Project Summary
Rocky Mountains Cooperative Ecosystem Studies Unit

Project Title: Wetlands and Climate Change

Type of Project: Research

Funding Agency: U.S. Geological Survey

Other Partners/Cooperators:

Effective Dates:
1 Aug 2004 – 30 September 2006

Funding Amount: $34,075 (FY04) and $35,000 (FY06)

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Project Abstract:

The prairie potholes of the Northern Great Plains comprise some of the most ecologically valuable freshwater resources in the Nation. The diversity of wetland hydrologic regimes and the abundance of macroinvertebrates and plant life provides critical habitat for wildlife. Our current work has sought to determine the vulnerability of glaciated prairie wetlands to changes in temperature and precipitation predicted by global climate change models. To achieve this objective, we have 1) developed an improved version of an earlier model (WETSIM) to assess the effects of climate variability on semi-permanent wetlands across the PPR, 2) developed a model subroutine to examine the effects of alternative land uses on wetland hydrology 3) developed a landscape scale model of the wetland complex that simulates the response of different wetland permanence types to climatic variability, and 4) extended our model results to the regional scale to account for the variability in local climate across the PPR.

Because of the accomplishments in our previous work, we are now able to link our wetland dynamics models with wildlife models to simulate wildlife responses to climate change. The research outlined in this proposal will: 1) Link wetland dynamic models with waterfowl habitat models to simulate the effects of future climate variability on the settling patterns and population dynamics of waterfowl, 2) Evaluate the extent to which current waterfowl habitat protection programs and policies may need to be modified given the prospects for climate change, and 3) Use regional climate scenarios and wetland dynamics models in conjunction with empirical data gathered from ongoing field and mesocosm studies (funded by the U.S. EPA) to evaluate the role of a changing climate on amphibian communities associated with prairie pothole wetlands. This funding through the RM CESU is to facilitate field work during summer 2005. Data from this field season will be used in model development/completion.

Outcomes with completion dates (reports, publications, workshops, videos, etc.):
Publications forthcoming after completion of work in 2006.

Keywords:
Climate change, prairie wetlands, warming, temperature, precipitation, WETSIM, modeling

For Administrative use only:
Date Annual Report Received:

Date Final Report Received:

Publications, etc. on file: