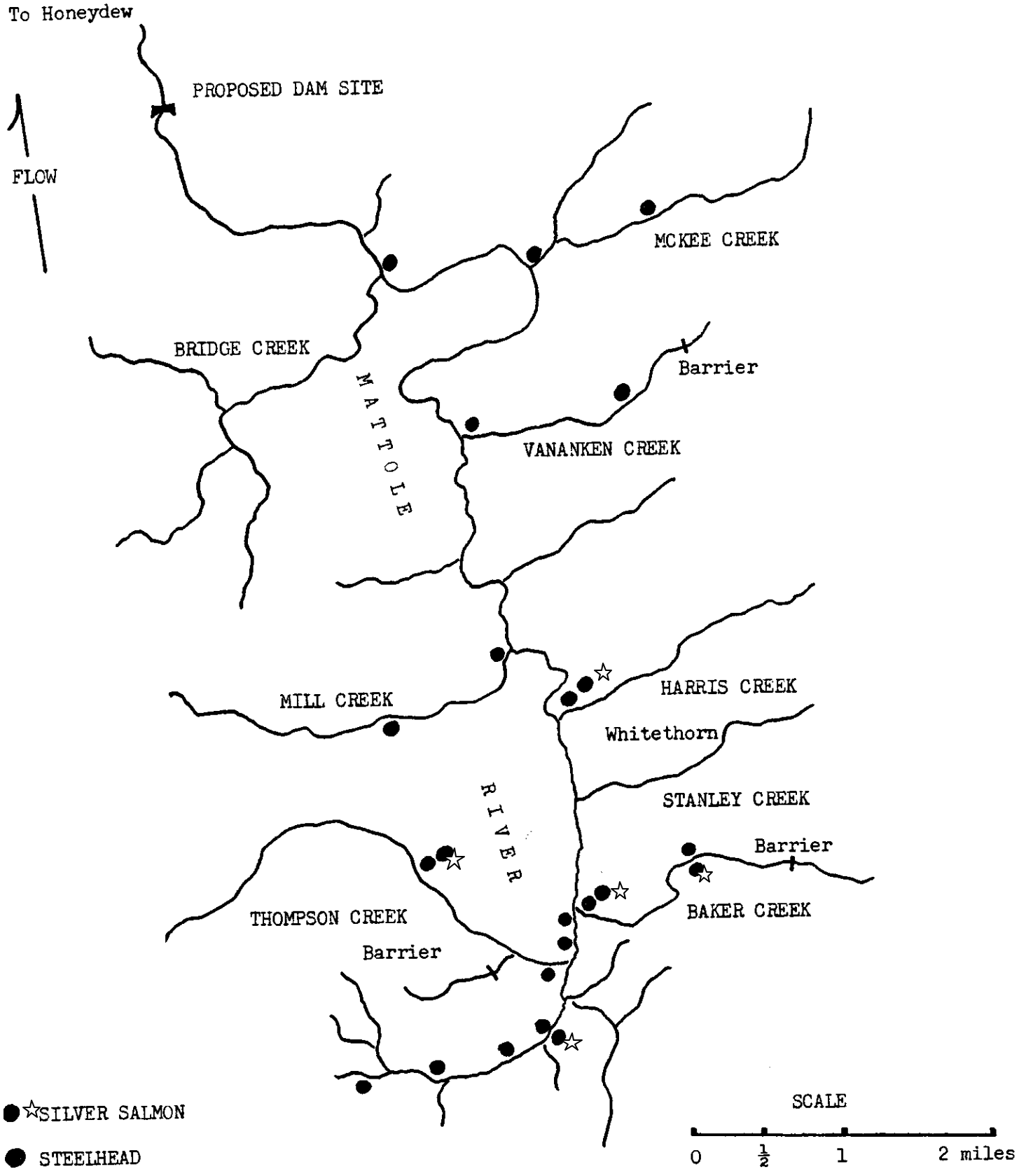

FIGURE 3. - Occurrence of silver salmon and steelhead at sampling stations in upper Mattole River, California (August, 1972)

TABLE 2

ESTIMATES OF SALMONID POPULATIONS AT 100-FOOT SAMPLING STATIONS ON TRIBUTARIES TO MATTOLE RIVER ABOVE THE PROPOSED NOONING CREEK DAMSITE

July- August 1972

Location	100ft Section Population Estimate (95% Confidence Interval)	Station Surface Area ($Yds.^2$)	Number of Salmonids Per $Yd.^2$	Species Composition — %		
				Steelhead / Rainbow Trout		Silver Salmon
				Young-of-the-Year	Yearling & Older	
McKee Creek Near Mouth	209 (201-217)	63.3	3.30	99	1	0
McKee Creek One Mile Above Mouth	67 (59-75)	69.9	0.97	60	40	0
Vananken Creek Near Mouth	112 (99-125)	79.9	1.40	99	1	0
Vananken Creek One Mile Above Mouth	37 (34-40)	86.6	0.43	100	0	0
Mill Creek Near Mouth	14 (10-18)	73.3	0.19	100	0	0
Mill Creek One Mile Above Mouth	62 (55-69)	69.9	0.88	100	0	0
Harris Creek Near Mouth	48 (40-56)	36.6	1.31	98	0	2
Baker Creek Near Mouth	58 (48-68)	30.0	1.93	79	0	21
Baker Creek One Mile Above Mouth	50 (47-53)	40.0	1.25	80	3	17
Thompson Creek Near Mouth	71 (61-81)	93.2	0.76	95	5	0
Thompson Creek One Mile Above Mouth	62 (50-74)	66.6	0.93	81	2	17

Salmonid populations in six tributaries to the Mattole River above the proposed Nooning Creek Dam site ranged from 14 to 209 juveniles per 100 feet or, in terms of surface area, from 0.19 to 3.30 salmonids per square yard. Most of these fish were young-of-the-year steelhead rainbow trout. Yearling and older trout made up from zero to 40 percent of the population; at most stations, they made up less than 5 percent of the population. Silver salmon were found in Harris, Baker, and Thompson Creeks (Figure 3). They made up from 2 to 21 percent of the total populations there (Table 2). The flow in all tributaries was less than 1.0 cfs during sampling.

Populations at two stations below the proposed damsite, Ettersberg and Bear Creek, sites, respectively, were 67 and 201 salmonids per 100 feet. Densities were 0.35 and 0.91 salmonids per square yard surface area. No silver salmon were found, and young-of-the-year steelhead dominated the catch (Table 3). Flow at the Bear Creek site was 7 cfs and flow at the Etterburg site was 14 cfs.

Populations from four stations on three tributaries below the proposed damsite ranged from 74 to 608 salmonids per 100 feet. Relative abundance ranged from 0.49 to 4.57 salmonids per square yard surface area. Silver salmon were found only in Mattole Canyon Creek. Young-of-the-year steelhead made up from 87 to 100 percent of the total catch, and yearling and older steelhead made up from zero to 13 percent (Table 3). Flow in Squaw Creek was 3 cfs; flow in Mattole Canyon Creek was 1 cfs and flow in the North Fork was 4 cfs.

Few king salmon spawn above the Nooning Creek Dam site.

Discussion and Need for Further Study

Sampling effort was not sufficient to accurately estimate the numbers of salmonids in the main Mattole River above the proposed

Nooning Creek Dam site. Because of the large variance between 100-foot sections, a relatively large number of samples would be necessary to estimate the standing stock for the upper river. At least five, 100-foot sample sections would be needed for each mile of main stream or tributary. In addition, because the high, natural variation in salmonid numbers that occurs from year to year in California coastal streams (Burns, 1971), an extended period of sampling would be necessary to confidently estimate salmonid abundance in Mattole River and its tributaries above the proposed Nooning Creek Dam site. Nevertheless, a very rough estimate is needed for this report. Based on my meager data, the proposed damsite would eliminate nursery area for 126,951 juvenile salmonids (125,283 steelhead trout and 1,713 silver salmon).**

Literature Cited

Burns, James W. 1971 The carrying capacity for juvenile salmonids in some Northern California streams. Calif. Fish and Game, 57(l): 44-57

Seber, G. A. F., and E. D. LeCren. 1967 Estimating population parameters from catches large relative to the population. J. Anim. Ecol. 36(3): 631-643

** Estimated using information on surface area and number of salmonids per area of stream.

TABLE 3

ESTIMATES OF SALMONID POPULATIONS AT 100-FOOT SAMPLING STATIONS ON MATTOLE RIVER & SOME TRIBUTARIES BELOW THE PROPOSED NOONING CREEK DAMSITE

July-August 1972

Location	100ft Section Population Estimate (95% Confidence Interval)	Station Surface Area ($Yds.^2$)	Number of Salmonids Per $Yd.^2$	Species Composition — %		
				Steelhead / Rainbow Trout		Silver Salmon
				Young-of-the-Year	Yearling & Older	
Mattole River Under Ettersberg Bridge	67 (58-76)	193.1	0.35	93	7	0
Mattole River 0.5 Miles Above Bear Ck.	201 (125-277)	219.8	0.91	100	0	0
Mattole Canyon Creek Near Mouth	608 (406-810)	133.2	4.57	98	1	1
Squaw Creek Near Mouth	74 (57-91)	149.9	0.49	100	0	0
North Fork 0.5 Miles Downstream From Petrolia Road Bridge	122 (102-l42)	86.6	1.41	87	13	0
North Fork 1.5 Miles Above Mouth	250 (208-292)	96.3	2.59	95	5	0