

## Thresholds or intractable complexity – Is there a middle ground for effective conservation and management of wild *Rangifer*?

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A disturbance threshold is an appealing idea for resource and conservation professionals focussed on the long-term persistence of wild *Rangifer*. If achievable, limits set on development can greatly simplify planning exercises at the scale of landscapes and tactical decisions at specific resource development sites. Contrarians state that the complexity of caribou-environment-human relations makes thresholds a naïve construct at best and at worst a science and management target that could impede effective conservation and management. Using examples from my research, I argue that the threshold concept has value, but that it should not be the end-point for understanding and managing the impacts of anthropogenic developments. Thresholds are valid when revealing the point at which small-scale development activities result in trivial impacts. However, the state of our science and the values at risk will prevent the meaningful application of thresholds to the understanding and maintenance of long-term population and distributional dynamics. In these cases, mechanistic and participatory approaches, although expensive and time consuming, are the best route to more effective conservation and management decisions. Thresholds are potentially one part of a larger discussion on how we manage the environment for *Rangifer*, not the stop point in a technical exercise designed to identify levels of development activities.

