Reproductive Biology of Breeding Harlequin Ducks in Glacier National Park

Warren K. Hansen,* Wildlife Biology Department, University of Montana, Missoula, MT 59812
Lisa J. Bate*, Glacier National Park, West Glacier, MT
Creagh W. Breuner, Wildlife Biology Department, University of Montana, Missoula, MT 59812

Glacier National Park and The University of Montana partnered up in 2011-2013 to study the reproductive biology of Harlequin Ducks (*Histrionicus histrionicus*) breeding on Upper McDonald Creek (UMC) in Glacier National Park. The Harlequin Duck exhibits unusual migratory patterns compared to other ducks, moving east to west, rather than north to south; these birds winter along North America's Pacific coast, then move inland to breed on alpine streams. The objectives of this study were to understand the environmental, physiological, and anthropogenic influences on reproduction. During the course of this study, 138 Harlequin Ducks were trapped and banded. We also attached radio transmitters to breeding females (n = 43) to enable daily tracking, behavioral observations, and nest discovery. Over the course of the study our team discovered 11 nests, tracked two broods, and located four females on their wintering grounds. With the use of radio telemetry, we documented novel habitat use

and nesting habitat. Human presence along UMC is widespread. We used occupancy and presence/absence techniques to analyze these influences. To validate assumptions of stream flow on reproductive success, we used a 23-yr data set collected by park personnel and citizen scientists to confirm these assumptions. We found a strong relationship between unpredictable stream flow and reduced reproductive success. To further understand reproductive dynamics, we measured corticosterone concentrations in feathers, which significantly predicted reproductive decision. We address the management implications from this study for future Harlequin Duck conservation.