



CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

STREAM INVENTORY REPORT

Parlin Creek

INTRODUCTION

A stream inventory was conducted from July 13 to September 13, 2016 on Parlin Creek. The survey began at the confluence with the South Fork Noyo River and extended upstream 4.5 miles.

The Parlin Creek inventory was conducted in two parts: habitat inventory and biological inventory. The objective of the habitat inventory was to document the habitat available to anadromous salmonids in Parlin Creek. The objective of the biological inventory was to document the presence and distribution of juvenile salmonid species.

The objective of this report is to document the current habitat conditions and recommend options for the potential enhancement of habitat for coho salmon and steelhead trout. Recommendations for habitat improvement activities are based upon target habitat values suitable for salmonids in California's north coast streams.

WATERSHED OVERVIEW

Parlin Creek is a tributary to South Fork Noyo River, tributary to Noyo River, which drains to the Pacific Ocean, located in Mendocino County, California (Map 1). Parlin Creek's legal description at the confluence with South Fork Noyo River is T17N R16W S04. Its location is 39.3695° north latitude and -123.6591° west longitude, LLID number 1236581393696. Parlin Creek is a first order stream and has approximately 2.73 miles of blue line stream according to the USGS Noyo Hill 7.5 minute quadrangle. Parlin Creek drains a watershed of approximately 4.5 square miles. Elevations range from about 170 feet at the mouth of the creek to 750 feet in the headwater areas. Mixed conifer forest dominates the watershed. The watershed is primarily state forest and is managed for timber production. Vehicle access exists via Cal Fire Jackson Demonstration State Forest roads off of Highway 20.

METHODS

The habitat inventory conducted in Parlin Creek follows the methodology presented in the *California Salmonid Stream Habitat Restoration Manual* (Flosi et al. 1998). The California Department of Fish and Wildlife (CDFW) personnel and California Conservation Corps (CCC) personnel that conducted the inventory were trained in standardized habitat inventory methods by the CDFW. The inventory was conducted by a two-person team.

SAMPLING STRATEGY

The inventory uses a method that samples approximately 10% of the habitat units within the survey reach. All habitat units included in the survey are classified according to habitat type and their lengths are measured. All pool units are measured for maximum depth, depth of pool tail crest (measured in the thalweg), dominant substrate composing the pool tail crest, and embeddedness. Habitat unit types encountered for the first time are measured for all the

parameters and characteristics on the field form. Additionally, from the ten habitat units on each field form page, one is randomly selected for complete measurement. Surveyors also take photos to document general habitat conditions (Appendix II).

HABITAT INVENTORY COMPONENTS

A standardized habitat inventory form has been developed for use in California stream surveys and can be found in the *California Salmonid Stream Habitat Restoration Manual*. This form was used in Parlin Creek to record measurements and observations. There are eleven components to the inventory form.

1. Flow:

Flow is measured in cubic feet per second (cfs) near the bottom of the stream survey reach using a Marsh-McBirney Model 2000 flow meter.

2. Channel Type:

Channel typing is conducted according to the classification system developed and revised by David Rosgen (1994). This methodology is 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. Channel characteristics are measured using a hand level, hip chain, tape measure, and a stadia rod.

3. Temperatures:

Water and air temperatures are measured and recorded at every tenth habitat unit using a hand-held thermometer. Both temperatures are taken in degrees Fahrenheit and the time of the measurement is also recorded. Air temperatures are recorded within one foot of the water surface, while water temperatures are recorded (where possible) in flowing water within the habitat unit.

4. Habitat Type:

Habitat typing uses the 24 habitat classification types defined by McCain and others (1990). Habitat units are numbered sequentially and assigned a type identification number selected from a standard list of 24 habitat types. Dewatered units are labeled "dry". Parlin Creek habitat typing used standard basin level measurement criteria. These parameters require that the minimum length of a described habitat unit must be equal to or greater than the stream's mean wetted width. All measurements are in feet to the nearest tenth. Habitat characteristics are measured using a clinometer, hip chain, and stadia rod.

5. Embeddedness:

The depth of embeddedness of the cobbles in pool tail-out areas is measured by the percent of the cobble that is surrounded or buried by fine sediment. In Parlin Creek, embeddedness was ocularly estimated. The values were 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 was assigned to tail-outs deemed unsuitable for spawning due to inappropriate substrate like bedrock,

log sills, boulders or other considerations.

6. Shelter Rating:

Instream shelter is composed of those elements within a stream channel that provide juvenile 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 for prey. 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. In Parlin Creek, a standard qualitative shelter value of 0 (none), 1 (low), 2 (medium), or 3 (high) was assigned according to the complexity of the cover. The shelter rating is then calculated by multiplying the qualitative shelter value by the percent of the unit covered. Thus, shelter ratings can range from 0-300 and are expressed as mean values by habitat types within a stream.

7. Substrate Composition:

Substrate composition ranges from silt/clay sized particles to boulders and bedrock elements. In all fully-described habitat units, dominant and sub-dominant substrate elements were ocularly estimated using a list of seven size classes and recorded as a one and two, respectively. In addition, the dominant substrate composing the pool tail-outs is recorded for each pool.

8. Canopy:

Stream canopy density was estimated using modified handheld spherical densimeters as described in the *California Salmonid Stream Habitat Restoration Manual*. Canopy density relates to the amount of stream shaded from the sun. In Parlin Creek, an estimate of the percentage of the habitat unit covered by canopy was made from the center of approximately every third unit in addition to every fully-described unit, giving an approximate 30% sub-sample. In addition, the area of canopy was estimated ocularly into percentages of coniferous or hardwood trees.

9. Bank Composition and Vegetation:

Bank composition elements range from bedrock to bare soil. However, the stream banks are usually covered with grass, brush, or trees. These factors influence the ability of stream banks to withstand winter flows. In Parlin Creek, the dominant composition type and the dominant vegetation type of both the right and left banks for each fully-described unit were selected from the habitat inventory form. Additionally, the percent of each bank covered by vegetation (including downed trees, logs, and rootwads) was estimated and recorded.

10. Large Woody Debris Count:

Large woody debris (LWD) is an important component of fish habitat and an element in channel forming processes. In each habitat unit all pieces of LWD partially or entirely below the elevation of bank full discharge are counted and recorded. The minimum size to be considered is twelve inches in diameter and six feet in length. The LWD count is presented by reach and is expressed as an average per 100 feet.

11. Average Bank full Width:

Bank full width can vary greatly in the course of a channel type stream reach. This is especially true in very long reaches. Bank full width can be a factor in habitat components like canopy density, water temperature, and pool depths. Frequent measurements taken at riffle crests (velocity crossovers) are needed to accurately describe reach widths. At the first appropriate velocity crossover that occurs after the beginning of a new stream survey page (ten habitat units), bank full width is measured and recorded in the appropriate header block of the page. These widths are presented as an average for the channel type reach.

BIOLOGICAL INVENTORY

Biological sampling during the stream inventory is used to determine fish species and their distribution in the stream. Fish presence was observed from the stream banks in Parlin Creek. In addition, underwater mask and snorkel observations were made at 11 sites using techniques discussed in the *California Salmonid Stream Habitat Restoration Manual*.

DATA ANALYSIS

Data from the habitat inventory form are entered into Stream Habitat 2.0.18, a Visual Basic data entry program developed by Karen Wilson, Pacific States Marine Fisheries Commission in conjunction with the California Department of Fish and Wildlife. This program processes and summarizes the data, and produces the following ten tables:

- Riffle, Flatwater, and Pool Habitat Types
- Habitat Types and Measured Parameters
- Pool Types
- Maximum Residual Pool Depths by Habitat Types
- Mean Percent Cover by Habitat Type
- Dominant Substrates by Habitat Type
- Mean Percent Vegetative Cover for Entire Stream
- Fish Habitat Inventory Data Summary by Stream Reach (Table 8)
- Mean Percent Dominant Substrate / Dominant Vegetation Type for Entire Stream
- Mean Percent Shelter Cover Types for Entire Stream

Graphics are produced from the tables using Microsoft Excel. Graphics developed for Parlin Creek include:

- Riffle, Flatwater, Pool Habitat Types by Percent Occurrence
- Riffle, Flatwater, Pool Habitat Types by Total Length
- Total Habitat Types by Percent Occurrence
- Pool Types by Percent Occurrence
- Maximum Residual Depth in Pools
- Percent Embeddedness
- Mean Percent Cover Types in Pools
- Substrate Composition in Pool Tail-outs
- Mean Percent Canopy
- Dominant Bank Composition by Composition Type

- Dominant Bank Vegetation by Vegetation Type

HABITAT INVENTORY RESULTS

* ALL TABLES AND GRAPHS ARE LOCATED IN APPENDIX I *

The habitat inventory of July 13 to September 13, 2016, was conducted by Amidia Frederick, Ryan Bernstein (CDFW), and Chantel Moore (CCC). The total length of the stream surveyed was 23,936 feet with an additional 98 feet of side channel.

Stream flow was measured near the bottom of the survey reach with a Marsh-McBirney Model 2000 flowmeter at 0.118 cfs on September 6, 2016.

Parlin Creek is an F4 channel type for 16,701 feet of the stream surveyed (Reach 1) and a B4 channel type for 7,332 feet of the stream surveyed (Reach 2).

Water temperatures taken during the survey period ranged from 52° to 68° Fahrenheit. Air temperatures ranged from 54° to 78° Fahrenheit.

Table 1 summarizes the Level II riffle, flatwater, and pool habitat types. Based on frequency of occurrence there were 38% pool units, 29% riffle units, 24% flatwater units, and 8% dry units (Graph 1). Based on total length of Level II habitat types there were 44% pool units, 25% flatwater units, 17% riffle units, and 14% dry units (Graph 2).

Thirteen Level IV habitat types were identified (Table 2), and the most frequent habitat types by percent occurrence were mid-channel pool units, 29%; run units, 23%; and low gradient riffle units, 19% (Graph 3). Based on percent total length, mid-channel pool units made up 35%, run units 23%, and dry units 14%.

A total of 248 pools were identified (Table 3). Main channel pools were the most frequently encountered at 79% (Graph 4), and comprised 86% of the total length of all pools (Table 3).

Table 4 is a summary of maximum residual pool depths by pool habitat types. Pool quality for salmonids increases with depth. Ninety-eight of the 246 pools (40%) had a residual depth of two feet or greater (Graph 5).

The depth of cobble embeddedness was estimated at pool tail-outs. Of the 248 pool tail-outs measured, 85 had a value of 1 (34.3%); 81 had a value of 2 (32.7%); 47 had a value of 3 (19%); 11 had a value of 4 (4.4%) and 24 had a value of 5 (9.7%) (Graph 6). On this scale, a value of 1 indicates the highest quality of spawning substrate. Additionally, a value of 5 was assigned to tail-outs deemed unsuitable for spawning due to inappropriate substrate such as bedrock, log sills, boulders, or other considerations.

A shelter rating was calculated for each habitat unit and expressed as a mean value for each habitat type within the survey using a scale of 0-300. Riffle habitat types had a mean shelter rating of 14, flatwater habitat types had a mean shelter rating of 38, and pool habitats had a mean shelter rating of 63 (Table 1). Of the pool types, scour pools had the highest mean shelter rating of 96, main channel pools had a mean shelter rating of 56, and backwater pools had the lowest

mean shelter rating of 40 (Table 3).

Table 5 summarizes mean percent cover by habitat type. Large woody debris is the dominant cover type in Parlin Creek. Graph 7 describes the pool cover in Parlin Creek. Large woody debris is also the dominant pool cover type followed by small woody debris.

Table 6 summarizes the dominant substrate by habitat type. Graph 8 depicts the dominant substrate observed in pool tail-outs. Gravel was the most dominant substrate type, observed in 77% of the pool tail-outs. Large cobble was the next most frequently observed dominant substrate type and occurred in 8% of the pool tail-outs.

The mean percent canopy density for the surveyed length of Parlin Creek was 94. Six percent of the canopy was open. Of the canopy present, the mean percentages of hardwood and coniferous trees were 8% and 92%, respectively. Graph 9 describes the mean percent canopy in Parlin Creek.

For the stream reach surveyed, the mean percent right bank vegetated was 98%. The mean percent left bank vegetated was 98%. The dominant elements composing the structure of the stream banks consisted of 88% sand/silt/clay, 9% bedrock, and 3% cobble/gravel (Graph 10). Coniferous trees were the dominant vegetation type observed in 83% of the units surveyed. Additionally, 7% of the units surveyed had brush as the dominant vegetation type, and 6% had grass as the dominant vegetation type (Graph 11).

BIOLOGICAL INVENTORY RESULTS

A survey team conducted a mask and snorkel survey at 11 sites for species composition and distribution in Parlin Creek on September 21, 2016 (Table A). The sites were sampled by Maddelyn Harden, Brian Starks, and Matt Rice (CDFW).

In Reach 1, which comprised the first 16,459 feet of stream, 3 sites were sampled. The reach sites yielded 9 young-of-the-year (YOY) steelhead trout (SH), 1 age 2+ SH, and 85 YOY coho salmon.

In Reach 2, 8 sites were sampled starting approximately 16,475 feet from the confluence with South Fork Noyo and continuing upstream 17,898 feet. The reach sites yielded 7 YOY SH, 1 age 2+ SH, 1 YOY coho salmon, and 2 sculpin.

During the survey, the upstream-most observation of juvenile coho salmon occurred at 39.380° north latitude and -123.622° west longitude, approximately 16,582 feet upstream from the confluence with South Fork Noyo River. The upstream-most observation of juvenile steelhead occurred at 39.3761° north latitude and -123.6189° west longitude, approximately 17,898 feet upstream from the confluence with South Fork Noyo River.

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Table A. Summary of results for a fish composition and distribution survey within Parlin Creek, 2016.

Date	Survey Site #	Habitat Unit #	Habitat Type	Approx. Dist. from mouth (ft.)	Steelhead Trout			Coho Salmon		Additional Aquatic Species Observed
					YOY	1+	2+	YOY	1+	
Reach 1: F4 Channel Type										
09/21/16	1	105	Pool	1,858	4	0	0	46	0	
	2	105	Pool	1,858	2	0	1	23	0	
	3	115	Pool	2,069	3	0	0	16	0	
Reach 2: B4 Channel Type										
09/21/16	4	457	Pool	16,457	0	0	0	0	0	SCP
	5	463	Run	16,582	2	0	1	1	0	
	6	469	Run	16,716	2	0	0	0	0	
	7	475.2	Pool	16,865	1	0	0	0	0	
	8	479	Pool	16,963	0	0	0	0	0	
	9	485	Pool	17,068	0	0	0	0	0	
	10	503	Pool	17,057	1	0	0	0	0	
	11	520	Pool	17,898	1	0	0	0	0	

DISCUSSION

Parlin Creek is an F4 channel type for the first 16,701 feet of stream surveyed (Reach 1) and a B4 channel type for the remaining 7,332 (Reach 2) feet. The suitability of F4 and B4 channel types for fish habitat improvement structures is as follows: F4 channels are good for bank-placed boulders and fair for plunge weirs, single and opposing wing-deflectors, channel constrictors, and log cover. B4 channels are excellent for low-stage plunge weirs, boulder clusters, bank placed boulders, single and opposing wing-deflectors, and log cover.

The water temperatures recorded on the survey days July 13 to September 13, 2016, ranged from 52° to 68° Fahrenheit. Air temperatures ranged from 54° to 78° Fahrenheit. This is a suitable water temperature range for salmonids. However, 60° Fahrenheit, if sustained, is near the threshold stress level for salmonids. To make any further conclusions, temperatures need to be monitored throughout the warm summer months, and more extensive biological sampling needs to be conducted.

Flatwater habitat types comprised 25% of the total length of this survey, riffles 17%, and pools 44%. Ninety-eight of the 246 (40%) pools had a maximum residual depth greater than two feet. In general, pool enhancement projects are considered when primary pools comprise less than 40% of the length of total stream habitat. In first and second order streams, a primary pool is defined to have a maximum residual depth of at least two feet, occupy at least half the width of the low flow channel, and be as long as the low flow channel width.

One hundred sixty-six of the 248 pool tail-outs measured had embeddedness ratings of 1 or 2. Fifty-eight of the pool tail-outs had embeddedness ratings of 3 or 4. Twenty-four of the pool tail-outs had a rating of 5, which is considered unsuitable for spawning. Cobble embeddedness

measured to be 25% or less, a rating of 1, is considered to indicate good quality spawning substrate for salmon and steelhead. Sediment sources in Parlin Creek should be mapped and rated according to their potential sediment yields, and control measures should be taken.

Two hundred one of the 246 pool tail-outs measured had gravel or small cobble as the dominant substrate. This is generally considered good for spawning salmonids.

The mean shelter rating for pools is 63. The shelter rating in the flatwater habitats is 38. A pool shelter rating of approximately 100 is desirable. The amount of cover that now exists is being provided primarily by large woody debris in Parlin Creek. Large woody debris is the dominant cover type in pools followed by small woody debris. Log and root wad cover structures in the pool and flatwater habitats would enhance both summer and winter salmonid habitat. Log cover structures provide rearing fry with protection from predation, rest from water velocity, and also divide territorial units to reduce density related competition.

The mean percent canopy density for the stream was 94%. Reach 1 had a canopy density of 93%, Reach 2 had a canopy density of 94%. The percentage of right and left bank covered with vegetation were both 98%.

RECOMMENDATIONS

Parlin Creek should be managed as an anadromous, natural production stream. Recommendations for potential habitat improvement activities are based on target habitat values suitable for salmonids in California's north coast streams. Considering the results from this stream habitat inventory, factors that affect salmonid productivity and CDFW's professional judgment, the following list prioritizes habitat improvement activities in Parlin Creek. Keep in mind, watershed and stream ecosystem processes, land use alterations, changes in land ownership, and other factors could potentially change the order of these recommendations or create the need to remove/add recommendations in the future.

- 1) Active and potential sediment sources related to the road system need to be identified, mapped, and treated according to their potential for sediment yield to the stream and its tributaries.
- 2) Increase woody cover in the pools and flatwater habitat units. Most of the existing cover in the pools is from large woody debris. Adding high quality complexity with woody cover in the pools is desirable.
- 3) The limited water temperature data available suggest that maximum temperatures are above the acceptable range for juvenile salmonids. To establish more complete and meaningful temperature regime information, 24-hour monitoring during the July and August temperature extreme period should be performed for three to five years.

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.

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Position (ft.):	Habitat unit #:	Comments:
0	0001.00	Start of survey at the confluence with South Fork Noyo River.
199	0006.00	Young-of-the-year (YOY) salmonids observed.
224	0007.00	Bridge #1 is the crossing for Parlin Creek Road, and is 15' high x 17.4' wide x 52' long. It is an automobile bridge (made of wood) and is not a barrier to salmonids.
1257	0026.00	Bridge #2 (098) is the crossing for Parlin Creek Road, and is 23' high x 14' wide x 47' long. It is an automobile bridge (made of wood and metal) and is a barrier to salmonids.
1293	0027.00	Start of timberland.
2401	0043.00	Less entrenched, flood plain widens in this habitat unit (HU).
3364	0062.00	Channel in this section is predominately bedrock.
3455	0064.00	Log debris accumulation (LDA) #1 contains 5 pieces of large woody debris (LWD) and measures 2' high x 11' wide x 9' long. Water flows through the LDA and there are no visible gaps in it. Retained sediment ranges from clay to sandy silt and measures 18' wide x 18' long x .5' deep. Fish were observed above the LDA.
3609	0067.00	LDA #2 is 5' high x 20' wide x 14' long and contains 15 pieces of LWD. Water flows through the LDA. Sediment is being retained in the approximate dimensions of 32' wide x 23' long x 1.5' deep. The sediment ranges in size from sand to gravel. Fish were observed above the LDA.
3691	0069.00	A 30' long x 40' wide landslide is the possible source of LDAs downstream.
4260	0081.00	Becomes slightly more entrenched with significant erosion of left bank.
4789	0092.00	Tributary #92 enters on the right bank. The water temperature of the tributary was 56 degrees Fahrenheit, the water temperature downstream of the confluence was 60 degrees Fahrenheit, and the water temperature upstream of the confluence was 60 degrees Fahrenheit. The slope of the tributary is 12%. The tributary is accessible to salmonids due to gaps in the cluttered SWD and debris. Fish were not observed in the tributary. The tributary went dry at 25' from the mouth.
5012	0097.00	LDA #3 is 4' high x 24' wide x 13' long and contains 14 pieces of LWD. Water flows through the LDA and there are no visible gaps in it.

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Sediment is being retained in the approximate dimensions of 32' wide x 23' long x 1.5' deep. The sediment ranges in size from sand to gravel. There is also a 3' plunge into a 5.6' pool. Fish were observed above the LDA.

5040	0098.00	Entrenchment increases after LDA.
5739	0111.00	Plunge pool has a 2' drop over bedrock into a 3.1' depth.
6089	0120.00	Tributary #2 enters on the left bank. The water temperature of the tributary was 63 degrees Fahrenheit, the water temperature downstream of the confluence was 62 degrees Fahrenheit, and the water temperature upstream of the confluence was 62 degrees Fahrenheit. The slope of the tributary is 9%. The tributary is accessible to salmonids, however may be a barrier to juvenile salmon with a 4' drop 100' up the tributary. Tributary goes dry 100' up the tributary. Fish were not observed in the tributary.
6782	0139.00	LDA #4 is 5' high x 34' wide x 11' long and contains 16 pieces of LWD. Water flows through the LDA and there are no visible gaps in it. Sediment is being retained in the approximate dimensions of 14' wide x 32' long x 1.5' deep. The sediment ranges in size from sand to gravel. The LDA is a possible barrier to juvenile salmonids as flow is subterranean. Fish were observed above the LDA. Four juvenile salmonids trapped in pool on right bank of LDA. There is no plunge and flow becomes subterranean and disappears beneath gravel and LDA.
7514	0157.00	LDA #5 is 38' high x 22' wide x 1.5' long and contains 12 pieces of LWD. Water flows through the LDA and there are no visible gaps in it. Sediment is being retained in the approximate dimensions of 38' wide x 22' long x 1.5' deep. The sediment ranges in size from sand to gravel. No plunge as water flows subterranean. Fish were observed above the LDA.
8394	0177.00	LDA #6 is 2.5' high x 18' wide x 9' long and contains 5 pieces of LWD. Water flows through the LDA and there are no visible gaps in it. Sediment is being retained in the approximate dimensions of 11' wide x 18' long x 1.1' deep. The sediment ranges in size from sand to gravel. There is no plunge and flow is subterranean. Fish were observed above the LDA.
9068	0197.00	LDA #7 is 1' high x 24' wide x 3' long and contains 3 pieces of LWD. Water flows through the LDA and there are visible gaps in it. Sediment is being retained in the approximate dimensions of 8' wide x 14' long x 1.5' deep. The sediment ranges in size from sand to gravel. There is no plunge. Fish were observed above the LDA.

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9774	0222.00	Tributary #3 enters on the right bank. The water temperature of the tributary was 63 degrees Fahrenheit, the water temperature downstream of the confluence was 62 degrees Fahrenheit, and the water temperature upstream of the confluence was 66 degrees Fahrenheit. The slope of the tributary is 2%. The tributary is accessible to salmonids due to gradual slope of flowing water. Fish were not observed in the tributary. There is a deeply entrenched tributary with strong water flow which provides good salmonid habitat due to roots and riffles and rocks.
9982	0229.00	LDA #8 is 4' high x 28' wide x 9' long and contains 11 pieces of LWD. Water flows through the LDA and there are no visible gaps in it. Sediment is being retained in the approximate dimensions of 10' wide x 24' long x 1' deep. The sediment ranges in size from sand to gravel. Fish were observed above the LDA.
10032	0231.00	Tributary #4 enters on the right bank. The water temperature of the tributary was 57 degrees Fahrenheit, the water temperature downstream of the confluence was 57 degrees Fahrenheit, and the water temperature upstream of the confluence was 57 degrees Fahrenheit. The slope of the tributary is 5%. The tributary is accessible to salmonids due to a gradual slope with good cover observed and no barriers. Fish were not observed in the tributary.
10047	0232.00	Lots of dead trees ready to fall into the stream.
10795	0254.00	More frequent bedrock appearing on left bank.
11616	0283.00	Slightly more entrenched.
11953	0294.00	Erosion bringing fallen redwoods into HU.
13921	0344.00	There is a 0.7' high plunge into a 0.2' deep pool.
14462	0358.00	Erosion in this habitat unit.
14846	0371.00	High entrenchment with 30' high left bank.
14954	0377.00	A lot of woody debris within entrenched channel.
14969	0378.00	Old wooden bridge posts are part of LWD.
15238	0390.00	LDA #9 is 2.6' high x 18' wide x 3' long and contains 2 pieces of LWD. Water flows through the LDA and there are no visible gaps in it. Sediment is being retained in the approximate dimensions of 15' wide x 15' long x 1.2' deep. The sediment ranges in size from sand to gravel. Fish were observed above the LDA. There is no plunge, at high flows, water can go over. Pool depth is 2.6'.

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15238	0390.00	LDA #9 is 2.6' high x 18' wide x 3' long and contains 2 pieces of LWD. Water flows through the LDA and there are no visible gaps in it. Sediment is being retained in the approximate dimensions of 15' wide x 15' long x 1.2' deep. The sediment ranges in size from sand to gravel. Fish were observed above the LDA. There is no plunge, at high flows, water can go over. Pool depth is 2.6'.
15267	0391.00	Upstream of LDA is dry.
15317	0393.00	Erosion occurs here at this HU.
15356	0395.00	LDA #10 is 5' high x 28' wide x 5' long and contains 8 pieces of LWD. Water flows through the LDA and there are no visible gaps in it. Sediment is being retained in the approximate dimensions of 15' wide x 26' long. The sediment ranges in size from sand to gravel. There are no visible holes but still seepage of water. Fish were not observed above the LDA. Pool depth is 3.5'
15373	0396.00	LDA #11 is 5' high x 20' wide x 11' long and contains 7 pieces of LWD. Water flows through the LDA and there are no visible gaps in it. Sediment is being retained in the approximate dimensions of 18' wide x 23' long x 1.3' deep. The sediment ranges in size from sand to gravel. LDA #10 and LDA#11 in 2 separate pools separated by 3' dry unit. Flow goes subterranean with little seepage. Fish were observed above the LDA.
15488	0401.01	Parlin becomes intermittent, as channel splits into side channel with small pools.
15920.5	0422.00	LDA #12 is 9' high x 32' wide x 38' long and contains 9 pieces of LWD. Water flows through the LDA and there are no visible gaps in it. Sediment is being retained in the approximate dimensions of 20' wide x 20' long x 3' deep. Pool is 3' deep. The sediment ranges in size from sand to gravel. Fish were observed above the LDA.
16127.5	0431.00	Old bridge that is no longer in use.
16520.5	0448.00	Tributary #5 enters on the right bank. The water temperature of the tributary was 57 degrees Fahrenheit, the water temperature downstream of the confluence was 57 degrees Fahrenheit, and the water temperature upstream of the confluence was 57 degrees Fahrenheit. The slope of the tributary is 5%. The tributary is accessible to salmonids due to gradual slope with great cover and habitat. Water is still flowing in August, so there is a good water supply. Tributary is deeply entrenched. Fish were observed in the tributary.

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16644.5	0453.00	Channel type changes to a B4 at HU 453. Channel type cross-section location is at HU#455. At HU 453, a noticeable increase in entrenchment and bank full left has occurred as a result of a channel change. Canopy over stream has an increase presence of brush and hardwood, LWD presence remains consistent.
16793.5	0461.00	Remains of an old bridge ahead.
17722.5	0503.00	There are 18 pieces of LWD consecutively laid perpendicular to flow remain; left over by old logging road bridge.
17762.5	0506.00	LDA #13 is 7' high x 26' wide x 33' long and contains 19 pieces of LWD. Water flows through the LDA and there are visible gaps in it. Sediment is being retained in the approximate dimensions of 24' wide x 28' long x 19' deep. Pool is 1.6' deep. The sediment ranges in size from sand to gravel. Fish were observed above the LDA.
17905.5	0511.00	LDA #14 is 7' high x 7' wide x 11' long and contains 7 pieces of LWD. Water flows through the LDA and there are no visible gaps in it. Sediment is being retained in the approximate dimensions of 11' wide x 9' long x 1' deep. The sediment ranges in size from sand to gravel. There is a dry unit before LDA. Fish were observed above the LDA.
18108.5	0520.00	LDA #15 is 4' high x 11' wide x 7' long and contains 7 pieces of LWD. Water flows through the LDA and there are no visible gaps in it. Sediment is being retained in the approximate dimensions of 6' wide x 9' long x 0.6' deep. The sediment ranges in size from silt to gravel. The pool depth is 2.6' deep. Fish were observed above the LDA.
18270.5	0530.00	Tributary #6 enters on the right bank. The water temperature of the tributary was not measured due to dryness, the water temperature downstream of the confluence was 58 degrees Fahrenheit, and the water temperature upstream of the confluence was 56 degrees Fahrenheit. The slope of the tributary is 1%. The tributary is not accessible to salmonids due to 3' diameter logs blocking access. Fish were not observed in the tributary. The stream was very dry and disconnected from main stream Parlin and a 3.5' drop into a disconnected pool was observed.
19793.5	0569	Tributary #7 enters on the right bank. The water temperature of the tributary was 57 degrees Fahrenheit, the water temperature downstream of the confluence and the water temperature upstream of the confluence was not measured due to being dry. The slope of the tributary is 1%. The tributary is not accessible to salmonids due to 8.5' long debris that separates the tributary from the main stream. Fish were not observed in the tributary. There is one large pool near the main stream before it turns into a dry unit.

- 22386.5 0631 There is a 6' plunge to next unit.
- 22406.5 0632 Tributary #8 enters on the left bank. The water temperature of the tributary was not measured due to dry unit, the water temperature downstream of the confluence was 52 degrees Fahrenheit, and the water temperature upstream of the confluence was 52 degrees Fahrenheit. The slope of the tributary is 2%. The tributary is not accessible to salmonids at this point due to dryness; however there is no barrier to block fish from going upstream. Fish were not observed in the tributary. There is a dry unit on Parlin before Tributary #8, and tributary is completely dry.
- 22948.5 0642 End of survey due to apparent end to anadromy. Parlin Creek is split into two reaches, the first reach measured as F4 from the mouth all the way to HU # 448. At 3.1 miles upstream at approximately Tributary #5, bank full width decreases and slope gradually increased from a slope of 1% to a slope of 2.3%. Channel changes occurred at HU 453, start of Reach 2 measured as a B4 channel type. Temperatures for both Reach 1 and 2 ranged around mid-50 degrees Fahrenheit. A total of 15 LDAs were identified and a total of 8 tributaries were identified and measured. LDAs observed throughout Reach 1 and 2; many of these formed from fallen trees, storm debris, installed LWD and old lumber from old lumber bridges. Anadromous habitat continued upstream with fish observed consistently until HU 543. HU 543 is 3.56 miles from the mouth of Parlin Creek with thick algae presence increased further upstream; temperatures remain around mid to high 50s degrees F. No fish were observed in any of these habitat units after HU 543. At HU 641, Parlin Creek becomes 987 feet of dry channel with the last 160' of dry channel increase in slope from 2% to 8%. The end of anadromy slope measured to be 8%.

REFERENCES

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

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 }

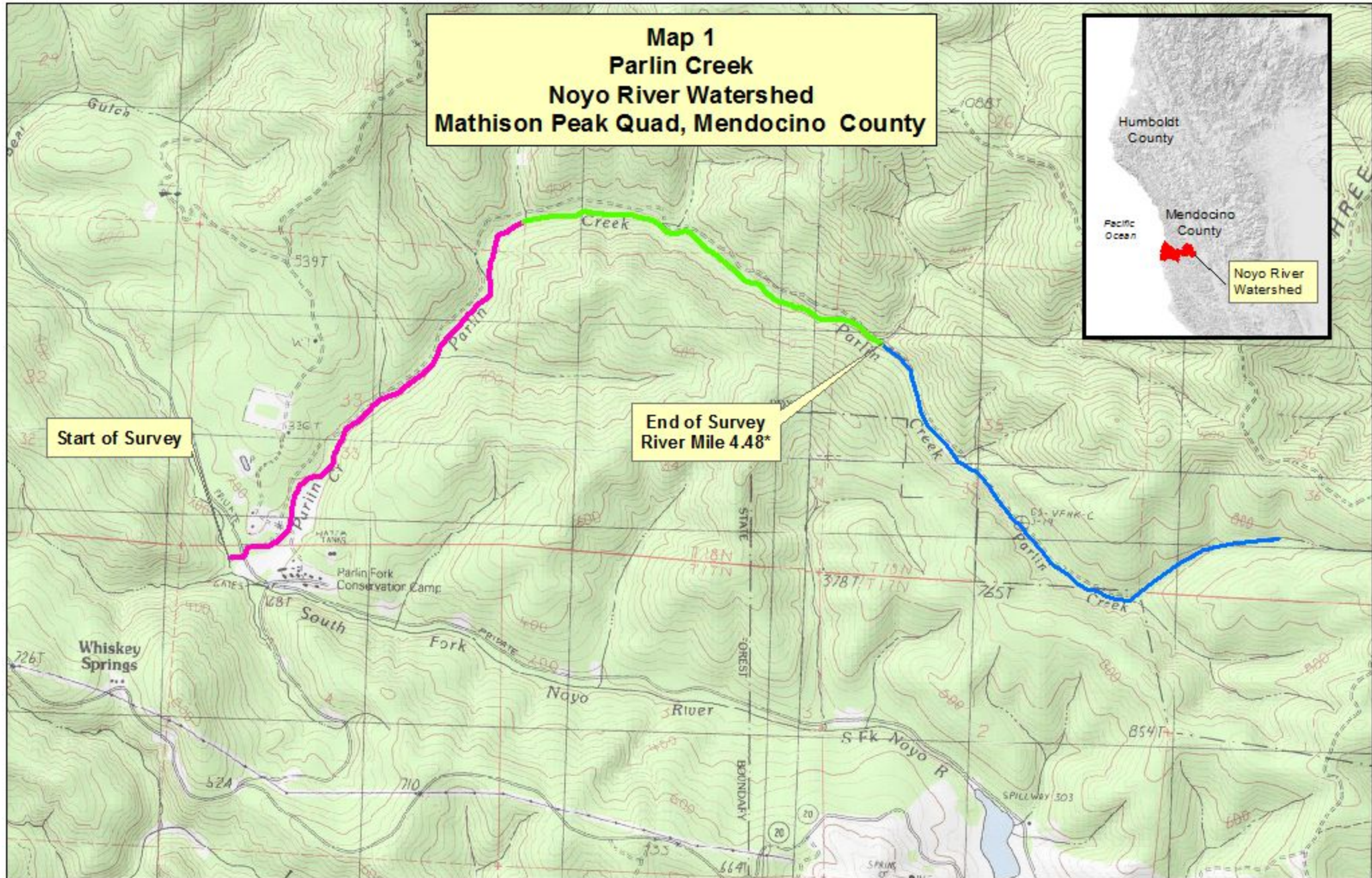
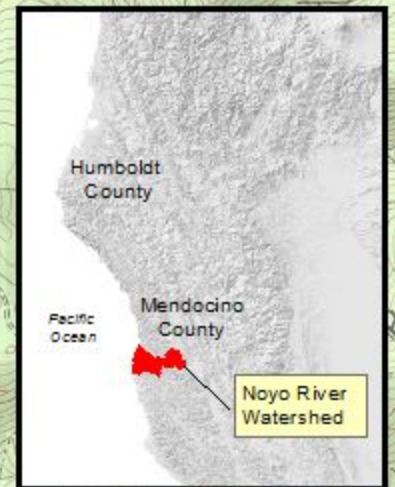
BACKWATER POOLS

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}

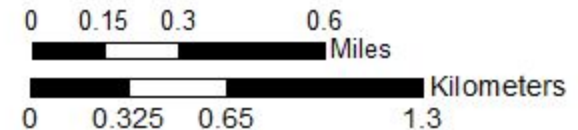
ADDITIONAL UNIT DESIGNATIONS

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

Map 1
Parlin Creek
Noyo River Watershed
Mathison Peak Quad, Mendocino County



— Reach 1: E4 Channel Type — Parlin Creek
 — Reach 2: B4 Channel Type



*River Mile indicates distance from confluence with the South Fork Noyo River

APPENDIX I

TABLES AND GRAPHS

Table 1 - Summary of Riffle, Flatwater, and Pool Habitat Types

Stream Name: Parlin Creek

LLID: 1236581393696

Drainage: Noyo River

Survey Dates: 7/13/2016 to 9/13/2016

Confluence Location: Quad: NOYO HILL

Legal Description: T17NR16WS04

Latitude: 39:22:11.0N

Longitude: 123:39:29.0

Habitat Units	Units Fully Measured	Habitat Type	Habitat Occurrence (%)	Mean Length (ft.)	Total Length (ft.)	Total Length (%)	Mean Width (ft.)	Mean Depth (ft.)	Mean Max Depth (ft.)	Mean Area (sq.ft.)	Estimated Total Area (sq.ft.)	Mean Volume (cu.ft.)	Estimated Total Volume (cu.ft.)	Mean Residual Pool Vol (cu.ft.)	Mean Shelter Rating
52	1	DRY	8.0	67	3470.5	14.4	11.0			88	4576				
159	25	FLATWATER	24.4	38	6107	25.4	6.6	0.5	0.8	289	45912	176	28024		38
1	1	NOSURVEY	0.2	0	0	0.0									0
248	246	POOL	38.1	42	10489.	43.6	11.7	0.9	2.0	513	127222	619	152927	535	63
191	15	RIFFLE	29.3	21	3966	16.5	9.5	0.2	0.4	130	24778	35	6618		14
Total Units	Total Units Fully Measured				Total Length (ft.)					Total Area (sq.ft.)			Total Volume (cu.ft.)		
651	288				24033					202488			187569		

Table 2 - Summary of Habitat Types and Measured Parameters

Stream Name: Parlin Creek

LLID: 1236581393696

Drainage: Noyo River

Survey Dates: 7/13/2016 to 9/13/2016

Confluence Location: Quad: NOYO HILL

Legal Description: T17NR16WS04

Latitude: 39:22:11.0N

Longitude: 123:39:29.0W

Habitat Units	Units Fully Measured	Habitat Type	Habitat Occurrence (%)	Mean Length (ft.)	Total Length (ft.)	Total Length (%)	Mean Width (ft.)	Mean Depth (ft.)	Max Depth (ft.)	Mean Area (sq.ft.)	Estimated Total Area (sq.ft.)	Mean Volume (cu.ft.)	Estimated Total Volume (cu.ft.)	Mean Residual Pool Vol (cu.ft.)	Mean Shelter Rating	Mean Canopy (%)
125	7	LGR	19.2	18	2297	9.6	7	0.2	0.7	110	13734	29	3598		6	92
66	8	HGR	10.1	25	1669	6.9	12	0.2	1.1	147	9709	40	2626		20	96
149	22	RUN	22.9	38	5628	23.4	6	0.5	1.3	250	37211	131	19590		42	92
10	3	SRN	1.5	48	479	2.0	9	0.5	2.4	575	5749	505	5046		8	100
191	190	MCP	29.3	44	8358	34.8	12	1.0	5.5	524	100146	656	124629	567	57	94
1	1	CCP	0.2	35	35	0.1	10	0.9	1.9	350	350	350	350	315	20	100
5	5	STP	0.8	119	597	2.5	14	1.0	3.4	1607	8035	1780	8898	1561	23	86
39	38	LSL	6.0	30	1175	4.9	12	0.8	3.7	379	14796	379	14796	325	106	97
8	8	LSR	1.2	28	222	0.9	12	0.9	3.9	354	2831	403	3227	345	64	97
1	1	LSBk	0.2	39	39	0.2	5	0.3	0.8	195	195	98	98	59	20	100
1	1	PLP	0.2	7	7	0.0	20	1.3	2.9	140	140	210	210	182	40	86
2	2	BPL	0.3	28	57	0.2	14	0.9	1.7	303	607	259	518	229	40	83
52	1	DRY	8.0	67	3471	14.4	11			88	4576					
1	1	NS	0.2	0	0	0.0	0			0	0				0	0

Total Units
651

Total Units Fully Measured
288

Total Length (ft.)
24033

Total Area (sq.ft.)
198078

Total Volume (cu.ft.)
183585

Table 3 - Summary of Pool Types

Stream Name: Parlin Creek

LLID: 1236581393696

Drainage: Noyo River

Survey Dates: 7/13/2016 to 9/13/2016

Confluence Location: Quad: NOYO HILL

Legal Description: T17NR16WS04

Latitude: 39:22:11.0N

Longitude: 123:39:29.0W

Habitat Units	Units Fully Measured	Habitat Type	Habitat Occurrence (%)	Mean Length (ft.)	Total Length (ft.)	Total Length (%)	Mean Width (ft.)	Mean Residual Depth (ft.)	Mean Area (sq.ft.)	Estimated Total Area (sq.ft.)	Mean Residual Pool Vol (cu.ft.)	Estimated Total Resid.Vol. (cu.ft.)	Mean Shelter Rating
197	196	MAIN	79	46	8990	86	11.6	1.0	551	108557	591	115800	56
49	48	SCOUR	20	29	1443	14	12.3	0.8	366	17949	320	15658	96
2	2	BACKWATER	1	29	57	1	14.0	0.9	303	607	229	458	40
Total Units	Total Units Fully Measured			Total Length (ft.)						Total Area (sq.ft.)			Total Volume (cu.ft.)
248	246			10489.5						127113			131916

Table 4 - Summary of Maximum Residual Pool Depths By Pool Habitat Types

Stream Name: Parlin Creek

LLID: 1236581393696

Drainage: Noyo River

Survey Dates: 7/13/2016 to 9/13/2016

Confluence Location: Quad: NOYO HILL

Legal Description: T17NR16WS04

Latitude: 39:22:11.0N

Longitude: 123:39:29.0W

Habitat Units	Habitat Type	Habitat Occurrence (%)	< 1 Foot Maximum Residual Depth	< 1 Foot Percent Occurrence	1 < 2 Feet Maximum Residual Depth	1 < 2 Feet Percent Occurrence	2 < 3 Feet Maximum Residual Depth	2 < 3 Feet Percent Occurrence	3 < 4 Feet Maximum Residual Depth	3 < 4 Feet Percent Occurrence	>= 4 Feet Maximum Residual Depth	>= 4 Feet Percent Occurrence
189	MCP	77	7	4	104	55	45	24	21	11	12	6
1	CCP	0	0	0	1	100	0	0	0	0	0	0
5	STP	2	0	0	1	20	3	60	1	20	0	0
39	LSL	16	3	8	25	64	9	23	2	5	0	0
8	LSR	3	0	0	4	50	3	38	1	13	0	0
1	LSBk	0	1	100	0	0	0	0	0	0	0	0
1	PLP	0	0	0	0	0	1	100	0	0	0	0
2	BPL	1	0	0	2	100	0	0	0	0	0	0
Total Units			Total < 1 Foot Max Resid. Depth	Total < 1 Foot % Occurrence	Total 1< 2 Foot Max Resid. Depth	Total 1< 2 Foot % Occurrence	Total 2< 3 Foot Max Resid. Depth	Total 2< 3 Foot % Occurrence	Total 3< 4 Foot Max Resid. Depth	Total 3< 4 Foot % Occurrence	Total >= 4 Foot Max Resid. Depth	Total >= 4 Foot % Occurrence
246			11	4	137	56	61	25	25	10	12	5

Mean Maximum Residual Pool Depth (ft.): 2

Table 5 - Summary of Mean Percent Cover By Habitat Type

Stream Name: Parlin Creek

LLID: 1236581393696

Drainage: Noyo River

Survey Dates: 7/13/2016 to 9/13/2016

Dry Units: 52

Confluence Location: Quad: NOYO HILL

Legal Description: T17NR16WS04

Latitude: 39:22:11.0N

Longitude: 123:39:29.0W

Habitat Units	Units Fully Measured	Habitat Type	Mean % Undercut Banks	Mean % SWD	Mean % LWD	Mean % Root Mass	Mean % Terr. Vegetation	Mean % Aquatic Vegetation	Mean % White Water	Mean % Boulders	Mean % Bedrock Ledges
125	7	LGR	33	33	0	0	17	17	0	0	0
66	8	HGR	12	12	26	0	0	50	0	0	0
191	15	TOTAL RIFFLE	21	21	16	0	6	36	0	0	0
149	22	RUN	24	23	15	1	22	15	0	0	0
10	3	SRN	0	50	50	0	0	0	0	0	0
159	25	TOTAL FLAT	22	26	18	1	20	13	0	0	0
191	190	MCP	24	23	31	5	5	3	1	3	5
1	1	CCP	100	0	0	0	0	0	0	0	0
5	5	STP	33	4	19	9	16	19	0	0	0
39	37	LSL	7	34	54	3	1	1	0	0	0
8	8	LSP	11	11	28	46	0	4	0	0	0
1	1	LSBk	0	25	0	75	0	0	0	0	0
1	1	PLP	0	0	0	0	0	0	80	0	20
2	2	BPL	0	0	100	0	0	0	0	0	0
248	245	TOTAL POOL	20	24	36	6	4	3	2	1	4
1	1	NS	0	0	0	0	0	0	0	0	0
651	286	TOTAL	21	24	34	6	6	4	1	1	3

Table 6 - Summary of Dominant Substrates By Habitat Type

Stream Name: Parlin Creek

LLID: 1236581393696

Drainage: Noyo River

Survey Dates: 7/13/2016 to 9/13/2016

Dry Units: 52

Confluence Location: Quad: NOYO HILL

Legal Description: T17NR16WS04

Latitude: 39:22:11.0N

Longitude: 123:39:29.0W

Habitat Units	Units Fully Measured	Habitat Type	% Total Silt/Clay Dominant	% Total Sand Dominant	% Total Gravel Dominant	% Total Small Cobble Dominant	% Total Large Cobble Dominant	% Total Boulder Dominant	% Total Bedrock Dominant
125	8	LGR	0	0	88	13	0	0	0
66	8	HGR	0	0	88	13	0	0	0
149	22	RUN	14	5	77	5	0	0	0
10	3	SRN	33	33	33	0	0	0	0
191	190	MCP	17	11	63	4	0	0	5
1	1	CCP	0	0	100	0	0	0	0
5	5	STP	0	0	80	20	0	0	0
39	39	LSL	13	18	64	5	0	0	0
8	8	LSR	13	0	63	25	0	0	0
1	1	LSBk	0	0	100	0	0	0	0
1	1	PLP	0	0	0	0	0	0	100
2	2	BPL	0	0	100	0	0	0	0

Table 7 - Summary of Mean Percent Canopy for Entire Stream

Stream Name: Parlin Creek

LLID: 1236581393696

Drainage: Noyo River

Survey Dates: 7/13/2016 to 9/13/2016

Confluence Location: Quad: NOYO HILL

Legal Description: T17NR16WS04

Latitude: 39:22:11.0N

Longitude: 123:39:29.0W

Mean Percent Canopy	Mean Percent Conifer	Mean Percent Hardwood	Mean Percent Open Units	Mean Right Bank % Cover	Mean Left Bank % Cover
94	92	8	0	98	98

Note: Mean percent conifer and hardwood 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: Parlin Creek

LLID: 1236581393696

Drainage: Noyo River

Survey Dates: 7/13/2016 to 9/13/2016

Survey Length (ft.): 24033

Main Channel (ft.): 23935.5

Side Channel (ft.): 97.5

Confluence Location: Quad: NOYO HILL

Legal Description: T17NR16WS04 Latitude: 39:22:11.0N

Longitude: 123:39:29.0W

Summary of Fish Habitat Elements By Stream Reach**STREAM REACH: 1**

Channel Type: F4

Canopy Density (%): 93.1

Pools by Stream Length (%): 53.1

Reach Length (ft.): 16644.5

Coniferous Component (%): 93.2

Pool Frequency (%): 39.2

Riffle/Flatwater Mean Width (ft.): 8.5

Hardwood Component (%): 6.8

Residual Pool Depth (%):

BFW:

Dominant Bank Vegetation: Coniferous Trees

< 2 Feet Deep: 53

Range (ft.): 9 to 51

Vegetative Cover (%): 98.2

2 to 2.9 Feet Deep: 27

Mean (ft.): 19

Dominant Shelter: Large Woody Debris

3 to 3.9 Feet Deep: 13

Std. Dev.: 6

Dominant Bank Substrate Type: Sand/Silt/Clay

>= 4 Feet Deep: 7

Base Flow (cfs.): 0.1

Occurrence of LWD (%): 27

Mean Max Residual Pool Depth (ft.): 2.1

Water (F): 56 - 68 Air (F): 55 - 78

LWD per 100 ft.:

Mean Pool Shelter Rating: 54

Dry Channel (ft): 167.5

Riffles: 2

Pools: 5

Flat: 2

Pool Tail Substrate (%): Silt/Clay: 1 Sand: 0 Gravel: 76 Sm Cobble: 7 Lg Cobble: 9 Boulder: 0 Bedrock: 7

Embeddedness Values (%): 1. 32.6 2. 34.8 3. 19.1 4. 5.6 5. 7.9

STREAM REACH: 2

Channel Type: B4

Canopy Density (%): 94.9

Pools by Stream Length (%): 22.2

Reach Length (ft.): 7291

Coniferous Component (%): 88.1

Pool Frequency (%): 35.6

Riffle/Flatwater Mean Width (ft.): 5.7

Hardwood Component (%): 11.9

Residual Pool Depth (%):

BFW:

Dominant Bank Vegetation: Coniferous Trees

< 2 Feet Deep: 79

Range (ft.): 7 to 23

Vegetative Cover (%): 98.8

2 to 2.9 Feet Deep: 19

Mean (ft.): 12

Dominant Shelter: Large Woody Debris

3 to 3.9 Feet Deep: 1

Std. Dev.: 4

Dominant Bank Substrate Type: Sand/Silt/Clay

>= 4 Feet Deep: 0

Base Flow (cfs.): 0.1

Occurrence of LWD (%): 42

Mean Max Residual Pool Depth (ft.): 1.6

Water (F): 52 - 65 Air (F): 54 - 68

LWD per 100 ft.:

Mean Pool Shelter Rating: 87

Dry Channel (ft): 3303

Riffles: 3

Pools: 14

Flat: 4

Pool Tail Substrate (%): Silt/Clay: 14 Sand: 0 Gravel: 79 Sm Cobble: 0 Lg Cobble: 7 Boulder: 0 Bedrock: 0

Embeddedness Values (%): 1. 38.6 2. 27.1 3. 18.6 4. 1.4 5. 14.3

Table 10 - Mean Percent of Shelter Cover Types For Entire Stream

Stream Name: Parlin Creek

LLID: 1233581393696

Drainage: Noyo River

Survey Dates: 7/13/2016 to 9/13/2016

Confluence Location:

Quad: NOYO HILL

Legal Description: T17NR16WS04

Latitude: 39:22:11.0N

Longitude: 123:39:29.0W

	Riffles	Flatwater	Pools
UNDERCUT BANKS (%)	21	22	20
SMALL WOODY DEBRIS (%)	22	26	24
LARGE WOODY DEBRIS (%)	15	18	35
ROOT MASS (%)	0	1	7
TERRESTRIAL VEGETATION (%)	6	20	4
AQUATIC VEGETATION (%)	36	13	3
WHITewater (%)	0	0	1
BOULDERS (%)	0	0	2
BEDROCK LEDGES (%)	0	0	4

Table 9 - Mean Percentage of Dominant Substrate and Vegetation

Stream Name: Parlin Creek

LLID: 1236581393696

Drainage: Noyo River

Survey Dates: 7/13/2016 to 9/13/2016

Confluence Location: Quad: NOYO HILL

Legal Description: T17NR16WS04

Latitude: 39:22:11.0N

Longitude: 123:39:29.0W

Mean Percentage of Dominant Stream Bank Substrate

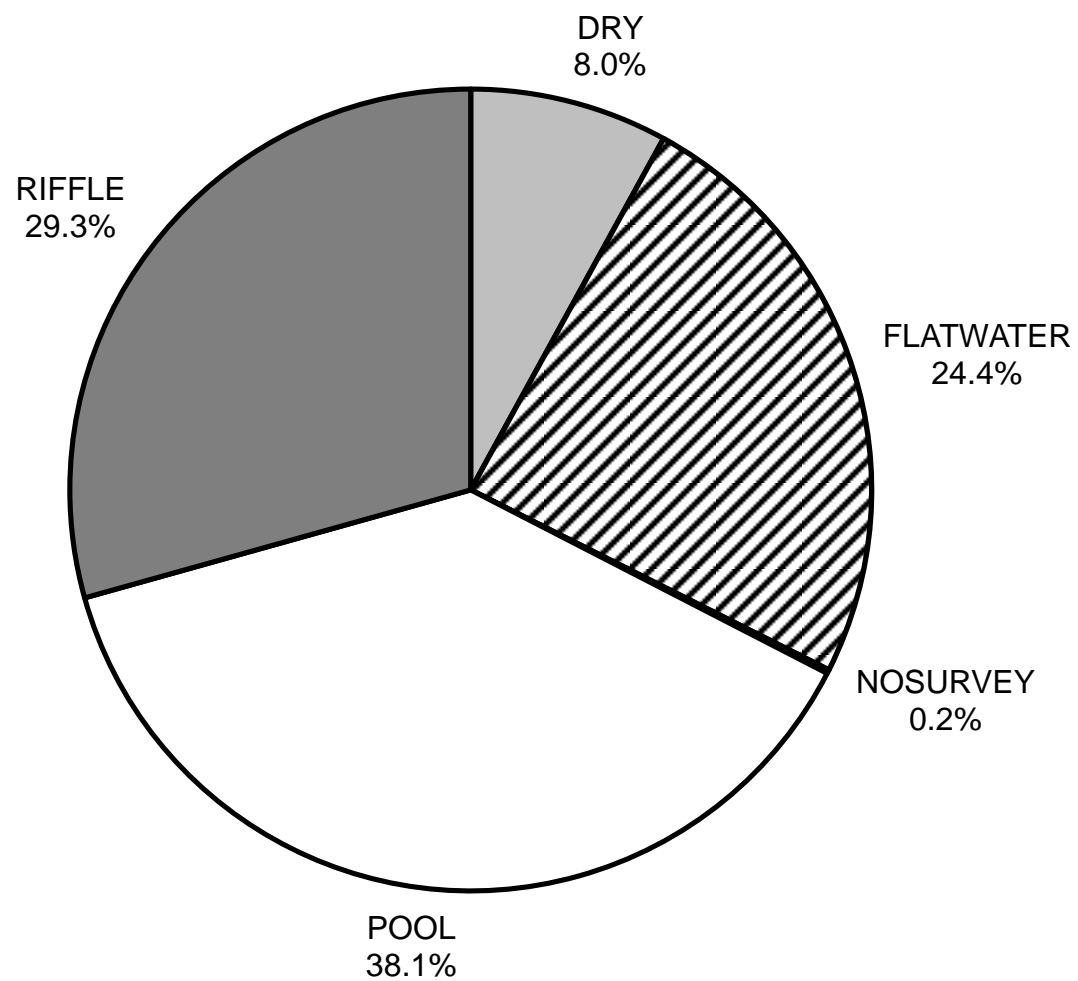
Dominant Class of Substrate	Number of Units Right Bank	Number of Units Left Bank	Total Mean Percent (%)
Bedrock	27	24	8.8
Boulder	1	1	0.3
Cobble / Gravel	9	8	2.9
Sand / Silt / Clay	252	256	87.9

Mean Percentage of Dominant Stream Bank Vegetation

Dominant Class of Vegetation	Number of Units Right Bank	Number of Units Left Bank	Total Mean Percent (%)
Grass	24	9	5.7
Brush	28	15	7.4
Hardwood Trees	12	9	3.6
Coniferous Trees	225	255	83.0
No Vegetation	0	0	0.0

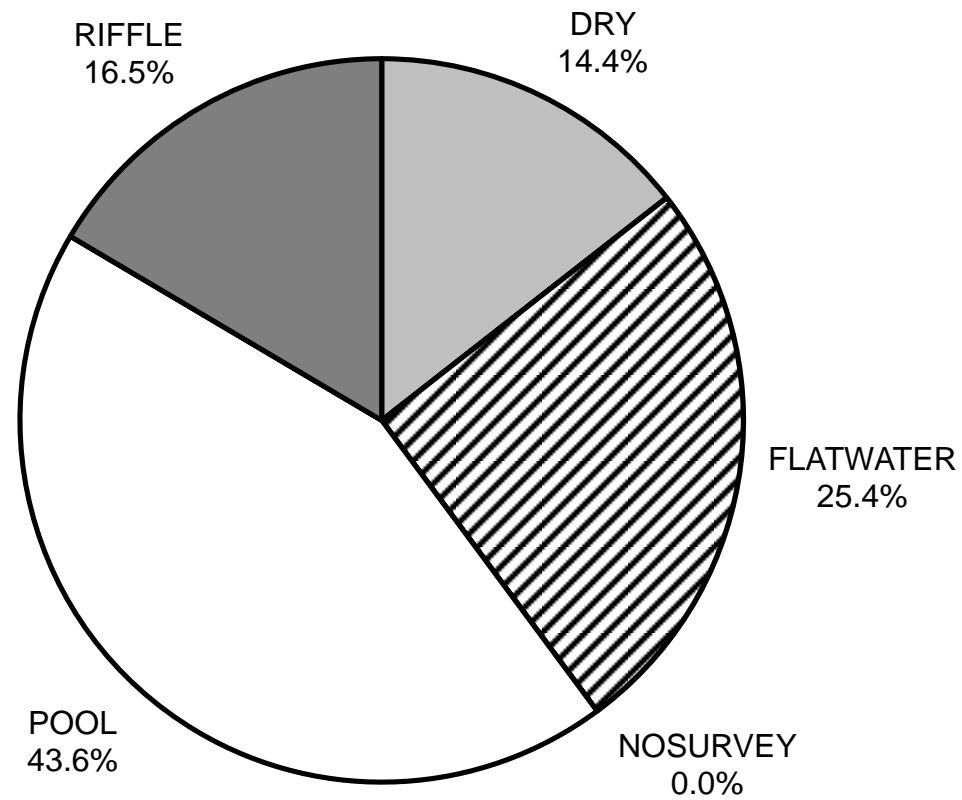
Total Stream Cobble Embeddedness Values: 2

PARLIN CREEK 2016 HABITAT TYPES BY PERCENT OCCURRENCE



GRAPH 1

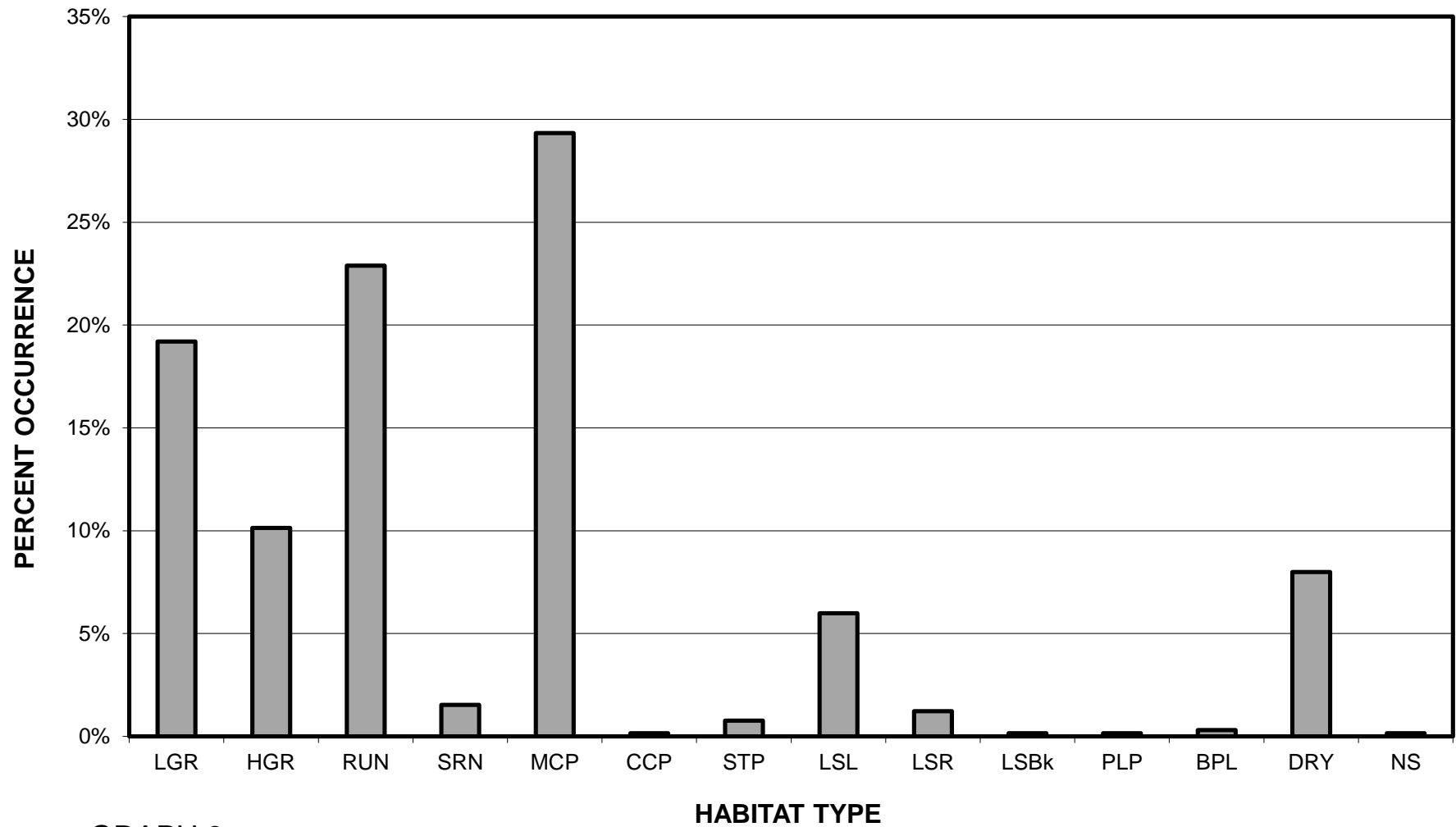
**PARLIN CREEK 2016
HABITAT TYPES BY PERCENT TOTAL LENGTH**



GRAPH 2

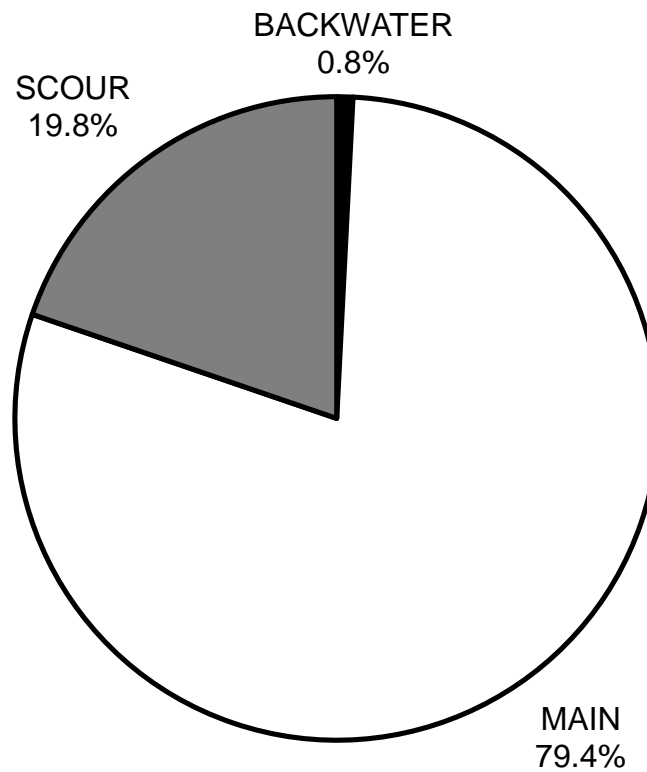
PARLIN CREEK 2016

HABITAT TYPES BY PERCENT OCCURRENCE



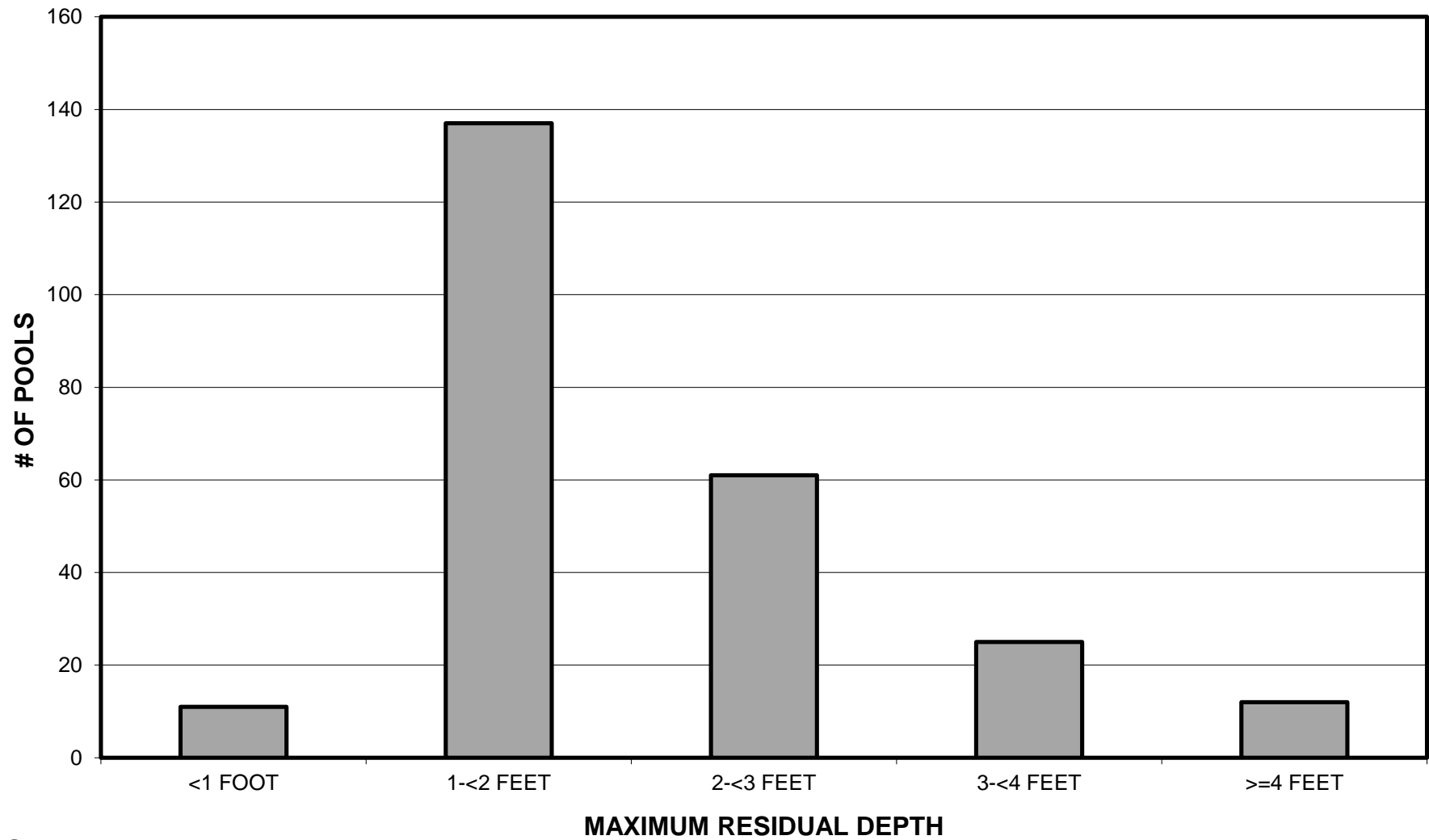
GRAPH 3

PARLIN CREEK 2016 POOL TYPES BY PERCENT OCCURRENCE



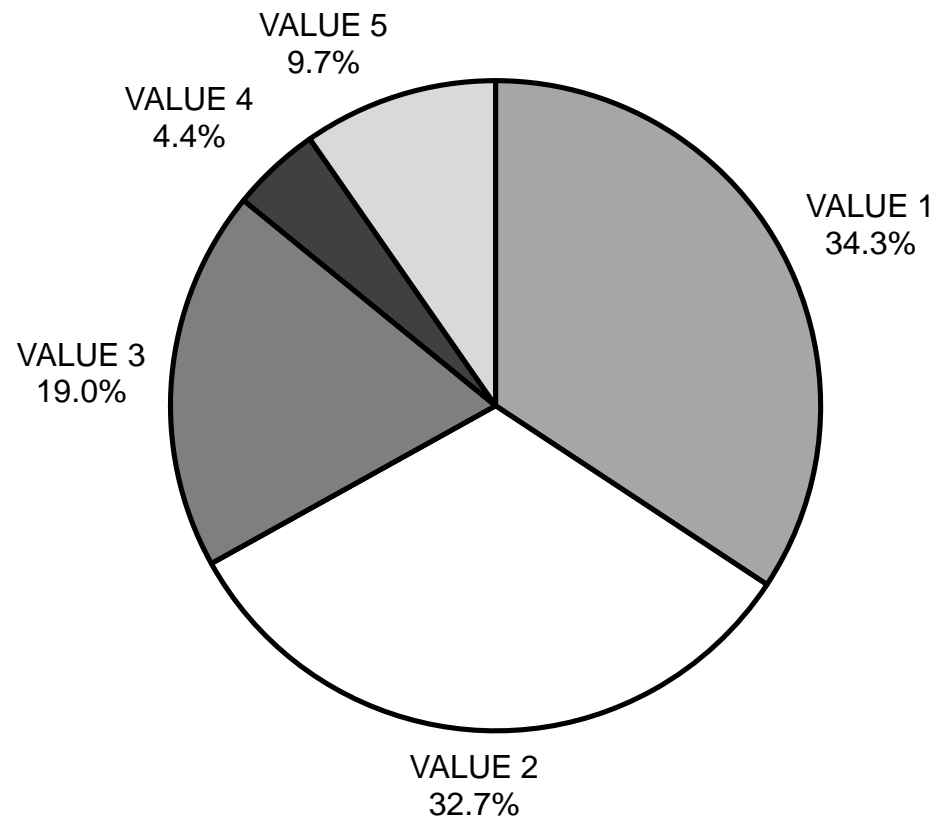
GRAPH 4

PARLIN CREEK 2016 MAXIMUM DEPTH IN POOLS



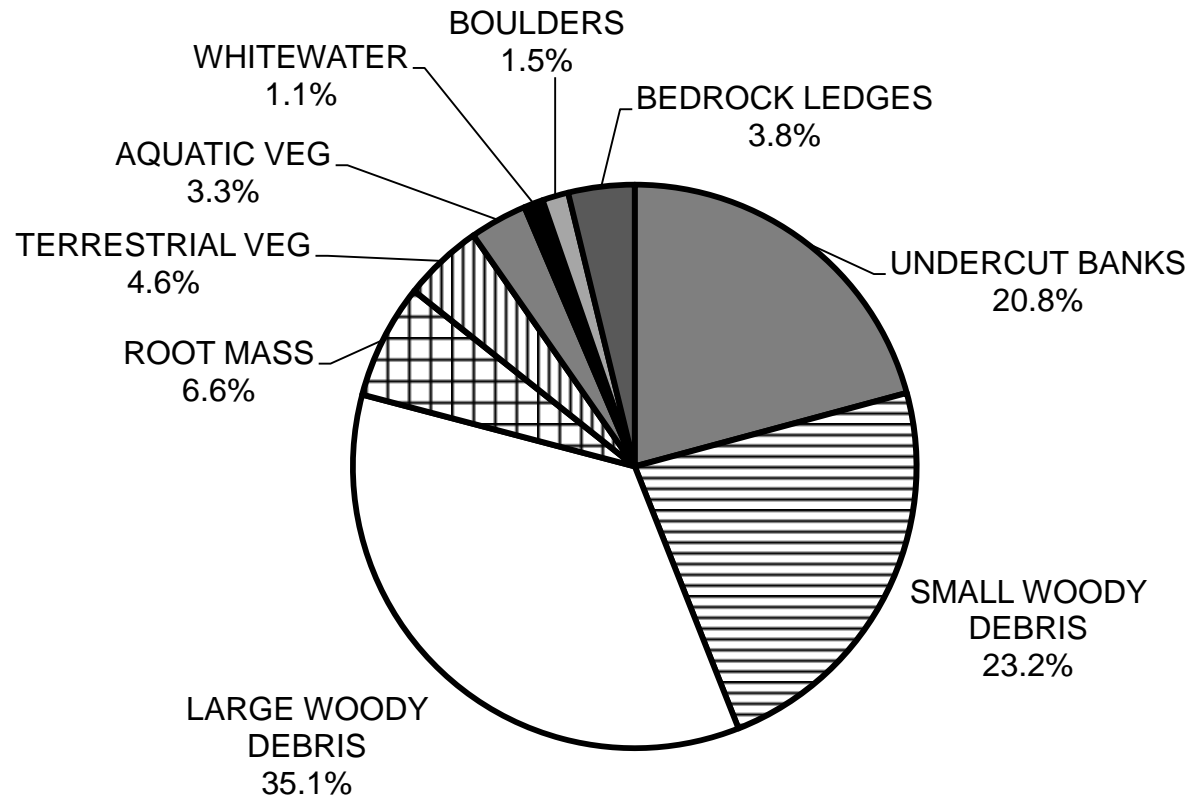
GRAPH 5

PARLIN CREEK 2016 PERCENT EMBEDDEDNESS



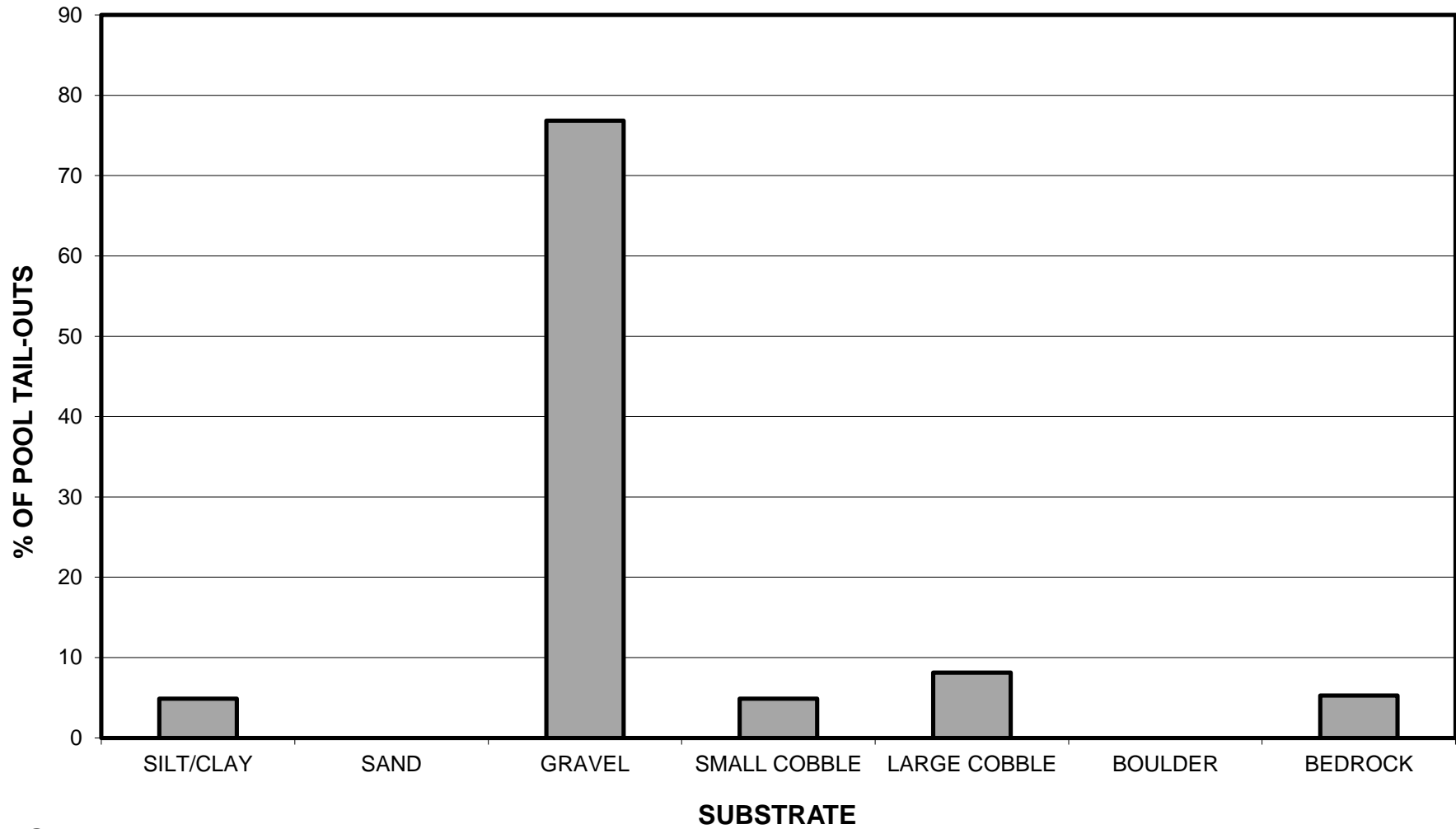
GRAPH 6

PARLIN CREEK 2016 MEAN PERCENT COVER TYPES IN POOLS



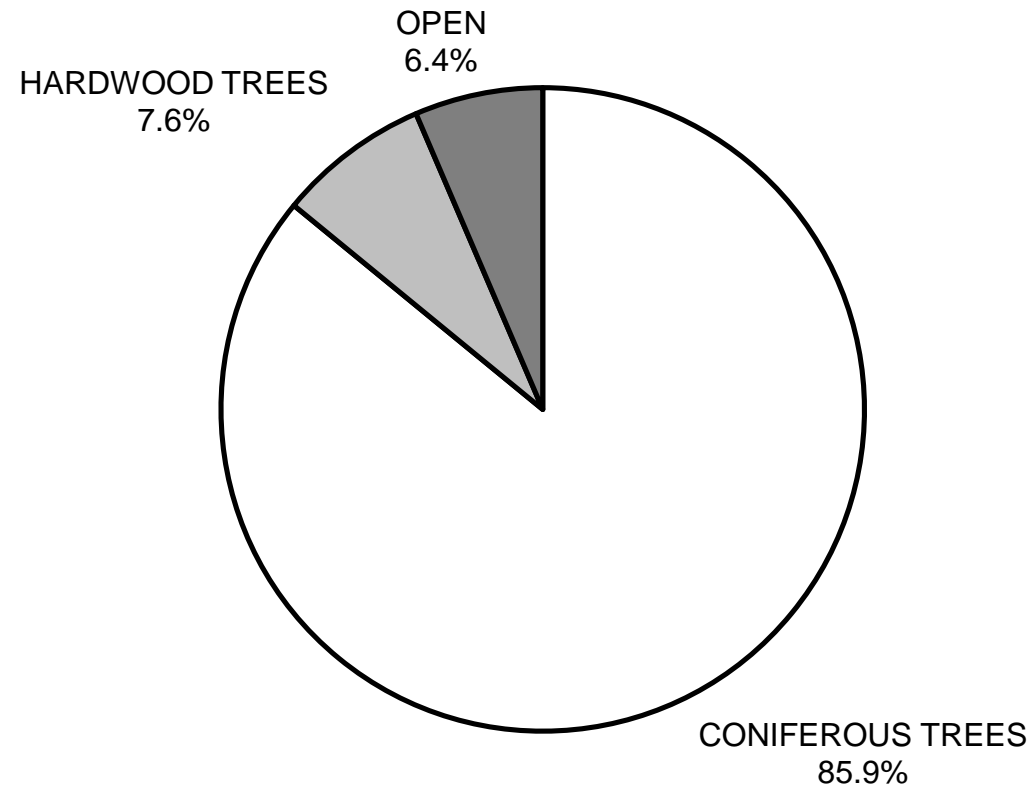
GRAPH 7

PARLIN CREEK 2016
SUBSTRATE COMPOSITION IN POOL TAIL-OUTS



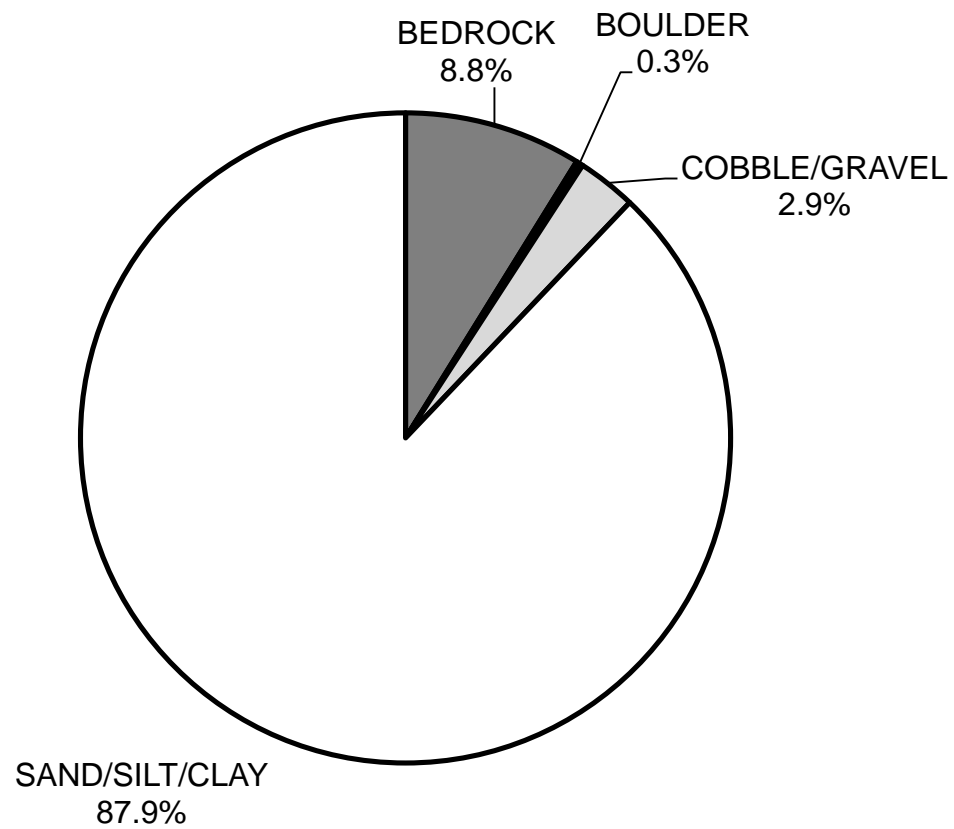
GRAPH 8

PARLIN CREEK 2016 MEAN PERCENT CANOPY



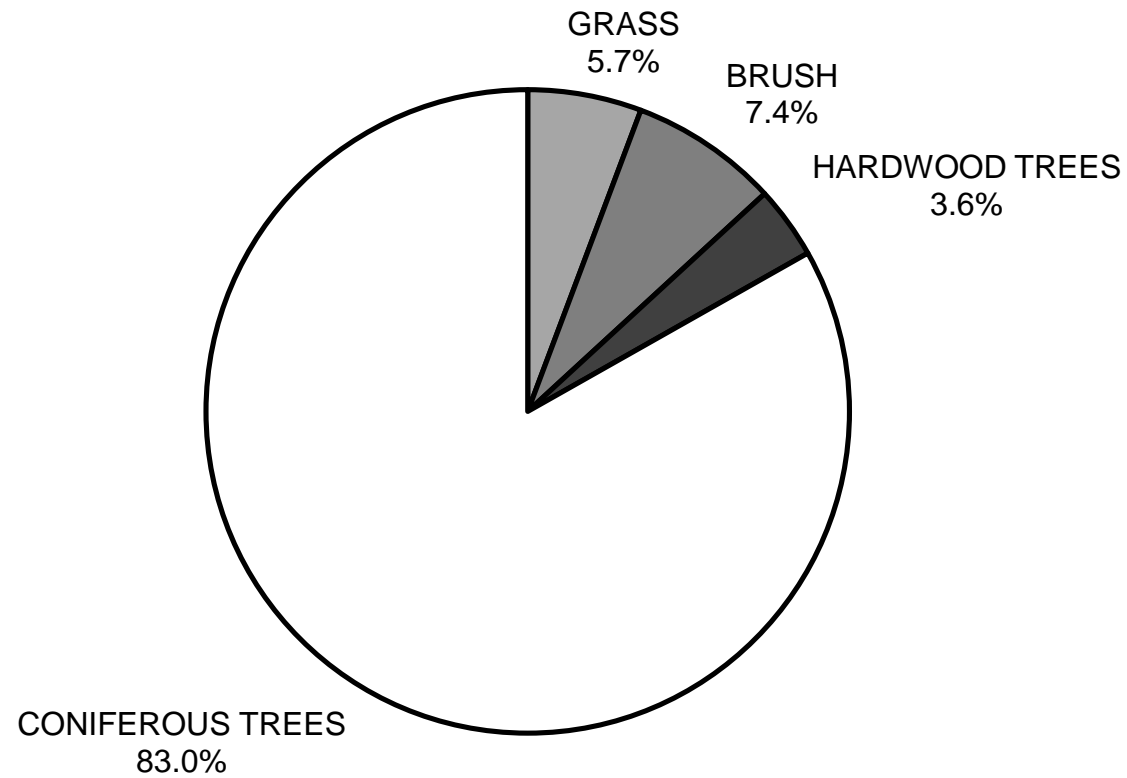
GRAPH 9

**PARLIN CREEK 2016
DOMINANT BANK COMPOSITION IN SURVEY REACH**



GRAPH 10

**PARLIN CREEK 2016
DOMINANT BANK VEGETATION IN SURVEY REACH**



GRAPH 11

APPENDIX II

STREAM INVENTORY PHOTOS

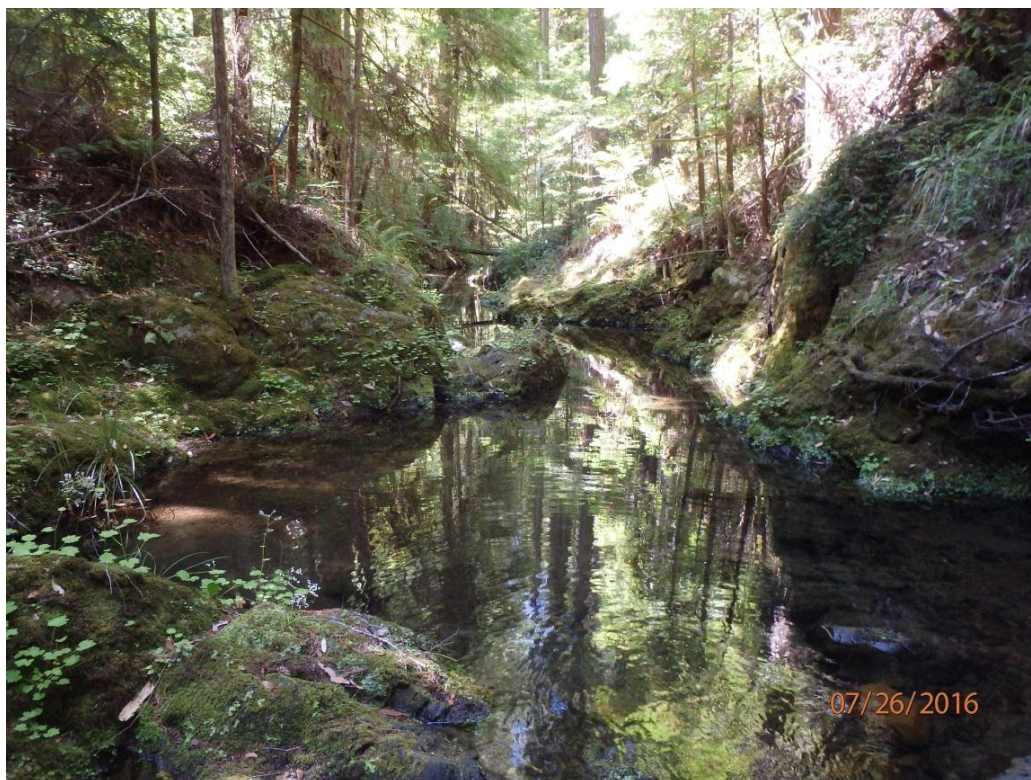


Photo 1: Bedrock dominated pool approximately 11,000' upstream of the start of survey (SOS). (Photo taken 7/26/16)

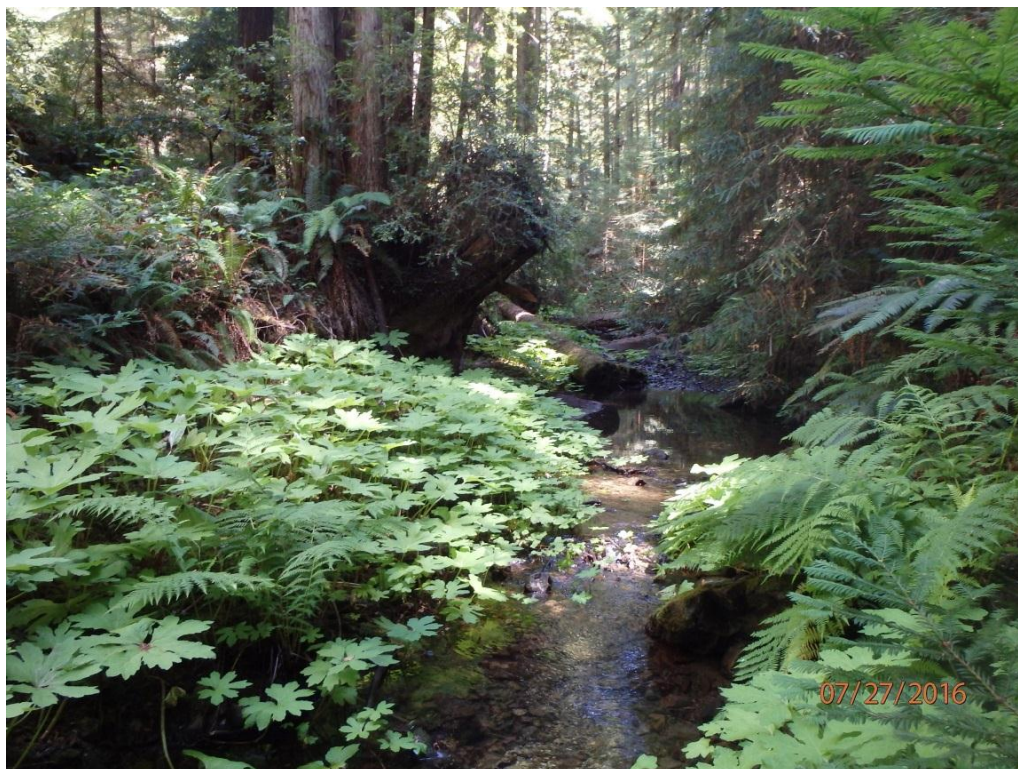


Photo 2: Scour pool at habitat unit #313. (Photo taken 7/27/16)



Photo 3: LDA at habitat unit #423. Ryan Bernstein pictured. (Photo taken 8/16/16)



Photo 4: End of survey at habitat unit #642, 23,674' upstream of SOS due to dry channel for the last 987 ft of survey. (Photo taken 9/13/16)