

**Project Summary**  
**Rocky Mountains Cooperative Ecosystem Studies Unit**

**Project Title: Detection and avoidance of whales by cruise ships in Glacier Bay National Park**

**Type of Project:** Research  
**Discipline:** Natural Resources  
**Funding Agency:** National Park Service  
**Other Partners/Cooperators:** University of Montana  
**Student Involvement:** Yes, MS student  
**Effective Dates:** 7/1/2015 - 5/31/2018  
**Funding Amount:** \$123,700

**Investigators and Agency Representative:**

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Investigator: Paul Lukacs, College of Forestry and Conservation, University of Montana, Missoula, MT 59812, 406-243-5675; paul.lukacs@umontana.edu

**Project Abstract:** The Objective of this project, and the purpose of this CESU Agreement, is to facilitate a collaborative effort between Glacier Bay National Park and the University of Montana to quantify conditions that influence the process and observation variation related to whale detection and avoidance by cruise ships in Glacier Bay. The Agreement will fund a graduate student (MS) who will work with the NPS in Glacier Bay by boarding cruise ships to collect data on whale surfacing events and detection issues. The student will live in Glacier Bay and board a number of ships that enter the park by being transported out to them via an NPS vessel. Once on board, the student will conduct observations and record whale behavior. The graduate project will focus on collecting information on two related questions.

1. Process uncertainty related to whale avoidance: Quantify surfacing intervals (respiration rates) of whales around ships.
2. Observation uncertainty: test the assumptions of detection probability using double observer experiments.

**Outcomes with Completion Dates:**

August 2017-February 2018 - Student writes thesis with two chapters reflecting two questions identified above in Statement of Work. Chapters will be written as stand-alone manuscripts that will be submitted to mutually agreed upon peer reviewed science

**Keywords:** spatial models, ship-whale encounters, Glacier Bay National Park, University of Montana