

## RAYMOND DARWIN CAMERON III (1941–2014)

Ray Cameron was widely known as an Arctic scientist and a caribou biologist. And Ray was just as well known and appreciated by colleagues, friends, and family as social and sociable, generous, and as helpful to others as a human can be. In his community of Ester, Alaska, Ray probably plowed more driveways for friends, hosted more gatherings, and organized more barn and house raisings than anyone else.

While Ray was a true-blue scientist, he was just as successful in his many “blue-collar” interests and endeavors. He could move between cogent and meticulously logical scientific argument and then, being an uninhibited entertainer, play his guitar and sing ballads and folksongs. He was an accomplished carpenter. He loved boats, airplanes, diesel cars, and trucks, and overhauled, rebuilt, and maintained many, while keeping his many other “projects” going.

After receiving his BS degree from Ursinus College, Colleagueville, Pennsylvania, and teaching biology for a couple of years, Ray, wife Jill, and daughter Amy moved in 1966 to Alaska, where Ray pursued a PhD in nutritional physiology under the guidance of Professor Jack R. Luick. Ray followed his PhD in 1972 from the University of Alaska with a 30-year career as a research biologist for the Alaska Department of Fish and Game (ADF&G). His strengths and leanings as a scientist were well recognized in his parallel position as a principal research scientist within the Institute of Arctic Biology and an affiliate professor of wildlife management within the Department of Biology and Wildlife at the University of Alaska Fairbanks. Ray was an untiring advocate for research and a frequent publisher of scientific papers.

Ray’s PhD research described for the first time the seasonal dynamics of water metabolism and body compositional changes in free-ranging animals at the Reindeer Research Station at Cantwell, Alaska. Ray showed that reindeer were highly adapted to conserve protein-nitrogen even when faced with a low-protein diet. He considered this physiological mechanism as an adaptation to the caribou’s foraging on lichens, their main winter forage, which are low in protein.

Ray joined ADF&G in 1974 as research biologist studying caribou responses to the Trans-Alaska Pipeline and development in the Prudhoe Bay oilfield. He, with ADF&G collaborator Ken Whitten, was instrumental in using radio-collared caribou to identify the Central Arctic Herd as a distinct herd. Then he led the way to measuring how caribou cows avoided the roads and pipelines after calving. This displacement, together with variation in insect harassment, could explain differences in herd productivity. Relating these findings to estimated productivity of females that calved within and adjacent to the oilfield led to recommendations for caribou management. Ray’s findings and publications were not without controversy, and even in declining health, he was writing up the last of his analyses on the Central Arctic Herd.



Ray Cameron at Anaktuvuk Pass in 1975 with the Cessna 185 he was piloting for radio-tracking caribou. (Photo credit: Jim Davis.)

Ray’s results and their scientific rigor have underpinned much subsequent understanding of how caribou respond to industrial development. He and his colleagues used monitoring of radio-collared females as a means to understand the seasonal dynamics of distribution, body condition, and reproductive success, while also determining survival and growth of calves. Those findings have led to the understanding that Arctic caribou can be habitat-limited, and lifetime reproductive success involves breeding pauses to regain energy and protein reserves after successful weaning. In all, Ray led and contributed to our collective understanding of evolutionary strategies and how caribou adapt to a changeable environment.

Given his background in research, management, and conservation of caribou, Ray was appointed to the U.S. National Research Council panel to review the cumulative environmental effects of oil and gas development on Alaska’s North Slope. The analyses in this publication (Committee et al., 2003) are noted for their depth of interpretation on the ecology, behavior, and nutritional interactions as caribou make use of the landscape with increasing density of industrial infrastructure. It was one of the first attempts to analyze the cumulative effects of industrial development on an Arctic species.

Beside his work for ADF&G, Ray as a scientist was influential and sought after as a mentor of graduate students, and he served on a number of graduate committees and advised both PhD and Master’s students. His editorial and logic skills were legendary in Alaska. For those same editorial skills and an uncanny ability to nail weakness in data and interpretation, Ray was both feared and admired as a reviewer for publications. But he always had time to help improve the publications and was a friend and supporter of many colleagues.

In summary, perhaps Ray's own words best describe his niche, vision, and mission as an Arctic scientist. In the preface of the Proceedings of the 3rd North American Caribou Workshop (Cameron et al., 1988), he wrote: "This volume is dedicated to the caribou and their ways, to those who endeavor to understand them, and to the belief that understanding will bring forth the wisdom to ensure that those ways are preserved."

#### REFERENCES

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