

**Cumberlands HCP Science Advisory Committee (SAC)  
September 2007 Update for SAC Members**

Please see sections as lettered below for updates. Contact SAC Coordinator Hayden Mattingly [hmattingly@tntech.edu](mailto:hmattingly@tntech.edu) or Assistant Coordinator Trisha Johnson [tjohnson@tntech.edu](mailto:tjohnson@tntech.edu) with any questions or comments, and visit the project website for regular updates that pertain to the wider HCP effort: [www.cumberlandhcp.org](http://www.cumberlandhcp.org). Thank you for your continued support of the Cumberlands HCP development process by serving on the SAC.

- A. Overview of Selected Events
- B. Recently Funded Research Projects
- C. Species Accounts
- D. Spottfin Chub Subcommittee
- E. Water Resources HCP
- F. Forest Resources HCP
- G. Next SAC Meeting – 20 September 2007
- H. Closing Remarks

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**A. Overview of Selected Events**

- March 2007 – Last SAC update was distributed to committee members
- May 2007 – Trisha Johnson and Emily Saunders attended week-long HCP Training Workshop at the NCTC in West Virginia
- June 2007 – Funding for 2008-2009 was awarded (USFWS HCP Planning Assistance Grant)
- June 2007 – Special Aquatic HCP session at NABS meeting in South Carolina; Hayden Mattingly made a presentation on Cumberland HCP SAC efforts
- July/August 2007 – Writing proposal for 2009-2010 funding from USFWS HCP Planning Assistance Grant; proposal submitted in August
- August 2007 – Trisha Johnson, Hayden Mattingly, Alex Wyss attended Efroymsen Workshop sponsored by TNC/WWF to conduct conservation planning for Emory/Obed watershed
- September 2007 – Annual SAC whole-group meeting will be at Cumberland Mountain State Park on September 20<sup>th</sup>

See [www.cumberlandhcp.org](http://www.cumberlandhcp.org) for information.

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**B. Funded Research Projects**

Three research proposals were fully or at least partially funded this summer using HCP funds: (1) cerulean warbler and golden-winged warbler research; (2) Indiana bat roosting and foraging behavior; and (3) underwater videomapping of portions of the Obed/Emory system. The first two projects will provide information to directly support

development of the Forest Resources HCP and the third project will support the Water Resources HCP. David Buehler and students at University of Tennessee will continue their cerulean warbler research, and expand the scope to include an analysis of golden-winged warbler response to different forest management practices. Mark Gumbert, Eric Britzke, and staff at Copperhead Consulting will be documenting Indiana bat roosting and foraging patterns around New Mammoth Cave during autumn. They will also collect Indiana bat hair samples for isotope analysis at a wider number of caves. Paul Ayers and students at University of Tennessee will be producing underwater videomaps of approximately 30 river miles of Clear Creek and Obed River when flow conditions allow access. The National Park Service office in Ft. Collins, Colorado, provided half of the funding for the videomapping project. Please contact Hayden Mattingly, Trisha Johnson, or the researchers if you want to learn more about these projects. We sincerely thank all of you who provided peer reviews of the research proposals.

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### **C. Focal Species Accounts**

Five of six focal species accounts have now been finished by Trisha Johnson and sent to survey participants for additional review and comments. Accounts have been completed for the Cumberland elktoe, purple bean, spotfin chub, cerulean warbler, and Indiana bat. The account for the blackside dace is scheduled to be completed by the end of this month, and we plan to discuss the accounts at our 20 September 2007 meeting.

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### **D. Spotfin Chub Subcommittee**

An ad-hoc committee was formed in July to formulate an approach to estimating take of the spotfin chub (estimation of take will be a required component of the Water Resources HCP). The committee met in Crossville on 19 July 2007, with Pat Rakes, Mark Thurman, Kirk Miles, Brad Cook, Geoff Call, Alex Wyss, Trisha Johnson, and Hayden Mattingly in attendance. An important goal of the meeting was to identify a process by which take could best be quantified. The subcommittee focused on the spotfin chub because recent research projects have greatly increased our knowledge of factors affecting the distribution and abundance of this species at multiple spatial scales. Spotfin chub presence has been positively associated with watershed size, amount of run habitat, substrate size, water velocity, and intermediate water depths; further, logistic regression occupancy models have been created to predict the probability of spotfin chub presence based on these variables.

The subcommittee concluded that spotfin chub occupancy models represent an important component in the overall approach to estimating take, but a critical missing element is the connection between (1) land-use and water resource development that would be covered activities under the incidental take permit, and (2) the significant environmental variables in the occupancy models. In short, we need to establish strong working hypotheses (i.e., create additional models complementary to the occupancy models) about how the landuse activities are linked to the environmental variables immediately associated with spotfin chub presence or absence. We need to understand,

for example, how increasing impervious surfaces and increasing sedimentation rates from land-clearing and construction would affect flow rates and substrate characteristics in the hydrologically unique Emory-Obed river system, and how the biotic response would be expected to change under different scenarios (spatially and temporally explicit) of land-use and water resource development. Working with these linkages, the SAC could inform Technical Teams and make recommendations concerning take of the spotfin chub and co-occurring aquatic species with similar ecological requirements, thereby making use of the best scientific knowledge available for this system. Ultimately, the biotic response will be monitored as part of the HCP, and the working hypotheses can be adjusted as part of the adaptive management framework.

The subcommittee also concluded that it will be no trivial task to establish the linkages between landuse activities related to development in Crossville, Cumberland County (and counties to the north) and the environmental variables directly associated with the covered species. After the meeting, Hayden Mattingly proposed that such work would best be handled by a post-doctoral researcher who can immediately devote his or her full-time attention to the project and who has statistical modeling skills, landscape or watershed spatial data experience (GIS, remote sensing), excellent understanding of hydrology, and a background in aquatic ecology and conservation biology. The post-doctoral researcher would be based at Tennessee Technological University where the Center for the Management, Utilization and Protection of Water Resources is located, and where the researcher could be in daily contact with the Coordinator and Assistant Coordinator of the HCP Science Advisory Committee. We are actively looking for a suitable post-doctoral candidate at this time, along with funding to support that candidate. Please let Hayden Mattingly know if you are aware of any interested individuals.

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## **E. Water Resources HCP**

The City of Crossville and Cumberland County have now formally passed resolutions to move forward with a Water Resources HCP for their municipalities to cover activities related to residential/commercial development and water supply/discharge. The first Steering Committee meeting is scheduled for the morning of **October 3<sup>rd</sup>** at Cumberland Mountain State Park; attendance is open to the public and any interested SAC member can attend.

The City of Crossville is also working on its Stormwater Ordinance for TDEC. Trisha Johnson, Emily Saunders, and agency staff (USFWS, TWRA) have been attending monthly stormwater meetings to serve in an advisory capacity. The advisors will be suggesting modifications to craft a document that is protective of threatened and endangered aquatic species, and should closely match protective measures that we anticipate being part of the HCP.

We will soon be forming one or more Technical Teams as part of the Water Resources HCP development process. The SAC will be asked to provide information to the Technical Teams, and several SAC members may be invited or can volunteer to serve as Technical Team members. More information will follow at the SAC meeting on September 20<sup>th</sup>.

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**F. Forest Resources HCP**

Kentucky Department of Fish and Wildlife Resources and Tennessee Wildlife Resources Agency are moving forward with developing an HCP to cover forestry practices on state wildlife management areas in Cumberland's project area. The possibility of involving private lands continues to be discussed. There are large-scale land purchases occurring now on the Cumberland Plateau in Tennessee which add some degree of complexity to the Forestry HCP planning process.

The first steering committee meeting for the Forest Resources HCP will be on the morning of **September 24<sup>th</sup>** in the Deans Conference Room on the second floor of Derryberry Hall at Tennessee Tech University in Cookeville. Similar to the Water Resources HCP steering committee meeting, this is a public meeting and all SAC members would be welcome. More information will follow.

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**G. Next SAC Meeting – September 20<sup>th</sup> at Cumberland Mountain State Park**

Our previous whole-group SAC meeting was September 2006 at Cumberland Mountain State Park, and we are establishing a tradition of annual meetings in September of each year at CMSP. Our meeting this year is on the 20<sup>th</sup>; please see the meeting agenda and other information attached to the email along with this document. We have several important topics to cover and are looking forward to a productive meeting.

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**H. Closing Remarks**

The Coordinator and Assistant Coordinator would like to re-extend an invitation for SAC members to participate as much as possible in the HCP development process. There are great opportunities here to use scientific knowledge to positively influence land use activities that are currently affecting, and will continue to affect, endangered species in the Cumberlands. The coordinators and Development Team are grateful for all the hours the SAC members have already devoted to this project.

Contact information for the coordinators is given below. Please also use the project website [www.cumberlandhcp.org](http://www.cumberlandhcp.org) to view recent presentations, obtain copies of reports, and so forth.

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