Rayl, N. D., Fuller, T. K., Organ, J. F., Mcdonald, J. E., Otto, R. D., Bastille-Rousseau, G., Soulliere, C. E. and Mahoney, S. P. (2015), Spatiotemporal variation in the distribution of potential predators of a resource pulse: Black bears and caribou calves in Newfoundland. The Journal of Wildlife Management, 79: 1041–1050.

Abstract: Understanding spatiotemporal variability in prey accessibility is important for disentangling predator-prey interactions and is relevant to management interventions to reduce predation. Recently, caribou (*Rangifer tarandus*) in Newfoundland declined by 66%, with calf predation by black bears (*Ursus americanus*) implicated as a major proximate mechanism of the decline. Most predation occurs when calves are aggregated on calving grounds. We used telemetry data from 271 caribou and 45 black bears in 2 caribou herd ranges to examine spatial variability in calf accessibility, identify the distribution of potentially predatory bears, and assess the aggregative response of bears to the calf resource. We predicted whether a bear was a visitor to a calving ground during the calving season (a potentially predatory bear) based upon its sex, the herd range it occupied, its distance to the calving grounds, and the season. The distribution of potentially predatory bears and their degree of segregation from non-predatory bears varied seasonally. The probability of a bear visiting the calving grounds during calving decreased with increasing distance from the calving grounds, and was greater for males than for females in all seasons at distances beyond 2.4 km from the calving grounds. Residency time of bears increased in the calving grounds of 1 herd during calving, suggesting an aggregative response to neonates in that area. For both herds, the estimated distribution of potentially predatory bears was much larger than the calving grounds, illustrating that the relevant scale of predator-prey interactions may extend far beyond the area where lethal encounters occur. Our work highlights the value of examining spatiotemporal dynamics of predator movements prior to implementing ecosystem manipulations designed to reduce predation and provides a modeling framework that can be used to guide management interventions in systems with aggregated prey.