

The role of stress in mass mortality of wood lemmings (*Myopus schisticolor*)

Background

The wood lemmings (*Myopus schisticolor*) is a small rodent that during years of low population size is restricted to moss-rich old-growth spruce forest where it is exclusively feeding on mosses. The species is known for population outbreaks followed by mass mortality. During outbreaks, wood lemmings are commonly found dead along roads, railroads, in villages, on lawns, in basements etc. The reason for the outbreaks are unknown, but might be related to the – especially in outbreak years – skewed sex ratio of the species. Likewise, we know very little about the causes of the mass mortality that has been speculated to be caused by either predation, diseases, stress and/or food shortage.

During a total of three outbreak years from three different population cycles, we have sampled wood lemmings that are biobanked at -20°C. This material along with wood lemmings sampled within the national monitoring program of small rodents provides a unique opportunity to examine different factors potentially driving mass mortality. This project will focus on the stress-hypothesis by studying a stress indicator, the steroid hormone cortisol in different matrices (e.g. blood, feces, adrenal glands).

Primary questions

1. Have wood lemmings during outbreak- in contrast to non-outbreak years higher concentrations of cortisol?
2. How do cortisol concentrations differ among matrices?
3. If cortisol concentrations are higher in outbreak years, are they at levels that could cause/contribute to mass mortality?

Work plan and methods

1. Thorough literature study on stress indicators in mammals
2. Development of study design and identification of suitable matrices
3. Lab analyses determining cortisol concentrations
4. If interesting, participation in small rodent trapping to get a better “feeling” for the data
5. Data analyses
6. Thesis compilation

Extent

Preferably 60 credits, but 30 credits might also work.

Contact

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