

# **SOUTH DAKOTA STATEWIDE FISHERIES SURVEY**

**2102-F21-R-45**

**Survey Location:** Whitewood Creek

**County:** Lawrence

**Survey Dates:** July 11-12, 2013

## **INTRODUCTION**

Fish populations in Whitewood Creek were surveyed in 2013 to monitor the impacts of recent flushing flows. Concerns have arisen that the fish populations in Whitewood Creek were greatly impacted by high flows. Whitewood Creek and its tributaries are managed under Black Hills wide regulations of a daily limit of five trout (in any combination) with one allowed 14 inches or longer.

Whitewood Creek's headwaters are located about 11 km south of Lead, SD. It flows north through the cities of Lead and Deadwood where it converges with Deadwood Creek. It continues northeast past the town of Whitewood, and enters the Belle Fourche River about 8 km east of the town of Nisland. Whitewood Creek has a long history involving gold mining operations in the Deadwood area. It experiences a fair amount of angling pressure, especially northeast of Deadwood. The south western portion of Whitewood Creek's watershed is located in a pine/spruce forest. Large portions are managed by the US Forest Service, the Bureau of Land Management and Homestake Mining Co. From Deadwood to Whitewood the watershed is divided into smaller parcels with various private owners. The area east of Whitewood is privately owned and in a short grass prairie used for ranching and farming practices. Much of the land directly adjacent to Whitewood Creek is owned by Homestake Mining Co.

## **SURVEY METHODS**

Three sites were selected to survey in Whitewood Creek during July 2013. Efforts were made to satisfy the assumptions 1) the population is static, 2) capture probability remained constant across sampling periods, and 3) all fish in the population are equally vulnerable to capture (Van Den Avyle and Hayward 1999; Hayes et al. 2007). All sample reaches were 100 meters in length. Block nets were set at the upstream and downstream boundaries to prevent fish from emigrating or immigrating within the sample site. Three passes were made with two backpack electrofishing units. Captured fish were anesthetized with carbon dioxide. Most species of fish were measured to the nearest millimeter total length (TL), weighed to the nearest gram, and returned to the stream. Longnose Dace were generally only counted, not weighed or measured. Relative abundance was calculated as CPUE (number of fish captured per 100 meters of stream) and density was calculated as fish per acre. These were compared to past surveys. As a result of the small sample size, caution must be given when interpreting the data and extrapolating it to the entire stream.

In addition to fish data, pH, temperature, and specific conductance were measured and recorded. Stream widths were also measured every ten meters and averaged to obtain an estimate of total area sampled to calculate density of fish (number per 100 m<sup>2</sup>).

## RESULTS AND DISCUSSION

Four species of fish were sampled in Whitewood Creek in 2013, consisting of game species of Brook Trout (BKT) and Brown Trout (BNT), and native species Longnose Dace (LND) and Mountain Sucker (MTS) (Table 1).

Table 1: Estimated abundance (per100 m) and density (per acre) of species captured within three sample sites of Whitewood Creek during the 2013 survey.

	BKT ≥200 mm /100 m	BKT /acre	BNT <200 mm /100 m	BNT ≥200 mm /100 m	BNT /acre	LND /100 m	MTS /100 m
WWC28	-	-	-	-	-	550*	24*
WWC17	1	6	6	32	197	158	108
WWC1	-	-	43	55	345	80	14

\*only 1 pass was completed at WWC28 due to shocker malfunction

### Site 28

This site is located just east of the town of Whitewood. Only one pass was completed due to shocker malfunction caused by high conductivity. This site was first sampled in June 2009 and again in Aug 2010 with 51 and 5 Mountain Suckers sampled, respectively. Twenty-four were sampled on July 11, 2013 (Table 1). Longnose Dace are also present at this site with 1, 64, and 550 sampled in 2009, 2010, and 2013 respectively.

### Site 17

This site is located on Whitewood Creek Road northeast of Deadwood. During the July 11, 2013 survey, densities of Brown Trout ≥200 mm were actually higher than they have been in previous surveys over the past 14 years (Table 2) with an estimate of 197 fish/acre. This falls within a Class I Brown Trout fishery (≥150 fish ≥200 mm/acre).

Table 2: Species abundance estimates (per 100 m) during three pass back-pack electrofishing of Whitewood Creek Site 17 on three different dates. Density (per acre) is also given for Brown Trout ≥200 mm.

	BKT ≥200 mm /100 m	BNT <200 mm /100 m	BNT ≥200 mm /100 m	BNT /acre	RBT ≥200 mm /100 m	LND /100 m	MTS /100 m
9/1998	-	40	45	297	-	182	89
5/2005	-	3	16	115	-	284*	59
9/2005	-	31	13	102	4	51	45
7/2013	1	6	32	197	-	158	108

\*actual capture numbers are reported due to very high confidence intervals.

### Site 1

This site is located in Deadwood at the Rodeo Grounds above the bridge. This site has been sampled numerous times in the past. In July 2008 it was sampled with a single pass with 12 Brown Trout >200 mm, three Rainbow Trout >200 mm, seven Mountain Sucker, and one

Longnose Dace sampled. Table 2 shows some prior samples. The survey in 2013 yielded the highest numbers of adult Brown Trout since 2000. During most surveys, this site can be considered a Class I Brown Trout fishery ( $\geq 150$  fish  $\geq 200$  mm/acre).

Table 3. Species abundance estimates (per 100 m) during three pass back-pack electrofishing of Whitewood Creek Site 1 on eight different dates. Density (per acre) is also given for Brown Trout  $\geq 200$  mm.

	BKT <200 mm /100 m	BNT <200 mm /100 m	BNT >200 mm /100 m	BNT /acre	RBT >200 mm /100 m	LND /100 m	MTS /100 m
6/1999	2	28	31	144	-	-	28
9/1999	-	122	41	220	-	-	16
6/2000	-	58	50	269	-	-	7
9/2000	10	98	84	478	-	8	6
5/2005	-	5	15	107	11	40**	16**
9/2005	1	174	21	155	-	41	19
7/2008*	-	4	12	79	3	1	7
7/2013	-	43	55	345	-	80	14

\*single pass survey

\*\*actual capture numbers are reported due to very high confidence intervals.

#### LITERATURE CITED

Van Den Avyle, M. J. and R. S. Hayward. 1999. Dynamics of exploited fish populations. Pages 127-166 in C. C. Kohler and W. A. Hubert, editors. Inland fisheries management in North America, 2nd edition. American Fisheries Society, Bethesda, Maryland.