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DE LEEUW, A. D.  
DEENA CREEK STEELHEAD:  
SOME ASPECTS OF THEIR LIFE  
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DEENA CREEK STEELHEAD:  
SOME ASPECTS OF THEIR LIFE HISTORY,  
POPULATION SIZE AND SPORT FISHERY,  
SPRING 1983

By

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## ABSTRACT

deLeeuw, A.D. 1986. Deena Creek steelhead: some aspects of their life history, population size and sport fishery, Spring 1983. Fisheries Progress Report No. SK-53.

In the spring of 1983, a steelhead tagging study was undertaken on Deena Creek, Queen Charlotte Islands. One hundred and twenty-seven steelhead were tagged, by angling and beach seining during late March, April and May, of which only 12 were recaptured. Using multiple sample analysis techniques, population estimates of 625, 577 and 684 steelhead were calculated, range 336 to 1599 fish. Of the 16 age groups identified, 3.2 dominated and accounted for 40.5%. The large number of age groups was likely the result of high incidence of repeat spawners which accounted for 25.6% of the total. Over 83% of all steelhead sampled had spent 3 years in the stream prior to spending 1 (35%), 2 (83%) or 3 (7%) years in the ocean. The average length of steelhead sampled was 74.9 cm and ranged from 55 to 93 cm. These results and the sports fishery are discussed relative to other Queen Charlotte steelhead streams.

## INTRODUCTION

Angling is an important activity on the Queen Charlotte Islands. Approximately 40% of all eligible Charlotte residents purchase a non-tidal angling licence of which 1/3 to 1/2 also angle for steelhead trout (Salmo gairdneri). Despite this intense angling, very little steelhead life history and population information is available for Charlotte streams. As a consequence, in order to better understand Charlotte steelhead a study was undertaken on Deena Creek steelhead during the spring of 1983. The objectives were to:

1. Determine steelhead run timing and movement;
2. Describe life history characteristics;
3. Estimate population size.

## DESCRIPTION OF THE STUDY AREA AND FISHERY

Flowing in a northeasterly direction into South Bay, Skidegate Channel, Deena Creek drains an area of 6,920 hectares on northern Moresby Island (Fig. 1). Anadromous fish migrate throughout the lower 12 km of the mainstem and some of the tributaries. In addition to steelhead, Deena Creek is also inhabited by coho salmon (Oncorhynchus kisutch), chum salmon (O. keta), pink salmon (O. gorbuscha), Dolly Varden char (Salvelinus malma) and the prickly sculpin (Cottus asper).

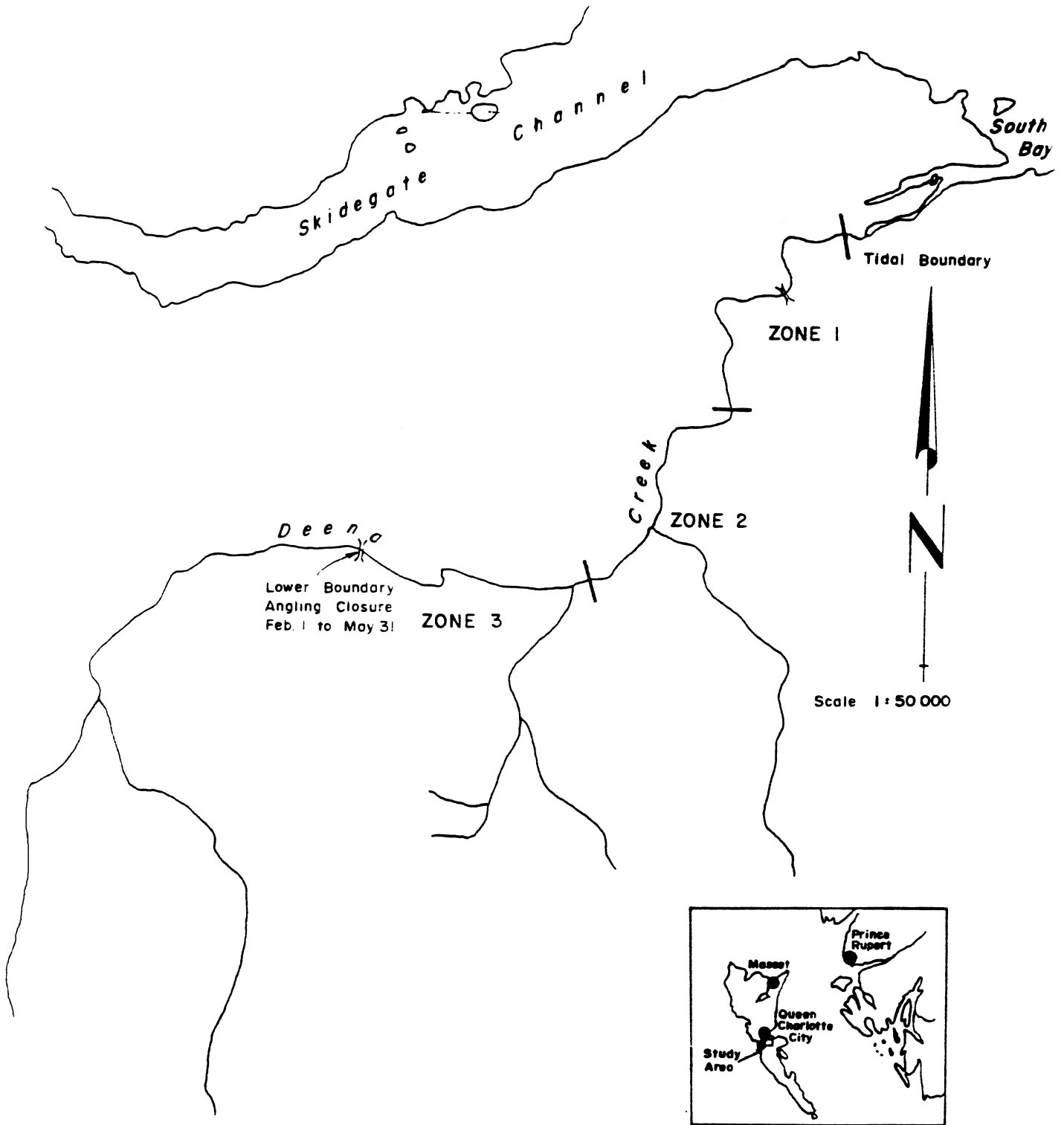


Fig. 1 Deena Creek , Queen Charlotte Islands

Stream discharges on the Deena are extremely variable, not unlike other Charlotte streams. Flows were recorded from June to September 1963 only and ranged from .74 m<sup>3</sup>/s to 5.86 m<sup>3</sup>/s (Environment Canada, 1982). Total dissolved solids ranged from 76 to 80 ppm, pH ranged from 6.8 to 7, and temperatures varied from 0.5°C in winter to 17°C in summer. Salmon escapements have been documented for a number of years (Marshall, et al., 1978).

Questionnaire-estimated angling effort for steelhead in the Deena increased until the 1979-80 season and then stabilized at a somewhat lower level (Table 1). The number of steelhead killed was as high as 78 during the 1976-77 season, but has since declined, while the number of fish released has tended to fluctuate sporadically during the period of record. On average, success or catch/day has tended to be better on the Deena than for all Charlotte streams combined except for 1970-71, 1971-72 and 1979-80.

The river upstream of the second bridge, located about 8 km above tide water, is closed to all angling from February 1 to May 31 to protect steelhead which spawn during that time.

#### METHODS

For sake of convenience, the lower 8 km of river was partitioned into 3 equal 2.66 km sections (Fig. 1). Steelhead were both angled and seined, then tagged with coloured, numbered anchor (spaghetti) tags.

Table 1. Deena Creek steelhead harvest analysis<sup>1</sup>, 1970-71 to 1983.

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Season	Days Fished	No. of Anglers	Kept	Released	Kept/Day	Catch/Day	Charlottes Catch/Day
70-71	50	28	6	4	0.12	0.20	.36
71-72	11	5	0	0	0.00	0.00	.52
72-73	66	23	73	13	1.11	1.30	.31
73-74	153	23	23	86	0.15	0.71	.33
74-75	35	14	11	2	0.31	0.37	.27
75-76	121	22	23	101	0.19	1.02	.47
76-77	165	43	78	104	0.47	1.10	.37
77-78	106	34	13	65	0.12	0.74	.48
78-79	104	42	11	39	0.11	0.48	.41
79-80	299	50	15	37	0.05	0.17	.48
80-81	188	65	37	165	0.20	1.07	.79
81-82	191	51	14	235	0.07	1.30	.93
82-83	<u>147</u>	<u>40</u>	<u>15</u>	<u>100</u>	<u>0.10</u>	<u>0.78</u>	<u>.23</u>
Mean:	126	34	25	65	0.23	0.71	.46

<sup>1</sup>Steelhead Harvest Analysis; B.C. Fish and Wildlife Branch Annual Reports

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Weights were generally estimated while fork lengths were measured. Gender, date of capture, tag number and colour as well as location of capture were noted. After the removal of a few scales, fish were released at the capture site.

Scales were viewed using a dissecting microscope, and the two best examples from the sample selected were cleaned and mounted on gummed cards. Impressions of the scales were made on acetate cards by applying heat and pressure. A Leitz Prado projector was then used to examine each scale for freshwater and ocean age determination (Narver and Withler, 1974).

Population size was determined using the Schnabel, Schumacher and Schnabel–Chapman adjusted multiple census techniques (Ricker, 1970). The formulae were:

$$\text{Schnabel: } N = \frac{\text{sum } (Ct \ Mt)}{R}$$

$$\text{Schumacher: } N = \frac{1}{N} = \frac{\text{sum } (Mt \ Rt)}{\text{sum } (Ct \ Mt^2)}$$

$$\text{Schnabel, Chapman revised: } N = \frac{\text{sum } (Ct \ Mt)}{R+1}$$

where: t = 5-day time period  
 Ct = total catch during time t  
 Mt = total fish tagged and released during time t  
 M = sum of Mt  
 Rt = total recapture during time t  
 R = sum of Rt

## RESULTS

From March through May, 1983, 127 steelhead were tagged in the Deena River. Of these, 31 were taken by beach seine in the lower river on May 3, while the remaining 96 were angled. Twelve fish were recaptured, 3 by anglers and 9 by beach seine. Fish seined, tagged and recaptured again by seine within the catch period (May 3), were excluded from the information set. In other words, only angler–recaptured fish were included in the population estimation.

### SPATIAL AND TEMPORAL DISTRIBUTION

The largest number of steelhead (101) were taken in the lower reaches of Deena Creek (Table 2), with only marginal catches in the middle and upper zones. Although fish were available throughout the March to May period, largest catches occurred during April (Table 3).  
 Table 2. Deena Creek steelhead catch by zone.

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Zone	Zone length (km)	Catch	Catch/km
1 (lower r.)	2.66	101	38.0
2 (middle r.)	2.66	7	2.6
3 (upper r.)	2.66	17	6.4
Not recorded	<u>-</u>	<u>2</u>	<u>-</u>
Total	8	127	15.9 (127 / 8)

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Table 3. Number of steelhead captured during the spring of 1983 tagging study on Deena Creek. Catch grouped by 10-day periods.

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Date	Males	Females	Total
03/1-10	0	0	0
03/11-20	6	4	10
03/21-31	11	4	15
04/1-10	16	16	32
04/11-20	9	11	20
04/21-30	4	3	7
05/1-10	7	33	40
05/11-20	0	2	2
05/21-31	<u>0</u>	<u>1</u>	<u>1</u>
Total	53	74	127

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Seine catches in the tidal portion of the river accounted for the majority of fish recorded during May. Large numbers of fish were schooled in the intertidal area as a result of extreme low water conditions during this time.

Overall sex ratio of steelhead captured favoured female (n = 74) to males (n = 53).

The average number of days between recaptures of the three fish recorded was only 4.3 days (Table 4). Intertidal seine hauls captured 9 previously-tagged fish, all originally angled further downstream.

Table 4. Movement and residency of recaptured steelhead in Deena Creek spring of 1983.

Tag #	Original Capture Zone	Original Capture Date	Recapture Zone	Recapture Date	# of Days
Y00804	3	Mar. 12	3	Mar. 12	0
Y00849	2	Apr. 4	2	Apr. 5	1
Y00836	1	Apr. 4	1	Apr. 18	12
9 fish not recorded			1	May 3	
					X=4.3

#### AGE AND SIZE

Scales were removed from 127 adult steelhead, of which only two were not readable. Absorbtion of the fresh water anulli (R) had occurred in 33 sets of scales, therefore, 92 samples were readable for total age.

Sixteen age groups were represented in the Deena Creek steelhead sample. Of these, 5 age groups (15 fish) occurred as kelts (Table 5).

Table 5. Steelhead trout age groups from Deena Creek, spring of 1983 (n = 92)

Age group	Males	Females	Total	% of Total
3.2	24	24	48	40.5
3.3	1	5	6	6.5
4.2	7	1	8	8.7
4.3	1	0	1	1.1
2.1S1	1	0	1	1.1
3.1S1	5	7	12	13.0
3.2S1	0	1	1	1.1
3.1SS1	0	2	2	2.2
4.1S1	1	1	2	2.2
4.2S1	0	1	1	1.1
4.1SS1	0	1	1	1.1
3.1S(kelt)	0	4	4	4.3
3.2S(kelt)	0	2	2	2.2
3.1SS(kelt)	0	1	1	1.1
3.1SSS(kelt)	0	1	1	1.1
4.1S(kelt)	<u>0</u>	<u>1</u>	<u>1</u>	<u>1.1</u>
Total	<u>40</u>	<u>52</u>	<u>92</u>	<u>100</u>
R.1	0	1	1	
R.2	10	8	18	
R.1S1	2	1	3	
R.1SS1	0	2	2	
R.2S1	0	2	2	
R.2SS1	0	1	1	
R.1S(kelt)	0	3	3	
R.1SS(kelt)	0	1	1	
R.2SS(kelt)	0	2	2	

Three years of fresh water growth followed by two years of marine growth prior to first spawning (i.e., age 3.2) was the dominant age, and accounted for 40.5% of all scales where both fresh and marine growth were readable. The next dominant age group was 3.1S1 at 13%, followed by 4.2 at 8.7%.

Seventy-seven or 83.7% of all Deena Creek steelhead sampled had spent three years in the stream prior to smolting (Table 6). The two other fresh water age groups had spent four (15.2%) and two (1.1%) years in the stream.

Among first time spawners, those with 2 years marine residency accounted for 66.4% of the total, while those with one year ocean growth accounted for 28% of the scales examined. A little less than 6% of all fish sampled had spent three years in the ocean prior to spawning (Table 7).

Of all fish sampled, 32 or 25.6% had spawned prior to the year of capture. The majority (75%) of repeat spawners, i.e. both males and females, were on their second spawning run (.1S1 and .2S1) (Table 8).

Size of fish was not obviously indicative of duration of ocean residency. One and two year ocean fish averaged 75.6 and 79.0 cm respectively, while the fork length of the 30 adults measured was 74.9 cm (Table 9). Since weights were hand-estimated, these measurements were not included in the comparison. Also, only three males were measured compared to 27 females.

Table 6. Number and percentage of male and female Deena Creek Steelhead of different fresh water ages, spring of 1983 ( n = 92 ).

Fresh water age	Males	Females	Total	% of Total
2	1	0	1	1.1
3	30	47	77	83.7
4	<u>9</u>	<u>5</u>	<u>14</u>	<u>15.2</u>
Total	40	52	92	100.0

Table 7. Number and percentage of male and female Deena Creek steelhead of different ocean ages, prior to first spawning, spring of 1983 ( n = 125 ).

Ocean Age	Males	Females	Total	% of Total
.1	9	26	35	28.0
.2	41	42	83	66.4
.3	<u>2</u>	<u>5</u>	<u>7</u>	<u>5.6</u>
Total	52	73	125	100.0

Table 8. Numbers and percentage of repeat spawning Deena Creek steelhead of different ocean age groups, spring of 1983, kelts excluded, ( n = 32, or 25.6% of all fish sampled).

Age	Males	Females	Total	% of Total
.1S1	8	11	19	59.1
.2S1	0	6	6	18.8
.1SS1	0	6	6	18.8
.2SS1	<u>0</u>	1	<u>1</u>	<u>3.0</u>
Total	8 (25%)	24 (75%)	32	100.0

Table 9. Fork lengths (cm) of male and female Deena Creek steelhead of different ocean ages, spring of 1983, repeat spawners excluded.

Ocean Age	No. Males	$\bar{X}$	Range	No. Females	$\bar{X}$	Range	Total	$\bar{X}$	Range
.1	1	76	—	15	75.6	67–88	16	75.6	67–88
.2	<u>2</u>	<u>69</u>	<u>69</u>	<u>12</u>	<u>74.8</u>	<u>55–93</u>	<u>14</u>	<u>74.0</u>	<u>55–93</u>
Total	3	71.3	69–76	27	75.2	55–93	30	74.9	55–93

#### POPULATION ESTIMATION

Results of the three estimators indicate a population of between 577 and 684 steelhead in Deena Creek during the spring of 1983 (Table 10). Large confidence limits are likely due to few repeat captures.

Table 10. Deena Creek steelhead population estimates during the spring of 1983.

Method	5	95% Confidence Limits	
		Estimate	Poisson distribution Normal distribution
N Schnabel	625	357 - 1210	388 - 1599
N Schumacher	577	481 - 1182	-----
N Chapman	<u>684</u>	<u>336 - 1087</u>	<u>375 - 1250</u>
Average	629		

## DISCUSSION

The large numbers of steelhead taken in the lower reaches of Deena Creek is not typical of Charlotte streams. In Pallant and Copper Creeks, both on northern Moresby Island, steelhead were generally angled in the mid to upper sections of the stream (Chudyk, 1982; de Leeuw, 1985a, 1985b). On the Yakoun River also, steelhead were generally angled in the middle and upper reaches (de Leeuw, 1983). It is possible that because of the small size of Deena Creek, steelhead hold in the lower reaches prior to rapid upstream migration and subsequent spawning when the stream is in freshet conditions. Almost 40 steelhead were seined from an intertidal pool in early May during low water conditions. These fish migrated upstream when a freshet condition occurred a few days later.

In addition to the distribution, the timing of Deena Creek steelhead is also different from other Charlotte study streams such as the Copper, Pallant and Yakoun Rivers. In these streams, peaks in run timing generally occur in early to late winter rather than the April to May period. Late run timing of steelhead has been observed in several other Charlotte streams including Mathers Creek and Skedans Creek on Louise Island, and Bonanza and Gregory Creeks on the west coast of Graham Island. No doubt different streams have steelhead runs which maximize their production potentials by developing specific migration

strategies. Noteworthy is the disproportionately large number of females (36) as opposed to males taken in the lower river during May. Overall sex ratio favoured females (74) considerably over males (53) and is not unlike other Charlotte streams.

Since Deena Creek appears to have a very late winter steelhead run of limited duration, fish likely migrate into, spawn and exit the stream all within a very short time period. The average time between captures (3 recaptures) was only 4.1 days and ranged from 0 to 12 days. On Pallant Creek, the average number of days between recaptures during 1983-84 and 1984-85 was 45 and 39.1 days respectively, while on the Yakoun the average steelhead spent 26.5 days in the river (de Leeuw, 1983, 1985a, 1985b). Time duration between captures on these latter two streams, ranged from 0 to 152 days.

The number of age groups represented in Deena Creek steelhead samples (16) is considerably greater than for the Yakoun (de Leeuw, 1983), Pallant (de Leeuw, 1985a, 1985b) and Copper Rivers (Chudyk, 1982). The high observed incidence of repeat spawners in Deena Creek is the most likely reason for the large number of age groups.

The dominance of three year old juveniles is typical of other Charlotte streams. Unlike other streams however, Deena Creek steelhead have a shorter ocean residency. On the Yakoun, Copper and Pallant Rivers, the major portion of the steelhead run is comprised of three year ocean fish. On the Deena, 66.4% of the steelhead examined had spent only two years in the ocean. The remaining 28% and 5.6% had

spent one and three years respectively in the marine environment prior to spawning. This relatively short marine residency was not reflected in their size. The lengths of Deena Creek steelhead (55 to 98 cm) was well within the expected range for other Charlotte streams. In these streams, however, three years of ocean residency occurred more frequently.

The low repeat capture rate (9.4%) and therefore large confidence limits around the population estimates is possibly the result of a short adult stream residency. Since the total run is of limited duration, Deena Creek steelhead likely migrate into, spawn and exit the stream all within a few weeks.

## SUMMARY

1. During the spring of 1983, 127 steelhead were tagged in the Deena River of which 12 or 9.4% were recaptured.
2. The greatest number of steelhead were captured in the lower river, and the time duration between original and recapture was about four days.
3. Of the 16 age groups identified, age 3.2 dominated and accounted for 40.5% of all scale samples where both fresh and marine growth was readable. Of all Deena Creek steelhead sampled, 83.7% had spent three years in the stream prior to smolting. Two and one years of marine residency prior to first spawning accounted for 66.4% and 28.0% respectively of the total number of steelhead examined.
4. Lengths of steelhead ranged from 55 to 93 cm and averaged 74.9 cm. An increase in length relative to duration of ocean residency was not apparent.
5. Population abundance of the 1983 Deena Creek steelhead run was estimated using multiple sample techniques. Three estimates were calculated and include: 625, 577 and 684 steelhead. Wide confidence limits, ranging from 336 to 1599, result from few repeat captures.

## ACKNOWLEDGEMENTS

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## APPENDICES

- I. Original steelhead captures from Deena Creek during  
The spring of 1983.
- II. Steelhead recaptures from Deena Creek during the spring of  
1983.

APPENDIX I. Original steelhead captures from Deena Creek during the spring of 1983.

Fish No	Date	Sex	Length (cm)	Weight (kg)	Tag No. Colour	Area	Remarks	Age
1	Mar 12	M		2.7	Y00 801	Lower R.	Dark	3.2
2	"	F		3.6	" 802	Upper R.	Bright	3.1S1
3	"	M		2.3	" 803	Upper R.	Coloured	R.2
4	"	M		2.7	" 804	Upper R.	Bright	3.2
5	"	M		3.2	" 805	Lower R.	Bright	3.2
6	"	F		4.1	" 806	Lower R.	Kelt	3.3
7	Mar 13	F		4.5	" 807	Upper R.	Bright	3.1S1
8	"	M		4.1	" 808	Lower R.	Coloured	4.1S1
9	"	M		4.1	" 809	Lower R.	Coloured	4.2
10	"	F		4.1	" 810	Lower R.	Bright	3.2
11	Mar 26	M		4.1	" 811	Lower R.	Bright	3.2
12	"	F		5.0	" 812	Lower R.	Bright	3.2S1
13	"	M		4.1	" 813	Lower R.	Bright	3.2
14	"	F		4.5	" 814	Lower R.	Kelt	3.2S
15	"	M		2.7	" 815	Upper R.	Bright	3.2
16	"	M		4.5	" 816	Upper R.	Dark	3.1S1
17	"	M		2.7	" 891	Lower R.	Coloured	3.2
18	Mar 27	F		2.7	" 817	Upper R.	Bright	3.2
19	"	F		4.5	" 818	Upper R.	Bright	3.3
20	"	M		5.0	" 819	Lower R.	Bright	4.3
21	"	M		2.7	" 820	Lower R.	Coloured	R.2
22	"	M		4.1	" 821	Lower R.	Coloured	R.1S1
23	Mar 29	M		4.1	" 893	Lower R.	Coloured	3.1S1
24	Mar 30	M		3.2	" 881	---	Coloured	R.2
25	Mar 31	M		3.6	" 894	Lower R.	Coloured	3.2
26	Apr 1	F		1.8	" 822	Lower R.	Bright	3.2
27	"	M		4.1	" 823	Lower R.	Dark	R.2
28	"	M		4.5	" 824	Lower R.	Bright	4.2
29	"	M		4.1	" 825	Lower R.	Coloured	3.2
30	"	F		5.0	" 826	Lower R.	Coloured	3.3
31	"	M		6.4	" 827	Lower R.	Bright	3.3
32	"	F		3.2	" 828	Lower R.	Bright	3.2
33	"	M		2.7	" 829	Lower R.	Bright	3.2
34	"	M		5.0	" 830	Lower R.	Coloured	3.1S1
35	Apr 2	M		3.2	" 837	Lower R.	Bright	3.2
36	"	M		4.5	" 838	Lower R.	Bright	4.2
37	"	M		4.1	" 839	Upper R.	Bright	3.2
38	"	F		5.0	" 840	Upper R.	Bright	R.2
39	"	M		2.7	" 841	Lower R.	Bright	R.2
40	"	F		2.3	" 842	Middle R.	Kelt	3.2
41	"	F		4.5	" 843	Lower R.	Bright	3.3
42	"	F		5.4	" 844	Lower R.	Bright	R.2S1

APPENDIX I, continued. Original steelhead captures from Deena Creek during the spring of 1983.

Fish No	Date	Sex	Length (cm)	Weight (kg)	Tag No. Colour	Area	Remarks	Age
43	Apr 2	M		4.5	Y00 845	Lower R.	Coloured	2.1S1
44	"	F		2.7	" 895	Lower R.	Bright	R.2
45	"	F		2.7	" 862	Lower R.	Bright	—
46	"	F		2.3	" 863	Lower R.	Bright	3.2
47	"	F		4.5	" 864	Middle R.	Bright	4.1S1
48	"	F		5.4	" 854	Middle R.	Bright	R.2S1
49	Apr 4	M		2.7	" 846	Upper R.	Bright	3.2
50	"	F		5.0	" 847	Lower R.	Bright	3.3
51	"	F		4.5	" 848	Middle R.	Kelt	3.1S1
52	"	M		3.6	" 849	Middle R.	Dark	3.2
53	Apr 9	F		3.6	" 850	Lower R.	Bright	3.2
54	"	M		2.7	" 831	Upper R.	Coloured	3.2
55	"	M		2.7	" 832	Upper R.	Coloured	R.2
56	"	F		3.6	" 833	Lower R.	Bright	3.2
57	"	M		3.6	" ---	Lower R.	Bright	3.2
58	Apr 13	F		4.1	" 834	Lower R.	Coloured	3.2
59	"	M		3.6	" 835	Lower R.	Kelt	3.1S1
60	"	F		3.2	" 836	Lower R.	Bright	R.2
61	"	M		3.2	" 892	Lower R.	Bright	4.2
62	"	M		4.5	" 896	Lower R.	Coloured	4.2
63	"	F		4.5	" 897	Lower R.	Bright	3.2
64	"	F		3.6	" 898	Lower R.	Bright	R.2
65	"	F		4.1	" 899	Middle R.	Bright	3.2
66	"	M		3.6	" 900	Middle R.	Kelt	R.2
67	Apr 14	M		2.7	" 866	Lower R.	Bright	3.2
68	"	F		3.2	" 871	Lower R.	Bright	R.2
69	"	M		5.0	" 872	Lower R.	Coloured	4.2
70	"	F		6.4	" 873	Lower R.	Bright	3.1SS1
71	"	F		2.5	" 874	Upper R.	Bright	3.2
72	"	M		3.2	03097	Lower L.	Bright	4.2
73	Apr 17	F		2.7	Y00 875	Lower R.	Bright	3.2
74	"	F		2.7	" 876	Lower R.	Bright	3.2
75	"	M		3.6	" 877	Upper R.	Dark	3.2
76	"	F		5.4	" 878	Lower R.	Bright	3.1SS1
77	Apr 18	M		3.2	" 879	Lower R.	Coloured	3.2
78	Apr 21	F		3.2	" 882	---	Bright	3.2
79	Apr 24	M		4.5	" 880	Lower R.	Dark	R.1S1
80	"	M		2.7	03187	Lower R.	Coloured	3.2
81	"	M		3.6	03188	Lower R.	Bright	R.2
82	"	M		2.7	03189	Lower R.	Kelt	R.2
83	"	F		1.4	03190	Upper R.	Bright	R.1
84	"	F		4.5	03191	Upper R.	Bright	3.1S1

APPENDIX I, continued. Original steelhead captures from Deena Creek during the spring of 1983.

Fish No	Date	Sex	Length (cm)	Weight (kg)	Tag No. Colour	Area	Remarks	Age
85	May 1	F		3.6	03192	Lower R.	Bright	3.2
86	"	F		3.2	03193	Lower R.	Kelt	3.1S1
87	"	F		3.6	03194	Lower R.	Bright	3.2
88	"	F		4.1	03195	Lower R.	Bright	3.2
89	May 3	F	65	---	Y00 884	Lower R.	Kelt	3.2
90	"	F	67	---	" 885	Lower R.	Kelt	R.1S
91	"	M	69	---	" 890	Lower R.	Dark	3.2
92	"	F	74	---	000 834	Lower R.	Bright	3.2
93	"	F	81	---	" 836	Lower R.	Kelt	R.1S
94	"	F	81	---	" 837	Lower R.	Kelt	3.1SSS
95	"	F	84	---	" 840	Lower R.	Bright	4.2S1
96	"	M	69	---	" 841	Lower R.	Dark	3.2
97	"	F	72	---	" 842	Lower R.	Bright	3.1S
98	"	F	67	---	" 843	Lower R.	Kelt	4.1S
99	"	M	63	---	" 844	Lower R.	Kelt	---
100	"	F	71	---	" 845	Lower R.	Kelt	R.1S
101	"	F	55	---	06976	Lower R.	Bright	3.2
102	"	M	71	---	06977	Lower R.	Dark	3.2
103	"	F	71	---	06978	Lower R.	Bright	R.2
104	"	F	74	---	06979	Lower R.	Kelt	R.1SS
105	"	F	65	---	06981	Lower R.	---	4.2
106	"	F	75	---	06983	Lower R.	Bright	R.1S1
107	"	F	91	---	06984	Lower R.	Kelt	R.2SS
108	"	F	76	---	06985	Lower R.	Bright	R.1SS1
109	"	F	67	---	06986	Lower R.	Bright	R.2
110	"	F	71	---	06987	Lower R.	Bright	R.2
111	"	F	73	---	06988	Lower R.	Kelt	3.1S
112	"	F	68	---	06989	Lower R.	Kelt	3.1S
113	"	F	87	---	06990	Lower R.	Bright	4.1SS1
114	"	F	76	---	06991	Lower R.	Bright	3.1S1
115	"	M	76	---	06992	Lower R.	Bright	3.1S1
116	"	F	88	---	06993	Lower R.	Bright	R.1SS1
117	"	F	90	---	06999	Lower R.	Kelt	R.2SS
118	"	F	93	---	07000	Lower R.	Bright	R.2SS1
119	"	F	76	---	09996	Lower R.	Kelt	3.1SS
120	May 7	M		4.1	03098	Lower R.	Kelt	3.2
121	"	F		3.6	03196	Lower R.	Bright	3.2
122	"	M		2.7	03099	Lower R.	Dark	R.2
123	"	F		3.2	03100	Lower R.	Bright	3.2
124	"	F		3.2	03176	Lower R.	Kelt	3.1S
125	May 14	F		3.2	03177	Lower R.	Bright	3.2
126	"	F		5.0	03178	Lower R.	Kelt	3.2S
127	May 21	F		4.1	03179	Lower R.	Kelt	3.1S

APPENDIX II. Steelhead recaptures from Deena Creek during the spring of 1983.

Fish No.	Date	Length (cm)	Weight (kg)	Tag No. & Colour	Area	Remarks	Age
1	Mar 12			Y00 804	Upper R.	---	
2	Apr 5			Y00 849	Middle R.	Killed	
3	Apr 18			Y00 836	Lower R.	---	
*4-12	May 3			Not recorded	Lower R.	---	

\* These fish (9) were seined in the Lower River.