Spawning Times and Locations of Rainbow Trout and Brown Trout in Tributaries to the Smith River, Montana

Prepared by

Grant Grisak

Montana Fish, Wildlife & Parks 4600 Giant Springs Road Great Falls, Mt. 59405





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From 2007 through 2012 Montana Fish Wildlife & Parks (MFWP) conducted studies of trout behavior in the Smith River and Missouri River to identify migratory patterns, spawning locations and spawning times. This report represents a compendium of results of fish behaviors relating to rainbow trout and brown trout spawning in tributaries to the Smith River. The majority of this information was chronicled in reports prepared by Grisak (2012) and Grisak et al. (2012). In 2011, Montana FWP conducted additional studies of trout behavior by surgically implanting radio transmitters in 4 rainbow trout and 1 brown trout in the Smith River near the mouth of Eagle Creek.

2011 trout behavior –Smith River near Eagle Creek

Rainbow trout 720-50A was tagged in the Smith River on September 14, 2011 in the Eagle Creek electrofishing section near river mile 79.1. It measured 15.1 inches long and weighed 1.28 pounds. During the surgical procedure, it was positively identified as a female. It stayed in the same general vicinity through April 8, 2012. On April 11, it was located by ground tracking at the mouth of Sheep Creek. Over the next 22 days it entered Sheep Creek and progressively moved upstream approximately 12.6 miles to the mouth of Calf Creek. During a flight on May 7 it was located in Calf Creek 0.2 mile upstream of the mouth. By May 11 it returned to Sheep Creek near river mile 12.6. On May 21, it was located in the Smith River at river mile 78. Over a 43 day period this fish traveled 30.5 miles round trip to spawn in Calf Creek. Based on its median residency date in Calf Creek, we believe it spawned near May 7.

Brown trout 720-51 was tagged in the Smith River on September 14, 2011 in the Eagle Creek electrofishing section near river mile 79.1. It measured 15.4 inches long and weighed 1.55 pounds. During the surgical procedure, it was positively identified as a female. Over the next 26 days, this fish progressively moved downstream in the Smith River 3.5 miles. Contact was lost with this fish for nearly seven months until it was discovered in Rock Creek 2.5 miles upstream of the mouth. It stayed in a 0.3 mile reach of Rock Creek over the next three months. We believe this fish likely spawned in Rock Creek near stream mile 2.5 in the fall of 2011, but cannot accurately estimate the spawning date. Total distance traveled by this fish was 10.1 miles.

Rainbow trout 720-53A was tagged in the Smith River on September 14, 2011 in the Eagle Creek electrofishing section near river mile 79.1. It measured 15.9 inches long and weighed 1.46 pounds. During the surgical procedure, it was positively identified as a female. This fish stayed within the same general vicinity over the next 6.5 months. In 2012 it began its spawning run on April 8. Within a few days it entered Sheep Creek and progressively moved upstream reaching it furthest upstream point (stream mile 11.7) on April 23. It returned to the Smith River and was located at river mile 79.5 on May 3, where it stayed for the remained of 2012. Over a 26 day period, this fish was able to travel 30 miles round trip to spawn in Sheep Creek. Based on it median residence date in Sheep Creek, we believe it spawned on April 20 at stream mile 11.7.

Rainbow trout 720-55i was tagged in the Smith River on September 14, 2011 in the Eagle creek electrofishing section near river mile 79.1. It measured 17.5 inches long and weighed 1.85

pounds. It was positively identified as a female during the surgical procedure. It was tagged using the internal antennae procedure where the whip antennae was coiled and implanted within the fish's body cavity. Over the next seven months, it stayed within at 5 mile reach between river mile 75.1 and 80.1. On April 8, 2012 it was located at the mouth of Eagle Creek. Three days later it was located at the mouth of Sheep Creek. It entered Sheep Creek shortly after April 11 and during a flight on April 23, it was located in Moose Creek 1.4 miles upstream of the mouth. It progressively moved upstream in Moose Creek and reached stream mile 3.1 on May 3. It stayed in this general area for 18 days. On June 21, it was located in the lower reaches of Moose Creek at stream mile 1.1. During a flight on August 16, it was located in the Smith River near its tagging site at river mile 79.8. In 2012 this fish began its spawning run near April 11 and traveled 42.6 miles round trip in 128 days. Its median residency date in Moose Creek was May 20. We believe this fish spawned near May 20 based on its median residency date in Moose Creek.

Rainbow trout 720-92A was tagged in the Smith River on September 27, 2011 in the Eagle Creek electrofishing section near river mile 78.5. It measured 16.3 inches long and weighed 1.82 pounds. It's sex was undetermined during the surgical procedure. Over the next 6.5 months it stayed in the same general vicinity before starting its spawning run in early April 2012. On April 8, it was located in Sheep Creek 2.9 miles upstream from the mouth. It progressively moved upstream in Sheep Creek and was ultimately located in Moose Creek 3.7 miles upstream of the mouth on May 3. It progressively moved downstream into Sheep Creek, then to the Smith River where it returned to its prespawn location at river mile 79.8 on May 21. During a flight on August 16 it was located 25.3 miles downstream in the Smith River at river mile 54.5. In 2012 this fish began its spawning run near April 8 and traveled 39.3 miles round trip to spawn in Moose Creek and Moose Creek, we believe it spawned in Moose Creek near May 2. This is one of the few rainbow trout that demonstrated long distance movements after the spawning period.

Discussion

Of the fish tagged with radio transmitters from 2007-2012 13% (n=3) of radio tagged brown trout used tributaries to spawn during the evaluation period. Brown trout spawned in Rock Creek and Hound Creek, but no definitive dates were determined. The most significant brown trout spawning movements were demonstrated by fish 720-89 which traveled 56 miles round trip in 157 days. This fish displayed overwintering behavior in the tributary where it spawned.

For rainbow trout, 42% (n=11) of the radio tagged fish used tributaries to spawn. The Sheep Creek drainage was used by 55% (n=6) of the radio tagged rainbow trout. Of these fish, one (16%) spawned in Calf Creek, two (33%) spawned in Moose Creek and the three (50%) spawned in Sheep Creek. The remaining tagged fish spawned in Newlan Creek (18%), Deep Creek (18%) and Tenderfoot Creek (9%).

The median date rainbow trout entered spawning tributaries was April 23 (range April 8-May 6) and the median date these fish left the tributaries was May 27 (range May 2-June 22). The median spawn date for rainbow trout in the Smith River tributaries was May 12 (range April 20-

May25). Rainbow trout traveled round trip a mean distance of 64.3 miles (range 3.2-193.4) miles to spawn. The mean number of days for tagged rainbow trout to make their spawning run and return to the post spawn locations was 73.6 days (range 28-180).

These studies provide information on general behaviors of rainbow trout and brown trout in the Smith River drainage. More studies of trout behavior are needed to increase the resolution of these observations and gather more information about critical habitats for summering, overwintering and spawning.

References

- Grisak, G. 2012. An Evaluation of trout movements in the Upper Smith River Basin. Final report to Canyon Ranch, Pat Barnes Missouri River Chapter of Trout Unlimited and Missouri River Flyfishers. Montana Fish, Wildlife & Parks, Great Falls.
- Grisak, G., A. Strainer and B. Tribby. 2012. Rainbow trout and brown trout movements between the Missouri River, Sun River and Smith River, Montana. PPL-Montana MOTAC projects 021-08, 771-09, 771-10, 771-11. Montana Fish, Wildlife & Parks, Great Falls.