

Upper Mineral Creek

On March 15-16, 2006 Bill Burger, Curt Gill, Natalie Robb, Cori Carveth and Craig Woods surveyed the upper section of Mineral Creek from the ASARCO Dam to the headwaters at Government Springs Ranch. This section of Mineral Creek was surveyed in 2000 and 2002. Gila chub, longfin dace and green sunfish were reported in 2000 however since then no fish have been observed in the upper section of Mineral Creek. Suitable physical habitat currently exists for native fish species however it is unclear whether high flows or some form of contamination caused the extirpation of fishes from this section of stream. Lowland leopard frogs, Sonoran mud turtles and a mixture of invertebrates were observed on this survey. We would recommend re-introducing longfin dace to the upper section of Mineral Creek to determine its suitability as habitat for native fish species.

Survey Results

Mineral Creek is a tributary to the Gila River in Pinal County, Arizona. Mineral Creek is a highly disturbed system. The headwaters of Mineral Creek have been heavily grazed and destroyed by fire. The stream is dammed above the ASARCO Mine and downstream flows are diverted around the mine, by way of a tunnel, for 1700 feet.

Surveys were conducted in two areas, from the ASARCO mine upstream to Tillmans Wash (~2.5 km) and from Government Springs Ranch downstream to Tillmans Wash (~2 km)

Upstream: 12S 0502659E 3679736N (Government Springs Ranch)

Midway: 12S 501230E 3677527N (Upstream of Tillmans Wash)

Downstream: 12S 0500656E 3675446N (Above reservoir)

Note: All UTM's are in NAD27.

Access: Moderate

Note: The drive to both locations is fairly easy. Permission is required in advance by way of letter to enter the mine site. Mine personnel must accompany visitors through the mine. Permission is also required for Government Springs Ranch (see file).

Elevation: 2540 ft or 770 m at midpoint

Dates/Time: 03-15-06 and 02-16-05

Personnel: B. Burger, N. Robb, C. Gill, C. Carveth (AZGFD) and C. Woods (USFS)

Habitat: The stream channel is canyonized for the large part of the flowing stream. Substrate consists of sand, gravel, large boulders and bedrock outcroppings. Flows were moderate although multiple large pools were present and many backwater areas have been formed by large boulders. Riparian vegetation was lush and canopy was moderate throughout most of the surveyed area. Watercress, duckweed, algae and other aquatic vegetation were well represented and provided abundant habitat within the stream.

Methods: Electrofishing, fine mesh dip nets or visual observation.

Note: We electrofished the lower section of the stream on March 15th.

Fish: None

Riparian Herps:

Lowland leopard frogs, *Rana Yavapaiensis* (Both adult and tadpole life stages were observed)

Sonoran mud turtles, *Kinosternon sonoriense sonoriense*

Aquatic Invertebrates:

Hemipterans, notonectidae and corixidae

Larval caddis flies, mayflies, and Diptera

Adult Tycos (check with Curtis on all these)

Crayfish: No crayfish were observed during this or past surveys.

Barrier: Maybe

Note: Large boulders currently provide barriers for upstream movement in several locations but may not be barriers at all flows.

Water Quality: Good (taken at 11am on March 15, 2006)

Temp: 16⁰C

pH: 8.85

Land Use: This portion of Mineral Creek experiences minimal recreational use because of restricted access at both its upstream and downstream ends. Cattle are permitted to graze the upstream portion of the stream, and we saw sign of cattle at both ends of the creek. Due to a change in ownership of the Government Springs Ranch, the upper portion of the stream is currently less grazed than it had been under the prior permittee. The new permittee is working to develop a management strategy that hopefully will reduce the impact of cattle on the stream.

Recommendations:

Mineral Creek has been designated as critical habitat for Gila Chub, however, since 2002 Mineral Creek has been devoid of fish. Prior to 2002 longfin dace, Gila chub and green

sunfish were collected from this creek. The habitat within the creek consisted of deep pools with runs and riffles in between indicating good structure. Fallen trees and a diverse mixture of riparian species provide stabilization for adjacent banks. Despite extreme flooding last winter (landowner), most vegetation seemed stable with the exception of some large broken trees. Large boulders and channel morphology should provide backwater habitat for native fishes. Aquatic invertebrates were abundant and should provide a forage base for native fishes. The presence of sensitive aquatic invertebrates and lowland leopard frogs indicates good water quality.

It has been speculated that flooding within the canyon led to the disappearance of fishes from the stretch of Mineral Creek. We recommend re-stocking this section of Mineral Creek with longfin dace. If this species is successful, after two years we propose re-stocking Gila chub.

Mineral Creek has been designated as critical habitat for Gila Chub since November 2005. Surveys in 2000 documented longfin dace, Gila chub and green sunfish; however subsequent surveys in 2002, 2005, and our current survey have failed to document any fish in this creek. During our survey habitat within the creek consisted of deep pools with runs and riffles in between indicating good structure. Fallen trees and a diverse mixture of riparian species provide stabilization for adjacent banks. Despite the landowners report of high flows in 2005 most vegetation seemed stable with the exception of some large broken trees. Large boulders and channel morphology should provide backwater habitat for native fishes. Aquatic invertebrates were abundant and should provide a forage base for native fishes. The presence of sensitive aquatic invertebrates and lowland leopard frogs indicate that good water quality currently exists in this portion of the stream.

It has been speculated that flooding within the canyon may have led to the disappearance of fishes from this stretch of Mineral Creek since 2000, but other than the apparent disappearance of the fish, there is little evidence to support this contention. Currently the reason for the disappearance of the fish is unclear.

We recommend re-stocking this section of Mineral Creek with longfin dace. Depending on the success of this species we recommend re-evaluating Mineral Creek as habitat for the endangered Gila chub.

