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BACKGROUND

The Henry’s Fork Foundation conducted a fish and stream habitat survey on Anderson Mill Canyon on October 6, 2005. The survey group was comprised of Anne Marie Emery-Miller (HFF) and HFF volunteer Brad Miller.

HABITAT

Anderson Mill Canyon flows southeast down Big Bend ridge where it adjoins with the Warm River portion of the Henry’s Fork via several small tributaries. It is accessible by taking I-20 north from Ashton and then turning right on Forest Service road 164.

Sites 2.3 and 6.3 were visited on Anderson Mill Canyon and were found as dry. Site 2.3 was a dry sinuous streambed that contained many LWD singles and root wads. Aspen and lodgepole pine dominated the overstory with perennial grasses and snowberries being the observed understory. Large boulders were observed present throughout the streambed. Site 6.3 was found on a lower gradient than site 2.3 and was inactive at the time. Sparse lodgepoles served as the dominant overstory at both sites with perennial grasses being noted as the dominant understory.

RECOMMENDATIONS

The entire length of Anderson Mill Canyon should be considered intermittent.

Figure 1. Stream sites (both dry) surveyed on Anderson Mill Canyon in 2005.
BACKGROUND

On September 16, 2005, the Henry’s Fork Foundation (HFF) and Gregory Aquatics (GA) conducted a fish survey on the Bechler River. The survey group was composed of Jim De Rito (HFF), Jim Gregory (Gregory Aquatics), and four Utah Conservation Corp. members: Jonas Landes, Kate Fuller, Carrie Wyler, and Tonilyn Brinhurst.

The Bechler River upstream of Colonnade Falls, if not its entire length was historically fishless (Jaeger et al. 2000). Over 6.6 million cutthroat trout are documented to have been stocked in the Bechler River between 1920 and 1961 (Varley 1981). There are three hatchery sources noted for these stockings: Lake (Yellowstone Lake egg source), Ashton, ID (Henrys Lake egg source likely, M. Sadecki, personal communication), and Idaho Fish and Game (possibly a different entry for the Ashton hatchery). Cutthroat trout stocked from Idaho sources may have been Yellowstone cutthroat trout or westslope cutthroat trout (D. Mahoney, Yellowstone National Park, personal communication). Specific stocking locations within the Bechler River are not noted, but the 1920 stocking from the Lake Hatchery was noted in the “extreme headwaters” (Varley 1981), likely upstream of Colonnade Falls. Only cutthroat trout were documented in the Bechler River above Colonnade Falls with snorkeling surveys (Jaeger et al. 2000).

The objectives of the 2005 survey were to obtain density estimates and genetic samples of Yellowstone cutthroat trout above Colonnade Falls. The objectives of genetic testing were to determine the purity and stocking origin of cutthroat trout.

LOCATION AND HABITAT

One site was sampled on the Bechler River. The start of the site was adjacent to campsite #980, about 6.5 km upriver of Colonnade Falls and 1.5 km below Three Rivers Junction (Figure 1). The site was about 400 m length; ending about 150 m upstream of the Park Service patrol cabin in a meadow. The river is about 20 – 25 m wide and large boulder and cobble are the primary substrate (Figure 2). There was one area of exposed bedrock that had a large, deep plunge pool below it. There were a couple small thermal areas within this length of stream and many upstream. The river splits into 2 channels near the start. Woody debris was present in the split channel area and slightly above, but was less prevalent in the meadow section. Detailed habitat typing and measurements were not collected.

FISH

A 100 m reach upstream of the patrol cabin was block netted at the top and bottom. Two electrofishing units were used to sample the site, but only a few fish were caught in one
pass. The width of the river, along with the very clear water, allowed most fish to easily avoid capture by electrofishing. Therefore, density estimates were not feasible.

Spot electrofishing and hook-and-line were used to capture 52 cutthroat trout (111 – 274 mm fork length), e.g., see Figure 3, throughout the entire 400 m reach. All fish were fin clipped. Genetic analysis was completed on 49 of the 52 fish. All fish were identified as Yellowstone cutthroat trout and no introgressive hybridization with rainbow trout or westslope cutthroat trout was found (Campbell and Cegelski 2006). Given the sample size processed, there is a > 95% probability of detecting 1% introgressive hybridization with rainbow trout. A subsample of twenty fish was tested to determine stocking origin. Haplotype 1 was found in eight fish and haplotype 4 was observed in the other twelve fish. The presence of these haplotypes, and the absence of haplotype 6 which is the most frequent in Henry's Lake (a potential stocking source), suggests that these pure Yellowstone cutthroat trout are products of past introductions from Yellowstone Lake (Campbell and Cegelski 2006).

DISCUSSION

Fish sampling and genetic analysis confirmed that only cutthroat trout are present in the 8.1 km of the Bechler River above Colonnade Falls. The Yellowstone Lake stocking origin of these fish is consistent with the majority of the documented stocking records for the Bechler River (Varley 1981). No traces of Henry's Lake origin stocking, i.e., Haplotype 6, may have been found because cutthroat trout stocking from Idaho sources may have been downriver of Colonnade Falls. This would be the nearest stream length from the Idaho side of Yellowstone Park. Whereas, if fish came from Yellowstone Lake, by way of the Old Faithful side of the Bechler River trail, then the nearest stream length for stocking the Bechler River is above Colonnade Falls.

Yellowstone cutthroat trout present in the Bechler River are not likely sources of fish for Yellowstone cutthroat trout restoration of streams in the Henrys Fork, because these fish are from outside of the Henrys Fork drainage.
Figure 1. Bechler River and the Three Rivers Junction. Surveyed sites (yellow circle = cutthroat trout only, black circle = no trout) and fish barriers (black crosses). There are a few small cascades between the Bechler River survey site and Three Rivers Junction, but none of these cascades appear to be a complete fish barrier.

Figure 2. Looking downstream (9-14-2005) on the Bechler River a few hundred meters upstream of the end of the site where the fish sample was taken for genetic testing.
Figure 3. A Yellowstone cutthroat trout that was captured from the Bechler River and fin clipped on 9/16/2005. Several fish had more spots anterior of the dorsal fin, mostly below the lateral line, compared to this fish.

LITERATURE CITED


BACKGROUND

On August 3rd, 2005, the Henry’s Fork Foundation conducted a fish and habitat survey on Blind and Keg Springs Creeks. The survey group was comprised of Bryce Cheney, Michael Willson and Haynes King.

HABITAT

Blind Creek runs southward down the continental divide where it meets at a confluence with Keg Springs Creek approximately half a mile before flowing into Schneider Creek (Figure 1). Site 1.2 was visited on Blind Creek and did not contain enough flowing water to effectively electrofish (Figure 2).

Figure 1: Stream site surveyed (white circle = no water) on Blind Creek in 2005.

Figure 2 (above): Blind Creek site 1.2
BACKGROUND

On August 1-2, 2005, the Henry’s Fork Foundation conducted a fish and habitat survey on Blue Creek. The survey group was composed of Anne Marie Emery-Miller, Sarah Shiley, and Bryce Cheney.

HABITAT

Blue Creek flows southwest from the Snake River Butte where it eventually meets with the Warm River portion of the Henry’s Fork about a mile downstream from the Warm River campground.

Site 0.7 on Blue Creek consisted of a small, narrow stream that was found at the base of a sloped hill and bordered by the road. The reach was heavily covered with overhanging vegetation such as willows, shrubs and perennial grasses that made electrofishing difficult. Many partially emerged boulders were present throughout the 100m, especially near the beginning where the stream went into a culvert and then under the road. Banks were very stable and well rooted with only about 1 meter observed as disturbed. This stream seemed to provide great habitat for fish populations as it had sufficient vegetative coverage and consistent pools, but none were found. This could be due to low and inconsistent summer water flows.

Site 2.7 was found in an open marshy area that was dominated with willows and sedges, and bordered by Lodgepole pines on the surrounding hills. The stream had many forks and braids and appeared prone to spring flooding with shallow banks and surrounding wetland habitat. Due to the constant forking only 60 meters of this site were surveyed. The reach was well covered with 85% of its banks containing overhanging vegetation and much of its stream bottom being grass covered.

FISH

Sites 0.7 and 2.7 that were surveyed on Blue Creek were found to have no fish although one large Eastern Brook Trout was spotted but not netted on site 0.7.
Figure 1: Sites surveyed (black circles = no trout) on Blue Creek in 2005.
Figure 2: Blue Creek site 0.7

Figure 3: Blue Creek site 0.7 at road

Figure 4: Blue Creek site 2.7
BACKGROUND

On July 28th, 2005, the Henry’s Fork Foundation conducted a fish and habitat survey on Cold Spring Creek. The survey team was composed Anne Marie Emery-Miller, Sarah Shiley and Michael Willson.

HABITAT

Site 2.4 on Cold Spring Creek was not found when followed to the GPS coordinates and was the only site attempted to visit due to roadblocks and private property signs. The area was thoroughly searched with no streambed found, this could indicate that the stream is active in only in early spring, or has been diverted upstream for other purposes (Figure 1).

RECOMMENDATIONS

The unvisited sites on Cold Spring Creek should be observed if private owners allow land access.

Figure 1. Site surveyed (attempted) on Cold Spring Creek in 2005.
BACKGROUND

On July 28th, 2005, the Henry’s Fork Foundation conducted a fish and habitat survey on Dry Robinson Creek. The survey team was composed of Bryce Cheney, Haynes King and Michael Willson.

HABITAT

Dry Robinson and “Little Dry Robinson” creeks flow southeast where they join with Robinson Creek (Figure 1), tributary to Warm River. These sites are accessible by taking Fish Creek Road (082) to Forest Service road 92. Sites 1.8, 2.7 and 4.7 were visited and found dry (Figures 2 - 4). Remaining sites 0.7 and 6.7 were not visited, but were assumed dry.

Figure 1: Stream sites surveyed (all dry) on Dry Robinson and “Little Dry Robinson” creeks in 2005.
Figure 2: Little Robinson Creek site 1.8

Figure 3: Dry Robinson Creek site 2.7

Figure 4: Dry Robinson Creek site 4.7
BACKGROUND

On August 8th and 16th, 2005, the Henry’s Fork Foundation (HFF) conducted a fish and habitat survey on the East and West Dry Creeks. The survey group was composed of Anne Marie Emery-Miller, Michael Willson, Haynes King, Sarah Shiley, and Bryce Cheney.

LOCATION AND HABITAT

West Dry Creek flows southwest from the continental divide. A tributary joins at about 6,870 feet elevation, called here “West Dry Creek tributary” (labeled ‘tributary’; Figure 1). East Dry Creek flows southeast and joins West Dry Creek at about 6,420 feet elevation. According to the 1:100,000 GIS stream layer; a channel of East Dry Creek flows towards Sheridan Lake, whereas another channel of East Dry Creek joins West Dry Creek and flows towards the Beaver Creek watershed of the Sinks Drainages (Figure 1).

Site 1.0 on West Dry Creek is a high gradient mountain stream comprised of a step pool system that contains many split channels and small cascading waterfalls. The dominant overstory was Douglas fir and overhanging willow. Dominant under story contained riparian wildflowers such as Monkeyflower (Mimulus guttatus) and perennial grasses. Substrate was primarily cobble with submerged and partially emerged boulders noted throughout the stream creating pools and habitat along the banks. Many LWD singles and aggregates were also noted with most fish being found underneath large fallen trees. Only 85 meters of this site were surveyed due to continuous branching and barriers (Figures 2 and 3).

Site 1.1 on the tributary to West Dry Creek was found on a lower gradient than site 1.0 on West Dry Creek. Depositional zones were observed frequently on this reach with substrate exposed either near the banks or in the center of the stream making some areas appear braided. Split flows were observed around areas of exposed bedrock. Surrounding vegetation was similar to that of West Dry Creek with Douglas Fir trees and willows acting as the dominant over story and perennial grasses being dominant under story. This reach was in good condition with 99% stable banks and small percentages of surface fines detected (figure 4).

Site 1.0 on East Dry Creek was found in a marshy flat area that contained numerous beaver dams and much sediment. Only 75 meters of this stream reach were surveyed due to continuous branching and many incoming side streams. Changes in sediment were frequent with fines being the dominant composition behind the beaver dams and small gravels being dominant downstream of the dams. Overbank flows appear common here, as banks were hard to detect sometimes with active flooding from beaver dams.
Dominant vegetation was noted as willows with perennial grasses bordering the stream. This section was highly disturbed and hard to survey (Figure 5).

FISH

In West Dry Creek site 1.0, a total of 21 brook trout and three cutthroat trout (Figure 6) were collected in three electrofishing passes.

In West Dry Creek tributary site 1.1, a total of twelve Yellowstone cutthroat trout (e.g., Figure 7) and one putative cutthroat trout x rainbow trout hybrid were captured during the first electrofishing pass. No fish were caught during the second electrofishing pass. No non-game fish were captured in either pass. All 13 trout were genetically tested to determine purity. All fish were genetically identified as Yellowstone cutthroat trout; no rainbow trout hybridization/introggression was detected (Campbell and Cegelski 2006). Given the sample size at West Dry Creek there was about a 95% probability of detecting as little as 1.5% rainbow trout introgression (Matt Campbell, Idaho Department of Fish and Game, personal communication).

East Dry Creek site 1.0 contained no fish.

DISCUSSION/RECOMMENDATIONS

The genetically pure Yellowstone cutthroat trout population in the West Dry Creek tributary may be a source of cutthroat trout for translocations to other streams in the area. However, the stream length with YCT is only about 2 km long and likely does not support many fish. The upstream extent and densities of YCT in this tributary should be further evaluated. The exact location and nature of the downstream barrier that is preventing brook trout invasion should also be evaluated.

In the mainstem, West Dry Creek should be evaluated for brook trout removal and restoration of Yellowstone cutthroat trout. The Idaho Department of Fish and Game also collected data on this creek in 2005. These data should be reviewed to assess possible locations of barriers; either natural or manmade, e.g., water diversion structures, that could be used as upstream passage barriers for a YCT restoration.
Figure 1: Stream sites surveyed on West Dry Creek, West Dry Creek tributary, and East Dry Creek by HFF in 2005. Yellow circle = cutthroat trout only, pink circle = cutthroat trout and brook trout, and a white circle = no trout.
Figure 2: West Dry Creek site 1.0 step-pool system.

Figure 3: Waterfall on West Dry Creek site 1.0.
Figure 4: West Dry Creek tributary site 1.1,

Figure 5: East Dry Creek site 1.0.
Figure 6: YCT captured at West Dry Creek site 1.0.

Figure 7: YCT captured at West Dry Creek tributary site 1.1.
BACKGROUND
On September 21, 2005, the Henry’s Fork Foundation (HFF) and Caribou-Targhee National Forest (CTNF) personnel conducted a fish survey on the Fall River above Beula Lake. The survey group was composed of Jim De Rito (HFF), Lee Mabey and Corey Lyman (CTNF), and two Utah Conservation Corps members: Jonas Landes and Carrie Wyler.

The source of the Fall River is Four Springs, which come directly out of the Pitchstone Plateau (Rubinstein et al. 2000). The stream length from the 1:100,000 GIS stream layer extends 2.2 km upstream of these springs, but this length is likely intermittent. The stream distance from Four Springs to the southeast corner of Beula Lake is about 6.0 kilometers at the 1:100,000 scale. A few hundred meters below Beula Lake on the Fall River is “Bradley Falls” (Rubinstein et al. 2000). This falls is a barrier to upstream fish passage.

Beula Lake and the Fall River upstream were historically fishless; the first documented planting of cutthroat trout in the Fall River drainage was “from Beula L. down” in 1920 (Varley 1981). The hatchery and egg source for this initial stocking is Yellowstone Lake. This hatchery and egg source account for over 1.5 million cutthroat trout eyed eggs or fry that were stocked into the Fall River drainage through 1948 (Varley 1981). However, cutthroat trout fry were also stocked from Idaho hatcheries in Ashton (N = 454,554) and Warm River (N = 15,000) from 1937 to 1946 (Varley 1981). The egg source for Idaho Yellowstone cutthroat trout for this time period is likely Henrys Lake, though documentation for the specific plantings is not available (M. Sadecki, Idaho Department of Fish and Game, personal communication). It is also possible that westslope cutthroat trout from Idaho were stocked in Yellowstone National Park (D. Mahoney, Yellowstone National Park, personal communication). Stocking locations of cutthroat trout within the Fall River Drainage are not available for the six records from Idaho hatcheries and only for 3 of 11 records from the Yellowstone Lake Hatchery (Varley 1981).

The objectives of the survey were to evaluate if only Yellowstone cutthroat were present in the Fall River above Beula Lake, and if so, to assess distribution, densities, and genetic purity and origin of this cutthroat trout population.

LOCATION AND HABITAT
Two sites were surveyed, 1.7 km and 3.7 km, upstream from Beula Lake (Figure 1). No fish migration barriers were noted, and likely none are present, because of the relatively low gradient of the stream between Beula Lake and the 3.7 km site.
At the 1.7 km site, stream wetted width averaged 9.2 m with no pools and twelve pieces each of large woody debris (LWD) singles and aggregates (Figure 2). Dominant substrate was cobble and subdominant was gravel.

At the 3.7 km site, the stream wetted width averaged 10.0 m, there were two pools (averaged 0.46 m), and there were nine LWD singles and eight LWD aggregates (Figure 3). Dominant substrate was cobble and subdominant was gravel.

FISH

At the 1.7 km site, two backpack electrofishing units were used to make one pass of the 105 m long site. A total of 54 cutthroat trout and 1 putative hybrid (Figure 4) were captured. Fish ranged from 60 to 238 mm (fork length). The first 49 cutthroat trout and the one hybrid were fin clipped for genetic testing.

All 50 fish were identified as Yellowstone cutthroat trout and no introgressive hybridization with rainbow trout or westslope cutthroat trout was found (Campbell and Cegelski 2006). Given the sample size processed, there is a > 95% probability of detecting 1% introgressive hybridization with rainbow trout. A subsample of five fish from this site and eighteen fish from below Beula Lake were used to assess cutthroat trout stocking origin (see Campbell and Cegelski 2006). Only haplotype 4 was observed in the twenty-three fish subsample. The presence of haplotype 4, and the absence of haplotype 6, which is the most frequent in Henrys Lake (a potential stocking source), suggests that these pure Yellowstone cutthroat trout are products of past introductions from Yellowstone Lake (Campbell and Cegelski 2006).

At the 3.7 km site, two backpack electrofishing units were used to make three passes of the 103 m long site. There were 239 YCT captured that ranged from 54 – 252 mm (fork length). The population estimate was 411 (95 % CI 239 – 557). The capture probability was 0.252 was the lowest of any multipass electrofishing site in 2005. The wide width of the river made it difficult to effectively electrofish, even with two electrofishing units and three people netting.

DISCUSSION

Fish sampling and genetic analysis confirmed that only Yellowstone cutthroat trout are present in the 6.0 km of the Fall River above Beula Lake. This part of the Fall River likely supports both resident and adfluvial YCT life histories. Spawning habitat is abundant and of high quality in the Fall River, especially near the confluence with the lake. The Fall River likely provides almost all the spawning habitat for YCT from Beula Lake (a few of which were caught by hook-and-line during this trip in the range of about 350 to 450 mm). Most YCT captured in the two electrofishing sites were less 150 mm in length and were likely age-0 and age-1 fish. These fish may outmigrate to the Fall River to rear to adults. Only 14 of 294 fish captured in sites 1.7 km and 3.7 km were ≥ 150
Though electrofishing may not have captured some of the bigger fish that were present in the sites, because capture probability was low, the size structure of these fish was heavily weighted towards smaller fish.

The genetic assessment that these fish likely originated from Yellowstone Lake is consistent with the original stocking record of Beula Lake in 1920. No traces of Henrys Lake origin YCT stocking, i.e., Haplotype 6, were found in the Fall River above Beula Lake. Stocking locations of Idaho YCT in the Fall River Drainage may have been further downriver, below waterfalls that are barriers to upstream fish migration.

Yellowstone cutthroat trout present in Beula Lake and the Fall River above are not likely sources of fish for Yellowstone cutthroat trout restoration of streams in the Henrys Fork drainage, because these fish are from outside of the Snake River Basin. Ideally, YCT used for translocations in the Upper Snake River Basin come from the nearest adjacent populations within the same drainage (Cegelski et al. 2006).

Figure 1. Fall River above Beula Lake and sites surveyed in 2005. Surveyed sites (yellow circle = cutthroat trout only) and fish barriers (black crosses).
Figure 2. Looking upstream from the start of site 1.7 km on the Fall River above Beula Lake.

Figure 3. Looking upstream and across in the middle of site 3.7 km on the Fall River above Beula Lake.
Figure 4. Putative hybrid from Fall River above Beula Lake site 1.7km. Note that presence of numerous small spots forward of the dorsal fin and on top of head. No rainbow trout introgression was detected in this fish or the 49 fish phenotypically identified as YCT that were genetically tested from this site.

LITERATURE CITED


BACKGROUND

On September 22, 2005, the Henry’s Fork Foundation (HFF) and Caribou-Targhee National Forest (CTNF) personnel conducted a fish survey on the Fall River below Beula Lake. The survey group was composed of Jim De Rito (HFF), Lee Mabey and Corey Lyman (CTNF), and two Utah Conservation Corp. members: Jonas Landes and Carrie Wyler.

Beula Lake and the Fall River upstream were historically fishless; the first documented planting of cutthroat trout in the Fall River drainage was “from Beula L. down” in 1920 (Varley 1981). The hatchery and egg source for this initial stocking is Yellowstone Lake. This hatchery and egg source account for over 1.5 million cutthroat trout eyed eggs or fry that were stocked into the Fall River drainage through 1948 (Varley 1981). However, cutthroat trout fry were also stocked from Idaho hatcheries in Ashton (N = 454,554) and Warm River (N = 15,000) from 1937 to 1946 (Varley 1981). The egg source for Idaho Yellowstone cutthroat trout for this time period is likely Henrys Lake, though documentation for the specific plantings is not available (M. Sadecki, Idaho Department of Fish and Game, personal communication). It is also possible that westslope cutthroat trout from Idaho were stocked in Yellowstone National Park (D. Mahoney, Yellowstone National Park, personal communication). Stocking locations of cutthroat trout within the Fall River Drainage are not available for the six records from Idaho hatcheries and only for 3 of 11 records from the Yellowstone Lake Hatchery (Varley 1981).

“Bradley Falls” which is a few hundred meters below Beula Lake is a barrier to upstream fish migration into the Fall River and Beula Lake above. “Forgotten Falls” (Rubinstein et al. 2000) prevents upstream fish migration into this section of the Fall River from below (Figure 1).

The goal of the survey was to evaluate if only Yellowstone cutthroat were present in the Fall River between Forgotten Falls and Bradley Falls. The objectives of the survey were to assess distribution, densities, and genetic purity and origin of this cutthroat trout population.

LOCATION AND HABITAT

One site, 8.7 km upstream from Terraced Falls (the start of the unsurveyed length of the Fall River) was sampled on the Fall River (Figure 1). This site was about 75 m downstream of the confluence of “Savage Creek” which comes in from the north and nearly doubles the flow of the Fall River at this point (see Rubinstein et al. 2000). Habitat measurements were not taken at the 8.7 site of the Fall River, but it was probably at least 15 m wide, contained several pieces of large woody debris, and had a relatively low gradient (Figure 2).
FISH

A 100 m site was measured and a block net was placed at the upstream end. We attempted to electrofish both banks with two electrofishers. However, we were having mechanical problems with one of the electrofisher units. We did catch a few fish from within the site with one electrofishing unit. We then spot electrofished the Fall River above “Savage Creek” along the banks and in side channels to obtain fish for a genetics sample (N = 56, figure 3).

Genetic analysis was completed on all 56 fish. All fish were identified as Yellowstone cutthroat trout and no introgressive hybridization with rainbow trout or westslope cutthroat trout was found (Campbell and Cegelski 2006). Given the sample size processed, there is a > 95% probability of detecting 1 % introgressive hybridization with rainbow trout. A subsample of eighteen fish from this site was combined with five fish from upriver of Beula Lake to assess the stocking origin of these fish. Only haplotype 4 was observed in the twenty-three fish sample. The presence of only this haplotype, and the absence of haplotype 6 which is the most frequent in Henrys Lake (a potential stocking source), suggests that these pure Yellowstone cutthroat trout are products of past introductions from Yellowstone Lake (Campbell and Cegelski 2006).

DISCUSSION

Fish sampling and genetic analysis confirmed that only Yellowstone cutthroat trout are present in the 5.8 km of the Fall River between Forgotten and Bradley falls. The genetic assessment that these fish likely originated from Yellowstone Lake is consistent with the original stocking record of Beula Lake in 1920. No traces of Henrys Lake origin YCT stocking, i.e., Haplotype 6, were found in the Fall River above Beula Lake. Stocking locations of Idaho YCT in the Fall River Drainage may have been further downriver, below waterfalls that are barriers to upstream fish migration. The Fall River below Forgotten Falls should be surveyed to assess species composition and genetic purity of any cutthroat trout present. Anglers have reported that rainbow trout, cutthroat trout, and hybrids of the two are present below Forgotten Falls.

Yellowstone cutthroat trout present in the Fall River between Forgotten and Bradley falls are not likely fish sources for Yellowstone cutthroat trout restoration of streams in the Henrys Fork drainage, because these fish are from outside of the Snake River Basin. Ideally, YCT used for translocations in the Upper Snake River Basin would come from the nearest adjacent populations within the same drainage (Cegelski et al. 2006).
Figure 1. Site 8.7 km location on the Fall River between “Forgotten Falls” and Bradley Falls. The site was immediately below “Savage Creek”. A site was also surveyed on a tributary to “Savage Creek” - Harebell Creek - which is contained in a separate stream report.

Figure 2. Looking upstream on the Fall River below “Savage Creek” at site 8.7 km.
Figure 3. Yellowstone cutthroat trout caught and fin clipped from the Fall River above site 8.7 km and above “Savage Creek”. A total of 56 YCT were fin clipped and genetically tested from the Fall River between Forgotten and Bradley falls.

LITERATURE CITED


BACKGROUND

On September 13, 2005, the Henry’s Fork Foundation (HFF) and Gregory Aquatics (GA) conducted a fish and habitat survey on Ferris Fork. The survey group was composed of Jim De Rito (HFF), Jim Gregory (Gregory Aquatics), and four Utah Conservation Corp. members: Jonas Landes, Kate Fuller, Carrie Wyler, and Tonilyn Bringhurst.

Fish were previously not found in a complete snorkeling survey of Ferris Fork (Jaeger et al. 2000). The objective of the 2005 survey was to confirm or refute the absence of cutthroat trout in Ferris Fork by means of electrofishing.

HABITAT

Site 0.2 km was located about 200 m upstream from the confluence with Three Rivers Junction (Figure 1). The site was only 50m long because the stream width (average of 9.2 m) was wide enough that the area covered was thought to be sufficient for electrofishing. The stream averaged 0.33 m in depth and contained three pools that averaged 0.75 m deep. The substrate was bedrock dominant with boulder subdominant (Figure 2). There were < 5% fines in the riffles or pool tailouts. There were many pocket pools and slots for fish holding habitat. Ragged Falls is about 100 m upstream from the end of the site and is a complete fish barrier (Figure 3). There are numerous thermal springs that flow into the Ferris Fork about a kilometer upstream of Ragged Falls (Figure 4). The habitat above the thermal areas at site 1.2 km appeared to be very good, with numerous step pools, woody debris in the stream, and the water temperature was noticeably cooler than below.

FISH

One pass of the 0.2 km site was made with two backpack electrofishing units. The conductivity was 220 umhos and water temperature was 17° C at 1139. No fish were captured or seen.

No fish were captured or seen during spot electrofishing with two backpack electrofishing units at three sites upstream of Ragged Falls: 1) 50 m upstream of Ragged Falls (25 m length); 2) a long (~ 15 m), deep pool several hundred meters upstream of Ragged Falls and just below most of the thermal springs; and 3) site 1.2 km, from the top part of the thermal area to about 50 m above the thermal area (total length of about 150 m).
DISCUSSION

The absence of fish below Ragged Falls was unexpected, because fish can access this part of the creek from the Bechler River which has relatively abundant Yellowstone cutthroat trout. Fish habitat appeared to be good. The conductivity and water temperature of Ferris Fork was high compared to other nearby streams. Gregg Fork at sites 0.5 km and 3.2 km had conductivities of about 14 and 15 umhos and Phillips Fork at 0.6 km had a conductivity of 20 umhos. Water temperatures at these three sites ranged from 9 – 11 °C. It is possible that the thermal features that are upstream of Ragged Falls are affecting water temperature and chemistry. Fish may avoid the lower 300 m of Ferris Fork below Ragged Falls because of these effects. If fish were ever stocked upstream of the Ragged Falls then they may not have survived for similar reasons.

This electrofishing effort confirmed the findings of the previous snorkeling surveys that also did not fish in Ferris Creek (Jeager et al. 2000). The entire length (8.9 km) of Ferris Fork should be categorized as “No trout”.

Figure 1. Ferris Fork and the 0.2 km and 1.2 km survey sites (black circle = no trout) and fish barriers (black crosses). The barrier immediately above the 0.2 km survey site is Ragged Falls. The barrier below the survey site is likely a small cascade that is a partial barrier and was likely mapped from the previous snorkeling survey.
Figure 2. Looking upstream from the start of site 0.2 km. Ragged Falls is visible in the background.

Figure 3. Ragged Falls on Ferris Fork, about 300 m upstream from Three Rivers Junction.

Figure 4. Looking downstream from near the top of thermal spring area on Ferris Fork a few hundred meters upstream of Ragged Falls. Most of the inflow of warm water appears to be from these springs. Spot electrofishing of site 1.2 km was started here and went upstream for 150 meters.
BACKGROUND

A fish and stream habitat survey was conducted on Gregg Fork (tributary to the Bechler River) from September 13 – 15, 2005 by the Henry’s Fork Foundation (HFF) and Gregory Aquatics. The survey group was composed of Jim De Rito (HFF), Jim Gregory (Gregory Aquatics), and four Utah Conservation Corp. members: Jonas Landes, Kate Fuller, Carrie Wyler, and Tonilyn Bringhurst.

Gregg Fork was classified as having only Yellowstone cutthroat trout for its entire length, based on snorkeling surveys (Jeager et al 2000). The objectives of the 2005 survey were to verify presence and distribution of cutthroat trout in Gregg Fork and take genetic samples for determining purity and stock origin of the fish.

HABITAT

Gregg Fork was surveyed at three sites at 0.5, 3.2, and 4.2 kilometers upstream from the stream mouth. Waterfalls are located both downstream and upstream of all three sites (Rubinstein et al. 2000), such that upstream fish passage is not possible among the sites (Figure 1). All three sites are accessible within 0.5 km from the Bechler River Trail. Site 1.2 km was the randomly selected first point to be surveyed. However, this site was within the Gregg Canyon and it was not possible to safely access the site because of the steep canyon walls. Therefore, site 0.5 km was sampled instead.

Site 0.5 km was about 100 m upstream from “Forlorn Falls”, which is about 5 m in height and thought to be a complete barrier to upstream fish passage. Site 0.5 was characterized by bedrock substrate and large boulders that formed riffles and riffle-rapid habitat (Figures 2 & 3). The site was relatively wide (average width = 10.2 m) and shallow (average depth 0.13 m) with only three small pools found within the site. Most of the woody debris was associated with a couple of the pools and little overhead or instream cover is found within the site. A thermal upwelling of less than 1 cfs was present at about 33 m into the site on the stream left.

Site 3.2 km was located about 100 m upstream of the Bechler River trail crossing and ended about 75 m downstream of “Confusion Cascade”; a complete upstream fish barrier (misnamed on topo maps as Twister Falls, which is actually downstream). The stream site averaged 4.1 m wide and 0.23 m deep. There were eight pools located within the site, the first three averaged 0.39 m in depth. Woody debris was present; there were 11 singles and 5 aggregates. Substrate was boulder dominant with cobble subdominate (Figure 4) and less than 5% surface fines in riffles or in pool tailouts.

Site 4.2 km was located in a meadow upstream of “Confusion Cascade”. The stream site averaged 3.6 m wide and 0.17 m deep. There was relatively low habitat complexity expect for
some deep pools (n = 5, the first three averaging 0.68 m) and some deeply undercut banks (Figure 5). Substrate was boulder dominant with cobble subdominate and less than 5% surface fines in riffles or in pool tailouts.

FISH

Site 0.5 km was a one-pass electrofishing site with two backpack units. Six trout were caught in a single pass of the 100m site and twelve trout were caught either above or below the site while spot electrofishing on September 13th. Seven more trout were caught by spot electrofishing in the same approximate length of stream the following day. Fish were typically found in the small deeper pockets or pools with very few fish found associated with the riffles and rapids over bedrock. In sum, 25 trout (range 95 mm - 222 mm fork length) were captured from two passes on about 425 m of stream below, within, or above site 0.5 km over two days. No nongame species of fish were captured. All captured trout were fin clipped.

Of the 25 trout captured, 3 were thought to have phenotypes of hybrids; with several spots found forward of the dorsal fin, e.g., see Figure 6. Genetic testing was completed on 24 of 25 fish, including the three putative hybrids, and all fish were identified as Yellowstone cutthroat trout (Campbell and Cegelski 2006). Given the sample size processed, there is a > 95% probability of detecting 1% introgressive hybridization with rainbow trout.

Site 3.2 km was a three-pass electrofishing site with two backpack units. The first pass was mostly spot electrofished, because we thought there was more stream length available upstream for a 100 m site. However, “Confusion Cascade” was not seen until rounding a stream bend and it is a barrier to both fish and electrofishing. Consequently, more effort was expended and more fish were caught on pass #2 than the first pass. A total of 23 YCT were captured, ranging in size from 26 - 195 mm (fork length). No nongame species of fish were captured. Fin clips were taken from 21 fish and two fry were vouchered whole. Genetic testing was completed on 22 of 23 trout; all were indentified as Yellowstone cutthroat trout (Campbell and Cegelski 2006). Given the sample size, there is a > 95% probability of detecting 1% introgressive hybridization with rainbow trout.

Site 4.2 km was a one-pass site with one backpack electrofishing unit. Two cutthroat trout were captured in the 100 m site. Twenty-five cutthroat trout were caught spot electrofishing above the site. All twenty seven fish (113 – 217 mm fork length) were fin clipped. These samples were not submitted for genetic testing. No other species of fish were captured.

A subset of 20 fish from Gregg Fork (from sites 0.5 km and 3.2 km) were analyzed to assess origin of stocking. Based on the haplotypes observed it is most likely that these fish are of Yellowstone Lake origin (Campbell and Cegelski 2006).

DISCUSSION

The entire 7.1 km of Gregg Fork likely contains low densities of cutthroat trout, similar to the three sites that were sampled. Gregg Canyon, between sites 0.5 km and 3.2 km likely contains low densities of cutthroat trout, considering the bedrock dominated habitat and cascades in this stretch. The top 3 kilometers of the creek above site 4.2 km were not surveyed, but the map
gradient is relatively low (there is a larger meadow shown on the map) and fish should be distributed throughout the entire length of the stream. It is likely that the cutthroat trout in Gregg Fork above “Confusion Cascade” are pure, similar to the two sites that were tested downstream. Fish could move downstream over the falls from site 4.2 km and if there was rainbow trout (or westslope cutthroat trout) introgression within this top section of creek, it would likely have shown up in the 3.2 km site.

Putative hybrids were identified in site 0.5 km, but genetic testing found no evidence of introgression. The cutthroat trout captured from this site were the first observed by the crew in this area. Pure cutthroat trout at other sites on Gregg Fork and in other streams in the area had a variety of spotting patterns, similar to those found in site 0.5 km.

Figure 1. Gregg Fork showing sites surveyed in 2005 (yellow circles) and waterfalls (crosses). The yellow stream line indicates the classification of “cutthroat trout only” based on previous surveys. Twister Falls is mislabeled, it is the next downstream falls, and the name “Confusion Cascade” had been suggested for the falls that is just above site 3.2 km (Rubinstein et al. 2000).
Figure 2. Gregg Fork at 0.5 km survey site, looking upstream at the start on 9-13-05.

Figure 3. Gregg Fork at 0.5 km survey site, looking downstream at the end on 9-13-05.

Figure 4. Greggs Fork at 3.2 km site, end of site looking downstream on 9-14-05.

Figure 5. Greggs Fork at 4.2 km site, looking downstream from the end of site on 9-15-05.

Figure 6. Putative hybrid (fish #2) from site 0.5 km, 148mm fork length, numerous spots located forward of the dorsal fin. Fish was genetically identified as a cutthroat trout. No rainbow trout introgressive hybridization was detected in any of the fish tested (n = 24).
LITERATURE CITED:


BACKGROUND

On September 22, 2005, the Henry’s Fork Foundation (HFF) and Caribou-Targhee National Forest (CTNF) personnel conducted a fish and habitat survey on Harebell Creek, a tributary to “Savage Creek” (see Rubinstein et al. 2000) which is a tributary to the Fall River below Beula Lake in Yellowstone National Park (YNP). The survey group was composed of Jim De Rito (HFF), Lee Mabey and Corey Lyman (CTNF), and two Utah Conservation Corp. members: Jonas Landes and Carrie Wyler.

Harebell Creek enters “Savage Creek” within 50 m of the confluence of the later with the Fall River. Harebell Creek may have had greater flow than Savage Creek when surveyed in September, because of greater spring influence (based on springs that are noted on 1:24,000 USGS topographic maps). However, the watershed area of Savage Creek appears to be larger than Harebell Creek. Harebell Creek is labeled as such on the Targhee National Forest map, ½” to the mile (1984). However, it is not labeled (named) on any USGS topographic map or YNP map.

Beula Lake and the Fall River upstream were historically fishless; the first documented planting of cutthroat trout in the Fall River drainage was “from Beula L. down” in 1920 (Varley 1981). The hatchery and egg source for this initial stocking is Yellowstone Lake. This hatchery and egg source account for over 1.5 million cutthroat trout eyed eggs or fry that were stocked into the Fall River drainage through 1948 (Varley 1981). However, cutthroat trout fry were also stocked from Idaho hatcheries in Ashton (N = 454,554) and Warm River (N = 15,000) from 1937 to 1946 (Varley 1981). The egg source for Idaho Yellowstone cutthroat trout for this time period is likely Henrys Lake, though documentation for the specific plantings is not available (M. Sadecki, Idaho Department of Fish and Game, personal communication). It is also possible that westslope cutthroat trout from Idaho were stocked in Yellowstone National Park (D. Mahoney, Yellowstone National Park, personal communication). Stocking locations of cutthroat trout within the Fall River Drainage are not available for the six records from Idaho hatcheries and only for 3 of 11 records from the Yellowstone Lake Hatchery (Varley 1981).

“Bradley Falls” which is a few hundred meters below Beula Lake is a barrier to upstream fish migration into the Fall River and Beula Lake above. “Forgotten Falls” (Rubinstein et al. 2000) prevents upstream fish migration into this section of the Fall River from below (Figure 1).

“Bradley Falls” which is a few hundred meters below Beula Lake is a barrier to upstream fish migration into the lake above. “Forgotten Falls” on the Fall River (Rubinstein et al. 2000) prevents upstream fish migration into this section of the Fall River and thus Savage and Harebell Creeks (Figure 1). There are no falls or fish barriers on either creek near
their confluences. However, there are substantial falls and cascades on Savage Creek further upstream (Rubinstein et al 2000; Figure 1) that are fish barriers.

The objective of the survey was to evaluate if Yellowstone cutthroat trout were present in Harebell Creek.

LOCATION AND HABITAT

Harebell Creek was sampled at 0.1 km upstream from its confluence with Savage Creek (Figure 1). The stream wetted width averaged 7.7 m. There were 6 large pools (the first three of which average about 1 m maximum depth) and 9 singles and 2 aggregates or rootwad pieces of large woody debris within the site (Figure 2). The dominant substrate was gravel, subdominant substrate was cobble, and there were about 10 % surface fines in the riffles.

FISH

Two backpack electrofisher units were used with three people netting to make one electrofishing pass of the 100 m site. Eighteen YCT (54 – 128 mm fork length) were captured. However, the large pools within the site were difficult to electrofish because of their depth. Therefore, the capture probability of fish was likely very low on this site.

DISCUSSION

Only YCT are present within the lower reaches of Harebell Creek. This is expected, because the site sampled is only about 150 m upstream of the Fall River and there are no migration barriers. This part of the Fall River has only YCT, as confirmed by fish sampling and genetic analysis (see Fall River below Beula Lake Survey Report – 2005). The fish in Harebell Creek are also likely of Yellowstone Lake origin, similar to those in the Fall River. The upstream extent of YCT in Harebell Creek is unknown. The map gradient increases about 2.0 km upstream of its confluence. This may be the upstream extent of YCT in this stream, if there is a waterfall or cascade similar to Bradley Falls which is directly south along a similar topographic feature and elevation (Figure 1). If a barrier is not present in this part of the creek then several more kilometers of stream are accessible and may contain YCT. Harebell Creek should be surveyed from about 2.0 km upstream to document the upstream extent of YCT.
LITERATURE CITED

2005 CUTTHROAT TROUT DISTRIBUTION SURVEY REPORT
JULY CREEK
By ANNE MARIE EMERY-MILLER

BACKGROUND

On August 1st and July 28th 2005, the Henry’s Fork Foundation Crew conducted a fish and habitat survey on July Creek. The survey team was composed Anne Marie Emery-Miller, Sarah Shiley, and Michael Willson.

HABITAT:

July Creek is a spring-fed, southwest flowing stream. All sites visited on July Creek were found to be dry by HFF. All reaches were in sagebrush and Juniper communities with shrubs like Rabbitbrush and Bitterbrush prevalent. This stream is assumed inactive year around as sections of it were filled in with dirt (Figures 2 & 3).

RECOMMENDATIONS:

This stream appears to be inactive and no longer capable of delivering water as it has been filled in with dirt in what appears to be a diversion effort to water cattle. However, it may be of interest to see what structures upstream divert July Creek.

Figure 1: Stream sites (all dry) visited on July Creek in 2005.
Figure 2: July Creek site 2.4

Figure 3: July Creek site 3.0
BACKGROUND

On August 3rd, 2005, the Henry’s Fork Foundation conducted a fish and habitat survey on Keg Springs Creek. The survey group was comprised of Bryce Cheney, Michael Willson and Haynes King.

HABITAT

Keg Springs Creek run southward down the continental divide where it meets with Blind Creek at a confluence approximately half a mile above where they flow into Schneider Creek (Figure 1). Site 0.1 was visited on Keg Springs Creek and found to be dry (Figure 2).

Figure 1(above): Site 0.1 (White circle = no water) surveyed on Keg Springs Creek in 2005.

Figure 2(top): Keg Springs Creek site 0.1.
BACKGROUNDS

A fish and stream habitat survey was conducted on Littles Fork (tributary to the Gregg Fork of the Bechler River) by Jim Gregory (Gregory Aquatics), along with Jonas Landes and Kate Fuller (Utah Conservation Corp.) on September 15, 2005. These contractors completed this work for the Henry’s Fork Foundation (HFF).

Littles Fork was classified as having no trout for its entire length based on snorkeling surveys (Jeager et al 2000). The objective of the 2005 survey was to confirm or refute the absence of cutthroat trout in Littles Fork by means of electrofishing.

SAMPLING LOCATIONS AND HABITAT

Littles Fork was surveyed at one site, 2.6 km upstream from the stream mouth (Figure 1). The site is relatively easy to access from the Bechler River trail. There are three major cascades or waterfalls downstream - “Littlesmouth Cascade”, Tempe Cascade, and “Douglas Knob Falls”, (Rubinstein et al. 2000) - that are barriers to upstream fish passage (Figure 1).

Site 2.6 km was characterized by a streambed with a dominant substrate of loose rhyolite gravels with about 40% fines. There was low complexity, with no wood and some good pools (n = 6, the first three averaging 0.83 m). The site averaged 4.4 m wide and 0.10 m deep (Figure 2).

FISH

One-pass electrofishing was completed with one backpack unit at site 2.6 km. An additional 100 m was electrofished upstream. No fish were captured or seen in the 200 m that was electrofished.

DISCUSSION

Yellowstone cutthroat trout in the Gregg Fork are not able to access Littles Creek because of “Littlesmouth Cascade”, a steep cascade at the confluence of Littles Creek with Gregg Fork. The upper part of Littles Creek is fishless, apparently it wasn’t stocked, despite the relative easy accessibility from the Bechler River Trail. The entire 5.0 km length of Littles Creek should be classified as “fishless”, as was previously indicated from earlier snorkeling surveys.
Figure 1. Littles Fork showing sites surveyed in 2005 (black circle) and waterfalls (crosses).

Figure 2. Littles Fork at the start of site 2.6 km, looking upstream on September 15, 2005.

LITERATURE CITED


BACKGROUND

On July 12 and July 26, 2005, the Henry’s Fork Foundation conducted a fish and habitat survey on Moose Creek. The survey group was composed of Anne Marie Emery-Miller, Sarah Shiley, Michael Willson, Haynes King and Bryce Cheney.

HABITAT

Moose Creek flows in a Southwest direction where it eventually meets up with the Warm River downstream from the Warm River Springs and fish hatchery (Figure 1). The lower reaches of Moose Creek are accessible via a hiking trail that begins at the Warm River fish hatchery.

Reach 0.7 was in a steep narrow canyon that was dominated with Lodgepole pine and perennial grasses. This reach was a clear mountain stream with a step-pool system and much fallen woody debris and LWD aggregates (Figure 2). Substrate was composed of mostly gravels and fines with pool tails containing mostly gravels. Banks were completely stable and well rooted with vegetation throughout the entire reach with the exception of 2 meters that were disrupted by a fallen tree. Also, continuous fallen and deposited debris throughout this reach made it difficult to distinguish root wads from singles.

Reach 2.7 was also in a V-shaped mountain valley with Lodgepole pines as the dominant overstory and plants like Hemlock, Monkey-flower (*Mimulus guttatus*) and perennial grasses as the dominant under story. This reach was not a defined step-pool system like 0.7 as it appeared more like a continuous riffle reflecting a change in gradient (Figure 3). Woody debris and LWD aggregates were still present in this reach, but not as numerous as in 0.7. Substrate composition was composed of gravels and fines with an increase in fines in pool tails. Banks were 90% stable with visible undercut banks that were well rooted with gravel and roots, so not appearing disturbed. Both stream sites 0.7 and 2.7 appear to be fed by a natural spring.

Above site 2.7 (at about an elevation of 6,120 feet) a natural spring apparently keeps water perennially flowing at sites 0.7 and 2.7. Both sites visited (8.7 and 12.7) above this spring were dry (Figures 1, 4 & 5). Sites 4.7 and 10.7 were not visited, but assumed dry.

FISH

Moose Creek supported populations of Eastern Brook Trout that were found in sites 0.7 and 2.7. In site 0.7, twenty-nine EBT were counted in one pass with no non-game fish
species found. Site 2.7 produced 85 EBT in a three-pass run with no other fish species collected.

DISCUSSION

Eastern Brook Trout apparently dominate the perennially flowing portion, about 3.7 km from the mouth to the springs, of Moose Creek. The remaining stream length, about 5.0 km above springs, of Moose Creek is intermittent.

Figure 1: Stream sites surveyed (blue circles = brook trout only and white circles = no water) on Moose Creek in 2005.
Figure 2: Moose Creek site 0.7

Figure 3: Moose Creek site 2.7

Figure 4: Moose Creek site 8.7

Figure 5: Moose Creek site 12.7
BACKGROUND

On July 27th, the Henry’s Fork Foundation conducted a fish and habitat survey on North Fork Fish Creek. The survey team was composed Bryce Cheney, Haynes King and Michael Willson.

HABITAT

The stream length of North Fork Fish Creek runs southwest towards the Warm River (Figure 1). Sites 0.8, 4.8 and 8.8 were visited and confirmed dry (Figures 2 – 4) with remaining sites 2.8 and 6.8, not visited but assumed dry.

DISCUSSION

The entire surveyed length of the North Fork Fish Creek should be classified as intermittent.
Figure 2: NF Fish Creek site 0.8

Figure 3: NF Fish Creek site 4.8

Figure 4: NF Fish Creek site 8.8
2005 CUTTHROAT TROUT DISTRIBUTION SURVEY REPORT
PHILLIPS FORK
By JIM DE RITO

BACKGROUND

A fish and stream habitat survey was conducted on Phillips Fork (tributary to the Bechler River) on September 15, 2005 by Jim De Rito (Henry’s Fork Foundation), along with Carrie Wyler and Tonilyn Bringhurst (Utah Conservation Corps).

Snorkeling surveys on Phillips Fork found only Yellowstone cutthroat trout (Jeager et al. 2000) and this was extrapolated to the entire 3.8 km length of stream. However, the Phillips Fork contains the highest concentration of waterfalls of any named stream in Yellowstone National Park (Rubinstein et al. 2000) and some of these features are likely upstream to barriers to cutthroat trout. The objectives of the 2005 survey were to determine the distribution and abundance of cutthroat trout in Phillips Fork and take genetic samples for determining purity and stock origin of the fish.

LOCATION AND HABITAT

Phillips Fork was surveyed at two sites: 0.6 km and 1.2 km upstream from the mouth (Figure 1). Several small cascades or waterfalls are present between the mouth of Phillips Fork and site 0.6 km that are likely partial fish passage barriers.

Site 0.6 km averaged 4.6 m in wetted width and 0.12 m in depth with only three pools, averaging 0.83 m in depth. The site had about a 2 % gradient and the dominant substrate was boulder and subdominant was cobble. Surface fines in riffles and pool tails was < 5 %. The majority of the length of the unit was a straight riffle with few trees (Figure 2) Woody debris and the pools were mostly found toward the top of the unit and a plunge pool formed by a log across the creek was the upstream end of the site (Figure 3).

Site 1.2 km was located upstream of two fish barriers: Quiver Cascade #1 (about 5 m in height) and Quiver Cascade #2 (about 10 m in height, see Rubinstein et al. 2000). Because it was difficult to access the creek immediately above Quiver Cascade #1, a site was chosen about 80 m further upstream which is also above Quiver Cascade #2. The site was 77 m long and ended near the base of Quiver Cascade #3 (about 10 m in height). The 1.2 km site had about a 5 % gradient and is bedrock dominated with boulder subdominant (Figure 4). The site average about 2.1 m in wetted width. There were seven pools (average depth of first three was 0.50 m) and eight woody debris singles and three aggregates. Habitat was suitable and sufficiently complex to hold fish.

FISH

Site 0.6 km was a three-pass electrofishing site with one backpack unit. Eleven Yellowstone cutthroat trout (including one fry) were caught during the first pass, three during the second pass, and none in the third pass. Eight to ten additional YCT fry (most
less than 25 mm) were observed during each pass, but were not included in the above fish count. Another 23 YCT were caught while spot electrofishing within about 350 m upstream from the top of site 0.6 km. In sum, 37 trout (range 34 - 235 mm fork length) were captured and fin clipped from about 450 m of stream within or above site 0.6 km. No nongame species of fish were captured.

Genetic testing was completed on all 37 fish and all fish were identified as Yellowstone cutthroat trout (Campbell and Cegelski 2006). Given the sample size processed, there is a > 95% probability of detecting 1% introgressive hybridization with rainbow trout. A subset of 2 fish from Phillips Fork was analyzed to assess origin of stocking. Only haplotype #1 was observed in these two fish and they are most likely of Yellowstone Lake origin (Campbell and Cegelski 2006).

Site 1.2 km was a one-pass electrofishing site with one backpack unit. No fish were seen or captured within the site.

DISCUSSION

The stream length with cutthroat trout only extends from the mouth to Quiver Cascade #1, a distance of about 1.1 km. The remaining stream length of 2.7 km upstream of Quiver Cascade #1 is fishless. A couple partial fish barriers exist between the mouth of Phillips Fork and site 0.6 km that may limit movement of cutthroat trout from the Bechler River into Phillips Fork.
Figure 2 (left). Looking downstream from about the midpoint of the site 0.6 km on the Phillips Fork. Most of the site had few trees along banks, but the start and end of the site had tree canopy and large woody debris instream.

Figure 3 (right). Looking upstream at the end of site 0.6 km on Phillips Creek and pool-forming woody debris.

Figure 4 (left). Looking upstream from the middle of site 1.2 km on Phillips Creek.
LITERATURE CITED


BACKGROUND

On July 28th, 2005, the Henry’s Fork Foundation conducted a fish and habitat survey on Pine Creek. The survey team was composed Anne Marie Emery-Miller, Sarah Shiley and Michael Willson.

HABITAT

Sites 7.2 and 9.2 were visited on Pine Creek (Figure 1), but found to have little or no water during this time of year (Figure 2). Site 7.2 with water was not electrofished.

RECOMMENDATIONS

Pine Creek should be re-visited and surveyed earlier in the summer.
2005 CUTTHROAT TROUT DISTRIBUTION SURVEY REPORT
ROCK CREEK
By ANNE MARIE EMERY-MILLER

BACKGROUND

On July 28th, the Henry’s Fork Foundation conducted a fish and habitat survey on Rock Creeks. The survey team was composed Bryce Cheney, Haynes King and Michael Willson.

HABITAT

Rock Creek flows southeast into Rising Creek (Figure 1). The site visited was dry (Figure 2).

Figure 1: Stream site surveyed (1.7, dry) on Rock Creek in 2005.

Figure 2: Rock Creek site 1.7
BACKGROUND

On July 28th, the Henry’s Fork Foundation conducted a fish and habitat survey on Sawmill and Rock Creeks. The survey team was composed Bryce Cheney, Haynes King and Michael Willson.

HABITAT

Sawmill Creek flows south where it joins with Shaefer Creek near Rock Creek Campground (Figure 1). The site visited on Sawmill Creek was dry, but it is most likely active in the spring/early summer (Figure 2).

Figure 1: Stream site (dry) surveyed on Sawmill Creek in 2005.

Figure 2: Site 0.9 on Sawmill Creek.
SHEEP CREEK (INCLUDING DRY, TOM, AND BLUE CREEKS)
By ANNE MARIE EMERY-MILLER

BACKGROUND

On August 3rd, 11th and 16th, 2005, the Henry’s Fork Foundation conducted a fish and habitat survey on Sheep Creek. The survey group was composed of Anne Marie Emery-Miller, Sarah Shiley, Michael Willson, Haynes King and Bryce Cheney.

HABITAT

Sheep Creek begins at natural springs above Tom Creek. Tom, Dry, and Blue Creeks are all tributaries to Sheep Creek. The terminus of Sheep Creek is into Island Park Reservoir. The sites visited were accessible by way of the Sheep Creek Road. Some sites were inaccessible as they were on posted private property and access was not available.

Sheep Creek site 1.6 was a low gradient shallow stream found in a small marsh like ravine. This reach had poorly defined banks with some areas of flooding. Recent cattle grazing has deteriorated the overall condition of this stream by eroding the banks and increasing fine sediment loads with pool tails containing 100% surface fines. Pools were hard to define at low water flows (Figures 2 & 3).

Sheep Creek site 7.6 was a very straight, shallow stream found on a steady gradient in a sparse sagebrush community. The section of Sheep Creek appears to have been artificially straightened. Substrate composition was dominated by fines, with gravels subdominant. Banks appeared to be 85% stable with some evidence of recent cattle grazing, but does not seem to be the cause of fines. This was a hard place to electrofish as water levels were very low making it hard to keep the anode underwater (Figure 4).

Sheep Creek site 9.6 was a straight, low gradient stream system that was bordered with aspen, sage and perennial grasses. This reach was fenced off from cattle and bordered by the Sheep Creek road. Substrate consisted of fines and gravels with pool tails containing up to 95% fines and banks appearing 95% stable. The end of this reach went under a culvert that had a screen over it possibly preventing fish passage.

Dry Creek site 0.7 was only a 75 m site, because there were numerous beaver dams and split channel areas made it difficult to have a full 100 m site (Figure 5). Many of the side channels contained a high amount of sediment deposition. The mean wetted stream width was about 3.0 m and the mean depth was 0.15 m. There were six pools; the first three averaging 0.49 m. The dominant substrate was fines, subdominant gravel, and there was 100 % fines in the riffles. Dry Creek at sites 2.7 and 4.7 was dry.

Tom Creek at site 1.9 was dry. This site was above a spring source and the channel below this site contained water. Blue Creek at site 1.9 was dry.
FISH

Only sites 1.6 and 9.6 on Sheep Creek and site 0.7 on Dry Creek had fish. At Sheep Creek site 1.6 and Dry Creek site 0.7, only long nosed dace, red side shiners, and mottled sculpin were captured and vouchered. Sheep Creek site 9.6 had only brook trout and no non-game species were captured.

DISCUSSION/RECOMMENDATIONS

Sites on Sheep Creek had the lowest bank stability ratings of any sites surveyed in 2005. The stream channel has been straightened, diverted, and grazed by cattle on private land. A stream site on Sheep Creek between 1.6 and 7.6 should be surveyed to determine the extent of water and fish. Jerry Creek should also be surveyed.

Figure 1: Sites surveyed on Sheep, Tom, Dry, and Blue creeks in 2005. white circles = no water, black circles = no trout, blue circles = brook trout only.
Figure 2: Sheep Creek site 1.6

Figure 3: Site 1.6 unstable banks.

Figure 4: Sheep Creek site 7.6

Figure 5: Dry Creek site 0.7, beaver influence.
BACKGROUND

On July 27th, the Henry’s Fork Foundation conducted a fish and habitat survey on Snow Creek. The survey crew consisted of Haynes King, Bryce Cheney, and Michael Willson.

HABITAT

Snow Creek is accessible by taking the North Fork Fish Road northward past Horsefly Springs. The stream length of Snow Creek begins north of Snow Creek Butte, parallels the Yellowstone National Park Boundary, and flows southward where it eventually joins with Robinson Creek, tributary to Warm River (Figure 1). There is a spring source at about 7,000 feet elevation. All of the remaining unsurveyed stream length (4.6 km) is above these springs.

Site 1.4 was visited on Snow Creek and was dry; therefore, the uppermost site (3.4) was assumed dry.

DISCUSSION

The entire stream length above the springs should be classified as intermittent.

Figure 1. Stream site surveyed (dry) on Snow Creek in 2005.
BACKGROUND

On August 26th and 27th, 2005, the Henry’s Fork Foundation conducted a fish and habitat survey on South Fork Partridge Creek. The survey group was composed of Anne Marie Emery-Miller and Sarah Shiley.

HABITAT

South Fork Partridge Creek is a southwest flowing system that joins Partridge Creek (Figure 1), a tributary to the Warm River.

Site 1.0 was a dry sinuous streambed that is found ¼ of a mile below a culvert that transports the stream under Fish Creek Road (082). This section contained many large boulders and woody debris within the channels banks and was about 2 meters wide with many side channels and depositional zones. Overall stream conditions seemed good with cobble and gravel as dominant substrate and secure banks. Surrounding vegetation was lodgepole pines and perennial grasses (Figure 2).

Site 3.0 is a narrow creek that contained still standing murky water and an abundance of macrophyte growth. Water was present, possibly from a spring source, but not flowing at this site. Surrounding area was marsh-like and flat with surrounding willows and lodgepole pine trees (Figure 3).

Site 5.0 was in a steep narrow canyon that was completely dry. This site was viewed from the canyon’s ledge and contained cobble and gravel substrate. Rockslides may be common at this site (Figure 4).
Figure 2: SF Partridge Creek site 1.0

Figure 3: SF Partridge Creek site 3.0

Figure 4: SF Partridge Creek site 5.0
BACKGROUND

On July 13 and July 20-21, 2005, the Henry’s Fork Foundation (HFF) conducted a fish and habitat survey on Split Creek. The survey group was composed of Anne Marie Emery-Miller, Sarah Shiley, Michael Willson, Haynes King, and Bryce Cheney. In addition, Lee Mabey (USFS Fisheries Biologist) and Jim De Rito (HFF Conservation Director) worked with the crew on July 13th.

HABITAT

Split Creek is comprised of three main forks: North, Middle, and South (Figure 1). Site numbering began at the mouth of Split Creek and continued in sequence upstream through a portion of the Middle Fork and up through the South Fork. Sites on the North Fork and Middle Fork (above the South Fork confluence) were independently selected.

North Fork Split Creek

Site 0.4 was the only site on the North Fork Split Creek that contained water; it is fed by the incoming spring channels that were observed during the survey. It was found in a Lodgepole pine community and was bordered with overhanging perennial grasses. This site had a constant gradient and was mostly riffle. Pools were small and mostly formed under debris jams. LWD singles and aggregates were numerous with two root wads counted. Substrate consisted of gravels and cobble with few surface fines excluded mostly to pool tails (figure 2).

All other sites upstream of site 0.4 were dry. Site 2.4 was found dry at the bottom of a steep cliff with lots of dead trees fallen across it. Site 4.4 (was erroneously omitted from database and is not included on map) was in a sloped valley surrounded by perennial grasses and Lodgepole pines and appears to have been dry all season (Figures 3 & 4). Site 6.4 was not visited, but assumed dry.

Split Creek

Site 1.5 was in an open marshy valley dominated with willows and sedges and bordered by Lodgepole pine slopes. This stream was unconfined; with many side channels. Three beaver dams were found on the stream; resulting in multiple channels and pools that were trapping sediment (Figure 5). Side channels showed evidence of active erosion with flooded banks and silty substrate compositions. Banks of stream were poorly defined, especially behind beaver dams where over bank flows appeared common and substrate was extremely silty.
Site 3.5 was in a confined valley setting with Lodgepole pines and perennial grasses bordering the stream. This site contained a single thread channel of Split Creek and streambanks were mostly stable. LWD singles and root wads were prevalent (Figure 6).

Site 5.5 is within a wider mountain stream that contains many fallen LWD singles from surrounding Lodgepole pines and willows. This reach is wider than site 3.5 and contains depositional zones that could be from crosscurrents created by fallen debris. Water clarity was good with substrate consisting of gravel and small boulders. Perennial grasses stabilized banks well (Figure 7).

**South Fork Split Creek**

Site 7.5 is a high gradient mountain stream; consisting of a step-pool system. Only 50 meters of site 7.5 were surveyed because of natural barriers, such as waterfalls, and channel forks. Dominant vegetation was Lodgepole pine trees and perennial grasses. This stream was very shallow but swift with substrate composition changing from fines and gravels to cobble and gravel. Note: this site is actually on the Middle Fork Split Creek according to the 1:100,000 GIS stream layer.

Site 13.5 was dry. Somewhere between site 7.5 and 13.5 the stream is no longer perennial. Sites 15.5 and 17.5 are assumed dry.

**Middle Fork Split Creek**

Two sites on the Middle Fork of Split Creek were visited (Figure 1) and confirmed dry (Figure 8).

**FISH**

The perennially flowing portions of Split Creek, the North Fork, and the South Fork (actually the lower Middle Fork) support brook trout. On Split Creek, site 1.5 contained 40 brook trout and 10 speckled dace, site 3.5 had 134 brook trout and no non-game fish, and site 5.5 had 43 brook trout and 3 mottled sculpin. Site 7.5 on the South Fork (actually lower Middle Fork) had 9 brook trout. Site 0.4 on the North Fork had 11 brook trout and 23 sculpin.

**DISCUSSION/RECOMMENDATIONS**

All sites on the main stem of Split creek contained water, but only two sites above the North Fork confluence had water; site 0.4 on the North Fork and 7.5 of the South Fork/Middle Fork. All sites upstream of 7.5 were dry. However, there was a 6 kilometer stretch of stream that wasn’t able to be surveyed. Site 9.5 should be visited to determine if water is present, and if so, surveyed for fish presence.
Figure 1: Surveyed sites (blue circles = brook trout only, white circles = no water) on Split Creek in 2005.

Figure 2: NF Split Creek site 0.4

Figure 3: NF Split Creek site 4.4
Figure 8: Middle Fork Split Creek

Figure 9: SF Split Creek site 13.5
BACKGROUND

On August 1st, the Henry’s Fork Foundation conducted a fish and habitat survey on Strong Creek. The survey team was composed Bryce Cheney, Haynes King and Michael Willson.

HABITAT

Strong Creek flows southeast through the Targhee National Forest where it flows into the Henry’s Fork above the Ashton Reservoir (Figure 1). Site 0.4 was the only site visited on Strong Creek and it contained non-flowing water that appeared swampy with excessive macrophyte growth. Surrounding slopes contained sagebrush, willow, juniper and perennial grasses with willows overhanging the stream in some places (Figure 2).

RECOMMENDATIONS

Re-visit site and upper most sites and survey as Strong Creek does contain water even though it appears to be non-flowing.

Figure 1: Surveyed site on Strong Creek in 2005.
Figure 2: Strong Creek site 0.4.
BACKGROUND

The Henry’s Fork Foundation conducted a fish and habitat survey on West Fork Sheridan Creek and Twin Creek on August 9 and 10, 2005. The survey team was composed Anne Marie Emery-Miller, Sarah Shiley, Bryce Cheney, Haynes King and Michael Willson.

LOCATION AND HABITAT

The headwaters of both West Fork Sheridan Creek and its tributary, Twin Creek, are along the continental divide (Figure 1). Twin Creek and West Fork Sheridan Creek were previously unsurveyed above their confluences. It was noted during this survey that a tributary to Twin Creek, the Middle Fork Sheridan Creek, which is not recorded on the 1:100,000 GIS stream layer contained water.

Site 0.1 on West Fork Sheridan Creek was only 75 m in length. The mean wetted width was 2.2 m and the mean depth was 0.14 m. There were 10 pools; the first three averaged 0.34 m. There were seven singles and two aggregates of LWD. Dominant substrate was boulder and subdominant was cobble (Figure 2). There were about 10% fine in riffles and 35 percent in pool tailouts.

Site 2.1 on West Fork Sheridan Creek was only 60 m in length. The mean wetted width was 3.8 m and the mean depth was 0.11 m. There were three pools; they averaged about 0.27 m in depth. LWD in the site consisted of four singles, two aggregates, and two rootwads. Cobble was the dominant substrate and gravel was subdominant (Figure 3).

Site 1.6 on Twin Creek is a clear sinuous mountains stream that contains many large boulders and woody fallen debris (Figure 4). The stream was approximately 2 meters wide with willow and perennial grasses overhanging the stream with the left bank being greatly sloped. The right side of the steam looking upstream contained a depositional zone containing gravel, cobble and small willows that may be submerged in spring when water levels are high. Depositional zones like this one were frequent through out the 100 meters surveyed, isolating many small pools. Surrounding dominant vegetation included lodgepole pines trees, willow and unidentified shrubs. This stream appeared in great condition with stable banks and little to no surface fines indicating little wasting.

FISHERIES

A total of 45 brook trout (range 45 – 195 mm fork length) were captured in three electrofishing passes on site 0.1 on the West Fork Sheridan Creek. Thirteen brook trout (range 85 – 210 mm fork length) were captured in one electrofishing pass on site 2.1 on
the West Fork Sheridan Creek. Six brook trout (range 109 – 186 mm fork length) were captured in two electrofishing passes of Twin Creek.

DISCUSSION/RECOMMENDATIONS

Only brook trout were captured in West Fork Sheridan or Twin creeks. There were no Yellowstone cutthroat trout or non-game species. However, the upper couple of kilometers of West Fork Sheridan Creek and all of Middle Fork Sheridan Creek have not been surveyed. It is recommended that these remaining stream lengths be surveyed to determine if any Yellowstone cutthroat trout are present, or at the very least determine the extent of water and brook trout in these creeks.

Figure 1: Sites surveyed on West Fork Sheridan Creek and Twin Creek in 2005. Blue circles = brook trout only.
Figure 2 (left). Looking upstream from the start of site 0.1 on West Fork Sheridan Creek.

Figure 3 (right). Looking upstream from the start of site 2.1 on West Fork Sheridan Creek.

Figure 4 (left): Twin Creek site 1.6, looking downstream.
BACKGROUND

On August 2nd, the Henry’s Fork Foundation conducted a fish and habitat survey Willow Creek. The survey team was composed of Haynes King, Michael Willson and Bryce Cheney.

HABITAT

Willow Creek flows southwest in the Targhee National Forest where it empties into the eastern portion of Ashton Reservoir (Figure 1). Site 6.9 was the only site visited in 2005 and it was dry (Figure 2). Because this was the uppermost site, it was assumed that the sites downstream were also dry.

RECOMMENDATIONS

Visit lower sites to verify that stream is dry and not fed by any natural spring systems.