Nevada Strip Fishery Survey

Challenge Cost Share

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ABSTRACT

The Nevada Department of Wildlife and the Jarbidge District of the Bureau of Land Management entered into a Challenge Cost Share Agreement to conduct fishery surveys in specific streams located on the Nevada – Idaho border area within the Bruneau River Drainage. Streams that were surveyed included Deep Creek, Dorsey Creek, Columbet Creek, Dave Creek, East Fork Jarbidge River, Cherry Creek, and Deadman Creek. Redband trout were found to inhabit Columbet Creek, Dave Creek, East Fork Jarbidge River, Deadman Creek and the upper mile of Cherry Creek. Taylor Creek was deemed unsurveyable due to minimal, shallow flow conditions. Dorsey Creek and Deep Creek were fishless. There were two bull trout sampled on private ground on Dave Creek and these fish represent the lowest elevation that the species has been documented thus far in Dave Creek. Prevailing stream temperatures were as high as 64°F where the bull trout were collected. The private and Forest portions of Dave Creek were surveyed on several occasions for bull trout spawning beginning in September and ending in October. There were only four redds found and only one was on private land.

Stream habitat conditions were assessed using USFS, General Aquatic Wildlife Survey (GAWS)–Level 3 methodology on Deep Creek, Dorsey Creek, Columbet Creek, and the East Fork Jarbidge River. Streambanks were nearly all covered and stable and showed light to no ungulate damage. Deep (>0.3 m) pool habitat was assessed in electrofished sites and in GAWS habitat surveyed areas except in the East Fork Jarbidge River where all pools were at least 0.3 m deep. No deep pools were found in Dorsey Creek, Columbet Creek. One deep pool in Deep Creek was found between sampled sites and it was surveyed. Beaver ponds in Columbet Creek did meet depth criteria but they were not assessed. Active beaver ponds were also present in Cherry Creek. Large woody debris was present in Dave Creek and the East Fork Jarbidge River. The absence of fish in lower Cherry Creek necessitates that a check on streamflows be done in late August.

INTRODUCTION

The Interior redband trout (O*ncorhrynchus mykiss)* has been identified as the primary native salmonid within the Bruneau, Owhyee, and Salmon Falls River drainages of Nevada and Idaho. This project was conducted to determine the distribution of fishes and stream habitat conditions on various stream reaches located on Bureau of Land Management administered land and private lands within what is commonly referred to as the Nevada Strip of Northern Nevada (Figure 1.) The upper reach of these streams located on the Humboldt –Toyiabe National Forest were last surveyed in the 1990's. The later surveys consisted of both fish population and stream habitat condition surveys. The challenge cost share agreement allowed for surveys to be completed on streams where data on fish population status and stream habitat condition was incomplete.

Fish population surveys were completed on the following streams in 2004: Deep Creek, Dorsey Creek, Columbet Creek, Dave Creek, East Fork Jarbidge River, Cherry Creek, and Deadman Creek. Intensive stream habitat data were collected on Deep Creek, Dorsey Creek, Columbet Creek, and the East Fork Jarbidge River. Bull trout spawning surveys were conducted in Dave Creek.

METHODS

Sample sites on each stream were pre-plotted on USGS 7.5' topographic maps with the first site beginning near Stateline or near the stream mouth and additional sites at intervals of from 0.2 mi. to about 1.0 mi. on upstream to the Forest Boundary. In the absence of a survey map during the survey of the East Fork Jarbidge River, a Garmin® 12 GPS unit was used to determine approximate 0.5 mi. distances between sample sites and thus, the location of the sites.

Fish Population Sampling

Upon locating a sample site to be electrofished, a ¼-inch mesh blocknet was placed in the stream. A second blocknet was placed 100 ft upstream. A Dirigo® 850 backpack electroshocker and one or two dip-netters moved upstream. Captured fish were placed in a bucket and all fish were measured (TL and FL) in metric. Fish weights were measured with Pesola® spring scales (10, 30, or 100g). Processed fish were released back into the stream below the downstream blocknet. The downstream blocknet was checked for fish captures prior to completing additional electrofishing passes. Any fish found in the net were included in the fish totals for the electrofishing pass that had last been completed. If no fish were captured or seen during the first electrofishing pass then, no additional passes were completed. A third, or rarely a fourth pass was completed in the event that the last completed pass captures comprised >30% of the number of fish captured in the preceding pass. The fish population data was

analyzed in the Microfish 3.0 PC Program (Van Deventer, J. S. and W. S. Platts 1988). Resulting population estimates were compared with estimates derived from totaling number of fish removed plus the number of misses observed during the last electrofishing pass. Species population estimates were derived from averaging estimates and multiplying the mean number per mile by the fish occupied length of stream.

The large size of the East Fork Jarbidge River precluded the use of backpacking electrofishing equipment hence, a team of two divers snorkeled while moving slowly upstream to identify and count fish through a 100 ft length of stream (126 ft at SS-2). Identified gamefish were classified as catchable (>6 in.), subcatchable (<6 in.), or fingerling (~<3.5 in.). Nongame fish were identified and numbers were recorded. Dace were usually difficult to identify to species and to numerous to count. Gamefish abundance was estimated by averaging numbers observed at each sample site and expanding the number per mile by the occupied length of surveyed stream.

Redd Surveys

Surveys to assess bull trout spawning in Dave Creek were completed on September 9, 14-15, 28-29, and October 12-13, 2004. Surveys were restricted to the reach of stream between the private land road crossing upstream to the perennial spring source to Dave Creek on the Forest. Usually one surveyor on each bank proceeded upstream to search for redds/spawning bull trout. Both starting and ending stream temperatures were recorded during the surveys. Beginning and ending locations were recorded using GPS, as were locations of redds.

Habitat Surveys

Habitat characteristics noted through each electrofished sample site included a streambank stability and cover evaluation (Platts et al. 1987), air and stream temperature (ºF), and stream discharge (if a suitable site could be found). Stream discharge was calculated from measurements of stream width, depth, and velocity over a somewhat uniform 1 or 2 m length of stream. Depth and velocity were determined at ¼, ½, and ¾ the stream width (Leitritz E. and R. C. Lewis, 1976). Quality fish rearing habitat was assessed in pools that were at least 0.3 m deep. A substrate score was recorded for the substrate within that portion of the pool ≥0.3 m (Bjornn et al. 1977). Width and depth at ¼, ½, and ¾ the width were recorded through the fish population sample sites in East Fork Jarbidge River, Columbet Creek, Cherry Creek and Deadman Creek. Large woody debris was present and recorded at East Fork Jarbidge River sample sites.

General Aquatic Wildlife Survey (GAWS) Level III stream habitat surveys (USFS 1989) were completed at sample sites located in Deep Creek, Dorsey

Creek, Columbet Creek, and East Fork Jarbidge River. This perpendicular-to-flow clustered transect survey design is capable of providing statistically unbiased habitat descriptions (Clarkson R. and J. Wilson 1995). A minimum of five and usually eight across stream transects was used to assess habitat at each sample site. The first habitat transect was placed 150 ft upstream of the start of the fish population survey site. Transects were 50 ft apart. Due to thick stream canopy conditions at some sample sites, the distance between transects had to be estimated by running the tape around or over streambank vegetation. Normally the tape was run right up the middle of the stream. Stream gradient was estimated using a clinometer and judging eye-level location on a fellow surveyor separated as far as 50ft or less if constrained by vegetation. GAWS data was entered and analyzed in a GAWS - PC Program (McGraw and Patterson, 1992).

RESULTS

Fish Surveys

Redband trout were found to occupy East Fork Jarbidge River, Columbet Creek, Cherry Creek, Deadman Creek, and Dave Creek (Table 1). No fish were found to occupy Deep Creek and Dorsey Creek. No fish were found on the Forest portion of Deep Creek, Dorsey Creek, or Columbet Creek in 1992. Bull trout were only found in Dave Creek. The East Fork Jarbidge River held the only multi-species fish assemblage wherein, besides redband trout and mountain whitefish, there were an occasional bridgelip sucker and sculpin seen. Both speckled dace and longnose dace were common although, neither species were counted. Population estimates derived from the combined fish capture in each electrofishing pass plus the number seen but missed fish (last electrofishing pass) provided the best population estimate at sampled sites (Appendix I).

Table 1. Gamefish occupied range, density, and expanded population estimate in the Nevada Strip in Summer, 2004.

Stream	Species	Range (miles)	Mean No./mi.	Exp. Pop. Est.
Cherry Cr	RB	1.2	52.8	63
Columbet Cr.	RB	2.7	167.2	451
Dave Cr.	RB	6.4	844.8	5,407
	BT	6.4	15.1	97
Deadman Cr.	RB	1.2	448.8	539
E.F.Jarbidge	RB	3.6	840.3	3,025
R.	MF	3.6	163.0	587

Redd Surveys

There were only a few bull trout redds observed in Dave Creek during any of the surveys (Table 2). The first redds were observed on the Forest when first surveyed on September 14. A redd was first observed on the upper private land

on October 12 and there was another redd seen on the lower Forest on October 13 (Table 3). At no time was there spawning bull trout observed in 2004.

Table 2. Summary of bull trout redd surveys conducted in Dave Creek in 2004.

Date	Reach	Maximum Water Temperature ºF	Time	BT Redds
9/9	Private	49	0949	0
9/14	Private	50	1407	0
9/14	Forest	48	1542	2
9/15	Forest	45	1040	0
9/28	Private	52	1447	0
9/29	Private	47	0925	0
9/29	Forest	45	1149	0
10/12	Private	47	1622	1
10/13	Forest	45	1304	1
10/14	Forest	43	1755	0

Table 3. Location of identified bull trout redds in Dave Creek in 2004.

Date	Reach	Easting	Northing	Pit Depth (m)	Mound Depth (m)
9/14	L. USFS	0636542	4640963	0.18	0.05
9/14	L. USFS	0636561	4640872	0.14	0.07
10/12	Private	0635525	4643544	0.12	0.06
10/13	U. USFS	0636692	4638141	0.10	0.04

Stream Summaries

Columbet Creek

Six sample sites (SS's) were completed on lower Columbet Creek (Appendix II). The lower elevation SS's are each represented by 8 transects per SS. The upper three SS's each had 5 transects per SS completed. There were four sample sites below the Diamond A road and two sample sites above the road to the cross stream fenceline located just above the confluence of Fawn Creek. Highest redband trout densities (8-9 fish per 100 ft) were present at SS-2 and SS-3. No fish were captured or seen at SS-4 and SS-5. Two trout were captured at SS-1 and only one trout was found at SS-6. The stream below the Diamond A road to SS-4 is influenced by beaver dams. The beaver ponds were not sampled for fish however, they may contain redband trout and some would likely contain catchable-sized fish. A fish barrier existed at a stabilized headcut located just above the electrofished area at SS-6.

The stream below the beaver impacted area was a Rosgen B5 stream type whereas, above the Diamond A road the stream was a B4 type. Stream gradient ranged from 1.0% - 2.0% and averaged 1.6%. Stream Channel Stability (SCS) Evaluation scores ranged from 76 to 108 and averaged 86 or “fair” stability. The lowest rated SCS parameters were lower bank rock content; stream bottom size distribution; and stream bottom percent stable materials. The stream banks at SS-1 appeared to have been broken/collapsed at one time, but were now in a healed state for the most part. Stream banks through the fish population sample areas at each sample site ranged from mostly covered stable (83-100%) at the four SS’s below the county road to mostly covered unstable (70-72%) at the two SS's above the road. Uncovered unstable banks were rare and accounted for a maximum of 11.5% of the bank area at SS-3. Bank soil stability and vegetative stability ratings rated 80.5% and 82.5% of optimum. Bank cover vegetation ranged from 57.5% of optimum at SS-5 to 95% of optimum at beaver impacted SS-4 and averaged 76.1% of optimum. Undercut bank frequency averaged 23% and stream bank ungulate damage was minimal as evidenced by a 3.5% damage rating.

Poor rated stream habitat parameters included streambottom substrate, pool measure, and pool structure. The streambottom was mostly a clay to silt texture. The upper two SS’s did have a rockier substrate than downstream areas however; sand-silt was still common. Substrate embededness ranged from a low of 12% at SS-5, which coincidently had 74.2% of the water width as riffle habitat, to a high of 80% in the beaver ponded area at SS-4. The embededness was considerably higher at SS’s below the road (mean of 63%) compared to the mean rating above the road (22%).

Stream flow averaged 1.31 cfs and the water width and depth averaged 1.44 m and 0.094 m, respectively at free-flowing sites. The mean width and depth at the beaver ponded sample site was 13.6 m and 0.17 m, respectively. Riffle habitat was present at four of the six sample sites and the overall, percent of optimum pool measure rating was 34.8%. Slow moving glide habitat accounted for the bulk of the 39.2% of cross stream habitat classified as “other”, water type. Stream temperatures ranged from 44ºF to 57 ºF.

Excluding the beaver ponded area, there were only two quality pools (> 0.30 m deep) identified at sampled areas. The pools were type 3 pools and both were found at SS-3. Habitat features of both pools included undercut banks and streamside aquatic vegetation. The mean depth of the largest and smaller pool was 0.25 m and 0.17 m, respectively. Dominant deep pool rearing habitat substrate was silt/clay. Sub-dominant substrate was cobble in one pool and sand in the other pool. The pools were both mostly embedded within the area classified as deep rearing habitat, which amounted to 2.6 m² of deep water in the largest pool and 0.8 m² in the smaller pool. Within the beaver ponded area of SS-4, there were quality pools encompassed four of the five transects. All of the pools at SS-4 had features of aquatic vegetation and clay/silt/organic

streambottom. Maximum depths over the aforementioned pools at transect locations ranged from 0.3 to 0.7 m. Quality pools were only present at SS-2, SS-3, and SS-4. The pool structure percent of optimum rating averaged 33.3% when the three 0.0% ratings from SS-1, SS-5, and SS-6 are included in the average.

Riparian Conditions

Riparian area width averaged 31 m and ranged from 7 m at SS-5 to 98 m at SS-1. Streamside vegetative communities were dominated by *Salix boothii* and *Rosa woodsii* along with mesic graminoids and forbs. There were two sample sites where *S. drummondiana* was also noted. Some *S. exigua* was also present at SS-4. *Aspen* was only noted at SS-5. The riparian condition ratings for the five shrub dominant SS's averaged "good" and ranged from "fair" at SS-1 and SS-3 to "excellent" at SS-4. A "good" rating represented the dominant aspen/salix community. Grass seed heads were commonly seen, thus indicating that livestock grazing had not really started in the area prior to our survey. Stream bank vegetation provided an average canopy cover of 59% and ranged from 20% at SS-5 to 92% at SS-6.

Deep Creek

Downstream of the Forest Boundary there were five sample sites surveyed on Deep Creek within a 200-400 ft deep canyon (Appendix II). There were eight transects completed at each SS. No fish life was found during the June 22-23 survey. Deep Creek was a losing stream wherein, surface flows ceased downstream of SS-2 a quarter mile hence, stream inspection or survey of SS-1 did not occur.

The stream channel was classified as a Rosgen B5 with a B4 inclusion at the uppermost SS-6. At the two SS's that it was possible to take a gradient measurement, the gradients were 1.0% and 1.5%. Stream Channel Stability Evaluation scores ranged from 61 to 80 and averaged 71, or "good". Within electrofished areas, covered stable and uncovered stable stream banks accounted for 72.7% of the stream bank length. Within the GAWS habitat survey area, streambank soil stability and vegetative stability ratings were 74.4 % and 75.0% of optimum, respectively. Only 6.25% of banks intersected by transects were undercut. Ungulate streambank damage only amounted to 5.0%.

The lowest rated stream habitat parameter was percent of optimum streambottom wherein, the mean rating was 33.2%. Owing to the preponderance of silt on the streambottom, embededness ratings averaged 58.7%. Aquatic plants were essentially absent from the stream, possibly due to ephemeral conditions later in the summer.

Stream discharge at the five surveyed SS's averaged a low, 0.22 cfs. Stream temperatures ranged from 48ºF to 70ºF during the June 22- 23 survey period. The mean stream width and depth was 1.1 m and 0.05 m, respectively. The stream was comprised of 52.7% pool, 34.2% riffle, and 18.5% other (mostly glide) habitat. The only quality pools transected were type 3, which were shallow and had minimal cover features. The maximum water depths of transected type 3 pools ranged from 0.04 - 0.19 m and averaged 0.12 m. The maximum depths across transected riffle habitat were 0.02 – 0.08 m and averaged 0.07 m. While hiking along the surveyed reach of Deep Creek, only one true quality pool was seen. Located between SS-5 and SS-4 was a type 1 quality, log-formed pool that encompassed 7.0 m². The deep (> 0.3 m) habitat area was 1.43 m². The maximum pool depth was 0.51 m. Substrate score was only 5, due to the sand-silt streambottom.

Riparian Conditions

Riparian community types along Deep Creek consisted of (1) aspen/willow at SS-6 and SS-2 and (2) Juniper/willow at SS-3, 4 and 5. Only at SS-5 was the juniper deemed common enough to rate the riparian area as a tree type. Other common shrub types present included woods rose and dogwood. Some tall forbs were noted at SS-3. Most SS's rated in "good" condition and SS-4 rated "fair". The scores for rating SS-2 were inadvertently left off the field form. Riparian vegetation provided an average stream canopy density of 92.6%. Streambank vegetative cover averaged 83.4% of optimum. Sample Site 4 had a 70.3% percent of optimum rating and the lowest of all scores.

Dorsey Creek

There were six sample sites completed on the 2.5 mile surveyed reach of Dorsey Creek between the Forest Boundary and the Idaho Stateline (Appendix II). There were 5 transects completed per SS at SS-1 and SS-2. The remaining four SS's were completed with 8 transects per SS. No fish life was encountered during the June 16 and 21 survey.

The stream channel was classified as primarily a Rosgen B4 channel. Stream Channel Evaluation scores ranged from 55 - 88 and averaged 73 or "good". Stream gradient averaged 2.8% along the surveyed reach. Streambank soil stability and vegetative stability averaged 75.2 % and 77.7% of optimum, respectively. Within electrofished areas streambanks were classified as 83.7% stable. Uncovered, unstable streambanks amounted to 7.6% of the length. Undercut bank frequency at transect locations was 23.8%. Ungulate streambank damage was "light" and only amounted to an average of 7% of the bank area.

Stream discharge was perennial during the survey and averaged 0.97 cfs. The discharge at SS-1 near the Idaho Stateline was only 0.42 cfs. A water

diversion ditch across from SS-2 had a flow of 0.85 cfs. The mean stream width and depth averaged 1.3 m and 0.07 m. respectively. The mean width:depth ratio was 18.6. The stream was composed of 35.9% pool, 44.8% riffle, and 19.3% of other, most of which was glide habitat. Pool:riffle percent of optimum averaged 42.6% and quality type 3 pools provided a mean 40.7% of optimum pool structure rating. Quality pools >0.3 m deep accounted for four pools at SS-3 and one pool at SS-4. Four type 2 pools met the depth criteria, while only one type 3 pool met the depth criteria. The area of the deep fish rearing habitat of the quality pools was minimal (0.01 – 0.54 m^2) and averaged 0.32 m^2. Small logs were the dominant pool habitat feature. Undercut banks were associated with two of the deep pools. Clay/silt was dominant or sub-dominant in all but one deep pool rearing area hence, substrate scores included two – 4's, two – 8's, and only one pool that rated as high as 13.

The streambottom percent of optimum mean rating was 51.3%. Silt/clay was the dominant substrate at the lower four SS's whereas, gravel was dominant at the upper two SS's. The overall substrate composition was as follows: boulder (2.8%), rubble (16.3%), gravel (35.3%), sand/silt (43.5%), and other (2.2%). Embededness averaged 39.3%.

Riparian Condition

The lowest two elevation SS's were in a willow/rose/grass/forb community. Tree willow (*Salix lasiandra*)/rose was present at SS-3 and aspen/*S. lasiandra/rose* was present at SS-4. Alder entered the aspen/salix community at the upper two SS's. Stream canopy density averaged 66% and ranged from 42% at SS-1 to 96% at SS-4. Riparian condition ratings for the two shrub communities averaged "good"; despite SS-1 rating only "fair". The four tree communities averaged a "good" rating; even though SS-3 and SS-5 rated "fair". No recent grazing use of riparian herbaceous vegetation was noted at SS-1, 2, or 6. There were some grass seed heads present at SS-3 and grazing appeared light to moderate. The water was murky at SS-3 due to the presence and use of the stream by cattle. Seed heads were more common at SS-4 and grazing use was "light'. Most grass had been grazed at SS-5 to a height of 3 inches. Some browsing of willows was also noted at SS-5.

East Fork Jarbidge River

There were six sampled areas within the 800 -1000 ft deep and narrow canyon that confines 3.6 miles of river on public lands between the Forest Boundary and the Idaho Stateline (Appendix II). There were five habitat transects completed per sample site. The survey of the river occurred on August 3 and 4. Access between stations had to be done by wading, due to the narrow confines of the canyon.

The entire surveyed reach of river was classified as primarily a Rosgen B3 channel. The mean measured gradient was 1.75% (1.0 – 2.5%). Stream channel stability evaluation scores averaged 56.7 and SS's had "good" stability. The mean channel width and measured valley bottom width at each SS averaged 9.8 m and 11.0 m, respectively.

Streambank soil and vegetative stabilities averaged 86.3% and 81.3% of optimum. Bank cover only rated 42.5% of optimum, due to the high frequency of bare rocky streambanks. Undercut bank frequency averaged 20% at transect locations.

The mean pool and riffle ratio was 48.4 : 51.6 however; the mean percent of optimum pool measure attribute was only 61.5. The mean pool structure rating was 66.2 % of optimum. Quality pool habitat was absent only at SS-4. The large woody debris (LWD) survey resulted in LWD being found at all SS's except, SS-2. A third of the 12 total LWD locations were partially or wholly in water. A quarter of the identified LWD was associated with quality pools.

The mean stream width and depth at transect locations were 6.7 m and 0.22 m, respectively. Stream width and depth measurements within the snorkeled sites averaged 7.4 m and 0.24 m, respectively. The maximum depth at transect locations at each SS ranged from 0.49 m to 1.07 m and averaged 0.69 m. Stream discharge measured at the time of survey averaged 15.9 cfs. A probable maximum water temperature of 66ºF was taken at 1455 hrs at SS-5 on August 3. Early that day, the river was 56 ºF at 1110 hrs. The thermometer was lost during the survey and so additional temperature data collection was not possible.

The streambottom composition was 21% boulder, 74% rubble, <1% gravel, and 4% sand/silt. Owing to the dominance of rubble, the streambottom was at 74% of optimum. Streambottom embededness was similar throughout the surveyed reach and averaged 30.7%.

Riparian Condition

The juniper/willow community was present at the three lower SS's and at SS-5. The alder/willow community was dominant at SS-6 and SS-4. The riparian condition scores rated "excellent" everywhere except at SS-1, where the shrub and understory components rated "good". Minor ungulate streambank damage was only noted at SS-3. Riparian vegetation provided an average stream canopy of 35% (25.5 – 51%).

Dave Creek

There were seven fish population sample sites completed in Dave Creek during the period of July 27-29 (Appendix II). The 6.4 mile reach of Dave Creek below the Forest Boundary had an average of 844.8 redband trout per mile. An estimated 5407 redband trout resided within the surveyed reach. Length frequency analysis of the sample of 105 redband trout revealed five age groups including a single young-of-year, a large age-I class, age-II, age-III, and two age-IV fish (Figure 1).

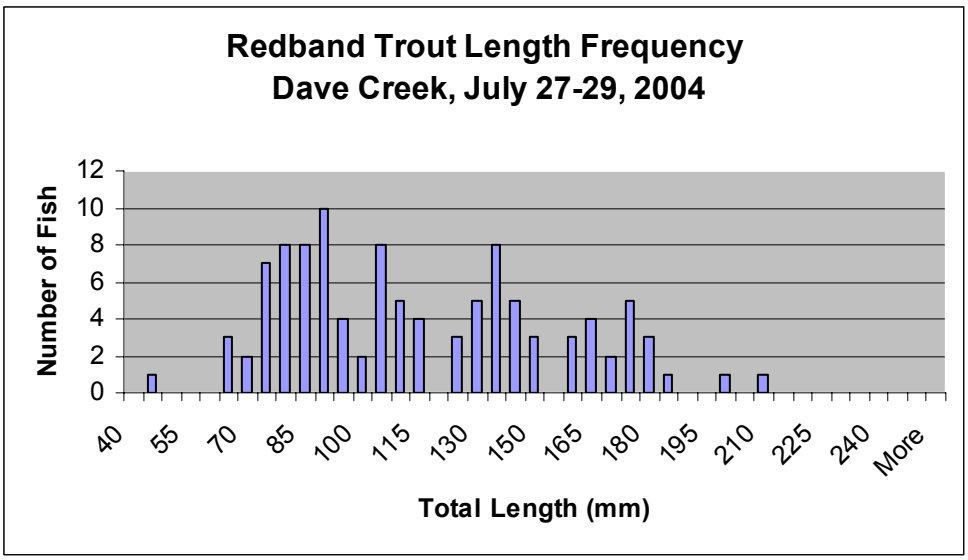


Figure 1. Dave Creek redband trout length frequency, July 27-29, 2004.

There were two bull trout captured; one at SS-3 was 158 mm (TL) and the one at SS-4 was 193 mm long. The expanded bull trout population estimate was 97. Stream temperature at the time of the captures was 62º-63ºF. These temperatures are generally considered unsuitable for bull trout occupancy. The absence of any younger-aged juvenile bull trout in the sample would seem to indicate that the surveyed reach is thermally unsuitable for juvenile bull trout summer rearing. Both captures represent the first documented occurrence of bull trout at such a low elevation (6160 – 6320 ft) in Dave Creek.

The mean streambank conditions were as follows: 85.6% covered and stable; 1.6% uncovered and stable; 1.6% covered and unstable and 2.2% uncovered and unstable. The mean stream width and depth was 2.3 m and 0.10 m, respectively. Stream width to depth ratios ranged from 13.1 at SS-3 to 31.3 at SS-7 and averaged 25.5. The mean stream discharge as measured at five SS's was 3.08 cfs. Water temperature ranged from 49ºF at 0923 hrs at SS-7 to 64ºF at 1730 hrs at SS-3.

There was one quality type 2 pool at each of the lower four SS's. The mean length and width of the five quality pools was 3.4 m and 2.5 m, respectively. Maximum depths in the pools ranged from 0.34 m to 0.53 m and averaged 0.43 m. The mean area coverage of the >0.3 m deep pool zone ranged from 0.44 m² at SS-3 to 3.36 m² at SS-1 and averaged 1.95 m². Deep pool area substrate scores ranged from 8.5 at SS-1 where sand/silt was the dominant substrate to 15 at SS-4. The other high embededness rated pool was at SS-2 with sand/silt the subdominant substrate material.

Riparian vegetation overstory was dominated by aspen, juniper, alder (SS-1 and 2), willow, rose, and western black currant (SS-4). Downed trees were abundant at SS-2 and there was a moderate amount of large woody debris at SS-3. Aspen regeneration was noted at SS-6 and numerous aspen saplings were present at SS-2. No sign of ungulate grazing was noted during the survey.

Recommendations

1) A complete stream habitat evaluation should be completed on the recently state acquired private land portion of Dave Creek.

2) Summer – fall thermal profiles should be taken on the recently state acquired private land portion of Dave Creek.

Cherry Creek

A total of six sample sites were slated for survey on Cherry Creek during July 7-8 (Appendix II). Only SS-1 was not surveyed due to the extreme density of riparian vegetation (Figure 2).

Figure 2. Cherry Creek SS-1 located near the stateline.

A single redband trout was captured at each of the two ≤100 ft long SS's located within a mile of the Forest Boundary. No fish were seen or captured during the second pass at the two SS's where fish were found. Sampling of 200 ft of stream at each of the three lower elevation SS's did not result in any fish captures or sightings. Total length of captured redband trout were as follows: 151 mm and 122 mm. There was an expanded, estimated 63 redband trout in the approximate 1.2 miles of occupied stream below the Forest Boundary. The absence of fish at three downstream sites could indicate that streamflow diminishes in late summer although; the presence of moss, sedge and rush at SS-2 would seem to indicate perennial flows.

Mean stream width and depth were 1.78 m and .093 m, respectively and the mean width:depth ratio was 19.1. Discharge in Cherry Creek at SS-6 above the confluence of Deadman Creek was 0.42 cfs. Below the confluence the mean discharge was 1.4 cfs. There were two quality pools deeper than 0.3 m present within the surveyed sites (Table 4). The rearing habitat substrate at the SS-4 class 3 pool consisted of "cemented" gravel between small boulders. The class 2 pool at SS-2 had fine sediment among a dominant rubble substrate.

Table 4. Deep (>0.3 m) pools encountered at sample sites in Cherry Creek, July 7-8, 2004.

SS	Pool Class	Pool Area (m^2)	Mean Depth (m)	Deep Pool Area (m^2)	Maximum Pool Depth (m)	Substrate Score
4	3	2.15	0.16	0.96	0.39	10
2	2	11.9	0.20	1.76	0.43	9

Stream riparian vegetation communities found along Cherry Creek included the following: willow/dogwood/rose at SS-1 and SS-2; willow/rose at SS-3 through SS-5; and aspen/rose at SS-6. There were 13 pieces/small aggregates of woody debris at SS-6 however; few pieces were actually in the stream. Mean streambank stability conditions were as follows: covered and stable – 65.5%, uncovered and stable - 10.2%, covered and unstable – 14.4%, and uncovered and unstable – 9.9%. There were active beaver ponds present less than a 0.1 mile upstream of SS-4. Stream temperatures ranged from a temperature of 52°F at 0914 hrs at SS-2 to an afternoon temperature of 66°F at SS-5 and SS-6.

Recommendation

The water status of lower Cherry Creek should be assessed in late-August.

Deadman Creek

Two 100 ft long sample sites were electrofished in the lower 1.2 miles of Deadman Creek (Appendix II). Both SS's had a similar density of redband trout present on July 7; eight plus one missed trout at SS-1 and eight trout at SS-2. There were an average of 448.8 redband trout per mile and an expanded estimated 539 trout within the sampled reach of stream. The sample of 16 trout averaged 121.25 mm TL (93 – 200 mm). The sample at SS-1 held two adult – sized trout (200 and 168 mm).

The mean width and depth of the sample sites were 1.47 m and 0.085 m, respectively. The mean width to depth ratio was 16.6. The mean discharge was 1.21 cfs. A spring flow entered the stream below SS-1. There was one deep quality type 2 pool present at SS-1. The total pool area was 6 m^2 and the deep (> 0.3 m) area encompassed 1.06 m^2. The mean pool depth was 0.17 m and the maximum depth was 0.40 m. The rubble – gravel deep pool area substrate was mostly embedded with fines hence, the substrate score of 9. Mean streambank stability conditions were as follows: covered and stable – 86.75%, covered and unstable – 5.75%, uncovered and stable – 4.75%, and uncovered and unstable – 2.75%. Willow was the dominant riparian overstory vegetation.

Taylor Creek

The upper couple hundred feet of stream on BLM administered was inspected on July 6. The stream was deemed to have insufficient water depth for an electrofishing survey. No further evaluation of the stream was made.

LITERATURE CITED

Bjornn, T. C., M.A. Brusven, M.P. Molnau, J.H. Mulligan, R.A. Klant, E. Chacho, and C. Schaye. 1977. Transport of granitic sediment in streams and its effect on insects and fish. Forest, Wildlife, and Range Station. Technical Report. Project B-036-IDA.

Clarkson, R. and J. Wilson. 1995. Evaluation of the U.S. Forest Service's fish habitat relationship system in east-central Arizona trout streams. Arizona Game and Fish Department. Technical Report 8, Phoenix. 74 pp.

Leitritz, E. and R.C. Lewis. 1976. Trout and salmon culture (hatchery methods). Fish Bulletin 164. California Department of Fish and Game. 197 pp.

McGraw, J. and L. Patterson. 1992. General aquatic wildlife system (GAWS) PC software Version 5.2 – user's guide. Nevada Department of Wildlife, Reno.

Platts, W.S., C. Armour, G.D. Booth, M. Bryant, L.L. Bufford , P. Culpin. S. Jensen, G.W. Liekaemper, G.W. Minshall, S.B. Monsen, R.L. Nelson, J.R. Sedell, and J.S. Tuhy. 1987. Methods for evaluating riparian habitats with applications to management . Gen. Tech. Reort INT-221. USDA Forest Service, Intermountain Research Station, Ogden, UT, 177 pp.

U.S. Forest Service. 1989. Fisheries habitat surveys handbook, Region 4 – FSH2609.23, Intermountain Region, Ogden, Utah.

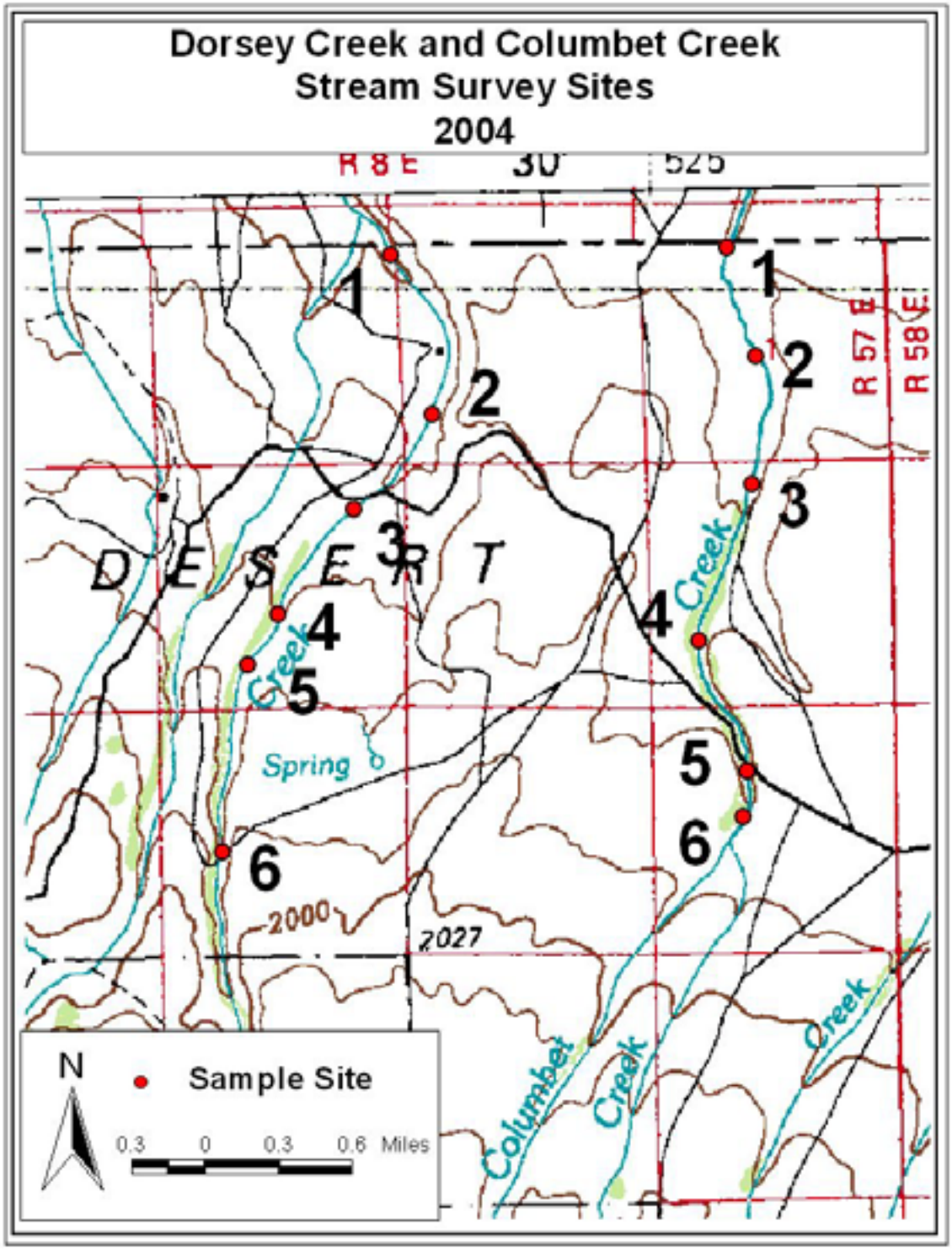
Van Deventer, J.S. and W.S. Platts.1988. User's guide for Microfish 3.0 PC software, U.S. Forest Service Intermountain Research Station. General Technical Report INT-254, Boise, Idaho.

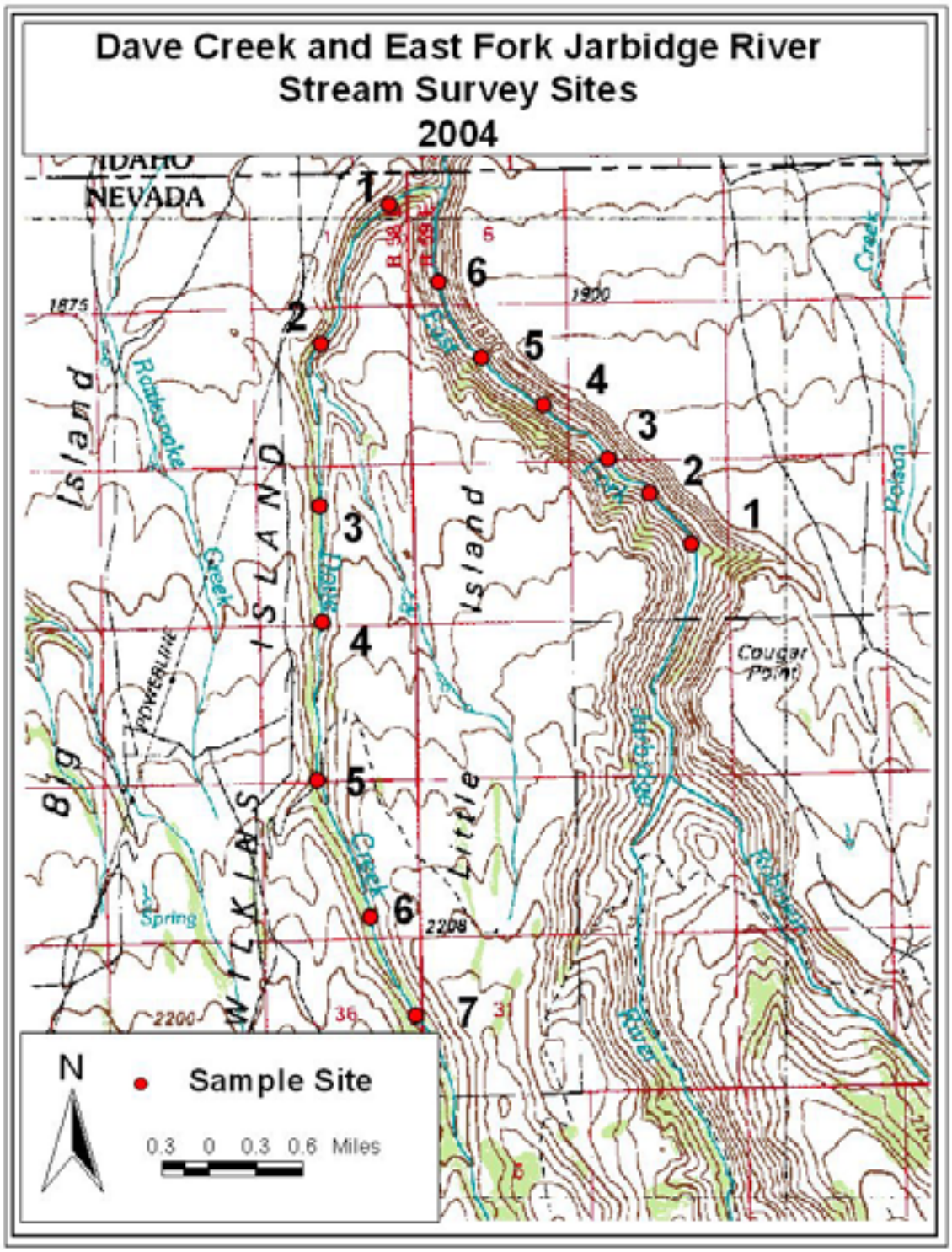
APPENDIX I

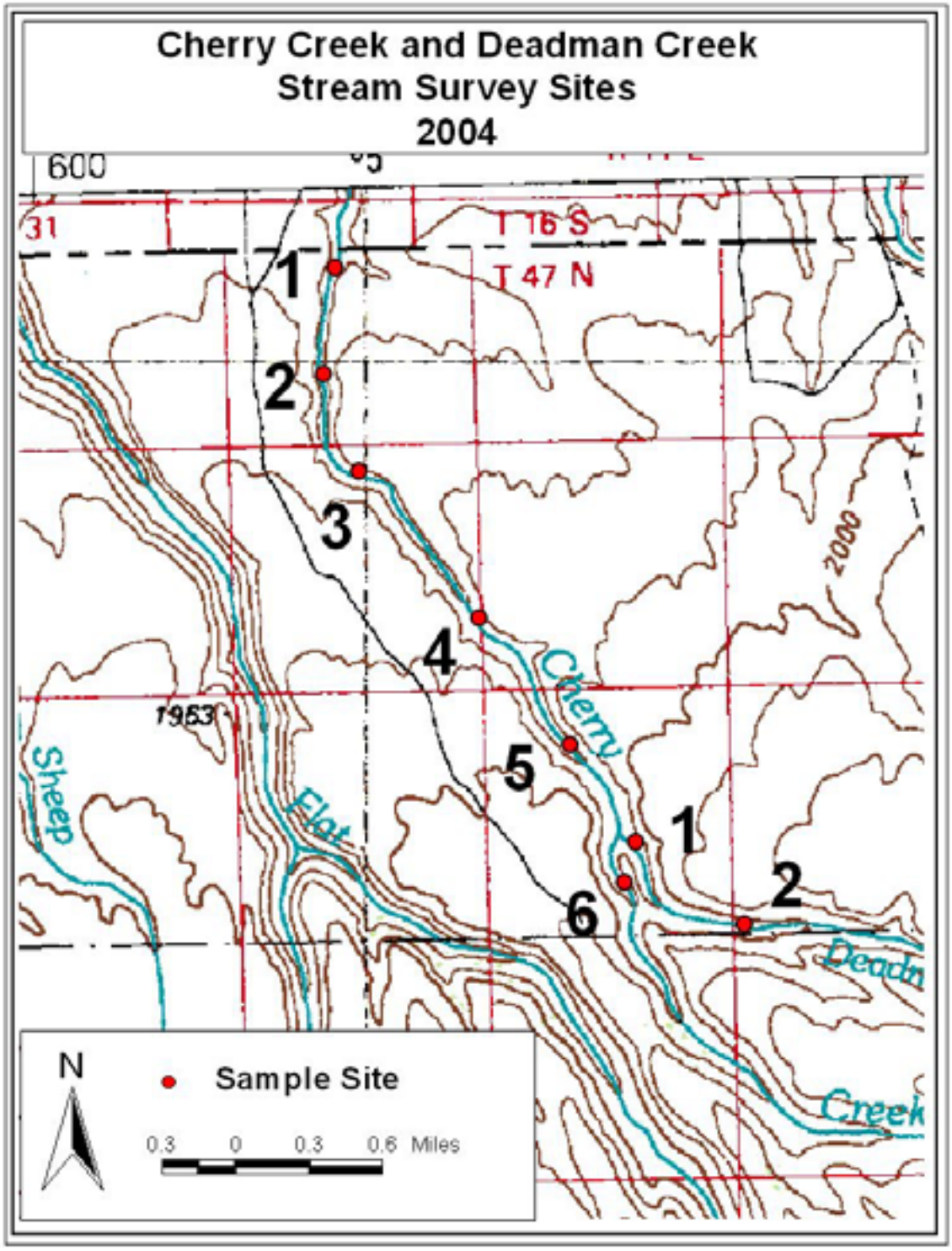
Stream	Sample No.	Number of Passes	Removal Pattern	Microfish Est. / C.I	Captured & Last Pass Misses Obs.
Columbet	1	3	1, 1, 0	2 / 2 - 5.55	2
Columbet	2	3	3, 2, 1	6 / 6 – 8.58	8
Columbet	3	2	6, 2	8 / 8 -10.05	9
Columbet	4	1	0	N/A	0
Columbet	5	1	0	N/A	0
Columbet	6	2	1, 0	N/A	1
Dorsey	1	1	0	N/A	0
Dorsey	2	1	0	N/A	0
Dorsey	3	1	0	N/A	0
Dorsey	4	1	0	N/A	0
Dorsey	5	1	0	N/A	0
Dorsey	6	1	0	N/A	0
Deep	2	1	0	N/A	0
Deep	3	1	0	N/A	0
Deep	4	1	0	N/A	0
Deep	5	1	0	N/A	0
Deep	6	1	0	N/A	0
Deadman	1	2	7, 1	8 / 8 – 8.94	9
Deadman	2	2	7, 1	8 / 8 – 8.94	8
Cherry	2	1	0	N/A	0
Cherry	3	1	0	N/A	0
Cherry	4	1	0	N/A	0
Cherry	5	2	1, 0	N/A	1
Cherry	6	2	1, 0	N/A	1
Dave	1	2	8, 0	N/A	9
Dave	2	2	9, 2	11/11-12.57	12
Dave	3	2	5 RB, 1 BT	N/A	5 RB 1BT
Dave	4	3	7RB 1BT, 3, 0	10/10-10.95	12RB 1BT
Dave	5	2	18, 4	22/22-24.07	23
Dave	6	4	15, 5, 3, 2	25/25-27.21	25
Dave	7	4	11/5/9/0	27/25-32.89	25

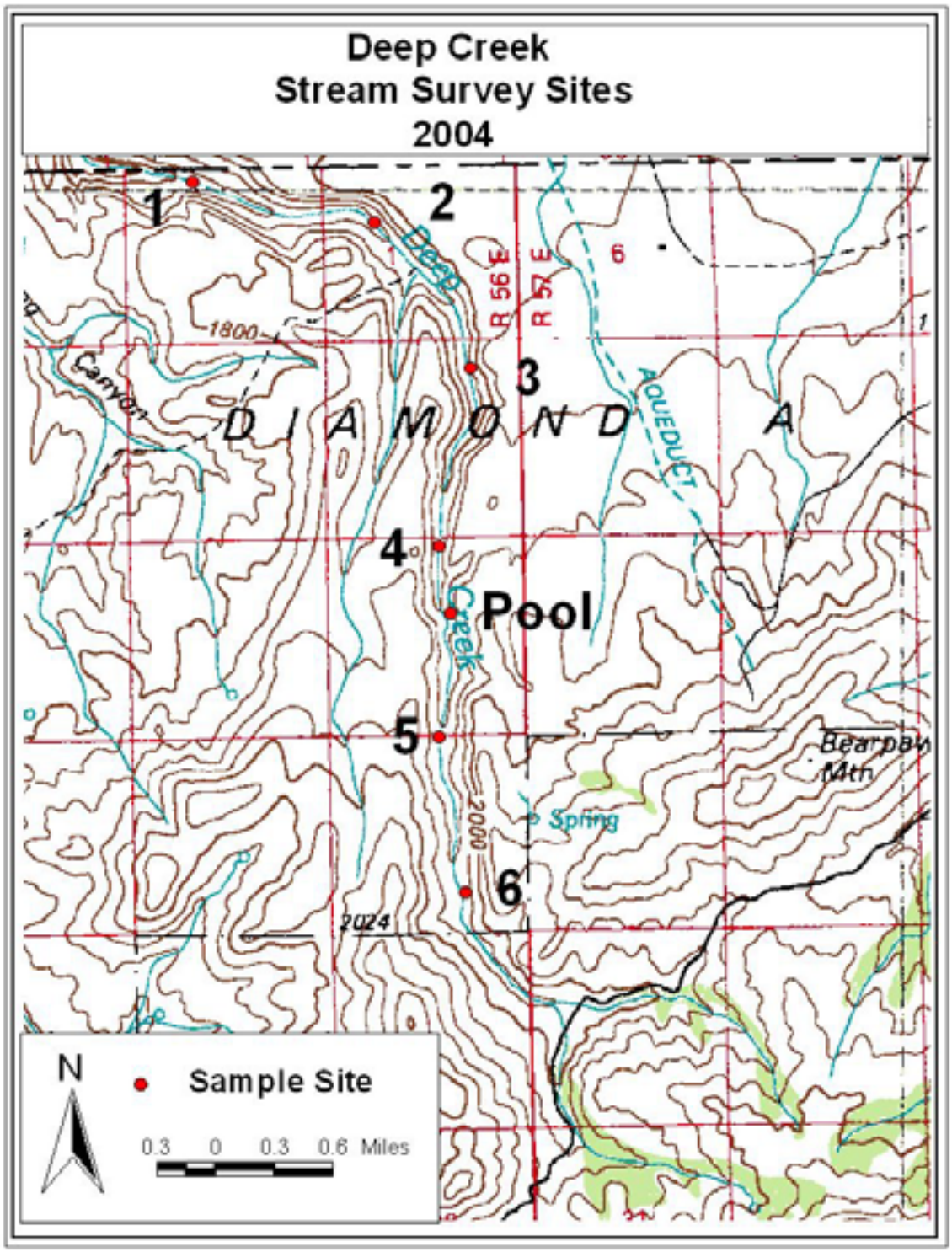
Number used in density estimates.

APPENDIX II
Survey Location Maps




Dave Creek and East Fork Jarbidge River
Stream Survey Sites
2004
NEVADA
Big Island
Rattlesnake
Creek
Tomkins
Spring
WILLIAMS ISLAND
Dave
Creek
Little Island
East
Fork
Jarbidge
River
Cougar Point
Robinson
Poison
Creek
1875
1900
2200
2208
1
2
3
4
5
6
7
N
Sample Site
0.3 0 0.3 0.6 Miles


Cherry Creek and Deadman Creek
Stream Survey Sites
2004
600
31
T 16 S
T 47 N
1
2
3
4
5
6
1
2
2000
1953
Cherry
Sheep
Flat
Deadm
Creek
N
Sample Site
0.3 0 0.3 0.6 Miles


Deep Creek
Stream Survey Sites
2004
1
2
3
4
5
6
Pool
Deep
Creek
Canyon
DIAMOND
A
AQUEDUCT
R 56 E
R 57 E
6
1800
2000
2024
Spring
Bearpaw
Mtn
N
Sample Site
0.3 0 0.3 0.6 Miles