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### **Using physiological measures of captive seals to inform best practices of rapid body condition assessments of wild Arctic seals**

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Predicting population-level responses to rapidly changing Arctic conditions requires empirical demographic and physiological data. Unfortunately, Arctic seals are particularly difficult to sample in the wild due to their remote, ice-covered habitats. Further, the ongoing Unusual Mortality Event (UME) of Alaskan ice seals—declared due to abnormally high numbers of seals stranding in poor body condition—highlights the urgent need to accurately monitor the health of wild populations. Body condition is commonly assessed in seals via blubber content and provides an important metric of individual health. As comprehensive assessments of body condition are generally not feasible to conduct during field research and subsistence activities, we evaluated the efficacy of simple metrics of body condition by comparing measurements obtained from captive seals. We used fine-scale morphometric data to calculate blubber content for one bearded (*Erignathus barbatus*), three ringed (*Pusa hispida*), and four spotted (*Phoca largha*) seals. We then ran regression analyses to evaluate how well seven different body condition metrics correlated with our comprehensive assessments of blubber content. Several simple metrics proved to be useful indicators of fat reserves. Metrics that utilized measures of blubber depth worked well across all species, while those relying on length-girth relationships were either species-specific or poor indicators. These results can refine and improve field sampling efforts and provide valuable information for conservation decision-making by management agencies as climate change continues to threaten Arctic seal populations.