



November 8, 2017 Meeting Minutes

1. Call to order.

Chair, Dr. Arsuffi called the meeting to order at 9:05 a.m. Members present include Janis Bush, Jacquelyn Duke, Conrad Lamon, Glenn Longley, Robert Mace, Doyle Mosier, Chad Norris, Jackie Poole, Floyd Weckerly, Tom Arsuffi, and Charles Kreitler; all members were present.

2. Public comment.

No comments from the public.

3. Approval of the Science Committee meeting minutes (Attachment 1).

Dr. Longley motioned to approve the minutes as written; Dr. Weckerley seconded. No opposition.

4. Receive report from the Program Manager.

▪ Spring systems hydrologic update

Springflow and well levels are decreasing, but levels are declining from abnormally high levels due to all the rain received in 2016.

▪ 2018 Science Committee meeting dates (Attachment 2)

The Science Committee will meet 6 times next year, with the next meeting occurring on January 31st at the San Marcos Activity Center.

▪ EAHCP Refugia Program update

Rattlesnake Cave, a sampling location for blind salamanders, has recently experienced deteriorated water quality including low dissolved oxygen levels. Sources are unknown, but Dr. Schwartz of EARDC will be monitoring the location to identify potential causes

SMARC Refugia facility construction has been awarded to the Puyenpa Services and AmeriVet firm. Construction started on November 2 with anticipated completion in Fall 2018. The Uvalde construction bid packet should be available on the FedConnect website.

USWFS is currently working on the 2017 annual report and will present an overview of their 2017 activities at the joint-meeting in December.

- **Update from the National Academy of Sciences EAHCP Science Review Panel**
The second NAS meeting for Report 3 will be held January 4-5 at the Edwards Aquifer Authority
- **Update on the recent Sediment Removal and Impervious Cover Water Quality Protection Adaptive Management action**
The non-routine adaptive management proposal has been approved by the Stakeholder and Implementing Committees.
- **Aquifer Storage and Recovery optimization and Adaptive Management**
The Edwards Aquifer Authority will host a brief Hydrologic Model workshop during the joint Implementing and Stakeholder Committees meeting on December 14th. The updated model has a difference of a few cfs per model scenario runs, but ultimately it is based on the original MODFLOW model by HDR.

Updates to the MODFLOW model and ASR optimization will be covered during this meeting. EAA was required to update the MODFLOW model with enhanced calibration and validation, the updates have been completed. Two external review panels have reviewed the results in addition to a Groundwater Advisory Group comprised of hydrology experts such as Charles Kreidler and Robert Mace, the EAA has been reviewing the HDR model as a second, external review.

Updates to the Aquifer Storage and Recovery optimization process; 125,000 acft is the goal for our storage, but at the end of year the program will have 85,000 acft leased and 35,000 committed in contracts. Getting close to 125,000 acft, but only good for 1 year, which may be difficult to forbear water during periods of drought.

November 17th; EAA will host a brown bag presentation on the modeled results and provide an opportunity to ask detailed questions of the modelers.

- **Designated access point maintenance in San Marcos**
All sites have been completed with minimal disturbance to endangered species.
- **San Marcos River real-time water quality station installation**
The new EAA Sessom Creek real-time water quality station will be installed later this year, near the Freeman Aquatic Biology Building. Texas State in partnership with the National Severe Storm Laboratory, department of NOAA, is installing a flow gage that will measure Sessom Creek flow through non-contact radar. This is a separate

endeavor that will be paid for by NOAA. Data from both sites will help support the 2018 Sessom Creek Applied Research.

▪ **Research Work Group formation and scheduling (Attachment 3)**

The next meeting of the Research Work Group will be held after the next Science Committee meeting on January 31st. The group will discuss and evaluate proposed 2018 Refugia research projects.

2018 proposed projects will be related to the peck's cave amphipod, Comal Springs dryopid beetle, and the Comal Springs riffle beetle life history projects. Two new projects for 2018 are the San Marcos Salamander propagation and statistical/data analysis on collection information.

5. Presentation of the 2016-2017 Applied Research results: Evaluation of the life history of the Comal Springs riffle beetle from egg to adult.

Dr. Kosnicki from BIO-WEST, Inc. presented an overview of the CSRB life history applied research.

Dr. Weckerley inquired about the source of mortality in the early instar stages. Dr. Kosnicki replied that it could be natural mortality or a number of conditions that can be controlled or observed, but moving forward research will help better understand survivorship.

Dr. Arsuffi noted that there's research on instar development, how do the instars in the laboratory compare with instars collected in the field? Dr. Kosnicki responded that to identify the level of instar one would likely need to kill it and then calculate the number of cuticle layers; can assess the instar level based on size, but there's variation within the sizes. Dr. Arsuffi suggested there's research available for life stage dynamics based on morphometric analysis and there are enough individuals in the lab to compare to the field observations. Dr. Kosnicki will consider the suggestion for future analysis.

Dr. Nowlin's student analyzed instar analysis on wild-caught CSRBS larvae from lure. Dr. Nowlin noted that the data assumed a certain number of instars based on the capture densities. The number of instars are similar to those observed in the wild based on distribution characteristics, but do not know about the explicit comparison sizes.

Dr. Bush asked if the study had been replicated and how much variation? When you have a population of eggs, is the mortality rate always 50-60%? Yes, but survival rates vary depending on the life stage.

2 weeks: 1st instar to 5th instar; 50% die-off at each instar

1 month: 5th to 6th instar; 90% survival

1 month: 6th to 7th instar; 90% survival

Dr. Arsuffi commented that it does not make sense for them to not grow once they reach a certain age. Dr. Kosnicki responded that they are instead assimilating energy for pupation. Dr. Arsuffi disagreed, that the assimilating energy is not occurring and is unsure as to why there would be a 5 month delay in development, because it increases chances of predation, etc. Dr. Kosnicki - They rush to get to the 7th instar, once it's reached they are saving their energy for things like puberty, etc.

Dr. Arsuffi cautioned inferring that the laboratory findings represent individuals in the wild; more analysis is needed. Field data indicate that the species is a multi-multi asynchronous life cycle. The field findings do not follow the findings presented by the laboratory research. Dr. Kosnicki acknowledged the difference but emphasized that the purpose of the study is to have a successful rearing of the species in the Refugia program.

Dr. Arsuffi reasserted that the 5-month delay is an assumption that they're gearing up for pupation- what if there is something missing in their diet at the last stage that is preventing them from going into the next life cycle stage? Dr. Nowlin stated that some studies of field data have found that heterelmis will delay pupation if conditions are not optimal.

Dr. Arsuffi replied that the laboratories should have optimal conditions, so why would they delay pupation? He has issue with the interpretation of the study results that the delay is more associated with the assimilation of energy but he agrees that there are alternative hypotheses to explain it.

6. Discussion of changes to the Comal Springs riffle beetle biomonitoring program.

Based on input from the Science Committee, the CSRB biomonitoring program will be expanded to cover more artesian springs within Landa Lake and the Comal River. The proposed new reaches have been delineated based on the TPWD 2012 artesian springs survey. The increased sampling may result in cuts for other biomonitoring programs which will be discussed at the January 31st meeting;

**Dr. Arsuffi requested that the sampling program costs be provided at the January meeting.*

7. Presentation and discussion of the procedure for the Science Committee review of proposals received for the 2018 Applied Research RFPs (Attachment 4 and 5).

The redacted proposals will be emailed later today and we ask that the reviews be returned no later than Monday, November 27th.

8. Discussion and possible action to nominate and elect a new Chair and Vice-Chair for 2018.

As 2017 Vice Chair, Dr. Weckerly will be the 2018 Chair. Dr. Weckerly nominated Chad Norris as Vice chair, Janis seconded; no opposition.

9. Consider future meetings, dates, locations, and agendas.

- *Annual Joint Committee Meeting*, Thursday, December 14th at 9 a.m. at the Edwards Aquifer Authority (Recharge Room)
- *Science Committee Meeting*, Wednesday, January 31st at 9 a.m. at the San Marcos Activity Center (Multipurpose Room)

10. Questions and comments from the public.

No questions or comments from the public

11. Adjourn: 11:40 am