A New Protection Strategy for the Saimaa Ringed Seal, Due to Climate Change

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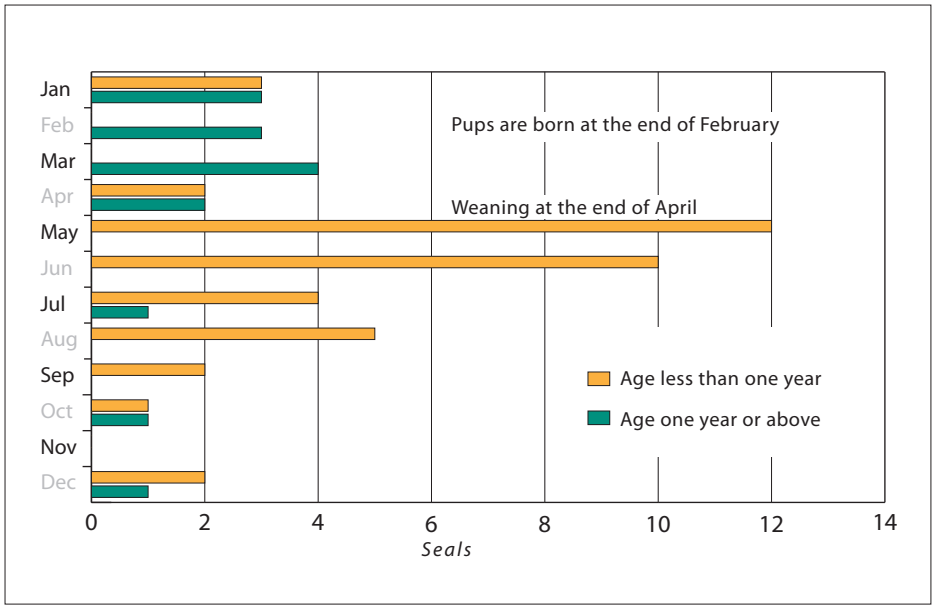

Fig. 2. By-catch numbers observed, by month, in 2000–2010.

An endemic relict of Finland, the Saimaa ringed seal (*Pusa hispida saimensis*) lives only in the fragmented freshwater body Lake Saimaa. With a small population, of about 290 seals (winter stock in 2010–11), it is probably the world's most endangered seal species and has an IUCN status of CR. Climate change poses a long-term threat to the Saimaa stock, and there are also several short-term threats. The only truly effective way to promote survival of these seals and increase population size is to restrict fishing, which kills seals as a side effect.

The mean annual pup production in 2000–2010 was 54, and in normal winters about eight per cent of the lanugo-coated pups were found dead in lairs. Two consecutive winters, 2005–2006 and 2006–2007, were exceptionally mild and there was a lack of snow for lairing in the area of the lake. Several pups were born on open ice, which increased the rate of lair mortality to 29% (Fig. 1). Abnormally high lair mortality over two winters decreased the population by about 20 seals (Sipilä and Kokkonen 2008, ICES 2008).

To compensate for the high lair mortality resulting from the mild winters, the Finnish government drew up a new protection strategy, the main goal of which was to decrease the by-catch mortality of young seals. Previously, approximately 70% of pups died before they reached the age of one year. With the new strategy, which increases the size of fishing restriction areas, this figure very probably will decrease to less than 50%. The main target is to reduce by-catch accidents during 15th April to 30th June (Fig. 2, 3 and 4). Springtime fishing restriction is likely to decrease the bycatch mortality of young seals, those under one year old, by approximately 35%. To reduce the by-catch mortality of seals aged over one year, the state passed an act in 2011 that forbade using certain fishing methods, such as strong mesh nets, large fish traps, and fish-baited hooks, in the main part of the Saimaa ringed seal's habitat.

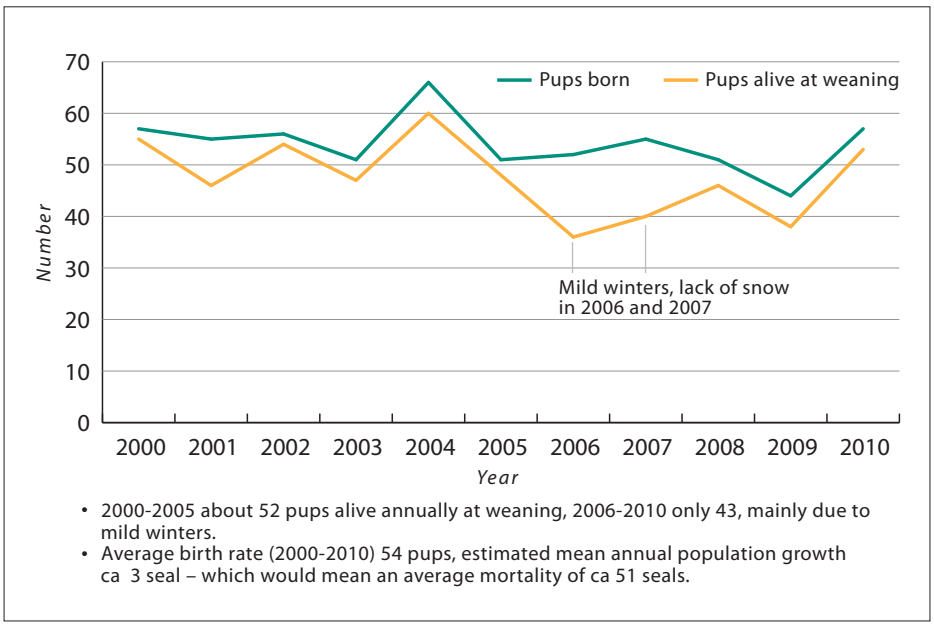

Fig. 1. Pups born and pups alive at weaning in the years 2000–2010.

The weaning age is approximately two months. In total, 174 more than two months old seal carcasses were found in 2000–2010. Most of the carcasses, 97 bodies (55.7 %), had decomposed too much for determination of the cause of death. Fishermen sent 49 by-catch seals to Metsähallitus Natural Heritage Services (NHS), and local people or NHS staff found 16 by-catch bodies on the shoreline. Approximately 40% of the seal carcasses have been found in Lake Saimaa itself (Sipilä and Kokkonen 2009). These figures suggest that many more than the 65 bodies observed were the result of fishing gear in the years 2000–2010.

The Finnish Game and Fisheries Research Institute, the University of Eastern Finland, and NHS launched a joint population modelling project in autumn 2010 to estimate total by-catch mortality on Lake Saimaa. A rough estimate generated earlier from 2000–2009 data placed annual by-catch mortality at between 10 and 20 seals.

According to the widely used Potential Biological Removal formula, the Lake Saimaa by-catch mortality rate should be about one seal per year. The number of harbour seals in the isolated population on the Swedish coast of the Baltic Sea increased from approximately 100 to over 600 between 1990 and 2010. This indicates that even a relatively small seal population can reach a growth rate of nearly 10% per year (Härkönen and Isakson 2010). In the foreseeable future, the Saimaa ringed seal population will not reach a favourable conservation status, and the core idea of the new protection strategy is for the Saimaa seal population to grow about 3–4% per year (Anon. 2011). This strategy allows for several by-catch accidents each year affecting the Saimaa seal population.

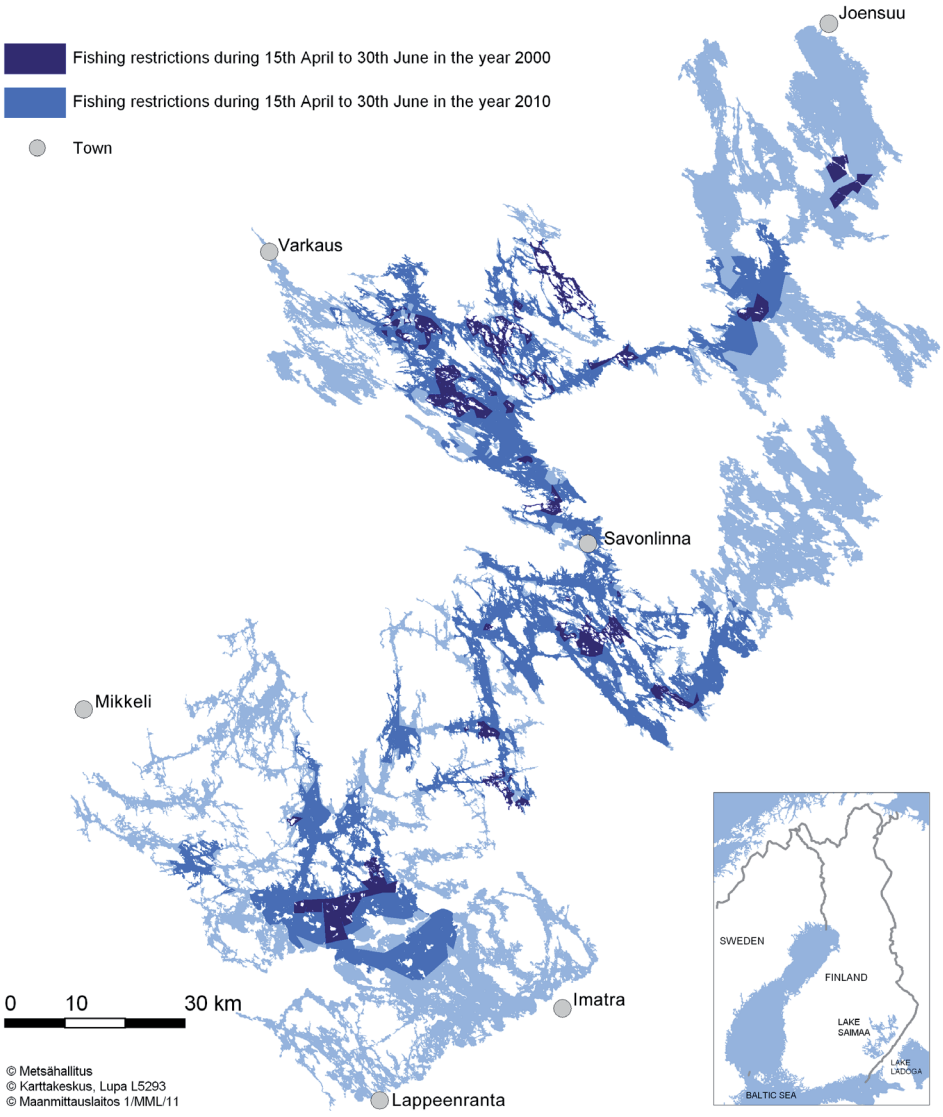

Fig. 3. Fishing restrictions 15.4.–30.6. in Lake Saimaa in the years 2000 and 2010.

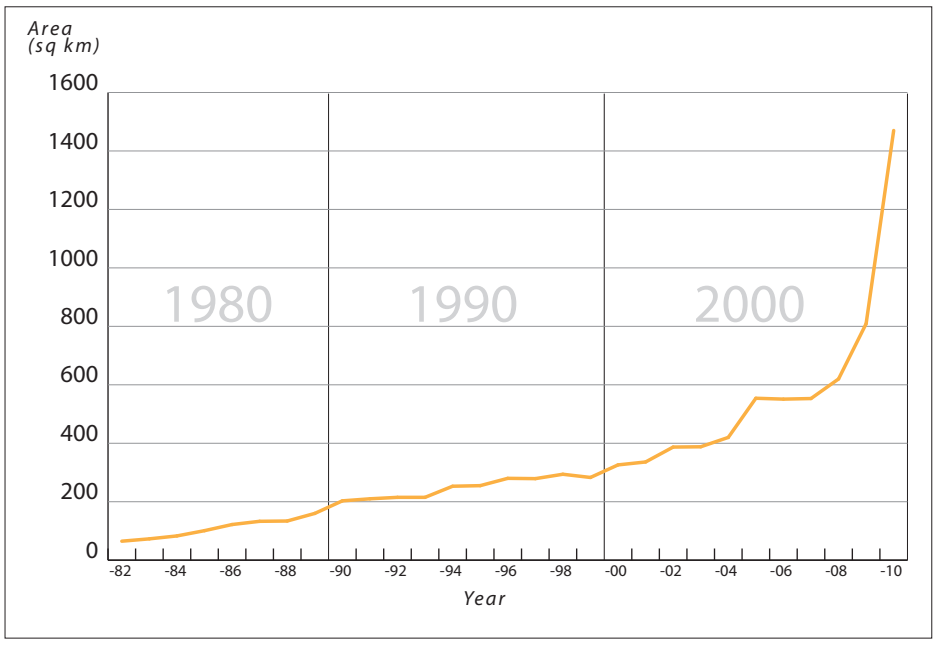

Fig. 4. Expansion of the fishing restrictions 15.4.–30.6.

References:

Anon. 2011: Saimaannorpan suojelustrategia ja toimenpidesuunnitelma. Saimaannorpan suojelutyöryhmän ehdotus 31.3.2011. Ympäristöministeriö, luontoympäristöosasto, Helsinki. 110 pp.

ICES. 2008: Report of the Working Group on Marine Mammal Ecology (WGMME), February 25–29 2008, St. Andrews, UK. ICES CM 2008/ ACOM:44. 86 pp.

Sipilä, T. & Kokkonen, T. 2008: Saimaannorppakannan tila vuonna 2007 – Ilmaston muutoksen vaikutus sekä sen aiheuttaman haitan kompensoinnista. Metsähallitus, Etelä- Suomen Luontopalvelut, julkaisematon asiakirja nro 657/41/2008. 17 pp.

Sipilä, T. & Kokkonen, T. 2009: Saimaannorppakannan tila vuonna 2009 – Saimaalle syntyi poikkeavan vähän kuutteja. – Raportti asianumero 1511/41/2010, Metsähallitus, luontopalvelut, Etelä-Suomi, 31.3.2010. 19 pp.

Härkönen, T. & Isakson, E. 2010: Status of harbour seals (Phoca vitulina) in the Baltic proper. In: Desportes, G., Rosing-Asvid, A., Bjørge, A., & Waring, G.T. (eds), Harbour Seals in the North Atlantic and Baltic. NAMMCO, Sci. Publ. 8: 71–75.