2023 ANKNEY AWARD RECIPIENT

Caroline Blommel, MS Student

Caroline Blommel is an MS student at Colorado State University. She is analyzing long-term mark-recapture and harvest data (1990-2021) to estimate the joint impact of harvest and seasonal climate change on the demographic rates of Pacific black brant (Branta bernicla nigricans) that breed on the Yukon Kuskokwim Delta.

Brant are coastal native plant-specialists, making them uniquely dependent on the health of coastal ecosystems throughout their migratory range and particularly sensitive to rapidly changing coasts as the climate warms. Additionally, brant face harvest pressure as a culturally important game species.

Caroline will develop custom multi-event models in a Bayesian framework to estimate annual cause-specific mortality and breeding propensity of brant as well as the effect seasonal climate change-driven processes (such as the El Niño Southern Oscillation) have had on these vital rates.
Multi-event models allow for some uncertainty in the assignment of breeding status to estimate annual breeding propensity more accurately, while also allowing for the discernment of harvest and non-harvest mortality. Caroline will also use this model with data on projected environmental parameters and simulated harvest scenarios to forecast how brant demography will respond to seasonal climate change and harvest in the future.

Caroline's research will provide valuable insight into how the brant population will be jointly impacted by climate change and harvest, and could help inform anticipatory management decisions to compensate for the demographic impact of climate change.