

THE LEWISTON FISH TRAPPING FACILITIES: FIRST YEAR OF OPERATION, 1959-1959<sup>1/</sup>

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WWS 6/24/60 SK 4/11/61 Steelhead Recovery  
Steelhead Release

REF 90070

REC'D

APR 8 1994

Chinook Recovery  
Chinook Release

Note: when Double-checking the Coho, Pay Close Attention MARK RETURN TO [unclear]

The construction of Lewiston and Trinity dams is blocking the salmon and steelhead runs of the Trinity River. Trinity River Hatchery will be constructed to hatch the eggs and rear the young of fish blocked by the dam, but the hatchery cannot operate until Lewiston Dam is complete, presumably no later than October, 1962. The Lewiston Fish Trapping Facilities were constructed to trap these fish and transport them above the Trinity Dam site until the hatchery becomes operative. The trapping project was built by the U. S. Bureau of Reclamation, and is operated under contract by the California Department of Fish and Game.

BACKGROUND

Investigations by the U. S. Fish and Wildlife Service<sup>2/</sup> and the Department of Fish and Game<sup>3/</sup> indicated that between 9,000 and 25,000 king salmon utilized the spawning gravels above the proposed site of Trinity Dam. Very little information was available concerning silver salmon and steelhead, since they usually arrived when increased river flows made it impossible to maintain counting racks in the river at Lewiston. Due to the fact that expected water velocity in the diversion tunnel at Trinity Dam would be too fast for the spawners to negotiate, it was decided that it would be necessary to truck the fish around the work area.

The site chosen for the trapping facilities is in a narrow, rocky part of the stream bed located about a mile below the proposed site of Lewiston Dam.

Lewiston Dam will be an afterbay structure, built to reregulate the releases from Trinity Reservoir, to divert surplus water into the Clear Creek tunnel and to control releases for fishery and other requirements downstream. Trinity River Hatchery will be located directly adjacent to the lower side of this dam.

METHOD OF TRAPPING

The physical properties of the trapping facilities consist of a concrete weir which blocks all upstream migration, a fish ladder which leads the fish into a 70-foot holding tank, and an engine-powered sweep which crowds the fish to the upper end of the tank. Here they may jump through an artificial waterfall into a smaller tank. Those that do not jump are lifted over by the sweep. The water in this second tank contains 12.5 parts per million of the anesthetic quinaldine. After about five minutes in the anesthetic the fish are elevated by means of an escalator into a transport truck and are then hauled 12 miles to the release site, which is located at the confluence of the Trinity River and the Stuart Fork of the Trinity River. This is about a mile above the Trinity Dam construction area. The fish are normally active when released. The anesthetic appears to have no harmful effect whatever.

1/ Submitted September 15, 1959. Resubmitted in revised form February 23, 1960.

Inland Fisheries Administrative Report No. 59-13.

2/ Biological Investigations of the Fishery Resources of the Trinity River.

3/ Earl Gibbs' investigations of 1955 and 1956.

SUMMARY

Due to the blocking of the Trinity River during the construction of Trinity Dam, it was necessary to provide means whereby the anadromous fishes could be passed around the construction zone. The water velocity in the diversion tunnel would be too great for spawners to negotiate. The result was the Lewiston Trapping Facilities, built and financed by the Bureau of Reclamation. Here the anadromous fishes are trapped, drugged, and loaded into tank trucks. They are then transported upriver for 12 miles to a release point about a mile above Trinity Dam. The drug (quinaldine) has no harmful effect on this fish.

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APPENDIX

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Tables 1 through 9 give the daily air and water temperatures, weather conditions, river flow, and number of fish of each species trapped at the Lewiston Fish Trapping Facilities from September 29, 1958, through June 30, 1959.

Figures 1, 2, and 3 show the number of king salmon, silver salmon, and steelhead trout trapped each week over the same period.

Figure 4 is a map of the area.

TABLE 1  
 Lewiston Fish Trapping Facilities  
 September and October, 1958

Date	Air		Water		Weather	Flow of Trinity River at Lewiston (c.f.s.)*	Fish trapped and hauled		
	Maximum	Minimum	Maximum	Minimum			King Salmon	Silver Salmon	Steelhead trout
September 29	95	41	68	63	Clear	220	160		7
September 30	95	43	68	63	Clear	220	131		3
October 1	89	38	67	63	Clear	217			
2	92	41	68	63	Clear	210			
3	93	38	68	63	Clear	210			
4	95	39	67	62	Clear	220			
5	95	38	65	61	Clear	210			
6	87	40	64	61	Clear	210			
7	80	38	64	60	Clear	210	202		10
8	82	37	64	60	Clear	210	232		5
9	81	39	65	61	Clear	210	140		3
10	85	40	65	61	Clear	210	133		2
11	89	40	64	61	Clear	210	268		6
12	90	38	61	56	Clear	210	99		3
13	84	34	62	56	Cloudy	210			
14	79	32	61	56	Clear	210	95		6
15	81	32	62	56	Cloudy	200	57		3
16	83	37	63	56	Cloudy	200	102		9
17	84	37	63	56	Rain	200	55	4	2
18	74	44	62	55	Rain	210	182	3	9
19	63	45	61	55	Partly Cloudy	220	147	1	4
20	58	27	60	56	Fog--clear	270	279	6	10
21	66	26	59	55	Clear	250	93	6	1
22	74	29	60	55	Cloudy	240	96	6	2
23	67	32	59	54	Clear	220	243	7	7
24	69	30	59	54	Fog--clear	220	106	13	11
25	75	38	60	55	Clear	220	70	13	5
26	73	36	58	54	Clear	220	75	8	4
27	74	35	58	54	Clear	220	38	12	6

(Continued)

TABLE 1  
Lewiston Fish Trapping Facilities  
September and October, 1958  
(Continued)

<u>Date</u>	<u>Temperatures (degrees F.)</u>				<u>Weather</u>	<u>Flow of Trinity River at Lewiston (c.f.s.)*</u>	<u>Fish trapped and hauled</u>		
	<u>Air</u>		<u>Water</u>				<u>King</u>	<u>Silver</u>	<u>Steelhead</u>
	<u>Maximum</u>	<u>Minimum</u>	<u>Maximum</u>	<u>Minimum</u>			<u>salmon</u>	<u>salmon</u>	<u>trout</u>
28	74	35	57	54	Clear	220	44	2	2
29	79	30	58	55	Clear	220	70	15	5
30	78	28	57	54	Cloudy	220	31	11	5
31	70	36	57	53	Rain	212	47	18	3
<b>TOTALS</b>							<b>3,195</b>	<b>138</b>	<b>128</b>

\*From U. S. Bureau of Reclamation records.

TABLE 2  
Lewiston Fish Trapping Facilities  
November, 1958

Date	Temperatures (degrees F.)		Weather	Flow of Trinity River at Lewiston (c.f.s.)*		Fish trapped and hauled		
	Air Maximum Minimum	Water Maximum Minimum		King salmon	Silver salmon	Steelhead trout		
1	63	43	Partly cloudy	220	31	10	5	
2	65	40	Partly cloudy	240	40	6	6	
3	70	38	Partly cloudy	230	44	11	13	
4	71	42	Partly cloudy	230	83	8	10	
5	68	40	Clear	230	38	39	9	
6	71	37	Clear	230	13	33	9	
7	74	43	Clear	230	8	16	13	
8	74	37	Cloudy	230	4	32	8	
9	74	31	Rain	240	10	27	9	
10	74	32	Fog-clear	220	4	29	10	
11	58	25	Fog-clear	300	10	49	12	
12	57	29	Fog-clear	260	3	8	14	
13	56	33	Cloudy	290	4	14	30	
14	57	36	Rain	470	5	28	59	
15	45	33	Clear	400	7	20	23	
16	42	13	Clear	330	3	4		
17	46	15	Cloudy	300				
18	45	25	Rain	300				
19	37	32	Fog	400				
20	43	35	Fog	500	2	71	39	
21	45	36	Fog	420	7	23	89	
22	42	36	Fog	370	3	11	28	
23	41	34	Fog	340				
24	41	35	Fog	330				
25	44	36	Fog	310	4	11	49	
26	59	35	Fog	300				
27	59	35	Cloudy	290				
28	42	29	Cloudy	280		1	24	
29	53	24	Cloudy	280				
30	54	26	Cloudy	270				
TOTALS					323	451	459	

\*From U. S. Bureau of Reclamation records.

TABLE 3  
Lewiston Fish Trapping Facilities  
December, 1958

Date	Temperatures (degrees F.)				Weather	Flow of Trinity River at Lewiston (c.f.s.)*	Fish trapped and hauled		
	Air		Water				King	Silver	Steelhead
	Maximum	Minimum	Maximum	Minimum			salmon	salmon	trout
1	52	29	44	43	Rain	270			
2	48	34	43	42	Fog	270			
3	59	33	44	43	Fog	280			
4	48	42	44	44	Clear	280	1	8	33
5	55	34	47	44	Clear	280			
6	55	34	45	43	Partly cloudy	270			
7	49	33	46	46	Partly cloudy	260			
8	50	35	48	46	Partly cloudy	260			
9	48	41	48	42	Fog	270			
10	52	42	48	47	Clear	270	4	5	4
11	63	43	50	48	Clear	270			
12	50	41	51	49	Partly cloudy	270			
13	52	29	52	46	Partly cloudy	270			
14	46	29	46	42	Clear	260			
15	54	29	46	42	Clear	260			
16	58	29	46	42	Cloudy	260			
17	58	30	48	44	Clear	250			
18	56	32	47	44	Fog	240	1	7	6
19	54	34	47	46	Cloudy	240			
20	49	39	46	46	Rain	240			
21	46	37	45	44	Partly cloudy	250			
22	48	32	46	44	Clear	320			
23	49	30	46	44	Cloudy	300			
24	46	35	46	44	Rain	280			
25	44	32	46	44	Rain	500			
26	47	34	45	44	Rain	800			
27	44	34	46	45	Cloudy	750		7	212
28	47	33	48	46	Cloudy	550			
29	44	33	48	46	Partly cloudy	450			
30	47	34	44	44	Fog	410			
31	41	35	45	44	Fog	410			27
<b>TOTALS</b>							<b>6</b>	<b>27</b>	<b>282</b>

\*From U.S. Bureau of Reclamation records.



TABLE 4  
Lewiston Fish Trapping Facilities  
January, 1959

Date	Temperatures (degrees F.)				Weather	Flow of Trinity River at Lewiston (c.f.s.)*	Fish trapped and hauled		
	Air		Water				King	Silver	Steelhead
	Maximum	Minimum	Maximum	Minimum			salmon	salmon	trout
1	40	33	45	43	Fog	400			
2	41	20	43	42	Clear	380			
3	47	18	42	40	Fog	320			
4	44	18	42	42	Snow	320			
5	37	25	42	40	Snow	350			
6	37	25	39	38	Cloudy	350			
7	45	32	38	37	Rain	800			
8	48	32	37	36	Rain	2,500			
9	48	34	40	39	Rain	5,500			
10	52	46	42	40	Rain	5,700			
11	48	37	42	42	Rain	7,200			
12	56	40	40	40	Partly cloudy	18,700			
13	52	30	40	40	Partly cloudy	17,000			
14	44	37	40	40	Cloudy	5,700			
15	39	30	42	40	Partly cloudy	3,300			
16	53	34	44	43	Cloudy	2,600			
17	53	32	43	42	Clear	2,400			
18	47	33	43	42	Clear	2,300			
19	42	27	43	42	Clear	2,100		97	
20	50	20	40	39	Fog-clear	1,800			
21	51	21	40	39	Fog-clear	1,600			
22	44	25	41	40	Cloudy	1,500			
23	50	26	42	42	Cloudy	1,400		26	
24	55	34	42	42	Rain	1,450		184	
25	44	36	42	42	Rain	1,650		47	
26	51	34	44	42	Rain	1,850		95	
27	47	37	44	43	Rain	2,200			
28	54	34	43	42	Clear	3,600		83	
29	50	27	41	40	Snow	2,600			
30	39	31	42	40	Cloudy	2,200			
31	48	32	42	41	Clear	1,850			
<b>TOTALS</b>							0	0	532

\*From U. S. Bureau of Reclamation records.

TABLE 5  
Lewiston Fish Trapping Facilities  
February, 1959

Date	Temperatures (degrees F.)				Weather	Flow of Trinity River at Lewiston (c.f.s.)*	Fish trapped and hauled		
	Air		Water				King	Silver	Steelhead
	Maximum	Minimum	Maximum	Minimum			salmon	salmon	trout
1	52	30	42	41	Clear	1,650			
2	52	22	40	39	Clear	1,550			
3	53	22	41	39	Clear	1,400			
4	52	23	42	40	Clear	1,350			
5	63	30	43	41	Clear	1,300		39	
6	61	28	43	42	Clear	1,250			
7	55	23	42	40	Clear	1,200			
8	46	19	41	39	Clear	1,150			
9	48	24	39	38	Snow	1,150			
10	37	28	37	36	Snow	1,150			
11	42	26	37	36	Partly cloudy	1,100			
12	47	22	40	38	Partly cloudy	1,000			
13	49	22	39	38	Rain	1,000			
14	40	30	38	37	Rain	1,050			
15	35	32	36	35	Rain	1,500			
16	48	34	39	37	Rain	4,000			
17	52	30	40	39	Rain	5,700			
18	48	34	42	40	Rain	4,700			
19	51	33	42	40	Rain	4,400			
20	49	34	42	42	Rain	3,800			
21	39	32	40	40	Snow	3,900			
22	35	32	42	42	Snow	2,950			
23	47	33	43	42	Clear	2,500			
24	53	30	43	43	Clear	2,200			
25	58	29	44	43	Clear	2,150			
26	63	31	43	43	Clear	2,100		235	
27	59	30	44	42	Clear	2,100		56	
28	66	30	44	44	Clear	2,300			
<b>TOTALS</b>							0	0	330

\*From U. S. Bureau of Reclamation records.

TABLE 6  
Lewiston Fish Trapping Facilities  
March, 1959

Date	Temperatures (degrees F.)		Weather	Flow of Trinity River at Lewiston (c.f.s.)*	Fish trapped and hauled		
	Air	Water			King salmon	Silver salmon	Steelhead trout
1	71	44	Clear	2,900			
2	69	43	Clear	3,200	151		
3	71	43	Clear	3,400			
4	67	43	Clear	3,300			
5	72	43	Clear	3,200			
6	71	43	Clear	3,100	51		
7	70	44	Clear	3,000			
8	69	42	Clear	2,800			
9	67	43	Clear	2,700			
10	61	42	Clear	2,550			
11	65	42	Clear	2,400			
12	74	43	Cloudy	2,500			
13	65	43	Clear	2,600		134	
14	55	42	Clear	2,450			
15	63	44	Clear	2,250		135	
16	72	44	Partly cloudy	2,300			
17	73	46	Cloudy	2,450			
18	65	44	Clear	2,450			
19	59	43	Clear	2,250		92	
20	65	44	Clear	2,150			
21	73	46	Rain	2,200			
22	58	44	Rain	2,300			
23	47	44	Rain	2,250		89	
24	52	44	Partly cloudy	2,050			
25	59	45	Rain	1,900			
26	49	44	Cloudy	2,150		93	
27	54	44	Cloudy	2,000		34	
28	61	44	Cloudy	1,850			
29	62	46	Rain	1,900			
30	57	44	Clear	2,100		15	
31	55	46	Clear	2,300			
TOTALS					0	0	794

\*From U.S. Bureau of Reclamation records.

TABLE 7  
Lewiston Fish Trapping Facilities  
April, 1959

Date	Temperatures (degrees F.)				Weather	Flow of Trinity River at Lewiston (c.f.s.)*	Fish trapped and hauled		
	Air		Water				King	Silver	Steelhead
	Maximum	Minimum	Maximum	Minimum			salmon	salmon	trout
1	70	36	49	47	Clear	2,500			
2	77	41	49	48	Clear	3,300		101	
3	77	41	49	48	Clear	4,000			
4	80	42	49	48	Clear	4,700			
5	77	41	50	48	Clear	5,400			
6	76	33	48	46	Clear	5,600		51	
7	73	27	47	45	Clear	4,800			
8	71	29	47	46	Clear	4,000			
9	78	30	48	46	Clear	3,700			
10	77	32	48	46	Clear	3,650			
11	77	34	49	47	Clear	3,800			
12	76	35	49	47	Clear	4,050			
13	74	26	48	46	Clear	3,950		71	
14	71	39	49	47	Clear	3,650			
15	71	27	48	46	Clear	3,500			
16	67	26	47	45	Clear	3,100			
17	74	31	48	47	Clear	3,000			
18	64	27	48	46	Clear	2,900			
19	68	35	50	48	Clear	2,700			
20	75	33	50	38	Clear	2,750		31	
21	78	35	50	49	Clear	3,000			
22	74	35	50	49	Partly cloudy	3,350			
23	74	40	50	48	Clear	3,600			
24	80	39	50	49	Partly cloudy	4,200		33	
25	75	48	48	48	Rain	4,700			
26	56	41	48	46	Rain	4,500			
27	58	34	47	46	Cloudy	3,700			
28	61	34	49	47	Clear	3,050			
29	75	39	50	49	Clear	3,450			
30	78	47	49	49	Cloudy	3,550			
<b>Totals</b>							0	0	287

\* From U.S. Bureau of Reclamation records.

TABLE 8  
Lewiston Fish Trapping Facilities  
May, 1959

Date	Temperatures (degrees F.)				Weather	Flow of Trinity River at Lewiston (c.f.s.)*	Fish trapped and hauled		
	Air		Water				King	Silver	Steelhead
	Maximum	Minimum	Maximum	Minimum			salmon	salmon	trout
1	64	42	50	49	Cloudy	3,400			
2	55	26	48	45	Cloudy	2,900			
3	57	24	49	46	Cloudy	2,550			
4	61	27	49	46	Cloudy	2,300		11	
5	66	34	51	49	Partly cloudy	2,200			
6	65	33	51	50	Clear	2,250			
7	75	35	52	51	Clear	2,400			
8	82	37	52	52	Clear	2,750			
9	75	33	52	51	Clear	2,850			
10	72	36	52	50	Clear	2,950			
11	81	50	53	52	Clear	3,100		11	
12	87	41	53	52	Clear	3,600			
13	89	52	53	52	Partly cloudy	4,450			
14	69	48	52	51	Clear	4,450			
15	60	29	50	48	Clear	3,800			
16	67	37	52	50	Cloudy	3,000			
17	70	45	52	50	Partly cloudy	2,650			
18	69	29	50	49	Partly cloudy	2,400			
19	61	28	51	50	Partly cloudy	2,200			
20	68	31	53	50	Clear	2,100			
21	74	34	54	52	Clear	2,100			
22	75	37	53	53	Partly cloudy	2,100			
23	71	45	53	52	Rain	2,300			
24	68	48	54	52	Clear	2,500			
25	72	37	55	54	Clear	2,450	1	1	
26	75	44	53	53	Clear	2,400			
27	63	31	54	52	Clear	2,050			
28	67	34	54	52	Clear	1,900			
29	72	36	54	53	Clear	1,800			
30	76	36	56	55	Clear	1,850			
31	83	37	58	56	Clear	1,950			
<b>Totals</b>							<b>1</b>	<b>0</b>	<b>23</b>

\*From U.S. Bureau of Reclamation records

TABLE 9  
Lewiston Fish Trapping Facilities  
June, 1959

Date	Air		Water		Weather	Flow of Trinity River at Lewiston (c.f.s.)*	Fish trapped and hauled			
	Maximum	Minimum	Maximum	Minimum			King salmon	Silver salmon	Steelhead trout	Brown trout
1	87	40	58	57	Partly cloudy	2,050				
2	85	40	59	57	Partly cloudy	2,200	1		1	
3	82	41	59	58	Partly cloudy	2,150				
4	85	45	59	58	Clear	2,100				
5	86	44	58	58	Cloudy	2,100				
6	75	41	58	56	Clear	2,000				
7	74	37	58	57	Clear	1,750				
8	75	36	59	57	Clear	1,600				
9	78	42	59	57	Clear	1,500				
10	70	35	60	57	Clear	1,350				
11	84	42	62	53	Clear	1,350				
12	89	45	64	60	Clear	1,450				
13	85	46	63	61	Clear	1,500				
14	83	35	63	59	Clear	1,350				
15	78	38	64	59	Clear	1,200	110		6	10
16	82	41	64	58	Clear	1,150				
17	80	42	65	60	Clear	1,100				
18	89	50	67	63	Clear	1,150	38		3	12
19	100	52	69	66	Partly cloudy	1,200	26		10	2
20	102	52	70	67	Partly cloudy	1,250	22		4	18
21	99	50	70	67	Clear	1,200	33		2	7
22	98	46	70	66	Clear	1,050	20		2	4
23	93	45	70	66	Clear	950	10		2	1
24	93	50	70	67	Clear	880	16		4	9
25	85	47	66	65	Rain	820	20		2	2
26	71	47	68	62	Clear	770	25		2	4
27	78	40	68	64	Clear	710	18		1	2
28	82	42	69	64	Clear	640	20		3	8
29	81	39	70	64	Clear	590	7		3	1
30	88	39	71	64	Clear	560				
Totals						366	0	45		80
GRAND TOTALS - 9/29/58 through 6/30/59						3,891	616	2,880		80

\*From U. S. Bureau of Reclamation records.

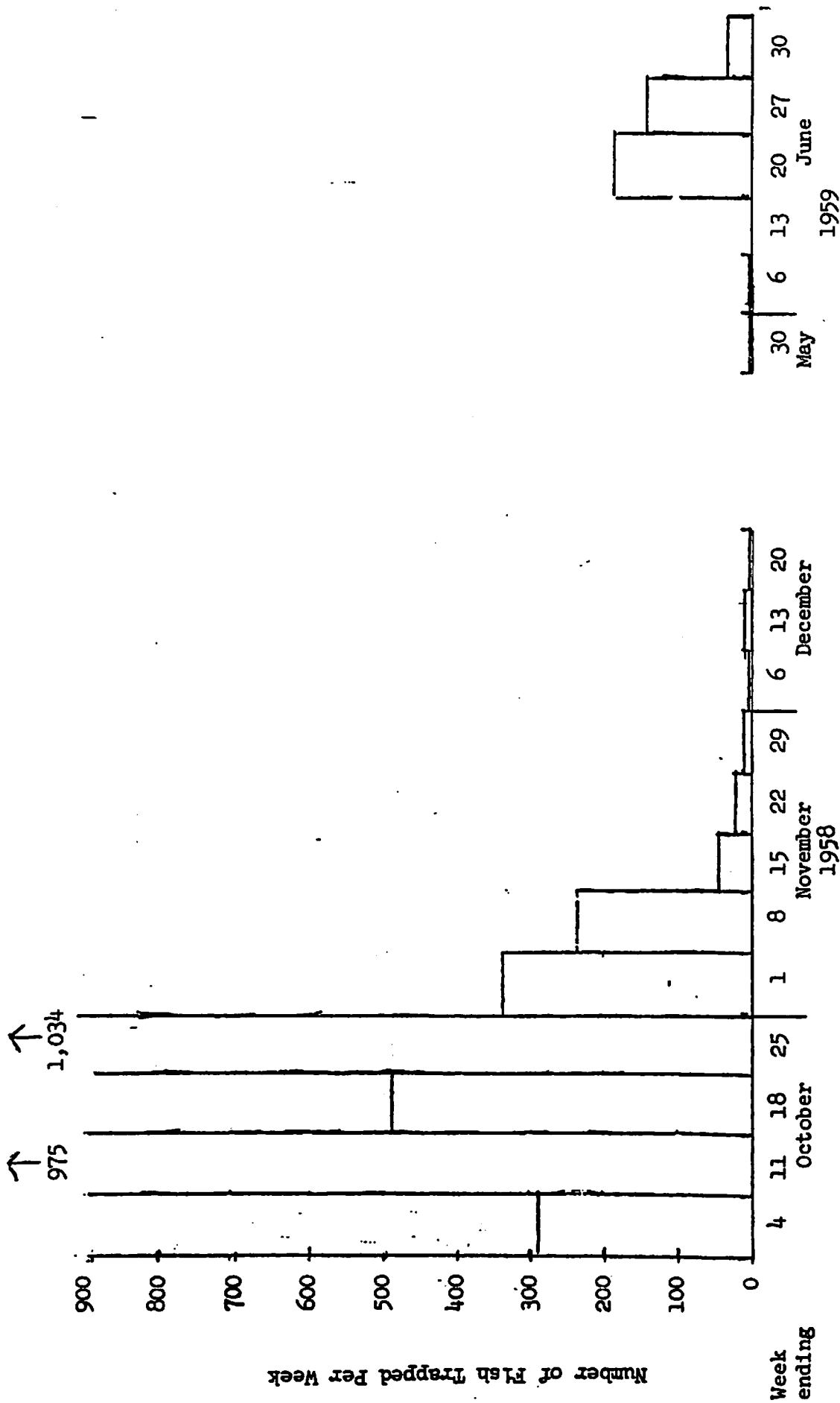


FIGURE 1. King salmon trapped at Lewiston Fish Trapping Facilities, September 28, 1958, to June 30, 1959.

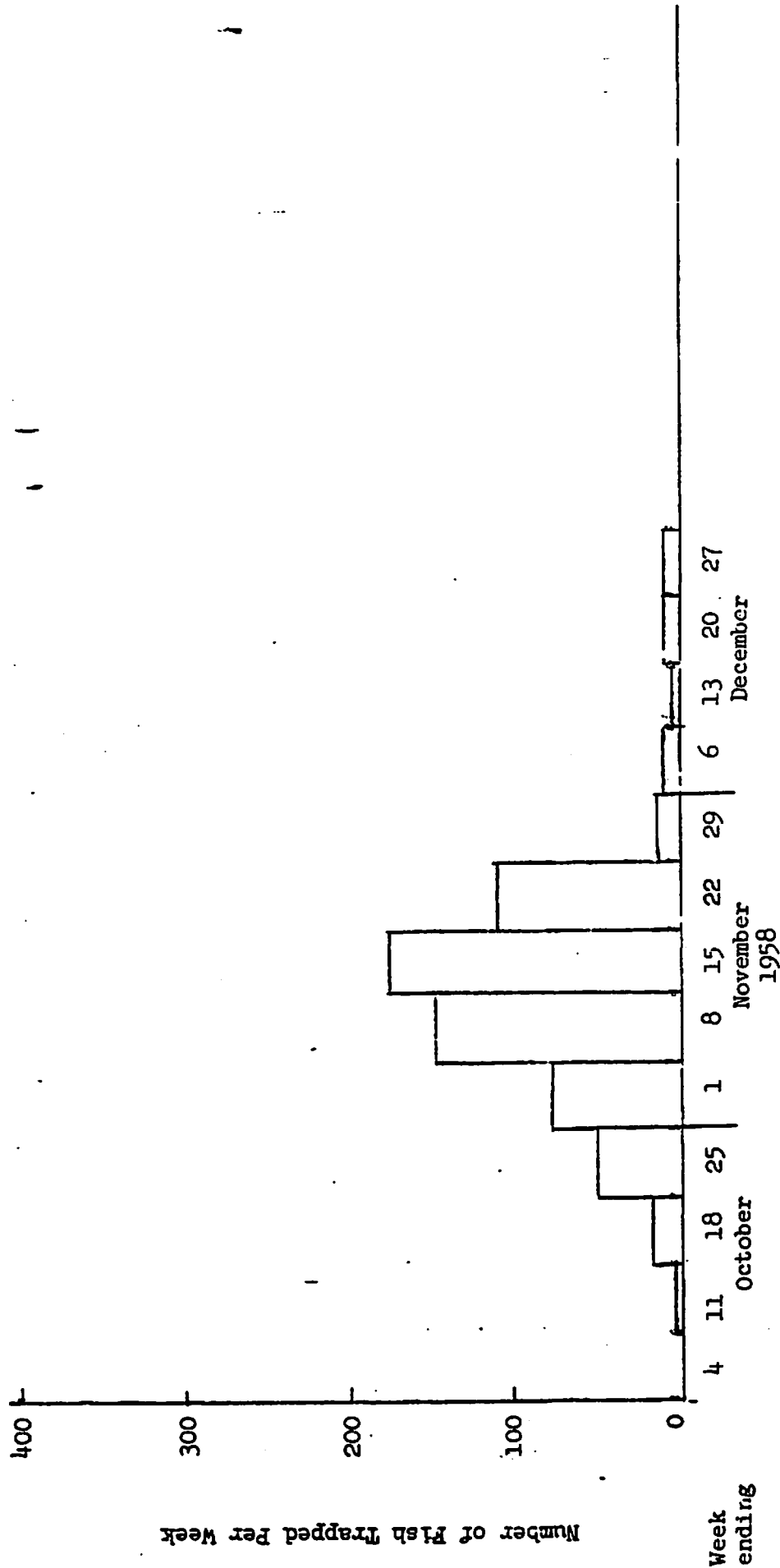


FIGURE 2. Silver salmon trapped at Lewiston Fish Trapping Facilities, September 28, 1958, to June 30, 1959.



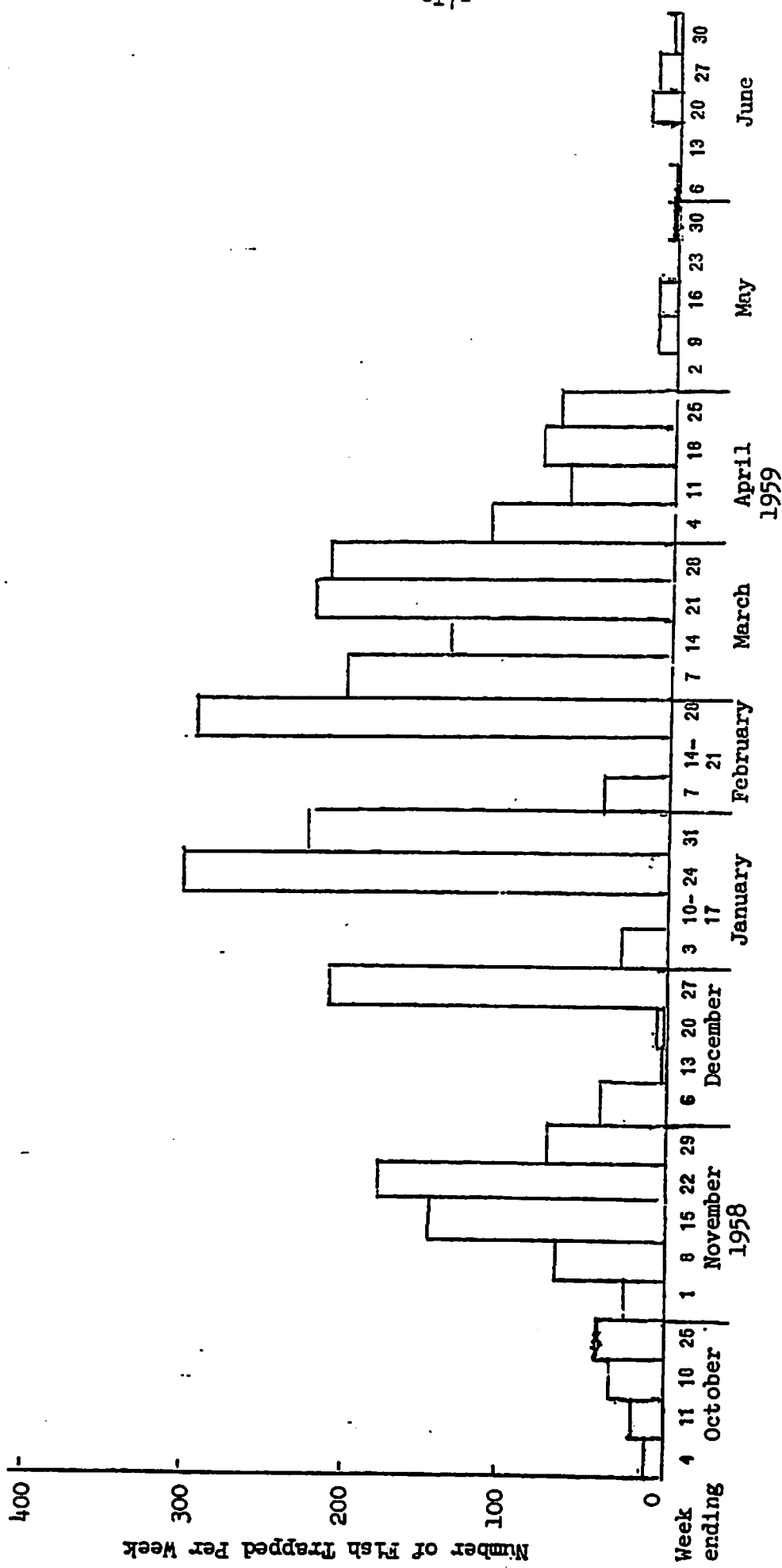


FIGURE 3. Steelhead trout trapped at Lewiston Fish Trapping Facilities, September 28, 1958, to June 30, 1959.

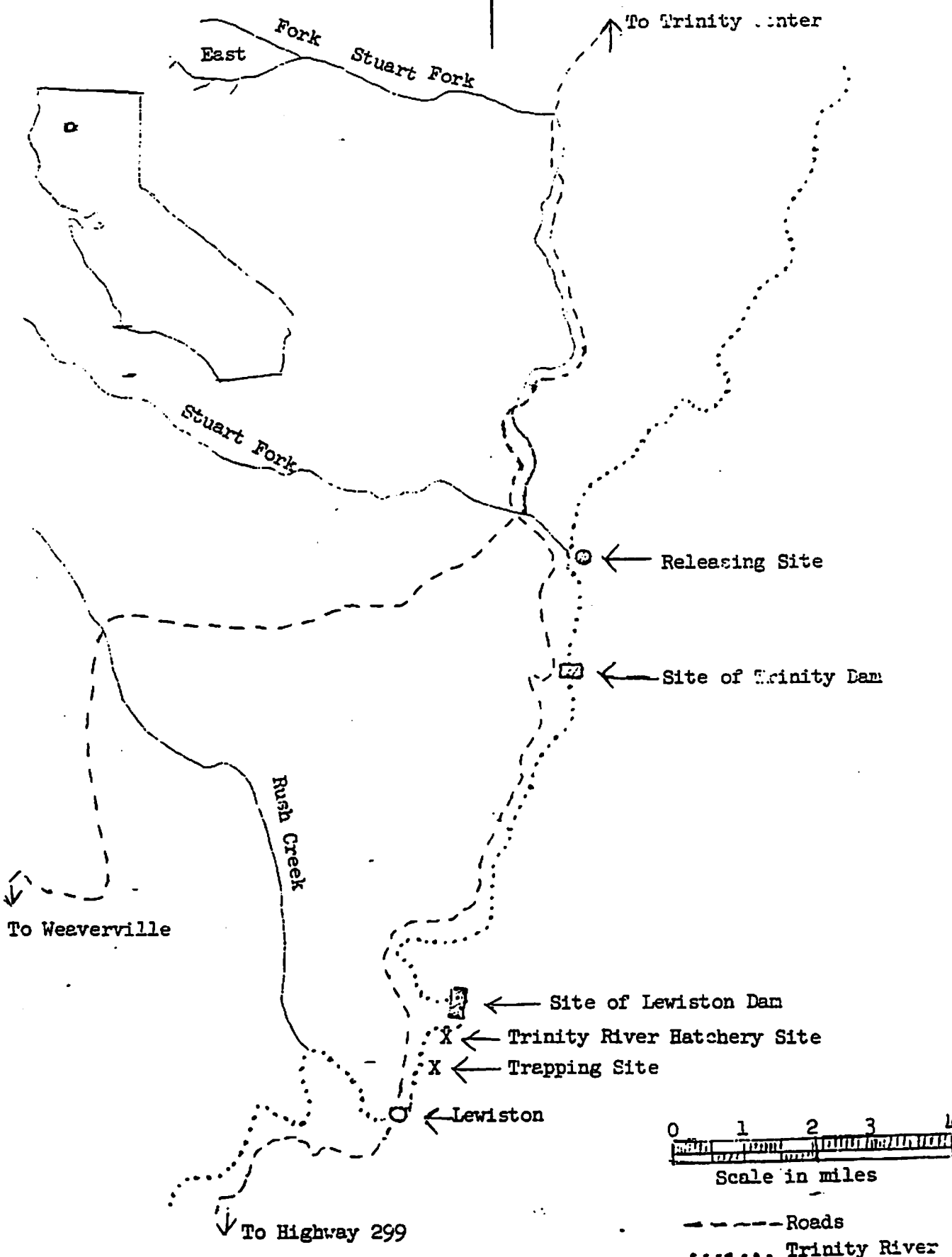
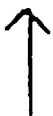


FIGURE 4. Map showing the Trinity River dam sites, hatchery site, and trapping facilities.