

## PROJECT ABSTRACT

### Colorado Plateau Cooperative Ecosystem Studies Unit (Cooperative Agreement # H1200-004-0002)

**Park:** Dinosaur National Monument (DINO)

**Project Title:** Investigate Floodplain Processes and Riparian Ecosystem Linkages on the Yampa River and on the middle Green River in Dinosaur National Monument, Moffat County, Colorado, and Uintah County, Utah

**Funding Amount:** \$38,000

**CPCESU Partner Institution:** Utah State University (USU)

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**Start Date:** 1 August 2008

**End Date:** 30 September 2011

**Continuation of USUCP-22, J1376060003**

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**Abstract:**

Dr. Jack Schmidt (USU-fluvial geomorphology) and Dr. Mike Scott (USGS-riparian ecology) have collaborated in recent years to study linkages among dam operations, climate change, land use change, characteristics of river channel and floodplain environments, implications for aquatic habitats, and changes to valued riparian vegetation. This work has focused on the upper Green River in Lodore Canyon in Dinosaur National Monument. One component of this integrated

monitoring and research program is the detailed analysis of floodplain stratigraphy for the purpose of describing the rate, style, and mechanisms by which floodplains are formed and maintained. Improved understanding of the causal links among changes in flow and sediment supply and the relative size and characteristics of the channel and floodplains is essential information to river managers who seek to predict how changes in operations of Flaming Gorge Dam or regional changes in climate or land use will affect valued Monument resources.

This project continues a detailed floodplain analysis of the Yampa River and initiates comparable work on the middle Green River (below the Yampa confluence) between Echo Park and the downstream Monument boundary. The details of floodplain depositional history in the Yampa River and the Green Rivers below the confluence are an essential complement to the existing floodplain analysis program underway on the upper Green River in Lodore Canyon. The hydrology of the Yampa River changed little during the 20<sup>th</sup> century, and comparison of the styles of channel change and floodplain accretion between the Yampa and Green Rivers in Dinosaur National Monument will allow us to evaluate the specific roles of flow regime and tamarisk invasion in determining floodplain form. We seek to develop a comparative data base concerning rates and styles of floodplain formation for the entire upper Green River between Flaming Gorge Dam and Echo Park, the Yampa River, and the middle Green River between Echo Park and the downstream boundary of Dinosaur National Monument. These data will provide information critical to development of programs necessary to protect the native riverine resources of the Yampa River, rehabilitate resources of the upper Green River, and propose mitigation strategies for the middle Green River, including protection of critical habitat for endangered fish.

The Schmidt-Scott research team proposes to use modern dendrogeomorphic methods, stratigraphic interpretation of floodplain sediments, and established stage discharge relations to provide a detailed history of floodplain deposition in the Yampa River Canyon and in the middle Green River in Dinosaur National Monument.

This task agreement addresses the USU component of the project only. The USGS component is funded by other means and is administered through a separate interagency agreement between NPS-DINO and the USGS-BRD.

**Keywords:**

Riparian habitats, monitoring, exotic vegetation, tamarisk, Green River, Yampa River, fluvial geomorphology, floodplain stratigraphy