

# *Trout in the Grand Canyon*

**by David Epstein**

The tailwater section of the Colorado River below Glen Canyon Dam (GCD) is managed as a blue-ribbon trout fishery. While this tailwater section provides cold, clear water that is ideal for trout success, conditions below Lee's Ferry are much less suitable for trout (Epstein, this volume, 2005). However, trout have been documented in the river all the way down to Lake Mead. Many accounts from researchers and river guides include the obvious presence of trout in the mainstem river. In fact, trout have been known to congregate at frequently used camp sites in search of human food discarded into the river. Although river conditions seem suitable for trout when the river runs clear, the Grand Canyon does not provide high quality trout habitat, especially when turbidity is high. The majority of the Colorado River in Grand Canyon is high velocity rapids and large eddies, which are not ideal habitat for trout. On the other hand, many of the tributaries to the mainstem provide more traditional riffle, run and pool habitats that are preferentially occupied by trout.



**Figure 1.** Rainbow Trout caught in Kanab Creek close to the mouth (Wilson 2005).

During our visit to Grand Canyon the Colorado River was extremely turbid due to sediment-rich inputs from the Little Colorado River. It is not understood how trout adapt

to these prolonged periods of turbidity, but we hypothesized that they may find refuge in the warmer, clearwater tributaries. Trout are commonly known to greatly reduce their feeding attempts in highly turbid conditions (Valdez 2005). Although flows were elevated, all tributaries we visited were running clear with the exception of Kanab Creek. We encountered higher diversity and abundance of aquatic invertebrates in tributaries (mainly Elves Chasm and Tapeats Creek). However, very few trout were observed in clearwater tributaries or at their interface with the mainstem. Therefore, the majority of trout must have remained in the mainstem during these turbid flows. It is possible that high discharge in tributaries from recent storms flushed the majority of fish out, but as fast water adapted fish this seems unlikely.



**Figure 2.** The mouth of Tapeats Creek where one rainbow trout was observed (Epstein 2005). Three other trout were observed upstream in the creek.

At both Tapeats and Havasu Creeks we observed trout right at the tributary-mainstem interface (Figure 2). While it makes sense for trout to be obtaining food resources from tributaries, it is not clear why they remain in the colder, more turbid mainstem instead of moving up into the tributaries. Temperatures in the Colorado River

are below the optimal growth range of temperatures for rainbow trout and all tributaries are warmer than the mainstem. Kanab Creek was flowing with greater turbidity than the mainstem during our visit. Nonetheless, we observed a rainbow trout in the creek. It is possible that the fish resides in the creek or was using it as a temperature refuge.

Both Elves Chasm and Shinumo Creek support aquatic invertebrates. However, they are both high-gradient streams that contain waterfalls within a few hundred feet of their mouths. Therefore, fish habitat is limited and trout may remain at the confluence with the mainstem awaiting drift from the tributaries. Elves Chasm supports such great diversity and biomass of invertebrates that it was extremely surprising that we did not observe any trout in the lowest pool. As a spring-fed system, it is unlikely that high discharge flushed fish out but human disturbance may play a role in the lack of their presence. River guides and veterans described rainbow trout in the lowest pool at Elves Chasm in previous years. Shinumo Creek was flowing at a high rate and provided no current refuge for fish. Trout may be holding at the mouth of the creek awaiting lower flows to move up into the creek.

Trout are ubiquitous in the Colorado River. However, we observed very few during our visit to the Grand Canyon. The turbid conditions played a large role in this, yet it is not understood why fish do not move up into clearwater tributaries in greater numbers. The ecology of trout below Lee's Ferry should be further investigated especially if there is interest in reducing their population size.

## References

Epstein, D.M. 2005. "Trout Management in the Colorado River Below Glen Canyon Dam." In. J. Mount, P. Moyle and C. Hammersmark (eds.). *Ecogeomorphology of the Grand Canyon and its Tributary Streams*. Davis, CA.  
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