

**Middle Rio Grande Endangered Species Collaborative Program (MRGESCP)**  
**Science & Technical (S&T) Ad Hoc Group Charge**  
***Southwestern Willow Flycatcher and Yellow-billed Cuckoo***  
***Conceptual Ecological Model Refinement Ad Hoc***

Approved by the Science and Adaptive Management Committee (SAMC) April 22, 2021.

**Parent Committee**

Science and Adaptive Management Committee.

**Ad Hoc Group Charge**

Describe the level of scientific understanding for each relationship characterized in the Middle Rio Grande (MRG) conceptual ecological models (CEMs) for the southwestern willow flycatcher (*Empidonax trailii extimus*; SWFL) and yellow-billed cuckoo (*Coccyzus americanus*; YBCU). The CEMs and descriptions can be found in Appendix C (page 62 of 98) of the MRGESCP 2020 Science and Adaptive Management Plan (WEST 2020), tabular versions of which will be provided for assigning level of understanding to each relationship between a driver or stressor and a life stage response.

**Membership**

**A. Criteria for membership**

- Knowledge of SWFL and YBCU life history and ecology within the MRG;
- Familiarity with MRGESCP Science and Adaptive Management Plan (WEST 2020) and avian species CEM development.

**B. Member List**

**Amy Erickson, (Lead) Audubon New Mexico,**

Meaghan Conway, NM Department of Game and Fish (later U.S. Fish & Wildlife Service),

Dave Moore, Bureau of Reclamation Technical Service Center,

Ondrea Hummel, TetraTech,

Jennifer Davis, U.S. Fish & Wildlife Service.

**Iterative Task Development**

**Background**

Life stage-based CEMs are under development for each of the five species currently under the purview of the MRGESCP. In order to prioritize research and conservation efforts, each relationship between a driver or stressor variable and a life-stage response is characterized by importance of variable to life stage, ability to manage and level of understanding about the relationship between variable and life stage. The current models for SWFL and YBCU provide designations for level of importance and ability to manage, but not for level of understanding about these relationships. The task described below will remedy these omissions and help to inform adaptive management strategies for SWFL and YBCU recovery.

This task will help to prioritize and address Critical Uncertainties SWFL2, SWFL3, SWFL5, YBCU1 and YBCU5 identified in the *Middle Rio Grande Adaptive Management Framework: Identifying Critical Scientific Uncertainties* (Sections 4 and 5 of Caplan et al. 2018):

- SWFL2: The impact of the tamarisk beetle (*Diorhabda*) on SWFL breeding habitats in the MRG.

- SWFL3: SWFL breeding population sizes, distributions, and trends along the Angostura Reach.
- SWFL5: The abiotic and biotic variables that predict suitable and unsuitable SWFL habitats across multiple spatial and temporal scales in the MRG.
- YBCU1: The abiotic and biotic variables that predict suitable YBCU breeding habitats in the MRG across multiple spatial and temporal scales.
- YBCU5: The timing and availability of YBCU prey in the MRG and which factors influence both.

## Tasks and Deliverables

### Task 1: Characterize level of scientific understanding in SWFL and YBCU CEMs

Characterize the level of scientific understanding or confidence (i.e., High, Medium, Low, or Unknown) for each relationship characterized in the MRG CEMs for the SWFL and YBCU. The CEMs and descriptions of variables can be found in Appendix C of the MRGESCP 2020 Science and Adaptive Management Plan (WEST 2020). Tabular versions of the CEMs will be provided by the Program Support Team for designating a confidence level for each relationship.

#### Objective of Task 1:

Characterizing the scientific understanding for each relationship between a driver or stressor variable and a life-stage response in the CEMs will help prioritize research and conservation efforts.

#### Deliverable:

- 1) Table format of each CEM with levels of scientific understanding (i.e., High, Medium, or Low) designated for each relationship (i.e., row in the table) between a driver or stressor variable and a life stage response.
  - Please add any comments on previous designations listed in the table and identify any areas of disagreement, where applicable, in the “Notes” column. If basing your designation on a source other than best professional judgment, you may use the “Notes” column to cite references, as well.

## Timeline and Reporting Scheduling

Task	Subtask	Deliverable	To Be Completed By
Task 1: Characterize level of scientific understanding in SWFL and YBCU CEMs	NA	<ul style="list-style-type: none"> <li>• Modified table of SWFL CEM</li> <li>• Modified table of YBCU CEM</li> </ul>	September 2021

**References:**

Caplan, T., D. Lee, G. Wilde, H. Walker, and J. Frey 2018. Middle Rio Grande Adaptive Management Framework: Identifying Critical Scientific Uncertainties. Prepared for U.S. Army Corps of Engineers Albuquerque District on behalf of the Middle Rio Grande Endangered Species Collaborative Program. Prepared by GeoSystems Analysis, Inc. Albuquerque, New Mexico.

Western EcoSystems Technology, Inc. 2020. Middle Rio Grande Endangered Species Collaborative Program Science and Adaptive Management Plan. Prepared for the Executive Committee of the Middle Rio Grande Endangered Species Collaborative Program, Albuquerque, NM. 98 pp.