

## Applied Research Recommendations

Topic	Recommendation	Details
<p><b>Research Priorities Moving Forward</b></p>	<p>Some specific applied research foci are especially important given the HCP's management objectives.</p>	<p>The 2017 project to establish better relationships between the fountain darter and the different species and coverages of SAV (including Ludwigia) in both systems is critically important.</p>
		<p>Research to better understand the life history of listed species and identifying effective sampling techniques rightfully deserves high priority.</p>
<p><b>Application and Limitations to Application for Existing Applied Research Results</b></p>	<p>Applied research study results can and should be used to inform management efforts; in some cases, caution is warranted in applying these results, however.</p>	<p>The CSRB temp and oxygen study's use of surrogates is of questionable relevance for the CSRB.</p>
		<p>The CSRB temp and oxygen study's use of lab environments may not provide a relevant test of CSRB behavior in its natural environment.</p>
		<p>Areas where Hygrophila is of concern should be targeted for Ludwigia establishment where restoration efforts are being carried out.</p>
		<p>The competitive advantage of Ludwigia against Hygrophila should be communicated to the SAV modeling team and incorporated into their efforts.</p>
		<p>Additional consideration of the interactions between Hydrilla and Ludwigia is needed before conclusions are made or further application of this research occurs.</p>
		<p>Ludwigia should be seriously considered for use in the San Marcos system.</p>
		<p>miniDOT oxygen sensors in Landa Lake and Upper Spring Run should be continued as part of a routine integrated water quality and biological monitoring program</p>
		<p>The Committee recommends that aeration not be used routinely as a mitigation measure.</p>
		<p>There should be a method to provide standardized data that accounts for the amount of time that the cotton lure has been deployed.</p>
		<p>The CSRB trophic study should be looked at with a view to possibly identifying an alternative sampling approach for the CSRB that could be a reasonable reflection of population densities.</p>

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<p><b>CSRB Population and Sampling Techniques</b></p>	<p>Several issues remain to be addressed with regards to CSRB population and sampling.</p>	<p>Identifying the type, and estimate the relative amount, of organic matter near or at the cotton lure placement locations should be included as part of the cotton-lure SOP for CSRB.</p>
		<p>A validation study encompassing repeated sampling from the same and new spring outlets to account for potential life history and flow effects on the population estimates is highly recommended.</p>
		<p>Studies on the importance of Peck's cave amphipod-predation on the CSRB may be warranted.</p>
		<p>Key lab experiments involving the CSRB (e.g., connectivity study) should be validated using creative field studies where variables can be manipulated.</p>
		<p><i>Attempts to understand the population abundances of the CSRB should be undertaken.</i></p>
		<p><i>Attempts to better quantify the CSRB population densities should be undertaken.</i></p>
		<p><i>Attempts to better calibrate the cotton-lure method of sampling to be efficient and reliable for estimating populations should be made.</i></p>
<p><b>Administrative/Logistical Considerations Associated with the Applied Research Program</b></p>	<p>There are several administrative and/or logistical considerations that should be considered for the improvement of the Applied Research program.</p>	<p>The window of time for an RFP to be open to final deadline should be extended.</p>
		<p>The EAA should continue to look for ways to remove conditions that restrict the pool of potential Applied Research applicants.</p>
		<p>The EAA should use the data management system being implemented to allow greater data discovery and access by the outside scientific community and the public.</p>
		<p>The cause for the large mortalities of CSRB at the FAB still need to be definitively identified and resolved through additional study.</p>
		<p>The EAA should be prepared to invest in additional research projects in life history of listed species and sampling techniques that span multiple years, if necessary.</p>
<p>Monitoring effectiveness of M&amp;M measures should not be part of the Applied Research Program.</p>		

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		Resources for ongoing data management activities will need to be allocated throughout the lifetime of the HCP.
		Modeling efforts should become more integral to consideration of future Applied Research projects.