



MEMORANDUM

TO: Nathan Pence
FROM: Ed Oborny (BIO-WEST)
DATE: **August 8, 2014**
SUBJECT: EA HCP Biological Monitoring – **Week 17**

BIOLOGICAL MONITORING UPDATES

COMAL SYSTEM:

At the time of this memorandum, the total system discharge at Comal Springs was below 100 cfs (Figure 1). This is the first time that this trigger has been documented since the inception of the biological monitoring program in 2000. This also makes the seventeenth consecutive week below 150 cfs, and therefore, the required weekly habitat evaluation was conducted on August 7th. Weekly habitat evaluations and memorandums will continue to occur until total system discharge at Comal Springs/River increases and consistently stays above 150 cfs. As total system discharge declined below 100 cfs this week a Critical Period full sampling event was officially triggered and authorized by EAA.

Discharge, cubic feet per second

Most recent instantaneous value: 91 08-08-2014 09:45 CDT

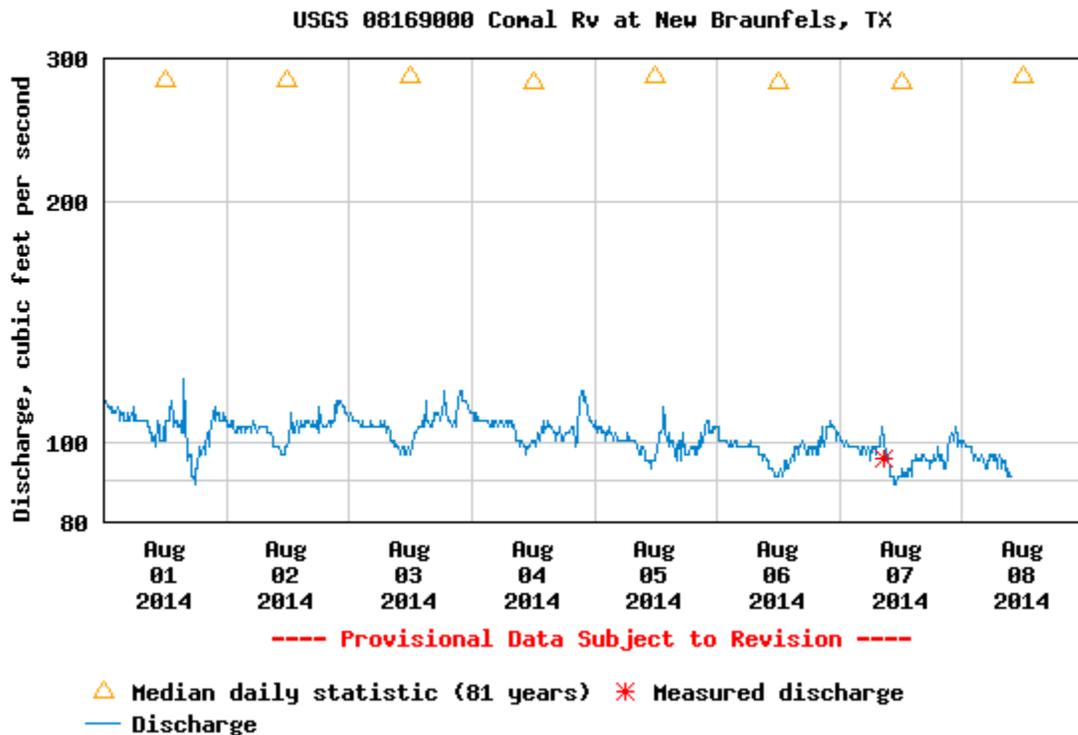


Figure 1: Screen shot of USGS webpage for the *COMAL* gage (08169000) showing total system discharge over the past week.

The following activities associated with HCP Biological Monitoring at Comal Springs were conducted this week and are scheduled for next week:

CRITICAL PERIOD MONITORING

- This week:
 - Currently, two sets of cotton lures for Comal Springs riffle beetle sampling are in place in each of the three sampling reaches. One set is checked and reset every two weeks on a four week duration protocol. Cotton lures were retrieved this past week and will be checked again the week of August 18th.
 - Aquatic vegetation mapping of the four (Upper Spring Run, Landa Lake, Old Channel, and New Channel) study reaches was initiated on August 8th.
 - Fountain darter presence/absence dip netting (standard method) was conducted on August 8th.
- Projected for week of August 11-15.
 - Fish Community sampling via SCUBA and seining.
 - Aquatic vegetation mapping - remaining reaches.
 - Fountain darter presence/absence dip netting (fixed method).
 - Water quality grab samples at 12 established stations longitudinally down the system.
 - Thermister downloading.
 - Cross – sectional discharge measurements at established transects.
 - Comal Springs salamander surveys.
 - Flow partitioning throughout Spring Island area of upper Landa Lake.
 - Fountain darter drop netting at all study reaches.

SAN MARCOS SYSTEM:

The total system discharge for San Marcos Springs/River is approximately 119 cfs after another USGS downward adjustment late in the week. To build on sampling earlier this summer, Texas wild-rice physical measurements in vulnerable stands will be initiated when total system discharge reaches 105 cfs. A Critical Period full sampling event is not triggered until total system discharge declines below 100 cfs. As part of COMPREHENSIVE monitoring annual full-system mapping of Texas wild-rice is ongoing.

COMAL SPRINGS/RIVER - WEEK 17 CONDITIONS:

Weekly habitat observations and photo documentation associated with HCP triggered sampling were conducted on Thursday, August 7th.

OBSERVATIONS AND ACTIVITIES:

The J17 water level at the time of photo documentation this week was in the 628's and total system discharge has declined below 100 cfs for the first time since 1996. At present, Spring Run 1, Spring Run 3, the Spring Island area and the Upper Spring run are exhibiting the lowest discharge conditions observed since the initiation of this biological monitoring program in 2000. Not surprisingly, surface habitat conditions relative to flow, water level and exposed substrate in Spring Run 1, Spring Run 3 and the Spring Island area again declined this past week. At the time of photo documentation on Thursday, neither of the two major orifices at Spring Run 1 exhibited any surface discharge and in fact, only a puddle of water remained in the main pool (Figure 2). Immediately downstream of the main orifice pool, an extended portion of Spring Run 1 is again completely dry at the surface (Figure 3). Downstream of the dry surface portion, wetted surface water habitat reappears (Figure 4) but the channel continues to be severely laterally constricted as one proceeds downstream until the confluence with Spring Run 2 outfall. Spring Run 2 continues to maintain surface flow for the main portion of the channel above the entrance road but habitat below the road is in extremely poor condition (Figure 5). Spring Run 3 continues to maintain longitudinal connectivity throughout the run but at these discharge levels it is starting to experience some reductions in wetted area at the headwaters (Figure 6) as well as constrictions in lateral connectivity (Figure 7).



Figure 2: Spring Run 1 main headwater pool.



Figure 3: Spring Run 1 main channel looking downstream from main orifices.



Figure 4: Spring Run 1 main channel looking downstream from Figure 3.



Figure 5: Spring Run 2 downstream of entrance road.



Figure 6: Spring Run 3 headwaters.



Figure 7: Spring Run 3 constriction just downstream of mid channel.

Surprisingly, the amount of green algae in the Upper Spring Run reach continues to be very low (Figure 8). Fisheries biologists conducting fountain darter marking collected well over 1,000 fountain darters of all sizes and tagged over 800 adult fountain darters from this reach on Thursday, August 7th. Figure 9 shows the crew marking darters in the Upper Spring Run reach. The fact that so many darters continue to occupy this upper most reach when less than 3 cfs of total discharge has been flowing through it for over four months now is quite amazing. Additionally, there has been no documented movement (via the marking study) of darters out of this reach during this time period so far.

The surface water level in the Spring Island area this week continues to be low with exposed surface habitat along the eastern and northern side of the island (Figure 10). Although green algae continues to expand in this area, thick healthy bryophytes also continue to be supported. Similar to last fall and the past few weeks, both spring runs associated with Spring Island were completely dry on the surface with subsurface flow still evident at the base of the island. Floating mats of aquatic vegetation continue to build up in Landa Lake at these lower than average discharge conditions and will require weekly attention in the lake as well as in front of the restored culvert to the Old Channel. Aquatic vegetation within Landa Lake, the Old Channel (Figure 11), and New Channel (Figure 12) continue to support quality fountain darter habitat.



Figure 8: Algal coverage remains under control in the Upper Spring Run reach. Note: fountain darter collection effort for marking study evident downstream in photo.



Figure 9: Fountain darter marking activities – lovely turkey feather in hat 😊.

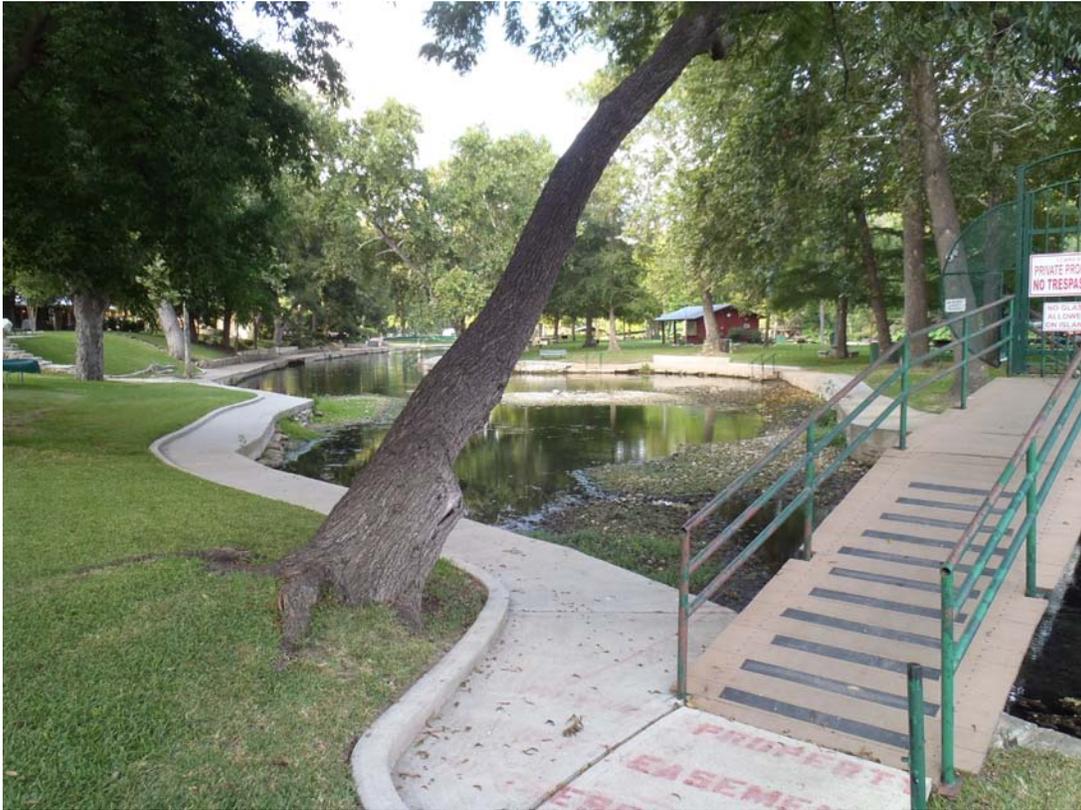


Figure 10: Continued exposed surface habitat adjacent to Spring Island.



Figure 11: Restored native aquatic vegetation continues to thrive in the Old Channel.



Figure 12: New Channel *Cabomba* continues to support quality fountain darter habitat.

In summary, total system discharge in the Comal System is passing levels that have not been witnessed since 1996. If the downward trend continues, these lower discharges will continue to create worsening surface habitat conditions each week for the Comal Springs invertebrates. The good news continues to be that the overall system continues to support quality fountain darter habitat conditions throughout most of its entirety even after nearly 4 months. Whether the fringes of the system are approaching a tipping point or will continue to hold fast is the very reason the Critical Period monitoring program (both HCP species specific and full Critical Period events) is in place. It is vital to keep tracking the success of the surface dwelling invertebrates as surface habitat continues to decline at Comal Springs. To supplement the species-specific sampling, the full Critical Period sampling event triggered this week should provide some excellent data on overall system conditions.

As always, if you have any questions, please give me a shout. Ed