



Edwards Aquifer Habitat Conservation Plan  
Applied Research Work Group

**Report of the 2015 Applied Research Work Group [Draft]**

October XX, 2015

## Introduction

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The Edwards Aquifer Habitat Conservation Plan (EAHCP) calls for the Applied Research Program to build knowledge about the Covered Species, and to facilitate the collection of data for the Ecological Model. This effort provides the EAHCP with a more accurate understanding of the ecological dynamics of the Comal and San Marcos spring systems, particularly under low-flow conditions. The Applied Research Program is an important component of the EAHCP as it helps build information necessary for meeting the Biological Objectives and Goals.

In early 2015, the EAHCP received the first report of the National Academy of Sciences (NAS), where it provided recommendations towards all EAHCP programs, including the Applied Research Program. From these recommendations, a robust list of possible studies was compiled and presented to the NAS Recommendation Review Work Group (RRWG).

For the recommendations pertaining to the EAHCP Applied Research Program, the RRWG recognized that the EAHCP program had completed many of the recommendations or was currently in the process of incorporating them. The RRWG recommended the creation of an Applied Research Work Group to establish a research project schedule for the remainder of Phase I of the EAHCP. As identified in Chapter 7 of the EAHCP, funding for the Applied Research Program is limited to Phase 1 (2013 through 2019) only. The RRWG stated that the Applied Research Work Group should start work as soon as possible to allow for potential inclusion of 2016 research projects in the prioritization process.

Specifically, the RRWG recommended the following issues be addressed by the Applied Research Work Group: (1) Determining if additional applied research studies are needed; and (2) Developing a research plan that prioritizes the numerous studies recommended by NAS, the Science Committee, the Implementing Committee, and independent subject matter experts.

Based on the recommendation of the RRWG, the EAHCP Implementing Committee created the Applied Research Work Group (ARWG) at its August 20, 2015 meeting, approving its charge “to recommend a holistic Applied Research Project Schedule that takes into account currently identifiable research necessary to better understand EAHCP’s Covered Species in order to achieve the EAHCP’s Biological Goals and Objectives. This schedule will be used to develop the Work Plans for the Applied Research Program in 2016 through 2019” (Appendix III).

The Implementing Committee also appointed the following members to the ARWG at its August, 20 meeting: Tom Arsuffi (Texas Tech University), Janis Bush (University of Texas at San Antonio), Bob Hall (Edwards Aquifer Authority), Chad Norris (Texas Parks & Wildlife Department), and Kenneth Ostrand (United States Fish & Wildlife Service. Dr. Tom Arsuffi was elected as the Work Group Chair at the first meeting of the Work Group. The Work Group held a total of four meetings during September and October 2015.

Appended to this report are the *2016-2019 Applied Research Project Schedule* (Appendix I), the *2016-2019 Applied Research Project Prioritization Matrix* (Appendix II), the *Charge of the 2015 ARWG* (Appendix III), and *ARWG’s meeting agendas and minutes* (Appendix IV).

## **NAS Applied Research Recommendations**

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As previously mentioned, the NAS Recommendation Review Work Group (RRWG) recommended that an Applied Research Work Group (ARWG) be convened to determine (1) if additional applied research studies are needed, and (2) to develop a research plan that prioritizes the numerous studies that have been recommended by NAS, the Science Committee, the Implementing Committee, and independent subject matter experts.

Reflecting this recommendation, a comprehensive list of the studies recommended by NAS was presented for consideration by the ARWG from the first meeting onwards as part of a proposed draft Applied Research Project Schedule. These NAS-recommended studies appear in blue on the *2016-2019 Applied Research Project Schedule*. Four NAS studies were not recommended for implementation; these were also presented to the ARWG, and they appear at the bottom of the *Research Schedule*.

This strategy enabled the ARWG to take all NAS recommendations under consideration, so that NAS' contributions to the Applied Research Program could be duly incorporated into the final draft Applied Research Project Schedule as deemed appropriate by the ARWG.

## **Categories of Applied Research**

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In its first meeting, the Applied Research Work Group (ARWG) identified categories of Applied Research on which to focus. The identification of these categories was based off the ARWG's review of to-be-conducted Applied Research studies identified to-date, including a comprehensive list of the studies recommended by NAS (as mentioned above), as well as studies recommended by the Science Committee, the Implementing Committee, and independent subject matter experts.

From this holistic review process, the ARWG identified five final categories, which are listed below along with a short description:

- 1. Conservation measures**  
Assessing the effectiveness of EAHCP Conservation Measures, and the efficiencies of the benefits to the Species, in achieving Biological Objectives & Goals.
- 2. Standard sampling methods**  
Ensuring sampling methods are reliable, valid measures for Species; ensuring they permit evaluation of trends over time, including standardization as an important consideration; and that they are consistent with Biological Objectives & Goals.
- 3. Habitat quality and requirements**  
Evaluating the habitat requirements of the Species, including the assessment of whether habitat is of sufficient quality, and validating HCP's assumptions related to habitat, consistent with Biological Objectives & Goals.

4. **System memory/Disturbance ecology**

Measuring the effects of disturbance (e.g., drought, scouring floods, etc.) on the system, and the resilience of the system in rebounding post-disturbance as it relates to Biological Objectives & Goals.

5. **Data**

Data management considerations relevant to existing and future data to be collected, as well as applications for analysis of existing data relevant to Biological Objectives & Goals.

Besides the above, four additional categories were discussed which were identified as important, but did not fit in the Applied Research Program due to logistical and/or programmatic factors. These additional categories of research will be covered by other EAHCP programs. These categories are listed below, along with a short description and mention of what other EAHCP Program they fall under.

1. **Study reaches**

Evaluating the appropriateness of study reaches in the Comal and San Marcos systems will be conducted by the Biological Monitoring Work Group.

2. **Water quality**

Assessing water quality issues for the Comal and San Marcos systems, including watershed concerns and tailoring programs to the needs of species, not typical human health measures, will be conducted by the Water Quality Monitoring Work Group.

3. **Eco-model**

Validating the eco-model and other research applications related to the eco-model will be conducted within the scope of the EAA's modeling program.

4. **Basic biology of Species**

Starting in 2017, studies related to aspects of the basic biology of Species will be conducted through the Refugia Research Program.

**Applied Research Project Schedule**

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The following section of this report is a summary of the *2016-2019 Applied Research Project Schedule* as recommended by the ARWG. This summary provides background information detailing the ARWG recommended projects, ARWG prioritization of these projects, and other pertinent information related to the EAHCP Applied Research Program plan for the next four years.

**2016**

**2017**

**2018**

**2019**

**Conclusion**

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At their final meeting on October 23, 2015, the ARWG unanimously approved this draft report and the draft *2016-2019 Applied Research Project Schedule*. The ARWG recommends this version of the report and the *2016-2019 Applied Research Project Schedule* for approval and adoption by the Implementing Committee.

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