

Juvenile Steelhead and Silver Salmon Population Estimates, San Geronimo, Lagunitas, and Olema Creeks, Marin County

Lagunitas Creek and its principal tributaries are the most important silver salmon and steelhead spawning and nursery streams in Marin County. Estimate of the spawning escapements in the winter have been made but very little information concerning the summer populations of juvenile salmonids has been collected.

During the period, August 7 to September 15, 1970, Lagunitas Creek and tributaries were sampled with portable electro-fishing gear. Fifteen 100-foot stretches of stream were sampled. Six stations were located on Lagunitas Creek and four stations were on San Geronimo Creek which is an extension of Lagunitas Creek above the confluence of Kent Creek at Shafter. One station was on Devils Gulch, which enters Lagunitas Creek 8 miles upstream from the mouth, and four stations were on Olema Creek, which enters the tidal slough of Lagunitas Creek below the mouth. Time was not allotted for a survey of tributary Nicasio Creek.

The locations of the stations and stream miles from the tidal arm of Tomales Bay are as follows:

<u>Station</u>		<u>Stream mile</u>	<u>Location</u>
	Lagunitas Creek		
1		9.4	Just below bridge in Taylor State Park.
2		8.5	At Taylor State Park campground.
3		7.0	At Jewell below bridge.
4		4.8	0.8 mile below Tocsloma(sic)
5		3.3	Opposite quarry.
6		2.1	Just above bridge.
	San Geronimo Creek		
1		11.5	At Lagunitas
2		12.4	0.2 miles above bridge at Forest Knolls.
3		13.5	Above bridge at San Geronimo.
4		14.6	Just below Woodacre.
0.0.	Devils Gulch	9.0	One mile from confluence with Lagunitas Creek.
	Olema Creek		
1		2.4	At Olema
2		3.6	Truttman Ranch
3		5.0	Stewart Ranch

The electrofishing survey, following routine procedures, was conducted by James Crunk, Fish and Game Assistant, and Len Maitland and Charles Maitland, Seasonal Aids. Tables 1, 2, and 3 are summaries of the fish sampling surveys.

Fish populations in each section were estimated by use of the regression formula,  $\frac{M-C_1^2}{C_1-C_2}$ , where M equals the population estimate,  $C_1$  the catch in the

first run, and  $C_2$  the catch in the second run. Estimated juvenile steelhead populations per hundred feet of stream in the section sampled ranged from zero at station 4 on Lagunitas Creek, Stream mile 4.8, to 210 fish at Station 1 on Lagunitas Creek, Stream mile 9.4. The average number of juvenile steelhead was 50.6 fish per section. Over 92 percent of the fish recovered were this year's hatch. The condition of the fish ranged from 0.78 at Stream mile 9.4 on Lagunitas Creek to 1.83 at Stream mile 14.6 on San Geronimo Creek. The average was 1.30 for all sections sampled.

Juvenile silver salmon were only recovered in Devils Gulch which enters Lagunitas Creek at stream mile 8.0 and Station 4 on San Geronimo Creek, Stream mile 14.6. The estimated population for the two stations was 139 fish. The condition factor averaged 1.26.

Assuming the areas sampled are typical of the 21 miles of nursery area in the drainage the standing crop of juvenile steelhead ranged between 34,183 and 53,633 fish at the 95 percent confidence interval. Likewise the juvenile silver salmon population was between 2,430 and 4,112 fish.

This memo is based on data compiled by the fish shocking crew.

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Assoc. Fishery Biologist Region 3

Table 1  
A. Lagunitas Creek and Devils Gulch

Station	1	2	3	4	5	6	D. G.
Date	8/17	8/7	8/17	8/11	8/12	8/13	8/13
Water Temp., F,	62	58	*62	72	67	62	--
Flow, cfs	1.81	1.33	1.42	1.48	2.99	3.06	--
<u>Steelhead</u>							
Run #1	41	21	62	0	8	14	18
Run #2	33	11	29	0	6	5	6
Total Wt., gms	294	84	504	0	-	-	259
F.L. Range, in.	1.7/5.0	1.9/3.1	1.7/6.2		2.5/8.0	2.9/5.1	1.6/9.8
Mean F.L.	2.7	2.4	2.7		4.4	3.7	3.4
Mean Wt., gms.	4.0	2.6	5.5		-	-	10.8
Condition Factor	1.24	1.14	1.70		-	-	1.68
<u>Silver Salmon</u>							
Run #1	0	0	0	0	0	0	49
Run #2	0	0	0	0	0	0	29
Total Wt., gms	-	-	-	-	-	-	188
F. L. Range, in.	-	-	-	-	-	-	1.2/3.0
Mean F.L.	-	-	-	-	-	-	2.3
Mean Wt., gms.	-	-	-	-	-	-	2.4
Condition Factor	-	-	-	-	-	-	1.2
<u>Pop. Est. and Wt./100</u>							
No. of Steelhead	210	44	116	0	32	22	27
Wt., gms	840.0	114.4	638.0	-	-	-	291.6
No. of Silver Salmon	0	0	0	0	0	0	120
Wt., gms	-	-	-	-	-	-	288
No. of rough fish	67	36	40	34	91	182	48
Wt., gms	382	183	75	140	-	-	134

Table 2  
San Geronimo Creek

Station	1	2	3	4
Date	9/11/70	9/11/70	9/15/70	9/15/70
Water Temp., F.	56	56	52	52
Flow, cfs	.05	--	.19	--
<u>Steelhead</u>				
Run #1	43	42	41	20
Run #2	4	29	6	5
Total Wt., gms	180	345	233	118
F.L. Range, In.	2.4/4.4	2.0/6.0	2.0/3.6	1.7/4.9
Mean F.L.	3.1	2.8	2.8	2.5
Mean Wt., gms	3.8	4.8	5.0	4.7
Condition Factor	0.78	1.33	1.38	1.83
<u>Silver Salmon</u>				
Run #1	0	0	0	13
Run #2	0	0	0	4
Total Wt., gms	-	-	-	47
F.L. Range, In.	-	-	-	1.9/3.1
Mean F.L.	-	-	-	2.4
Mean Wt., gms	-	-	-	2.8
Condition Factor	-	-	-	1.23
<u>Pop. Est. and Wt./100</u>				
No. of Steelhead	47	132	48	27
Wt., gms	178.6	633.6	240.0	126.9
No. of Silver Salmon	0	0	0	19
Wt., gms	-	-	-	53.2
No. of Rough fish	63	51	0	1
Wt., gms	121	28	0	12.0

Table 3  
Olema Creek

Station	1	2	3	4
Date	9/4/70	9/4/70	9/10/70	9/10/70
Water Temp., F.	60	60	64	56
Flow, cfs	.36	.57	-	-
<u>Steelhead</u>				
Run #1	16	20	1	0
Run #2	6	4	0	2
Total Wt., gms	128	58	-	8
F.L. Range, Inches	2.3/5.2	1.9/3.3	-	2.8/2.8
Mean F.L.	3.1	2.5	-	2.8
Mean Wt., gms	5.8	2.4	-	4.0
Condition Factor	1.20	0.94	-	1.11
<u>Silver Salmon</u>				
Run #1	0	0	0	7
Run #2	0	0	0	11
Total Wt., gms	-	-	-	67
F.L. Range, Inches	-	-	-	2.0/3.6
Mean F.L.	-	-	-	2.6
Mean Wt., gms	-	-	-	3.7
Condition Factor	-	-	-	1.28
<u>Pop. Est. and Wt./100</u>				
No. of Steelhead	26	25	1	2
Wt., gms	150.8	60.0	-	8.0
No. of Silver Salmon	0	0	0	30
Wt., gms	-	-	--	111.0
No. of Rough fish	28	19	0	14
Wt., gms	140	106	--	119

FIGURE T

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