FRESHWATER MOLLUSK CONSERVATION SOCIETY
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April 20, 2011

Rowan Gould
Acting Director and Deputy Director for Operations
U.S. Fish and Wildlife Service
1849 C Street NW
Washington DC 20240

Dear Dr. Gould,

I write to you today on behalf of the Freshwater Mollusk Conservation Society (FMCS) to express support for the U.S. Fish and Wildlife Service (Service) initiative to develop a national network of Landscape Conservation Cooperatives (LCC) and express strong reservations with the proposed change from the perspective of managing the numerous endemic aquatic mollusks which occur in the present Appalachian LCC (ALCC). The FMCS is a non-profit entity whose mission includes education, research, and protection of freshwater mollusks, North America's most imperiled group of animals. Our membership includes individuals affiliated with state and federal government, academia, as well as amateur collectors, and citizen scientists from across North America.

The FMCS strongly supports the Service's strategic vision for addressing aquatic conservation issues on a landscape scale. Because conservation and management of aquatic species occurs at the watershed level, we also feel very strongly that splitting our nation's most diverse freshwater ecoregion (Tennessee and Cumberland River drainages) into two LCCs will create additional burden upon conservation managers, and will be detrimental to the management of the 700 aquatic species (fish, mussels, snails, and crayfish) residing in the present Appalachian LCC. This region contains 1/4th of North America's aquatic diversity, with over 240 aquatic mollusks, 90 of which are endemic and 35 of which are federally listed. Indeed, approximately 1/2 of our nation's freshwater mussel species occur in this region, as well as 1/3 of North American fishes occurs in this region. Over 80% of the 79 listed aquatic species are endemic to the ALCC. The FMCS strongly supports the Appalachian LCC boundary as defined to date to include the entire freshwater ecoregion of the Tennessee River and Cumberland River drainages.

The FMCS has strong reservations with the proposed change from the perspective of managing the numerous endemic aquatic mollusks which occur in the present ALCC. The FMCS would recommend that the boundary remain as unchanged for the following reasons:

1. ECOLOGICAL: There are significant ecological reasons to maintain the entire Tennessee and Cumberland River drainages within the current ALCC boundary. The zoogeographic distribution and life history of numerous mollusks endemic to the current ALCC boundary determines that management for the species occurs at the watershed and basin level in order to ensure the entire life cycle and life history of the organism is captured in management schemes for the watershed. In running water, the main natural factor of disturbance is hydraulic, with increasing anthropogenic disturbances masking the natural function of rivers. Discharge and temperature are the most likely major factors controlling the physicochemical and biological dynamics of rivers in the ALCC, and these will play a larger role in controlling riverine ecosystem dynamics in light of projected changes in climate. Indeed, it is the complex nature of ecological patterns and processes in natural river ecosystems, including the critical role of natural disturbance that has constrained the effectiveness of river conservation and restoration initiatives. Managing and restoring rivers for the conservation of the many endemic and endangered aquatic species and for all forms of life residing in the ALCC, therefore, requires a thorough understanding of river corridors that encompasses interactions along the longitudinal dimension, floodplain dynamics and surface-subsurface exchange processes, and requires a thorough understanding of the biology of the species and other community attributes necessary to the species survival. These river systems must be managed as complete systems to the extent possible in order to adequately identify the scientific needs, species recovery priorities, and aquatic landscape management tools that will ensure hydrologic flows and suitable habitat are available to support our nation's precious freshwater systems and freshwater organisms. Separation is not supported from an eco-regional perspective.

   Among faunas, the number of aquatic endemics and endangered aquatic species would point towards the need for making aquatics far and away the driving force behind collective efforts at management and conservation of faunal resources in the ALCC. As well, given that the taxa that represent the greatest conservation needs in the area are aquatic, it makes sense for the Cumberlandian region to be included in total in a single LCC. Please refer to the table below which highlights the number of aquatic, imperiled, endemic, and endangered species residing in this freshwater eco-region.

Category	Fishes	Mussels	Crayfishes	Snails	TOTAL
TOTAL	~300-350	~140	~115	~100	~650-700
Imperiled	~105	~85	~40	~40	~270
Listed	24	41	0	14	79
Endemic Imperiled	~90	~50	~40	~40	~220
Endemic Listed	~20	~25	0	14	~65
North American	~1/3	~1/2	~1/3	~1/7	~1/4

2. CONSERVATION PLANNING AND RECOVERY: Conservation planning would be greatly hindered and coordination of recovery for threatened and endangered (T&E) species would be compromised if the ALCC boundary split occurs. Present planning and recovery for freshwater mollusks is already hampered by limited resources and staffing to address the multitude of threats to aquatic landscapes, and to coordinate strategic plans for conserving and restoring our aquatic landscapes. As stated above, it is critical that planning occur at the watershed level to ensure all aspects of the organisms life history is considered in planning for aquatic species, and to achieve wholly functioning aquatic ecosystems. Indeed, management for these highly imperiled and sensitive aquatic species could be problematic in the future in light of changing climates if this boundary change moves forward. We must ensure that natural refugia for aquatic organisms are identified and preserved, and planning for aquatic species does not separate upper populations from their lower populations, or separate tributary populations from mainstem populations which serve as biological centers for reproduction and gene flow, and habitat centers for potential refugia.

   Under the proposed change, there would be too many key river ecosystems and species that are currently viewed under one umbrella for management and recovery, split between LCC's. Key rivers in the western half of the Ohio River basin that would be affected include the Duck, Green, Licking and Kentucky rivers and several smaller ones. This would split the management of more than a dozen federally listed mussel species between the two proposed LCCs, with most of the expertise for these species residing in the ALCC. If leadership for the Central Hardwoods LCC is coming from west of the Mississippi River, then we see this as potentially problematic.

   We would like to point out as well that all management and restoration of aquatic habitat for endangered aquatic species benefits and indeed is critical to all terrestrial fauna. In order to restore instream riverine habitat, we necessarily work in the riparian, upland areas and forested areas of the watershed. All life is ultimately tied to healthy freshwater habitats.

3. PARTNERSHIP CONSIDERATIONS: Maintaining the current boundaries simplifies and reinforces existing partnerships and <u>increases cohesion</u> among conservation efforts for the Tennessee and Cumberland River drainages. We are greatly concerned that the proposed boundary change would create more work for existing partnerships and recovery/planning team efforts.

   - STATE CONSIDERATIONS: The proposed change will be especially problematic for the State of Alabama (which holds numerous endemic mussels and snails in the TN/Cumberland river drainages). If the proposed boundary change were to move forward, AL will be forced to work with 3 LCCs. Representatives for Tennessee Wildlife Resources Agency and Kentucky Department of Fish and Wildlife Resources also have expressed a preference for maintaining the existing boundary in order to avoid the existing stakeholder fatigue they experience by participating in SARP, ORB, and now potentially two LCCs. Conservation efforts for freshwater mollusks in the ALCC includes multiple states and agencies from AL, KY, TN, VA, OH, and WV, who work closely throughout the year to identify science and management needs and implement recovery for endemic mollusks in the existing ALCC and

Tennessee/Cumberland drainage. Partnership fatigue is a great concern for this small group of biologists working across state and agencies to recover imperiled aquatic species and restore their habitats.

- It will be much harder and potentially represent a greater burden for new partnerships to work effectively within the Tennessee/Cumberland drainage if the ALCC boundary change moves forward.

Perhaps rather than examining this issue in terms of existing partnerships (and single taxonomic groups), the LCC steering committee should look at it from the perspective of what the LCC's will need to focus on in terms of potential threats and impacts on the systems (both aquatic and terrestrial) which the LCCs are to maintain. We suggest the question of boundary lines be reexamined by examining the distribution and potential for projected impacts which will be a central planning focus as defined within what is now the ALCC boundary. From a geological (extractive) standpoint the ALCC should stay together as originally defined, as the more effective approach to planning and delivery around the commonality of the threat of coal and natural gas (shale) deposits. Additional thematic mapping products already produced by the U.S. Geological Survey, U.S. Department of Agriculture, U.S. Forest Service, and others as part of a balanced consideration of this issue: don't just look at single species groups but also look at the nature of the threats that will impact all species. This will ultimately dictate both the research and management challenges and needs.

The FMCS requests that a community of practice, planning, and agenda-setting for integrating science into the conservation and restoration needs of aquatic species at the landscape level be retained by the Appalachian LCC Coordinator for the current the ALCC boundary.

Sincerely,

Dr. Caryn C. Vaughn, President
Freshwater Mollusk Conservation Society

cc: Dr. Jean Brennan, Appalachian LCC Coordinator
Mr. Daniel M. Ashe, U.S. Fish and Wildlife Service
Mr. Marvin Moriarty, U.S. Fish and Wildlife Service
Ms. Cynthia K. Dohner, U.S. Fish and Wildlife Service