**Investigating Non-Invasive Survey Methods for Studying Harlequin Ducks on Their Breeding Grounds in the Northern Rockies

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Long-term monitoring of Harlequin Ducks (*Histrionicus histrionicus*) (HADU) in Montana, Idaho, and Alberta has documented population declines on their breeding grounds leading to broad concerns about population status in the Northern Rockies. Additionally, biologists have struggled to monitor the status and trends in the Northern Rockies breeding population due to their rarity and the ruggedness of their habitat. Previous methods have primarily relied on direct, in-person observations. However, results from these ground-based foot surveys are highly variable owed to factors outside the observer's control such as late spring flooding which can result in HADU nests being washed out and females leaving breeding streams earlier. This can affect detections of broods causing false negatives on potential breeding streams. Thus, there is a critical need to better understand the efficacy of existing methods and to explore other survey strategies to assess HADU population status and trends. We are comparing detection probabilities of eDNA, game camera, and ground-based foot surveys to determine their relative efficacy in detecting HADU on streams. Given that HADU breeding habitat is highly variable and complex, we are evaluating these methods as related to habitat covariates. During 2022 and 2023, we visited ten streams two times each season and tested our three methods over three days. We were able to detect HADU during the late incubation and the brood rearing season using all three methods. We will discuss field techniques and preliminary results of our efforts.