

# EAHCP 2016-2019 APPLIED RESEARCH PROJECT SCHEDULE



YEAR	Applied Research Program			Other Research Programs & Contracts			
	Research Categories	Research Projects	Biological Goal Reference & Rationale	Salvage Refugia	Refugia	EAA Modeling Plan	Eco Modeling
2013	1. EcoModel SAV	1. pH Drift 2. Low flow effects on native vegetation (NAS 49) 3. Field vs. lab Study				1. Develop FE Model 2. Develop ModFlow Model	1. Develop EcoModel
	2. EcoModel FD	1. Low flow effects on food source (NAS 44, 45)					
2014	1. EcoModel FD	1. Low flow effects on FD fecundity (NAS 44) 2. Effects of predation on FD (NAS 44, 45) 3. FD movement under low flow (NAS 41)				1. Develop FE Model 2. Develop ModFlow Model	1. Develop EcoModel
	2. Basic Biology of Species (CSRB)	1. Baseline distribution (NAS 51) 2. Plastron functionality 3. Low flow effects on survival (NAS 54)					
2015	1. Basic Biology of Species (CSRB)	1. Habitat connectivity		1. Training at SMARC		1. Complete FE Model	1. Develop EcoModel
	2. EcoModel SAV	1. Algae dynamics 2. <i>Ludwigia</i> interference (NAS 44) 3. Sediment (recreation/turbidity) impacts on TWR (NAS 49, 50)		2. Produce F <sup>1</sup> TX Blind Salamander 3. Work w/ TXSTATE and SMARC researchers 4. Obtain property access for collection research		2. Complete ModFlow Model	
2016	1. Basic Biology of Species (CSRB)	1. CSRB tolerances of elevated temperature & low DO* (NAS 54) 2. Evaluate CSRB life history Phase I* (NAS 51, 52, 53, 54) 3. CSRB Trophic level & functional feeding group categorization* (NAS 51, 55)	Water quality, habitat quality Population Population	1. Collection methods/location for TX Blind Salamander 2. Collection methods for CSDB 3. Establish suitable surrogates		1. FE Model verification 2. ModFlow Model verification 3. Hardy Thermal Model verification** 4. Recharge modeling	1. Complete EcoModel 2. FD Random Drop Netting (NAS 42, 44) 3. FD Mortality in Adverse Conditions (NAS 41)
	2. Standard Sampling Methods	1. CSRB quantitative sampling techniques (NAS 55) (#2 Priority)	Population				
	3. Data	1. Compile data, format, template, normalization; IC consideration in Dec 2015 (#1 Priority)					
2017	1. Basic Biology of Species (CSRB)	1. Evaluate CSRB life history Phase II* (NAS 51, 52, 53, 54)	Population		Refugia research will accomplish the below deliverables for each species; moving onto the next step, only when the previous has been concluded for all listed species.  1. Collection methods and locations 2. General husbandry (feeding, density, etc.) 3. Propagation techniques (egg to adult) 4. Reintroduction/genetics  Evaluate Life Histories of Covered Species	1. EcoModel verification*** 2. Recharge modeling	
	2. Habitat Quality, Quantity, & Requirements	1. SAV as FD habitat (shelter, prey habitat) (NAS 45, 46) 2. Effects of sedimentation on SAV, FD and CSRB (NAS 56)	Habitat based population Habitat, water quality (silt free)				
	3. Standard Sampling Methods	1. CS Dryopid Beetle quantitative sampling techniques	Population				
	4. Data	1. Statistical analysis of data (System Memory/Disturbance Ecology) 2. Statistical analysis of data (Species)					
2018	1. Habitat Quality & Requirements	1. Peck's Amphipod quantitative sampling techniques	Population			1. HydroModel Runs	
	2. Conservation Measures	1. Evaluate success of SAV restoration & TWR enhancement (coincides w/ 5 yr SAV mapping) (NAS 44, 47, 48) 2. Confirm species-specific Tables 4-1, 4-21 3. Evaluate success of flow-split management	Habitat Habitat Habitat			2. EcoModel Runs 3. Recharge modeling	
	3. TBD	1. TBD/Contingency	TBD				
2019	1. Conservation Measures	1. Evaluate success of removal of invasive animal species and reduction of introduction 2. Evaluate success of Sessom Creek sand bar removal and sediment removal efforts	Habitat Habitat			1. HydroModel Runs 2. EcoModel Runs	
	2. TBD	1. TBD/Contingency	TBD				

**Legend/Footnotes**

- \* RFP developed and posted for solicitation
- \*\* Use low flow data from 2013 and 2014 for verification of model (desktop exercise)
- \*\* May require contract w/ Meadows
- \*\*\* Use data collected in 2016 to perform a verification analysis

NAS-recommended projects  
 Funding to be allocated/Research yet TBD

**NAS Projects Not Recommended for Implementation**

- 1. Determine the effects from phosphorus sources, cycling, and availability on the productivity of the ecosystems (NAS 58)
- 2. CSRB population (quantitative) and distribution in Comal (NAS 55)
- 3. CSRB population (quantitative) and distribution in San Marcos (NAS 55)
- 4. Evaluate CSRB status as an indicator species (NAS 57)