



Rhonda Reidy preparing the AZFP for prey mapping just moments after tagging a whale. (photo credit: Jessica Qualley)

The University of Victoria Ph.D. candidate Rhonda Reidy has recently received funding for her project “Modifying an Acoustic Zooplankton and Fish Profiler for quantitative spatial sampling of baleen whale prey in British Columbia”, co-supervised by Dr. Laura Cowen and Dr. Stephane Gauthier. This funding comes from an NSERC Alliance grant awarded to Laura Cowen. Reidy studies baleen whale foraging dynamics. North Pacific humpback whales, in particular, are increasing in abundance and, in BC, are increasingly struck by vessels and entangled in fishing gear. New tools are required to observe their interactions including collecting data on the humpback whale diet. The goal of a partnership between Reidy and ASL Environmental Sciences (ASL) is to collaborate on a modified ASL Acoustic Zooplankton and Fish Profiler (AZFP). The AZFP is an autonomous and calibrated scientific echo sounder, designed for long-term environmental monitoring of the water column from a stationary mooring on the seafloor. In a bottom-mounted, upward-looking orientation, the AZFP monitors the presence of zooplankton and fish by measuring acoustic backscatter returns at multiple ultrasonic frequencies.

One great interest to the marine conservation community in BC is to develop reliable measurement methods for the evaluation of baleen whale diet over time. The objectives of this project are to (i) modify the AZFP for efficient use on small boats and (ii) evaluate the performance of the AZFP regarding its utility for collecting high-resolution prey data near feeding baleen whales. Reidy’s research will employ the AZFP in a vessel-mounted, downward-looking orientation from the sea surface which requires modifying the AZFP’s external hardware and developing custom software. Advantages of this modification include ruggedized portability of the instrument, expedited deployments and ease of use by non-physical oceanographers. In contrast to ship-based surveys or stationary moorings on the seafloor, portability provides high resolution data collection at low cost as well as rapid visualization and evaluation of results.

ASL will incorporate Reidy’s feedback into the modified system. Examples include a new AZFP interface unit for above-water operation on a moving platform and less complicated software for expediting system deployments. The “new” AZFP will enable enhanced spatial surveys that are economical, quantitative, and repeatable and that are conducted over a significantly shorter duration than a six or twelve-month fixed deployment on the seafloor.

ASL will contribute to this project through a cash contribution and through in-kind contributions. Engineering expertise is in collaboration with Dr. Stephane Gauthier, an acoustics scientist with Fisheries and Oceans Canada who will offer use of an AZFP purchased by DFO as well as his expertise using the AZFP data. Dr. Laura Cowen is an ecological statistician who will be providing statistical support. ASL staff will assist with the project—Jan Buermans will oversee ASL’s participation, Matt Stone will install the modified AZFP on the field boat and Rene Chave will be responsible for implementing software updates and troubleshooting. Dr. Steve Pearce, ASL’s AZFP product manager, with expertise in applied sonar systems, will be liaison between ASL and the Cowen laboratory, assisting in all aspects of the partnership.