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ANNUAL REPORT
VAN ARSDALE FISHERIES STATION, 1988-89

by

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Inland Fisheries
Region 3

Inland Fisheries
Administrative Report No. 91-1

1991

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ABSTRACT

This report describes the operation of Van Arsdale Fisheries Station (formerly the Snow Mountain Station), Mendocino County, California, for the 1988-89 season. Chinook salmon, Oncorhynchus tshawytscha, and steelhead trout, O. mykiss, counts have been made at this station since 1933.

During the season, a total of 328 chinook salmon and 331 steelhead was trapped.

Numbers of migrating fish trapped, Eel River morning water temperatures, and Eel River flows and weather conditions were recorded.

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Department of Fish and Game, 1416 Ninth Street, Sacramento,
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INTRODUCTION

Van Arsdale Fisheries Station is located approximately 25 miles northeast of the town of Ukiah, in Mendocino County, California. It is on the Eel River at Capehorn Dam, which impounds Van Arsdale Reservoir. The Station was constructed by Snow Mountain Light and Power Company in 1907 and subsequently sold to Pacific Gas and Electric Company (PG&E) in 1930. A fish ladder located on Capehorn Dam is maintained by PG&E; the fisheries station, grounds and facilities are maintained by the Department of Fish and Game.

METHODS

The upstream migrant fish trap was placed into operation on 17 November 1988 and remained in continuous operation until 19 April 1989. The trap was checked daily during this period. All trapped fish not retained for spawning were released upstream after data on species, sex, fork length (FL), and hatchery fin clips were collected (Appendix Table 1).

Environmental data were recorded daily, usually between 0700 and 0900 hours. Eel River flow was measured at a PG&E gauging station (E-11) located immediately downstream of Capehorn Dam. Eel River water temperatures and general weather conditions were also recorded.

1988-89 CHINOOK SALMON PROGRAM

The first chinook salmon was trapped on 22 November 1988 and the last on 8 January 1989. A total of 328 chinook (115 males, 195 females, and 18 grilse) was recorded (Appendix Table 1).

All trapped chinook were passed above Capehorn Dam. However, a total of 160 chinook (49% of the season total) refused to leave the release area. One hundred and thirty-two of the (29 males, 94 females, and 9 grilse) were returned to the river below Capehorn Dam. None returned to our trap. Twenty-eight died in the release area or were killed by otters.

Refusal to negotiate the upper ladder is an annual phenomenon at this facility, and is thought to be a result of poor homing instincts in fish not originally spawned in the upper river.

No chinook eggs were collected this season.

PG&E, in cooperation with the Department, continued with a 10-year study to evaluate the impact of a power plant diversion on the upper Eel. A complete summary of data collected and tagged fish movements may be found in a report by Steiner Environmental Consultants (SEC) entitled "Potter Valley Project: Effects of Operations on Anadromous Salmonids".

1988-89 STEELHEAD PROGRAM

The first steelhead was trapped on 22 November 1988 and the last on 11 April 1989. A total of 331 steelhead (58 males, 237 females, and 36 sub-adults) was recorded (Appendix Table 1).

Twelve female steelhead were spawned and the eggs from each female kept separate from each other in an attempt to rear enough yearlings for a management experiment. However, because of poor fertility and an inadequate supply of adult steelhead the test was not completed and all lots were released as swim-up fry. Swim-ups were released into Bucknell Creek, a tributary to the Eel River upstream of Cape Horn Dam. All other migrating steelhead were released upstream.

Ovarian samples were collected from 65 female steelhead and shipped to the veterinary laboratory at the University of California at Davis. Ovarian fluid was then tested for the presence of the virus infectious hematopoietic necrosis (IHN). All samples tested negative.

Additional information concerning steelhead movements and related data can be found in the SEC publication.

APPENDIX TABLE 1. Date of Chinook Salmon and Steelhead Arrivals, Eel River Flow and Weather Conditions at Van Arsdale Fisheries Station, 1988-89

Date	Steelhead				Chinook				Eel River(cfs)	Weather
	M	F	T	S/A ^{1/}	M	F	G ^{2/}	T		
22		1	1		2	4	1	7	114	Rain
23					3	6	10	10	1,435	Overcast
24					12	27	2	41	149	Clear
25			0	1	37	43	5	85	154	Rain
26					15	31	5	51	61	Overcast
27					3	7	0	10	20	Clear
28		2	2		2	7	2	11	18	Clear
29					2	2		4	13	Clear
30					1	5	1	7	10	Clear
Monthly totals										
	0	3	3	1	77	132	17	226		
Cumulative totals										
	0	3	3	1	77	132	17	226		

^{1/} S/A=sub-adult

^{2/} G=grilse

Date	Steelhead				Chinook				Eel River(cfs)	Weather	
	Dec	M	F	T	S/A ^{1/}	M	F	G ^{2/}			T
1						1	2		3	45	Clear
2							8		8	44	Clear
3						2	10		12	130	Clear
4						4	6		10	151	Clear
5						3	3		6	149	Clear
6						4	4		8	149	Overcast
7		2	2			4	4		8	149	Clear
8			0	1		3	3		6	211	Clear
9		1	1	1		2	3		5	154	Overcast
10		1	1			1	4	1	6	162	Clear
11		1	1							45	Clear
12										45	Clear
13										45	Clear
14						1	2		3	46	Clear
15										63	Clear
16										64	Clear
17										63	Overcast
18										63	Clear
19										70	Rain
20						1			1	55	Rain
21										156	Rain
22										362	Rain
23		2	2	1		3	7		10	92	Overcast
24		3	3	1		1	1		2	162	Rain
25		1	4	5		2	2		4	112	Clear
26						2	1		3	77	Clear
27										97	Snow
28			0	1						78	Clear
29		2	2							124	Clear
30										130	Rain
31		1	1	0		1			1	154	Clear

Monthly totals

1 17 18 6 35 60 1 96

Cumulative totals

1 20 21 7 112 192 18 322

^{1/} S/A=sub-adult

^{2/} G=grilse

Date	Steelhead				Chinook				Eel River(cfs)	Weather	
	Jan	M	F	T	S/A ^{1/}	M	F	G ^{2/}			T
1			3	3	1	2			2	116	Clear
2										56	Clear
3						1	1		2	71	Clear
4										78	Clear
5										366	Rain
6										63	Clear
7			7	7	2		1		1	61	Clear
8							1		1	60	Snow
9										114	Rain
10	2		9	11	3					560	Clear
11	4		10	14	2					110	Clear
12			1	1						99	Clear
13										102	Overcast
14										87	Cloudy
15										87	Overcast
16										81	Clear
17			5	5						77	Clear
18										78	Clear
19										78	Clear
20										90	Clear
21										64	Clear
22										66	Rain
23	1		12	13	1					142	Overcast
24										50	Clear
25			2	2	3					55	Clear
26										66	Clear
27	1			1						70	Clear
28										60	Clear
29										51	Clear
30										55	Clear
31										57	Clear

Monthly totals

8 49 57 12 3 3 0 6

Cumulative totals

9 69 78 19 115 195 18 328

^{1/} S/A=sub-adult

^{2/} G=grilse

Date	Steelhead				Chinook				Eel River(cfs)	Weather	
	Feb	M	F	T	S/A ^{1/}	M	F	G ^{2/}			T
1			2	3	1	2				55	Overcast
2										70	Snow
3										95	Snow
4										95	Clear
5										95	Clear
6										95	Clear
7										95	Clear
8										95	Clear
9										101	Overcast
10										101	Rain
11										101	Overcast
12										116	Clear
13										116	Clear
14										132	Clear
15										95	Clear
16										95	Clear
17										97	Overcast
18										99	Rain
19										116	Cloudy
20										97	Clear
21										97	Overcast
22			1	1	1					97	Rain
23			2	3						124	Overcast
24										99	Clear
25										99	Overcast
26										99	Clear
27										99	Clear
28										99	Clear

Monthly
totals

0	3	3	1	0	0	0	0
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Cumulative
totals

9	74	81	20	115	195	18	328
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^{1/} S/A=sub-adult

^{2/} G=grilse

Date	Steelhead				Chinook				Eel River(cfs)	Weather
	Mar	M	F	T	S/A ^{1/}	M	F	G ^{2/}		
1									99	Clear
2		8	30	38					497	Rain
3		18	67	85	2				112	Clear
4		1	5	6					227	Snow
5		4	13	17	2				476	Rain
6		2	20	22	6				614	Rain
7		5	9	14	2				182	Overcast
8			6	6					2,897	Rain
9		3	3	6					5,813	Rain
10									9,230	Overcast
11									9,705	Cloudy
12									5,111	Overcast
13									3,566	Cloudy
14		1	1	2					2,376	Clear
15			3	3	1				1,306	Clear
16		1		1	1				1,306	Rain
17			2	2					1,225	Rain
18			1	1					1,391	Rain
19		1		1					497	Overcast
20		1	1	2	1				2,053	Clear
21									1,734	Overcast
22		2		2	1				1,702	Clear
23		1	1	2					1,518	Overcast
24									1,777	Rain
25									3,802	Rain
26									4,476	Clear
27									1,867	Rain
28									1,225	Rain
29									1,290	Overcast
30									805	Overcast
31									540	Overcast

Monthly totals

48 162 210 16 0 0 0 0

Cumulative totals

57 236 293 36 115 195 18 328

^{1/} S/A=sub-adult

^{2/} G=grilse

Date	Steelhead				Chinook				Eel River(cfs)	Weather
	Apr	M	F	T	S/A ^{1/}	M	F	G ^{2/}		
1									325	Overcast
2									305	Rain
3									343	Overcast
4									305	Clear
5									269	Clear
6									154	Clear
7										
8									184	Clear
9									126	Clear
10									92	Clear
11	1	1	2						92	Clear

Monthly
totals

1	1	2	0	0	0	0	0
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Cumulative
totals

58	237	295	36	115	195	18	328
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^{1/} S/A=sub-adult

^{2/} G=grilse

APPENDIX TABLE 2. Annual Steelhead and Chinook Counts, Van Arsdale Fisheries Station, 1933-34 to 1988-89.

Season	Chinook	Steelhead	Season	Chinook	Steelhead
1933-34		3,247	1960-61		1,130
1934-35		2,225	1961-62		1,693
1935-36		6,310	1962-63	9	2,030
1936-37		6,861	1963-64	3	846
1937-38		3,413	1964-65	108	921
1938-39		4,786	1965-66	94	423
1939-40		3,990	1966-67	119	534
1940-41		2,228	1967-68		531
1941-42	no record		1968-69		340
1942-43	no record		1969-70	15	719
1943-44	no record		1970-71	47	1,863
1945-46		9,528	1971-72		696
1945-46		5,054	1972-73		586
1946-47*	917	4,409	1973-74	12	1,040
1947-48		178	1974-75	1	1,126
1948-49		2,433	1975-76	2	1,077
1949-50	no record		1976-77		39
1950-51	55	1,091	1977-78	23	590
1951-52		5,444	1978-79	5	106
1952-53		2,197	1979-80		87
1953-54		2,590	1980-81		1,966
1954-55		6,131	1981-82	175	646
1955-56		3,719	1982-83	9	369
1956-57		4,109	1983-84	26	1,534
1957-58		5,151	1984-85	153	1,980
1958-59		3,335	1985-86	961	1,196
1959-60		2,206	1986-87	1,754	1,952
			1987-88	1,080	2,206
			1988-89	328	331

*Forty-seven coho salmon were trapped this season.