CA-LCC Fleskes Project Accomplishments (thru 8/29/11)

Understanding impacts of climate change on ecology and habitats of waterfowl, shorebirds, and other waterbirds: Guidance for the California LCC and other wetland habitat conservation programs in the Pacific Flyway

1) Modeled changes in timing and amount of waterbird habitat and wintering waterbird food supplies in the Butte Basin based upon projected water supplies for 31 scenarios differing in projected climate, urbanization, and/or water management.
   a) downscaled climate model projections of temperature and precipitation, and hydrological simulations of potential evapotranspiration, climatic water deficit, snowpack, recharge and runoff to estimate water supply for 4 climate change scenarios (2 emission scenarios x 2 climate change models
   b) adapted the Water Evaluation and Planning (WEAP) model to better estimate water supplies for wetlands and agricultural habitats of importance to waterbirds under each scenario
   c) input water supply estimates under each climate change scenario into WEAP to model water supply amounts and timing for each habitat of importance to wintering waterbirds
   d) estimated impacts of each scenario on wintering waterfowl food supplies
   e) modeled winter food supplies vs waterfowl population requirements for selected scenarios
2) Reported project background, goals, methods, and results to resource managers
   a) developed a project webpage
   b) completed a 51-page Progress Update (Feb 2011)
   c) produced and presented a project poster at the CA-LCC Open House (June 2011)
   d) presented project information and results to the Central Valley Joint Venture Water Committee, the Central Valley Waterfowl Working Group, and the USFWS
   e) will be presenting project information and results at The Wildlife Society annual conference (November 2011)
3) Improved project efficiency and expanded capabilities by recruiting new project partners
   a) recruited $80K from the Delta Waterfowl Foundation to support new collaborations
   b) initiated a new collaboration with the Stockholm Environment Institute (SEI). SEI developed the Water Evaluation And Planning (WEAP) model used by the state of California and their full collaboration is proving crucial to improving the efficiency with which we are able to adapt WEAP to produce accurate results for waterbird habitats.
   c) initiated a new collaboration with the University of California-Davis to apply a spatially-explicit, agent-based modeling approach to simulate effects of habitat change on energetics and carrying capacity of the landscape for foraging waterbirds.
4) Improved and expanded modeling efforts
   a) refined modeling efforts to focus on the most informative scenarios
   b) developed details of additional scenarios based on proposals by fishery and other groups that would alter water supply management
   c) started modeling in other Central Valley basins
   d) continued translation of changes in water supplies and habitats supported by those water supplies into impacts on ecology of waterfowl, shorebirds, and other waterbirds.

Most significant finding: Phase I modeling completed for the Butte Basin portion of the Central Valley indicates that under some scenarios, water supplies will not be adequate to maintain habitat at the levels necessary to support Central Valley Joint Venture goal populations of waterfowl and result in late-winter food deficits for waterfowl and other waterbirds.