Harlequin Duck (*Histrionicus histrionicus*) Behavior and Habitat Use in a Northern Rocky Mountain Stream [TWS]

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The harlequin duck is a valuable case study for behavioral research because only 110 harlequin duck pairs are known to breed in Montana (Genter 1992). In spite of this regional rarity, McDonald Creek, in Glacier National Park (GNP) has the highest known density of harlequins in the intermountain region. The harlequin duck has been listed as Category 2 status, declining trend, under the Endangered Species Act. The USDA Forest Service lists the harlequin duck as a "Sensitive Species" in Region 1 USDA and Montana of Fish, Wildlife and Parks lists it as a "Species of Special Concern". The harlequin duck's vulnerability creates the urgent need to characterize the species habitat use, and define effective riparian assessment practices. Harlequin duck range throughout North America has decreased dramatically from the historical record. Solutions to this decrease are likely to be as varied as the biomes in which the species lives. This study is an initial component of a multidisciplinary, multiorganizational approach to harlequin conservation. This study site is important for harlequin duck research because of the extensive historic data collection at the site during 1973-75 and 1992-1994). This 2-year study began in fall, 1994 with initial habitat use surveys. Observed behavioral responses by males during the breeding season showed significant sensitivity to human presence. Responses by males varied from immediate flight, to stress behaviors such as physical positioning of the male between the intruder and the female, accompanied by repeated headbobbing. Males engaged in courtship displays culminating in mating and intraspecies aggression were significantly less sensitive to human presence. Observed behavioral responses by females during the breeding season, nesting and broodrearing showed less

sensitivity to human presence than the males, although flight or drift responses still occurred at ranges of less than 100 m. Immature ducks before full flight showed less sensitivity to human presence than the females, with flight or drift responses still occurred at ranges of less than 70 m. All classes of harlequin ducks used riparian habitat features such as exposed, in channel boulders for loafing. No classes of this species used study stream reaches with substrates smaller than large gravel.