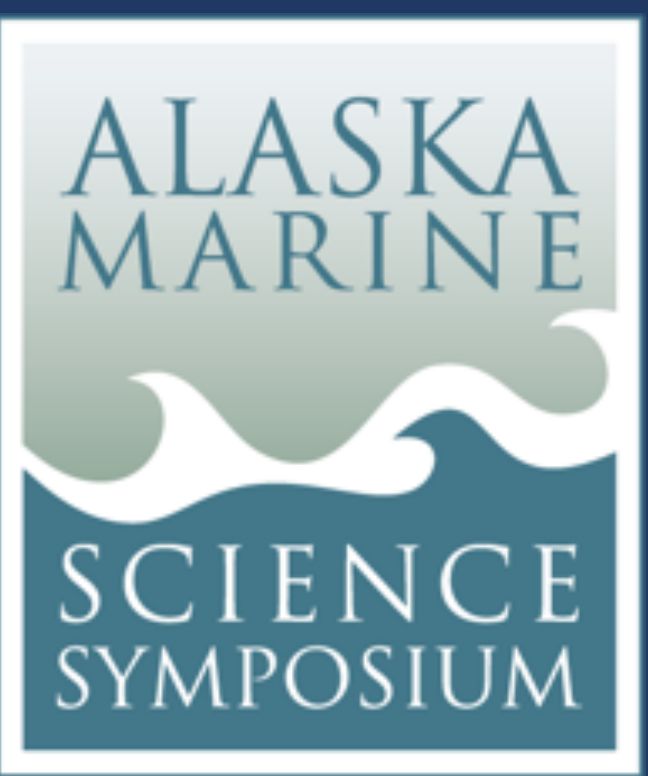


Informing best practices for field body condition assessments of wild Arctic seals



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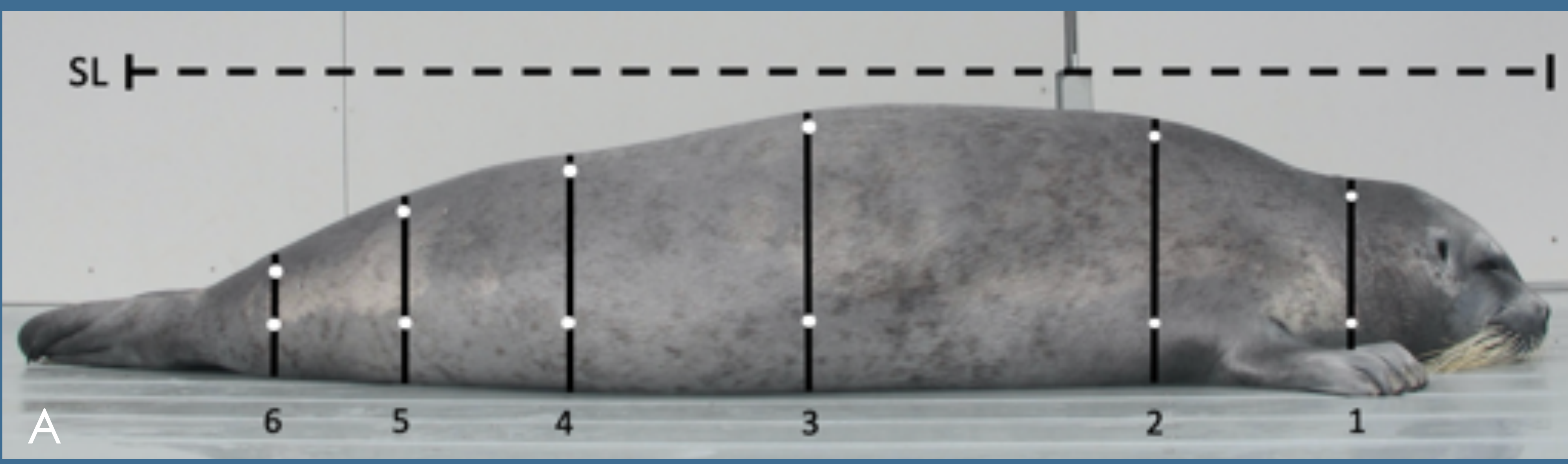
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Background

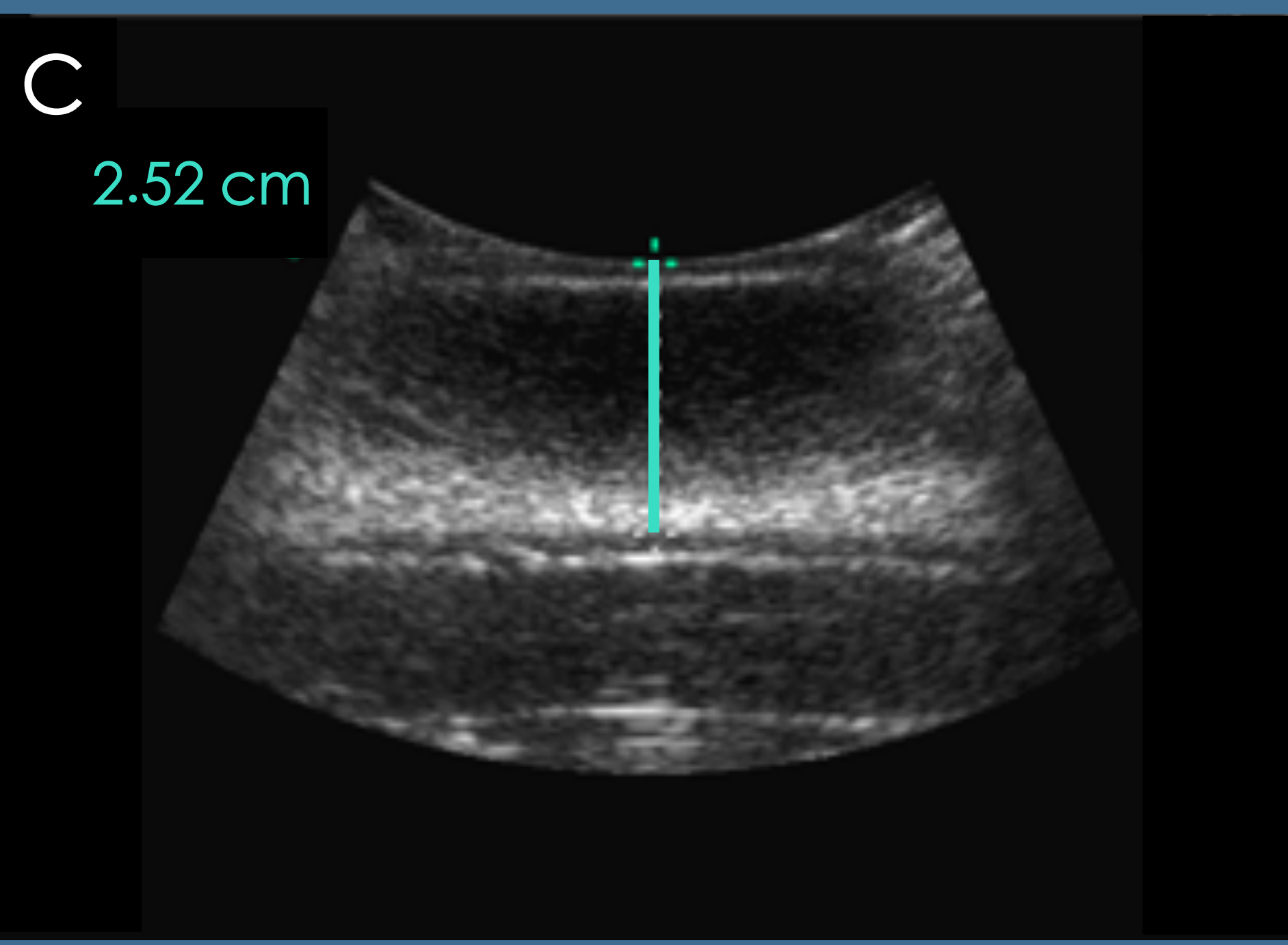
Trained Arctic seals in human care provide the opportunity to study longitudinal changes in blubber mass and determine accurate metrics of body condition across species, age classes, and seasons. These metrics can then be used in the field to assess the health of free-ranging seals, where data are collected via direct handling of animals or using unmanned aerial vehicles.

Methods

We determined the true body condition of 3 ringed seals, 4 spotted seals, and 1 bearded seal using traditional truncated cones methods₁ over 36 months and compared to simpler field body condition metrics (*e.g.* mass/standard length, the LMD index₂ [$\sqrt{SL/mass} \cdot \text{blubber depth}$], girth, and blubber depth at specific locations) using linear regressions.



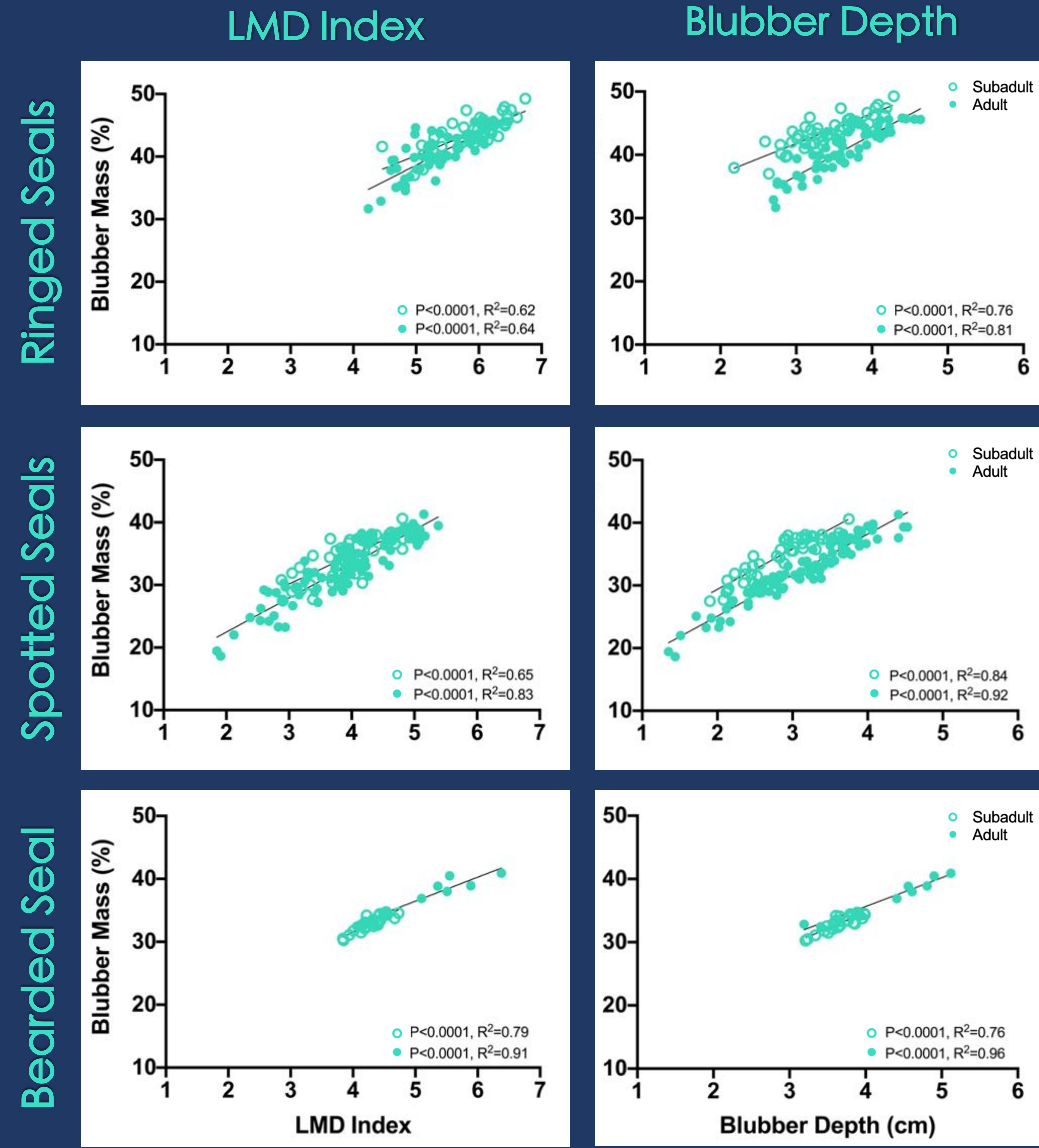
A. Measurements used to assess body condition: standard length (SL), girths at locations 1-6 (black solid lines) and blubber depths at specific markers (white circles).



B. Blubber depth measured using a portable ultrasound.

C. Representative ultrasound image showing blubber depth from the top of the skin to the base of the blubber layer.

Findings



Ringed seals: the LMD index and blubber depth at the dorsal umbilicus (subadults) and lateral middle (adults) were the best metrics.

Spotted seals: the LMD index and blubber depth at the dorsal pelvis (subadults) and lateral middle (adults) were the best metrics.

Bearded seal: the LMD index and blubber depth at the dorsal middle (subadult) and lateral umbilicus (adult) were the best metrics.

Sternal blubber depth, commonly collected during field procedures, was also a reasonable indicator of body condition for these Arctic species.

Acknowledgements and Authorizations

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¹Gales & Burton 1987, ²Ryg *et al.* 1990

