Reindeer health assessment in Iceland 2012

Rán Þórarinsdóttir East-Iceland Natural History Institute, Tjarnarbraut 39a, 700 Egilsstaðir, Island.

Genetic bottleneck

Today a winter population of about 5.000 reindeer live in Iceland. They derive from semi-domesticated herds in North Norway that were imported more than 220 years ago (Thorisson 1984). A study on founder effects implies that the genetically effective founder population was possibly less than 15 animals (Röed et al. 1985).

History

The reindeer population increased in size throughout the early 19th century but declined in the latter half of that century because of hard winters. The population is believed to have consisted of only a few hundred individuals in 1939. After this the population gradually increased in size, spending summers close to the glacier Vatnajökull, migrating (max 150km) east and north in autumn, and descending to lower ground in winter.



A study on mineral nutrition status in Icelandic reindeer showed high, possibly toxic levels of iron in reindeer foodstuff. The cause is acid insoluble ash, associated with soil particles which adhere to vegetation (Chase et al 1994).



Sustainabilety

As the reindeer population grew, a management plan became necessary. Large natural herbivores didn't exist in Iceland before the reindeer, and the vegetation is vulnerable to grazing. As the reindeer share pastures with livestock, it became important early on to keep reindeer densities at low levels. Densities are in most cases far below 1 animal/km².

Stress

Because of its isolation Iceland, is spared many of the threats that cause trouble for continental species. The island has no large predators, and insects, parasites and diseases are few and of little consequence to the population, so far (Guðmundsdóttir 2006).

The fertility in the population is high (over 80-90%) and mortality in most year very low. Harsh winters with widespread non-penetrable ice crust and lack of available food source have until recent times been the main reason for high "natural" mortality in singular years. Such conditions are rare in later years and today the population size is controlled with harvest/hunting. The hunting pressure is high (20-30%) and causes considerable stress during the two month hunting period.

Threats

Isolated and protected surroundings together with low genetic variability in the Icelandic reindeer population, makes them vulnerable to future ecological changes.

Climate changes with alteration in vegetation, food availability and pathogen threats are likely to affect the population in future. Less snow may lead to more exposed vegetation cover and faster withering during summer. New pathogen species or higher abundance of existing species can also seriously affect reindeer condition.

Roads and industrial projects have already fragmented the reindeer habitat somewhat with potential cumulative effects that have yet to be revealed. Originating from semi-domesticated animals and living in predator free surroundings might make them relaxed to disturbance but on the other hand, heavy annual hunting pressure is likely to keep them shy and sensitive to stress.

The reindeer in Iceland are of economical importance in their local area. What started out as a harvest with primitive means for a handful of purposeful farmers, developed into a strictly managed and popular hunt. Hunting reindeer in Iceland is expensive and almost all the income goes directly to the local area.

In the last twenty years there has been a reduction in the number of livestock utilizing the same pastures as the reindeer. Less grazing pressure together with a milder climate has boosted vegetation. The demand for higher harvest is becoming more strident, and monitoring organizations need good arguments to defend low reindeer numbers.



REFERENCES

Gudmundsdottir, B 2006. Parasites of reindeer (*Rangifer tarandus*) in Iceland. MSc thesis. In Icelandic with English summary.

Thórisson, S. 1984. The history of reindeer in Iceland and reindeer study 1979-1981. *Rangifer* 4 (2): 22-



Health Assessment

The East-Iceland Natural History Institute is planning a reindeer collection in Iceland in 2012. We hope to establish this in cooperation with the CARMA and Rangifer Health Network. The objective is a comparable health assessment to evaluate the condition of the Icelandic reindeer population.

In general the body condition is good but few studies so far have focused on reindeer health. Seventeen parasitic species have so far been identified; eight protozoans, one cestode and eight nematodes. (Berglind Guðmundsdóttir 2006). Nothing yet is known about viral or funguss infections in reindeer and only a few bacterial diseases are known.

A health assessment, following internationally accepted protocols, will give us the foundation to compare Icelandic herds with others worldwide. It will also provides us with a zero-point, a standard, to compare future conditions.

Carma (no date). [webpage]. Accessible on the link: <u>http://carmanetwork.com/pages/viewpage.action?pageId=1114390</u> [last viewed 26. November 2010]. Chase, L. A. Studier, E. H. & Thorisson, S. 1994. Aspects of nitrogen and mineral nutrition in Iceland reindeer, *Rangifer tarandus*. Comp. Biochem. Physiol. 1:63-73.