Thinhorn sheep populations in BC and the southern Yukon are managed to maximize hunting, viewing, sustenance opportunities and as an important ecological component. To be effective, management objectives also need to consider the impacts of resource exploration and development activities on habitat quality to safeguard the long-term viability of wild sheep herds. With interest in northern resource development on the rise, it is anticipated that the landscape level impacts these activities have on mountain ungulate range will also increase.

Photo by Joe Rocca

Effective conservation of thinhorn sheep populations relies on the establishment of biologically meaningful population units for management and protection of movement corridors between important habitats. Delineating true population boundaries and landscape linkages is necessary to inform resource development permitting processes so the viability of herds and hunter harvest opportunities are maintained and protected. At present, management units are based on subspecies designation, pelage colour and biogeography, but these measures are imprecise and largely uninformative for determining sustainable harvest limits

A key outcome addressed by this study is the designation of biologically sound population units for management. Our aim is to determine the genetic population structure of BC and southern Yukon thinhorn sheep, and therefore identify genetically discrete subpopulations. Subpopulation designations for management are ideally supported by genetic analyses that identify statistical differences between subpopulations in allele frequency. These are also likely to be functionally independent, and therefore should form the basis for population management unit designation. Genetically differentiated herds are significant for conservation because they are connected by such low levels of gene flow that they are functionally independent, and these could be at high risk of extirpation. Information from of this project will help mitigate this risk, as it will guide the updated FLNRO thinhorn Harvest Procedure and Policy, and provide a better understanding of the relationships amongst herds and subpopulations. The delineation of herd boundaries and collection of reference genetic data will also support forensic analysis and enforcement related to the illegal harvest of thinhorn rams.

Our project will help the public industry and government better understand the magnitude of anthropogenic impacts on herd viability, population connectivity and range occupation. The cost- benefit balances of resource development initiatives and sustainable rates of harvest are better evaluated with a full understanding of the biological integrity and continuity of thinhorn sheep herds.