Shifts in Birth Dates and Lambing Period in Dall's Sheep: Interannual Variation or Response to Climate Change?

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ABSTRACT: Concern about low annual lamb recruitment since 2019 at Thechàl Dhâl' (Sheep Mountain) in Kluane National Park and Reserve in southwest Yukon, Canada, caused us to examine the temporal dynamics of lambing since the early 1970s. Survival of Dall's sheep (*Ovis dalli*) lambs depends on ewes giving birth when environmental conditions are optimal for spring plant emergence, ease of movement, and thermoregulation. Research suggests ewes may have some control over timing of parturition in response to weather conditions leading up to lambing but less is known on the potential long- term shifts in Dall's sheep reproductive phenology because of climate change. In spring 2023 we surveyed lambing events systematically at Thechàl Dhâl'. We compared birth dates and lambing period duration with historic estimates from 1971 and 1972 using binomial generalized linear models. We found the peak birth date was earlier by 4–5 days and the window of bulk lambing was narrower in 2023. This was indicated by significantly different regression slopes and narrower interquartile ranges (5.6 days versus 7.7 and 9.9) for 2023 data versus that in 1971 and 1972. It is not clear whether the differences we saw in 2023 truly reflect an earlier shift in reproductive phenology due to climate change or natural interannual variation. We consider our results preliminary and plan to continue more lamb surveys at Thechàl Dhâl'. If lambing is indeed occurring earlier and over shorter periods due to phenological shifts, lambs could be more vulnerable to variable spring conditions or predation.

Biennial Symposium of the Northern Wild Sheep and Goat Council 24:102; 2024

KEYWORDS: Canada, climate change, Dall's sheep (*Ovis dalli*), Kluane National Park and Reserve, lambing, parturition, phenological shifts, Thechàl Dhâl' (Sheep Mountain), Yukon.