



May 10, 2017 MEETING MINUTES

1. Call to order

Dr. Arsuffi called the meeting to order at 9:05 a.m. Members present included Tom Arsuffi, Janis Bush, Jacquelyn Duke, Conrad Lamon, Glenn Longley, Doyle Mosier, Jackie Poole, and Floyd Weckerly. Robert Mace, Charles Kreitler, and Chad Norris advised prior to the meeting that they would be unable to attend.

2. Public comment.

None.

3. Approval of March 8, 2017 Science Committee meeting minutes.

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

4. Receive report from the Program Manager.

▪ Spring Systems Hydrologic update

Dr. Furl provided a presentation to the committee on recent hydrologic conditions at the spring systems related to daily, monthly, and annual trends.

▪ Response to Science Committee member questions from the last meeting

Dr. Furl addressed questions from the previous Science Committee meeting in March.

▪ Refugia collection efforts update

Dr. Furl presented a brief overview on refugia collection efforts.

- *Dr. Longley asked how salamanders were released back into the wild. Dr. Furl replied that the locations are stated within the contract and include wells such as Rattlesnake cave and Primer's Cave.*
- *Dr. Mosier asked how the Dryopid Beetle were sampled. Dr. Furl replied with cotton lures and handpicking off decaying organic matter such as branches and stumps. Dr. Nowlin emphasized that handpicking from organic matter is the most effective. They can also sometimes accumulate on the discharge nets set-up on spring orifices.*

▪ San Marcos Water Quality Protection Work Group

Dr. Furl presented a brief summary of the charge and status of the Water Quality Protection Work Group.

▪ Demo of EAHCP AQUARIUS Samples Database

- Mrs. Tolman presented a video demonstration of the new biomonitoring database stored in Aquarius Samples.*
- *Dr. Weckerly inquired about the QA/QC process and standards for data transfer. Dr. Furl replied that a minimum of 10% of the data were checked prior to uploading. Templates and data standards are being developed for the contractors to expedite the data import process.*
- **National Academy of Sciences Report 2 workshop overview**
Dr. Furl presented an overview of the NAS Report 2 public workshop. Members of the UT Center for Public Policy will compile and finalize the report in the coming months.
- **Hydrologic model update**
Mr. Pence presented an overview of the Hydrologic Model status. Recalibration efforts have improved the model since initial runs. Final model validation runs should be completed by May/June.
- *Dr. Arsuffi asked what type of data were used to improve the model and results? Dr. Furl replied that stratigraphy, transmissivity zones, and various parameters were refined.*
- **Ecological model update**
Dr. Furl presented an overview of the status of the ecological model. Model training will include Dr. Lamon and Mr. Norris, and a workshop will be held and will be open to the public. Dr. Furl noted that he has reviewed and submitted edits to the group and is waiting on one final document with his edits captured.
- *Dr. Arsuffi asked if there would be an opportunity for the members to comment on processes and data used by the model such as the biology and ecology. Mr. Pence responded that input was received at previous meetings and was incorporated into the model.*
5. **Presentation of the 2016 Applied Research results: Evaluation of the long-term elevated temperature and low dissolved oxygen tolerances of larvae and adult Comal Springs riffle beetle.**
Dr. Nowlin presented his 2016 Applied Research results on the impact temperature and dissolved oxygen (DO) have on the Comal Springs riffle beetle.
- *Dr. Arsuffi: when you're dealing with a plastron organism, how do you assess temperature and oxygen impacts as the plastron changes?*
 - *Dr. Nowlin: the tanks were routinely monitored with DO probes and the levels stayed relatively stable even as the temperature increased.*
 - *Dr. Arsuffi stated that when temperature increases, DO decreases. Dr. Nowlin replied that one would need to substantially raise the temperature up to 40 degrees Celsius before the dissolved oxygen started to drop significantly.*
 - *Dr. Arsuffi discussed the significance of mortality and its impact upon the results. Approximately a 25% mortality occurs with control conditions in the laboratory. Dr. Lamon responded there is a need to assess the control population characteristics/trends.*

Dr. Nowlin explained that the 25% mortality has been observed in other studies and was consistent with the scenarios evaluated.

- *Dr. Nowlin noted the importance of testing on CSRB and not alternate similar species. Each of the alternate species (*H. glabra*, *H. vulnerata*, *H. comalensis*, and *M. pusillus*) have different thresholds which may skew results and findings. It's also difficult to test the low temperature threshold of the beetles since they become less active with decreased temperatures.*

6. Update on the latest progress of the Evaluation of the life history of the Comal Springs Riffle Beetle from egg to adult.

Mr. Worsham presented an overview of the ongoing CSRB life history research conducted by BIO-WEST, Texas State University, and the Desert Research Institute.

- *Dr. Arsuffi proposed that the limited distribution of the CSRB is regulated by food. Mr. Worsham proposed that the spring openings provide enough water to support healthy riparian canopy cover which deposit nutrients to the spring orifice below.*
- *Mr. Worsham noted that although the CSRB have successfully laid eggs, the rate of mortality is very high within the first stages of development.*
- *Dr. Arsuffi inquired about the cause of the high mortality rates; 25% observed within both studies. Mr. Worsham replied that the age of each beetle is not known, therefore, mortality may be due to age and not laboratory conditions. Mr. Worsham has tried to account for this within his analysis of results.*
- *Mr. Worsham also noted that since they are now able to identify the gender of the CSRB, they have discovered a gender bias within their population; the gender ratio is approximately 65% male to 35% female. They have tried to assess whether the ratio is due to a sampling bias, however, similar ratios occur for lures versus hand-picking from organic matter. Both Dr. Nowlin and Mr. Worsham have noticed similar movement patterns between the genders within the lab, so it's difficult to decipher the source of the gender disparity.*
- *Dr. Arsuffi expressed that the fecundity seemed very low for an invertebrate <Discussion about whether it's a K-strategist or an R-strategist invertebrate> Mr. Worsham replied that it seems that they put a lot of effort into a small number of viable offspring. A female may lay about a dozen over the span of 12 months; they spend a long time developing, produce very few offspring, spend a lot of time on the offspring, and have an inherent gender bias.*

7. Presentation and possible recommendation of the City of San Marcos/Texas State University (COSM/TXST) 2018 Work Plan.

Melani Howard presented an overview of the 2018 City of San Marcos (COSM) and Texas State University Work Plan.

- *Dr. Duke asked if the contractor tasked with removal of exotic/invasive animals document the number/type of fish observed but not captured? This information could be used to potentially estimate the population characteristics. Col. Howard replied that he does not record the observed vs captured, but he has been very successful capturing*

tilapia and plecostomus that he observes. The plecostomus that get away are hard to reach/count because they hide in cracks and crevasses.

Dr. Longley motioned to approve the City of San Marcos/Texas State 2018 Work Plan; Dr. Weckerly seconded. No opposition.

8. Presentation and possible recommendation of the City of New Braunfels (CONB) 2018 Work Plan.

Mark Enders presented an overview of the 2018 City of New Braunfels (CONB) Work Plan.

- *Dr. Duke asked about the Old Channel terrestrial planting characteristics; Mr. Enders replied that they will remove most of the non-native but some non-native trees will remain in areas with 100% non-native coverage with the intent to provide shade for the younger trees to establish.*
- *Mr. Enders mentioned how the HCP lists eradication of colocasia esculenta (elephant ear) from the banks of the Old Channel, however, there are still persistent stands upstream in Landa Lake and in the upper reaches along private property. Therefore, until the stands upstream are treated, routine maintenance will be required for sections located downstream (such as the Old Channel).*
- *Dr. Lamon, noted that in one example it showed restoration in the Old Channel as removing saggitaria, a plant preferred by FD; why is this? Mr. Enders replied that ludwigia has been less successful than saggitaria, therefore, some saggitaria were removed to ensure that ludwigia has room to grow and that restoration efforts maintain heterogeneity and biodiversity.*
- *Dr. Arsuffi discussed the sustainability of this approach. Mr. Enders replied that they have targets for ludwigia that need to be met. Moreover, Bob Hall noted that according to the take permit, no more than 10% of the habitat for the species can be disturbed at once.*
- *Dr. Lamon stated that we do not know enough about the optimal proportions for vegetation types for FD, instead this is based on targets.*
- *Mr. Enders explained that the CONB WQPP identified 2 priority sites for restoration. The golf course parking lot next to Elizabeth Street will be torn-up and replaced by permeable pavers.*

Dr. Weckerly motioned to approve the City of New Braunfels 2018 Work Plan; Dr. Bush seconded. No opposition.

9. Presentation, discussion, and possible endorsement of the Report of the Research Work Group: 2018 Refugia Research and 2018-2019 Applied Research.

Dr. Furl presented a summary of the Research Work Group report including a list of potential applied research topics.

10. Presentation of the 2018 Applied Research Projects strategy and process for soliciting comments.

Dr. Furl presented an overview of the potential 2018 Applied Research Projects strategy based on the Research Work Group and National Academy of Science recommendations.

- *Dr. Lamon emphasized that it's important to identify the sources of the Sessom Creek NPS, Dr. Furl replied that science has shown approximately 80% of the loadings occur during high-flow events. If properly monitored, load duration curves can be developed to help us better understand the loading characteristics. Mr. Pence reiterated that by installing monitoring equipment in Sessom Creek watershed we can not only develop a baseline dataset, but also analyze changes over time.*

11. Presentation and possible recommendation of the Edwards Aquifer Authority (EAA) 2018 Work Plan.

Dr. Furl presented an overview of the potential Edwards Aquifer Authority (EAA) 2018 Work Plan.

Dr. Weckerly motioned to approve the EAA 2018 Work Plan; Dr. Bush seconded. No opposition.

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

13. Questions and comments from the public.

None.

14. Adjourn.