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Subject: RE: Summary of Muleshoe Conservation Area September 2010 Fish Populations Monitoring and Request for Stocking Suggestions
Date: Tuesday, September 21, 2010 11:35:05 AM

Hi All,

My thoughts are that we should continue to focus on and augment the "best" habitat with loach minnow and spikedace. Between the three systems it is Hot Springs. I suggest that we at least augment Hot Springs with at least 100 loach minnow and 100 spikedace, which would still leave large numbers for the other two systems. As I mentioned to Clayton this morning when we first looked at Redfield Canyon for loach minnow and spikedace it was a wet year with a lot of water. Unfortunately Redfield does not always look like that and likely supports very little, if any, good year-round habitat for loach minnow and spikedace.

Thanks, Heidi

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Subject

RE: Summary of Muleshoe
Conservation Area September 2010
Fish Populations Monitoring and
Request for Stocking Suggestions

Tony,

I think these are very encouraging results, especially for Hot Springs. Although we do not know if the seemingly-established populations of loach minnow and spokedace there will persist over the long term, this is the best news about these species I have seen during my career (excepting maybe the discoveries at Eagle Creek and E Fk N Fk Black River, but they now seem illusory). FYI, our fish barrier at Hot Springs should be constructed this autumn, and maybe we can protect the populations long-term.

I agree with your recommendation to skip loach minnow and spokedace stockings at Hot Springs this year, and concentrate on Fossil and Redfield. I am ok with the general numbers you suggested, and with the plans for the other species. Thanks to all of the brave souls who assisted with the monitoring; I was at Fossil Creek that week (we sadly found none of the 4 species considered below).

Rob

From: Tony Robinson [<mailto:TRobinson@azgfd.gov>]
Sent: Tuesday, September 21, 2010 10:18 AM
To: brogers@tnc.org; brookem@email.arizona.edu; Clayton Crowder; David Boyarski; Don Mitchell; Doug_Duncan@fws.gov; Duane Aubuchon; fish.dr@asu.edu; Heidi_Blasius@blm.gov; Jason Kline; Jeff Sorensen;

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Cc: David Ward

Subject: Summary of Muleshoe Conservation Area September 2010 Fish
 Populations Monitoring and Request for Stocking Suggestions

All,

Thanks to all that helped monitor the fish populations in the Muleshoe
 Conservation Management Area last week (September 13 and 14). People that
 helped included: Clay Crowder, Abby Medina, Steve Prager, Amberle Vasey,
 Tony Robinson, and Duane Aubuchon of Arizona Game and Fish Department; Mary
 Richardson of U.S. Fish and Wildlife Service; Bob Rogers, Larry Young,
 Linda Young, Cliff Todd, and Celeste Andersen of The Nature Conservancy;
 Heidi Blasius, Jeff Conn, Rachel Priddus, J. Cockman, Greg Prittain, and
 Richard England of U.S. Bureau of Land Management.

The table below summarizes the fish captured in the waters surveyed.

Water	Gila topminnow	Desert pupfish	Spikedace	Loach minnow	Gila chub	Longfin dace	Speckled dace	Desert sucker	Sonora sucker	Green sunfish
Redfield Canyon		9		1	237	43	286	78	1	
Hot Springs Canyon			29	68	39	566	331	49	6	
Swamp Springs Canyon	313					255				
Cherry Springs	28	1								
Secret Spring Pond	4269	12								
Headquarters Spring	33									
Larry & Charlie Tank		148								

Redfield Canyon: We only captured one loach minnow, and no spikedace;
 these are the lowest catches since we started monitoring in 2008. The
 loach minnow was likely a YOY (39 mm TL). So, loach minnow continue to
 reproduce in Redfield Canyon, but abundance seems to be low. We can't
 conclude much about spikedace, since none were captured. It should be
 noted that we only sampled via single-pass electrofishing; we were pressed
 for time as it was a furlough day week. Also, it should be noted that we
 did not stock loach minnow or spikedace into Redfield Canyon last year.
 Like last year we captured Gila topminnow in Redfield Canyon immediately
 downstream of the confluence with Swamp Springs Canyon. At a site near
 where the water ended, I observed and dip netted more topminnow. So,

topminnow are still persisting, or are being washed down from Swamp Springs Canyon each year.

Hot Springs Canyon: We captured 29 spokedace and 68 loach minnow; these are the highest catches since we started monitoring in 2008. I forgot to put measuring boards on the equipment list, so did not have any and hence most of the spokedace and loach minnow were just categorized to size class (<40 mm or >=40 mm TL). I happened to have one 6 inch ruler in my pack, so my crew, which sampled the two sites downstream of the 'narrows' were the only crew that measured spokedace or loach minnow, but we only captured 2 spokedace. This is the first year that we have captured spokedace downstream of the narrows (caught approximately 5 km downstream of where they were stocked). We captured one that was likely a YOY (30 mm TL), and the other that was likely age-1 or age-2 (63 mm TL). There looked to be suitable habitat (pebble-cobble riffles) in the lowest reach for loach minnow. For the entire stream, 18 (62%) of the spokedace were < 40 mm TL, and 26 (38%) of the loach minnow were less than 40 mm TL, so it looks like both species are reproducing. Note that last year the populations in Hot Springs Canyon were augmented with 386 spokedace and 156 loach minnow. I would say that we can tentatively conclude that loach minnow and spokedace are established in Hot Springs Canyon, but I think we won't be able to confidently conclude that they have established until a few years after we stop stocking.

Swamp Springs Canyon: Several hundred Gila topminnow and longfin dace were captured in the vicinity of the upper stocking site; no pupfish were captured. I think we can conclude, as we did last year, that Gila topminnow are established at the upper site in Swamp Springs Canyon. We can't conclude much about desert pupfish; none were captured last September either. We did not make it down to the lower site, but Bob Rogers said that he would try to get down there and monitor by the end of this week.

Cherry Spring Canyon: Thirty three Gila topminnow but only one desert pupfish were captured. This is fewer topminnow and pupfish than were captured last September. Additional topminnow that were too small for the mesh size of the dip net were also observed last week. Topminnow seem to be holding on, and we can probably still conclude that they have established a population. It is less clear if pupfish are established, but at least one fish has persisted since they were last stocked in September 2008.

Secret Spring Pond: Gila topminnow were again, like last September, quite abundant, and 12 desert pupfish were also captured. I think we can continue to conclude that Gila topminnow have established a population, and that desert pupfish have established a population. But pupfish abundance seems to remain low.

Headquarters Spring: Gila topminnow continue to be captured in Headquarters spring, although fewer were captured than last year. No desert pupfish were captured; similar to last September. So, I think we can still conclude that topminnow are established in this site. But it is unclear or unlikely that pupfish are still present.

Larry & Charlie Tank (the connected ponds constructed up the hill from the Casitas): Over one hundred desert pupfish were captured, all of which were >= 1 cm. Note that 196 were stocked last October. So, we can definitely conclude persistence, but are not yet sure about whether or not they are reproducing.

Augmentation Stockings

We have stockings scheduled for October 27-29 (we have not yet picked the actual day). So, what we need to figure out is what to stock and where. I ask that if you have a vested interest that you think about the data presented and reply with your suggestions.

In addition to the above mentioned sites, we should also consider Wildcat Canyon, which has been recommended for different species at different times (Gila topminnow and desert pupfish, only desert pupfish, only Gila chub, speckled dace and one or more of the T&E species).

Gila topminnow. After examining the data, my thoughts regarding topminnow are the same as I expressed last year. Namely, I think we can conclude that they have established in each of the sites where they were stocked, and have even dispersed into a new site (Redfield Canyon), so I don't think we need to stock any more Gila topminnow into any of these sites this year. Unless of course we want to try to establish them into Wildcat Canyon.

Desert pupfish. Last year we had a relatively small supply of desert pupfish available to stock, so decided to put them all into Larry & Charlie Tank, wait for the population to build, and then use fish from there to stock out into other waters on the Muleshoe. I don't think they have built up a large enough population (still unclear if they have in fact established a population) in Larry & Charlie Tank to withdraw any pupfish to stock elsewhere. However, this year we do have many more pupfish available to stock into various waters. So, we probably could augment some of the sites if we wanted to. I am still unsure if pupfish will establish populations in Swamp Springs Canyon or Cherry Spring even with additional stockings. Swamp Springs may be too flashy, among other things. Cherry also has the potential to be flashy, but so far has not shown much evidence of flooding. But the site is so shaded, full of predaceous insects, an low dissolved oxygen that it may not be the best habitat for pupfish, or even topminnow... There is tinaja, about 1.2 km further downstream, that appears to hold water (although Ross remembered one of the TNC folks saying it went dry a few summers ago). If there is no record of the tinaja going dry, then it might be a place to stock pupfish. It is much less shaded. But because of the bedrock walls, it is also probably even more likely to get washed out during floods.

I think we could make another attempt to establish pupfish into Headquarter Spring. We could stock more into the warmer pool (closest to the hot tubs) where most of the topminnow are. Alternatively, we could stock pupfish into the portion that is downstream of the hot tubs (topminnow are all in the portion upstream of the hot tubs). But the water temps may be somewhat high (we would have to get Bob to take some temperature readings at several locations). Plus, fish would be more likely to disperse downstream into the wetted road crossing; not sure if we want that.

The lowest tinaja (and even upstream of that) in Wildcat Canyon looked suitable for pupfish, and apparently does not go dry. But, this is another situation where a flood would likely wipe them out, but the drainage is relatively small, so maybe the flood frequency is not that great?

Spikedace and Loach minnow. This year we have many more Aravaipa lineages fish (about 5900 spikedace and 1,300 loach minnow) available at Bubbling Ponds Native Fish Conservation Facility to stock into three potential locations: Fossil Creek, Redfield Canyon, and Hot Springs Canyon. We could split them evenly among the three streams (1967 spikedace and 430 loach minnow to each). However, that may or may not be the best choice. We do want to stock Fossil Creek this year, as we did not last year due to a shortage of fish (they all went into Hot Springs Canyon instead as we

thought that had the best potential of all three streams). Fossil Creek is a much larger stream, and could potentially (if habitat is truly suitable) support large populations. Maybe we could hold off on Hot Springs Canyon this year, and see what happens? Redfield Canyon only has about 1.5 km of perennial water, and the watered reach is mostly a series of pools and runs separated by small falls or cascades. The habitat doesn't look quite as good for the two species as Hot Springs Canyon, but maybe we should give it another try. Maybe we could stock 1000 spinedace and 500 loach minnow into Redfield Canyon, and then stock the remainder into Fossil Creek (4900 spinedace and 800 loach minnow). Or maybe we should stock 1000 spinedace and 400 loach minnow into each Redfield Canyon and Hot Springs Canyon, and stock the rest into Fossil Creek (3900 spinedace and 500 loach minnow).

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