

Status of *Meda fulgida* in Aravaipa Creek, Arizona
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Dr. Peter Reinthal, Department of Ecology and Evolutionary Biology, University of Arizona started sampling fishes at Aravaipa Creek, Arizona in 2002. We have been sampling using (1) seining 200 meters at nine localities, (2) block and shock for 200 meters at six localities and (3) three pass depletion sampling at one site. Presented below (Fig. 1a) is the number of spinedace (*Meda fulgida*) combined from the nine seine localities for both spring and fall sampling efforts. Comparison of seining data with block-shock results, indicates that there is a greater proportional representation of spinedace when fish are collected by seining. The data from fall 2001 is from Dave Brown and Peter Unmack, ASU.

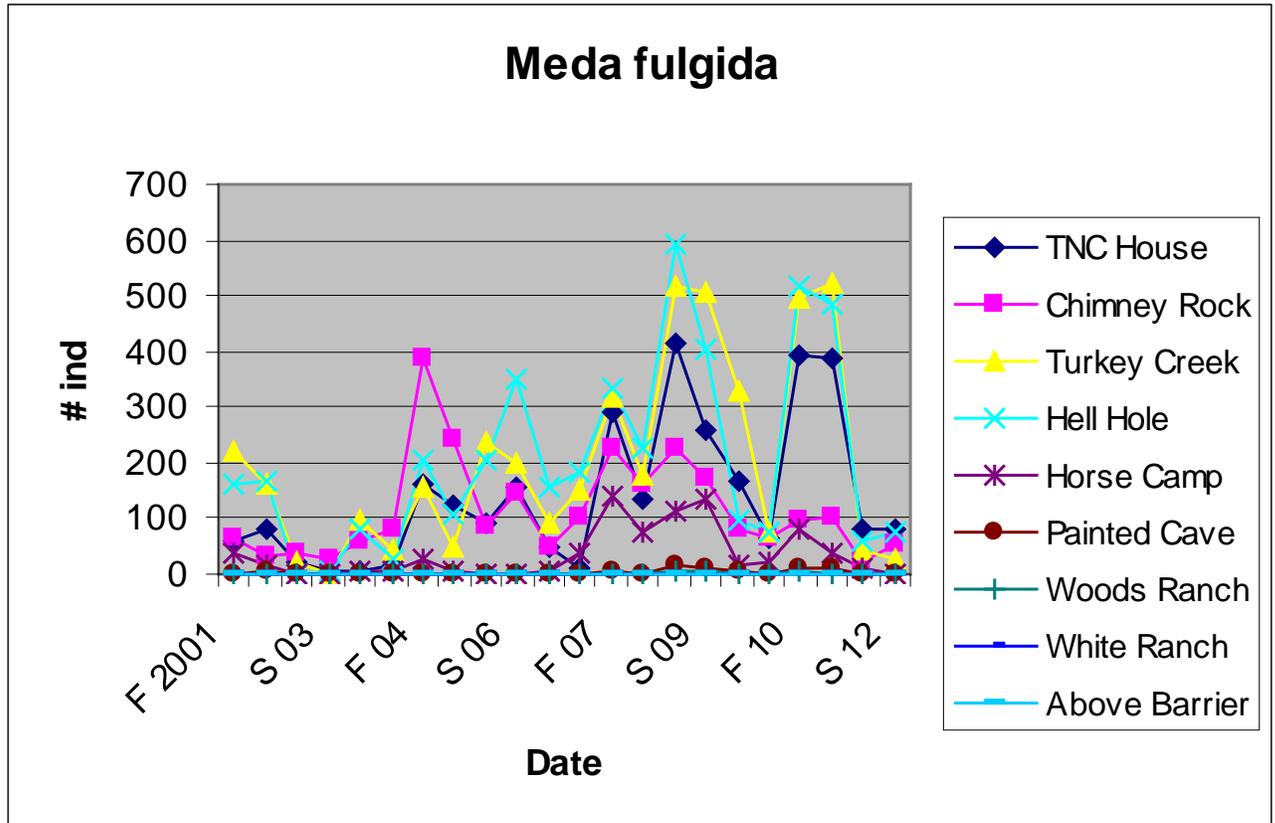


Fig. 1 – Total number of individual *Meda fulgida* sampled from 200 meter seine transects in the fall and spring at nine sites at Aravaipa Creek.

There is considerable variation in the numbers of individual MEFU at Aravaipa Creek and it is difficult to evaluate trends with nine sites. Eby et al. (2003) analyze data collected by W.L. Minckley from 1963 to 1999 by combining the first three sites (TNC, Chimney and Turkey) into Upper Canyon, the middle

three sites (Deer Creek, Horse Camp and Painted Cave) into Middle Canyon and the lower three sites (Woods, Whites and Barrier) into the Lower Canyon sites. The data from fall 2001 to spring 2012 for *Meda fulgida* are presented in the same manner below (Fig.2).

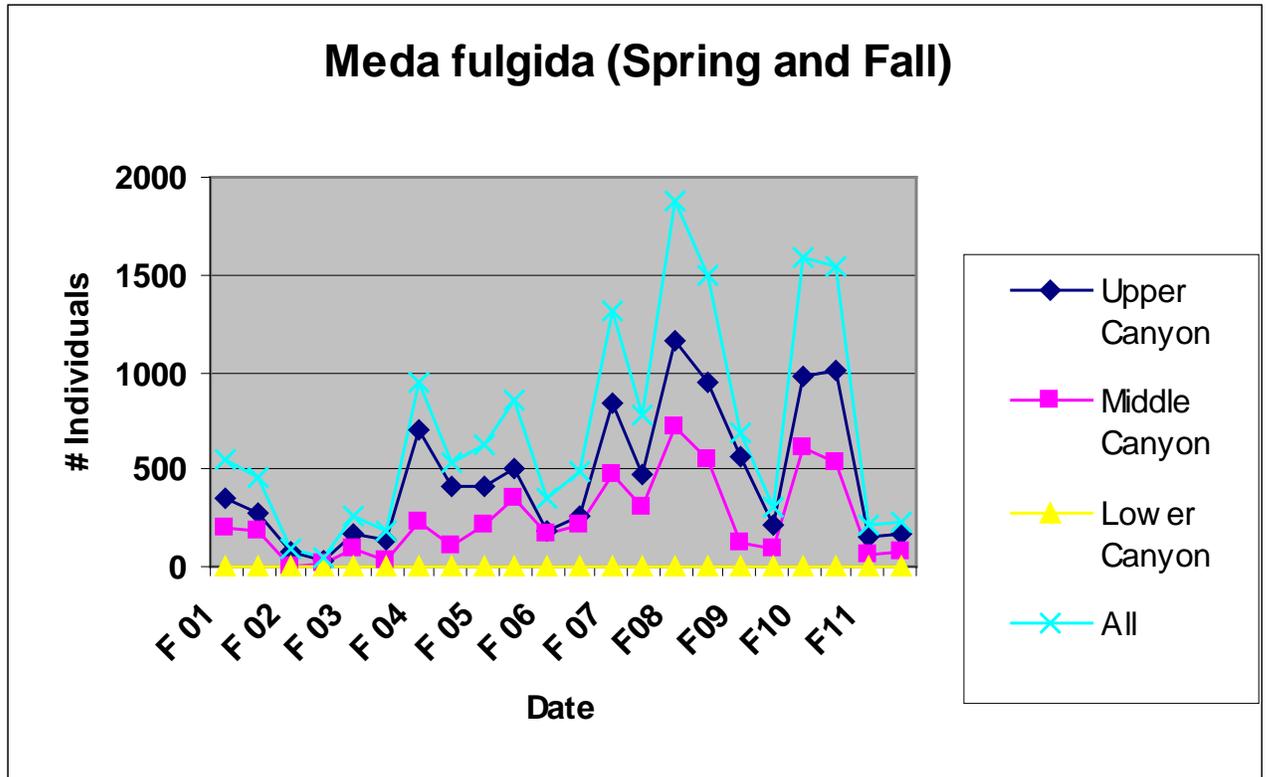


Fig. 2 – Total number of individual *Meda fulgida* sampled from nine 200 meter seine transects from Fall 2011 to Spring 2012 in the fall and spring at Aravaipa Creek with the three upper, three middle and three lower sites combined and all sites combined.

Again, the data demonstrate considerable variability and short term fluctuation. Numbers declined precipitately in 2002 through 2004 but recovered in fall 2004 and the population appeared to be doing well in the years following the July 2006 flooding event, one of the largest on record for Aravaipa Creek. However, in Fall 2011 and Spring 2012, there was a precipitous decrease in the numbers of fish sampled.

Distribution:

The average number of *M. fulgida* at each of the nine sample sites from Fall 2011 to Spring 2002 is shown in Figure 3. At all times, *M. fulgida* were found at the four easterly most sample sites and occasionally at the fifth site albeit in low numbers, irregularly at sites six and seven, once at site 9 and never at site eight. On only one occasion was an individual spikedace sampled at any of the four westerly most sites. This indicates that their distribution is regularly restricted to the upper half of perennial flow and not the entire creek.

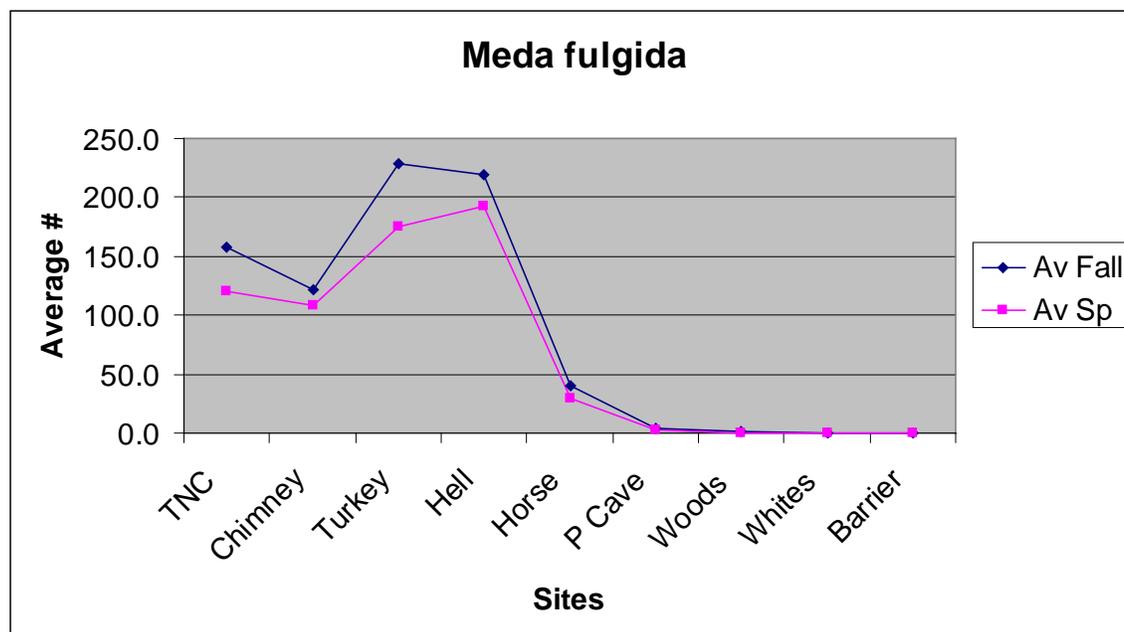


Fig. 3 – Total number of individual *Meda fulgida* sampled from nine 200 meter seine transects from Fall 2011 to Spring 2012 in the fall and spring at Aravaipa Creek with the three upper, three middle and three lower sites combined and all sites combined.

Concerns:

Red shiners (*Cyprinella lutrensis*), green sunfish (*Lepomis cyanellus*) and yellow bullheads (*Ameiurus natalis*) are regularly found in Aravaipa Creek. The distribution of shiners is restricted to the western part of the creek where they do not overlap with spikedace. Green sunfish are restricted to where Horse Camp tributary enters Aravaipa. Bullheads are found in the lower 2/3 of the creek. Presently, exotics do not appear to be having an impact on spikedace but this could change. We have initiated a research program to examine heavy metal contamination in Aravaipa fishes (see below).

Future Plans:

I will continue to do biannual sampling of Aravaipa fishes. To minimize impacts on fishes, we will sample nine sites with seines in the spring and nine sites with block and shock in the fall and not use both techniques during any one sampling. We will continue to do population estimates at a 100 meter stretch at Turkey Creek (upper east).

We have put together a team of University of Arizona scientists to study heavy metals (specifically lead) in Aravaipa food webs. We just received notification of EPA funding for a project – “Monitoring the Effects of Phytostabilization of Mine Tailings on Water Quality in Aravaipa Creek, Southern Arizona: Sources, Deposition and Pathways of Heavy Metals”. This is a coordinated effort with phytostabilization efforts of mine tailings at Klondyke, near the headwaters of Aravaipa Creek.

