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CANYON CREEK (GEORGETOWN) STREAM SURVEY

prepared by
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1. General Description

Canyon Creek is a perennial, third order stream. It is located on the Georgetown Ranger District of the Eldorado National Forest. The stream flows northwest for 10.5 miles to its confluence with the Middle Fork American River. Approximately 0.5 miles of Canyon Creek was surveyed for Rosgen stream type, Pfankuch channel stability ratings, gradient, riparian width, large woody debris, and nondependent riparian uses. Ten reaches were identified from aerial photos as being significantly different. Only six of these reaches were actually surveyed due to difficulties of access because of terrain, vegetation and private lands (off forest).

In addition, three stations were surveyed for habitat parameters including; substrate composition and embeddedness, canopy closure, pool bank angle, and water temperature. The stations were selected for a pool/riffle sequence representative of the lower, middle, and upper portions of the entire surveyed reach. Two of these reaches were sampled for relative fish abundance.

2. Access

The stream is only accessible from 12N29.4 (off Wentworth Springs Rd), 13N58D (off Bottle Hill Rd) 13N59 (Breedlove) and Marmaluke Hill Rd. Some other private roads may offer limited access.

3. Gradient

Stream channel gradient was measured as percent. Average measured gradient was 3.0, 3.0, 4.0, 6.0, 2.0, and 1.0% for reaches 1 through 6, respectively (see map). Overall average gradient was 3.0% for the surveyed reaches.

4. Flow

The flow during the April 1994 survey was calculated at 3.5 cfs in reach 5.

5. Substrate

Cobble, bedrock and fines substrate is predominate throughout the entire surveyed reaches.

For the three sample stations, ten evenly spaced transects were established in each pool and ten transects were established in the riffle immediately upstream at the same interval as in the pools. One hundred pebble counts were taken in both the pool and riffle, measuring 10 particles from each transect. Embeddedness was measured for substrate particles in the 32 to 256 mm range. Embeddedness measurements were taken only in the lower two transects in the

pool tail and in all riffle transects up to a maximum of 50 values. For the purpose of this report, particles <4 mm are considered fines and particles in riffles from 8 to 32 mm are considered spawning gravels.

Station 1 (Pool length = 28 ft) Reach 1

100 Point Pebble Counts--Percent occurrence for each substrate size class.

\geq but <	1	4	8	16	32	64	128	256	512	mm
	1	4	8	16	32	64	128	256	512	mm
Pool	15	1	7	10	16	11	11	10	3	16
Riffle	4	1	1	5	7	11	24	36	11	0

	<u>Pool</u>	<u>Riffle</u>
Average embeddedness	24%	33%
Range	0 - 59%	0 - 88%
Percent fines	16	5
Percent spawning gravels	N/A	12

Station 2 (Pool length = 30 ft) Reach 5

100 Point Pebble Counts--Percent occurrence for each substrate size class.

\geq but <	1	4	8	16	32	64	128	256	512	mm
	1	4	8	16	32	64	128	256	512	mm
Pool	12	0	2	5	6	11	9	13	19	23
Riffle	2	1	0	2	9	17	22	22	8	17

	<u>Pool</u>	<u>Riffle</u>
Average Imbeddedness	50%	51%
Range	0 - 100	0 - 62%
Percent fines	12	3
Percent spawning gravels	N/A	11

Station 3 (Pool length = 45 ft)

100 Point Pebble Counts--Percent occurrence for each substrate size class.

\geq but <	1	4	8	16	32	64	128	256	512	mm
	1	4	8	16	32	64	128	256	512	mm
Pool	8	5	4	14	6	16	17	20	10	0
Riffle	0	2	2	8	7	6	23	38	14	0

	<u>Pool</u>	<u>Riffle</u>
Average Imbeddedness	55%	27%
Range	33 - 96	0 - 86
Percent fines	13	2
Percent spawning gravels	N/A	21

6. Tributaries

Sixteen first order and 2 second order tributaries are identified on USGS 1:24,000 topographical maps

Only two tributaries were surveyed in 1994 (6 & 8). A hydrologic survey conducted in 1993 covered many of the first order, ephemeral tributaries. (See hydrology report 5013 Georgetown Canyon Creek Watershed Summary, Hornblende Sale Area)

Tributary 6 enters Canyon Creek in the SE 1/4 of the NW 1/4 section 31 T.13N R.11E. It flows due north to the east side of road 13N59. The stream course is approximately .75 miles in length. It is characterized by steep sided slopes.

Tributary 8 enters Canyon Creek in the NE 1/4 of the NE 1/4 section 36 T.13N R. 10E. It flows due south for approximately .8 miles. It is characterized by steep sided slopes and a deeply incised channel. Access is along an abandoned road off Bottle Hill Rd. (see map).

Tributary Number 6

Reach	Length (ft)	LWD/reach	LWD/1000ft	Rosgen Type	Pfankuch Rating
1	300	6	14	B3	76

Tributary Number 8

Reach	Length (ft)	LWD/reach	LWD/1000ft	Rosgen Type	Pfankuch Rating
1	440	2	5	A3	65

7. Barriers

One 10ft high waterfall is found at the top end of reach #4. This barrier is approximately 200ft above the confluence with tributary #8.

8. Vegetation

Canopy closure was measured at each of the three stations using a spherical densiometer. The measurements were 85%, 85%, 75% for stations 1, 2 and 3 respectively. Alder and dogwood provided most of the riparian cover. Riparian width averaged 34 feet from the right stream bank and 21 feet on the left bank. Madrone, Oak and Mixed Conifer provide the upper slope hardwoods.

9. Channel Characteristics and Large Woody Debris

At each sample station, bank angle was measured at each pool transect, starting on the right bank then alternating from left to right for the remaining nine transects. Undercut banks represented 30%, 20%, and 50% of the sample at stations 1 through 3, respectively. Average bank angle for the remaining measurements of non-undercut banks was 42, 22.1, and 19 degrees at stations 1 through 3, respectively. Each survey reach was classified by Rosgen's stream channel type and channel stability was rated using Pfankuch's methodology. All pieces of large woody debris within the bankfull channel were counted, including those greater than 12 inches in diameter and over 10 ft in length.

Reach	Length surveyed	Total R length	surveyed	LWD 1000ft	Reach	Rosgen Type	Pfankuch rating
1	650	4763	25	38.5	183.4	B4	100
2	375	4286	2	5.3	22.7	B1	61
3	300	937	5	16.7	15.6	B1	70
4	400	4588	5	12.5	57.4	A1	56
5	400	5438	5	12.5	68.0	B3	80
6	400	2035	3	7.5	15.3	C3	87
Total	2125	22047	42	mean 19.8	362.4		mean 76

10. Macroinvertebrates

No specific sampling was conducted on aquatic macroinvertebrates although random observations were made. Many Plecoptera (Stoneflies) were seen in Adult and larval stages. Adults were composed chiefly of Capniidae and larval forms of Perlidae were seen. Some Trichoptera (caddisflies) cases were observed and along with Ephemeroptera (mayflies). The mayflies were chiefly Heptageniidae.

11. Fishery

Visual estimates during the 1974 survey were much higher than the results of electroshocking in 1994. This reduction may be an influence of the overwintering habits of the fish which are probably holding up in the deepest pools. Fish five inches or longer were considered to be adults. All fish caught were held aside to prevent recapture.

Station #1 yielded 10 fish for a 145 ft reach, representing; 3 fry, 1 juvenile and 6 adults captured in a single pass. Observed abundance was 6.9 per 100 ft. All fish captured were brown trout (Salmo Trutta).

Station #3 yielded 15 fish for a 159 ft reach, representing 9 juveniles and 6 adults. Two passes were made in the pool habitats. Observed abundance was 9.4 per 100 ft. Four juvenile and six adult brown trout were captured as well as five juvenile rainbow trout (Oncorhynchus mykiss)

12. Nondependent Riparian Use

Reaches 1, 2 and 6 showed heavy recreational uses. Reaches 1 and 2 had heavy gold prospecting activities whereas 6 showed signs of swimming, fishing and other recreational activities. Hydraulic mining and other gold prospecting activities have been historically significant.

13. Disturbances

Monitoring of gold prospecting should occur to eliminate or reduce "high-banking", especially in the claimed areas of USFS lands.

14. Management Recommendations

It is recommended that SMZ designation take into account the need to maintain canopy cover and trees for large woody debris recruitment.

15. Potential Projects

Reachs 2 thru 6 have potential for introduction of large woody debris based on observed density and channel type.