

**Last Chance Creek Fish Data Summary
Compiled in March 2013**

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Introduction

This summary pulls together all known fisheries data collected in Last Chance Creek to date. The purpose of this compilation is to assist in developing fishery objectives for any planned or future restoration work in the Last Chance Creek watershed. This report summarizes and compiles fisheries monitoring data on Last Chance Creek starting in 1952 with a stream survey conducted by the California Department of Fish and Game. Below is a short summary of each effort or study. The summary contains agency conducting the monitoring; dates, locations, and descriptions of each effort; and species, sizes, or weights of fish found during each effort. Reports, summaries, and excerpts follow the summary section. All documents are also available at the Plumas Corporation office.

Summary

California Department of Fish and Game Stream Survey 1952

Agency: California Department of Fish and Game

Dates: August 1952

Location: On Last Chance Creek in upper meadow area

Description: Visual Stream Survey.

Species Encountered: Brown Trout

Average Size: Up to two pounds.

Forest Service Fish Population Estimate 1963-1970

Agency: US Forest Service

Dates: September 1963, 1964, 1965, 1970

Location: On Last Chance Creek at 6.5, 8, 9, and 15 miles above confluence with Red Clover Creek

Description: This data is from a stream habitat assessment and fish population survey.

Species Encountered: Rainbow Trout, Brown Trout, Dace, Sucker

Average Production: 6.5 mile station average= 9 lbs/acre, 8 mile station average= 8 lbs/acre, 9 mile station average= 13 lbs/acre, 15 mile station average= 37 lbs/acre

Forest Service stream surveys on mainstem Last Chance Creek as well as ten tributaries between 1973 and 1994

Agency: US Forest Service

Dates: Various dates in 1973, 1978, 1987, 1990, 1991, 1993, 1994

Location: On Last Chance Creek and tributaries in the upper Last Chance Creek watershed

Description: These surveys were hand written notes taken on various visual stream surveys as well as electroshocking surveys.

Species Encountered, number and size:

- Clarks Creek- ('93) 19 <2", 3 4-6", 1 6-8", 1 8-10"
- ('94) 140 Rainbow Trout. Avg size=121mm (4.8")
- McClellan Canyon- ('78) 4 Rainbow Trout/100ft, Size= 1-3"
- ('87) 4 trout

- Dooley Creek- ('73) No fish

- Willow Creek- ('78) Lower Section: Brown Trout, 6, ½-4"
Middle Section: Brown Trout, 3, 1-4"
- Ferris Creek- ('73) Lower Section: Brown Trout, 4, ½-4"
Middle Section: Brown Trout, 3, 1-3"
('90) 30 Rainbow Trout, Avg size= 4"
('93) 36 Rainbow Trout, Avg size= 4"
- Little Stoney Creek- ('87) 9+ trout seen
- ('91) 35 Rainbow Trout, Avg size= 4"
- Jordan Creek- ('78) <1 Rainbow Trout/100ft, Size=1"
- Bird Creek- ('78) Very few Rainbow Trout, Size= 1-2"
- Artray Creek- ('78) no trout
- Charles Creek- ('78) no trout
- Last Chance Creek- ('73) Lower Section: Brown Trout ½-18", Rainbow Trout ½-10"
- Middle Section: Brown Trout ½-2"
- Upper Section: Brown Trout 1-4"
- ('87) July: no trout. Aug: ~10 trout.
- ('93) Jenkins and Summit Allotment: No trout
- ('94) Bass Allotment: no trout
Bass Allot East Unit: 3 Rainbow Trout. Avg size= 42mm (1.5")
Ferris Allotment: 7 Rainbow Trout. Avg size= 130mm (5")
1 Brown Trout. Size= 225mm (9")

Excerpt from Fishery Resources Report for Genesee Hydroelectric Project (by Jones and Stokes)

Agency: CA Dept of Fish and Game and Jones and Stokes

Dates: 1976, 1985

Location: Powerhouse site near Genesee

Description: Electroshocking surveys on Last Chance Creek near Genesee Valley to determine fish populations near a proposed powerhouse site.

Species Encountered: 1976: Rainbow Trout, Sucker, Pike Minnow 1985: Rainbow Trout, Brown Trout, Sucker

Productivity & Size: 1976: 24.2 lbs/acre of Rainbow Trout. 1985: 23.6 lbs/acre of Rainbow Trout, 78% more than 127mm (5"). 1 Brown Trout= 401mm (16")

Last Chance Project Construction Fish Moving Data 2003 and 2004

Agency: US Forest Service and Plumas Corporation

Dates: 2003 and 2004

Location: Last Chance Creek in Ferris Flat, Alkali Flat, Bird Cr, Bird-Jordan, and Ferris Cr project areas

Description: Electroshocking passes to move all fish prior to project construction

Species Encountered: Rainbow Trout, Dace, Suckers

Number and Average Size: Ferris Flat- no trout, Alkali Flat- no trout, Bird Creek- 1 Rainbow Trout 6", Bird-Jordan- 2 Rainbow Trout 5", Ferris Creek- 16 Rainbow Trout Avg Size= 6"

DRAFT Last Chance Creek Fish Monitoring 1997, 2001, and 2005 Fish Sampling Efforts CA
Department of Water Resources

Agency: California Department of Water Resources

Dates: June and July 1997, 2001, 2005

Location: Upper Last Chance Creek watershed. Three reaches on Last Chance Creek and three reaches on tributaries (Willow, Little Stoney, and Ferris creeks)

Description: Pre- and post-restoration evaluation of fish assemblages in Last Chance Creek and tributaries

Species Encountered: Rainbow Trout, Brown Trout, Sucker, Dace

Rainbow Trout Numbers: Last Chance Creek- 1997: 12 trout/100 yards, 2001: 1 trout/100 yards, 2005: no Rainbow Trout.

Tributaries- 1997: 88 trout/100 yards, 2001: 107 trout/100 yards, 2005: 22 trout/100 yards.

Brown Trout Numbers: Last Chance Creek- 1997: 4 trout/100 yards, 2001: 9 trout/100 yards, 2005: 1.8 trout/100 yards.

Tributaries- 1997: 117 trout/100 yards, 2001: 96 trout/100 yards, 2005: 55 trout/100 yards.

Summary of 2008 DWR electroshocking data

Agency: California Department of Water Resources

Dates: June 2008

Location: Upper Last Chance Creek watershed. Two reaches on Last Chance Creek (Doyle Crossing and Below Low Water Crossing)

Description: Post-restoration evaluation of fish assemblages in Last Chance Creek and list of all fish caught in 1997, 2001, and 2008.

Species Encountered: Brown Trout, Sucker, Dace

Trout Numbers: Rainbow Trout- 2008: no Rainbow Trout; Brown Trout- 2008: 3 trout/100 yards.

California Dept. Fish and Game Stream Survey 1952

Name of Stream: Last Chance Creek

County: Plumas

Date: August 28, 1952

Extent Observed: Three short (100-200 yard) stretches at two mile intervals.

Trib to: Indian Creek, thence to N. Fork Feather R.

Watershed and Immediate Drainage Basin: Broad grassy meadow around portion of stream visited- steep hills on either side- willows along banks at upper part, no trees or brush in lower.

Width: Average 6' where flowing, numerous deep pools and beaver ponds.

Depth: Average 4-5' where flowing

Flow: 3-4 cfs estimated

Velocity: Slow

Bottom: silt, mud, gravel, some boulders.

Spawning areas: Considerable scattered spawning areas seen

Pools: Numerous deep beaver ponds in upper area visited. Numerous natural ponds in lower part.

Barriers and Diversions: Numerous beaver dam barriers.

Food: Small suckers, chubs (?), tadpoles, and frogs.

Fish Present:

Species: Brown Trout

Size: up to 2 lbs

Abundance: not numerous

Condition: good

Nat. Propagation: OK

Other: Several dead trout seen and reported

Species: Suckers

Size: to 8" and over

Abundance: numerous

Condition: good

Nat. Propagation: OK

Fishing Intensity: Reported to be fairly heavily fished

Accessibility and Remarks: Easily accessible from Hwy 395 at Milford. Good dirt road parallels stream for several miles.

Additional Data: Stream visited by Harold Wolf (parasitologist) and Bill West (warden) and LaFaunce, to check on worried reports of heavy fish mortality. Mr. Wolf believes the mortality was due to *Pseudomonas hydrophila* which also causes "red leg" in frogs.

Surveyor: Don A. LaFaunce

USFS Fish Population Estimates 1963-1970

Station Number	Location	Date	Survey Section Length*	Trout Per Mile	Adult Trout per Mile	Lbs per Acre	Species	Other Species
C5	15 mi. above Red Clover Creek	Sept 1963	300	485	211	39	89% RT, 11% BT	SKR, DC
C6	9 mi. above Red Clover Creek	Sept 1963	300	106	70	22	RT	SKR, DC
C7	6.5 mi above Red Clover Creek	Sept 1963	300	106	70	15	RT	SKR, DC
C5	15 mi. above Red Clover Creek	Sept 1964	300	880	176	20	25% RT, 75% BT	SKR, DC
C6	9 mi. above Red Clover Creek	Sept 1964	292	252	126	11	RT	SKR, DC
C6	9 mi. above Red Clover Creek	Sept 1965	230	390	69	10	89% RT, 11% BT	SKR, DC
C7	6.5 mi above Red Clover Creek	Sept 1965	74	1272	0	9	94% RT, 6% BT	SKR, DC
C5	15 mi. above Red Clover Creek	Sept 1970	480	77	77	51	50% RT, 50% BT	SKR, DC
C6	9 mi. above Red Clover Creek	Sept 1970	1100	18	52	7	25% RT, 75% BT	SKR, DC
C8	8 mi above Red Clover Creek	Sept 1970	700	90	9	8	45% RT, 55% BT	SKR, DC
C7	6.5 mi above Red Clover Creek	Sept 1970	400	225	15	2	93% RT, 7% BT	SKR, DC

RT- Rainbow Trout

BT- Brown Trout

SKR- Sucker

DC-Dace

*units not listed on file document

USFS Fish Data Summary (1973-1994)

Last Chance Creek Watershed

Clarks Cr

1993:

July- Electroshock: no trout seen in stations 1-3

Station 4		Station 6		Station 8	
Before cattle guard		Below culvert @ 28N01		28N11 culvert	
Size (in)	Number	Size (in)	Number	Size (in)	Number
0-2	14	0-2	4	0-2	1
2-4	0	2-4	0	2-4	0
4-6	2	4-6	1	4-6	0
6-8	1	6-8	0	6-8	0
8-10	0	8-10	1	8-10	0

1994:

Aug- Electroshock:

Antelope Allotment South Unit- no trout

Ant. Allotment South Unit Transect 3- 8 Rainbow Trout (2% of total) Avg length= 134 mm

Clarks Allotment Clarks Unit Trans. 1- 24 Rainbow Trout (10% of total) Avg length= 82mm

Clarks Allotment Clarks Unit Trans. 3&5- Avg RT length= 144mm

Trans 3: 9 Rainbow Trout (47% of total)

Trans 5: 10 Rainbow Trout (53% of total)

Clarks Allotment Clarks Unit Trans. 6&10- Avg RT length= 131mm

Trans 6: 23 Rainbow Trout (7% of total)

Trans 10: 41 Rainbow Trout (9% of total)

Clarks Allotment Dunn Pasture Unit Trans. 8&10- Avg RT length= 114mm

Trans 8: 6 Rainbow Trout (1% of total)

Trans 10: 19 Rainbow Trout (4% of total)

McClellan Canyon

1978:

Sept- Stream Survey: Rainbow Trout caught 4 per 100 ft. Size=1-3"

1987:

Sept- Stream Survey: Four trout seen

Dooley Creek

1973:

Aug- Stream Survey: No Fish

Willow Creek1978:

Sept- Stream Survey: From Squaw Valley Peak to Last Chance Creek (3.75 miles)

Section	Species	# per 100 ft	Length (in)
Lower	Brown Trout	6	0.5-4
Mid	Brown Trout	3	1-4
Upper	-	-	-

Ferris Creek1973:

Aug- Stream Survey: From Upper Ferris Rd to Last Chance Creek

Section	Species	# per 100 ft	Length (in)
Lower	Brown Trout	4	0.5-4
Mid	Brown Trout	3	1-3
Upper	-	-	-

1990:

Sept- Electroshock: Three reaches shocked. Mostly dace and a few sucker. Rainbow Trout described in tables.

Reach 1 Unit 7		Reach 1 Unit 8		Reach 1 Unit 10	
Size (in)	Number	Size (in)	Number	Size (in)	Number
0-2	0	0-2	1	0-2	0
2-4	0	2-4	0	2-4	0
4-6	1	4-6	0	4-6	0
6-8	1	6-8	0	6-8	0
8-10	1	8-10	0	8-10	0
10-12	0	10-12	0	10-12	0

Reach 2 Unit 11		Reach 2 Unit 17		Reach 2 Unit 19	
Size (in)	Number	Size (in)	Number	Size (in)	Number
0-2	8	0-2	1	0-2	0
2-4	2	2-4	0	2-4	3
4-6	0	4-6	0	4-6	1
6-8	0	6-8	2	6-8	1
8-10	0	8-10	1	8-10	0
10-12	0	10-12	0	10-12	0

Reach 3 Unit 46		Reach 3 Unit 47	
Size (in)	Number	Size (in)	Number
0-2	1	0-2	0
2-4	3	2-4	1
4-6	1	4-6	0
6-8	0	6-8	1
8-10	0	8-10	0
10-12	0	10-12	0

1993:

July- Electroshock: Rainbow Trout

1000' from 28N03		600' from 28N03		Near 26N01		North of 26N01	
Size (in)	Number	Size (in)	Number	Size (in)	Number	Size (in)	Number
0-2	0	0-2	4	0-2	5	0-2	5
2-4	0	2-4	0	2-4	2	2-4	0
4-6	0	4-6	1	4-6	7	4-6	2
6-8	0	6-8	0	6-8	2	6-8	4
8-10	0	8-10	2	8-10	0	8-10	1
10-12	0	10-12	0	10-12	1	10-12	0

Little Stoney Creek

1987:

Sept- Stream Survey: 9+ trout seen

1991:

May- Electroshock: Rainbow Trout

Size (in)	Pass 1 Number	Pass 2 Number
1-4	6 (one dead)	12
4-6	12	3
6-8	1	1
8-10		
10-12		
12+		

Jordan Creek

1978:

Sept- Stream Survey: Rainbow Trout, <1 per 100 ft, Size= 1"

Bird Creek

1978:

Sept- Stream Survey: Very few Rainbow Trout, Size= 1-2”

Artray Creek

1978:

Sept- Stream Survey: No trout

Charles Creek

1978:

Sept- Stream Survey: No trout

Last Chance Creek

1973:

Aug- Stream Survey: From Black Mountain to Genesee (29.75 miles)

Section	Species	# per 100 ft	Length (in)
Lower	Brown Trout	20	0.5-18
	Rainbow Trout	5	0.5-10
Mid	Brown Trout	30	0.5-2
Upper	Brown Trout	20	1-4

1987:

July & Aug- Stream Survey: 26N 12E 3SE ¼

July- no trout. Aug- trout present ~10 individuals (8 adults)

1993:

July- Electroshock: Jenkins Allotment- dace and suckers only

Aug- Electroshock: Summit Allotment- dace only

1994:

July-

- Electroshock: Bass Allotment- dace and suckers only
- Electroshock: Ferris Allotment Alkali Unit-

Pass	Species	Number	Avg Length (mm)
1	Rainbow Trout	5	130
2	Brown Trout	1	225
	Rainbow Trout	2	130
3	-	-	-

- Bass Allotment East Unit- 3 Rainbow Trout. Avg Length= 42mm

Excerpt from Fishery Resources Report for Genesee Hydroelectric Project Jones and Stokes

(Figure 1); only 1 percent of the captured fish exceeded 200 mm (approximately 8 inches) in length. Previous studies contained similar results.

Red Clover Creek, including the lower 1 mile of the project area, may provide spawning habitat for brown and rainbow trout residing in Indian Creek. Large gravel areas present downstream of the project area, however, are not apparent within the project area. Brown trout abundance is very low in this area of Indian Creek (Brown and Haines 1979) and with the lack of brown trout fry in lower Red Clover Creek, brown trout probably do not spawn in Red Clover Creek to any significant degree, if at all.

Rainbow trout may migrate into lower Red Clover Creek to spawn; rainbow trout spawning runs up tributary streams are common in the area (CDFG 1984). Rainbow trout typically begin moving into tributaries in mid-March with peak spawning in mid-April. Spawning is over by early May. High flows can delay spawning 1-2 weeks.

Lower Red Clover Creek contains a surprisingly large rainbow trout population given the poor watershed conditions. The upper watershed has been subjected to severe land-use practices resulting in significant sedimentation problems. Large quantities of silt limit food production and cover in many areas of the stream. Salmonid populations generally decrease in the upper watershed where the disturbances are most pronounced. While the stream segment potentially affected by the proposed project is 3.3 miles long, trout moving upstream from Indian Creek to spawn have access only to the lower 1.25 miles of the project area. Consequently, good habitat in this lower reach may be seeded to carrying capacity each year and not be indicative of trout populations throughout the project area. The lack of large trout may be caused by overharvest of catchable-sized fish.

b. Last Chance Creek

Last Chance Creek was sampled by the CDFG in 1976 (Brown 1976). Only one of five sampling stations was located within the project area. Fish biomass was estimated at 24.2 pounds/acre for rainbow trout (derived from 5.2 g/m³) and 18.8 pounds/acre for Sacramento sucker/Sacramento squawfish (Ptychocheilus grandis) (derived from 4.1 g/m³) at this station, located near the mouth of Last Chance Creek. Rainbow trout size composition data show that Last Chance Creek supports trout somewhat larger than does Red Clover Creek.

Jones & Stokes Associates biologists sampled lower Last Chance Creek using the methodology employed on Red Clover Creek. Only 15 trout were captured in the two, combined 50-meter reaches. The only brown trout captured was 401 mm in length. Unlike in Red Clover Creek, most rainbow trout exceeded 127 mm in length (78 percent). Standing crop estimates of rainbow trout

greater than 127 mm and total rainbow trout were 23.5 and 23.7 pounds/acre, respectively; small rainbow trout were a small portion of the total biomass. The total biomass value compares favorably with the previous estimate of 24.2 pounds/acre (Brown 1976). A juvenile sucker was caught as well as several hundred juvenile Sacramento squawfish (less than 127 mm in length).

Last Chance Creek has watershed problems similar to those of Red Clover Creek. Unlike Red Clover Creek, however, Last Chance Creek contains large quantities of granitic sand that have covered any available spawning gravels and limited food production. The lower 0.25 mile of Last Chance Creek provides spawning and juvenile rearing habitat for squawfish. Trout spawning is limited due to a scarcity of spawning gravels. The large brown trout that was captured was probably foraging on the abundant juvenile squawfish.

2. Angler Use

Creeel census data were not found for the project area in Red Clover or Last Chance Creeks. The powerhouse site and lower project area in Red Clover Creek are readily accessible and fishing pressure is assumed to be moderate. The remaining project area on Red Clover Creek lies within a fairly steep canyon that minimizes angling opportunities; angler use of this area is assumed to be light. The powerhouse site and lower project area on Last Chance Creek are not readily accessible because of private property. Fishing pressure is light throughout the project area, especially in the steep, upper reaches.

3. Threatened, Endangered, and Sensitive Species

Threatened, endangered, or sensitive aquatic species are not recorded in the project area. In addition, anadromous fish do not occur in either creek due to the presence of downstream dams.

4. Summary

Within the project area, Red Clover Creek is much more important than Last Chance Creek in terms of trout production and angling opportunities. Red Clover Creek has a trout biomass more than double that for Last Chance Creek. More trout are present per unit of stream length in Red Clover Creek, due to the greater width of Red Clover Creek, than is shown by biomass comparisons. The large biomass of trout less than 127 mm indicates that Red Clover Creek maintains good spawning and rearing conditions, and may be an important stream for rainbow trout recruitment into Indian Creek. Angling opportunities are readily available on lower Red Clover Creek and many anglers fish in this part of the stream.

Although both creeks have severe watershed problems, Last Chance Creek has suffered the greatest damage. Granitic

sand has covered the creek bottom and severely reduced fry, juvenile, and food production habitat. These poor habitat conditions are reflected in the low fish biomass estimates, especially for smaller fish. Since stream access is only available through private property, angling opportunities for the general public are reduced. Consequently, Last Chance Creek within the project area receives only light angling pressure from property owners.

B. Habitat Analysis

1. Methods

Methods used to determine the quantity of water necessary to meet the ecological requirements of aquatic biota are numerous and use different approaches (Fraser 1972; Stalnaker and Arnette 1976; Wesche and Recharad 1980). The CDFG has recommended investigations using the Instream Flow Incremental Methodology (IFIM) for this project. This methodology allows for an incremental (range of values) approach in determining instream flow requirements for aquatic resources (Bovee 1982). The IFIM is designed to predict changes in fish habitat due to incremental flow changes. The ability to integrate habitat impact analyses into IFIM makes this methodology a tool for quantifying potential project impacts.

a. Project Scoping

It was assumed that the stream channel maintains a dynamic equilibrium for the purposes of this study. Consideration of potential study sites was limited to the stream sections between the proposed intake and powerhouse sites. Rainbow trout was selected as the target species for both streams since brown trout were rare within the project area.

b. Segment, Study Site, and Transect Selection

The segmentation procedure of Bovee (1982) was applied to the project area prior to the selection of study sites. The characteristic feature of a selected stream segment is homogeneity of channel structure and flow regime.

Two segments were identified on Red Clover Creek during a field visit on October 10, 1984. Stream gradient was the primary factor influencing stream channel characteristics. Stream gradient generally increases from the powerhouse site to the intake site. The project area near the proposed intake site is steep and resembles a "boulder field." Hydraulic measurements in this segment were determined to be difficult due to the high gradient, nonlaminar flow conditions, and uneven water surface elevations.

Last Chance Creek Fish Moving Data during Project Construction

Fish Removal 2003

Reach	Date	Fish Species	Number	Notes
Last Chance Creek at Ferris Flat	8/1/2003	no trout		
Last Chance Creek at Alkali Flat	8/15/2003	no trout		
Bird Creek	9/21/2003	Rainbow Trout	1	6" - on Last Chance Creek
Last Chance Creek at Bird-Jordan	10/1/2003	Rainbow Trout	2	5"
	10/23/2003	no trout		

Fish Removal 2004

Reach	Date	Fish Species	Number	Notes
Ferris Creek	7/20/2004	Rainbow Trout	2	7"
			4	6.5"
			4	6"
			4	5"
			2	4"

**All removals also had suckers (w/o notch) and speckled dace, and a few Lahontan reddsides.

DRAFT- Last Chance Creek Fish Monitoring 2005 DWR Fish Sampling Effort and Summary of Data to Date

Purpose

The purpose of this study is to allow long term pre- and post-restoration evaluation of fish assemblages and abundance in the Last Chance Creek watershed. Fish, in general and rainbow trout (*Oncorhynchus mykiss*), specifically, are considered excellent indicators of the health of aquatic ecosystems.

This study is part of a larger monitoring effort to evaluate changes in key physical and biological indicators of watershed health and stability for the Last Chance Creek restoration project. The monitoring program was requested by the Feather River Coordinated Resource Management Program (FR-CRM) and developed by the Department of Water Resources to determine if a large number of area-specific restoration projects could provide watershed-wide benefits. These watershed benefits include enhanced late-season streamflow, improved flood detention, enhanced riparian habitat, improved fish passage, improved water quality, enhanced fish and wildlife habitat, decreased erosion, sedimentation and downcutting.

Study Area

Six 100 meter stream segments were sampled in 2005. Three of the reaches were along Last Chance Creek – one above Jordan Flat, one below Doyle Crossing, and one below the low water crossing at the bottom of Alkali Flat on Forest Service Road 26N70. The other three stream segments were on tributaries to Last Chance Creek and they included Ferris Creek above the 24N03 road crossing, Little Stony Creek above its mouth, and Willow Creek below Conklin Park. All of these stations are in the Last Chance Creek watershed in Plumas County. Last Chance Creek is a tributary to Indian Creek which flows into the East Branch North Fork Feather River. Figure XX depicts the Last Chance Creek watershed and the location of the sample reaches.

Methods

Trout abundance was estimated using two-catch electrofishing methods (Seber and Le Cren 1967). Sampling occurred between June 21 and 23 except for Doyle Crossing, which was not sampled until July 12, due to scheduling difficulties. The electrofishing crew consisted of staff from DWR, DFG, Plumas Corp, US Forest Service, and community volunteers. Sample stations were located by referring to the notes and photographs taken during the 1997 fish sampling effort. At each of the stations, a 100 meter stream segment was sampled for fish using battery-powered backpack electrofishers (Smith Root models LR 24 and 12B). The upstream and downstream ends of the survey



Monitoring on Last Chance Creek

segment were blocked using seines. In some cases the survey segment was divided into two even sections using a seine in the middle to allow the use of two electrofishers (one in each half). This was done to make the best use of personnel while maintaining the same level of effort used in the 1997 and 2001 sampling efforts. To relocate the stations in the future, photos and GPS coordinates were taken at each of the upstream and downstream net sites (Appendix A).

For each salmonid caught, species, fork and total length to the nearest millimeter (trout only), and volumetric displacement to the nearest milliliter were taken. Non-salmonids were counted and an aggregate volume measured and recorded by species. Fish were then immediately released outside of the enclosed section. A second pass was made if trout were captured on the first pass. Electrofishers were set to deliver enough power to effectively capture fish while minimizing the period it took fish to recover (USFWS 2000). The settings can be found in Appendix A. The length of stream habitat types (riffle, run, pool) were measured with a 300 meter metric tape and the average width and depth of the section were estimated in meters (Appendix A). Population estimates for rainbow trout and brown trout were processed using MicroFish 3.0 (Van Deventer and Platts 1989). At each station, water temperature was measured with a mercury thermometer, and electro conductivity, salinity, and total dissolved solids were measured using an ExStick EC400 Meter by EXTECH.

Results and Discussion

Table 1 shows the fish species captured during the 1997, 2001, and 2005 fish sampling efforts. In 2005, trout continued to be relatively abundant in Little Stony Creek and Willow Creek and much less abundant or absent in Last Chance Creek (Figure 1). The lack of trout in 2005 at Doyle Crossing could have been attributed to the fact that sampling did not occur until July, when flows had declined and average water temperatures increased. Trout were also of low abundance at the Ferris Creek station in 2005.

Table 1. Fish Captured at Last Chance Creek and tributary monitoring stations in 1997, 2001, and 2005.

	Rainbow Trout			Brown Trout			Speckled Dace			Sucker		
Year	97	01	05	97	01	05	97	01	05	97	01	05
Last Chance Creek												
Doyle Crossing	x						x	x	x	x ²	x ²	
Above Jordan Flat	x			x	x		x	x	x	x ²	x ²	x ¹
Low Water Crossing	x	x		x	x	x		x	x		x ²	
Last Chance Tribs												
Little Stony Creek	x	x	x									
Ferris Creek	x	x	x				x	x	x	x ²	x ²	
Willow Creek	x		x	x	x	x						

¹Tahoe or Sacramento Sucker

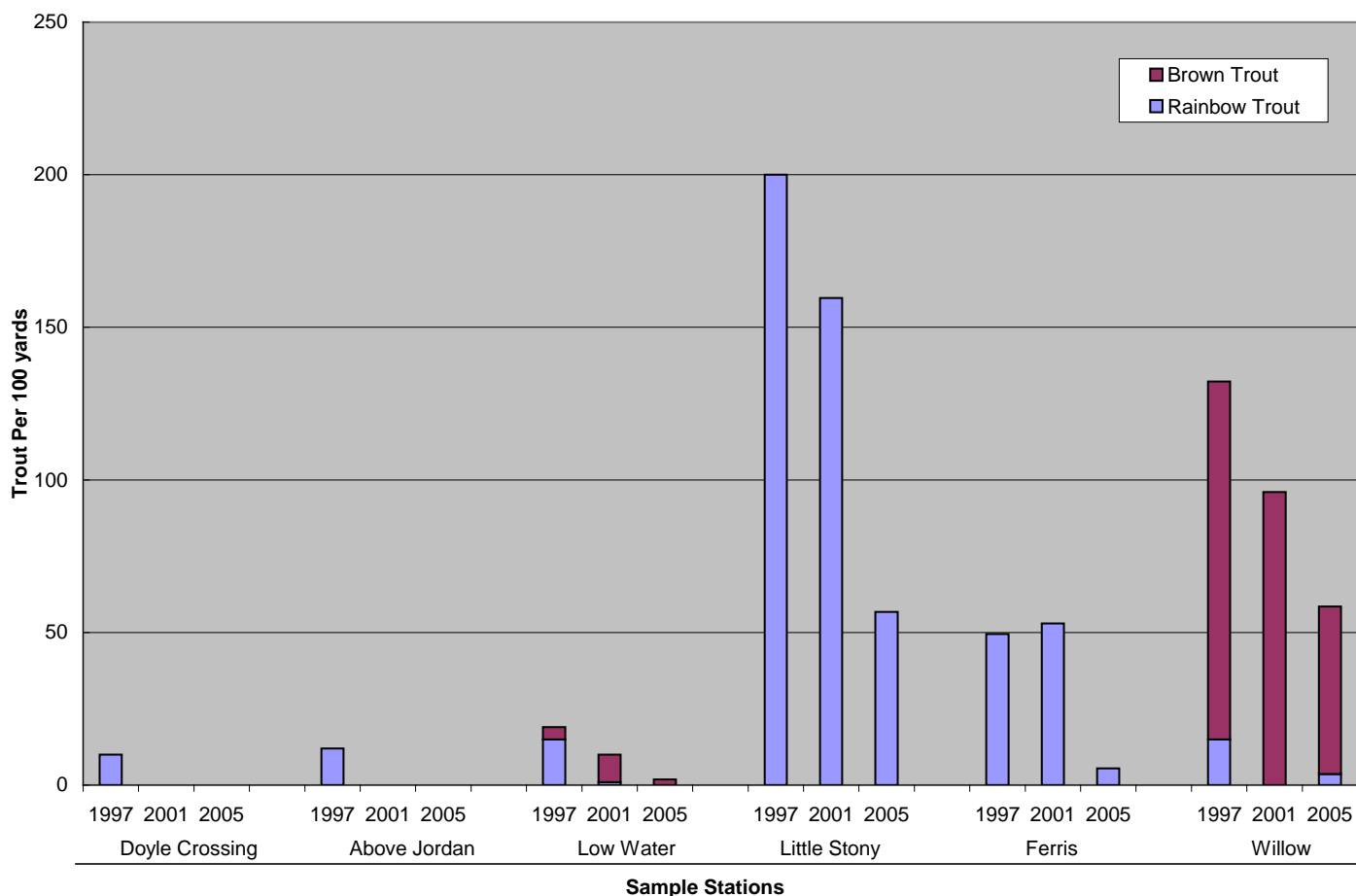
²Sucker species not recorded

Native rainbow trout were the dominant trout species in 2005 in Little Stony Creek and Ferris Creek. Non-native brown trout were the dominant species in Willow Creek and in Last Chance Creek below the Low Water Crossing, although only two trout were captured at this location. This pattern is similar to that observed in 1997 and 2001. Rainbow trout (*Oncorhynchus mykiss*) and brown trout (*Salmo trutta*) have similar habitat and water temperature requirements and commonly occupy the same sections of stream. The more aggressive brown trout will frequently out compete rainbow trout for space once they are established. The dominant species at Doyle Crossing and above Jordan Park were native speckled dace (*Rhinichthys osculus*) or suckers (*Catostomus spp.*).



Willow Creek Brown Trout

Figure 1. Trout per 100 yards of stream using population estimates from 1997, 2001, and 2005 electrofishing data.



The data indicate a decline in trout abundance since the first sampling effort in 1997, with the lowest abundance in 2005 (Figure 1). This could reflect a true decline in the populations, which may be the case. Precipitation in the watershed has been at or below normal since 1997, while the years before 1997 were wetter. However, differences in abundance estimates between years could be influenced by several factors. For example, trout could have been more dispersed in 2005 due to the late spring rains and relatively high flows that occurred. Other variables such as microhabitat conditions or predation (i.e. river otters and recreational fishing) could also have substantially influenced the abundance of trout in streams of this scale as well. On Last Chance Creek below the low water crossing, beaver dams could have substantially influenced trout abundance by reducing fish passage into the sample reach. Other than this, there were no obvious indicators that habitat quality had declined in the study area. However, the water quality, sediment, macroinvertebrate, and stream profile data should be assessed for factors that may reduce trout abundance in the sample reaches. It should also be noted that the nine-mile CALFED-funded Last Chance Creek Restoration Project was completed in 2004 (Low Water Crossing still to be completed in 2005) from Meadowview to the low-water crossing at

Alkali Flat. The FR-CRM is postulating that the Last Chance Creek riparian areas are still recovering from the work.

Literature Cited

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USFWS. 2000. Principles and techniques of electrofishing. Fish and Wildlife Service National Conservation Training Center.

Van Deventer, J.S. and Platts, W.S. 1989. Microcomputer software system for generating population statistics from electrofishing data. User's guide for MicroFish 3.0. U.S. Forest Service General Technical Report INT-254.

Appendix A

Summary of trout data for 1997, 2001, and 2005 sampling efforts

Last Chance above Jordan Park

Date	Species	Reach Length (ft)	Pass 1 Catch	Pass 2 Catch	Total Catch	Population Estimate	Capture Probability	Lower Conf Interval	Upper Conf Interval	Biomass ml/100yds	Average Fork Length	Fish per 100yds
6/25/1997	RBT	300	12	0	12	12	-	-	-	495	144.1	12.0
6/14/2001	-	300	-	-	0	0	-	-	-	-	-	-
6/23/2005	-	328	-	-	0	0	-	-	-	-	-	-

Last Chance below Low Water Crossing

Date	Species	Reach Length (ft)	Pass 1 Catch	Pass 2 Catch	Total Catch	Population Estimate	Capture Probability	Lower Conf Interval	Upper Conf Interval	Biomass ml/100yds	Average Fork Length	Fish per 100yds
6/26/1997	RBT	300	12	3	15	15	0.833	15	16.966	525	127.3	15.0
6/26/1997	BT	300	4	0	4	4	-	-	-	25	58.7	4.0
6/13/2001	RBT	300	1	0	1	1	-	-	-	15	108	1.0
6/13/2001	BT	300	9	0	9	9	-	-	-	320	138.1	9.0
6/23/2005	BT	328	2	0	2	2	-	-	-	173.7	188.5	1.8

Last Chance at Doyle Crossing

Date	Species	Reach Length (ft)	Pass 1 Catch	Pass 2 Catch	Total Catch	Population Estimate	Capture Probability	Lower Conf Interval	Upper Conf Interval	Biomass ml/100yds	Average Fork Length	Fish per 100yds
6/23/1997	RBT	300	7	3	10	10	0.769	10	12.714	284	97.1	10.0

Willow Creek

Date	Species	Reach Length (ft)	Pass 1 Catch	Pass 2 Catch	Total Catch	Population Estimate	Capture Probability	Lower Conf Interval	Upper Conf Interval	Biomass ml/100yds	Average Fork Length	Fish per 100yds
6/24/1997	BT	220	54	21	75	86	0.636	75	101.487	3580	129.6	117.3
6/24/1997	RBT	220	5	4	9	11	0.529	9	21.947	900	65.8	15.0
6/13/2001	BT	300	64	22	86	96	0.672	86	109.354	1575	91.2	96.0
6/22/2005	BT	328	28	16	44	60	0.478	44	90.161	1385	13.1	54.9
6/22/2005	RBT	328	4	0	4	4	-	-	-	7	5.25	3.7

Ferris Creek

Date	Species	Reach Length (ft)	Pass 1 Catch	Pass 2 Catch	Total Catch	Population Estimate	Capture Probability	Lower Conf Interval	Upper Conf Interval	Biomass ml/100yds	Average Fork Length	Fish per 100yds
6/25/1997	RBT	200	23	8	31	33	0.721	31	39.033	1200	119.2	49.5
6/15/2001	RBT	300	47	6	53	53	0.898	53	54.832	950	107.4	53.0
6/23/2005	RBT	328	6	0	6	6	-	-	-	262	150.8	5.5

Trout data summary continued

Little Stony Creek

Date	Species	Reach Length (ft)	Pass 1 Catch	Pass 2 Catch	Total Catch	Population Estimate	Capture Probability	Lower Conf Interval	Upper Conf Interval	Biomass ml/100yds	Average Fork Length	Fish per 100yds
6/24/1997	RBT	300	114	50	164	200	0.573	167.311	232.689	2110	97.9	200.0
*6/12/2001	RBT	110	43	15	58	64	0.682	58	74.345	2318	105.3	174.5
*6/12/2001	RBT	140	59	9	68	69	0.861	68	72	1275	93.1	147.9
6/23/2005	RBT	328	41	15	56	62	0.675	56	72.642	419	11.8	56.7

*Two sections of stream were sampled, two passes per section

Creek: Willow Creek

Reach: Below Conklin Park

Crew: Aric Lester, Jim Davis, Cassie Heinbockel, Leslie Mink, Lori Powers, Gia Martynn

Date: 06/22/05

Time Begin: 1248 End: 1400

Reach Length: 100 meters

No GPS; not enough satellites. 46 m at a bearing of 194.5° south of #3 RB cross section rebar

Weather: Mostly Clear and calm; 71°F at Doyle Crossing

Middle of reach is bisected by cross section #3

Station	Pass*	Scientific Name	Common Name	FL (cm)	TL (cm)	Total #	Displacement (ml)	Note
1	1	<i>Salmo trutta</i>	Brown Trout	22.75	23	1	125	
		<i>Salmo trutta</i>	Brown Trout	21.5	21.8	1	110	
		<i>Salmo trutta</i>	Brown Trout	20.5	20.7	1	105	
		<i>Salmo trutta</i>	Brown Trout	16	16.4	1	50	
		<i>Salmo trutta</i>	Brown Trout	16	16.5	1	46	
		<i>Salmo trutta</i>	Brown Trout	10	10.3	1	10.5	
		<i>Salmo trutta</i>	Brown Trout	16.5	17	1	48	
		<i>Salmo trutta</i>	Brown Trout	13.7	14.2	1	37	
		<i>Salmo trutta</i>	Brown Trout	12.3	12.6	1	19	
		<i>Salmo trutta</i>	Brown Trout	11.2	11.4	1	17	
		<i>Salmo trutta</i>	Brown Trout	10.9	11.1	1	15	
		<i>Salmo trutta</i>	Brown Trout	9.9	10	1	11	
		<i>Salmo trutta</i>	Brown Trout	11.3	11.6	1	17	
		<i>Salmo trutta</i>	Brown Trout	10.7	10.9	1	14	
		<i>Salmo trutta</i>	Brown Trout	10.2	10.6	1	14	
		<i>Salmo trutta</i>	Brown Trout	12.4	12.8	1	21	
		<i>Salmo trutta</i>	Brown Trout	9.5	9.8	1	10	
		<i>Salmo trutta</i>	Brown Trout	10.8	11.4	1	15.5	
		<i>Salmo trutta</i>	Brown Trout	11.7	12	1	19	
		<i>Salmo trutta</i>	Brown Trout	15.7	16	1	39	
		<i>Salmo trutta</i>	Brown Trout	16.2	16.7	1	49	
		<i>Salmo trutta</i>	Brown Trout	14.7	15.3	1	40	
		<i>Salmo trutta</i>	Brown Trout	11.1	11.6	1	15	
		<i>Salmo trutta</i>	Brown Trout	9.9	10.2	1	11	
		<i>Salmo trutta</i>	Brown Trout	11.9	12.3	1	17	
		<i>Salmo trutta</i>	Brown Trout	10.4	10.8	1	10.5	
		<i>Salmo trutta</i>	Brown Trout	12	12.5	1	20.5	
		<i>Salmo trutta</i>	Brown Trout	10.3	10.8	1	11.5	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout		~5	1	-	Identified as YOY
		<i>Oncorhynchus mykiss</i>	Rainbow Trout		~5	1	-	<i>O.mykiss</i> based on size
		<i>Oncorhynchus mykiss</i>	Rainbow Trout		~6.5	1	-	and that <i>S.trutta</i> are
		<i>Oncorhynchus mykiss</i>	Rainbow Trout		~4.5	1	-	fall spawners and YOY
								of this spp would be
								larger

Creek: Little Stony Creek

Reach: Above Mouth

Crew: Aric Lester, Jim Davis, Cassie Heinbockel, Leslie Mink, Lori Powers, Gia Martynn

Date: 06/23/05

Time Begin: 1500 End: 1620

Reach Length: 100 meters

GPS UTM, 10, NAD 83 - US Net: 722788, 4439019 DS Net: 722769, 4439095

Weather: Mostly Clear and calm; 74°F at Doyle Crossing

Station	Pass	Scientific Name	Common Name	FL (cm)	TL (cm)	Total #	Total Displacement (ml)	Note
1	1	<i>Oncorhynchus mykiss</i>	Rainbow Trout	11.8	12.5	1	25	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	15	17.2	1	50	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	21	22.5	1	98	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	15.7	16.2	1	40	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	9.6	10	1	18	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	12.5	13	1	19	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	11.8	12.3	1	20	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	14.8	16	1	39	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	12.4	13	1	19	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	8.6	9	1	7	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	8.2	8.5	1	7	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	12.6	13.3	1	23	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	13.2	13.9	1	31	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	9.3	10	1	9	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	10.2	10.6	1	10	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	18.8	19.3	1	63	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	16	16.5	1	55	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	22	22.5		105	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	9.4	9.7	1	9	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	8	8.2	1	5	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	10	10.4	1	15	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	8.2	8.5	1	6	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	9.3	9.6	1	9	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	8.6	8.9	1	8	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	7.8	8.1	1	6	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	7.7	7.9	1	5	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	8.6	8.8	1	6	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	7.7	8	1	5	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	6.4	6.7	1	3	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	7.4	7.8	1	4.5	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	8.3	8.6	1	6	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	8.7	9	1	7	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	7.4	8.8	1	5	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	13.8	14.4	1	28	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	14.6	15.1	1	30	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	12.5	12.9	1	22	

Station	Pass	Scientific Name	Common Name	FL (cm)	TL (cm)	Total #	Total Displacement (ml)	Note
	1	<i>Oncorhynchus mykiss</i>	Rainbow Trout	12.5	13.1	1	2	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	14.4	15	1	32	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	15.3	15.6	1	33	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	16	16.5	1	45	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	18.3	18.6	1	69	
	2	<i>Oncorhynchus mykiss</i>	Rainbow Trout	14.7	15.2	1	32	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	20	20.6	1	85	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	16.2	16.6	1	55	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	14.5	15	1	32	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	13.6	14.1	1	30	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	12.5	13.1	1	24	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	13.6	14.1	1	32	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	9.7	10.1	1	11	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	8.9	9.2	1	9	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	8.5	8.8	1	6	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	9.6	10	1	10	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	7.5	7.7	1	5	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	8.3	8.6	1	6	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	14.4	14.7	1	34	
		<i>Oncorhynchus mykiss</i>	Rainbow Trout	8.4	8.7	1	6	

Habitat and water quality data from 2005 fish sampling effort

Last Chace Creek Near Jordan 06/23/05

Water Temp °C	%Riffle	%Run	%Pool	%Meadow	Ave Depth (m)	Ave Width (m)	EC µS	TDS mg/L	Salinity ppm
13	5	2	75	18	0.5	1	223	158	116

Last Chace below Low Water Crossing 06/23/05

Water Temp °C	%Riffle	%Run	%Pool	Ave Depth (m)	Ave Width (m)	EC µS	TDS mg/L	Salinity ppm
17	9	15	76	0.6	2.5	166.7	117.2	83.8

Note: Beaver dam downstream

Last Chace Creek at Doyle Crossing 07/12/05

Water Temp °C	%Riffle	%Run	%Pool	Ave Depth (m)	Ave Width (m)	EC µS	TDS mg/L	Salinity ppm
17	51	18	31	0.2	1.5	163.1	108.5	112.9

Willow Creek Below Conklin Park 6/22/05

Water Temp °C	%Riffle	%Run	%Pool	Ave Depth (m)	Ave Width (m)	EC µS	TDS mg/L	Salinity ppm
17	35	40	25	0.15	1.5	131	94	94

Ferris Creek 06/23/05

Water Temp °C	%Riffle	%Run	%Pool	Ave Depth (m)	Ave Width (m)	EC µS	TDS mg/L	Salinity ppm
17	35	17	48	0.5	0.4	129.2	88.2	64.5

Little Stony Creek 6/23/05

Water Temp °C	%Riffle	%Run	%Pool	Ave Depth (m)	Ave Width (m)	EC µS	TDS mg/L	Salinity ppm
15	9	43.5	47.5	0.25	0.5	118.2	82.1	58.8

Last Chace Creek Near Jordan 06/23/04

	Pass	Voltage	Setting	Waveform	Amps	Duty Cycle	Frequency	Effort*
Smith-Root 12-B	1	400	I5			6ms	60Hz	228
Smith-Root LR-24	1	200	N/A	Pulsed DC	.07-.13	25%	60Hz	524
Combined Effort (seconds)								752

*The reach was divided into two 50m sections by placing a net in the middle to allow the use of two shockers while maintaining the same level of effort put forth in 1997 and 2001

Last Chace below Low Water Crossing 06/23/04

	Pass	Voltage	Setting	Waveform	Amps	Duty Cycle	Frequency	Effort*
Smith-Root 12-B	1	400	I5			6ms	60Hz	553
	2							429
Smith-Root LR-24	1	300-350	N/A	Pulsed DC	?	25%	60Hz	894
	2							1019
Combined Effort (seconds)								2895

*The reach was divided into two 50m sections by placing a net in the middle to allow the use of two shockers while maintaining the same level of effort put forth in 1997 and 2001

Last Chace Creek at Doyle Crossing 07/12/05

	Pass	Voltage	Setting	Waveform	Amps	Duty Cycle	Frequency	Effort
Smith-Root LR-24	1	250		Pulsed DC	0.6	25%	60	2147
Combined Effort (seconds)								2147

Ferris Creek 06/23/05

	Pass	Voltage	Setting	Waveform	Amps	Duty Cycle	Frequency	Effort*
Smith-Root 12-B	1	400	I5	Pulsed DC		6ms	60Hz	297
	2							415
Smith-Root LR-24	1	200	N/A	Pulsed DC	?	25%	60Hz	334
	2							507
Combined Effort (seconds)								1553

*The reach was divided into two 50m sections by placing a net in the middle to allow the use of two shockers while maintaining the same level of effort put forth in 1997 and 2001

Willow Creek Below Conklin Park 6/22/05

	Pass	Voltage	Setting	Waveform	Amps	Duty Cycle	Frequency	Effort*
Smith-Root 12-B	1	400	I5			6ms	60Hz	552
	2							468
Smith-Root LR-24	1	200	N/A	Pulsed DC	0.1	25%	60Hz	483
	2							465
Combined Effort (seconds)								1968

*The reach was divided into two 50m sections by placing a net in the middle to allow the use of two shockers while maintaining the same level of effort put forth in 1997 and 2001

Effort and settings continued

Little Stony Creek 6/23/05

	Pass	Voltage	Setting	Waveform	Amps	Duty Cycle	Frequency	Effort*
Smith-Root 12-B	1	400	I5			6ms	60Hz	?
	2							?
Smith-Root LR-24	1	250	N/A	Pulsed DC	0.02	25%	60Hz	373
	2							698
Combined Effort (seconds)								

*The reach was divided into two 50m sections by placing a net in the middle to allow the use of two shockers while maintaining the same level of effort put forth in 1997 and 2001

GPS coordinates for 2005 net sites

Coordinate System: UTM, Zone 10, NAD 83

Creek	Reach & Net	Easting	Northing
Last Chance	AB_Jordan_US_Net	732791.51	4439084.96
Last Chance	AB_Jordan_DS_Net	732718.27	4439131.94
Last Chance	LowWaterX_US_Net	724562.13	4441213.12
Last Chance	LowWaterX_DS_Net	724483.80	4441167.77
Last Chance	DoyleX_US_Net	714629.15	4443538.69
Last Chance	DoyleX_DS_Net	714579.31	4443459.10
Willow	No GPS	Cross Section #3 Bisects Reach	
Ferris	Ferris_US_Net	727381.99	4437604.00
Ferris	Ferris_DS_Net	727303.58	4437620.05
Little Stony	LittleStony_US_Net	722788.06	4439019.02
Little Stony	LittleStony_DS_Net	722769.06	4439095.61

Summary of electroshocking data not included in DWR Draft Report, including updated charts and tables

Table 1. Fish Captured at Last Chance Creek and tributary monitoring stations in 1997, 2001, 2005, and 2008.

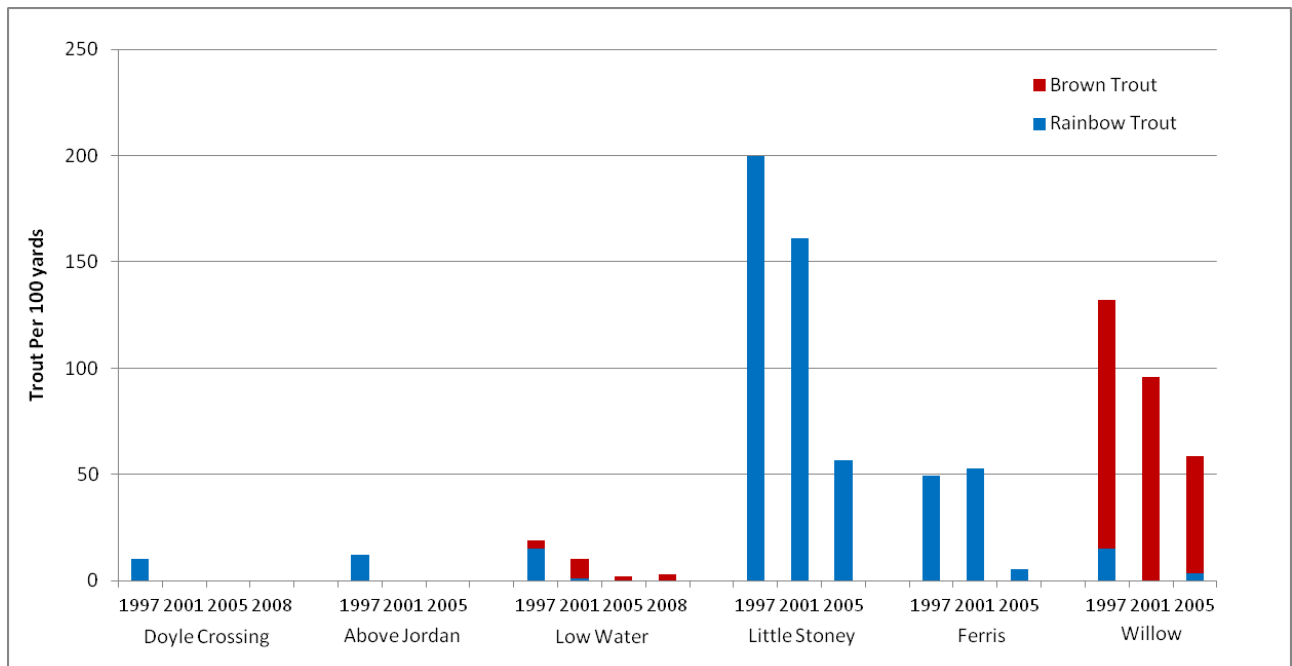
Year	Rainbow Trout				Brown Trout				Speckled Dace				Sucker			
	97	01	05	08	97	01	05	08	97	01	05	08	97	01	05	08
Last Chance Creek																
Doyle Crossing	x								x	x	x	x	x ²	x ²		
Above Jordan Flat	x			NS	x	x		NS	x	x	x	NS	x ²	x ²	x ¹	NS
Low Water Crossing	x	x			x	x	x	x		x	x	x		x ²		x ¹
Last Chance Tribs																
Little Stoney Creek	x	x	x	NS				NS				NS				NS
Ferris Creek	x	x	x	NS				NS	x	x	x	NS	x ²	x ²		NS
Willow Creek	x		x	NS	x	x	x	NS				NS				NS

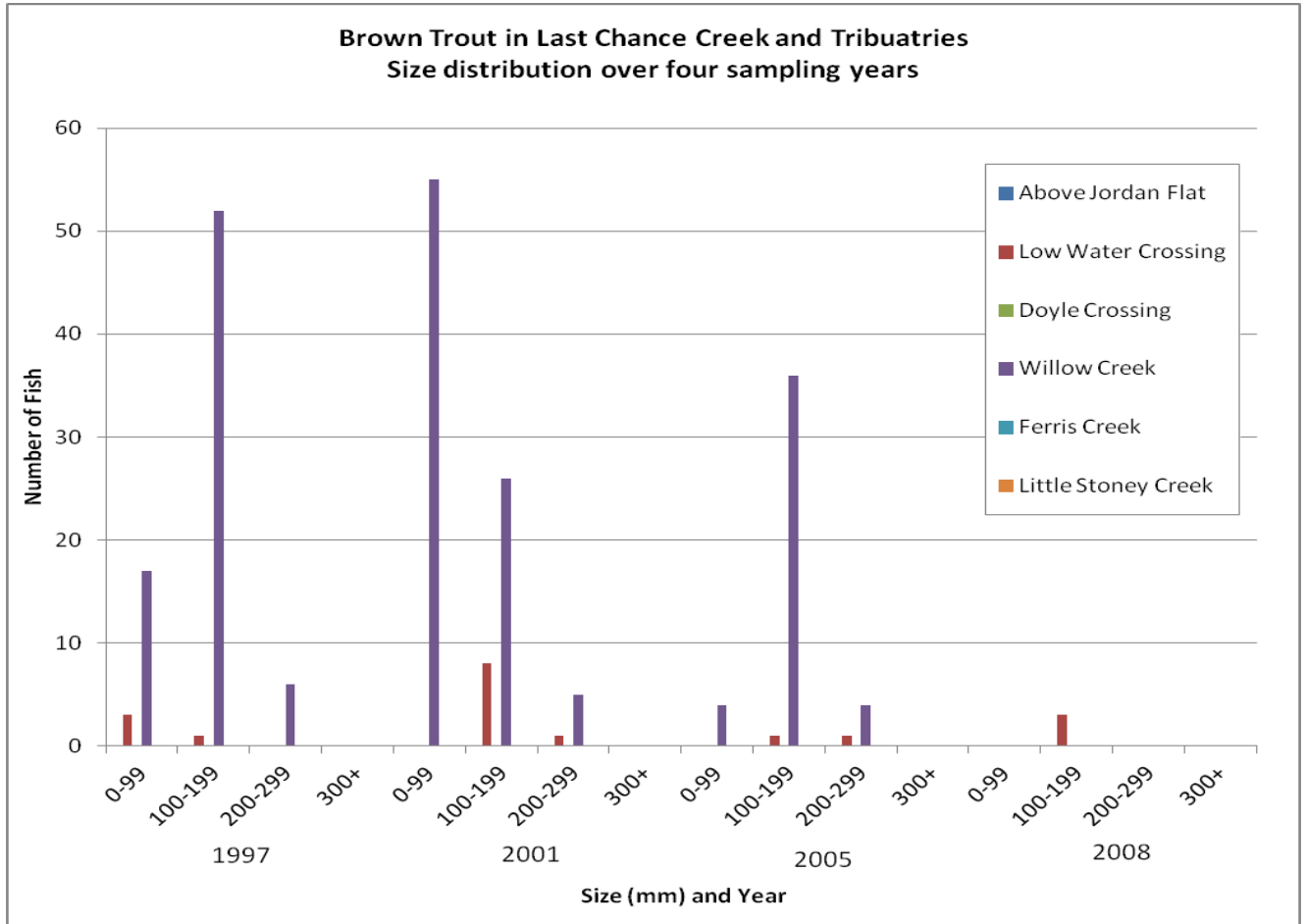
¹Tahoe or Sacramento Sucker

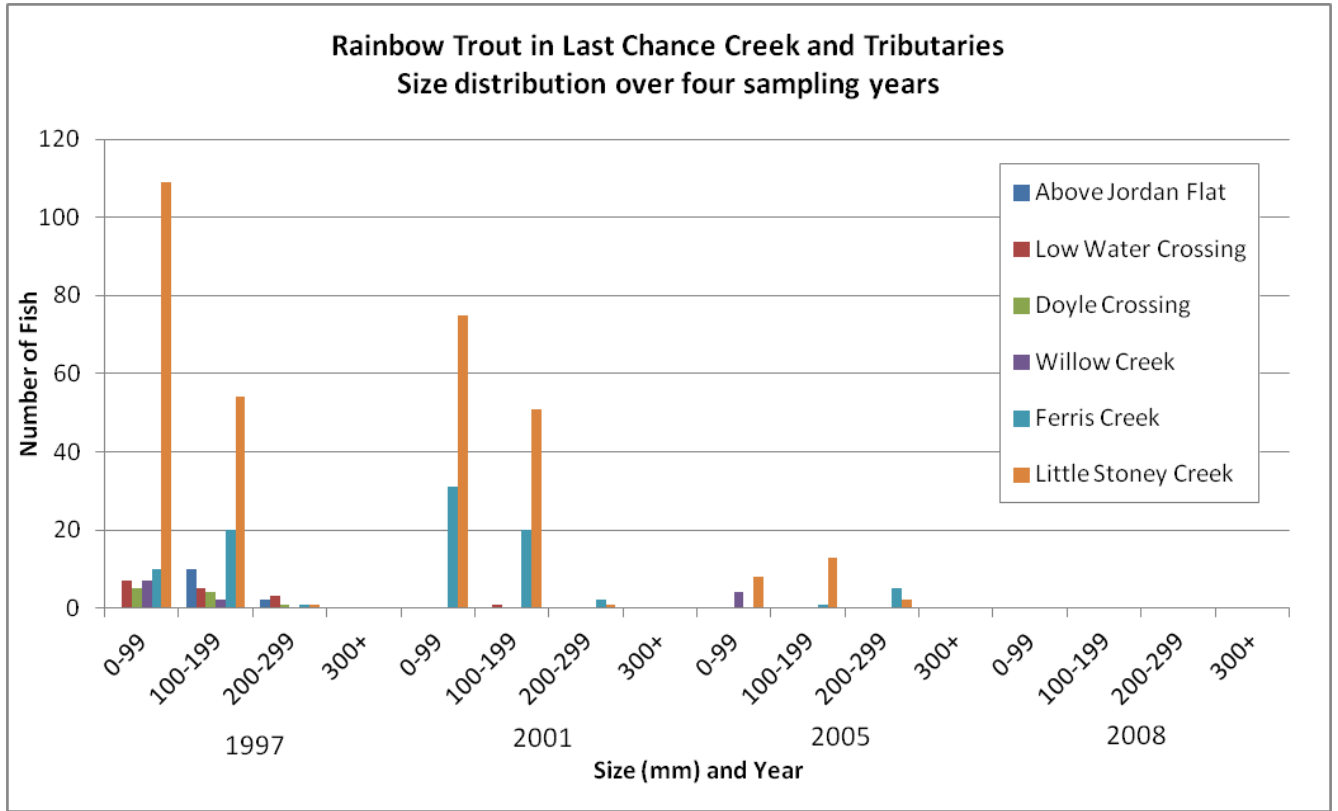
²Sucker species not recorded

NS- Not sampled

Figure 1. Trout per 100 yards of stream using population estimates from 1997, 2001, 2005, and 2008 electrofishing data.







Age Classes¹:

Age (yrs)	0-1	1-2	2-3	3+
Size (mm)	0-99	100-199	200-299	300+

¹ Size Class information from: Brown, Charles J. 1993. A Summary of Studies of Fish Populations in Indian Creek, Plumas County, 1977-1990. California Department of Fish and Game. 12-13 p.

Summary of trout data for 2008 DWR sampling efforts (including data from other years at this site)

Last Chance below Low Water Crossing

Date	Species	Reach Length (ft)	Pass 1 Catch	Pass 2 Catch	Total Catch	Population Estimate	Capture Probability	Lower Conf Interval	Upper Conf Interval	Biomass ml/100yds	Average Fork Length (mm)	Fish per 100 yards
6/26/1997	RBT	300	12	3	15	15	0.833	15	16.966	525	127.3	15
6/26/1997	BT	300	4	0	4	4	-	-	-	25	58.7	4
6/13/2001	RBT	300	1	0	1	1	-	-	-	15	108	1
6/13/2001	BT	300	9	0	9	9	-	-	-	320	138.1	9
6/23/2005	BT	328	2	0	2	2	-	-	-	173.7	188.5	1.8
6/18/2008	BT	300	3	0	3	3	-	-	-	127	148.3	3

All fish data from 1997, 2001, and 2008 DWR sampling efforts

1997

Willow Creek blw Conklin Park				fork lengths in mm			
6/24/1997							
Pass 1	BT	BT	BT	RBT	Pass 2	BT	RBT
	234	90	121	148		188	38
	97	117	102	88		95	42
	107	114	153	41		154	101
	112	118	172	47		103	44
	115	198	176	44		191	
	119	94	193			105	
	192	96	124			91	
	34	197	108			127	
	108	313	112			100	
	113	104	171			96	
	164	115	113			98	
	101	193	204			116	
	117	218	85			115	
	112	223	178			122	
	98	242				106	
	107	93				87	
	122	96				123	
	114	103				214	
	108	103				107	
	77	94				97	
						162	

Ferris Creek

6/25/1997

Pass 1	RBT	Pass 2	RBT
	148		105
	122		77
	105		105
	178		159
	158		153
	113		117
	110		74
	74		138
	74		
	78		
	100		
	80		
	114		
	87		
	91		
	127		
	83		
	141		
	31		
	159		
	145		
	170		
	279		

Little Stoney Creek

6/24/1997

Pass

1	RBT	RBT	RBT	RBT	RBT	RBT	Pass 2	RBT	RBT	RBT
	174	160	100	146	77	92		79	116	79
	117	85	108	136	67	70		89	83	77
	148	75	88	120	96	69		81	80	85
	147	186	92	76	76	85		84	77	83
	157	195	69	87	76	116		118	80	82
	75	177	68	78	138	94		163	72	78
	120	163	136	69	108	110		86	97	75
	93	141	74	71	98	86		102	77	80
	69	111	83	76	122	82		139	72	75
	192	114	75	90	98	68		78	93	183
	83	155	84	89	79	83		124	108	
	63	136	202	108	148	69		153	82	
	82	170	125	74	109	24		67	70	
	77	123	145	86	78	27		25	64	
	75	103	76	75	72			146	77	
	79	88	98	81	95			81	80	
	72	128	68	112	88			88	81	
	66	120	109	81	74			73	86	
	69	88	143	82	65			72	88	
	70	113	133	76	75			67	84	

Last Chance Creek abv Jordan Park

6/25/1997

Pass 1

RBT

Pass 2

2 fish seen not netted

- 209
- 226
- 199
- 122
- 121
- 123
- 118
- 105
- 103
- 134
- 132
- 137

Last Chance Creek abv Doyle xing

6/23/1997

Pass 1	RBT	Pass 2	RBT
	220		192
	142		112
	108		41
	41		
	36		
	38		
	41		

Last Chance Creek blw Low water Xing

6/26/1997

Pass 1	RBT	BT	Pass 2	RBT
	31	116		253
	211	41		75
	144	40		89
	280	38		
	111			
	178			
	51			
	147			
	87			
	92			
	129			
	32			

2001

Willow Creek bl Conklin Park

6/13/2001

Pass 1	BT	BT	BT	BT	Pass 2	BT	BT
	174	106	49	44		210	50
	205	89	47	47		185	45
	103	87	48	40		149	
	155	142	50	44		93	
	205	113	58			104	
	86	119	46			94	
	214	105	45			116	
	180	82	48			36	
	95	113	96			101	
	198	98	39			78	
	94	49	46			81	
	110	125	45			113	
	145	96	48			45	
	192	43	53			50	
	85	47	48			57	
	180	44	42			48	
	116	109	52			55	
	154	51	49			42	
	233	84	51			50	
	150	53	51			48	

Ferris Creek

6/15/2001

Pass						
1	RBT	RBT	RBT		Pass 2	RBT
	79	93	202			68
	73	169				95
	103	103				73
	80	144				74
	69	83				84
	142	84				87
	130	161				
	163	111				
	83	76				
	143	108				
	99	71				
	88	112				
	123	97				
	143	75				
	164	86				
	170	99				
	227	60				
	88	62				
	123	73				
	159	82				
	88	68				
	190	74				
	114	78				

Little Stoney Creek

6/12/2001

Pass

1

RBT

RBT

RBT

Pass 2

RBT

69	89	119	135
104	100	175	89
87	90	100	104
126	95		80
134	95		133
85	92		115
98	105		79
100	127		114
85	110		89
127	111		124
83	159		86
84	87		75
103	63		85
95	200		84
97	159		79
100	142		
93	112		
85	110		
116	118		
90	119		

Little Stoney Creek #2

6/12/2001

Pass 1	RBT	RBT	RBT	Pass 2	RBT
	118	88	105		163
	93	104	80		89
	99	68	86		103
	80	81	86		98
	142	94	72		97
	83	99	66		75
	108	189	65		73
	83	122	93		67
	95	109	95		96
	94	72	119		
	80	105	59		
	98	111	89		
	93	74	82		
	98	88	79		
	104	125	63		
	126	113	72		
	66	104	76		
	98	108	70		
	65	67	51		
	100	116			

Last Chance Creek ab Jordan Park

6/14/2001 no salmonids

Last Chance Creek ab Doyle xing

6/11/2001 see field sheet "snapshot 2 fish under bridge "

RBT 105 and 98 mm

Last Chance Creek bl Low water Xing

6/13/2001

Pass 1	RBT	BT	Pass 2
	108	110	no fish
		217	
		112	
		114	
		150	
		157	
		105	
		170	
		108	

2008

Low Water Crossing

Date	Pass	Common Name	Number	Total Displacement (ml)	Fork Length (mm)
6/18/2008	1	Brown Trout	1	77	180
6/18/2008	1	Brown Trout	1	35	150
6/18/2008	1	Brown Trout	1	15	115
6/18/2008	1	Tahoe Sucker	2	140	-
6/18/2008	1	Speckled Dace	43	93	-
6/18/2008	1	Fry	46	5	-
6/18/2008	2	Tahoe Sucker	3	115	-
6/18/2008	2	Speckled Dace	34	60	-
6/18/2008	2	Fry	1	-	-

Doyle Crossing

Date	Pass	Common Name	Number	Total Displacement (ml)	Fork Length (mm)
6/18/2008	1	Speckled Dace	49	95	-
6/18/2008	2	Speckled Dace	39	70	-