



MEMORANDUM

TO: Nathan Pence
FROM: Ed Oborny (BIO-WEST)
DATE: **September 19, 2014**
SUBJECT: EA HCP Biological Monitoring – **Week 23**

BIOLOGICAL MONITORING UPDATES

COMAL SYSTEM:

At the time of this memorandum, the total system discharge at Comal Springs was 93 cfs following a small pulse in the system caused by scattered thunderstorms in the area the latter part of the week (Figure 1). This week marks the twenty-third consecutive week below 150 cfs, and therefore, the required weekly habitat evaluation was conducted on September 17th. 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 increased above the HCP species specific trigger (< 80 cfs) those activities have reverted back to the schedules required by the <120 cfs trigger. This means that Comal Spring salamander surveys and discharge measurements are to be conducted every other week as opposed to weekly. The next full system Critical Period monitoring effort will be triggered when total system discharge consistently declines below 50 cfs. At this point, the <50 cfs Full Critical Period event appears unlikely this fall considering the recent increases in total system discharge and the fact that the fall Comprehensive sampling will be conducted in late October/early November.

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

CRITICAL PERIOD MONITORING

- September 15-21
 - Flow partitioning transects in the Upper Spring Run area and Landa Lake on September 17th.
 - Weekly photo documentation and habitat evaluation on September 17th.
- September 22-28 (assuming total system discharge remains below 120 cfs)
 - Flow partitioning transects in the Upper Spring Run area and Landa Lake
 - Comal springs salamander sampling.
 - Comal springs discharge measurements.
 - Weekly photo documentation and habitat evaluation.

SAN MARCOS SYSTEM:

The total system discharge for San Marcos Springs/River is recording 102 cfs. Based on observing the San Marco River on Wednesday and the following rainfall and pulse event this week, this lower measurement seems questionable. At present there are no Critical Period monitoring activities being conducted on the San Marcos system. Should total system discharge decline to 105 cfs, Texas wild-rice physical measurements in vulnerable stands will be reinstated.

Until we have confirmation the present reading is not in need of adjustment, we will not be reinstating this survey. Should it prove to be accurate, we will conduct Texas wild-rice physical measurements in vulnerable stands next week. A Critical Period full sampling event is not triggered until total system discharge declines below 100 cfs. The fall Comprehensive sampling event is scheduled for initiation on October 13th.

COMAL SPRINGS/RIVER - WEEK 23 CONDITIONS:

Weekly habitat observations and photo documentation associated with HCP triggered sampling were conducted on Wednesday, September 17th.

Discharge, cubic feet per second

Most recent instantaneous value: 93 09-19-2014 07:45 CDT

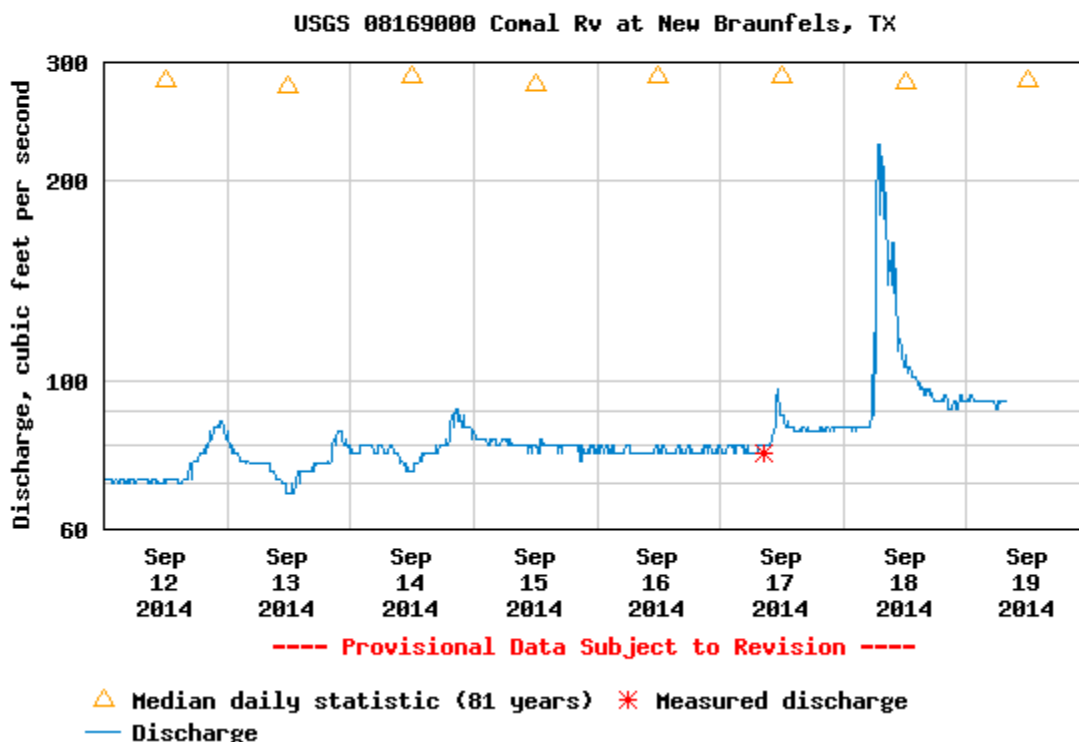


Figure 1: Screen shot of USGS webpage for the *COMAL* gage (08169000) showing total system discharge over the past week.

OBSERVATIONS AND ACTIVITIES:

The increase in total system discharge this week (Figure 1) resulted in increases in surface habitat for the major spring runs, Upper Spring run and Spring Island areas relative to water level and discharge (Figure 2). Although slightly improved relative to the past few months, surface habitat conditions in all of these areas remains poor. Increased upwelling areas were evident in the Spring Island area this week (Figure 3) but exposed substrate is still present in the eastern outfall and both runs associated with Spring Run 6 are still dry. As total system discharge rebounded above 80 cfs this week, no Comal Springs salamander surveys were conducted. Unless total system discharged rebounds above 120 cfs, those surveys will be conducted next week.



Figure 2: Spring Run 2 exhibiting surface discharge this week.



Figure 3: Increased upwelling flow in Spring Island area.

Fountain darter habitat continues to be in poor condition in the Upper Spring Run reach but did experience a slight improvement this past week with the small surface water pulse and subsequent increase in upwellings within this reach. With the shallow water depths and hot ambient temperatures, water temperature in this reach was tracking close to Blieders Creek (Figure 4) prior to the pulse event this week. Figure 4 is a graph of water temperature data taken from a thermister in the Upper Spring Run reach as well as in Blieders Creek. Water temperature as of this most recent download was exceeding 29 °C in the Upper Spring Run reach for the first time since the inception of the monitoring program in fall 2000. However, fountain darters continue to persist in this reach by moving under rocks in small upwelling seeps where water temperatures are still less than 25 °C.

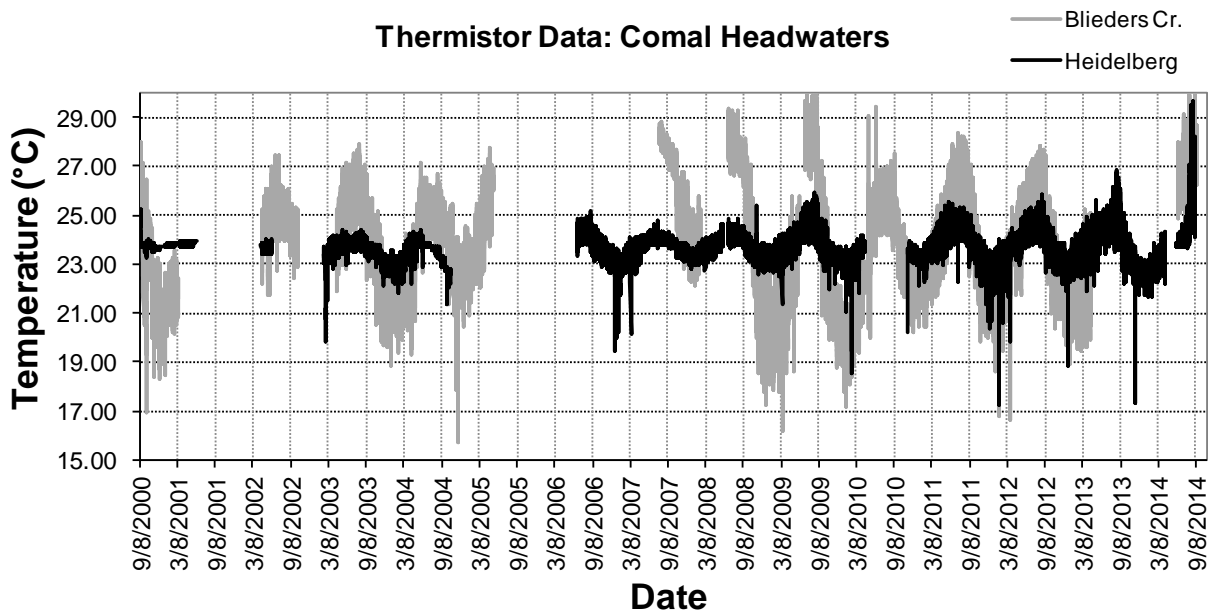


Figure 4: Water temperature data from Upper Spring Run reach (Heidelberg) and Blieders Creek.

Overall, quality fountain darter habitat persists in Landa Lake but impacts continue to occur. Shallow areas and floating mats of aquatic vegetation continue to be the main cause of impacts in Landa Lake (Figure 5). The Old Channel continues to support high quality fountain darter habitat with thriving restored native aquatic vegetation (Figure 6). As the Old Channel has maintained nearly the same discharge (50 to 60 cfs) over this entire 23 week critical period stretch, water temperature continues to be maintained within the Old Channel (Figure 7). The New Channel continues to support aquatic vegetation throughout most of the reach above the confluence of the Old Channel. However, fountain darter habitat in the New Channel continues to be of lesser quality than in either Landa Lake or the Old Channel.



Figure 5: Floating vegetation mats near Landa Lake fishing pier.



Figure 6: Restored native aquatic vegetation in Old Channel.

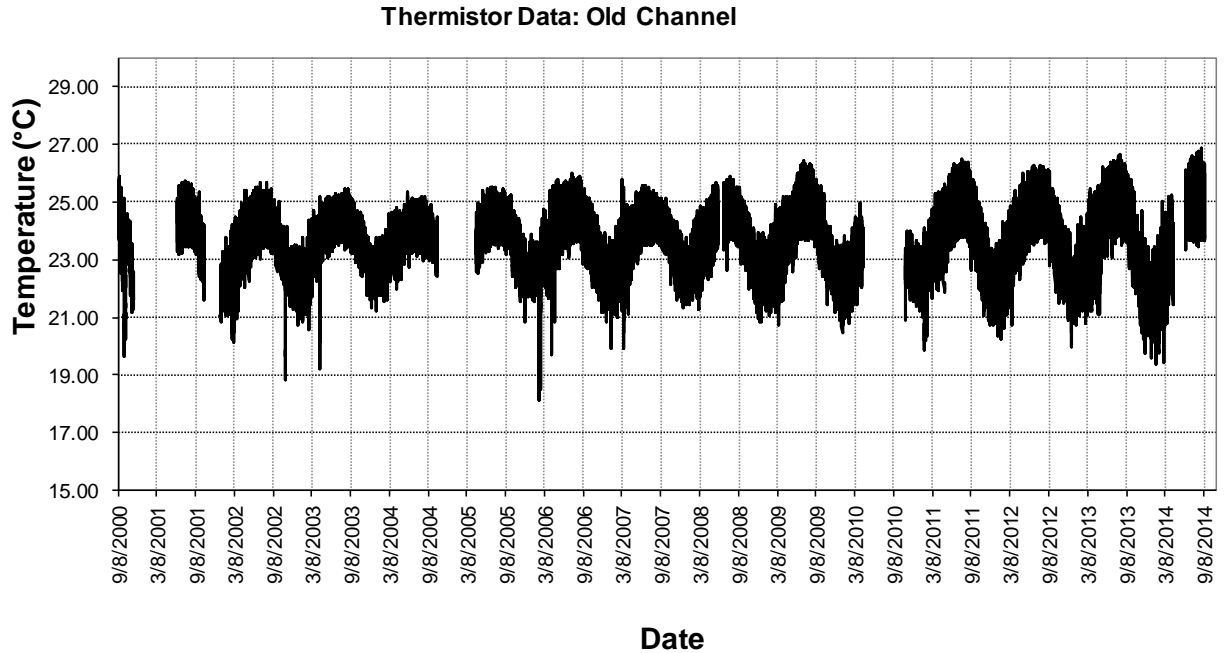


Figure 7: Water temperature data from Old Channel of the Comal River.

In summary, total system discharge and water level conditions improved over the past week. However, endangered invertebrate habitat continues to be impacted for surface dwelling invertebrates. Fountain darters continue to persist in the Upper Spring Run reach although habitat is very minimal and water temperatures are approaching 30° C within this area. Similar to last week, impacts to fountain darter habitat are evident in Landa Lake with shading of rooted aquatic vegetation by thick mats of floating aquatic vegetation while decreased flows in the New Channel continue to impact fountain darter habitat conditions in that reach. In contrast, the Old Channel continues to support high quality fountain darter habitat especially within the HCP restored reaches.

Cheers! Ed