

**NEVADA DEPARTMENT OF WILDLIFE  
NATIVE FISH AND AMPHIBIANS  
FIELD TRIP REPORT**

DATE(S): April 5, 6, May 31, July 7 and 26, October 5, 6 2016  
LOCATION(S): Sunnyside Creek and Flag Springs, Kirch Wildlife Management Area, Nye County, NV  
PURPOSE(S): Annual snorkel surveys of White River Spinedace  
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## INTRODUCTION

The White River Spinedace *Lepidomeda albivallis* was listed as an endangered species on September 12, 1985 (USFWS 1994). The White River Spinedace Recovery Plan was finalized in 1994. The current distribution of White River Spinedace includes the Flag Springs complex and contiguous upper Sunnyside Creek on the Kirch Wildlife Management Area. There was an unsuccessful attempt at introducing White River Spinedace into Indian Spring near Preston, NV in 2004.

The White River Spinedace population in Flag Springs and Sunnyside Creek was believed to be less than 20 adults ( $\geq 100$  mm) in spring 1996. These fish had been moved to artificial pools immediately below the North Flag Spring source to keep them safe from predation by Largemouth Bass *Micropterus salmoides* that had been accidentally introduced downstream. Unfortunately, no White River Spinedace reproduction was documented in the pools, so once Largemouth Bass were eradicated in 1995, NDOW and the US Geological Survey moved the fish to the outflow channel where it was hoped that successful reproduction could take place.

In September 1996, 68 White River Spinedace were counted in the lower reach of Middle Flag Spring and in Sunnyside Creek immediately below the confluence with North Flag Spring. All of these fish were less than 100 mm and represented recent recruitment. By September 1999, the count rose to 1,573. The population appeared to be improving until March 2001 when less than 100 were counted. The cause of this dramatic decline was determined to be a significant increase in predation by cormorants. After several months of intensive hazing, the cormorants and blue herons fled the area. The September 2001 count improved to 715 and by 2004 reached nearly 3,000 (Figure 1).

During censuses of White River Spinedace, the co-occurring White River Speckled Dace *Rhinichthys osculus velifer* and White River Desert Sucker *Catostomus clarkii intermedius* are observed but not counted.

## METHODS

Counts were obtained by visual observations during snorkeling. The South Flag Spring and North Flag Spring outflows were surveyed on April 5, 2016. Sunnyside Creek was surveyed on April 6, May 31, July 7 and 26, 2016. The majority of Sunnyside Creek was surveyed this year starting down near the county road and ending at the confluence of the Flagg tributaries.

On October 5, 2016 the North and South Flag Springs were surveyed. On October 6, 2016 Sunnyside Creek was surveyed beginning at 10 m downstream of the old 40 ft culvert and upstream to the confluence of the two Flag Spring outflows.

All surveys began at the most downstream point of the transect, with snorkelers moving upstream as they counted fish. When large groups of fish were encountered, snorkelers would exit the water and re-enter upstream of the group of fish as to avoid chasing fish upstream and double counting them. Each White River Spinedace counted was broken into one of four size classes: A =  $\leq 30$  mm, B = 31-60 mm, C = 61-90 mm, and D =  $\geq 90$  mm (Tables 1 & 2). Count and size data was relayed to a person on shore recording data.

## RESULTS

### April 5 and 6, May 31, and July 7 and 26 2016

The conditions were excellent for snorkeling except for South Flag which was clogged with tumble weeds. Underwater visibility was about 5-6 m in both North Flag and mainstem Sunnyside Creek. A total of 804 White River Spinedace were counted, of which, approximately 150 were observed in the lower half of Sunnyside Creek. (Table 1, Figure 1). White River Spinedace were found throughout the entire system, but were often encountered in concentrated groups. These concentrated groups were likely spawning aggregates, as many White River Spinedace and White River Desert Suckers were exhibiting spawning colors.

TABLE 1. Number of White River Spinedace counted during spring/summer 2016 snorkel surveys.

Reach	Size class				Total
	A ( $\leq 30$ mm)	B (31-60 mm)	C (61-90 mm)	D ( $\geq 90$ mm)	
Sunnyside Creek	9	100	154	65	328
South Flag	89	108	47	9	253
North Flag	60	107	45	11	223
Total	158	315	246	85	804

### October 5 and 6, 2016

October 5 and 6, 2016

Water clarity was excellent for snorkeling at about 5 m; however, large amounts of emergent vegetation, including watercress *Nasturtium officinale*, common reed *Phragmites australis*, bulrush *Schoenoplectus* spp., and cattails *Typha* spp. significantly impaired our ability to see anything in large stretches of Sunnyside Creek as well as North and South Flag. A total of 331 were counted (Table 2). No nonnative species were observed, and no piscivorous birds or fish with bird strikes were observed.

TABLE 2. Number of White River Spinedace counted during October 2016 snorkel surveys.

Reach	Size class				Total
	A (≤ 30 mm)	B (31-60 mm)	C (61-90 mm)	D (≥ 90 mm)	
Sunnyside Creek	0	50	20	0	70
South Flag	0	77	25	4	106
North Flag	27	95	25	8	155
Total	27	222	70	12	331

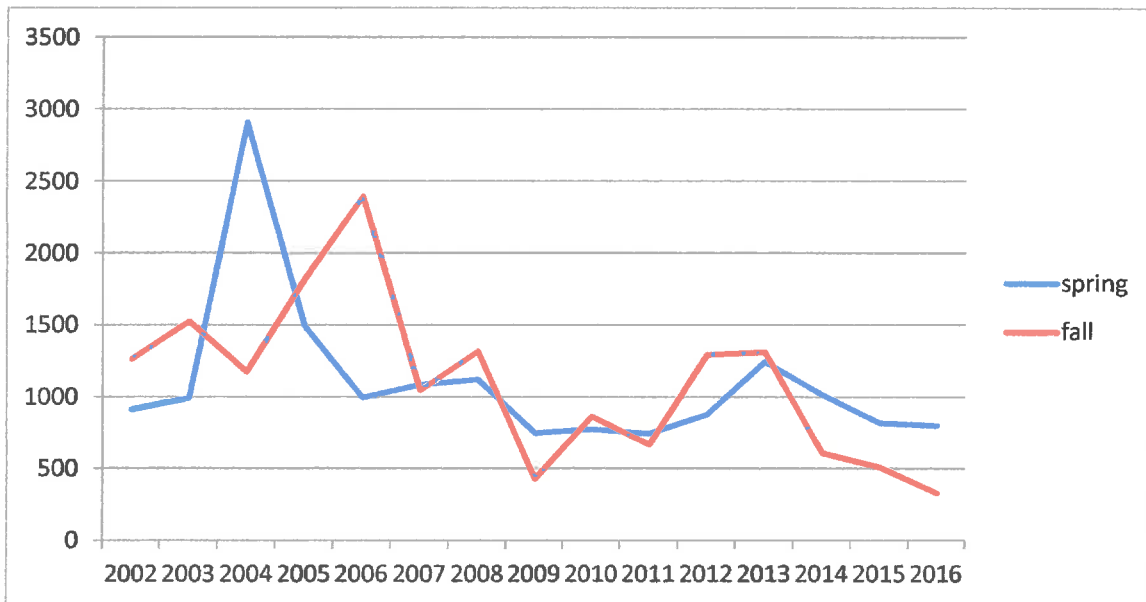


FIGURE 1. Numbers of White River Spinedace counted during spring and fall snorkel surveys, 2002-2016.

## DISCUSSION

White River spinedace continue to survive in healthy numbers in Flag Springs and Sunnyside Creek. NDOW contracted Streamwise, Inc. to restore the upper sections of the Flag Springs outflows to more natural and better functioning conditions. The work was started and completed in Fall/Winter 2009. Streamwise, Inc. was contracted again in

the spring of 2015 to remove the 40ft culvert (Figure 2), which acted as a barrier, and replace it with a box culvert (Figure 3). The work was completed in April 2015 and has reconnected the lower reaches of Sunnyside Creek to the Flag tributaries, thus greatly expanding available habitat for White River Spinedace and the other native fishes.



**FIGURE 2.** Looking upstream at the old “40ft culvert” on Sunnyside Creek. This culvert acted as a fish barrier to upstream movement and was removed in April 2015.



FIGURE 3. New box culvert that replaced the old “40ft culvert” on Sunnyside Creek. This new culvert allows up- and downstream movement of native fish, thus increasing available habitat.

The increasing thickness of watercress and reeds are problematic for obtaining accurate and representative count data, as well as potentially limiting movement and available habitat of White River Spinedace. Watercress grows so thick in the summer and early fall that it completely darkens the stream for stretches up to 150 m. Common reed grows along the banks, the sides of the channel, and up from the bottom of the channel making it difficult to maneuver stealthily and see fish upstream without scaring them further upstream or into hiding. Chairmaker’s bulrush or American three square *Schoenoplectus americanus* also causes problems as it dies in the fall and winter, and “lays over” the stream, again completely darkening the stream for significant stretches. These darkened stream reaches may be relegated to movement corridors rather than useable habitat for foraging by White River Spinedace and White River Speckled Dace, both of which are known drift feeders. Another effect of the thick vegetation seems to be an increase in the amount of flooded area adjacent to Sunnyside Creek. Water up to 20 cm deep and up to 20 m away from the channel were observed during the September surveys on the north side of the stream. This is particularly problematic since it provides more habitat for the already increasing stands of reeds.

Prescribed burns have previously been used to control vegetation at Sunnyside Creek and the Flag tributaries. A prescribed burn was conducted in April 2013 starting at the old 40 ft culvert and continuing upstream for approximately 2/3 the distance of Sunnyside Creek. The remaining 1/3 of Sunnyside Creek was scheduled for a prescribed burn in spring 2015, but has since be delayed to spring 2016. A prescribed burn was conducted

around the Flag Springs in April 2014. Prescribed burns are effective at immediately removing vegetation, but these benefits are often temporary as the vegetation usually grows back. Prescribed burns will continue in the future, as well as developing other vegetation management strategies that will improve habitat conditions for fish and accuracy of snorkel surveys.

#### LITERATURE CITED

US Fish and Wildlife Service. 1994. White River Spinedace, *Lepidomeda albivallis*, Recovery Plan. Portland, Oregon. 45 pp.