



Al Martin HCTF Conservation Scholarship Recipient 2026



Sydney Dixon

Sydney is a master's student at Royal Roads University whose research examines how marine-derived nutrients influence the resource partitioning, habitat use, and spatiotemporal behaviour of wolves, American black bears, and cougars on Nootka Island, on the west coast of Vancouver Island, British Columbia. Her research focuses particularly on how seasonal food resources such as Pacific salmon and Pacific herring shape the ways large carnivores use and share the landscape, and how these relationships may change in an ecosystem increasingly affected by habitat fragmentation, industrial logging, and other human pressures.

Working in partnership with the Nuchatlaht and Mowachaht/Muchalaht First Nations, Sydney's research integrates community collaboration, local priorities, and stewardship perspectives into wildlife research and conservation planning. Nootka Island provides a particularly important setting for this work, as extensive habitat alteration and the loss of old-growth forests have created a highly fragmented landscape while marine-derived nutrients continue to connect coastal and terrestrial ecosystems. Her research seeks to better understand how large carnivores adapt to these changing conditions and how access to marine resources may help facilitate coexistence among species.

Sydney is using a multi-method approach that combines remote camera trapping, scat DNA metabarcoding, and GIS-based environmental analysis. Approximately 35 camera-trap sites are being used to monitor carnivore presence, habitat use, movement, and seasonal activity across different habitat types, including old-growth and secondary forests, beaches, estuaries, and areas affected by logging and other disturbance. Camera locations are selected using a constrained random stratified approach, while field observations such as wildlife trails, tracks, scat, scent marking, and important seasonal food sources help inform deployment within selected sampling areas. Time-stamped camera detections will allow Sydney to examine daily and seasonal activity patterns and determine the degree to which wolves, bears, and cougars overlap or separate their use of space and time.

To complement the camera data, Sydney is collecting scat samples throughout the year for DNA metabarcoding. These samples will be used to identify prey consumed by each carnivore species, examine seasonal changes in diet, and assess the breadth and overlap of their resource use. Together, the camera and dietary data will help identify the ecological mechanisms underlying resource partitioning, including the influence of prey availability, habitat conditions, seasonal food resources, and interspecific competition.

Sydney is also incorporating GIS-based environmental data, including information on logging, habitat disturbance, roads, recreation, and other human activities. By integrating these landscape variables with carnivore detections and dietary information, her research will identify areas of ecological importance, document patterns of habitat use and movement, and identify potential human-wildlife conflict zones. Key outputs will include spatiotemporal maps of carnivore presence and habitat use, preliminary profiles of carnivore diets and seasonal dietary shifts, and a mammal species inventory for First Nations partners.

Sydney's research aims to strengthen understanding of the connections between marine and terrestrial ecosystems and provide applied knowledge to support conservation and wildlife management on Nootka Island and beyond. Her findings will be relevant to wildlife managers, land-use planners, conservation organizations, and Nuu-chah-nulth Nations seeking to balance biodiversity conservation, habitat protection, and human activities in coastal British Columbia. By examining how apex predators respond to changing food availability and fragmented landscapes, her work contributes to broader efforts to develop ecosystem-based and adaptive approaches to conservation in British Columbia.



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