

NPS Projects Underway At U/WY Research Center

Three projects of some general interest now underway at the NPS U/WY Research Center are:

(1) Changes in Geomorphic Processes in the Snake River Following Impoundment of Jackson Lake. (Richard A. Marston). Findings from the second year of a 3-year project in Grand Teton NP are helping identify potential conflicts over management strategies for the Snake River. An inverse relationship has been discovered between geomorphic stability (channel bar migration, lateral shifting of channels, aggradation/degradation) of the Snake River, and the diversity (relative richness) of floodplain communities.

Commercial river runners would prefer a stable, single-thread, meandering channel for improved navigation and safety. This contrasts with the desires of wildlife biologists, who would prefer a multiple-thread (braided or compound), unstable channel, which condition is associated with maximum diversity of floodplain vegetation. Channel stability and vegetation diversity, in turn, have been affected by the operation of Jackson Lake Dam. Lower peak flows and higher late summer flows in the Snake River since 1957, when the Jackson Dam release schedule was changed, have accelerated succession by eliminating destructive early summer flows and by elevating the late summer water table.

Work in the third year of the project will involve compilation of a sediment budget for the Snake River watershed, using GIS technology to develop a predictive model of river channel response.

(2) An Evaluation of Earthquake Hazards of the Grand Teton Fault. (Robert B. Smith, John O. Byrd, David D. Susong, Arthur G. Sylvester, Ronald L. Bruhn, and John W. Geissman). The Teton fault is a major, range-front normal fault that bounds the east side of the Teton Range, located in northwestern Wyoming. This fault is the primary structure responsible for producing more than 2100 meters of vertical topographic relief and is the single most important factor contributing to the spectacular topography and scenery of Grand Teton NP.

Dr. Smith and his team are conducting a multi-year investigation of the Quaternary faulting of the Teton Fault, including timing of faulting, earthquake induced ground deformation, and paleomagnetic measurements of fault deformation. On the basis of the long term record, Dr. Smith's team believes that future earthquakes of magnitude $6.3 < M_s < 7.5$ are expected to continue in the Hebgen Lake-Yellowstone-Teton region, with expected recurrence intervals on the order of once every 1000 years.

(3) Feral Horse Distribution, Habitat Use, and Population Dynamics in Theodore Roosevelt NP. (Clayton B. Marlow, Leonard C. Gagnon, Elena Hovland, and Lynn R. Irby.) Description of the ecological niche filled by feral horses in Theodore Roosevelt NP requires information on reproductive rates, home range size, individual and band affinity to home ranges, food and shelter requirements, and seasonal diets. The information will be used to integrate horse requirements with those of elk, bison, and vegetation to determine the ungulate carrying capacity.

To date, Dr. Marlow's research team believes that long term stability of individual bands and high fidelity to certain areas suggests the likelihood of overgrazing, especially when the concurrent patterns of elk and bison are included. Based on preliminary results, they believe that horse management might have to be more intensive than that for elk or bison.