

# **STREAM INVENTORY REPORT**

## **Camper Creek**

### WATERSHED OVERVIEW

Refer to the map of McKenzie Creek for the location of Camper Creek.

Camper Creek is tributary to Carson Creek, a tributary to McKenzie Creek, a tributary to Sproule Creek, a tributary to South Fork Gualala River, located in Sonoma County, California. Camper Creek is intermittent stream according to the USGS Fort Ross 7.5 minute quadrangle. Mixed hardwood and mixed conifer forest dominates the watershed. The watershed is primarily privately owned.

### HABITAT INVENTORY RESULTS AND DISCUSSION

Adrienne Carr and Randy Turner (WSP/AmeriCorps) conducted the habitat inventory of August 17, 1999. The total length of the stream surveyed was 3519 feet.

Camper Creek is a G4 channel type for the entire length of stream surveyed. G4 channels are well entrenched with “gully” step-pools, low width /depth ratio on moderate gradient (2-4%), with mainly gravel substrate. The suitability of G4 channel types for fish habitat improvement structures is: good for bank-placed boulders; fair for plunge weirs, opposing wing-deflectors, and log cover; and poor for boulder clusters and single wing-deflectors.

The air temperatures recorded on the survey day ranged from 60 to 73 degrees Fahrenheit. Water temperatures ranged from 56 to 58 degrees Fahrenheit. This is within the range of suitable water temperatures for salmonids, but is very close to the upper value of 60 degrees Fahrenheit for coho salmon and 65 degrees for steelhead trout.

Based on the total length of this survey, Level II habitat units consisted of 50% flatwater units, 31% riffle units, 11% pool units, and 8% dry units (Table 1). The pools are relatively shallow, with only 7 of the 26 pools having a maximum depth greater than 2 feet (i.e. 27% primary pools) (Table 4).

The mean shelter ratings for pool, flatwater, and riffle habitats were all low with ratings of 5, 16, and 13, respectively (Table 1). A shelter rating of approximately 100 is desirable. Log and root wad cover structures in the pool and flatwater habitats are needed to improve both summer and winter salmonid habitat.

All five of the low gradient riffles fully measured had either gravel or small cobble as the dominant substrate. This is generally considered good for spawning salmonids. Of the other ten habitat units fully measured, 5 were dominated by gravel, 2 each by sand and silt/clay, and 1 by small cobble (Table 6).

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The mean percent canopy density for the stream was 87%(Table 7). This is a relatively high percentage of canopy, since 80 percent is generally considered optimum in north coast streams. The percentage of right and left bank covered with vegetation was moderate at 63% and 72%, respectively (Table 7).

No fish were observed upstream of habitat unit #040, 1333' above the confluence with Carson Creek. A large debris accumulation 1511' above the confluence with Carson Creek, in habitat unit #041, appears to impede further passage.

## RECOMMENDATIONS

- 1) Camper Creek should be managed as an anadromous, natural production stream.
- 2) The limited water temperature available suggest that the maximum temperatures are within/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 3 to 5 years.
- 3) Where feasible, design and engineer pool enhancement structures to increase the number of pools. This must be done where the banks are stable or in conjunction with stream bank armor to prevent erosion.
- 4) Increase woody cover in the pools and flatwater habitat units. Most of the existing cover is from boulders. Adding high quality complexity with woody cover is desirable and in some areas the material is at hand.
- 5) Inventory and map sources of stream bank erosion and prioritize them according to present and potential sediment yield. Identified sites, like the site at 6---', should then be treated to reduce the amount of fine sediments entering the stream.
- 6) 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.
- 7) Increase the canopy on Camper Creek by planting willow, alder, redwood, and Douglas fir along the stream where shade canopy is not at acceptable levels. The reaches above this survey section should be inventoried and treated as well, since the water flowing here is effected from upstream. In many cases, planting will need to be coordinated to follow bank stabilization or upslope erosion control projects.

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- 8) Spawning gravel on Camper Creek are limited to relatively few reaches. Crowding and/or superimposition of redds have been observed during winter surveys. Projects should be designed at suitable sites to trap and sort spawning gravel in order to expand redd site distribution in the stream.
- 9) There are several log debris accumulations present on Camper Creek that are retaining large quantities of fine sediment. The modification of these debris accumulations is desirable, but must be done carefully, over time, to avoid excessive sediment loading in downstream reaches.
- 10) There are at least two sections where the stream is being impacted from cattle trampling the riparian zone and defecating in the water. Alternatives should be explored with the grazier and developed if possible.
- 11) Due to the high gradient of the stream, access for migrating salmonids is an ongoing potential problem. Good water temperature and flow regimes exist in the stream and it offers good conditions for rearing fish. Fish passage should be monitored and improved where possible.

## PROBLEM SITES AND LANDMARKS

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

Position    Comments:  
(ft):

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0	Start of survey at confluence with Carson Creek. Small riffle in Carson Creek influence zone.
27	Road enters on right bank, 12' from creek. Road enters on left bank.
116	Young-of-the-year (YOY) salmonids observed. Road on right bank, 12' from creek.
155	YOY observed.
203	Road about 40' from creek on right bank side.
230	YOY observed.

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- 398 Road on right bank approx. 60' up from creek. Plunge pool.
- 415 Tail crest is wood. YOY observed. Boulder formed pool.
- 497 YOY observed. Tributary enters on the left bank.
- 592 1' undercut bank.
- 642 1+ and YOY observed.
- 724 Large debris accumulation (LDA) behind boulders measures 4' long x 6' high x 14' wide. 6' high plunge over LDA. LDA is retaining approx. 30 cubic yards of gravel.
- 773 YOY observed. Bedrock, and undercut boulder on right bank.
- 826 Boulder pinched pool with LDA behind it.
- 836 LDA measures 17' long x 6' high x 15' wide. 4' high plunge over the LDA.
- 898 YOY observed.
- 916 YOY observed.
- 963 Creek flows underground. There is a culvert in the channel. 2' high plunge over gravel bar with large boulder and 4' x 10' culvert with a small debris accumulation behind it.
- 969 Very small flow.
- 1016 Bridge measures 35' long x 22' high x 28' wide.
- 1074 YOY observed.
- 1093 Channel braided. Concrete blocks part of substrate. YOY observed.
- 1136 YOY observed.
- 1235 YOY observed.
- 1246 YOY observed.

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- 1297 YOY observed.
- 133 YOY observed. Bridge measures 10' long x 12' high x 50' wide. Banks are eroding under bridge. Bridge is part of canopy of this unit.
- 1505 LDA measures 10' long x 17' wide x 6' high. 4' high plunge over the LDA. Greater than 100 cubic yards of gravel behind LDA. Creek is dry above. Possible end of anadromy.
- 1576 2' undercut boulder. Pacific Giant Salamander observed.
- 1607 Pacific Giant Salamander and frog observed.
- 1687 Tail crest is subterranean. Spring on left bank. Small debris accumulation measures 1' long x 8' wide x 3' high.
- 1902 LDA measures 18' long x 7' high x 25' wide. 4' of scouring, in sediment accumulated behind LDA, has already taken place behind LDA. This log jam is starting to blow out. Right bank is very erosive after LDA continues through next unit.
- 2262 Pacific Giant Salamander observed.
- 2297 Tailout is pea gravel. Four pieces of large wood over pool.
- 2382 Newts observed. 3' undercut bank. Right bank trees are very small. LDA measures 10' long x 5' high x 15' wide. LDA is retaining approx.. 20 cubic yards of gravel. There is a 5' high plunge over the LDA.
- 2390 Old road crossing through dry unit; the road has been approaching right bank through last two units.
- 2521 Historic slide on right bank.
- 2553 Slide ends at end of unit.
- 2563 Unit almost dry. Pacific Giant Salamander observed.
- 2621 Roots at end of unit.
- 2812 Tail crest is pea gravel. 2' undercut on under redwood on left bank.

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- 2825 LDA measures 20' long x 20' wide x 5' high. Most debris is on the right bank side. A second LDA measures 15' wide x 10' long x 5' high. Most debris is accumulating on the left bank side of the channel.
- 3253 Pacific Giant Salamander observed.
- 3391 LDA measures 13' long x 15' wide x 8' high. Slope failure on right bank above huge root wad with many sprouts. It is revegetating well with ferns. May have been caused by boulder falling away.
- 3404 One-eyed frog observed.
- 3436 Plunge.
- 3447 Frog observed.
- 3504 4' undercut bedrock. 8' high plunge. Small woody debris has accumulated in constriction of bedrock so that makes jumps more difficult. It is a partial barrier to anadromous fish. Small debris accumulation measures 5' long x 2' high x 10' wide.
- End of survey. LDA 300' upstream of end of survey point with more complexity and at least 8' jump.