

## THE WILDLIFE SOCIETY

5410 Grosvenor Lane • Bethesda, MD 20814-2144  
Tel: (301) 897-9770 • Fax: (301) 530-2471  
E-mail: [twswildlife.org](mailto:twswildlife.org)

November 6, 2013

Science Advisory Board Review Panel  
Attn: Dr. Thomas Armitage, Designated Federal Officer (DFO)  
EPA Science Advisory Board Staff Office (1400 R)  
U.S. Environmental Protection Agency  
1200 Pennsylvania Avenue NW  
Washington, DC 20460

**Re: Comments of The Wildlife Society on *Connectivity of Streams and Wetlands to Downstream Waters: A Review and Synthesis of the Scientific Evidence* Docket ID No. EPA-HQ-OA-2013-0582**

Dear Dr. Armitage:

The Wildlife Society was founded in 1937 and is a non-profit scientific and educational association of nearly 11,000 professional wildlife biologists and managers dedicated to excellence in wildlife stewardship through science and education. Our mission is to represent and serve the professional community of scientists, managers, educators, technicians, planners, and others who work actively to study, manage, and conserve wildlife and associated habitats worldwide.

Our organization also has formal working groups comprised of members with various specialized interests and experience. Members of our Wetlands Working Group with expertise in wetland and stream ecology as well as wildlife dependent upon those systems reviewed the report, "*Connectivity of Streams and Wetlands to Downstream Waters: A Review and Synthesis of the Scientific Evidence.*" We are pleased to forward to you their comments on behalf of the Society.

We were very pleased to see the fundamental approach of the Environmental Protection Agency (EPA) in fully assessing the state of the science relative to the Clean Water Act (CWA). We strongly support the EPA's approach of "science first" as the goals of the CWA cannot be achieved outside of the context of basic biologic, chemical, hydrologic, and other physical principles associated with streams, rivers, wetlands, and other waters.

Overall, The Wildlife Society is supportive and appreciative of the strength and breadth of the science contained in the report, "*Connectivity of Streams and Wetlands to Downstream Waters: A Review and Synthesis of the Scientific Evidence.*" The report contains extensive documentation

to support fundamental conclusions regarding the interconnectedness of streams and wetlands to rivers, bays, estuaries, and other downstream waters. We are particularly pleased to see the explicit recognition of the importance of two key science-based principles that significantly affect the conservation of aquatic and associated natural resources. The first is that watersheds should serve as the fundamental unit of evaluation for identification of physical, chemical, and biological connections between and among various waters and wetlands in a landscape. While watersheds can be evaluated at both small and large scales and the appropriate scale for any given policy or management action should be carefully considered, the science synthesized in the report underscores that the watershed is the appropriate ecological unit within which to consider the issue of connectivity.

The second principle, assessment of complexes of streams and wetlands in the aggregate, recognizes the potential impacts of degradation and loss of many small waters on local and regional processes. The science compiled in the report illustrates that while one small reach of a headwater stream or small wetland may not have a demonstrably significant effect on large, downstream rivers, the cumulative effect of losing many similar reaches of headwater streams or small wetlands can have a significant impact on downstream waters. In fact, problems as significant and severe as the hypoxic zone in the Gulf of Mexico are typically not the result of any single degradation but rather reflect the aggregated impacts of the loss and degradation of thousands of small wetlands and headwater stream reaches throughout the Mississippi River watershed.

Although the authors have done an excellent job of synthesizing the extremely large amount of literature relevant to the issue of connectivity of these waters, we believe that additional consideration of key perspectives and information would further strengthen the report. We recommend that the Scientific Advisory Board's panel, in their formal review and comment on the report, add a section highlighting forested wetlands (e.g., bottomland hardwood, floodplain forest wetlands). Forested wetlands comprise almost 50 percent of all of the remaining wetlands in the contiguous 48 states. However, the U.S. Fish and Wildlife Service's most recent wetlands status and trends report indicated loss of more than 633,000 ac of forested wetlands during 2004–2009, far more than any other freshwater wetland type. Due to the challenges facing forested wetland conservation and the fact that many people may not intuitively recognize the importance of forested wetlands, especially floodplain wetlands, we recommend this category of wetland be treated as one of the special “case studies” and a comprehensive review of the associated literature be conducted.

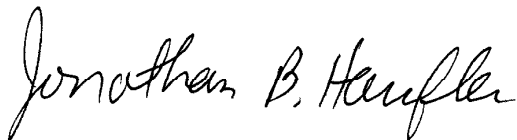
In general, we were pleased to see the report's discussion regarding unidirectional wetlands. Due to the degree of variation among the types of unidirectional wetlands and degrees of connectivity with downstream waters, the report does not draw categorical conclusions at the national level about the connectivity of these waters. However, the report cites numerous examples of the types of connectivity that exist between these wetlands and downstream waters at the regional level. We encourage the review panel to include additional clarity regarding the connectivity of unidirectional wetlands or aggregations thereof and methods for determination on a regional or watershed basis. Such an analysis will be particularly useful for landscapes such as the Prairie Pothole Region of the Dakotas, in which unidirectional wetlands play a dominant role in landscape form and functions.

We recommend that the strong scientific foundation the report provides regarding wetland connectivity to downstream waters be strengthened, particularly in the unidirectional landscape context, by ensuring a more comprehensive review of the literature relating to evidence of connectivity provided by birds and mammals. Birds are mentioned more often as “vectors” for invertebrates and seeds than as an important indicator of connectivity. For example, peer reviewed studies (Adair et al 1996, and Ballard et al 2010<sup>1</sup>) documented the dependence of certain waterfowl populations (e.g., redhead and scaup) in the Gulf Coast’s Laguna Madre on the freshwater inland wetlands in a unidirectional context. The daily flights of these species between the hypersaline lagoon in which they feed and the inland freshwater wetlands from which they must obtain freshwater provide an example of connectivity. Without inland, unidirectional freshwater wetlands, these populations would not be able to use the habitats of the Gulf of Mexico and the biological integrity of the Gulf would thus be affected. The report should further explore such connections provided by birds between wetlands and downstream waters.

Overall, we emphasize our support for compiling the best available science on wetlands and streams to inform policy decisions that guide national efforts to “restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.” We believe that the draft report provides a strong, comprehensive review of the related science and reaches conclusions that are consistent with the scope and content of the science. We appreciate the rigorous peer review underway by the Science Advisory Board and the panel of external peer-reviewers. We encourage the board to use the comments that we and others are offering to strengthen the report even further as the foundation for future policy designed to protect our nation’s waters, the fish and wildlife that depend upon them, and the citizens that enjoy the benefits provided by all of these interdependent natural resources.

Thank you for considering the views of wildlife professionals. Should you have any questions, please do not hesitate to contact Laura Bies, Director of Government Affairs (301.897.977 x308; [laura@wildlife.org](mailto:laura@wildlife.org)).

Sincerely,



Jonathan B. Haufler, Ph.D., CWB  
President

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<sup>1</sup> ADAIR, S.E., J.L. MOORE, AND W.H. KIEL, JR. 1996. Wintering diving duck use of coastal ponds: An analysis of alternative hypotheses. *Journal of Wildlife Management* 60:83-93.

BALLARD, B.M., J.D. JAMES, R.L. BINGHAN, M.J. PETRIE, B.C. WILSON. 2010. Coastal pond use by redheads wintering in the Laguna Madre, TX. *Wetlands* 30:669-674.