

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

2102-F21-R-45

Survey Location: Rapid Creek

Survey Dates: June 27 – August 6, 2012

County: Pennington

Introduction

Rapid Creek is the largest stream in the Black Hills of western South Dakota. Its watershed supplies municipal water to the city of Rapid City and other surrounding communities. It is also an important stream for anglers and has two dams on it creating Pactola Reservoir and Canyon Lake, which are also important for many forms of recreation.

The Rapid Creek watershed begins with the headwaters of Rapid Creek's forks north and west of the town of Rochford and with Castle Creek's forks south of Deerfield Reservoir. Castle Creek runs through Deerfield Reservoir and enters Rapid Creek near Mystic. Rapid Creek runs east through Pactola Reservoir, Canyon Lake, and Rapid City before entering the Cheyenne River about 13 miles east of Farmingdale. A majority of the Rapid Creek watershed is located in a pine/spruce forest which is managed by the United States Forest Service.

Like most streams in the Black Hills, Rapid Creek experienced drastic changes in flow over the past 15 years. The area above Pactola Reservoir is affected by flows coming out of Deerfield Reservoir into Castle Creek and by runoff from the upper part of the watershed. The lower part of Rapid Creek is mostly affected by flows coming out of Pactola Reservoir, which is regulated by the Bureau of Reclamation, a part of the United States Department of the Interior. Most of western South Dakota experienced moderate to severe drought from 2002 to 2008 (US Drought Monitor 2009), followed by four years of above average moisture, and in 2012, lower than average moisture. During the late 1990's mean annual flow was as high as 140 cfs in 1997, down to 23 cfs in 2008 and back up to 92 cfs in 2011. This included daily flows over 400 cfs in 1996, as low as 12 in 2008, over 300 cfs in 2010, and over 400 cfs in 2011 (Figure 1). These drastically variable flow events likely changed fish populations and habitat throughout Rapid Creek.

Another concern for Rapid Creek fish populations is the invasive exotic diatom, *Didymosphenia geminate* (Didymo), that was discovered in 2002. By 2004 large mats of Didymo were present in the creek and generated complaints about esthetics, and water quality. Around the same time a decline in the trout population and a change in population structure became apparent. Thereafter, research began to determine the relationship between didymo and the trout population (James and Chipps 2010, James et.al. 2010a, James et.al 2010b).

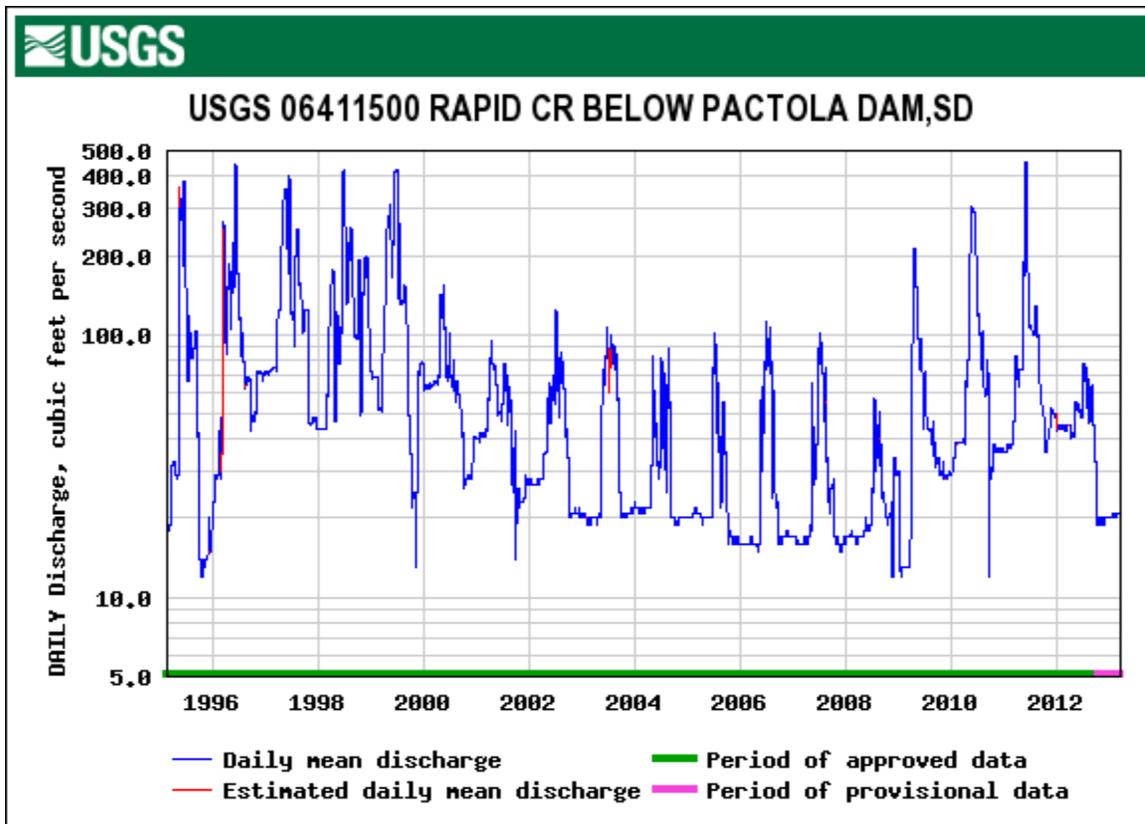


Figure 1: Daily discharge (CFS) of Rapid Creek below Pactola Reservoir in 1996-2012.

The majority of Rapid Creek and its tributaries are managed as a wild trout (natural yield) fishery with a daily limit of five trout (in any combination) with one allowed 14 inches or longer. Two areas of Rapid Creek are managed with a catch and release, no organic bait regulation for all trout. These are: 1) a two-mile stretch from the footbridge at Placerville Church Camp to Pactola Dam, including the stilling basin, and 2) the area in Rapid City from Jackson Boulevard upstream through the Meadowbrook Golf Course to Park Drive.

Two areas of Rapid Creek are managed with catchable rainbow trout stockings. One of these is from Braeburn Park (above Cleghorn Fish Hatchery) upstream to the United States Geologic Survey gaging station. This area receives monthly stockings of 125 catchable (11 inch) rainbow trout from May through August. The other area is from Silver City (above Pactola) upstream into the walk-in-fishery with five catchable rainbow trout stockings of 300 11-inch fish and 15 15-inch fish from April to August.

Survey Methods

Rapid Creek Site Selection

The main stem of Rapid Creek was divided into five segments (Figure 2) based on morphologic, hydrologic, or management characteristics. Each segment was assigned a specific number of 100 m reaches to be sampled based on length of the segment and management importance. Due to private property access issues and morphology with frequent deep pools, most sites

were selected because they had been sampled in the past. Sites were numbered based on their distance, in 100 meters, above the confluence with the Cheyenne River. Segment 1 included most of Rapid City from the low-head dam at the Central States Fairgrounds 9.3 km to Canyon Lake (Figure 3). Six sample reaches were selected for Segment 1 including a site in the Meadowbrook Golf Course catch and release area. Section 2 was from Canyon Lake upstream 35.3 km to the walking bridge at Placerville Church Camp (Figure 4). This large segment includes a loss zone with little water flow and a large distance that is difficult to access between Dark Canyon and Hisega. Nine sample reaches were selected for Segment 2. Segment 3 was within the catch and release area from Placerville Church Camp to the Pactola Reservoir stilling basin (Figure 5). Five sample reaches were selected here. Segment 3 is typically characterized by the highest flows in Rapid Creek and also some of the highest angling pressure in the Black Hills. Segment 4 was from the inlet of Pactola Reservoir up to the confluence with Castle Creek near the town of Mystic (Figure 6). Four reaches were selected in Segment 4. Segment 4 receives flows from Castle Creek, which is the largest tributary of Rapid Creek. Segment 5 was from Castle Creek to the confluence of the North and South Forks of Rapid Creek near the town of Rochford (Figure 7). Two reaches were sampled here. In 2012 this area was characterized by low flows and much narrower stream widths than the rest of Rapid Creek.

Sample Methods

Efforts were made to satisfy the assumptions 1) the population is static, 2) capture probability remains constant across sampling periods, and 3) all fish in the population are equally vulnerable to capture (Van Den Avyle and Hayward 1999; Hayes et al. 2007). Block nets at the upstream and downstream boundaries were used to prevent fish from emigrating or immigrating within the sample site. Three passes were generally made with one, two, or three backpack electrofishing units (depending on stream width), and captured fish were removed and held in holding cages between passes until processing. For all sites, captured fish were anesthetized with carbon dioxide (made by mixing glacial acetic acid and baking soda in water), measured to the nearest millimeter (mm) total length, weighed to the nearest gram (g). Fish were then held in recovery cages and returned to the stream after recovery. When 50 individual lengths and weights were collected from small fish (<100 mm) of a specific species, bulk counts were collected to expedite data collection. Data was entered into Coldstream database. The Coldstream database was used to calculate parameters such as population estimates of fish per 100 meters and estimated numbers of fish per acre. Calculations are based on depletion of fish numbers in each pass, and the catchability of fish within each site.

In addition to fish data, pH, temperature, and specific conductance were measured and recorded. Stream widths were measured every ten meters and averaged to obtain an estimate of total area sampled.

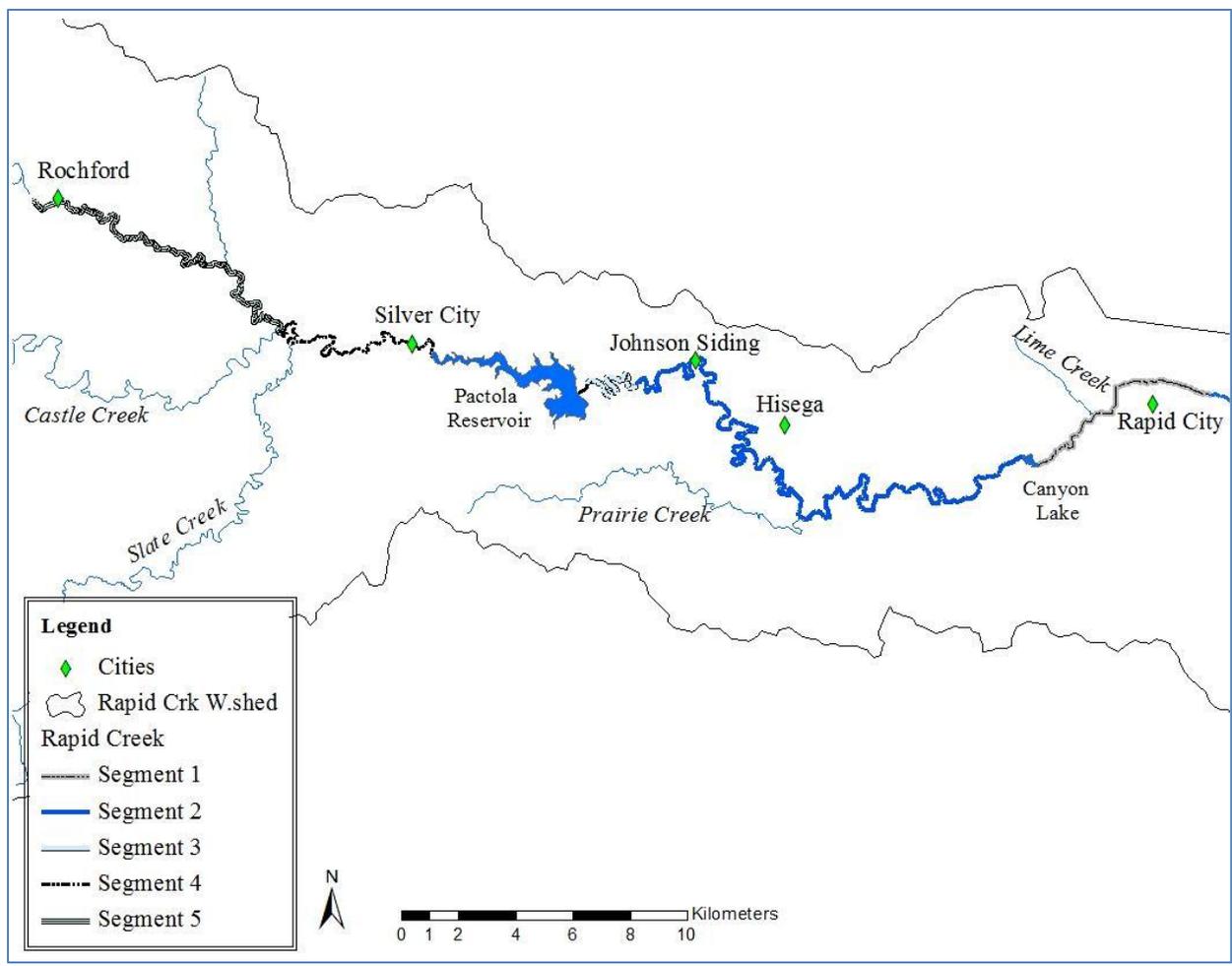


Figure 2. Map of Rapid Creek Watershed with sample segments and tributary streams of Rapid Creek delineated.

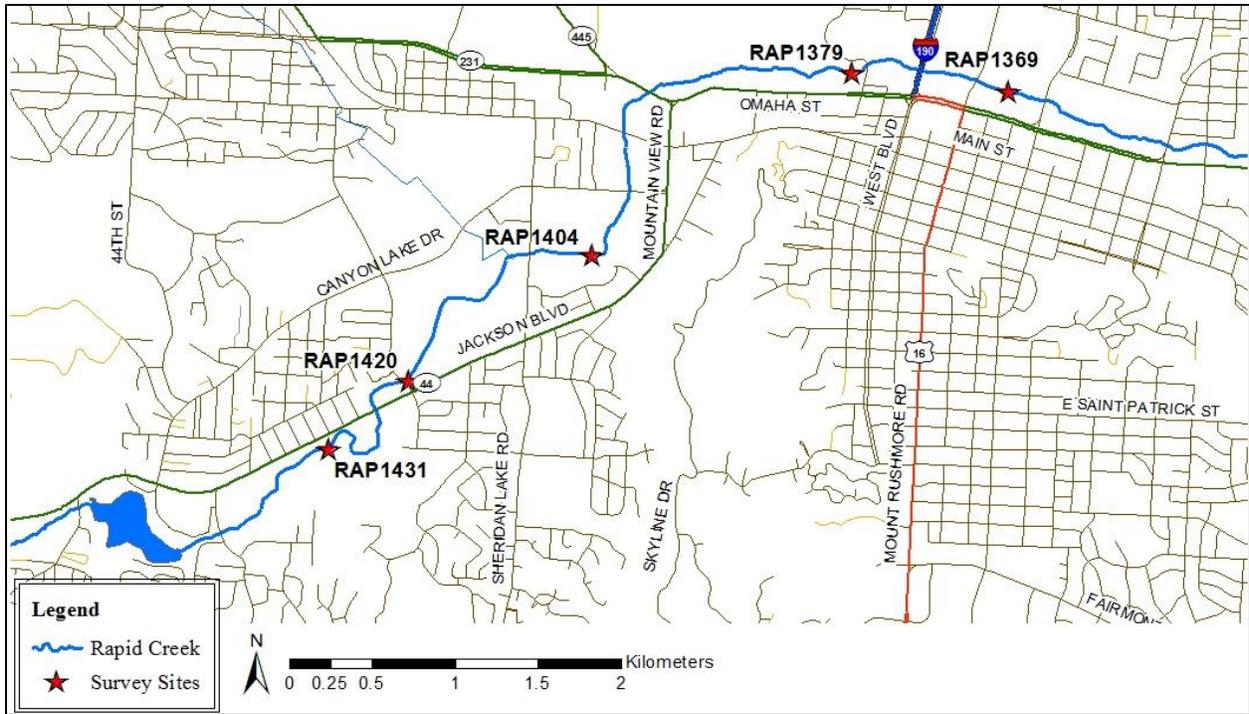


Figure 3. Map of 2012 sample reaches in segment 1 of Rapid Creek within Rapid City, SD.

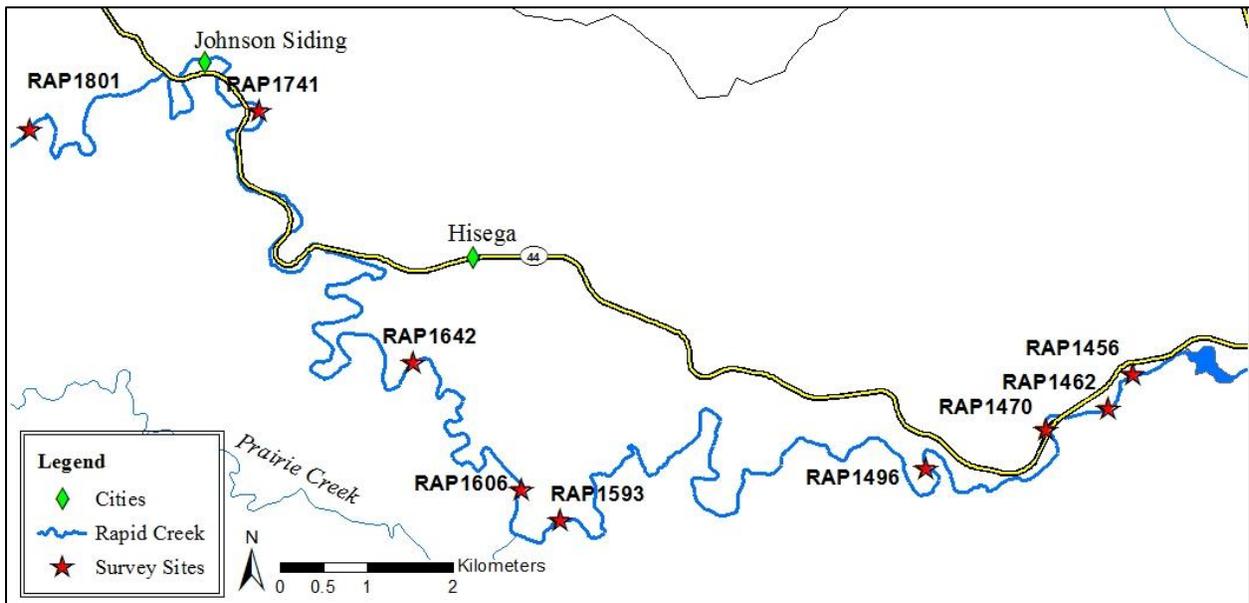


Figure 4. Map of 2012 sample reaches in segment 2 of Rapid Creek between Canyon Lake and Placerville Church Camp.

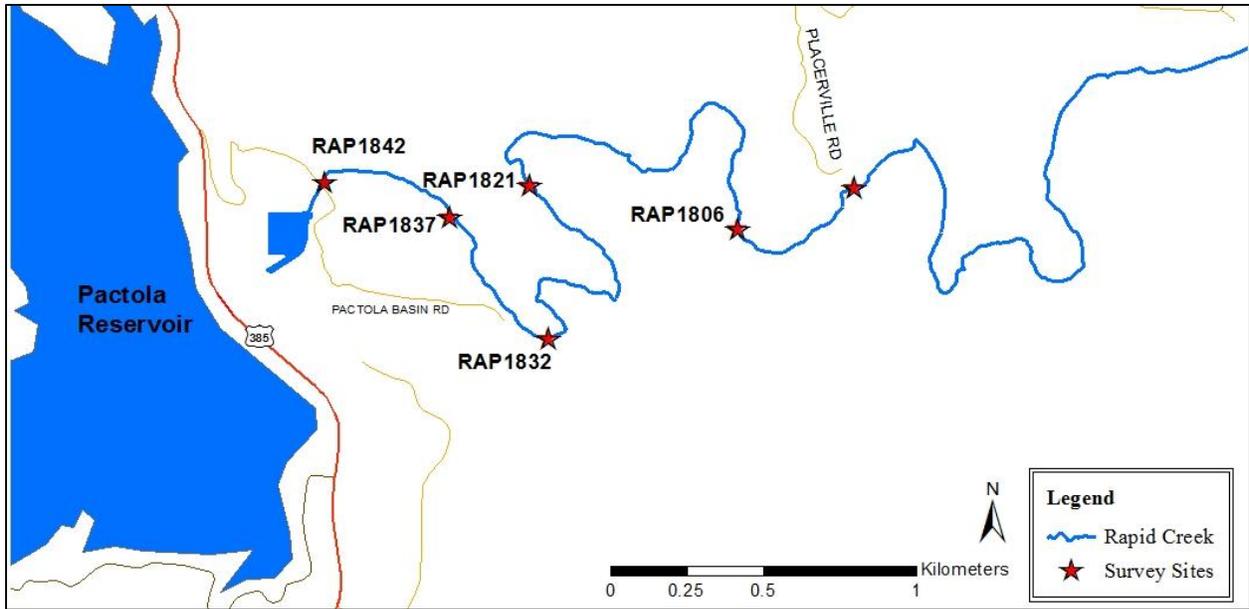


Figure 5. Map of 2012 sample reaches in segment 3 of Rapid Creek within the catch and release regulation area below Pactola Reservoir Stilling Basin.

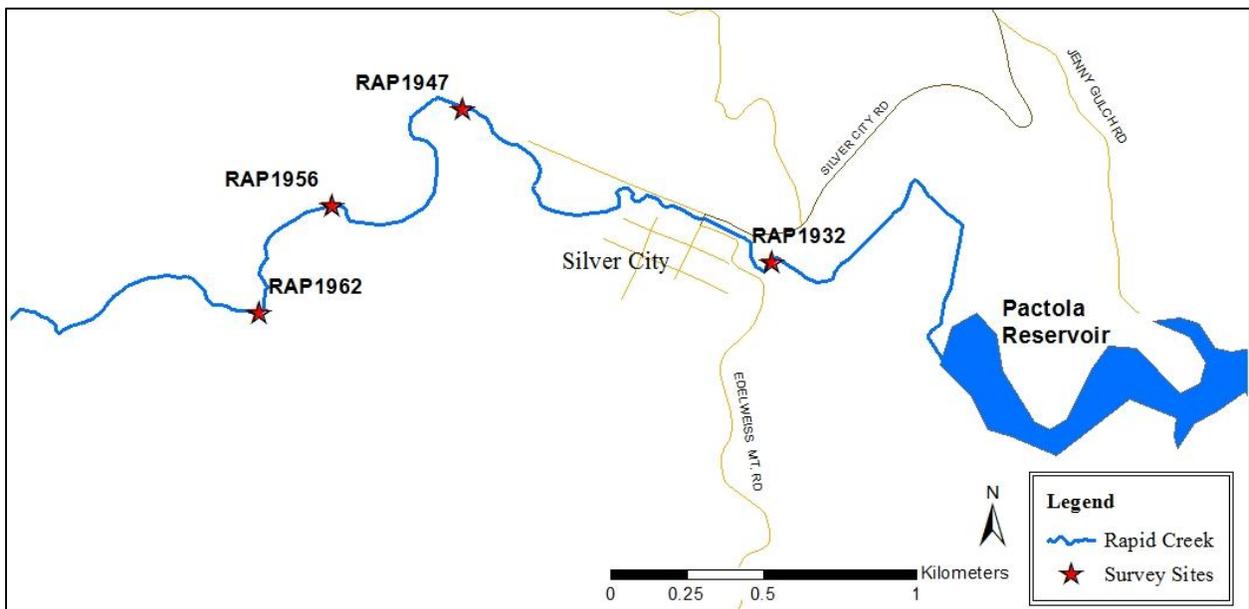


Figure 6. Map of 2012 sample reaches in segment 4 of Rapid Creek above Pactola Reservoir and in the Silver City walk-in fishery.

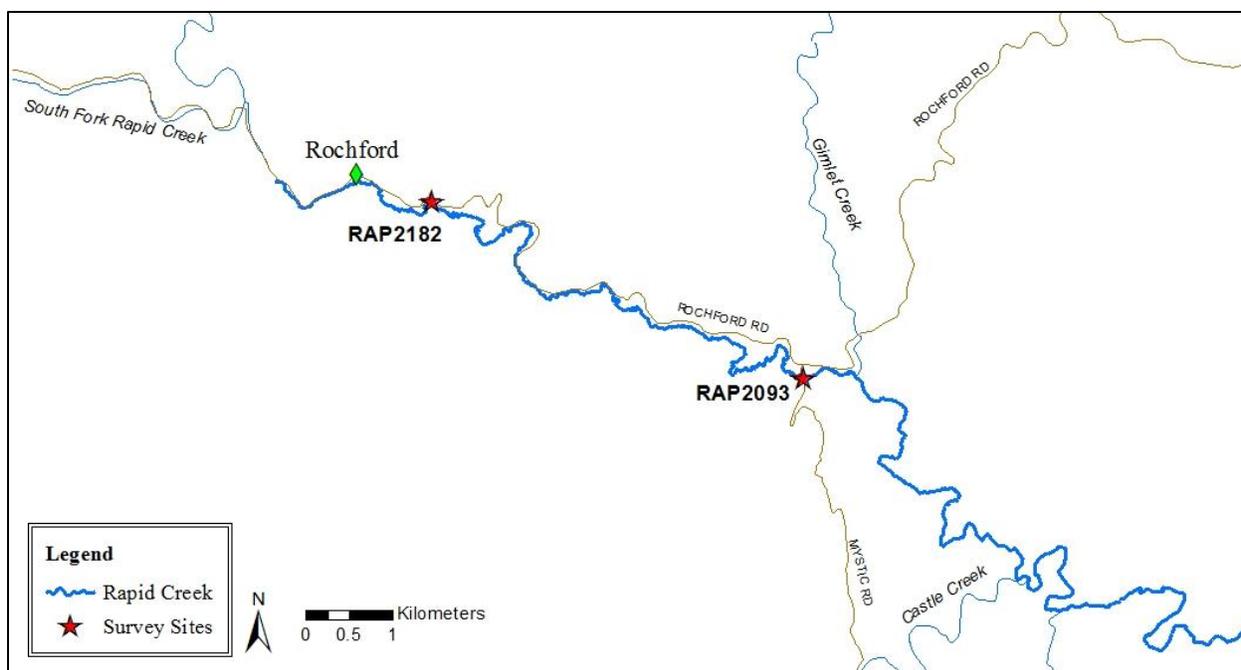


Figure 7. Map of 2012 sample reaches in segment 5 of Rapid Creek between Castle Creek and the Rapid Creek Forks.

Results and Discussion

Seven species of fish were sampled in Rapid Creek in 2012 with the majority being trout. Brown trout (*Salmo trutta*) dominated every segment and rainbow trout (*Oncorhynchus mykiss*) were surveyed in all five segments. Brook trout (*Salvelinus fontinalis*) were surveyed in Segments 3, 4, and 5. Other species were found in low densities and included creek chub (*Semotilus atromaculatus*), longnose dace (*Rhinichthys cataractae*), whitesucker (*Catostomus commersonii*), rock bass (*Ambloplites rupestris*), mountain sucker (*Catostomus platyrhynchus*), black bullhead (*Ameiurus melas*), largemouth bass (*Micropterus salmoides*), and bluegill (*Lepomis macrochirus*). Most of these non-trout species occur near the reservoirs located on Rapid Creek. Mountain sucker is a native species of greatest conservation need in South Dakota and is discussed further by Belica and Nibbelink (2006) and Schultz and Bertrand (2012). No further discussion will be made about non-trout species due to their low abundances.

Summary by species

Brown trout – Population estimates for brown trout varied by segment (Table 1). Total density estimates of brown trout were highest in Segment 1 and declined with upstream progression. Segments 1 and 2 had densities of brown trout high enough to meet the Class 1 brown trout standards (≥ 150 fish ≥ 200 mm/surface acre; Erickson et al. 1993). The other three segments were high enough to meet the Class 2 brown trout classification (25-150 fish ≥ 200 mm per acre). Brown trout less than 200 mm were most abundant in Segment 3 where site estimates ranged from 57 fish/100 m to 440 fish/100 m. Segments 1, 2 and 3 had similar densities of these small brown trout.

Segment 1 had the highest abundance of fish greater than 200 mm with individual sites ranging from 44 to 136 fish/100 m or 119-528 fish/acre. Highest abundance occurred in sites 1407

(Behind Sioux Park Swimming Pool) and 1420 (Behind Jamie Johnson Field). This Segment also exhibited the highest abundance of fish greater than 300 mm. Of special interest is the catch and release area and the site sampled here (1431) yielded 329 fish greater than 200 mm per acre.

Segment 3 is under a catch and release regulation and receives a lot of angler attention. Of the five reaches sampled the two furthest downstream exhibited high enough densities to meet the Class 1 brown trout fishery designation with around 200 fish greater than 200 mm per acre. The three upper sample reaches; however, ranged from 34 to 81 fish greater than 200 mm per acre resulting in a segment average estimate of 112 fish greater than 200 mm per acre. During a survey in 1999, this segment had an average estimate as high as 335 fish greater than 200 mm per acre (Table 4).

Decreases in the total biomass (>50%) of brown trout in Rapid Creek during an extended drought period from 2000-2007 (U.S. Drought Monitor 2010) have been documented (James, D. A. et. al 2010a). This is also apparent in the decline in abundance of adult brown trout (≥ 200 mm) that occurred during this time as well (Table 2, Table 3, Table 4). This decline occurred at the same time that didymo was thriving in Rapid Creek between Canyon Lake and Pactola Reservoir. The 2012 survey may indicate a slight improvement in the fishery since the drought with increases in abundance (≥ 200 mm/100 m) in Segments 1, 2 and 3. It should also be remembered that much of Rapid Creek was stocked regularly prior to 2007 with catchable rainbow trout, which could affect the brown trout fishery. Sites in Segments 4 and 5 were not previously surveyed extensively so comparisons were not made.

Table 1. Average population (number/100 m) and density (number/acre) estimates of brown trout by length (mm) in Rapid Creek during the 2012 survey. Segments number in upstream progression from Rapid City, SD to the Rapid Creek forks near Rochford.

Segment	<200 mm/100 m	≥ 200 mm/100 m	≥ 200 mm/acre	≥ 300 mm/100 m
1	150	89.2	345.3	19.0
2	156	46.0	180.7	6.6
3	217	28.0	112.0	7.2
4	36	23.0	108.3	0.3
5	47	12.5	97.5	0

Table 2. Average population (number/100 m) and density (number/acre) estimates of brown trout by length (mm) in Segment 1 of Rapid Creek (within Rapid City) during 2000-2012 surveys.

Month/Year	Number of sites	<200 mm/ 100 m	≥200 mm/ 100 m	≥200 mm/ acre	≥300 mm/ 100 m
10/2000	9	250	201	793	14
10/2001	9	143	169	678	11
10/2002	8	218	128	527	14
9/2005	5	212	46	210	16
7/2012	6	150	89	345	19

Table 3. Average population (number/100 m) and density (number/acre) estimates of brown trout by length (mm) in section 2 of Rapid Creek (Canyon Lake to Placerville Walking Bridge) during 2000-2012 surveys.

Month/Year	Number of sites	<200 mm/ 100 m	≥200 mm/ 100 m	≥200 mm/ acre	≥300 mm/ 100 m
10/2000	7	369	30	132	9
10/2001	7	503	21	102	11
10/2002	7	398	11	47	3
9/2005	4	249	11	44	4
7/2012	9	156	46	181	7

Table 4. Average population (number/100 m) and density (number/acre) estimates of brown trout by length (mm) in section 3 of Rapid Creek (catch and release area from Placerville Church Camp to Pactola Reservoir Basin) during 2000-2012 surveys.

Month/Year	Number of sites	<200 mm/ 100 m	≥200 mm/ 100 m	≥200 mm/ acre	≥300 mm/ 100 m
10/1999	4	51	72.0	335.0	14.0
10/2002	3	61	34.3	164.7	22.0
10/2005	3	424	8.3	33.0	4.7
10/2006	4	238	3.5	16.0	2.5
10/2007	4	281	8.8	38.3	3.0
7/2012	5	218	28.0	112.8	7.2

Size structure of brown trout varied among all segments (Figure 8). Segment 5 was excluded from cumulative percent comparison due to the relatively small sample size. Segments 1 and 4 appeared to have proportionally more fish greater than 200 mm than the other segments.

Additionally, Segments 1, 2 and 3 approach 100% at about the same length, around 350 mm. Segment 4 approaches 100% at a smaller length of 290 mm. Segment 1 also has the greatest proportion of fish <100 mm.

Caution must be taken when interpreting age data from the length-frequency distribution since hard structures (i.e. scales, otoliths, etc.) of fish were not collected to verify the age of the length classes. However, since this method typically works well for early age classes (Isely and Grabowski 2007), it will be assumed that length-frequency distributions in this report accurately portray size of fish at ages 0, 1, and 2 when separate modes are distinguishable.

Length-frequency distributions of brown trout in Segment 1 indicate age 0 and 1 modes with larger age groups indiscernible (Figure 9). The Age-1 mode is around 190 mm, slightly larger than other segments, which might indicate faster growth. There is a strong population of fish between 200 mm and 300 mm with more fish over 300 mm than other segments. The largest fish sampled in Segment 1 was 445 mm.

Age 0, 1, and 2, fish were discernible in Segment 2 by length-frequency histogram analysis (Figure 10). The Age-1 mode was around 120 mm and the Age-2 was around 230 mm. Growth appeared to be a little slower than Segment 1 and similar to Segment 3. Segment 2 had good numbers of fish between 200 and 300 mm with few over 300 mm. The largest fish surveyed was 465 mm.

Length-frequency histogram analysis of Segment 3 indicated a strong Age-1 year class with a mode around 120 mm (Figure 11). Larger age classes exhibited few fish and modes were not distinguishable. There has been concern with size structure of the fishery in this segment with few fish between 200 mm and 300 mm. Even after stocking 300 brown trout in 2010, size structure has not improved. Didymo has been suspect in changing the composition of aquatic insects to a lower quality diet for fish. Another speculation currently under research is predation by mink in this area. Additionally, a habitat improvement project is planned for this area within the next two years.

Segment 4 has possibly four age class modes discernible (Figure 12). The Age-1 mode was around 140 mm and the Age-2 mode was around 190 mm. This may indicate faster growth to Age-1 than Segments 2 and 3 and slower growth to Age-2. Water in this segment is supplied mainly by Castle Creek which flows through an iron bog area. It is suspect that this creates a lower productivity level with fewer invertebrates to support a natural fishery, however, this has not been studied to confirm. The Silver City walk-in fishery also receives a relatively high amount of angling pressure and therefore, is stocked with catchable rainbow trout in the summer months which could affect brown trout populations.

A length frequency histogram was not constructed for brown trout in Segment 5 due to low numbers of fish sampled. The largest fish surveyed was 275 mm.

For the most part, the brown trout populations in Rapid Creek appear to be healthy and continue to maintain through natural reproduction. One exception to this is Segment 3, which continues to be under research as to why the middle size classes are diminished. The other exception is Segment 4 just above Pactola Reservoir which will continue to be stocked with catchable rainbow trout.

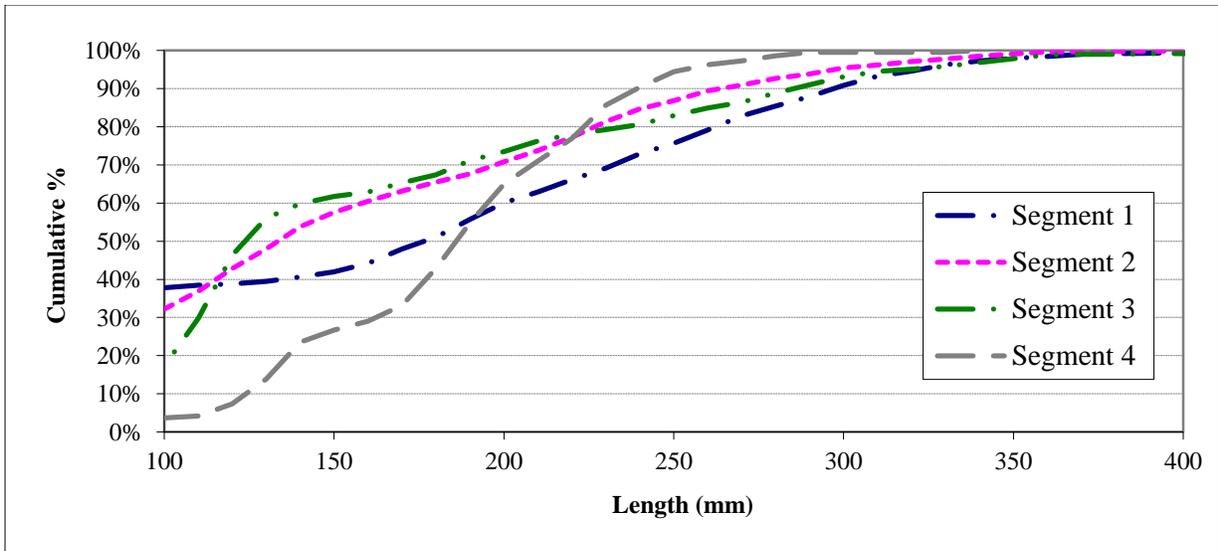


Figure 8. Cumulative length frequency of brown trout in segments 1, 2, 3 and 4 of Rapid Creek in 2012. Segment 5 was excluded due to small sample size.

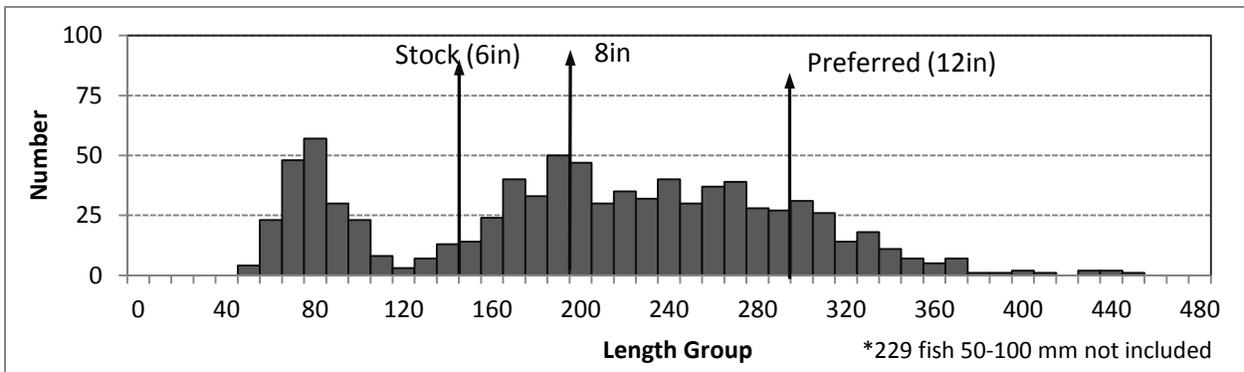


Figure 9. Length frequency histogram for brown trout surveyed in Rapid Creek segment 1 during the 2012 survey.

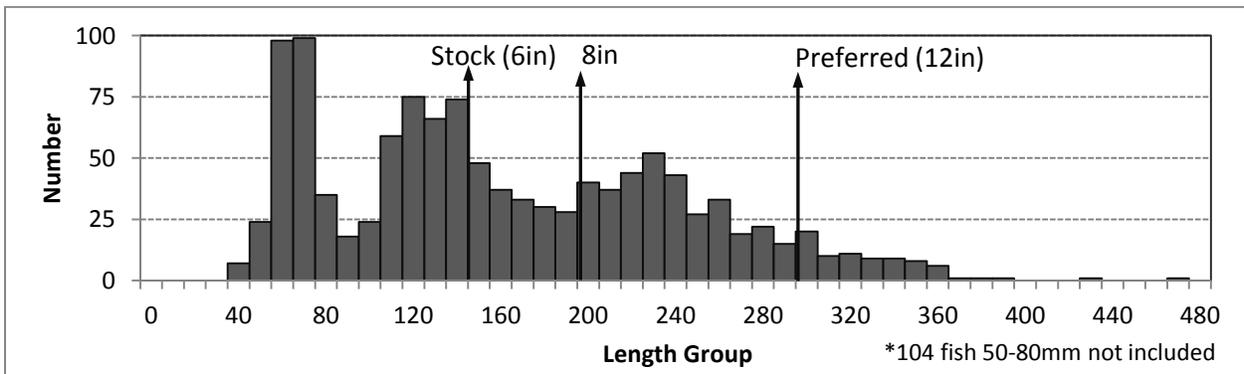


Figure 10. Length frequency histogram for brown trout surveyed in Rapid Creek segment 2 during the 2012 survey.

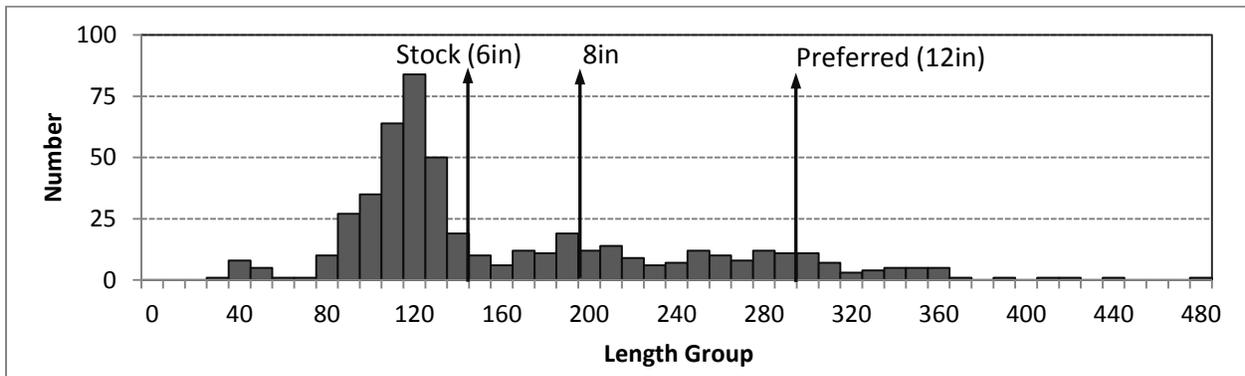


Figure 11. Length frequency histogram for brown trout surveyed in Rapid Creek segment 3 during the 2012 survey.

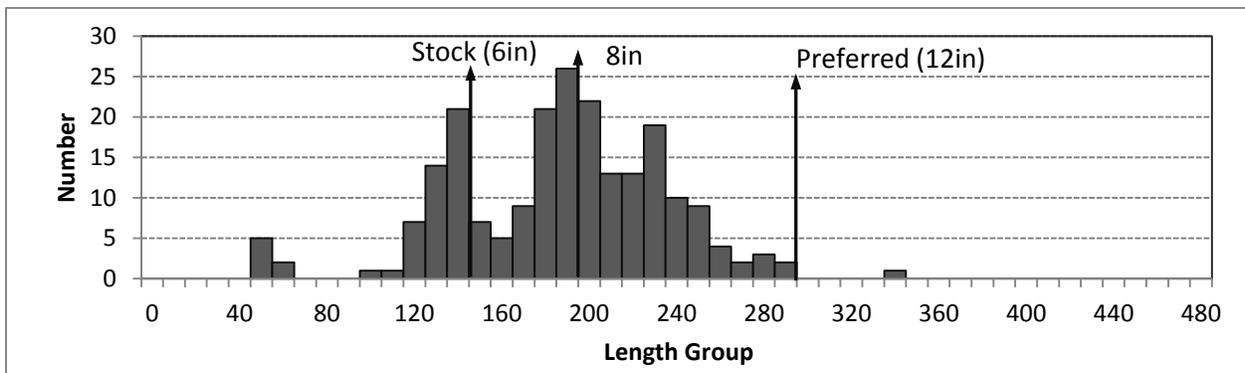


Figure 12. Length frequency histogram for brown trout surveyed in Rapid Creek segment 4 during the 2012 survey.

Brook trout – Brook trout were sampled in low numbers in Segments 3, 4 and 5. The only area with numbers worth mentioning was in Segment 3, Site 1842 (below the USGS bridge) with 26 fish/100 m. All fish were between 100 and 203 mm in length. In the past, a few larger individuals have been surveyed in this area directly below Pactola Reservoir Stilling Basin.

Rainbow trout – Rainbow trout were sampled in every segment of Rapid Creek (Table 5). In Segment 1 only Site 1431 (Meadowbrook Golf Course) contained a few rainbow trout. Fifty-two fish less than 80 mm were sampled, which indicates some reproduction in the area.

In the three downstream sites in Segment 2 (above Canyon Lake) rainbow trout greater than 200 mm were present at rates of 40 to 60 per acre. This area receives monthly stockings of catchable rainbow trout from May to August and most fish sampled were around 300 mm. Three other sites in Segment 2 contained rainbow trout with less than eight per site.

Segment 3 also contained low numbers of rainbow trout with 1 to 10 fish greater than 200 mm per 100 m for an average of 15.2 fish greater than 200 mm per acre. Some Age-1 fish were surveyed as well, indicating reproduction, but extent of recruitment into the adult fishery is unknown. Segment 4 contained the greatest abundance of rainbow trout ranging from four to 30 fish greater than 200 mm per 100 m for an average of 59.5 fish/acre. This would be classified

as a Class I rainbow trout fishery except that these are likely stocked fish and not wild populations. All rainbow trout were 180-360 mm with the majority around 280 mm. Segment 5 contained one rainbow trout, likely a remnant of prior year stockings in the area.

Table 5. Average population (number/100 m) and density (number/acre) estimates of rainbow trout by length (mm) in Rapid Creek during the 2012 survey. Segments number in upstream progression from Rapid City, SD to the Rapid Creek forks near Rochford.

Segment	<200 mm/100 m	≥200 mm/100 m	≥200 mm/acre	≥300 mm/100 m
1	8.7	0.3	1.3	0.17
2	0.7	5.1	20.0	1.40
3	12.2	4.0	15.2	2.20
4	1.5	12.5	59.5	4.0
5	0	0.5	4.0	0

Recommendations

1. Continue to manage the majority of Rapid Creek as wild brown trout (natural yield) fisheries with a daily limit of five trout (in any combination) and one allowed 14 inches or longer.
2. Continue managing the section of Rapid Creek between Park Drive and Jackson Blvd and the area between Placerville Church Camp walking bridge and Pactola Dam with catch-and-release regulations.
3. Continue regular spring and summer stocking of catchable rainbow trout above Canyon Lake and above Pactola Reservoir.
4. Perform intensive population surveys in Rapid Creek every three to five years and sample a few sites per segment every year for long term monitoring.

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Appendix A. Population and Biomass Estimates for Rapid Creek in the 2012 survey.

Site Number: 1349 Survey Completed by: South Dakota Game, Fish and Parks
 Site Description: Steele Avenue bridge (site 10)
 Legal Description: S6,R8E,T1N
 Stream Classification: BNT2

Date Sampled: 23 JUL 2012 Conductivity (µmhos): 458
 Site Length (m): 100 pH: ****
 Mean Width (m): 11.5 Water Temperature (°C): 20.5
 Number of Passes: 3 Air Temperature (°C): ****

Species	Size Class	Total Number Captured	Est. # in site	Lower 95% CI	Upper 95% CI	# per hectare	Kg per hectare	# per Km	# per acre	lb. per acre	# per mile	Mean Length (mm)	Mean Weight (grams)	Mean Fulton K-factor
Brown Trout	<200 mm	162	165	162	170	760	46.94	1,650	308	41.92	2,655	130.0	61.8	1.44
Brown Trout	≥200 mm	59	64	59	72	295	61.70	640	119	55.09	1,030	269.0	209.4	1.02
Brown Trout	ALL	221	229	221	237	1,054	155.16	2,290	427	138.54	3,685	195.1	147.2	1.20
Creek Chub	ALL	1	1	1	1	5	0.11	10	2	0.09	16	135.0	23.0	0.93
Longnose Dace	ALL	35	51	35	83	235	***	510	95	***	821	30.0	***	***
White Sucker	ALL	19	63	19	310	290	100.40	630	117	89.64	1,014	149.2	346.1	1.08

Site Number: 1369 Survey Completed by: South Dakota Game, Fish and Parks
 Site Description: Civic Center (6th St. Bridge) (site 27)
 Legal Description: S36,R7E,T2N
 Stream Classification: BNT1

Date Sampled: 25 JUL 2012 Conductivity (µmhos): 423
 Site Length (m): 100 pH: 8.4
 Mean Width (m): 11.2 Water Temperature (°C): 19.9
 Number of Passes: 3 Air Temperature (°C): ****

Species	Size Class	Total Number Captured	Est. # in site	Lower 95% CI	Upper 95% CI	# per hectare	Kg per hectare	# per Km	# per acre	lb. per acre	# per mile	Mean Length (mm)	Mean Weight (grams)	Mean Fulton K-factor
Black Bullhead	ALL	1	1	1	1	9	0.92	10	4	0.82	16	192.0	103.0	1.46
Brown Trout	<200 mm	71	128	71	221	1,142	47.92	1,280	462	42.79	2,060	95.3	42.0	1.21
Brown Trout	≥200 mm	41	44	41	50	393	90.63	440	159	80.92	708	268.7	230.9	1.10
Brown Trout	ALL	112	153	112	196	1,365	208.31	1,530	553	186.00	2,462	158.8	152.6	1.15
Creek Chub	ALL	1	1	1	5	9	***	10	4	***	16	80.0	***	***
Rock Bass	ALL	2	2	2	2	18	1.38	20	7	1.23	32	145.0	77.5	2.43

Population and Biomass Estimates for Rapid Creek. (Continued)

Site Number: 1379 Survey Completed by: South Dakota Game, Fish and Parks
 Site Description: Above road leading to Black Hills Pack (site 18)
 Legal Description: S35,R7E,T2N
 Stream Classification: BNT1

Date Sampled: 24 JUL 2012 Conductivity (µmhos): 441
 Site Length (m): 100 pH: ****
 Mean Width (m): 8.4 Water Temperature (°C): 20.3
 Number of Passes: 3 Air Temperature (°C): ****

Species	Size Class	Total Number Captured	Est. # in site	Lower 95% CI	Upper 95% CI	# per hectare	Kg per hectare	# per Km	# per acre	lb. per acre	# per mile	Mean Length (mm)	Mean Weight (grams)	Mean Fulton K-factor
Bluegill	ALL	1	1	1	2	12	1.27	10	5	1.13	16	176.0	107.0	1.96
Brown Trout	<200 mm	77	88	77	102	1,042	66.11	880	422	59.03	1,416	163.4	63.4	1.18
Brown Trout	≥200 mm	61	76	61	97	900	216.37	760	364	193.19	1,223	280.9	240.4	1.01
Brown Trout	ALL	138	166	140	192	1,966	343.49	1,660	796	306.69	2,671	234.4	174.8	1.07
White Sucker	ALL	5	5	5	7	59	38.12	50	24	34.03	80	366.2	643.8	1.15

Site Number: 1407 Survey Completed by:
 Site Description: Behind Sioux Park Swimming Pool downstream from Sheridan Lake Drive (site 3)
 Legal Description: S3,R7E,T1N
 Stream Classification: BNT1

Date Sampled: 24 JUL 2012 Conductivity (µmhos): 376
 Site Length (m): 100 pH: ****
 Mean Width (m): 10.1 Water Temperature (°C): 20.3
 Number of Passes: 4 Air Temperature (°C): ****

Species	Size Class	Total Number Captured	Est. # in site	Lower 95% CI	Upper 95% CI	# per hectare	Kg per hectare	# per Km	# per acre	lb. per acre	# per mile	Mean Length (mm)	Mean Weight (grams)	Mean Fulton K-factor
Brown Trout	<200 mm	108	210	108	349	2,089	93.42	2,100	846	83.41	3,379	113.4	44.7	1.05
Brown Trout	≥200 mm	86	131	86	187	1,303	246.78	1,310	528	220.34	2,108	263.0	189.4	1.01
Brown Trout	ALL	196	363	201	525	3,610	480.07	3,630	1,462	428.64	5,841	179.7	133.0	1.03
White Sucker	ALL	10	10	10	11	99	43.08	100	40	38.46	161	225.2	433.1	1.12

Population and Biomass Estimates for Rapid Creek. (Continued)

Site Number: 1420 Survey Completed by: South Dakota Game, Fish and Parks
 Site Description: Jamie Johnson Field (site 19)
 Legal Description: S10,R7E,T1N
 Stream Classification: BNT1

Date Sampled: 23 JUL 2012 Conductivity (µmhos): 367
 Site Length (m): 100 pH: ****
 Mean Width (m): 11.8 Water Temperature (°C): 19.3
 Number of Passes: 3 Air Temperature (°C): ****

Species	Size Class	Total Number Captured	Est. # in site	Lower 95% CI	Upper 95% CI	# per hectare	Kg per hectare	# per Km	# per acre	lb. per acre	# per mile	Mean Length (mm)	Mean Weight (grams)	Mean Fulton K-factor
Brown Trout	<200 mm	101	146	101	198	1,236	56.47	1,460	501	50.42	2,349	141.3	45.7	1.13
Brown Trout	≥200 mm	119	136	119	153	1,152	194.16	1,360	466	173.36	2,188	255.6	168.6	0.95
Brown Trout	ALL	220	276	236	316	2,337	283.31	2,760	947	252.96	4,441	206.4	121.2	1.02
Rock Bass	ALL	1	1	1	5	8	0.19	10	3	0.17	16	105.0	22.0	1.90
White Sucker	ALL	57	65	57	77	550	353.13	650	223	315.30	1,046	320.2	641.6	2.63

Site Number: 1431 Survey Completed by:
 Site Description: Downstream of Meadowbrook Golf Course Pro Shop (site 22)
 Legal Description: S9,R7E,T1N
 Stream Classification: BNT1 RBT2

Date Sampled: 06 AUG 2012 Conductivity (µmhos): 365
 Site Length (m): 100 pH: 8.2
 Mean Width (m): 10.3 Water Temperature (°C): 17.8
 Number of Passes: 3 Air Temperature (°C): ****

Species	Size Class	Total Number Captured	Est. # in site	Lower 95% CI	Upper 95% CI	# per hectare	Kg per hectare	# per Km	# per acre	lb. per acre	# per mile	Mean Length (mm)	Mean Weight (grams)	Mean Fulton K-factor
Brown Trout	<200 mm	122	160	123	197	1,549	73.56	1,600	627	65.68	2,574	135.9	47.5	1.15
Brown Trout	≥200 mm	73	84	73	98	813	186.84	840	329	166.82	1,352	278.8	229.7	1.00
Brown Trout	ALL	195	243	206	280	2,353	422.36	2,430	953	377.12	3,910	232.5	179.5	1.04
Rainbow Trout	≥200 mm	2	2	2	2	19	5.35	20	8	4.77	32	304.0	276.0	0.96
Rainbow Trout	ALL	54	54	54	54	523	144.32	540	212	128.86	869	304.0	276.0	0.96
Rock Bass	ALL	1	1	1	1	10	0.26	10	4	0.23	16	105.0	27.0	2.33

Population and Biomass Estimates for Rapid Creek. (Continued)

Site Number: 1456 Survey Completed by: South Dakota Game, Fish and Parks
 Site Description: Just upstream of Cleghorn Visitor Center (site 30)
 Legal Description: S8,R7E,T1N
 Stream Classification: BNT1 RBT1

Date Sampled: 10 JUL 2012 Conductivity (µmhos): 375
 Site Length (m): 100 pH: ****
 Mean Width (m): 8.5 Water Temperature (°C): 16.1
 Number of Passes: 3 Air Temperature (°C): ****

Species	Size Class	Total Number Captured	Est. # in site	Lower 95% CI	Upper 95% CI	# per hectare	Kg per hectare	# per Km	# per acre	lb. per acre	# per mile	Mean Length (mm)	Mean Weight (grams)	Mean Fulton K-factor
Brown Trout	<200 mm	67	335	67	1,543	3,929	139.86	3,350	1,591	124.87	5,390	141.5	35.6	1.02
Brown Trout	≥200 mm	56	58	56	63	680	117.96	580	275	105.32	933	255.4	173.4	0.97
Brown Trout	ALL	123	211	123	315	2,474	323.87	2,110	1,002	289.18	3,395	218.3	130.9	0.99
Rainbow Trout	≥200 mm	11	12	11	17	141	41.28	120	57	36.86	193	299.9	293.4	1.01
Rainbow Trout	ALL	11	12	11	17	141	41.28	120	57	36.86	193	299.9	293.4	1.01
White Sucker	ALL	7	7	7	8	82	31.95	70	33	28.52	113	304.7	389.2	1.16

Site Number: 1462 Survey Completed by:
 Site Description: Immediately Below Hockey Rink site 29 (site 34)
 Legal Description: S8,R7E,T1N
 Stream Classification: BNT2 RBT1

Date Sampled: 06 JUL 2012 Conductivity (µmhos): 353
 Site Length (m): 100 pH: 6.9
 Mean Width (m): 13.7 Water Temperature (°C): 17.5
 Number of Passes: 3 Air Temperature (°C): ****

Species	Size Class	Total Number Captured	Est. # in site	Lower 95% CI	Upper 95% CI	# per hectare	Kg per hectare	# per Km	# per acre	lb. per acre	# per mile	Mean Length (mm)	Mean Weight (grams)	Mean Fulton K-factor
Brown Trout	<200 mm	95	126	95	161	918	43.91	1,260	372	39.20	2,027	87.6	47.8	1.09
Brown Trout	≥200 mm	48	50	48	54	364	63.56	500	148	56.75	805	252.2	174.5	0.99
Brown Trout	ALL	143	169	146	192	1,231	161.37	1,690	499	144.08	2,719	143.6	131.1	1.02
Rainbow Trout	<200 mm	1	1	1	5	7	0.48	10	3	0.43	16	179.0	66.0	1.15
Rainbow Trout	≥200 mm	12	14	12	21	102	21.94	140	41	19.59	225	277.2	215.1	1.00
Rainbow Trout	ALL	13	18	13	35	131	26.70	180	53	23.84	290	269.6	203.6	1.01
White Sucker	ALL	1	1	1	5	7	***	10	3	***	16	224.0	***	***
Longnose Dace	ALL	10	14	10	30	102	***	140	41	***	225	***	***	***

Population and Biomass Estimates for Rapid Creek. (Continued)

Site Number: 1470 Survey Completed by:
 Site Description: Upstream of USGS Gaging Station (06412500) (site 28)
 Legal Description: S18,R7E,T1N
 Stream Classification: BNT1 RBT1

Date Sampled: 12 JUL 2012 Conductivity (µmhos): 358
 Site Length (m): 100 pH: ****
 Mean Width (m): 9.4 Water Temperature (°C): 18.0
 Number of Passes: 3 Air Temperature (°C): ****

Species	Size Class	Total Number Captured	Est. # in site	Lower 95% CI	Upper 95% CI	# per hectare	Kg per hectare	# per Km	# per acre	lb. per acre	# per mile	Mean Length (mm)	Mean Weight (grams)	Mean Fulton K-factor
Brown Trout	<200 mm	74	102	74	139	1,083	33.03	1,020	439	29.49	1,641	98.4	30.5	1.01
Brown Trout	≥200 mm	46	47	46	50	499	75.17	470	202	67.12	756	249.3	150.6	0.92
Brown Trout	ALL	121	143	121	165	1,518	151.19	1,430	615	134.99	2,301	156.3	99.6	0.96
Rainbow Trout	≥200 mm	11	14	11	25	149	33.00	140	60	29.46	225	287.1	222.0	0.90
Rainbow Trout	ALL	11	14	11	25	149	33.00	140	60	29.46	225	287.1	222.0	0.90

Site Number: 1496 Survey Completed by: South Dakota Game, Fish and Parks
 Site Description: Dark Canyon (Quest Cove) (site 12)
 Legal Description: S18,R7E,T1N
 Stream Classification: BNT2

Date Sampled: 10 JUL 2012 Conductivity (µmhos): ****
 Site Length (m): 100 pH: ****
 Mean Width (m): 10.1 Water Temperature (°C): ****
 Number of Passes: 3 Air Temperature (°C): ****

Species	Size Class	Total Number Captured	Est. # in site	Lower 95% CI	Upper 95% CI	# per hectare	Kg per hectare	# per Km	# per acre	lb. per acre	# per mile	Mean Length (mm)	Mean Weight (grams)	Mean Fulton K-factor
Brown Trout	<200 mm	67	76	67	89	749	23.07	760	303	20.60	1,223	103.6	30.8	1.01
Brown Trout	≥200 mm	33	33	33	35	325	54.95	330	132	49.06	531	259.3	168.9	0.92
Brown Trout	ALL	100	108	100	118	1,065	105.21	1,080	431	93.94	1,738	155.0	98.8	0.97

Site Number: 1593 Survey Completed by: South Dakota Game, Fish and Parks
 Site Description: McGee Siding (site 15)
 Legal Description: S15,R6E,T1N
 Stream Classification: BNT2

Date Sampled: 26 JUL 2012 Conductivity (µmhos): 370
 Site Length (m): 100 pH: 8.8
 Mean Width (m): 11.0 Water Temperature (°C): 14.5
 Number of Passes: 3 Air Temperature (°C): ****

Species	Size Class	Total Number Captured	Est. # in site	Lower 95% CI	Upper 95% CI	# per hectare	Kg per hectare	# per Km	# per acre	lb. per acre	# per mile	Mean Length (mm)	Mean Weight (grams)	Mean Fulton K-factor
Brown Trout	<200 mm	75	99	75	130	896	27.11	990	363	24.21	1,593	88.7	30.3	1.00
Brown Trout	≥200 mm	31	31	31	32	281	49.10	310	114	43.84	499	260.6	174.9	0.93
61 Brown Trout	ALL	106	119	106	133	1,077	120.45	1,190	436	107.55	1,915	139.0	111.8	0.96

Population and Biomass Estimates for Rapid Creek. (Continued)

Site Number: 1606 Survey Completed by: South Dakota Game, Fish and Parks
 Site Description: 1606 McGee Upstream Site
 Legal Description: S15,R6E,T1N
 Stream Classification: BNT1 RBT2

Date Sampled: 26 JUL 2012 Conductivity (µmhos): 3
 Site Length (m): 100 pH: 8.8
 Mean Width (m): 11.2 Water Temperature (°C): 16.8
 Number of Passes: 3 Air Temperature (°C): ****

Species	Size Class	Total Number Captured	Est. # in site	Lower 95% CI	Upper 95% CI	# per hectare	Kg per hectare	# per Km	# per acre	lb. per acre	# per mile	Mean Length (mm)	Mean Weight (grams)	Mean Fulton K-factor
Brown Trout	<200 mm	157	247	160	334	2,209	74.39	2,470	894	66.42	3,974	110.4	33.7	0.95
Brown Trout	≥200 mm	52	77	52	118	689	116.77	770	279	104.26	1,239	255.3	169.6	0.95
Brown Trout	ALL	209	331	228	434	2,960	249.10	3,310	1,199	222.41	5,326	146.4	84.2	0.95
Rainbow Trout	≥200 mm	1	1	1	2	9	1.75	10	4	1.56	16	272.0	196.0	0.97
Rainbow Trout	ALL	1	1	1	2	9	1.75	10	4	1.56	16	272.0	196.0	0.97

Site Number: 1642 Survey Completed by: South Dakota Game, Fish and Parks
 Site Description: Hisega (stream improvement area) (site 13)
 Legal Description: S9,R6E,T1N
 Stream Classification: BNT2

Date Sampled: 02 JUL 2012 Conductivity (µmhos): 362
 Site Length (m): 100 pH: ****
 Mean Width (m): 8.9 Water Temperature (°C): 13.0
 Number of Passes: 3 Air Temperature (°C): ****

Species	Size Class	Total Number Captured	Est. # in site	Lower 95% CI	Upper 95% CI	# per hectare	Kg per hectare	# per Km	# per acre	lb. per acre	# per mile	Mean Length (mm)	Mean Weight (grams)	Mean Fulton K-factor
Brown Trout	<200 mm	133	169	135	203	1,899	70.19	1,690	769	62.67	2,719	117.5	37.0	1.00
Brown Trout	≥200 mm	28	28	28	30	315	41.78	280	127	37.30	451	241.9	132.8	0.90
Brown Trout	ALL	161	194	166	222	2,180	130.56	1,940	883	116.58	3,121	139.1	59.9	0.98

Population and Biomass Estimates for Rapid Creek. (Continued)

Site Number: 1741 Survey Completed by:
 Site Description: Below Johnson Siding- Hawk's place(1984 site 25) (site 16)
 Legal Description: S5,R6E,T1N
 Stream Classification: BNT2 RBT2

Date Sampled: 12 JUL 2012 Conductivity (µmhos): 369
 Site Length (m): 100 pH: ****
 Mean Width (m): 11.6 Water Temperature (°C): 9.1
 Number of Passes: 4 Air Temperature (°C): ****

Species	Size Class	Total Number Captured	Est. # in site	Lower 95% CI	Upper 95% CI	# per hectare	Kg per hectare	# per Km	# per acre	lb. per acre	# per mile	Mean Length (mm)	Mean Weight (grams)	Mean Fulton K-factor
Brown Trout	<200 mm	78	89	78	103	765	15.14	890	310	13.52	1,432	107.7	19.8	1.10
Brown Trout	≥200 mm	30	30	30	31	258	68.72	300	104	61.35	483	286.1	266.5	0.99
Brown Trout	ALL	108	117	108	127	1,005	98.25	1,170	407	87.72	1,883	157.3	97.7	1.07
Rainbow Trout	≥200 mm	3	3	3	4	26	8.09	30	10	7.22	48	319.0	313.7	0.95
Rainbow Trout	ALL	3	3	3	4	26	8.09	30	10	7.22	48	319.0	313.7	0.95

Site Number: 1801 Survey Completed by: South Dakota Game, Fish and Parks
 Site Description: Below Placerville Church Camp dam (site 17)
 Legal Description: S1,R5E,T1N
 Stream Classification: BNT1 RBT2

Date Sampled: 05 JUL 2012 Conductivity (µmhos): ****
 Site Length (m): 90 pH: 8.2
 Mean Width (m): 11.0 Water Temperature (°C): 11.0
 Number of Passes: 3 Air Temperature (°C): ****

Species	Size Class	Total Number Captured	Est. # in site	Lower 95% CI	Upper 95% CI	# per hectare	Kg per hectare	# per Km	# per acre	lb. per acre	# per mile	Mean Length (mm)	Mean Weight (grams)	Mean Fulton K-factor
Brown Trout	<200 mm	143	164	145	183	1,652	35.47	1,822	669	31.67	2,932	116.9	21.5	1.02
Brown Trout	≥200 mm	56	60	56	67	604	87.38	667	245	78.02	1,073	240.9	144.6	0.96
Brown Trout	ALL	199	224	204	244	2,256	131.32	2,489	914	117.26	4,005	151.8	58.2	1.00
Rainbow Trout	<200 mm	5	5	5	5	50	1.67	56	20	1.50	89	119.4	33.3	1.41
Rainbow Trout	≥200 mm	2	2	2	3	20	1.69	22	8	1.51	36	205.5	84.0	0.97
Rainbow Trout	ALL	7	7	7	7	71	3.54	78	29	3.16	125	144.0	50.2	1.27

Population and Biomass Estimates for Rapid Creek. (Continued)

Site Number: 1806 Survey Completed by: South Dakota Game, Fish and Parks
 Site Description: First site upstream of Placerville in Catch and Release reach (site 24)
 Legal Description: S1,R5E,T1N
 Stream Classification: BNT1 RBT2

Date Sampled: 05 JUL 2012 Conductivity (µmhos): ****
 Site Length (m): 100 pH: ****
 Mean Width (m): 9.6 Water Temperature (°C): 11.5
 Number of Passes: 3 Air Temperature (°C): ****

Species	Size Class	Total Number Captured	Est. # in site	Lower 95% CI	Upper 95% CI	# per hectare	Kg per hectare	# per Km	# per acre	lb. per acre	# per mile	Mean Length (mm)	Mean Weight (grams)	Mean Fulton K-factor
Brown Trout	<200 mm	114	177	114	248	1,845	48.98	1,770	747	43.73	2,848	127.2	26.5	1.03
Brown Trout	≥200 mm	45	50	45	59	521	79.31	500	211	70.81	805	247.7	152.1	0.96
Brown Trout	ALL	159	218	166	270	2,273	143.74	2,180	921	128.35	3,508	161.3	63.2	1.00
Rainbow Trout	<200 mm	8	9	8	14	94	4.12	90	38	3.68	145	147.9	43.9	1.12
Rainbow Trout	≥200 mm	1	1	1	1	10	2.58	10	4	2.30	16	297.0	247.0	0.94
Rainbow Trout	ALL	9	9	9	11	94	6.24	90	38	5.57	145	164.4	66.4	1.10

Site Number: 1821 Survey Completed by: South Dakota Game, Fish and Parks
 Site Description: Pactola Basin (Flume Trestle) (site 14)
 Legal Description: S2,R5E,T1N
 Stream Classification: BKT3 BNT1 RBT2

Date Sampled: 11 JUL 2012 Conductivity (µmhos): 363
 Site Length (m): 100 pH: ****
 Mean Width (m): 9.9 Water Temperature (°C): 8.5
 Number of Passes: 3 Air Temperature (°C): ****

Species	Size Class	Total Number Captured	Est. # in site	Lower 95% CI	Upper 95% CI	# per hectare	Kg per hectare	# per Km	# per acre	lb. per acre	# per mile	Mean Length (mm)	Mean Weight (grams)	Mean Fulton K-factor
Brook Trout	≥200 mm	1	1	1	1	10	0.80	10	4	0.72	16	208.0	79.0	0.88
Brook Trout	ALL	1	1	1	1	10	0.80	10	4	0.72	16	208.0	79.0	0.88
Brown Trout	<200 mm	88	440	88	1,800	4,462	85.41	4,400	1,807	76.26	7,080	116.2	19.1	1.04
Brown Trout	≥200 mm	47	47	47	48	477	114.49	470	193	102.23	756	281.1	240.2	1.00
Brown Trout	ALL	136	183	139	227	1,856	180.70	1,830	752	161.34	2,944	173.6	97.4	1.03
Rainbow Trout	<200 mm	6	6	6	7	61	1.47	60	25	1.31	97	121.8	24.2	1.04
Rainbow Trout	≥200 mm	3	3	3	3	30	12.29	30	12	10.97	48	310.3	404.0	1.02
Rainbow Trout	ALL	9	9	9	10	91	13.76	90	37	12.29	145	184.7	150.8	1.04

Population and Biomass Estimates for Rapid Creek. (Continued)

Site Number: 1832 Survey Completed by: South Dakota Game, Fish and Parks
 Site Description: Pactola Basin (new channel) (site 8)
 Legal Description: S2,R5E,T1N
 Stream Classification: BNT2 RBT2

Date Sampled: 11 JUL 2012 Conductivity (µmhos): 362
 Site Length (m): 100 pH: ****
 Mean Width (m): 9.4 Water Temperature (°C): 8.5
 Number of Passes: 3 Air Temperature (°C): ****

Species	Size Class	Total Number Captured	Est. # in site	Lower 95% CI	Upper 95% CI	# per hectare	Kg per hectare	# per Km	# per acre	lb. per acre	# per mile	Mean Length (mm)	Mean Weight (grams)	Mean Fulton K-factor
Brown Trout	<200 mm	62	102	62	167	1,084	22.97	1,020	439	20.51	1,641	109.6	21.2	1.04
Brown Trout	≥200 mm	8	8	8	8	85	21.22	80	34	18.95	129	285.4	249.6	1.00
Brown Trout	ALL	70	96	70	131	1,020	52.70	960	413	47.05	1,545	129.7	51.7	1.04
Rainbow Trout	<200 mm	9	12	9	25	128	2.11	120	52	1.89	193	110.6	16.6	1.21
Rainbow Trout	≥200 mm	2	2	2	2	21	8.31	20	9	7.42	32	332.0	391.0	1.07
Rainbow Trout	ALL	11	12	11	17	128	10.79	120	52	9.64	193	150.8	84.6	1.18

Site Number: 1837 Survey Completed by: South Dakota Game, Fish and Parks
 Site Description: Above foot bridge between Sites 8 and 9 in Catch and Release reach (site 26)
 Legal Description: S2,R5E,T1N
 Stream Classification: BKT3 BNT2 RBT1

Date Sampled: 03 JUL 2012 Conductivity (µmhos): 335
 Site Length (m): 100 pH: ****
 Mean Width (m): 11.0 Water Temperature (°C): 8.9
 Number of Passes: 3 Air Temperature (°C): ****

Species	Size Class	Total Number Captured	Est. # in site	Lower 95% CI	Upper 95% CI	# per hectare	Kg per hectare	# per Km	# per acre	lb. per acre	# per mile	Mean Length (mm)	Mean Weight (grams)	Mean Fulton K-factor
Brook Trout	<200 mm	1	1	1	2	9	0.16	10	4	0.15	16	107.0	18.0	1.47
Brook Trout	≥200 mm	1	1	1	2	9	0.84	10	4	0.75	16	210.0	92.0	0.99
Brook Trout	ALL	2	2	2	4	18	1.00	20	7	0.89	32	158.5	55.0	1.23
Brown Trout	<200 mm	82	314	82	1,027	2,859	58.71	3,140	1,158	52.42	5,052	113.2	20.5	1.09
Brown Trout	≥200 mm	22	22	22	24	200	66.06	220	81	58.99	354	312.6	329.8	0.98
Brown Trout	ALL	104	194	104	318	1,767	160.17	1,940	715	143.01	3,121	155.4	90.7	1.07
Rainbow Trout	<200 mm	9	12	9	25	109	0.96	120	44	0.85	193	83.8	8.8	0.93
Rainbow Trout	≥200 mm	9	10	9	15	91	47.69	100	37	42.59	161	359.2	523.8	0.93
Rainbow Trout	ALL	18	26	18	49	237	86.49	260	96	77.22	418	221.5	365.3	0.93

Population and Biomass Estimates for Rapid Creek. (Continued)

Site Number: 1842 Survey Completed by: South Dakota Game, Fish and Parks
 Site Description: Pactola Basin (immediately below USGS bridge) (site 9)
 Legal Description: S2,R5E,T1N
 Stream Classification: BKT3 BNT2 RBT2

Date Sampled: 03 JUL 2012 Conductivity (µmhos): 334
 Site Length (m): 100 pH: ****
 Mean Width (m): 11.8 Water Temperature (°C): 8.5
 Number of Passes: 3 Air Temperature (°C): ****

Species	Size Class	Total Number Captured	Est. # in site	Lower 95% CI	Upper 95% CI	# per hectare	Kg per hectare	# per Km	# per acre	lb. per acre	# per mile	Mean Length (mm)	Mean Weight (grams)	Mean Fulton K-factor
Brook Trout	<200 mm	16	25	16	54	212	6.20	250	86	5.54	402	134.7	29.3	1.16
Brook Trout	≥200 mm	1	1	1	1	8	0.70	10	3	0.63	16	203.0	83.0	0.99
Brook Trout	ALL	17	24	17	44	204	6.60	240	82	5.89	386	138.7	32.4	1.15
Brown Trout	<200 mm	29	57	29	135	483	17.46	570	196	15.59	917	129.6	36.1	1.14
Brown Trout	≥200 mm	13	13	13	15	110	29.15	130	45	26.03	209	282.0	264.4	1.20
Brown Trout	ALL	42	61	42	95	517	56.99	610	210	50.89	981	176.8	110.2	1.16
Rainbow Trout	<200 mm	19	22	19	30	187	6.15	220	76	5.49	354	129.7	32.9	1.20
Rainbow Trout	≥200 mm	4	4	4	5	34	10.24	40	14	9.14	64	280.8	301.8	1.24
Rainbow Trout	ALL	23	26	23	34	221	18.04	260	89	16.11	418	156.0	81.8	1.20

Site Number: 1932 Survey Completed by:
 Site Description: Immediately below Nugget Gulch Confluence (site 2)
 Legal Description: S31,R5E,T1N
 Stream Classification: BNT2 RBT2

Date Sampled: 27 JUN 2012 Conductivity (µmhos): 403.0
 Site Length (m): 100 pH: ****
 Mean Width (m): 8.6 Water Temperature (°C): 19.1
 Number of Passes: 3 Air Temperature (°C): ****

Species	Size Class	Total Number Captured	Est. # in site	Lower 95% CI	Upper 95% CI	# per hectare	Kg per hectare	# per Km	# per acre	lb. per acre	# per mile	Mean Length (mm)	Mean Weight (grams)	Mean Fulton K-factor
Brown Trout	<200 mm	30	30	30	32	349	15.00	300	141	13.39	483	154.8	43.0	0.99
Brown Trout	≥200 mm	10	10	10	10	116	15.65	100	47	13.97	161	236.5	134.6	0.95
Brown Trout	ALL	40	40	40	42	465	31.51	400	188	28.14	644	175.7	67.8	0.98
Rainbow Trout	≥200 mm	4	4	4	7	47	13.17	40	19	11.76	64	304.3	283.3	0.98
Rainbow Trout	ALL	4	4	4	7	47	13.17	40	19	11.76	64	304.3	283.3	0.98
Rock Bass	ALL	7	7	7	9	81	4.23	70	33	3.78	113	110.7	52.0	1.82
White Sucker	ALL	3	3	3	3	35	16.29	30	14	14.55	48	347.3	467.0	1.06

Population and Biomass Estimates for Rapid Creek. (Continued)

Site Number: 1947 Survey Completed by: South Dakota Game, Fish and Parks
 Site Description: Silver City Walk-in area (site 3)
 Legal Description: S31,R5E,T1N
 Stream Classification: BNT2 RBT1

Date Sampled: 27 JUN 2012 Conductivity (µmhos): 403
 Site Length (m): 100 pH: 8.9
 Mean Width (m): 8.0 Water Temperature (°C): 16.0
 Number of Passes: 3 Air Temperature (°C): ****

Species	Size Class	Total Number Captured	Est. # in site	Lower 95% CI	Upper 95% CI	# per hectare	Kg per hectare	# per Km	# per acre	lb. per acre	# per mile	Mean Length (mm)	Mean Weight (grams)	Mean Fulton K-factor
Brown Trout	<200 mm	40	42	40	47	525	21.05	420	213	18.79	676	137.4	40.1	1.03
Brown Trout	≥200 mm	18	18	18	20	225	24.64	180	91	22.00	290	223.8	109.5	0.95
Brown Trout	ALL	58	62	58	69	775	49.69	620	314	44.37	998	164.2	64.1	1.00
Largemouth Bass	ALL	1	1	1	1	13	0.44	10	5	0.39	16	145.0	35.0	1.15
Rainbow Trout	<200 mm	4	4	4	7	50	3.23	40	20	2.88	64	183.8	64.5	1.04
Rainbow Trout	≥200 mm	6	6	6	6	75	14.03	60	30	12.52	97	269.3	187.0	0.94
Rainbow Trout	ALL	10	10	10	11	125	17.25	100	51	15.40	161	235.1	138.0	0.98
Rock Bass	ALL	1	1	1	1	13	0.64	10	5	0.57	16	135.0	51.0	2.07

Site Number: 1956 Survey Completed by: South Dakota Game, Fish and Parks
 Site Description: 1956 3rd Bridge Silver City Walk-In-Fishery
 Legal Description: S36,R4E,T2N
 Stream Classification: BKT0 BNT2 RBT1

Date Sampled: 28 JUN 2012 Conductivity (µmhos): 295
 Site Length (m): 100 pH: ****
 Mean Width (m): 8.4 Water Temperature (°C): 21.4
 Number of Passes: 3 Air Temperature (°C): ****

Species	Size Class	Total Number Captured	Est. # in site	Lower 95% CI	Upper 95% CI	# per hectare	Kg per hectare	# per Km	# per acre	lb. per acre	# per mile	Mean Length (mm)	Mean Weight (grams)	Mean Fulton K-factor
Brook Trout	<200 mm	2	2	2	2	24	0.80	20	10	0.72	32	150.0	33.5	0.99
Brook Trout	ALL	2	2	2	2	24	0.80	20	10	0.72	32	150.0	33.5	0.99
Brown Trout	<200 mm	35	37	35	42	442	23.70	370	179	21.16	595	171.2	53.6	1.03
Brown Trout	≥200 mm	22	27	22	39	323	35.13	270	131	31.37	434	225.0	108.8	0.92
Brown Trout	ALL	57	64	57	75	765	58.21	640	310	51.98	1,030	193.1	76.1	0.99
Rainbow Trout	<200 mm	1	1	1	1	12	0.24	10	5	0.21	16	115.0	20.0	1.32
Rainbow Trout	≥200 mm	29	29	29	31	347	89.73	290	140	80.12	467	288.7	258.8	1.03
Rainbow Trout	ALL	30	30	30	32	359	89.97	300	145	80.33	483	282.9	250.8	1.04
White Sucker	ALL	4	4	4	4	48	25.28	40	19	22.57	64	361.0	528.5	1.12

Population and Biomass Estimates for Rapid Creek. (Continued)

Site Number: 1962 Survey Completed by: South Dakota Game, Fish and Parks
 Site Description: 1962 - Trestle at Silver City Walk In Fishery
 Legal Description: S1,R4E,T1N
 Stream Classification: BKT0 BNT1 RBT1

Date Sampled: 28 JUN 2012 Conductivity (µmhos): 403
 Site Length (m): 100 pH: ****
 Mean Width (m): 9.1 Water Temperature (°C): 23.8
 Number of Passes: 3 Air Temperature (°C): ****

Species	Size Class	Total Number Captured	Est. # in site	Lower 95% CI	Upper 95% CI	# per hectare	Kg per hectare	# per Km	# per acre	lb. per acre	# per mile	Mean Length (mm)	Mean Weight (grams)	Mean Fulton K-factor
Brook Trout	<200 mm	2	2	2	3	22	1.13	20	9	1.01	32	178.5	51.5	0.90
Brook Trout	ALL	2	2	2	3	22	1.13	20	9	1.01	32	178.5	51.5	0.90
Brown Trout	<200 mm	31	35	31	44	383	16.50	350	155	14.73	563	157.3	43.1	1.04
Brown Trout	≥200 mm	35	37	35	42	405	48.62	370	164	43.41	595	231.2	120.1	0.95
Brown Trout	ALL	66	73	66	83	799	67.03	730	324	59.85	1,175	196.5	83.9	0.99
Rainbow Trout	<200 mm	1	1	1	1	11	0.65	10	4	0.58	16	180.0	59.0	1.01
Rainbow Trout	≥200 mm	10	11	10	16	120	27.79	110	49	24.81	177	282.0	230.8	0.98
Rainbow Trout	ALL	11	11	11	13	120	25.91	110	49	23.13	177	272.7	215.2	0.98
White Sucker	ALL	2	2	2	6	22	7.48	20	9	6.67	32	303.0	341.5	1.22

Site Number: 2093 Survey Completed by: South Dakota Game, Fish and Parks
 Site Description: Immediately below Mystic Road (site 5)
 Legal Description: S28,R4E,T2N
 Stream Classification: BKT0 BNT2

Date Sampled: 13 JUL 2012 Conductivity (µmhos): 402
 Site Length (m): 100 pH: ****
 Mean Width (m): 5.5 Water Temperature (°C): 15.0
 Number of Passes: 3 Air Temperature (°C): ****

Species	Size Class	Total Number Captured	Est. # in site	Lower 95% CI	Upper 95% CI	# per hectare	Kg per hectare	# per Km	# per acre	lb. per acre	# per mile	Mean Length (mm)	Mean Weight (grams)	Mean Fulton K-factor
Brook Trout	<200 mm	1	1	1	1	18	0.44	10	7	0.39	16	136.0	24.0	0.95
Brook Trout	ALL	1	1	1	1	18	0.44	10	7	0.39	16	136.0	24.0	0.95
Brown Trout	<200 mm	65	68	65	74	1,238	46.01	680	502	41.09	1,094	101.8	37.2	1.07
Brown Trout	≥200 mm	13	13	13	13	237	28.59	130	96	25.53	209	228.7	120.8	1.00
Brown Trout	ALL	78	81	78	86	1,475	90.44	810	597	80.76	1,303	123.0	61.3	1.05
Mountain Sucker	ALL	3	15	3	296	273	2.82	150	111	2.52	241	97.0	10.3	1.08

Population and Biomass Estimates for Rapid Creek. (Continued)

Site Number: 2182 Survey Completed by: South Dakota Game, Fish and Parks
 Site Description: 2182- 1980's site 10 @ Mickelson Trail
 Legal Description: S00,R00E,T
 Stream Classification: BKT0 BNT2 RBT2

Date Sampled: 27 JUL 2012 Conductivity (µmhos): 409
 Site Length (m): 100 pH: 8.6
 Mean Width (m): 4.9 Water Temperature (°C): 16.7
 Number of Passes: 3 Air Temperature (°C): ****

Species	Size Class	Total Number Captured	Est. # in site	Lower 95% CI	Upper 95% CI	# per hectare	Kg per hectare	# per Km	# per acre	lb. per acre	# per mile	Mean Length (mm)	Mean Weight (grams)	Mean Fulton K-factor
Brook Trout	<200 mm	3	3	3	4	61	2.04	30	25	1.82	48	150.7	33.3	0.93
Brook Trout	ALL	3	3	3	4	61	2.04	30	25	1.82	48	150.7	33.3	0.93
Brown Trout	<200 mm	25	26	25	30	530	22.66	260	215	20.23	418	135.8	42.8	1.01
Brown Trout	≥200 mm	12	12	12	13	244	26.81	120	99	23.94	193	227.8	109.7	0.91
Brown Trout	ALL	37	38	37	41	774	53.16	380	314	47.47	611	165.6	68.7	0.97
Longnose Dace	ALL	5	5	5	6	102	***	50	41	***	80	79.2	***	***
Mountain Sucker	ALL	3	5	3	24	102	5.74	50	41	5.12	80	166.0	56.3	1.23
Rainbow Trout	≥200 mm	1	1	1	1	20	3.04	10	8	2.71	16	273.0	149.0	0.73
Rainbow Trout	ALL	1	1	1	1	20	3.04	10	8	2.71	16	273.0	149.0	0.73