



MEMORANDUM

TO: Nathan Pence and Rick Illgner
FROM: Ed Oborny (BIO-WEST)
DATE: **October 18, 2013**
SUBJECT: EA HCP Bio-monitoring Update – **Week 10**

BIO-MONITORING UPDATES

Comal System:

The total system discharge at Comal Springs is ≈ 139 cfs. Weekly habitat evaluations continue to occur and will do so until total springflow increases above 150 cfs. The next full system critical period sampling is not scheduled until total springflow declines below 100 cfs. Fall comprehensive sampling on the Comal system was initiated this week with aquatic vegetation mapping as well as fountain darter dipnetting.

San Marcos System:

The total system discharge for San Marcos Springs is ≈ 130 cfs. As described in previous memorandums, no critical period sampling for the San Marcos system is scheduled until total springflow declines below 95 cfs (Texas wild-rice physical measurements) or below 85 cfs (full Critical Period sampling event). Fall comprehensive sampling is in progress with aquatic vegetation mapping, fountain darter dipnetting, fountain darter dropnetting, and macroinvertebrate sampling being conducted this week.

WEEK 10 (October 12 – 18) CONDITIONS AND ACTIVITIES:

Comal: Weekly habitat observations and photo documentation associated with HCP triggered sampling were conducted on Thursday, October 17th. Note: All photographs in this memorandum were taken on October 17th unless otherwise noted on the photograph. Fall Comprehensive sampling was initiated this week as well.

RESULTS:

Since last week's memorandum, a couple of rainfall events have occurred as evident in the Figure 1 screen capture from the USGS streamflow website. With these events, total system discharge has increased to around 140 cfs.

Discharge, cubic feet per second

Most recent instantaneous value: 139 10-18-2013 04:45 CDT

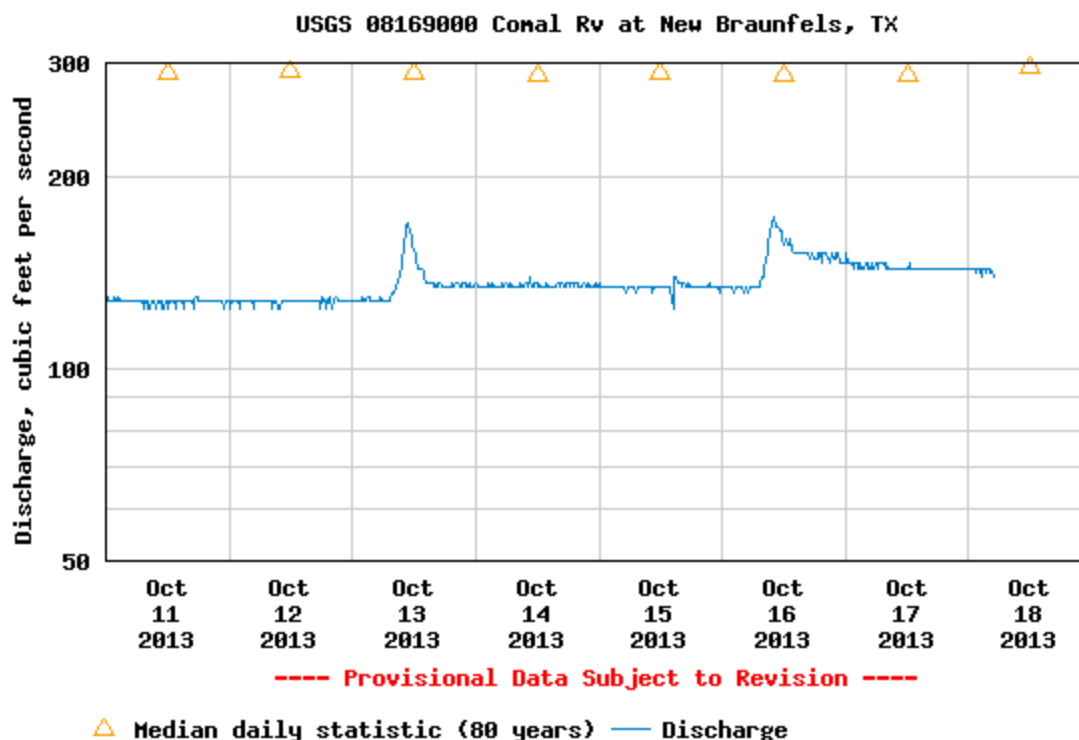


Figure 1: Screen shot of USGS webpage for the Comal gage (08169000) showing total system discharge over the past week.

The increase in total system discharge was evident in the main spring runs with the continuous surface water flow in Spring run 1 looking better than it has since mid-August (Figure 2). As in all previous weeks, Spring run 3 continues to maintain connectivity throughout the run. Algae is still evident throughout portions of the Upper Spring run reach (Figure 3) but not to the levels experienced in August or even last week. As of this memorandum, aquifer levels have not rebounded to the point to allow flow over the concrete structure at Spring run 5. Considerable improvements in surface water level and flow were also noted in the Spring Island area. Nearly all exposed areas along the eastern outfall were inundated this week (Figure 4) and surface flow in both the northern and southern runs of Spring run 6 was occurring.

As the footprint of the Landa Lake walls construction project changed again this week, I have included a couple of photos showing the wider bladder dam enclosure (Figure 5) being used this week and the reduction in overall area covered (Figure 6) relative to last week. All work thus far is being conducted at the confluence of the combined Spring run 1 and 2 with Landa Lake.



Figure 2: Looking upstream toward Spring run 1 main orifice (continuous surface flow extending bank to bank).



Figure 3: Upper Spring run reach adjacent to Spring run 5. Note sporadic green algae.



Figure 4: Eastern outfall at Spring Island - August 28 (top) - October 17 (bottom).



Figure 5: Landa Lake walls construction project - downstream view towards the lake. Note larger black inflatable coffer dam.



Figure 6: Landa Lake walls construction project – upstream view towards Spring run 2.

Week 10 biological activities at Comal Springs included completing a round of Fall Comprehensive riffle beetle cotton lure retrieval at the Spring Island sample reach. Additionally, Fall Comprehensive fountain darter dipnetting was conducted on October 17-18.

The riffle beetle collection represents the third 4-week count conducted since the inception of this critical period sampling event back in August. Lures at the Spring Island study reach were retrieved on Tuesday, October 15th. Table 1 shows the total Comal Springs riffle beetle counts per representative sample reach over time and in recent collections.

Table 1: Comal Springs riffle beetles – Total Counts per area

Survey Date	Riffle Beetle Total Counts			
	Spring Run 3	Western Shoreline	Spring Island	Total
Long-term average (2004-2013)	152	146	132	430
May / June 2013 Spring sampling	124	68	97	289
August / Sept. 2013 Critical period (Sept. 9-15) 1 st 4-weeks	118	119	100	337
September 2013 Critical period (Sept. 23-29) 2 nd 4-weeks	109	188	66	363
October 2013 Fall Comprehensive (Sept. 30 – October 15) 3rd 4-weeks	78	63	88	229
Lowest count per individual reach since going to cotton lures	53 (May 2010)	20 (May 2012)	20 (May 2010)	--
Lowest Total count since going to cotton lures (May 2010)	53	110	20	183

As noted last week, a key observation was the amount of sediment that was covering the lures, especially at the Western Shoreline lure placement sites which accounted for the lower than average numbers at both locations. Sedimentation was not nearly as noticeable at the Spring Island lure sites with more riffle beetles being collected this event than 2 weeks ago (Table 1). Although counts were lower than average, all sites continue to support greater than the lowest recorded individual site or total combined reaches counts (Table 1). As part of the Fall Comprehensive sampling, we continue to maintain duplicate sets of cotton lures within the study reaches enabling us to document 4-week counts every 2 weeks through October.

Similar to the first 9 week’s memorandums, fountain darter habitat conditions in Landa Lake continue to look really good. The floating vegetation mat condition in Landa Lake continues to be under control (Figure 7). In addition to the lake, fountain darter habitat continues to thrive in the Old Channel (Figure 8) and New Channel.



Figure 7: Floating vegetation mat condition in Landa Lake.



Figure 8: Restored aquatic vegetation in Old Channel – Sediment Island area.

To expand on the visual habitat assessment, presence/absence dipnetting (Figure 9) for the fountain darter conducted Thursday, October 17th as part of the Fall Comprehensive sampling is included in this update.



Figure 9: Fountain darter presence/absence dipnetting in Old Channel.

Figure 10 includes results collected from the Comal River since the inception of this sampling approach in 2005. Figure 10 demonstrates the variance observed in this metric over time and the solid blue lines represent the 5th and 95th percentiles of Non-Critical Period data.

As evident in Figure 10, the lowest percentage of fountain darters observed to date has been 52% recorded during Comprehensive sampling in Fall 2008 and Fall 2009. The October 17, 2013 value was 86%, which is the highest value to date. This follows the previous high of 82% documented during the last Critical Period event conducted only a couple weeks prior on October 1st. These high numbers are likely a result of several factors:

- Clumping of darters into limited bryophytes in the Upper Spring Run Reach. Bryophytes are targeted for dipnetting, and although there are few left, they are packed with fountain darters.
- High densities of fountain darters in restored *Ludwigia* around the islands in Landa Lake.
- Good habitat conditions in both the Old Channel and New Channel Reaches due to lack of any recent scouring flood pulses.

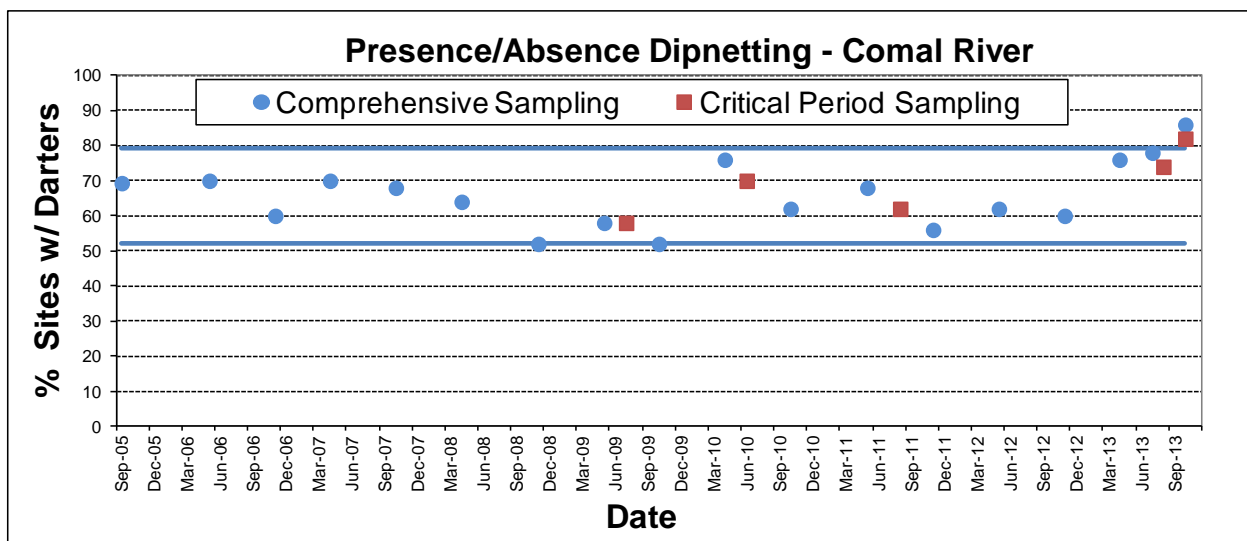


Figure 10: Percentage of sites (N = 50) in which fountain darters were present.

Solid blue lines mark 5th and 95th percentiles for Comprehensive Period Sampling.

Overall, the Comal system continues to support quality fountain darter habitat conditions in Landa Lake and Old and New Channels. Reduced habitat conditions are present in the Upper Spring Run reach but fountain darters continue to occupy this remaining habitat. It is extremely encouraging that after 10 weeks of total system discharge under 150 cfs, fountain darters are not only enduring, but still reproducing in this uppermost reach. Impacts to endangered Comal invertebrate surface habitat continue to be alleviated as recent rains have caused increases in surface water level and springflow in the main spring runs and Spring Island area. However, relative to average flow conditions, slight impacts to invertebrate habitat are still occurring in the Comal system.

San Marcos

As mentioned in all previous updates related to the Comal system, no critical period sampling activities have been triggered this summer on the San Marcos system. Fall comprehensive sampling was initiated on the San Marcos system on October 10th. Presence/absence dipnetting for the fountain darter in the San Marcos River was conducted Monday, October 14th as part of the Fall Comprehensive sampling. Figure 11 shows the fountain darter presence/absence dipnetting results since the inception of this monitoring approach in 2005.

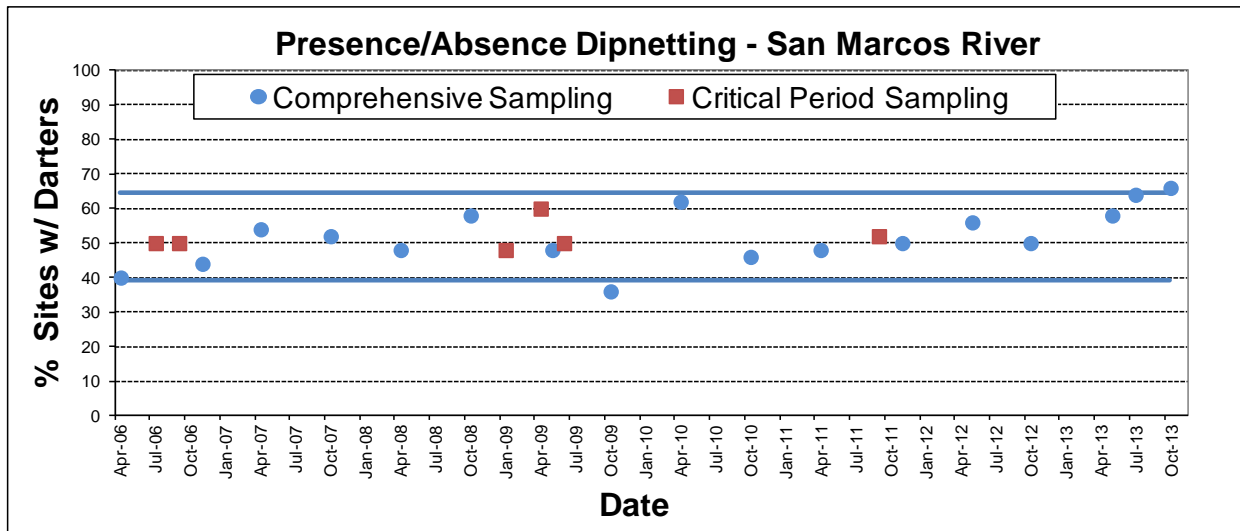


Figure 11: Percentage of sites (N = 50) in which fountain darters were present.

Solid blue lines mark 5th and 95th percentiles for Comprehensive Period Sampling.

As always, please don't hesitate to contact me if you have any questions or concerns.

Ed