

Appendix B

Lower Subbasin Historical Stream Field Notes and Spawner Survey Data

Wolverton Gulch

Wolverton Gulch is a smaller tributary to Barber Creek located in the western portion of the Lower Subbasin. Wolverton Gulch flows mostly in a north to south direction between the towns of Rohnerville and Hydesville. Passage impediments include a sediment delta at mouth and culverts on Highway 36 and Rohnerville road. Stream surveys were conducted by California Department of Fish and Wildlife (CDFW) in 1963 and 1978 and the respective field notes are summarized below.

Field note 1963:

Survey area was from mouth of Wolverton Gulch to 0.5 miles upstream. The terrestrial landscape was characterized as flat farmland. Stream flow was measured as ~ 1cfs, pool depths ranged up to 3 feet deep, a pool riffle ratio of 1:2 and a stream bottom characterized as heavily silted, coarse gravel. Salmonids were reported as numerous, ranging from small (1 inch) up to 8 inches long.

Field note April 24, 1978:

Stream survey was conducted 0.25 miles above Rohnerville Road. Stream flow was measured as 2-3 cfs, and water temperature was 49°F at 0930. Three juvenile coho salmon (approximately 1 inch long) were collected using electroshocking techniques.

Cummings Creek

Cummings Creek is a right bank tributary to the Van Duzen River located in the Lower Subbasin at RM 7.9. There is approximately 3.1 miles of stream habitat accessible to anadromous salmonids. Stream surveys have been conducted by CDFW (unless noted otherwise) in 1938, 1952, 1961, 1964, 1966 and 1994 and the respective field notes are summarized below.

Field Note August 16, 1938:

Shapovolov and Vestal (1938) conducted a stream survey of Cummings Creek on the lower mile of the creek. They recorded that many juvenile salmonids were present, spawning habitat was in excellent condition and extensive, pools and shelter were in good condition, and a water temperature of 64°F was reported. Debris from logging was also noted.

Field Note January 14, 1952:

Approximately three miles of Cummings Creek was surveyed on January 14, 1952. Despite extensive logging debris noted as choking the stream for most of its length, particularly near the headwater reach, it was considered an excellent steelhead and coho salmon spawning stream with numerous, highly suitable gravel sites. The stream substrate was mostly composed of gravel with some cobble. Pools were numerous and shelter was very good. The mouth of the creek was noted to dry up during summer months.

Field Note June, 1961:

In June 1961, this survey report for the lower 3.5 miles of Cummings Creek documented the vegetation as predominantly second-growth redwood, Douglas fir and alder with a thick underbrush growth of willow, berry vines and poison oak. The report notes 24 debris accumulations above Highway 36 that ranged in volume from 250 to 18,500 cubic feet. These accumulations were composed primarily of logging debris in the form of redwood logs and slash. The pool riffle ratio below Highway 36 was reported as 50:50 and composed of 70% riffle and 30% pools above the highway bridge. The pools were measured as 2 to 4 feet deep and 6 to 8

feet wide. The riffle substrate was composed mostly of gravels from 1 to 6 inches in diameter. The survey also noted two 80 X 4 foot culverts that pose as fish migration barriers and cause flow problems as they become obstructed at the upstream openings. The culverts were used for railroad crossings that are no longer needed.

Field Note December 15, 1964:

Three miles of Cummings Creek was surveyed to determine the abundance of spawning salmonids. A total of 16 Chinook salmon carcasses, one Chinook skeleton and six live Chinook were observed during the survey.

Field Note March 7, 1966:

A barrier survey was conducted from Highway 36 up to 1.5 miles upstream. . A pool riffle ratio was reported as 1:1, and the stream substrate was composed of loose gravel and a fair amount of quality spawning area. Six large log jams were also noted.

Field Note August, 1994:

In August 1994 a representative reach of Cummings Creek was electrofished to determine the abundance and biomass of salmonids. The reach was 29 meters long and yielded 140 juvenile steelhead and an estimated population of 154 fish. The majority of fish were young-of-the-year with several yearling up to 140 mm present. Steelhead density was estimated at 1.85 fish/meter with a biomass of 9.12 grams per square meter. No coho salmon were captured from the sight.

Cummings Creek Recovery Plan (1997)

Lastly, in 1997, a recovery plan for the Cummings Creek watershed was developed, primarily due to sediment deposition and deltas in low gradient reaches near the confluence with the mainstem Van Duzen River which impede salmonid migration. Subsequent efforts were made to re-route a failing road, decommission an old road bed, replace stream crossings with flat car bridges, and instream improvement work.

Spawner Survey Data

Spawner surveys were conducted in Cummings Creek from 1984 to 2005 (Figure 1). Efforts varied from year to year and during several years no surveys were conducted.

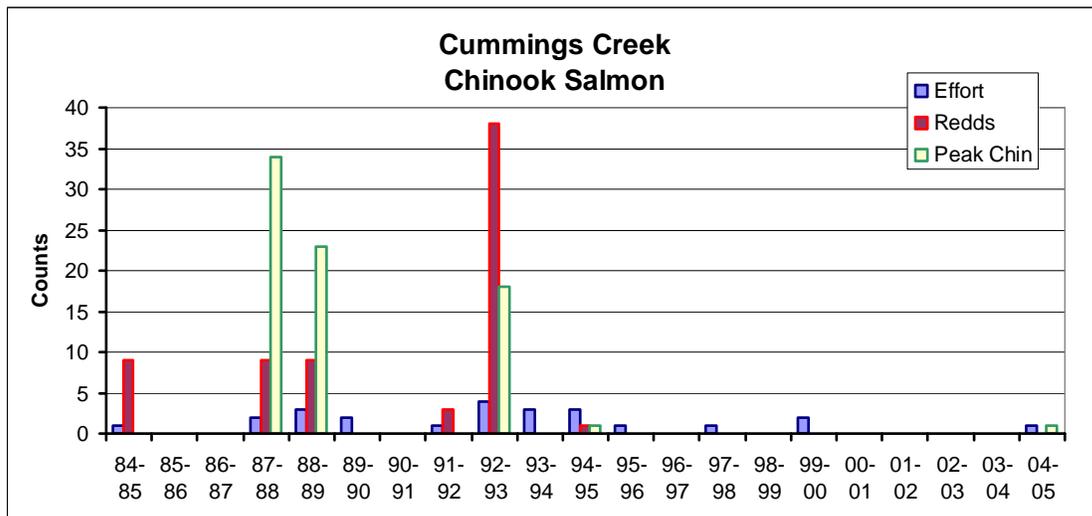


Figure 1. CDFW spawner survey data of Chinook salmon from 1984 to 2005.

Hely Creek

Hely Creek is a right bank tributary to the Van Duzen River located in the Lower Subbasin at approximately RM 14.7. Stream surveys have been conducted by CDFW (unless noted otherwise) in 1938, 1960, 1974, and 1983. The respective field notes are summarized below.

Field Note August 17, 1938:

In a stream survey by Shapovolov and Vestal (1938) it was noted that Hely Creek supported abundant numbers of steelhead and coho salmon. They stated that “natural propagation was extensive and pools and shelter were considered in good condition”. Recorded water temperature was 55°F. They also noted that Hely Creek received heavy fishing intensity.

Field Note August 22, 1960:

On August 22, 1960 CDFW conducted a stream survey in Hely Creek. The area had been logged over recently prior to the survey and the slash was poised for delivery to the stream channel during high water. Flow was reported as approximately 2-3 cfs, there was a good pool riffle relationship, and pools were reported as ranging from 6 inches to 3 feet deep but pool bottoms were covered with silt. In addition, there were adequate undercut banks and collections of woody debris including second growth redwood.

Field Note 1974:

A CDFW field note from Hely Creek states that “during past logging activities it is apparent little regard was given the stream”. Much slash and standing timber was reported as sliding into the creek, and many debris jams were silted in causing barriers to fish passage (CDFG 1974).

In 1979 a request was granted by CDFW to Louisiana Pacific (LP) to obtain a shade canopy exemption for a timber harvest plan and for the removal of the merchantable instream log jams (CDFG 1979). CDFW requested to work closely with LP during the project.

Field Note 1983:

In 1983 after heavy rains a debris torrent flooded Hely Creek with large cull logs, slash and sediment (Figure 2) The probable source of the debris torrent was noted as a tributary involved in recent harvest activities (CDFG 1983).



Figure 2. Debris torrent buries lower Heley Creek in 1983. The site is located approximately 1100 feet up Redwood House Road from HWY 36.



Figure 3. After clean up of debris torrent in Hely Creek. Photo taken in 1983.



Figure 4. Riparian vegetation encroaches in Hely Creek channel. The stream forms a braided shallow channel around small islands of sediment and vegetation. Photo taken in 2006.



Figure 5. Hely Creek, photo of vegetation, gravel island and debris blocking channel.

At extremely high fine sediment loading, the entire channel may become buried by a blanket of fine sediment. Hence the spatial distribution of fine sediment can indicate the relative magnitude of the fine sediment load, but the calibration of this indicator will vary with channel type and other factors such as the local geology (Schnackenberg and MacDonald 1998).



Figure 6. Hely Creek (~1600 feet above Highway 36) showing signs of high delivery of fine sediments in 2006.

Root Creek

Located at RM 20, Root Creek is one of the largest and most important tributaries to anadromous salmonids in the Lower Subbasin, however the stream is considered to be in poor condition attributed primarily to intensive timber harvest activities in the past. Primary limiting factors to salmonids in Root Creek are intermittent stream flow, a series of large debris accumulations that block or impede fish passage, and a shortage of good quality spawning substrate.

A reconnaissance level survey was done on Root Creek on August 29, 2006 by CDFW fisheries biologist, Steve Cannata and Pacific States Marine Fisheries Commission geologist, Dave Heaton. The survey crew described how Root Creek flows parallel to Van Duzen River through river terrace deposits for approximately 2,000 feet before entering the Van Duzen River. At the time of the survey this was a dry reach with a streambed composed predominantly of sand and fines.



Figure 7. Photo of confluence of Root Creek and Van Duzen River. Fish access into Root Creek may be limited during low flows by sediment accumulations at creek mouth.



Figures 8 and 9. Lower Root Creek, just upstream of mouth (left) and dry cobble substrate channel about 50 feet further upstream (right). Photos taken August 29, 2006



Figures 10 and 11. Lower Root Creek transition reach. Channel changes from dry cobble bottom to silt laden reach (left). Further upstream (RM 0.5) flows form pool habitat (right). Photo taken August 29, 2006.

Spawner survey data collected by CDFW from 1987- 2000 show relatively large runs of Chinook salmon in Root Creek in 1987 and 1988, with a count of 176 and 188 respectively (Figure 12). In 1988, a total of 162 redds were counted which is at least 4-fold greater than any other survey year. The highest level of effort of any year in the survey also occurred in 1988. Number of redds and Chinook were dramatically lower from 1989-1990. The number of redds counted in 1989 and 1990 was five and four respectively. The number of Chinook counted in 1989 and 1990 was zero and six respectively. From 1991-1993, the number of redds increased and were consistent averaging 40 redds, however the number of Chinook ranged from three to 30 to 12 respectively. The number of redds and fish counted dropped to zero or near-zero levels in 1995, 1997, 1998, and 2000 (no spawner surveys were conducted in 1994, 1996, and 1999); however the number of surveys per year (measured by effort) was reduced following 1993 which may account for some of the declines. In addition to 1994, 1996, and 1999, no spawner surveys were conducted following 2000; efforts ceased due to access problems, lack of fish, and logistical issues. Access to Root Creek requires crossing the mainstem Van Duzen River which is often dangerous in the spawning season due to high river flows.

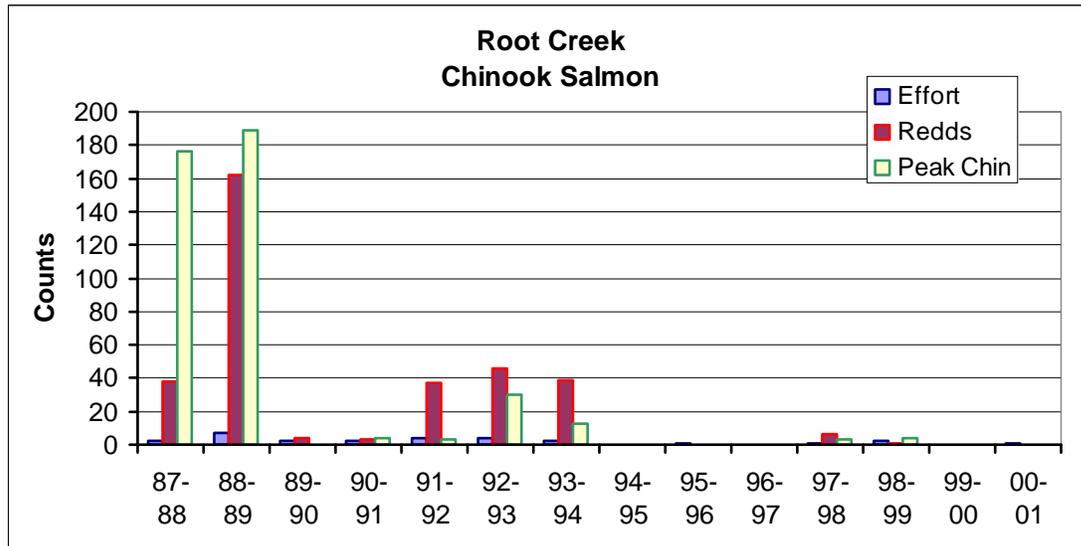


Figure 12. CDFW spawner survey data of Chinook salmon from 1987 to 2000. No data recorded in 1994-95, 95-96, 96-97, 99-00, and 00-10.

Grizzly Creek



Figure 13. Grizzly Creek.

Grizzly Creek's confluence with the Van Duzen River is located approximately RM 23.1. Grizzly Creek is an extremely important Chinook-producing stream. Spawner surveys have been conducted by CDFW from 1982-1983, 1990-1995, and from 1998-2008 (Figure 14). In a 1982-83 CDFW spawner study of 40 Eel River tributary streams, Grizzly Creek had the highest estimate of Chinook carcasses of all tributaries in the Eel River Basin. CDFW estimated there were approximately 266 ± 104 Chinook carcasses in Grizzly Creek, based on the recovery of 27 of the 61 marked carcasses from a total of 119 of carcasses examined. Other survey years with high Chinook counts include 90 redds in 1994-95, 190 live Chinook in 2001-02, and nearly 60 live Chinook observed in 2005-06.

Grizzly Creek does not support high numbers of coho salmon. Three coho carcasses were observed on January 7, 1983, and only four live coho were observed from a total of 40 tributaries included in the study (Leos and Mills 1983). No coho were positively observed during the 1990-1995 and 1998-2008 surveys.

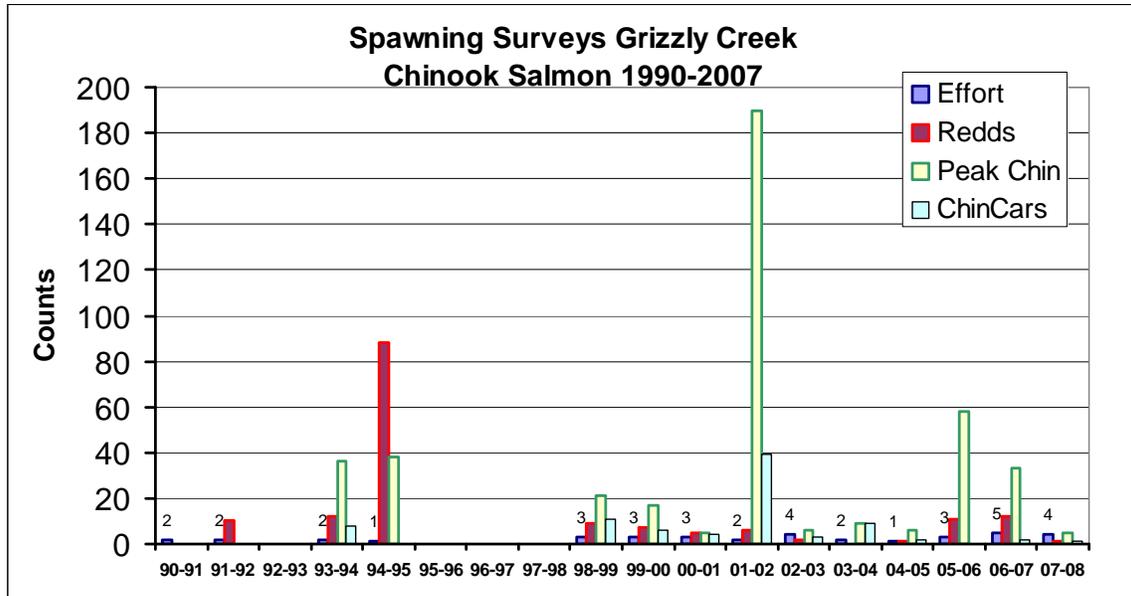


Figure 14. CDFW Grizzly Creek spawner surveys to determine counts of Chinook redds (Redds), live Chinook (Peak Chin) and Chinook carcasses (ChinCars) between 1990 -1995 and 1998-2008 (survey efforts expanded between 1998 and 2008).