

(Purkerson) (1981)

SANDERS, 1981



IN REPLY REFER TO
N1619

United States Department of the Interior

NATIONAL PARK SERVICE

REDWOOD NATIONAL PARK

ARCATA OFFICE

P.O. BOX 55 — 791 EIGHTH STREET

ARCATA, CALIFORNIA 95521

March 30, 1981

Mr. Danny Walsh, Chairman
Humboldt County Board of Supervisors
825 Fifth Street
Eureka, California 95501

Dear Supervisors:

This letter pertains to the State of California's Geothermal Mitigation Fund which we understand is available for salmon enhancement projects in Humboldt County. Recently, Terry Hofstra, Aquatic Ecologist and Mr. Steve Sanders, Manager, Prairie Creek Fish Hatchery, discussed the Board's interest in submitting salmon enhancement project proposals to the State seeking money from the Mitigation Fund. We understand Mr. Sanders has suggested the Redwood Creek estuary as a candidate restoration site.

Mr. Sanders knew the park has been conducting studies in the estuary and therefore, asked for park data documenting existing conditions within the estuary. Enclosed is a statement based upon our studies describing the problem. Specific scientific data was not submitted, but will be more available should you need it.

The objective of the park's watershed rehabilitation program is to restore the ecosystem to a naturally functioning state. Accordingly, we wish to restore the aquatic ecosystem as a whole, not just the salmonid fishery. We recognize the long term commitments required by such a program. By achieving our objectives, however, the salmonid fishery of Redwood Creek will be significantly enhanced through habitat improvements.

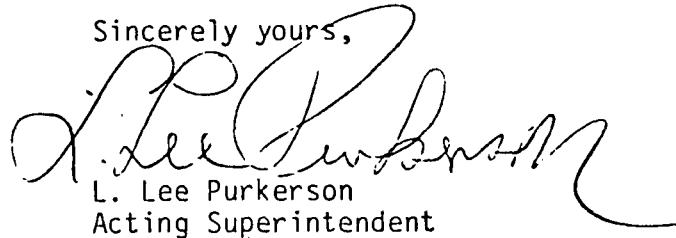
We are not able to propose specific estuarine rehabilitation alternatives at this time. Studies of the estuary were initiated only a short time ago, leading to the development of rehabilitation alternatives. Our initial studies will not be completed until the end of the year. Furthermore, we believe restoration program development must involve the following concerned parties: National Park Service, Humboldt County, California Department of Fish and Game, Army Corps of Engineers, the Coastal Commission, and, perhaps more importantly, local residents.

Year of
the
Visitor

Should funding become available before viable restoration project alternatives can be developed, we would hope that allocated funds might be applied toward rehabilitation alternatives identification.

We hope this information will be helpful to you. We look forward to the prospect of working with you on this program in the future. If we can provide additional information or clarification, please contact me or Terry Hofstra at (707) 822-7611.

Sincerely yours,

A handwritten signature in black ink, appearing to read "L. Lee Purkerson". The signature is fluid and cursive, with a large initial "L" and a long, sweeping tail.

L. Lee Purkerson
Acting Superintendent

Enclosure

cc:

Mr. Steve Sanders
Manager, Prairie Creek Hatchery

Introduction

The mouth of Redwood Creek is located approximately 2.5 river miles west of the town of Orick, Humboldt County (Figure 1 and 2). The location of the channel has remained relatively stable, even following the 1964 flood, as shown by aerial photography (Figure 3 and 4). However, property damage on the floodplain in 1953, 1955, and 1964 prompted the construction of levees along Redwood Creek. The downstream portion of the levee was completed in October 1968, which bypassed the last meander and directed the creek's flow directly to the ocean (Figure 5).

The estuary serves as a transition zone between freshwater and saltwater environments and plays a crucial role in the lives of adult and juvenile salmonids. Juvenile chinook salmon which use the estuary as a rearing area have a much higher survival rate than those which migrate directly out to sea.¹

Statement of the Problem

The anadromous fishery of the Redwood Creek watershed has experienced a substantial reduction (since pristine times) as a result of natural and man-induced conditions. During the last 15 years, the most notable decline has occurred to the chinook salmon fishery. An estimated 70-80% decline of the chinook salmon fishery and a 60% decline of the coho fishery has resulted. Although extensively supported by hatchery programs, the comparably more resilient steelhead fishery has realized a 50% decline. The historic coastal sea-run cutthroat fishery is virtually non-existent in Redwood Creek. These estimates have been deduced from records available at the Humboldt County's Prairie Creek Fish Hatchery (S. Sanders, personal communication).

Some degree of this decline is related to the degradation of salmon spawning and rearing habitat in the Redwood Creek basin. Siltation of spawning habitat, creation of impassable log jams, and the destruction of streamside vegetation have occurred due to flood damage and land use practices. However, alteration of the estuarine environment has also significantly impacted the Redwood Creek fishery. Construction of levees changed the circulation pattern, isolating two backwater areas, the north and south sloughs (Figure 6). Prior to channelization, high flows kept the south meander open and created an eddy against the cliffs near the neck of the north slough. Aggradation of 4 to 8 feet of sand has occurred in the south slough since the 1966 Army Corps of Engineers survey. Movement of sand into the sloughs has been observed under conditions of high ocean swells during high tides. The source of the sand deposits will be identified by sediment analysis studies in progress.

¹Reimers, Paul E., 1973, The length of residence of juvenile fall Chinook salmon in Sixes River, Oregon: Research Reports of the Fish Commission of Oregon, v. 4, no. 2, p. 1-43.

Sediment deposition in the backwater areas has resulted in the loss of a major portion of the estuarine environment. The north and south sloughs are disconnected from the main channel except during periods of high water. The channelized portion of Redwood Creek lacks streamside vegetative cover. Increased water temperatures and susceptibility to predation also result from shallow water depths in the mouth area (embayment).

The mouth of Redwood Creek periodically closes due to low flows and the formation of a wave-built berm during the summer months. The river fills the embayment behind the berm, increasing the water depth and the volume of available aquatic habitat. Historically, the berm may have remained intact until fall. High river flows might erode it naturally or local fishermen would dig out the berm to encourage upstream migration of adult salmonids. Under present conditions, the berm may be dug out by local land owners whose fields and roads are flooding. Recent backwater flooding problems are a direct result of aggradation since less water is now required to fill the embayment.

Backwater flooding and the timing of mid-summer breaching present problems for estuary fisheries management. Peak downstream migration of juvenile chinook occurs in May and June when larger volumes of water may fill the embayment. Man-induced breaching of the berm in early July 1980 decreased the available habitat by more than 75%. The productive north and south sloughs became disconnected and water depths decreased drastically. Juvenile utilization of the estuary may have continued much later into the summer but was interrupted by the breaching. An estimated 20,000 juveniles were prematurely flushed out to sea. Food resources within the estuary reach a maximum in the summer and may also be lost by premature flushing. The dominant fish food organism attains high densities during low flows when the substrate is stable and algal production contributes organic material to the benthic environment. The slough areas support high productivity throughout the year.

During early fall months, breaching of the berm during low flow increases the danger that upstream migrating salmon may fall prey to unscrupulous fishermen in shallow resting pools. In addition, spawning opportunities may be limited until after the first fall rains. Prior to channelization, there was a higher probability that the berm would remain intact until high flows eroded it naturally. This would allow salmonids to enter the freshwater environment at the proper time.

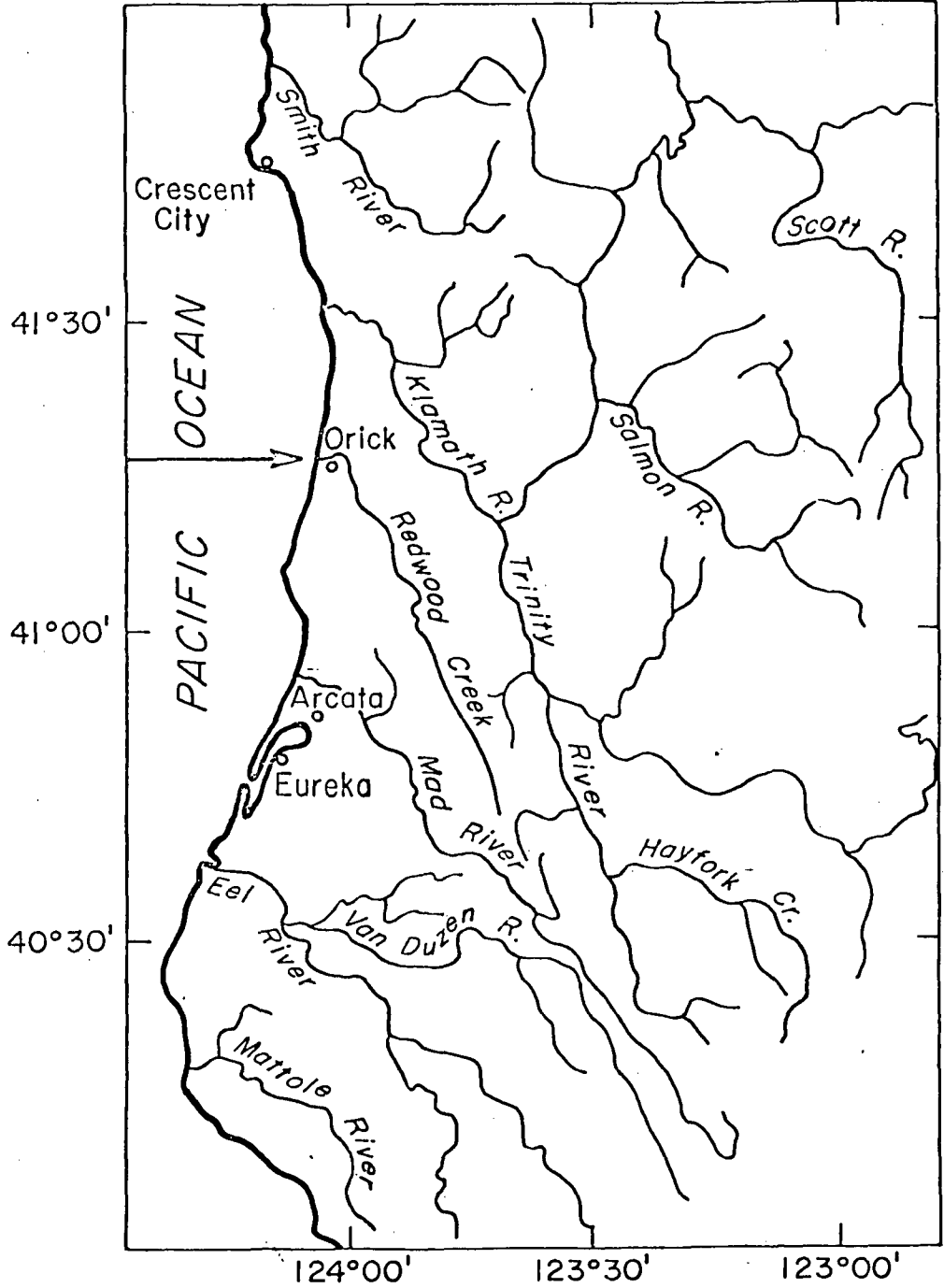


FIGURE 1

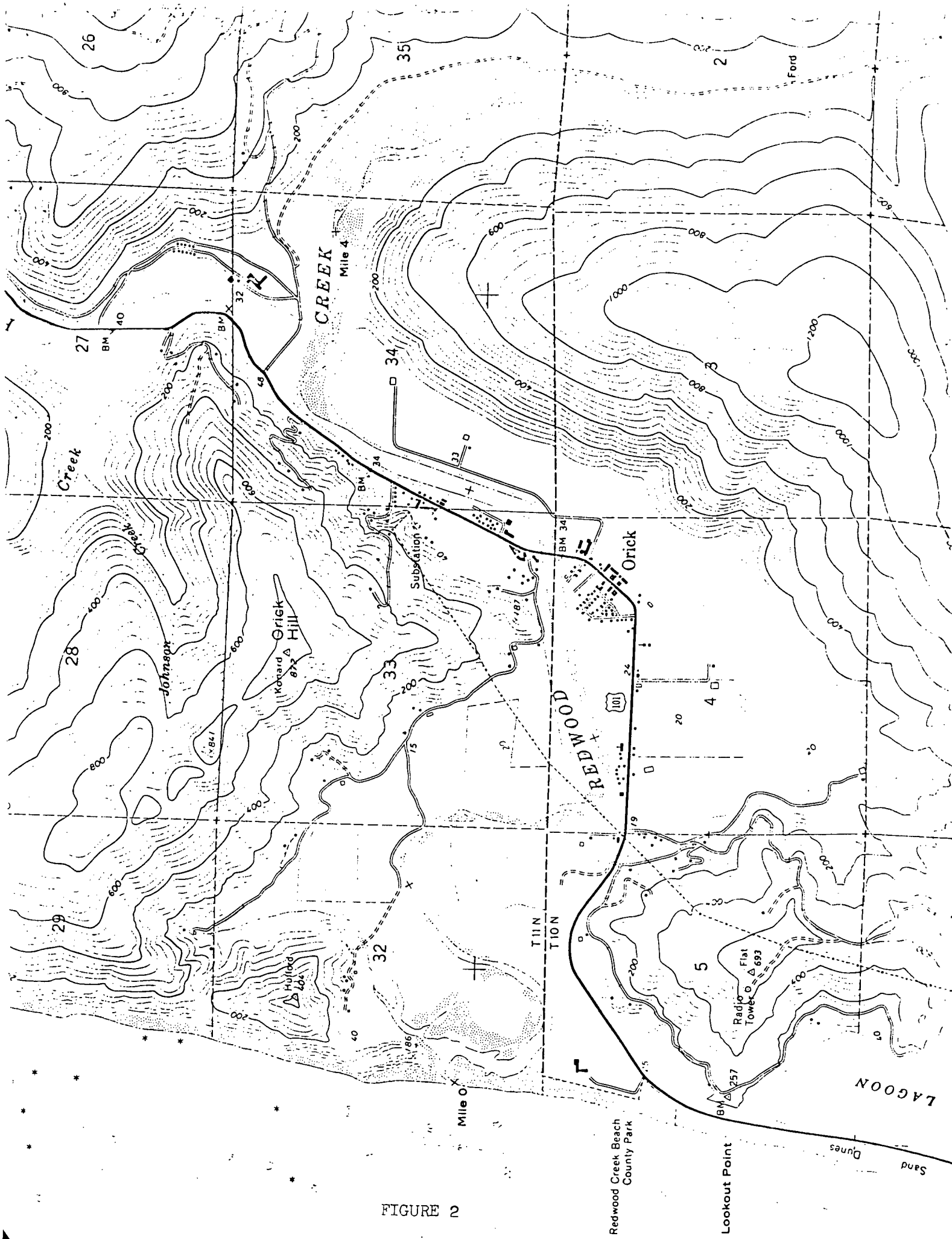


FIGURE 2



FIGURE 3
August 1962



FIGURE 4
June 30, 1966

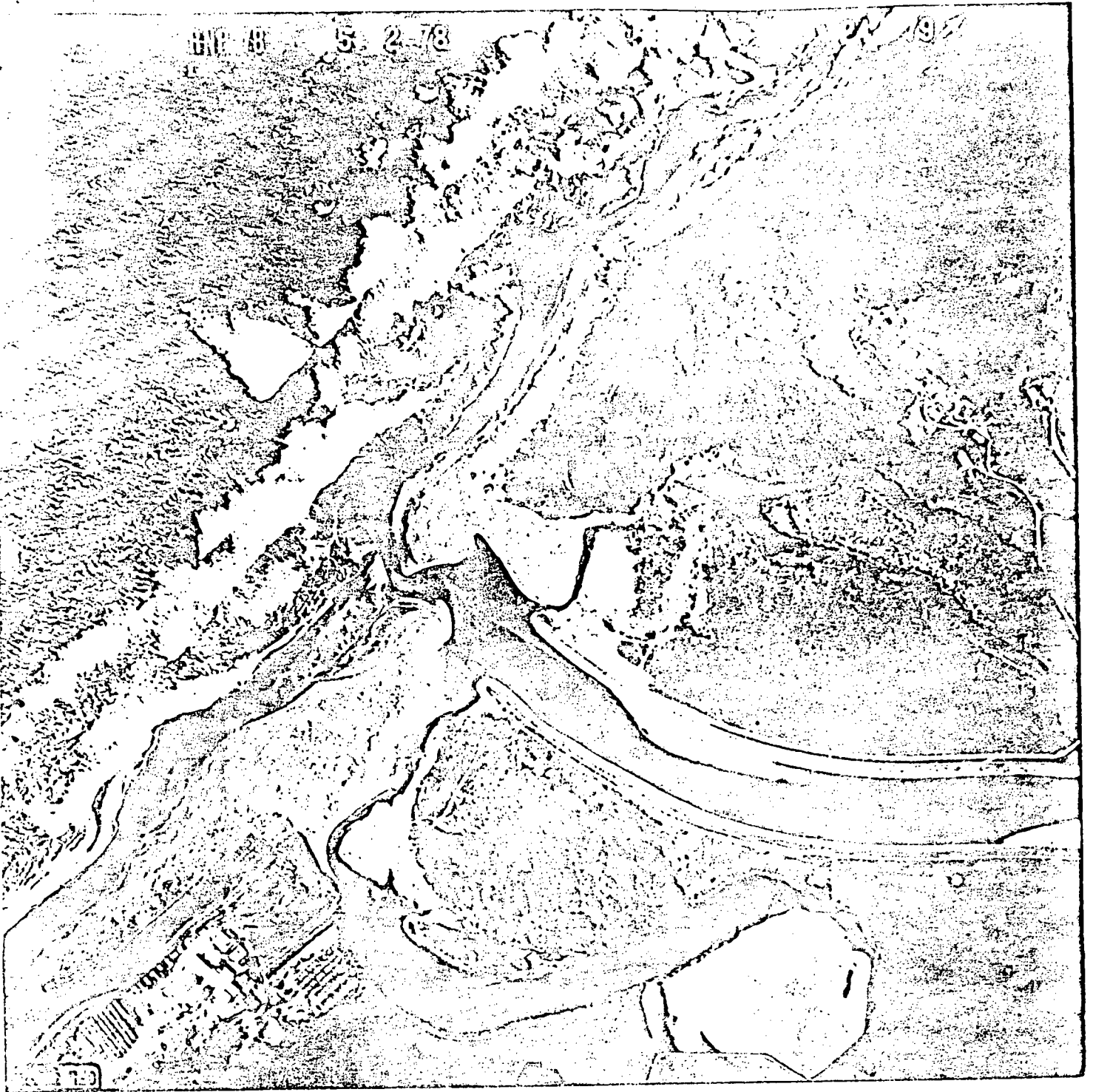
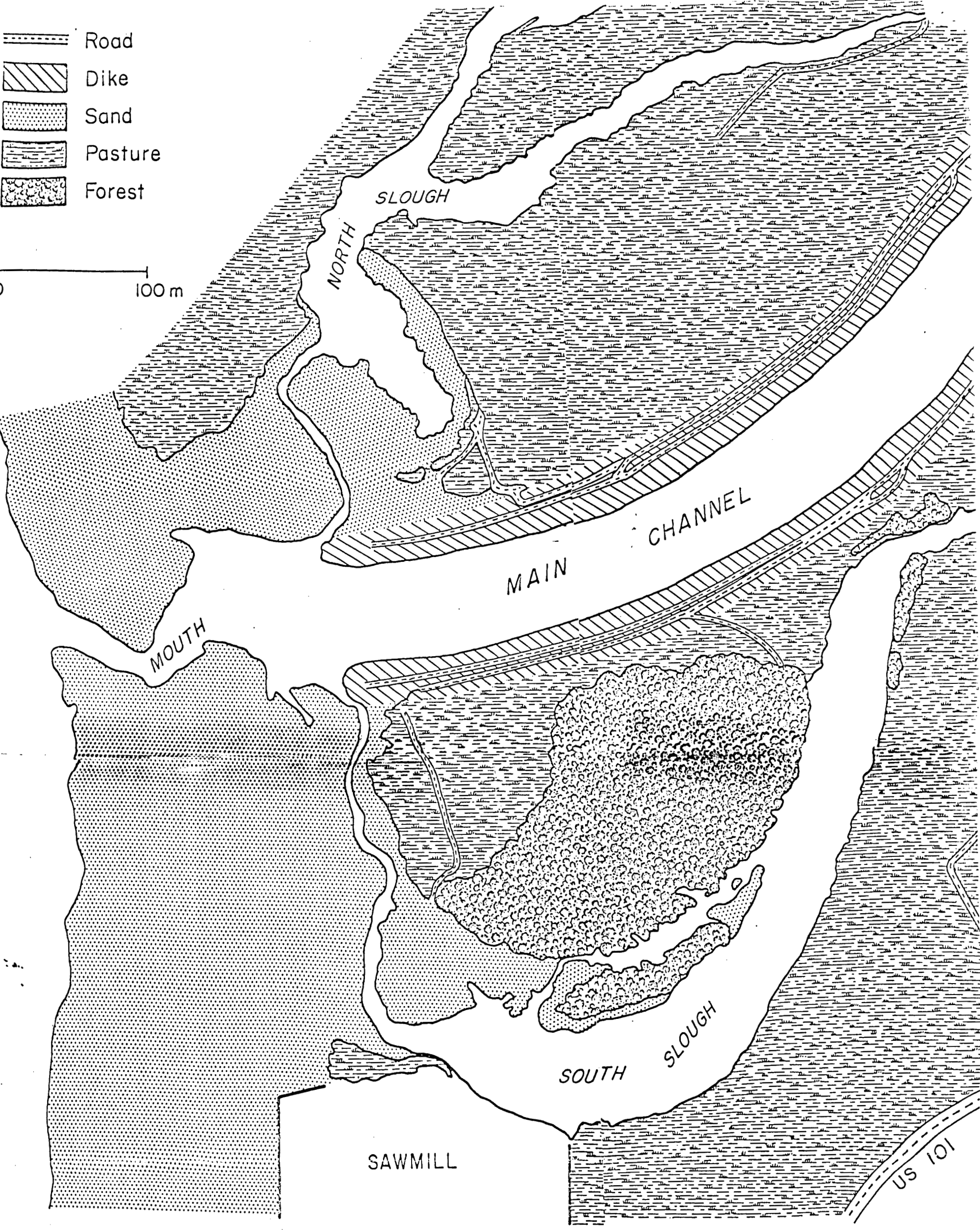


FIGURE 5



PRAIRIE CREEK FISH HATCHERY
ORICK, CA

March 29, 1981

Board of Supervisors
County Courthouse
Eureka, California 95501

Supervisors:

SUBJECT: Geothermal Mitigation Fund for Salmon
Enhancement Programs

Despite the fact Prairie Creek Fish Hatchery, Humboldt County has hatched, reared and released millions of salmon for the past ten years, the salmon runs in Redwood Creek are deplorable. I attribute the declining salmon runs in part to drought, miss-use of the Redwood Creek estuary and inadequate flood control by the levees built by the Corp of Engineers.

When I took the position of managing the Humboldt County Fish Hatchery in November of 1971 there was a deep, viable estuary at the mouth of Redwood Creek. At that time there was a vital fishery in Redwood Creek estuary for king salmon, silver salmon, coast cutthroat trout and steelhead. Unfortunately only the silver salmon appeared to be of hatchery origin. Also the Redwood Creek Levees had been in existence for 5½ years.

King salmon eggs were readily available at that time and the hatchery released over 3,000,000 king salmon from 1972 through 1975. By the Fall of 1975 I felt there would be adequate numbers of king salmon returning to the county hatchery to allow a self-supported king salmon program. Trapping records are attached.

Unfortunately the estuary was slowly silting in with upstream gravels and beach sands from the ocean. The levees the Corp of engineers had designed and built were doing an inadequate job of flood protection. During summer months when the mouth of the stream sanded closed, water would build up in the lagoon, flood around the end of the levees, cause flood damage in the adjacent fields and even flood the county road. To relieve this situation the berm has been dug out and recent data indicates that 100% of the juvenile salmonids subjected to the intrushing sea water were killed.

Now it is 1981 and where there was once a deep water estuary only a desolate waste land now exists (supportive data as to condition of estuary attached). The coast cutthroat trout are gone; the king salmon numbers are reduced to a number a run can no longer be maintained; the silver salmon are returning in fewer and fewer numbers; and the steelhead are returning to the hatchery in increasing numbers. The steelhead (hatchery reared) is not as dependent on the estuary as are the coast cutthroat and both species of salmon.

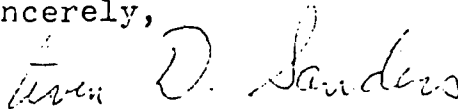
In light of the deplorable state of Redwood Creek estuary and the declining runs of salmon I respectfully request the Humboldt County Board of Supervisors to request \$150,000 from Geothermal monies to initiate a restoration program for the estuary on Redwood Creek.

I also respectfully request the Board of Supervisors explore the possibility of requesting \$100,000 to help defray the cost of Humboldt County's salmon hatchery programs.

My third and final request is for \$50,000 for construction of a trapping and holding facility on our Humboldt Bay site (Freshwater Creek). This facility would include a fish barrier on Freshwater Creek, a trapping area, a holding area and access by vehicle to said facility. Presently this program is showing increased numbers of returning adult salmonids and I feel a great deal of this can be attributed to the fact we are operating through a healthy estuary (Humboldt Bay). Drawing of trapping facility attached.

Total request from Geothermal monies for hatchery related programs in Humboldt County is \$300,000.

Sincerely,

A handwritten signature in cursive script that reads "Steven D. Sanders".

Steven D. Sanders
Hatchery Superintendent

MARKED KING SALMON TRAPPED

1976-77

DATE	MARK	SEX	WEIGHT IN POUNDS	TOTAL LENGTH IN INCHES	FORK LENGTH IN INCHES
9-22-76	LV	M	4	23	21
9-28-76	RV	M	?	?	?
10-18-76	RV	M	6	27 $\frac{1}{2}$	26
10-19-76	RV	M	3	21	20
10-20-76	LV	M	4	22 $\frac{1}{2}$	21
10-20-76	RV	M	4	22	21
10-21-76	RV	M	3 $\frac{1}{2}$	22 $\frac{1}{2}$	21 $\frac{1}{4}$
10-24-76	RV	M	8 $\frac{1}{4}$	29	27 $\frac{1}{4}$
10-25-76	RV	M	3 $\frac{1}{4}$	19 $\frac{1}{2}$	19
10-27-76	RV	M	8 $\frac{1}{2}$	28 $\frac{1}{2}$	26 $\frac{1}{4}$
10-27-76	RV	M	3 $\frac{1}{4}$	21 $\frac{3}{4}$	20 $\frac{1}{2}$
10-28-76	RV	M	3 $\frac{1}{4}$	21	20 $\frac{1}{4}$
10-29-76	LV	M	1 $\frac{1}{2}$	17 $\frac{1}{2}$	16 $\frac{1}{4}$
11-01-76	RV	M	3	22	20 $\frac{1}{2}$
11-22-76	RV	F	13 $\frac{1}{2}$?	?

15

1977-78

09-19-77	RV	F	9 $\frac{3}{4}$	28 $\frac{1}{2}$	26 $\frac{3}{4}$
09-20-77	LV	F	9	27	25 $\frac{1}{2}$
09-20-77	RV	F	10 $\frac{1}{4}$	28	25
09-21-77	RV	M	11	29	26
09-21-77	RV	F	9 $\frac{3}{4}$	29 $\frac{1}{2}$	26
09-23-77	RV	M	14 $\frac{1}{2}$	33 $\frac{3}{4}$	31 $\frac{1}{4}$
09-24-77	RV	F	11	29 $\frac{1}{2}$	27 $\frac{1}{2}$
10-03-77	RV	M	12	30	29
10-08-77	RV	F	7 $\frac{1}{2}$	27 $\frac{1}{2}$	26
10-09-77	RV	F	9 $\frac{1}{4}$	29	27 $\frac{3}{4}$
10-13-77	RV	F	14	32 $\frac{1}{4}$	31 $\frac{1}{4}$
10-18-77	RV	F	11	29 $\frac{1}{2}$	28
10-23-77	RV	M	13 $\frac{1}{2}$	33	31
11-22-77	LV	M	3 $\frac{1}{2}$	20 $\frac{1}{4}$	19 $\frac{1}{2}$

14

1978-79

09-07-78	RV	F	14 $\frac{1}{2}$	34	32 $\frac{1}{2}$
09-17-78	RV	F	12 $\frac{1}{4}$	33 $\frac{1}{4}$	31
10-20-78	RP	F	5	23	22
11-23-78	LV	M	2 $\frac{1}{4}$	17	16 $\frac{1}{2}$
11-26-78	LV	M	2 $\frac{1}{2}$	18	17
11-28-78	RV	M	2 $\frac{1}{4}$	17	16
12-08-78	RV	M	3 $\frac{1}{2}$	20 $\frac{1}{2}$	19
12-12-78	RV	M	3	19	18
01-07-79	RV	M	2 $\frac{3}{4}$	19 $\frac{1}{2}$	18 $\frac{1}{2}$
01-09-79	RV	M	2 $\frac{1}{2}$	18 $\frac{1}{2}$	18
01-11-79	RV	M	2	18	17

11

MARKED KING SALMON TRAPPED
1979-80

DATE	MARK	SEX	WEIGHT IN POUNDS	TOTAL LENGTH IN INCHES	FORK LENGTH IN INCHES
09-05-79	RV	F	10	28 $\frac{1}{2}$	27
09-14-79	RP	F	10 $\frac{3}{4}$	28 $\frac{3}{4}$	27 $\frac{1}{2}$
09-26-79	RV	F	11 $\frac{1}{4}$	29 $\frac{1}{2}$	28 $\frac{1}{2}$
10-20-79	RV	F	7 $\frac{1}{2}$	27	26
10-20-79	RV	M	6 $\frac{3}{4}$	28	27
11-01-79	RV	F	4 $\frac{1}{4}$	24	23
11-11-79	LV	M	2 $\frac{1}{2}$	19	17 $\frac{1}{4}$
11-13-79	RV	M	6	24	22 $\frac{1}{2}$
12-08-79	RV	M	6	24 $\frac{1}{2}$	23
01-07-80	RV	M	8 $\frac{1}{4}$	29 $\frac{1}{2}$	27 $\frac{1}{2}$
01-07-80	LV	M	2	18	17

1980-81

11-18-80	RV	F	13 $\frac{1}{2}$	33	32
12-01-80	RV	M	1	15	14 $\frac{1}{4}$
12-06-80	RV	M	2	18 $\frac{1}{2}$	17 $\frac{1}{2}$
12-07-80	LV	F	16 $\frac{1}{4}$	33	31 $\frac{1}{2}$
12-18-80	RV	M	3	20 $\frac{1}{4}$	19 $\frac{1}{4}$

5

MARKED SILVER SALMON TRAPPED
1976-77

DATE	MARK	SEX	WEIGHT IN POUNDS	TOTAL LENGTH IN INCHES	FORK LENGTH IN INCHES
01-13-77	RV	M	2 3/4	16	15 3/4

1977-78

09-23-77	LV	M	2	17 1/4	15 1/4
10-23-77	RV	M	1 1/2	16 1/4	15
10-26-77	RV	M	1 3/4	15 3/4	15 1/4
11-03-77	LV	M	1 3/4	17	15
11-08-77	LV	M	1 3/4	17 3/4	17
11-22-77	RV	M	12 1/2	32 1/2	31
11-22-77	LV	M	1 3/4	18	17
11-28-77	RV	M	3 1/4	22	20
12-07-77	RV	M	11	31	29 1/2
12-07-77	RV	F	5	24	23

10

1978-79

11-27-78	RV	F	8 1/2	28	27
11-29-78	RV	F	8	28	26
12-02-78	RV	F	6 1/4	25 1/2	24 3/4
12-02-78	RV	M	2 3/4	21	20 1/2
12-02-78	RV	M	6	28	25
01-09-79	RV	F	4 1/4	23 1/4	22 1/2
01-11-79	RV	M	5 3/4	26 1/2	25
01-11-79	RV	M	6 1/4	24 1/2	23
01-11-79	RV	M	4	20	18
01-16-79	RV	M	4	20 1/2	20
01-31-79	RV	F	3 1/4	22	21
02-11-79	RV	M	4 1/2	22	21
02-27-79	RV	M	3 1/4	21	20

13

1979-80

10-15-79	RV	M	1	14 1/2	13 1/2
10-15-79	RV	M	3 1/4	21	20
10-15-79	RV	M	2 1/2	18 1/2	18
10-16-79	RV	M	2 1/2	19	18
10-17-79	RV	M	1 1/2	16	15 1/2
10-17-79	RV	M	1 1/4	15	14 1/2
10-17-79	RV	F	3	19	18 1/4
10-20-79	RV	M	1 1/4	14 1/4	13 1/2
10-20-79	RV	M	3 1/4	20 1/4	20
10-20-79	LV	F	7 1/4	26 1/4	26 1/2
10-20-79	RV	M	2 1/2	18 1/2	18
10-20-79	RV	M	2	18	17 1/2
10-20-79	RV	M	1	14	13 1/2
10-20-79	LV	F	7 1/2	29	28
10-20-79	RV	M	2 1/4	18	17 1/2
10-20-79	RV	M	1	15 1/2	15
10-20-79	RV	M	2 1/2	18 1/2	18

MARKED SILVER SALMON TRAPPED
1979-80 (cont.)

DATE	MARK	SEX	WEIGHT IN POUNDS	TOTAL LENGTH IN INCHES	FORK LENGTH IN INCHES
10-20-79	RV	M	2	18 3/4	17 3/4
10-20-79	RV	M	1 3/4	16 1/2	15 1/2
10-25-79	RV	F	7 3/4	26 1/2	25
10-25-79	RV	M	3	19 1/2	18 3/4
10-25-79	RV	M	2 1/2	19 1/2	19
10-25-79	RV	F	4	20 3/4	19 3/4
10-25-79	RV	M	1 1/2	16	15 1/2
10-25-79	RV	M	1 1/2	15 3/4	15 1/2
10-25-79	RV	M	1 1/2	15	15
10-25-79	RV	M	1 1/2	14	13 1/2
10-25-79	RV	M	2 2 1/2	18	17
11-24-79	RV	F	3 3/4	20 3/4	20
11-24-79	RV	M	2 2 1/2	17 1/2	17
11-06-79	RV	M	2 3/4	20	19 1/2
11-22-79	RV	F	5	24	23 1/2
11-23-79	RV	F	3 3/4	24	23 1/2
11-24-79	RV	M	2 2 1/2	18	17
11-24-79	RV	M	1 1/2	15	14
11-24-79	RV	M	1 1/2	14 3/4	14
11-24-79	RV	M	2	17 3/4	17
11-29-79	RV	M	7 3/4	25	24
11-29-79	RV	M	3 3/4	25	24
12-14-79	RV	M	5 3/4	25	24
12-18-79	RV	F	10	29 1/2	28 1/2
12-18-79	RV	M	2	18	17
12-19-79	RV	F	9 1/2	29	27 1/2
12-19-79	RV	M	6 1/2	27	26 1/2
12-19-79	RV	M	7	28	27
12-21-79	RV	M	3	20	19 1/2
12-30-79	RV	M	1 1/2	16 1/2	15 1/2
12-30-79	RV	M	3	22	20
01-04-80	RV	M	1 1/2	18	17
01-04-80	RV	M	4 1/2	24	23 1/2
01-09-80	RV	M	7 1/2	30	27 1/2
01-10-80	RV	M	7	27 1/2	25 3/4
01-12-80	RV	F	6	24	23 1/2
01-12-80	RV	M	9	28	26 3/4
01-13-80	RV	M	9 1/2	29	28
01-13-80	RV	F	10	27	26
02-03-80	RV	F	10 1/2	30	28
02-18-80	RV	F	9	27 1/2	26 1/2
02-18-80	RV	F	11	29	27 1/2
11-03-80	RV	M	1 3/4	17	16 1/2
11-07-80	RV	M	1 1/2	15 1/2	14 1/2
11-08-80	RV	M	6	26	25
11-09-80	RV	M	7 3/4	28	26 1/2
11-30-80	RV	M	4	24	23 1/2
12-01-80	RV	M	3 3/4	21	20
12-02-80	RV	F	6	25	23 1/2
12-02-80	RV	M	1 3/4	17 1/2	16 1/2
12-02-80	RV	M	1	14	13 1/2

55

1980-81

9

MARKED STEELHEAD TRAPPED
1976-77

DATE	MARK	SEX	WEIGHT IN POUNDS	TOTAL LENGTH IN INCHES	FORK LENGTH IN INCHES
?	Ad	M	?	?	?
?	Ad	F	?	?	?
?	LV	M	?	?	?
02-04-77	LV	F	6 $\frac{1}{4}$	25 $\frac{1}{2}$?
02-16-77	Ad	F	6 $\frac{1}{4}$	25 $\frac{3}{4}$?
02-18-77	Ad	M	?	?	?
04-28-77	LV	M	?	?	?

? indicates crew didn't weigh or measure fish

1977-78

09-18-77	Ad	M	5	26 $\frac{1}{2}$	25
01-13-78	Ad	M	7 $\frac{1}{2}$	29 $\frac{1}{2}$	29
01-14-78	Ad	M	8	27 $\frac{1}{2}$	27
01-14-78	AD	M	9	29 $\frac{1}{2}$	28
01-17-78	Ad	M	8 $\frac{3}{4}$	30	29 $\frac{1}{2}$
01-21-78	Ad	M	14	32 $\frac{1}{2}$	31
01-28-78	Ad	M	9	30 $\frac{1}{2}$	30
02-03-78	Ad	M	8	29	28 $\frac{1}{2}$
02-04-78	Ad	F	8	28 $\frac{1}{2}$	27 $\frac{1}{2}$
02-10-78	Ad	F	8 $\frac{1}{4}$	28	27 $\frac{1}{2}$
02-12-78	Ad	M	9	29 $\frac{1}{4}$	29
02-12-78	Ad	F	9	27 $\frac{1}{4}$	27
02-13-78	Ad	F	6 $\frac{1}{4}$	26 $\frac{1}{2}$	26
02-13-78	Ad	F	7	27 $\frac{3}{4}$	27
02-13-78	Ad	F	10	30 $\frac{1}{2}$	30
02-15-78	Ad	F	7	27	26
02-16-78	Ad	M	8	26 $\frac{1}{2}$	26
02-17-78	LP	M	5 $\frac{1}{4}$	25	24 $\frac{1}{2}$ (stray)
02-21-78	Ad	M	8 $\frac{1}{4}$	28 $\frac{1}{2}$	28
02-22-78	Ad	F	6	25 $\frac{1}{2}$	24 $\frac{1}{4}$
02-24-78	Ad	M	7 $\frac{1}{4}$	29	27 $\frac{1}{4}$
02-24-78	RP	M	3 $\frac{1}{2}$	21	20 $\frac{1}{4}$ (stray)
02-26-78	Ad	M	9 $\frac{1}{2}$	29	28 $\frac{1}{4}$
02-27-78	Ad	M	9	27	26 $\frac{1}{2}$
03-02-78	Ad	M	7	27 $\frac{1}{2}$	27
03-02-78	Ad	F	?	?	?
03-03-78	RP	M	3 $\frac{1}{2}$	21	20 $\frac{1}{4}$ (stray)
03-04-78	Ad	M	1 $\frac{1}{2}$	16	15 $\frac{1}{2}$
03-04-78	Ad	M	8 $\frac{1}{2}$	28	27 $\frac{1}{2}$
03-05-78	Ad	M	9	30 $\frac{1}{2}$	30
03-05-78	RV	F	6 $\frac{3}{4}$	26 $\frac{1}{2}$	26 (stray)
03-06-78	Ad	F	8	27	26 $\frac{1}{2}$
03-06-78	Ad	F	7 $\frac{1}{4}$	25 $\frac{3}{4}$	25
03-08-78	Ad	F	8 $\frac{1}{2}$	28	27 $\frac{1}{4}$
03-08-78	Ad	M	7	27	26 $\frac{1}{4}$
03-08-78	Ad	F	8 $\frac{1}{2}$	28	27 $\frac{1}{2}$
03-09-78	Ad	M	9 $\frac{1}{2}$	29 $\frac{1}{2}$	29
03-09-78	Ad	M	8 $\frac{1}{2}$	30	29 $\frac{1}{2}$
03-10-78	Ad	M	3 $\frac{3}{4}$	23	22
03-12-78	Ad	F	9 $\frac{1}{2}$	28 $\frac{1}{2}$	28
03-12-78	Ad	M	8	27 $\frac{1}{2}$	27

MARKED STEELHEAD TRAPPED
1977-78 (con't)

DATE	MARK	SEX	WEIGHT IN POUNDS	TOTAL LENGTH IN INCHES	FORK LENGTH IN INCHES
03-13-78	Ad	M	10½	31½	30½
03-15-78	Ad	F	8½	30	29
03-25-78	Ad	F	7	27	26½

ADEQUATE SUPPLY OF STEELHEAD EGGS - STOPPED TRAPPING FISH

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1978-79

01-17-79	AD	M	4½	23 3/4	23 1/4
01-25-79	Ad	M	1 3/4	19	18 3/4
01-29-79	Ad	M	17 1/4	37	36 1/2
01-30-79	Ad	M	16	33	32
02-04-79	Ad	F	16 1/4	38	37 1/2
02-09-79	Ad	M	4 3/4	25	24
02-11-79	Ad	M	6 1/2	27	26 1/2
02-11-79	Ad	F	13	33	31 3/4
02-12-79	Ad	M	5 1/2	25 1/4	24 3/4
02-13-79	Ad	F	6 3/4	26 3/4	25 3/4
02-13-79	Ad	M	7 1/2	28	27 1/4
02-15-79	Ad	F	11	33	32
02-18-79	Ad	M	6	25	24
02-21-79	Ad	F	8 3/4	28	27
02-22-79	Ad	F	11 1/2	30	29
02-22-79	Ad	F	6 3/4	26 1/4	25
02-22-79	Ad	M	15	36 1/2	35
02-23-79	Ad	F	8 1/2	28 1/2	27
02-24-79	Ad	F	11	30	29
02-25-79	Ad	F	11 1/4	31 1/4	30 1/4
02-28-79	Ad	F	7	26 1/2	25
03-04-79	Ad	M	8	28	27 1/2
03-04-79	Ad	F	5 1/4	23 1/4	23
03-05-79	Ad	F	7	25 1/4	25
03-07-79	Ad	F	7	24 3/4	24 1/2
03-10-79	Ad	M	13 1/2	36 1/4	35 1/2

ADEQUATE SUPPLY OF STEELHEAD EGGS - STOPPED TRAPPING FISH

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1979-80

10-25-79	Ad	M	1	14	13 1/4
01-12-80	Ad	F	6 1/2	26	25 1/4
02-04-80	Ad	F	11	32 1/4	30 1/2
02-06-80	Ad	M	9 3/4	29 1/2	28 1/2
02-09-80	Ad	M	6	26 1/4	25 1/2
02-09-80	Ad	M	1	14 3/4	13 3/4
02-11-80	Ad	M	5 3/4	26	24 3/4
02-21-80	Ad	F	15 1/4	36 1/2	34 3/4
02-23-80	Ad	M	7	27 1/2	26 3/4
02-26-80	Ad	M	1 3/4	17	16 1/4
02-27-80	Ad	M	1 1/2	16	15 1/2
02-27-80	Ad	F	?	?	?
02-27-80	Ad	M	7 1/4	29 1/2	28 1/4
03-05-80	Ad	M	1	15	14 1/4
03-06-80	Ad	F	3 1/4	23 3/4	22 1/4

MARKED STEELHEAD TRAPPED
1979-80 (con't)

DATE	MARK	SEX	WEIGHT IN POUNDS	TOTAL LENGTH IN INCHES	FORK LENGTH IN INCHES
03-14-80	Ad	M	5 $\frac{1}{4}$	24 $\frac{1}{4}$	23
03-14-80	Ad	M	2	18	17 $\frac{1}{2}$

ADEQUATE SUPPLY OF STEELHEAD EGGS - STOPPED TRAPPING FISH

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1980-81

01-03-81	Ad	F	7	27 $\frac{1}{4}$	25 $\frac{1}{2}$
01-07-81	Ad	F	7 $\frac{1}{2}$	28 $\frac{1}{4}$	27
01-22-81	Ad	M	8 $\frac{1}{2}$	28 $\frac{3}{4}$	27 $\frac{1}{4}$
01-22-81	Ad	M	7 $\frac{1}{2}$	27	26
01-22-81	Ad	M	7 $\frac{3}{4}$	27	26 $\frac{1}{4}$
01-26-81	Ad	M	8 $\frac{3}{4}$	28 $\frac{1}{2}$	27 $\frac{1}{4}$
01-26-81	Ad	M	7 $\frac{1}{4}$	27 $\frac{1}{4}$	26 $\frac{1}{4}$
01-27-81	Ad	F	6 $\frac{3}{4}$	27	25 $\frac{3}{4}$
01-27-81	Ad	F	8 $\frac{1}{4}$	27 $\frac{1}{4}$	26 $\frac{1}{4}$
01-28-81	Ad	F	6 $\frac{1}{4}$	26 $\frac{1}{4}$	25
01-28-81	Ad	F	6 $\frac{1}{4}$	26 $\frac{1}{2}$	25 $\frac{1}{2}$
01-28-81	Ad	F	5 $\frac{3}{4}$	27	26
01-28-81	Ad	M	7 $\frac{3}{4}$	27 $\frac{3}{4}$	26 $\frac{3}{4}$
01-29-81	Ad	M	8	28 $\frac{1}{4}$	27 $\frac{1}{4}$
01-29-81	Ad	M	6 $\frac{1}{2}$	26 $\frac{3}{4}$	25 $\frac{1}{2}$
02-02-81	Ad	F	7	27 $\frac{1}{4}$	26
02-02-81	Ad	F	8	28	27 $\frac{1}{4}$
02-04-81	Ad	M	7 $\frac{1}{2}$	27 $\frac{1}{4}$	26 $\frac{1}{4}$
02-04-81	Ad	F	7 $\frac{1}{2}$	26 $\frac{3}{4}$	25 $\frac{1}{2}$
02-04-81	Ad	M	6 $\frac{1}{4}$	27	26
02-04-81	Ad	M	9	29 $\frac{1}{4}$	28 $\frac{1}{2}$
02-04-81	Ad	M	7 $\frac{1}{2}$	27 $\frac{1}{2}$	27
02-04-81	Ad	M	5 $\frac{3}{4}$	23 $\frac{3}{4}$	23
02-06-81	Ad	F	7 $\frac{1}{2}$	28 $\frac{1}{2}$	28
02-11-81	Ad	M	6	27	26 $\frac{1}{4}$
02-13-81	Ad	M	6 $\frac{1}{2}$	27 $\frac{1}{2}$	27
02-13-81	Ad	M	7	28 $\frac{1}{2}$	28
02-14-81	Ad	M	5	24	23 $\frac{1}{4}$
02-17-81	Ad	F	6 $\frac{1}{2}$	26 $\frac{1}{2}$	25 $\frac{1}{4}$
02-17-81	Ad	F	7 $\frac{1}{2}$	27 $\frac{1}{4}$	26 $\frac{1}{4}$
02-19-81	Ad	F	6 $\frac{1}{2}$	26 $\frac{3}{4}$	25 $\frac{1}{4}$
02-22-81	Ad	F	8 $\frac{1}{2}$	28	27 $\frac{1}{4}$
02-22-81	Ad	M	6 $\frac{1}{2}$	27 $\frac{1}{4}$	26 $\frac{1}{2}$
02-22-81	Ad	M	8	28	26 $\frac{1}{2}$
02-22-81	Ad	F	7 $\frac{1}{2}$	25	24 $\frac{1}{2}$
02-24-81	Ad	F	7 $\frac{3}{4}$	26	24 $\frac{3}{4}$
02-26-81	Ad	F	6 $\frac{1}{2}$	27 $\frac{3}{4}$	26 $\frac{3}{4}$
02-28-81	Ad	M	7 $\frac{3}{4}$	27 $\frac{3}{4}$	27
03-02-81	Ad	M	10	29 $\frac{1}{2}$	28 $\frac{1}{2}$
03-02-81	Ad	F	8	27	26 $\frac{1}{4}$
03-03-81	Ad	F	8	27 $\frac{1}{4}$	26
03-04-81	Ad	M	7	27 $\frac{1}{2}$	26 $\frac{1}{4}$
03-04-81	Ad	M	10	30	27 $\frac{3}{4}$
03-04-81	Ad	M	8 $\frac{3}{4}$	28	27
03-13-81	Ad	M	6 $\frac{1}{2}$	26 $\frac{1}{2}$	25 $\frac{1}{2}$
03-13-81	Ad	F	6 $\frac{3}{4}$	27	25 $\frac{1}{2}$

MARKED STEELHEAD TRAPPED
1980-81 (con't)

DATE	MARK	SEX	WEIGHT IN POUNDS	TOTAL LENGTH IN INCHES	FORK LENGTH IN INCHES
03-13-81	Ad	F	7	27	26
03-13-81	Ad	F	8	29	28
03-14-81	Ad	F	6 $\frac{1}{2}$	27 $\frac{1}{2}$	26 $\frac{1}{2}$
03-15-81	Ad	F	5 $\frac{1}{2}$	26 $\frac{1}{2}$	25 $\frac{1}{2}$
03-16-81	Ad	F	5	24 $\frac{1}{2}$	23 $\frac{1}{4}$
03-16-81	Ad	M	6	26 $\frac{3}{4}$	26
03-16-81	Ad	M	9	28 $\frac{1}{4}$	27 $\frac{1}{4}$
03-16-81	Ad	M	6 $\frac{1}{2}$	27 $\frac{1}{4}$	26
03-21-81	Ad	F	6	27	26
03-24-81	Ad	F	5 $\frac{1}{2}$	25 $\frac{1}{2}$	24
03-24-81	Ad	M	9 $\frac{1}{2}$	29 $\frac{3}{4}$	28 $\frac{3}{4}$
03-25-81	Ad	F	6	27 $\frac{1}{4}$	26 $\frac{1}{4}$
03-25-81	Ad	F	5 $\frac{3}{4}$	26 $\frac{1}{4}$	25 $\frac{1}{4}$
03-25-81	Ad	F	5 $\frac{1}{4}$	26 $\frac{1}{2}$	25 $\frac{1}{2}$
03-25-81	Ad	M	5 $\frac{3}{4}$	24 $\frac{3}{4}$	23 $\frac{1}{4}$
03-26-81	Ad	F	6	27 $\frac{1}{4}$	26 $\frac{1}{4}$
03-26-81	Ad	M	4 $\frac{1}{2}$	22	21 $\frac{1}{4}$
03-26-81	Ad	F	5 $\frac{3}{4}$	26	25 $\frac{1}{2}$

ADEQUATE SUPPLY OF STEELHEAD EGGS - STOPPED TRAPPING FISH

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HATCHERY PRODUCTION RECORD OF PRAIRIE CREEK FISH HATCHERY UNDER HUMBOLDT COUNTY

FISH PRODUCTION BY SPECIES:

YEAR	STEELHEAD		"chinook" KING SALMON		"coho" SILVER SALMON		RAINBOW		COAST CUTTHROAT	
	NO'S	LBS	NO'S	LBS	NO'S	LBS	NO'S	LBS	NO'S	LBS
1980-81	119,965	14,320	13,000	1,193	19,420	1,928	12,820	3,060	00	00
1979-80	54,048	4,794	52,708	4,217	209,081	9,763	19,195	3,843	2,440	682
1978-79	92,257	11,104	48,448	577	149,209	8,072	16,686	3,715	00	00
1977-78	94,841	8,228	96,511	4,267	136,921	5,590	17,719	4,510	3,489	718
1976-77	40,979	6,746	84,412	3,266	407,710	18,426	13,994	5,338	4,022	1,208
1975-76	128,975	10,824	82,456	4,891	77,570	7,295	29,903	5,730	4,510	1,894
1974-75	122,171	10,832	840,335	11,446	131,000	7,666	27,306	7,491	6,196	842
1973-74	51,116	5,531	1,000,000	7,940	521,800	14,164	16,602	3,864	63	104
1972-73	47,513	9,466	(no eggs available)		313,030	19,342	16,716	7,101	1,762	707
1971-72	NONE - NO SM		1,235,575	13,470	216,295	14,250	7,919	5,277	3,130	2,090
1970-71	PROGRAM AT		000	000	125,000	8,334	1,200	1,200	00	00
1969-70	HATCHERY		465,000	5,740	27,000	1,800	1,000	750	55,000	3,750
1968-69	00		500,000	9,787	95,350	9,535	4,965	1,035	7,667	2,587
1967-68	00		809,850	8,099	151,004	8,457	655	177	10,820	3,031
1966-67	00		1,143,383	13,054	55,034	4,105	3,755	1,293	18,560	4,998
1965-66	00		000	000	53,063	4,824	00	00	5,760	720
1964-65	00		9,996	118	25,015	2,256	00	00	14,060	2,265
1963-64	00		4,675	54	7,872	937	00	00	2,743	880
1962-63	NO PRODUCTION - HATCHERY MODIFICATIONS AND REPAIRS									
1961-62	00		00		00		00		1,916	430

HUMBOLDT FISH ACTION COUNCIL:

1980-81	46,000	4,500			10,140	1,085				
1979-80					60,045	3,304				
1978-79					37,270	2,643				
1977-78					26,058	2,020				
1976-77					100,624	5,330				
1975-76					100,000	6,667				
1974-75					40,000	2,000				
1973-74	PONDS USED TO REAR MAD RIVER FISH HATCHERY'S STEELHEAD TROUT									
1972-73					105,025	5,475				
1971-72			234,000	692	70,270	5,400				

RAINFALL

<u>Month</u>	<u>1972-73 Inches</u>	<u>1973-74 Inches</u>	<u>1974-75 Inches</u>	<u>1975-76 Inches</u>	<u>1976-77 Inches</u>	<u>1977-78 Inches</u>	<u>1978-79 Inches</u>	<u>1979-80 Inches</u>
July	0	0	0.39	0.03	0.46	0.02	0.09	0.51
August	0.06	0.25	0.01	0.87	2.98	0.82	1.73	0.08
September	1.13	3.96	0	0.01	0.21	8.23	4.89	1.28
October	1.89	9.45	3.25	12.64	0.93	3.94	0.18	10.67
November	8.10	32.78	4.61	9.69	3.75	11.58	5.19	9.50
December	12.24	15.71	12.78	7.13	1.13	12.84	2.91	9.99
January	10.74	11.64	10.61	5.08	4.60	10.65	5.85	7.01
February	6.37	10.59	14.53	12.03	5.19	9.09	12.91	14.12
March	10.20	16.56	21.27	4.46	6.50	5.30	3.69	12.04
April	0.75	3.89	5.89	4.58	2.27	7.75	7.28	5.36
May	1.52	0.71	2.13	0.90	4.89	1.71	4.88	2.04
June	0.44	0.83	2.21	0.28	0.14	0.63	0.36	0.98

	<u>1972-73</u>	<u>1973-74</u>	<u>1974-75</u>	<u>1975-76</u>	<u>1976-77</u>	<u>1977-78</u>	<u>1978-79</u>	<u>1979-80</u>
VISITORS:	44,865	51,130	63,465	87,320	75,080	72,330	59,035	46,255
RAINFALL:	53.44"	105.92"	75.55"	57.70"	33.05"	72.56"	49.96"	73.58"
ADULTS TRAPPED:	♂ ♀ G	♂ ♀ G	♂ ♀ G	♂ ♀ G	♂ ♀ G	♂ ♀ G	♂ ♀ G	♂ ♀ G
KS	01 00 01 ₂	02 03 03 ₈	01 00 01 ₂	37 47 30 ₁₁₄	43 54 48 ₁₄₅	44 43 05 ₉₂	21 28 14 ₆₃	17 10 06 ₃₃
SS	93 54 48 ₁₉₅	21 25 15 ₆₁	19 13 01 ₃₃	40 50 17 ₁₀₇	28 18 08 ₅₄	08 04 09 ₂₁	56 40 29 ₁₂₅	48 33 52 ₁₃₃
SH	11 14 <u>25</u>	18 01 <u>19</u>	02 03 <u>5</u>	16 09 <u>25</u>	47 52 <u>99</u>	44 26 <u>70</u>	21 15 <u>36</u>	22 22 <u>44</u>
EGG TAKE:	<u>222</u>	<u>88</u>	<u>40</u>	<u>246</u>	<u>298</u>	<u>183</u>	<u>224</u>	<u>210</u>
KS	0	8,215	0	126,535	102,060	65,775	71,330	20,035
SS	90,000	38,715	18,235	72,000	23,765	0 Humboldt Bay:	43,845 32,750	19,025 22,785
SH	10,000	9,435	6,770	25,000	154,000	63,025	77,285	55,050
RELEASES:								
KS	000,000 ^{1/}	1,300,000 ^{2/}	520,050 ^{3/}	47,652 ^{5/}	64,912 ^{6/}	38,360 ^{8/}	27,615 ^{10/}	52,015 ^{11/}
			6,795 ^{4/}		19,500 ^{7/}	52,526 ^{9/}		
SS	25,000 ^{1/}	78,500 ^{3/}	31,000 ^{5/}	13,698 ^{6/}	55,255 ^{8/}	21,339 ^{10/}	46,605 ^{12/}	6,480 ^{13/}
	183,000 ^{2/}	93,000 ^{4/}		63,872 ^{7/}	52,120 ^{9/}	22,154 ^{11/}		55,510 ^{14/}
SH	46,880 ^{1/}	6,561 ^{2/}	5,290 ^{4/}	3,808 ^{7/}	19,094 ^{9/}	70,817 ^{10/}	40,267 ^{11/}	23,824 ^{12/}
		29,540 ^{3/}	9,445 ^{5/}	39,162 ^{8/}			24,470 ^{12/}	
			40,000 ^{6/}					

♂ = male
 ♀ = female
 G = 2 year old male

KS = king salmon
 SS = silver salmon
 SH = steelhead

	<u>1972-73</u>	<u>1973-74</u>	<u>1974-75</u>	<u>1975-76</u>	<u>1976-77</u>	<u>1977-78</u>	<u>1978-79</u>	<u>1979-80</u>
	ADULTS TRAPPED FROM FRESHWATER CREEK						♂ ♀ G	♂ ♀ G
KS								00 01 01
SS							24 15 17	16 15 04
	RELEASES TO FRESHWATER CREEK							
KS			234,390	34,804				
SS	105,025		100,000		100,624	26,058	37,270	54,240 5,805
	RELEASES TO EEL RIVER							
SH	6,970	61,410	27,000	4,385	8,230	3,472		7,860

♂ = male
 ♀ = female
 G = 2 year old male
 KS = king salmon
 SS = silver salmon
 SH = steelhead