

CONSERVATION EFFECTS ASSESSMENT PROJECT
NATIONAL ASSESSMENT – WETLANDS COMPONENT
PEER REVIEW PANEL

INTRODUCTION

The U.S. Department of Agriculture (USDA)-Natural Resources Conservation Service (NRCS), is leading the Conservation Effects Assessment Project (CEAP)-Wetlands Component of the National Assessment. A peer review panel was convened by the NRCS to provide an opportunity for scientific scrutiny of the CEAP-Wetlands approach. The panel met on May 5, 2005, at the Hall of States, Washington, D. C. NRCS contracted with the Association of State Wetlands Managers (ASWM) to organize and facilitate the meeting.

The peer review panel is composed of scientists who have expertise in wetland ecology, functional assessment methodology and wetland ecosystem services on agricultural landscapes. NRCS and the ASWM coordinated the selection of panel members. The following individuals were invited by NRCS to participate in the panel review:

Dr. Paul Adamus, Oregon State University
Dr. Mark Brinson, East Carolina University
Dr. Siobhan Fennessy*, Kenyon College
Dr. Mary Kentula*, U.S. Environmental Protection Agency (USEPA)-
Office of Research and Development, Western Ecology Division
Dr. Aimlee Laderman, Swamp Research Center, Woods Hole
Oceanographic Institute
Ms. Kathy Mulder, USEPA, Region VII (Dallas, Texas)
Dr. Loren Smith, Texas Tech University
Dr. Denice Wardrop, Pennsylvania State University
Dr. Dennis Whigham, Smithsonian Environmental Research Center

* Participants unable to attend the May 5th meeting but who received the CEAP-Wetlands meeting materials for review and comment

The Principal Investigators for the two collaborative CEAP-Wetlands regional assessments currently underway also participated in the meeting: Dr. Stephen Faulkner, U.S. Geological Survey (USGS)-National Wetlands Research Institute, Principal Investigator for the Mississippi Alluvial Valley Regional Assessment (MAV) and Dr. Robert Gleason, USGS-Northern Prairie Wildlife Research Center, Principal Investigator for the Prairie Pothole Regional Assessment (PPR). They presented

information on both regional assessment methodologies, as examples of how the CEAP-Wetlands approach meets the goal of conducting regionally-based scientific investigations focused on quantifying wetland ecosystem service effects that result from Farm Bill program implementation.

Dr. Gleason also presented an overview of the recently initiated USDA-U.S. Department of the Interior (USDI) *Prairie Pothole Region Temporal Ecosystem Services Effects Model Project*. The project is a partnership effort between the USDA (NRCS, Farm Service Agency) and USDI (USGS, Fish and Wildlife Service), building on the CEAP-Wetlands Prairie Pothole Regional Assessment, to leverage limited resources to quantify environmental effects of USDA and USDI conservation practices, management activities and programs over the long term in the PPR. The project is one of four such projects USGS is launching in FY2006 to develop models of integrated landscape functions and effects.

Ms. Jeanne Christie, Executive Director of the Association of State Wetland Managers facilitated the meeting. Dr. Jon Kusler, Association of State Wetland Managers, also participated in the meeting. Dr. Skip Hyberg, FSA; and Ms. Diane Eckles, NRCS and CEAP-Wetlands Project Leader, also participated in the meeting.

MEETING PURPOSE

NRCS convened the meeting to provide an opportunity for scientists to review the CEAP-Wetlands approach and provide feedback to USDA. Objective, scientific feedback on the validity and design of the approach allows USDA to make revisions to the approach, thereby enhancing the findings from CEAP-Wetlands activities. Convening the panel also provided USDA with an opportunity to engage scientists not affiliated with USDA and further dialogue on agricultural issues effecting agricultural landscapes.

USDA requested specific input from the panel members in the following areas:

1. Assess the scientific merits of the CEAP-Wetlands approach, and
2. Assist USDA in developing a strategy that identifies methodologies to quantify conservation effects over the long-term.

SUMMARY OF COMMENTS

The following summarizes the comments presented at the peer review panel meeting. They are grouped by the meeting purpose statements identified above. General comments that did not address either statement are presented separately. A draft summary of comments document was circulated by NRCS to the panel members for review and comment prior to finalizing this document. The following comments reflect panel member input from that draft.

1. Comments to address Statement 1: Assess the scientific merits of the CEAP-Wetlands approach

1. Terminology and Concepts. Panel members supported the reference-based approach used in the CEAP-Wetlands regional assessments but suggested that it would clarify the USDA approach for audiences if terminology and concepts already developed for the hydrogeomorphic approach were used. For example, clearly identify that the supporting model is built upon the concept of *reference* as developed for the "HGM" approach (see <http://el.erdc.usace.army.mil/wetlands/pdfs/wrpde9.pdf> for a discussion of reference). Other terminology, e.g., *reference domain* and *site potential*, could also be used to effectively communicate what the USDA approach embodies. Need to use the same terminology relative to functions and services among regional assessments.
2. State Monitoring Efforts. Link where possible the regional assessment efforts with current or planned state monitoring efforts, e.g., Mid-Atlantic region. Work with panel members in those regions to facilitate the collaboration of these efforts.
3. Predictive Model Testing and Validation. Sufficient time and funding is needed to invest in these activities. While some models can be validated based on existing studies/published literature, other models need to be validated before they can be recognized as credible. For example, habitat and hydrology have been validated fairly well, but biogeochemical functions have not. Validation is an important aspect of the project and one that merits serious attention.
4. Clearly identify spatial units of sample. Some services can be easily attributed to the site scale (e.g., wetland habitat quality), but others are influenced by the landscape (e.g., flood water attenuation. Use of GIS in the CEAP-Wetlands is a strength. Variables that are derived from GIS to

produce ecosystem service estimates, however, need to be defined relative to their use in the assessment.

5. Temporal element. It is important to identify the time since the practice was implemented. Not all wetland functions and subsequent services operate at the same level simultaneously, and there are time lags between systems, e.g., forested wetland restoration/rehabilitation.

6. Value-added uses of USDA program wetlands. In addition to the ecosystem services wetlands provide, people make use of wetlands for a variety of activities, e.g., timber harvest, haying, grazing, education activities. Some effort is needed to identify USDA program wetlands for the “highest and best use” beyond what the conservation practice is designed for, e.g., wildlife habitat, recovery of declining species, flood water attenuation.

7. Similarity analysis. The panel suggested that CEAP look for common themes between regional assessments, e.g., sedimentation potential may be different between the PPR prairie pothole wetlands and MAV bottomland hardwoods but other services may have the same or similar model (e.g., flood water storage and attenuation).

8. Linking functions to services. It is important to consider the assessment scale because different outcomes can result, e.g., using landscape data vs. site-specific data.

9. Predictive model structure. It is important that the goals of the models are clearly defined, based on existing reviews of wetland assessment methodologies, e.g., the Environmental Law Institute report, *Measuring Mitigation: A Review of the Science for Compensatory Mitigation Performance Standards* (Nevel B., J. Milan, G. Arnold and R. Harris 2004; http://www.elistore.org/reports_detail.asp?ID=10991) and the Association of State Wetland Managers document *Final Report 1. Wetland Assessment for Regulatory Purposes* (Kusler, J. 2004; <http://www.aswm.org/pub/functionsvalues.pdf>). If the goal is to use them to assess wetland ecosystem services, then the models should be designed to do that. If something like HGM models are developed, for example, they only address disturbance not services.

10. Biogeochemical cycling. It is important to capture the entire biogeochemical suite, not focus on just one aspect, e.g., denitrification.

Look at regional assessment variables and determine what can be used to quantify benefits of well functioning nitrogen and phosphorus cycles, not just components of the cycles. Need to be creative.

11. Application of international studies/methods. Investigate application of results/methods from international studies published in the literature. Well-researched 'short-cuts' may be available to address various aspects of the regional assessments.

12. Ecosystem services. There are several other ecosystem services that have not been addressed to date by the two current regional assessment activities that are important for wetlands in other regions: groundwater recharge (a water quantity connection), pollinator/beneficial insects, links to coastal processes, and fisheries.

13. Adverse effects. It is important to document the encroachment/spread of weed/noxious/invasive plant species in the regional assessments, particularly with relevance to adjacent agricultural lands, e.g., cranberry production agricultural lands.

14. Wetlands Reserve Program (WRP) site landscape functions. It may be useful to look at overlap between mapped Federal Emergency Management Agency (FEMA) floodplains or Natural Heritage data with WRP easement coverage and present this information to the Office of Management and Budget (OMB).

15. Future regional assessments. If additional assessments similar to those in the PPR and MAV cannot be conducted in the other regions of interest, USDA may want to consider how to refine those reference data to design a more robust reference system and develop a rapid assessment approach to achieve the same products.

16. Current CEAP-Wetland approach. The framework and design are well developed. They only need some minor refinements.

17. Landscape change effects. In addition to documenting past effects, CEAP needs to look ahead. For example, it may be useful to consider how an agricultural landscape reference system would be altered as a result of land use change, e.g., urban influences. May want to think

about what this system would have to include and how the models would change.

18. Presentations of findings and other USDA wetland program information. There is a need to tie program case studies to comprehensive planning and other broad management approaches. The case studies could highlight the findings from the regional assessments relative to the services provided by these wetlands. This type of information would be useful for Congress and the public. The information could be posted to the web.

19. Inclusion of economic evaluation. Suggest economic evaluations in concert with regional assessments.

20. Corroborating data/published findings. Suggest using existing data sets (e.g., National Assessment Database for Water Quality [305(b) monitoring data] <http://www.epa.gov/305b>) to see if can corroborate regional assessment findings.

II. Comments to address Statement 2: Assist USDA in developing a strategy that identifies methodologies to quantify conservation effects over the long-term

1. Prairie Pothole Region – Temporal Ecosystem Services Effects Model Project. Addressing how wetland functions and ecosystem services change temporally, and the source of that change, is important. The [PPR] model should enhance the ability to provide quantitative information in a temporal framework.

2. Proposed “Cumulative Conservation Practice Effects – Nutrient Reduction Assessment”. Will this effort address pesticides or just focus on nutrient enrichment effects?

III. General comments unrelated to either statements:

1. Competing Services. There is a concern about lack of prioritization in Farm Bill programs. It is suggested that use of a ‘synoptic model’ would be useful to rank watersheds and identify sites where services are needed in a watershed.

2. Future Peer Review Panel Activities. What's next? Is this a group needed for the long term? Should the panel reconvene a year from now? Will documents be available for review?

CONCLUSIONS

The peer review panel meeting was a useful forum for review of USDA CEAP-Wetlands Component national framework and regional activities. The comments and ideas presented by the panel will be used by USDA to refine the CEAP-Wetlands Component framework and activities. The CEAP-Wetlands Component work plan, under development, will reflect the panel's input, and will be circulated by USDA to the panel for review and comment.

The panel is composed of a cadre of scientists with expertise that will benefit USDA efforts to document the conservation effects of wetlands on agricultural landscapes. USDA will continue to communicate with panel members as the CEAP-Wetlands Component evolves, and provide them opportunities to review and comment on CEAP-Wetlands Component activities, findings and products. A panel meeting in 2006 will provide another opportunity for the panel and CEAP-Wetlands collaborators to meet and learn of current regional methodologies and findings, and offer recommendations to improve the existing approach.

ACKNOWLEDGEMENTS

USDA thanks the panel members for their time and participation in the peer-review meeting. USDA also thanks the Association of State Wetland Managers for their contributions to make this a productive forum, and making accessible CEAP-Wetlands Component materials for the panel members.