

STREAM INVENTORY REPORT

Schooner Gulch

INTRODUCTION

A California Department of Fish and Game (CDFG) stream fisheries inventory was conducted in the summer of 2001 on North Fork of Schooner Gulch.

The objective of the habitat inventory is to assess the amount and quality of habitat available to anadromous salmonids. This report presents the inventory results and recommends options for potential habitat improvements for coho salmon and steelhead trout. The recommendations are based on target habitat values suitable for salmonids in California's north coast streams.

WATERSHED OVERVIEW

North Fork Schooner Gulch is a tributary to Schooner Gulch, which drains to the Pacific Ocean. It is located in Mendocino County, CA. The legal description for North Fork Schooner Gulch, at its confluence with the Schooner Gulch is T12N R16W S29. This confluence is located at 38.8692 degrees north latitude and 123.6499 degrees west longitude. North Fork Schooner Gulch is a first order stream and has approximately two miles of blue line stream according to the USGS Saunders Reef 7.5 minute quadrangle map. There is a culvert about 0.75 miles up the North Fork that is a fish barrier. North Fork Schooner Gulch drains a watershed of approximately two square miles. Elevations range from about 160 feet at the mouth to 960 feet in the headwater areas.

Mixed coniferous forest dominates the watershed. The lower part of North Fork Schooner Gulch is within California State Parks. Private landowners own the upper lengths, where land use is mainly timber production.

METHODS

The habitat inventory conducted in Schooner Gulch followed the methodology presented in the *California Salmonid Stream Habitat Restoration Manual* (Flosi *et al.*, 1998). A two-person team of AmeriCorps Watershed Stewards Project (WSP) members or CDFG personnel, trained in standardized habitat inventory methods by CDFG, conducted the field inventory.

HABITAT INVENTORY

The standardized habitat inventory protocol has nine components:

1. Flow:

Flow is measured in cubic feet per second (cfs) at the bottom of the stream survey reach using standard flow measuring equipment, if available. In some cases flows are estimated.

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2. Channel Type:

As described in the *California Salmonid Stream Habitat Restoration Manual*, channel typing is conducted simultaneously with habitat typing and follows a standard form to record measurements and observations. There are five measured parameters used to determine channel type: 1) water slope gradient, 2) entrenchment, 3) width/depth ratio, 4) substrate composition, and 5) sinuosity.

3. Temperatures:

Water and air temperatures are taken in degrees Fahrenheit at the middle of the habitat unit, within one foot of the water surface.

4. Habitat Unit Type and Dimensions:

Habitat units are numbered sequentially and assigned a habitat type selected from a standard list of 24 habitat types (Appendix 1). Dewatered units are labeled "dry". The length of a described habitat unit must be equal to or greater than the streams mean wetted width. Habitat unit dimensions of mean length, mean width, mean depth, and maximum depth are measured. In pool units, maximum depth at the pool tail crest is also measured. Measurements are taken to the nearest 1/10 foot using hip chains, measuring tapes, or stadia rods.

5. Embeddedness:

Embeddedness is defined as the percent of a cobble that is surrounded or buried by fine sediment. The values are recorded using the following ranges: 0 - 25% (value 1), 26 - 50% (value 2), 51 - 75% (value 3) and 76 - 100% (value 4). Additionally, a value of 5 is assigned to substrates deemed not suitable for spawning due to inappropriate substrate particle size (e.g. bedrock) or other considerations. On this scale, a value of 1 indicates the highest quality of spawning substrate and a value of 5 indicates the tail crest is not suitable for spawning. Embeddedness, estimated by eye, is taken in pool habitat units at the pool tail crest.

6. Shelter Rating:

Instream shelter is composed of those elements within a stream channel that provide salmonids protection from predation, reduce water velocities so fish can rest and conserve energy, and allow separation of territorial units to reduce density-related competition. The shelter rating is calculated by multiplying shelter value and percent cover. Using an overhead view, a quantitative estimate of the percentage of the habitat unit covered is made. All cover is then classified according to a list of nine cover types. A standard qualitative shelter value of 0 (none), 1 (low), 2 (medium), or 3 (high) is assigned according to the complexity of the cover. Thus shelter rating can range from 0-300.

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7. Substrate Composition:

Substrate composition ranges from silt/clay sized particles to boulders and bedrock elements. Dominant and sub-dominant substrate elements in the habitat unit are estimated by eye using a list of seven size classes. In addition, the dominant substrate composing the pool tail outs is recorded in pool habitat units.

8. Canopy:

Canopy density relates to the amount of stream shaded from the sun. Stream canopy density in the habitat unit is estimated using a handheld spherical densiometer. In addition, the area of canopy is estimated by eye into percentages of coniferous and deciduous trees.

9. Streambank Substrate and Vegetation:

Streambank substrate ranges from bedrock to silt/clay/sand, and may be covered with vegetation that enhances streambank stability. The dominant substrate type and the dominant vegetation type of both the right and left banks of the habitat unit are estimated by eye and recorded. Additionally, the percent of each bank covered by vegetation is estimated by eye and recorded.

SAMPLING STRATEGY

The sampling protocol calls for partial sampling of all habitat units within the survey reach and full sampling in approximately 10% of the habitat units. All habitat units are classified according to habitat type and their lengths are measured. All pool units are measured for maximum depth, depth of pool tail crest, dominant substrate composing the pool tail crest, and embeddedness. Habitat types encountered for the first time are fully sampled for all parameters on the field form. Additionally, from the ten habitat units on each field form page, one is randomly selected for full sampling. Canopy density is recorded for every third unit, in addition to every fully described unit, giving an approximate 30% sub-sample. Air temperature, water temperature, and time of day are recorded at every tenth habitat unit (once per field form page).

DATA ANALYSIS

Data from the habitat inventory form are entered into *Habitat*, a dBASE 4.2 data entry program developed by Tim Curtis, Inland Fisheries Division, CDFG. This program processes and summarizes the data, and produces the following standard tables:

- Table 1. Summary of riffle, flatwater, and pool habitat types
- Table 2. Summary of habitat types and measured parameters
- Table 3. Summary of pool types
- Table 4. Summary of maximum pool depths by pool habitat types
- Table 5. Summary of mean percent cover by habitat type
- Table 6. Summary of dominant substrates by habitat type
- Table 7. Summary of mean percent vegetative cover for entire stream

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- Table 8. Fish habitat inventory data summary
- Table 9. Streambank substrate and vegetation, and pool tail crest cobble embeddedness
- Table 10. Mean percent of shelter cover types for entire stream

Graphics are produced from the tables using a spreadsheet program. Standard graphics are:

- Graph 1. Riffle, flatwater, pool habitats by percent occurrence
- Graph 2. Riffle, flatwater, pool habitats by total length
- Graph 3. Total habitat types by percent occurrence
- Graph 4. Pool types by percent occurrence
- Graph 5. Total pools by maximum depths
- Graph 6. Embeddedness
- Graph 7. Pool cover by cover type
- Graph 8. Dominant substrate in pool tail crests
- Graph 9. Percent canopy
- Graph 10. Bank composition by composition type
- Graph 11. Bank vegetation by vegetation type

Standard tables and graphics are selected for inclusion in the stream inventory report based on their importance to the particular stream.

HABITAT INVENTORY RESULTS

The habitat inventory field survey for North Fork Schooner Gulch was conducted on June 15, 2001. The total length of stream surveyed was 1,112 feet.

North Fork Schooner Gulch was an A4 channel type. A4 channel types are classified as steep, narrow, cascading, step-pool streams; high energy/debris transport associated with depositional soils and a gravel channel.

The water temperature taken during the survey period was 55 degrees Fahrenheit. Air temperatures ranged from 60 to 65 degrees Fahrenheit.

Based on frequency of occurrence of Level II habitat types there were 67% flatwater units, 23% pool units, and 10% riffle units (Table 1). Based on total length of Level II habitat types there were 82% flatwater units, 11% pool units, and 7% riffle units, and (Table 1).

Eight Level IV habitat types were identified (Table 2). The most frequent habitat types by percent occurrence were glide units, 33%; runs units, 20%; and step run units, 13%. Based on percent total length, step run units comprised 32%, glide units 27%, and run units 23%.

A total of seven pools were identified (Table 3). Scour pools were most frequently encountered at 57% and comprised 58% of the total length of all pools. Of the seven pools, five (71%) had a depth of two feet or greater (Table 4).

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In North Fork Schooner Gulch, primary pools totaled 96 feet, or 9% of the total stream surveyed.

Riffle habitat types had a mean shelter rating of 20, flatwater habitat types had a mean shelter rating of 14, and pool habitats had a mean shelter rating of 22 (Table 1). Mid-channel pools, the dominant pool type, had a mean shelter rating of 40 (Table 2).

Cover in North Fork Schooner Gulch was provided mainly by a mix of undercut banks, small and large woody debris, root masses, boulders, and some terrestrial vegetation (Table 5). Root masses, large woody debris, small woody debris, and terrestrial vegetation provided the main cover in pools (Table 10).

Sand was the dominant substrate followed by gravel in all of the habitat units (Table 6). Sand was the dominant pool tail crest substrate in three of the seven pool units (42%), followed by gravel (28%), and then small cobble and silt/clay (each at 14%) (Graph 8).

Sand/silt/clay dominated the streambank substrate in 86% of the units, followed by bedrock dominating in 13% (Table 9). The right bank had a mean vegetative cover of 92%. The left bank had a mean vegetative cover of 91% (Table 7). Streambank vegetation was mainly composed of coniferous trees (77%), followed by deciduous trees (22%) (Table 9).

The mean percent canopy density for the stream reach surveyed was 93%, with deciduous and coniferous trees comprising 21% and 79%, respectively (Table 7).

DISCUSSION

The water temperature recorded on the survey day was within the suitable range for rearing of coho salmon and steelhead. Continuous monitoring of temperature throughout the warm season would be needed to verify temperature suitability. Given North Fork Schooner Gulch's location in the coastal fog belt and the high canopy density found, stream temperatures are likely suitable for coho or steelhead.

The North Fork has a high prevalence of sand substrate, which is undesirable for quality stream habitat.

RECOMMENDATIONS

- 1) North Fork Schooner Gulch should be managed as an anadromous, natural production stream. If habitat conditions sufficiently recover, consideration should be given to introduction of a compatible strain of coho salmon.
- 2) Active and potential sediment delivery from roads and other sources in the watershed should be identified, mapped, and quantified. Sources should be treated according to their potential for sediment yield to the stream and its tributaries. This kind of source control will hasten stream recovery from excess sedimentation.

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- 3) Instream wood should be increased to improve shelter rating, help sort sediments, and increase the depths of existing pools.

COMMENTS AND LANDMARKS

The following landmarks and possible problem sites were noted. All distances are approximate and taken from the beginning of the survey reach.

Length Comment

72	Begin survey about 50 yards up from the confluence with Schooner Gulch.
394	9' high plunge into the pool below.
440	Salmonids observed.
555	Pacific giant salamander observed.
572	Large woody debris (LWD) accumulation measures 13' wide x 8' long x 3' high.
644	LWD accumulation measures 15' wide x 6' long.
663	Salmonids observed.
768	Pacific giant salamander observed.
776	LWD accumulation associated with small woody debris (SWD).
916	LWD accumulation measures 20' wide x 20' long x and 6' high.
1112	End of survey. No longer observing salmonids. Walked up stream about 0.5 miles through various logjams. Water slows, almost stagnant. A culvert was noted upstream. Pipe about 10 feet above the stream with water plunging into pool below.

REFERENCES

- California Department of Fish and Game. 1966. Stream Survey, Schooner Gulch Creek. CDFG Form FG712 survey.
- California Department of Fish and Game. 1969a. Stream Survey, Schooner Gulch Creek. CDFG Form FG712 survey.
- California Department of Fish and Game. 1969b. Stream Survey, North Fork Schooner Gulch Creek. CDFG Form FG712 survey.

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Flosi, Gary, S. Downie, J. Hopelain, M. Bird, R. Coey, and B. Collins. 1998. *California Salmonid Stream Habitat Restoration Manual*, 3rd edition. California Department of Fish and Game, Sacramento, California.

North Fork Schooner Gulch

LEVEL III and LEVEL IV HABITAT TYPES

RIFFLE

Low Gradient Riffle	(LGR)	[1.1]	{ 1 }
High Gradient Riffle	(HGR)	[1.2]	{ 2 }

CASCADE

Cascade	(CAS)	[2.1]	{ 3 }
Bedrock Sheet	(BRS)	[2.2]	{24}

FLATWATER

Pocket Water	(POW)	[3.1]	{21}
Glide	(GLD)	[3.2]	{14}
Run	(RUN)	[3.3]	{15}
Step Run	(SRN)	[3.4]	{16}
Edgewater	(EDW)	[3.5]	{18}

MAIN CHANNEL POOLS

Trench Pool	(TRP)	[4.1]	{ 8 }
Mid-Channel Pool	(MCP)	[4.2]	{17}
Channel Confluence Pool	(CCP)	[4.3]	{19}
Step Pool	(STP)	[4.4]	{23}

SCOUR POOLS

Corner Pool	(CRP)	[5.1]	{22}
Lateral Scour Pool - Log Enhanced	(LSL)	[5.2]	{10}
Lateral Scour Pool - Root Wad Enhanced	(LSR)	[5.3]	{11}
Lateral Scour Pool - Bedrock Formed	(LSBk)	[5.4]	{12}
Lateral Scour Pool - Boulder Formed	(LSBo)	[5.5]	{20}
Plunge Pool	(PLP)	[5.6]	{ 9 }

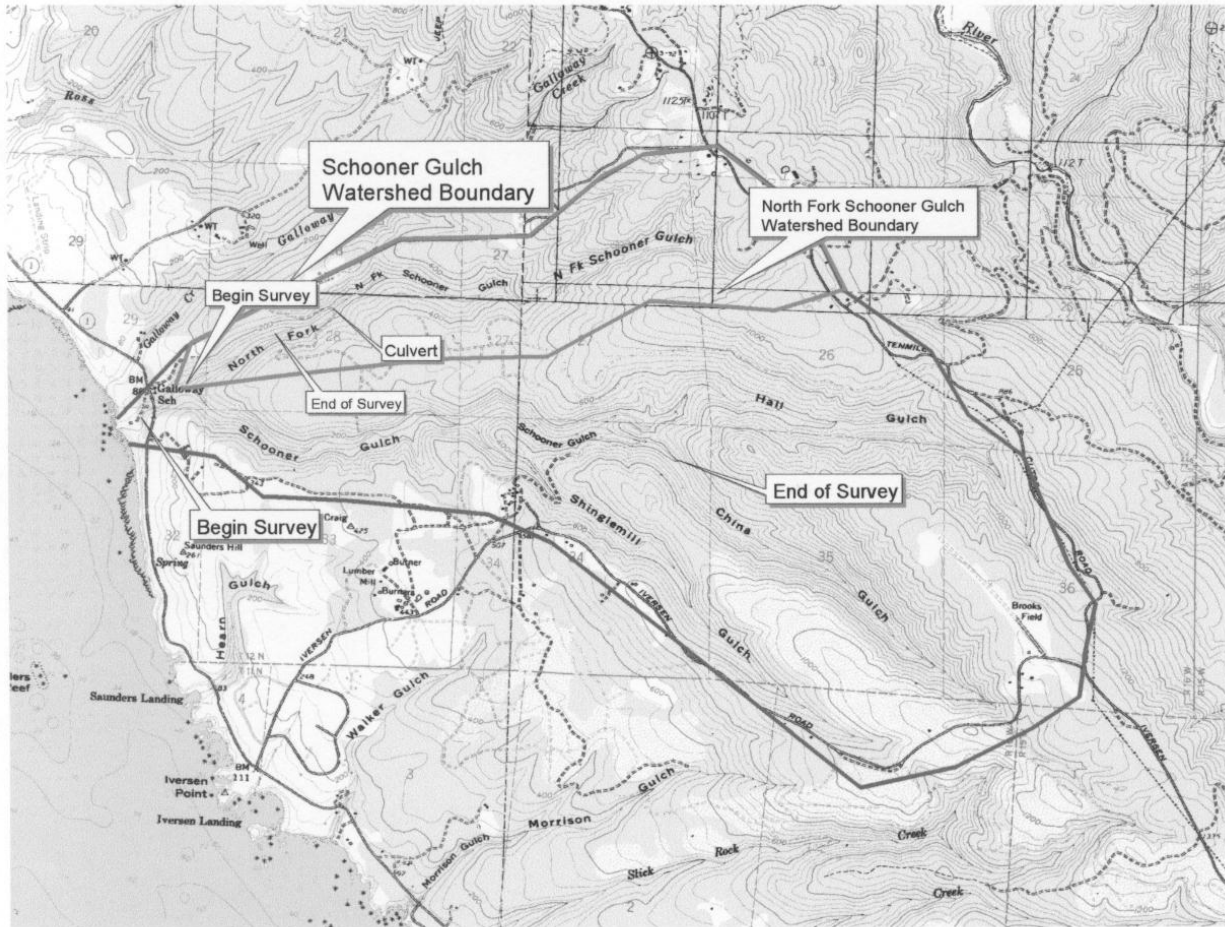
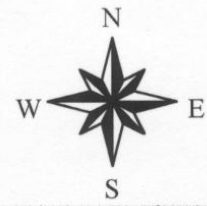
BACKWATER POOLS

Secondary Channel Pool	(SCP)	[6.1]	{ 4 }
Backwater Pool - Boulder Formed	(BPB)	[6.2]	{ 5 }
Backwater Pool - Root Wad Formed	(BPR)	[6.3]	{ 6 }
Backwater Pool - Log Formed	(BPL)	[6.4]	{ 7 }
Dammed Pool	(DPL)	[6.5]	{13}

ADDITIONAL UNIT DESIGNATIONS

Dry	(DRY)	[7.0]	
Culvert	(CUL)	[8.0]	
Not Surveyed	(NS)	[9.0]	
Not Surveyed due to a marsh	(MAR)	[9.1]	

Schooner Gulch Watershed



North Fork Schooner Gulch

N. FORK SCHOONER GULCH

Drainage: SCHOONER GULCH - PACIFIC OCEAN

Table 1 - SUMMARY OF RIFFLE, FLATWATER, AND POOL HABITAT TYPES

Survey Dates: 06/15/01

Confluence Location: QUAD: SAUNDERS R LEGAL DESCRIPTION: T12NR16WS32 LATITUDE:38°52'0" LONGITUDE:123°39'16"

HABITAT UNITS	UNITS FULLY MEASURED	HABITAT TYPE	HABITAT PERCENT OCCURRENCE	MEAN LENGTH (ft.)	TOTAL LENGTH (ft.)	PERCENT TOTAL LENGTH	MEAN WIDTH (ft.)	MEAN DEPTH (ft.)	MEAN AREA (sq.ft.)	TOTAL ESTIMATED AREA (sq.ft.)	MEAN ESTIMATED VOLUME (cu.ft.)	TOTAL ESTIMATED VOLUME (cu.ft.)	MEAN RESIDUAL POOL VOL (cu.ft.)	MEAN SHELTER RATING
3	1	RIFFLE	10	26	77	7	5.0	0.7	85	285	60	179	0	20
20	6	FLATWATER	67	46	910	82	5.3	0.6	350	6997	221	4623	0	14
7	7	POOL	23	18	125	11	7.9	1.3	139	970	189	1326	138	22
TOTAL UNITS	TOTAL UNITS				TOTAL LENGTH (ft.)				TOTAL AREA (sq. ft.)		TOTAL VOL. (cu. ft.)			
30	14				1112				8222		6127			

N. FORK SCHOONER GULCH

Drainage: SCHOONER GULCH - PACIFIC OCEAN

Table 2 - SUMMARY OF HABITAT TYPES AND MEASURED PARAMETERS

Survey Dates: 06/15/01

Confluence Location: QUAD: SAUNDERS R LEGAL DESCRIPTION: T12NR16WS32 LATITUDE:38°52'0" LONGITUDE:123°39'16"

HABITAT UNITS	UNITS FULLY MEASURED	HABITAT TYPE	HABITAT PERCENT OCCURRENCE	MEAN LENGTH (ft.)	TOTAL LENGTH (ft.)	PERCENT TOTAL LENGTH	MEAN WIDTH (ft.)	MEAN DEPTH (ft.)	MEAN MAXIMUM DEPTH (ft.)	MEAN AREA (sq.ft.)	TOTAL EST. AREA (sq.ft.)	MEAN EST. VOLUME (cu.ft.)	TOTAL EST. VOLUME (cu.ft.)	MEAN RESIDUAL POOL VOL (cu.ft.)	MEAN SHELTER RATING	MEAN CANOPY
3	1	LGR	10	26	77	7	5	0.7	1.2	85	285	60	179	0	20	95
10	2	GLD	33	30	303	27	7	1.0	1.5	407	4065	407	4065	0	13	93
6	2	RUN	20	43	252	23	4	0.4	0.7	84	504	37	223	0	18	94
4	2	SRN	13	89	395	32	6	0.5	1.0	559	2236	250	999	0	13	91
3	3	MCP	10	18	53	5	8	1.3	2.2	130	391	161	493	108	40	92
1	1	CRP	3	19	19	2	8	1.1	2.2	152	152	167	167	152	20	100
2	2	LSR	7	14	27	2	8	1.2	2.2	110	219	130	260	78	3	85
1	1	PLP	3	26	26	2	8	2.0	3.4	208	208	416	416	333	10	97
TOTAL UNITS	TOTAL UNITS				TOTAL LENGTH (ft.)					TOTAL AREA (sq.ft.)		TOTAL VOL. (cu.ft.)				
30	14				1112					8030		6792				

N. FORK SCHOONER GULCH

Drainage: SCHOONER GULCH - PACIFIC OCEAN

Table 3 - SUMMARY OF POOL TYPES

Survey Dates: 06/15/01

Confluence Location: QUAD: SAUNDERS R LEGAL DESCRIPTION: T12NR16WS32 LATITUDE:38°52'0" LONGITUDE:123°39'16"

HABITAT UNITS	UNITS FULLY MEASURED	HABITAT TYPE	HABITAT PERCENT OCCURRENCE	MEAN LENGTH (ft.)	TOTAL LENGTH (ft.)	PERCENT TOTAL LENGTH	MEAN WIDTH (ft.)	MEAN DEPTH (ft.)	MEAN AREA (sq.ft.)	TOTAL EST. AREA (sq.ft.)	MEAN EST. VOLUME (cu.ft.)	TOTAL EST. VOLUME (cu.ft.)	MEAN RESIDUAL POOL VOL (cu.ft.)	MEAN SHELTER RATING
3	3	MAIN	43	18	53	42	7.7	1.3	130	391	161	483	108	40
4	4	SCOUR	57	18	72	58	8.0	1.4	145	579	211	843	160	9
TOTAL UNITS	TOTAL UNITS				TOTAL LENGTH (ft.)				TOTAL AREA (sq.ft.)		TOTAL VOL. (cu.ft.)			
7	7				125				970		1326			

North Fork Schooner Gulch

N. FORK SCHOONER GULCH

Drainage: SCHOONER GULCH - PACIFIC OCEAN

Table 4 - SUMMARY OF MAXIMUM POOL DEPTHS BY POOL HABITAT TYPES

Survey Dates: 06/15/01

Confluence Location: QUAD: SAUNDERS R LEGAL DESCRIPTION: T12NR16WS32 LATITUDE:38°52'0" LONGITUDE:123°39'16"

UNITS MEASURED	HABITAT TYPE	HABITAT PERCENT OCCURRENCE	<1 FOOT	<1 FOOT	1-<2 FT.	1-<2 FOOT	2-<3 FT.	2-<3 FOOT	3-<4 FT.	3-<4 FOOT	>=4 FEET	>=4 FEET
			MAXIMUM DEPTH	PERCENT OCCURRENCE	MAXIMUM DEPTH	PERCENT OCCURRENCE	MAXIMUM DEPTH	PERCENT OCCURRENCE	MAXIMUM DEPTH	PERCENT OCCURRENCE	MAXIMUM DEPTH	PERCENT OCCURRENCE
2	MCP	43	0	0	1	33	2	67	0	0	0	0
1	CRP	14	0	0	0	0	1	100	0	0	0	0
2	LGR	29	0	0	1	50	1	50	0	0	0	0
1	PLP	14	0	0	0	0	0	0	1	100	0	0

TOTAL
UNITS
7

N. FORK SCHOONER GULCH

Drainage: SCHOONER GULCH - PACIFIC OCEAN

Table 5 - SUMMARY OF MEAN PERCENT COVER BY HABITAT TYPE

Survey Dates: 06/15/01

Confluence Location: QUAD: SAUNDERS R LEGAL DESCRIPTION: T12NR16WS32 LATITUDE:38°52'0" LONGITUDE:123°39'16"

UNITS MEASURED	UNITS FULLY MEASURED	HABITAT TYPE	MEAN % UNDERCUT	MEAN % SAND	MEAN % LAD	MEAN % ROOT	MEAN % TERR.	MEAN % AQUATIC	MEAN % WHITE	MEAN % BOULDERS	MEAN % BEDROCK
			BANKS			MASS VEGETATION	VEGETATION	WATER	LEDGES		
3	1	LGR	50	0	0	10	30	0	0	20	0
10	2	GLD	45	15	0	10	10	0	0	10	10
6	2	RUN	5	15	15	30	15	0	0	0	0
4	2	SRN	0	5	0	10	30	0	0	45	10
3	1	MCP	10	30	50	10	0	0	0	0	0
1	1	CRP	10	10	40	40	0	0	0	0	0
2	1	LGR	0	0	0	70	30	0	0	0	0
1	1	PLP	0	20	0	0	0	0	0	0	80

N. FORK SCHOONER GULCH

Drainage: SCHOONER GULCH - PACIFIC OCEAN

Table 6 - SUMMARY OF DOMINANT SUBSTRATES BY HABITAT TYPE

Survey Dates: 06/15/01

Confluence Location: QUAD: SAUNDERS R LEGAL DESCRIPTION: T12NR16WS32 LATITUDE:38°52'0" LONGITUDE:123°39'16"

TOTAL HABITAT UNITS	UNITS FULLY MEASURED	HABITAT TYPE	% TOTAL SILT/CLAY DOMINANT	% TOTAL SAND DOMINANT	% TOTAL GRAVEL DOMINANT	% TOTAL SM COBBLE DOMINANT	% TOTAL LG COBBLE DOMINANT	% TOTAL BOULDER DOMINANT	% TOTAL BEDROCK DOMINANT
3	1	LGR	0	100	0	0	0	0	0
10	2	GLD	0	100	0	0	0	0	0
6	2	RUN	0	100	0	0	0	0	0
4	2	SRN	0	100	0	0	0	0	0
3	1	MCP	0	100	0	0	0	0	0
1	1	CRP	0	100	0	0	0	0	0
2	1	LGR	0	100	0	0	0	0	0
1	1	PLP	0	100	0	0	0	0	0

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TABLE 7

NORTH FORK SCHOONER GULCH

Summary of Mean Percent Vegetative Cover for Entire Stream

Mean Percent Canopy	Mean Percent Conifer	Mean Percent Deciduous	Mean Percent Open Units	Mean Right Bank Percent Cover	Mean Left Bank Percent Cover
93	79	21	0	92	91

Note: Mean percent conifer and deciduous for the entire reach are means of canopy components from units with canopy values greater than zero.

Open units represent habitat units with zero canopy cover.

TABLE 8. FISH HABITAT INVENTORY DATA SUMMARY

STREAM NAME: N. FORK SCHOONER GULCH

SAMPLE DATES:

STREAM LENGTH: 1112 ft.

LOCATION OF STREAM MOUTH:

USGS Quad Map: SAUNDERS R

Legal Description: T12NR16WS32

Latitude: 38°52'0"

Longitude: 123°39'16"

SUMMARY OF FISH HABITAT ELEMENTS BY STREAM REACH

STREAM REACH 01

Channel Type: A4

Channel Length: 1112 ft.

Riffle/flatwater Mean Width: 5 ft.

Total Pool Mean Depth: 1.3 ft.

Base Flow: 0.0 cfs

Water: 055- 055°F Air: 060-065°F

Dom. Bank Veg.: Coniferous Trees

Vegetative Cover: 91%

Dom. Bank Substrate: Silt/Clay/Sand

Canopy Density: 93%

Coniferous Component: 79%

Deciduous Component: 21%

Pools by Stream Length: 11%

Pools >=3 ft.deep: 14%

Mean Pool Shelter Rtn: 39

Dom. Shelter: Root masses

Occurrence of LOD: 15%

Dry Channel: 0 ft.

Embeddness Value: 1. 0% 2. 29% 3. 14% 4. 14% 5. 43%

North Fork Schooner Gulch

TABLE 9

NORTH FORK SCHOONER GULCH

Mean Percentage of Dominant Substrate

Dominant Class of Substrate	Number Units Right Bank	Number Units Left Bank	Total Mean Percent
Bedrock	1	2	13.64
Boulder	0	0	0
Cobble/Gravel	0	0	0
Silt/clay	10	9	86.36

Mean Percentage of Dominant Vegetation

Dominant Class of Vegetation	Number Units Right Bank	Number Units Left Bank	Total Mean Percent
Grass	0	0	0
Brush	0	0	0
Decid. Trees	2	3	22.73
Conif. Trees	9	8	77.27
No Vegetation	0	0	0

Total stream average embeddedness value for pool 3.71

North Fork Schooner Gulch

TABLE 10. MEAN PERCENT OF SHELTER COVER TYPES FOR ENTIRE STREAM

Stream: N. FORK SCHOONER GULCH drainage: SCHOONER GULCH - PACIFIC OCEAN

Survey Date: 06/15/01

	RIFFLES	FLATWATER	POOLS
UNDERCUT BANKS	15.45	16.67	5
SMALL WOODY DEBRIS	11.82	11.67	15
LARGE WOODY DEBRIS	14.55	11.67	22.50
ROOTS	20.91	16.67	30
TERRESTRIAL VEG	14.55	18.33	7.50
AQUATIC VEG	0	0	0
WHITewater	0	0	0
BOULDERS	11.82	18.33	0
BEDROCK LEDGES	10.91	6.67	20

North Fork Schooner Gulch: Substrate Composition in Pool Tail-Outs

