

## **Project Progress Report, FY11 RM-CESU small projects Rocky Mountains Cooperative Ecosystem Studies Unit (RM-CESU)**

**Project Title:** Factors influencing harlequin duck survival and recruitment in Glacier National Park

**Project Code:** J124211002/UMT-251

**Type of Project:** Research

**Funding Agency:** National Park Service

**Partner Agency/University:** University of Montana

**NPS Agreement Technical Representative (with complete contact information):**

Mark J. Biel  
Natural Resources Program Manger  
PO Box 128  
West Glacier, MT 59936  
(406) 888-7919  
mark\_biel@nps.gov

**Principal Investigator (with complete contact information):**

Dr. Creagh Breuner  
Wildlife Biology, Organismal Biology and Ecology  
The University of Montana  
Missoula, MT 59812  
406-243-5585  
creagh.breuner@umontana.edu

**Start Date of Project:** March 15, 2011

**End Date of Project:** December 31, 2013

**Funding Amount:** \$10,000

**Project Summary, including descriptions of products, work accomplished and/or major results.** In 2011, a total of 46 harlequin ducks were captured and banded along Upper McDonald Creek during spring and late-summer capture periods. Of these 46, 14 were chicks that were captured in late-summer and received only leg bands. The remaining 32 ducks were adults, of which 12 were breeding-age females that received leg bands and a transmitter radio tag and 20 were males that received only leg bands. No mortalities were associated with the capture and handling of the ducks. Of the 12 females with transmitters, 2 confirmed nest sites were located. Three (3) additional nest sites were located by drainage but exact locations were not found due to terrain and/or signal bounce. Of the 2 confirmed nests, both were located along tributaries to Upper McDonald Creek; one 2 miles up Hidden Creek and another 2.5 miles up Snyder Creek. Of the 3 unconfirmed nests, a female was observed on each exhibiting nesting behavior for a period of weeks but the exact nest sites were either unable to be located or were completely inaccessible to researchers. Of these 3 nests, 2 were presumed to be lost

due to high water and one, while not located, was determined to be successful as the marked female was captured with 6 chicks in the late-summer.

**Number of students participating in this project: undergraduates, graduate students, degrees conferred.** One graduate student is studying under Dr. Breuner working towards a MS Degree with this project (Warren Hansen). There is also one undergraduate student assisting the graduate student at UM with data entry.

**Lessons Learned from this project.** As expected, researchers have learned that Harlequin ducks select very remote and treacherous locations for nest sites. Those nests that were located and visually verified were extremely difficult to see as a result of the female covering them in a thick blanket of feathers, down, and other natural materials. These nests would not have been found if not for the transmitter placement on the females.

Another interesting observation is that prior to nesting, the ducks prefer to spend the night at the head of Lake McDonald and then head upstream to their territories in the very early morning hours.

One of the females marked with leg bands and transmitter was observed and photographed in the Puget Sound area of Washington State in late-October 2011 by a Washington State Fish and Game biologist. This individual appeared to be healthy and was observed flying, swimming, feeding, and resting with the transmitter in place and showed no ill effects of her handling. This study will help us learn where the ducks that over-summer in the park spend their winters.

**When final products will be received.** A Master's thesis is the expected product of this research project. It is expected that the thesis will be successfully completed and defended by the graduate student by December 31, 2013.