Core home range areas as an indicator of breeding time territoriality in female Saimaa ringed seals (*Pusa hispida saimensis*)

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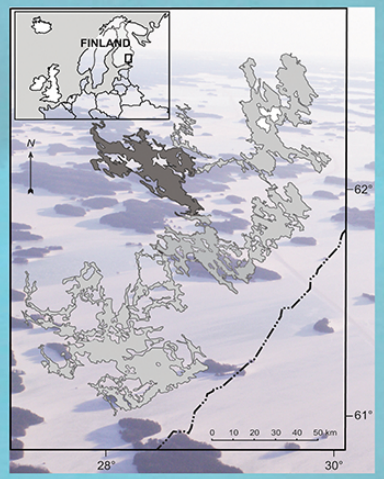

Figure 1. Study area (dark grey) Lake Haukivesi in central Lake Saimaa, southeastern Finland.

INTRODUCTION

Ringed seal males (*Pusa hispida*) are suggested to be territorial during the breeding season, but it is not known do females exhibit any territoriality. In this study, we investigated breeding time spatial ecology of female Saimaa ringed seals (*P. h. saimensis*). These endangered seals are living landlocked in Lake Saimaa, Eastern Finland (Fig. 1) with population estimates based on annual lair census ca. 360, and some 60-80 pups are born annually in February-March.

MATERIAL & METHODS

The research was carried out in central Saimaa, Lake Haukivesi basin (Fig. 1). Altogether eight female seals were tracked during the ice-covered period, from December to April, in 2008-2013 by VHF (ATS, USA) or GPS-phone tags (SMRU, Scotland) to estimate habitat usage. In addition, birth lair location data based on placentas (N = 59, Fig. 2) found during 2011-2013, were used to estimate breeding density of the seals within the study areas. Minimum convex polygon (MCP 95% and 50%) was used to describe the home ranges and core areas of the seals using QGIS2.14.12 software.

RESULTS & DISCUSSION

The average ± SD home range was 4.1 ± 3.0 km^2 and core area 1.6 ± 1.4 km^2. Total home ranges of tracked females overlapped with each other's more or less, but the core areas did not (Fig. 3). In addition, when radius (706 m) of an average core area was used as a buffer around the birth lair sites, only one birth lair situated inside each buffer. This may indicate that ringed seal females show a degree of territoriality against same sex during the breeding season. Due to high site fidelity (Fig. 3), breeding site territories of female ringed seal's may be also inter-annual. This new knowledge can be utilized in population monitoring and conservation.

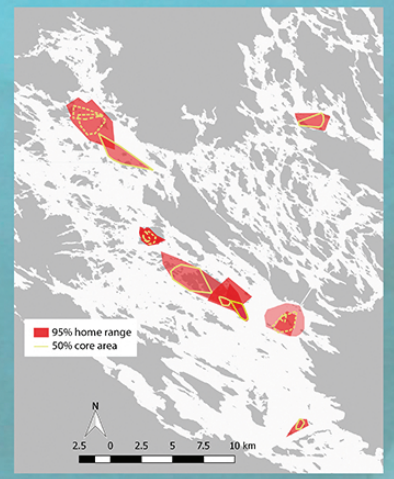

Figure 3. Wintertime home ranges (MCP 95%, red) and core areas (MCP 50%, yellow) of 8 female Saimaa ringed seal. Dotted lines shows the core areas of individuals tracked multiple season.

Saimaa ringed seal, *Pusa hispida saimensis*.
Photo: Mervi Kunnasranta

Background photo: Juha Taskinen

Saimaa ringed seal haul-out and gives birth to a snow lair situatued usually on the shores of small islands.
Photo: Mervi Kunnasranta

Figure 2. Placenta found by a diver under the birth lair location. Photo: Markku Tissarinen

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