

**Title:** Impacts of human recreational activity and developments on nesting, foraging, and brood-rearing habitat of Harlequin ducks.

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**Background:** The Harlequin Duck (*Histrionicus histrionicus*) is a small sea duck that breeds on turbulent mountain streams in the summer and migrates to the coast where it remains from September through April. There are two populations in North America. The eastern population of the Canadian Maritime Provinces and the northeast U.S. has declined from historical levels. The western North America population resides along the Pacific Rim from Alaska to Oregon and breeds from Alaska south to Wyoming. Coastal surveys have also shown localized declines in this population. The Harlequin is a "Species of Special Concern" in all of the Pacific Northwest states, including Montana. Between 1987 and 1999, the Montana Natural History Program (MNHP) worked cooperatively with Glacier National Park, the U.S. Forest Service, and the Montana Department of Fish, Wildlife and Parks to document distribution, reproductive success and overall status of the Harlequin Duck in Montana. Statewide population estimates averaged 160-200 pairs, plus associated non-breeders. Most nesting Harlequins occur in northwest Montana, principally in the Flathead, Kootenai, and Clark Fork drainages and streams along the Rocky Mountain Front. The ducks tend to be rare and widely dispersed in these areas. Upper McDonald Creek in Glacier is one of the densest and productive nesting streams in Montana. Harlequins have also been documented in several other streams within the park.

**Purpose and Need:** Effective protection and management of Harlequin Ducks, a "Species of Special Concern", requires basic information on the factors influencing nest site selection, habitat use, and the production and survival of young. Upper McDonald Creek in Glacier has been the most productive stream in Montana, thus the status of the species in Glacier is of significance to its long-term viability. This project will enhance annual stream surveys through capture and marking of Harlequin Ducks on the most productive primary breeding stream in Montana, and at dispersal, migratory, and wintering sites. Information gathered will include identification of nesting, foraging, and brood-rearing habitat, territorial boundaries, areas of greatest vulnerability to human impact, and staging areas. Additional information important to the long-term viability of this species will include determination of dispersal and migratory patterns, timing of nesting activity, production of young, and site fidelity of adult and juvenile birds.

**Methods:** Pair surveys, brood surveys, and possibly captures will be used to estimate the number of breeding pairs, ducklings, and obtain information on adult males and females utilizing park streams. Additional information will be collected related to the presence or absence of anthropogenic structures (roads, trails, campgrounds, etc) near occupied streams and reactions of the ducks to the presence of these structures and associated human presence and use. This project will provide information that will contribute to resolving issues associated with effectively managing recreational activities on Harlequin nesting streams, and for ensuring the persistence of this species in Glacier National Park.

**Cost:** \$50,000/yr x 3 yrs = \$150,000