From: Tony Robinson
Sent: Wednesday, April 09, 2008 11:10 AM
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Subject: 6-Month Post-Stocking Topminnow and Pupfish Monitoring at Three Muleshoe Ecosystem Sites

All,

Here is a summary of the Gila topminnow and desert pupfish 6-month post-stocking monitoring at the three Muleshoe sites. In a nutshell the Secret Spring population of topminnow is doing well, and hopefully so too are the pupfish. Topminnow and pupfish in Cherry and Swamp were very rare and possibly may not be doing that well.

Secret Spring. Sampled April 7, 2008 at 3:00 pm by Tony Robinson, Codey Carter, and Jesse Bahm. The sky was mostly clear, with gusty winds. Water quality: Water temperature =20.4 C, Conductivity = 259 uS, Salinity = 127 ppm, TDS = 181 mg/L; pH = 9.79, DO %saturation = 139, DO = 12.8 mg/L. We downloaded a temperature logger that was set in October on the side of the pond directly opposite the spring inflow; temperatures on October 6 averaged 21 C, had dropped to 8 C at the end of December, remained low through January (11 C), and had warmed to about 19 C by the end of March. Spirogyra alga was very abundant and covered much of the pond. The bottom of the pond had about 0.2-0.3 m of fine, organic filled, sediment. Tree roots are abundant in the water along most of the bank of the pond.

During water quality measurements, we conducted visual observations for fish all around the pond. We observed 4 pupfish and two schools of topminnow (approximately 50 and 40 individuals). We conducted 20 seine hauls. Topminnow were captured in 5 of the seine hauls and pupfish in 2; no fish were captured in the other 13 hauls. We first seined the area near the spring inflow where the large schools of topminnow were observed.

Seine haul #1(1.5 square meters)--1 topminnow

Seine haul #2 (2 square meters)--55 topminnow

Seine haul #3 (1.5 square meters)--29 topminnow

Seine haul #16 (1 square meter)--2 topminnow

Seine haul #20 (1 square meter)--30 topminnow

There were multiple size classes of topminnow; many very small fish approximately 10 mm long.

The rest of the seine hauls were targeted at pupfish; short (1 square meter) hauls towards the root filled banks, where we suspected the fish were hiding out. We captured two desert pupfish; one in each of two seine hauls. No fish were captured in 13 other seine hauls.

Our efforts indicate that topminnow are doing well and are reproducing. We can say less about pupfish. Hopefully the

reason why so few were seen or captured is because they are still inactive, and by summer will be more active and reproducing.

Cherry Spring Canyon. Sampled on April 8, 2008 by Tony Robinson and Kevin (TNC volunteer). Water quality in lower pool (at 9:30 am): 13.1 C, TDS = 220 mg/L, conductivity = 318 uS, Salinity = 158 ppm, pH = 7.61, DO = 4.10 mg/L and 39.0 %saturation. We downloaded a temperature logger that was set in October about 0.6 m deep on north side of pool; temperatures on October 5 averaged 19 C, had dropped to 5 C at the end of December, remained low through January (6 C) and February (9 C), and had warmed to about 13 C by the end of March. Water quality in upper pool (at 10:45 am): water temperature = 11.7 C, TDS = 245 mg/L, conductivity = 352 uS, Salinity = 175 ppm, pH = 7.51, DO = 2.55 mg/L and 23.5% saturation. Terrestrial plant debris (mostly leaves) was abundant in both pools. The riparian trees were not fully leafed out, but when they are probably shade 95% of the upper pool and 80-90% of the lower pool. An oily scum was present on the surface of both pools, but the bottom and water column was still visible.

One topminnow was observed in the lower pool. No fish were observed in the upper pool, or any water downstream of the lower pool.

We set two collapsible square minnow traps, baited with gravy train dog food, in the upper pool at 9:20 am and pulled them at 11:00 am; no fish were captured.

We conducted 10 seine hauls in the lower pool. Seine haul #1 (1.5 square meters)—3 pupfish, seine haul #6 (1 square meter)—one topminnow. No fish were captured in any of the other eight seine hauls (each about 1 square meter). Belostomatids were very abundant.

We conducted eight seine hauls (each approximately 1 square meter) in the upper pool, plus made eight dip net sweeps (each approximately 0.25 square meters). One pupfish was captured in one seine haul, and another in a separate seine haul. No fish were captured in any of the other six seine hauls or in any of the eight dip net sweeps.

Our efforts indicate that topminnow and pupfish have persisted in Cherry Spring Canyon since being stocked. However, we are not that optimistic that populations will become established, given that so few fish were observed (particularly of topminnow), and the low dissolved oxygen concentrations. Pupfish may still be hiding out, given the low water temperatures and season. Hopefully more will be visible when water temperatures are greater during the one-year monitoring in September or early October. There was evidence (debris on tree branches) of a flood through the drainage, which may have washed fish downstream.

Swamp Spring Canyon. Sampled on April 8, 2008 by Codey Carter and Jesse Bahm. Arrived at stocking site at 10:15 am. Water quality: the YSI multiparameter sonde failed to operate, so no water quality measurements could be taken. There was evidence of a flood event through the area; debris on trees, relatively recently, 2 feet above the water surface and an older event that left debris 3-4 feet above the water surface.

Visual observations from 10:15-10:50 am at site and downstream for 100 m---no topminnow or pupfish observed, but did observe high density of longfin dace.

Set two square minnow traps. Trap #1 set at 10:52 am and checked at 12:32 pm; captured 69 longfin dace. Trap #2 set at 10:56 am and checked at 12:27 pm; captured 42 longfin dace.

Conducted 12 seine hauls (0.5 to 2 m square). Captured longfin dace in every seine haul. Only captured one topminnow (seine haul #9—1 topminnow and 37 longfin dace). Did not capture any desert pupfish.

Conducted 53 dip net sweeps in habitat that was difficult to seine (woody debris and banks with roots). Captured 21 longfin dace total; no top minnow or pupfish.

Belostomatids were very abundant.

Our efforts indicate that topminnow have persisted in Swamp Spring Canyon since being stocked in October 2007. We cannot say whether or not pupfish have persisted. We are not that optimistic that populations of either species will become established, given that only one topminnow and no pupfish were captured. Hopefully more topminnow and some pupfish will be visible when water temperatures are greater during the one-year monitoring in September or early October. It is likely that the flood events washed stocked fish downstream.

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'Nothing in biology makes sense except in the light of evolution.' Theodosius Dobzhansky