Age structure of subsistence harvested ice seals in Alaska 2000–2018

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Introduction

Age distribution is an important component for understanding population dynamics. Since 2000, the Alaska Department of Fish and Game has used cementum annuli to age teeth from harvested ice seals: ringed seals (*Pusa hispida*), bearded seals (*Erignathus barbatus*), spotted seals (*Phoca largha*), and ribbon seals (*Histriophoca faciata*). Samples from seals were collected in collaboration with Alaska Native hunters as part of a subsistence harvest bio-monitoring program.

Methods

- Canine teeth were collected from subsistence harvested ice seals in 16 villages along the Bering, Chukchi, and Beaufort seas during the period of 2000–2018.
- Seal age was determined by counting annuli in the cementum layers of sectioned teeth.
- Age classes were determined based on sexual maturity for each seal species (Table 1) (Crawford et al., 2015; DeMaster, 1978).

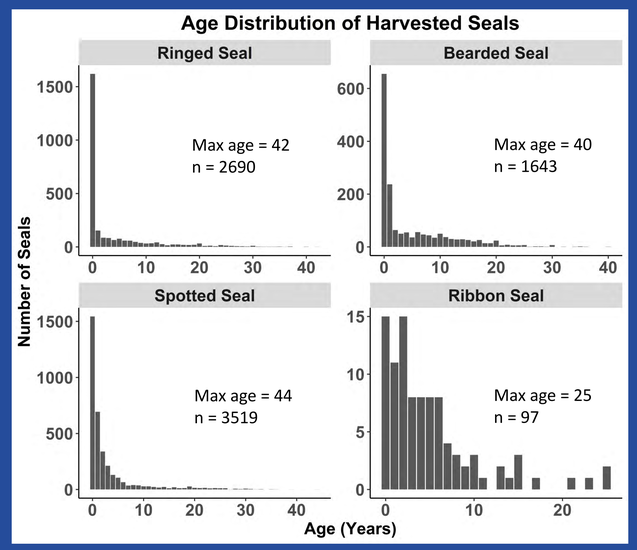
	Pup	Subadult	Adult
Ringed	<1	1-4	≥5
Bearded	<1	1-6	≥7
Spotted	<1	1-3	≥4

Table 1. Year ages used to define age classes.

- Few ribbon seals are harvested in Alaskan waters; therefore, they were not included in the age class analysis.

Subsistence harvested ice seals in Teller, AK. Photo by: Letty Hughes

Age Distribution

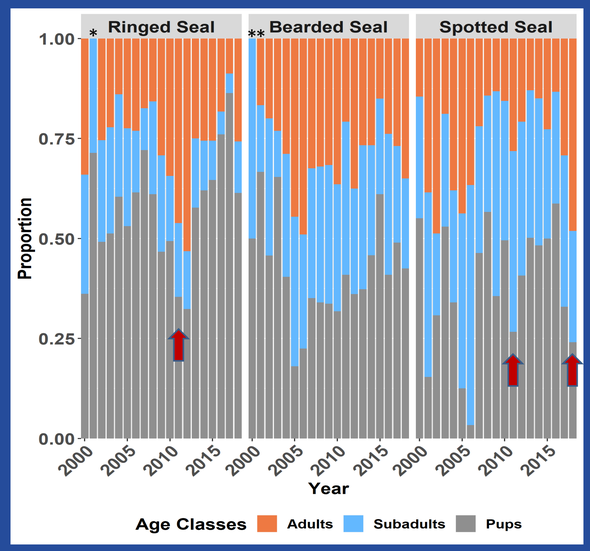


Age distribution of sampled seals by species during 2000–2018.

- Ringed, bearded and spotted seals can live for more than 40 years.
- The oldest ribbon seal was 25 years old.
- The age distribution of ribbon seals is different from the other seals; this could be a result of the small sample size.

Age Class Distribution

- Changes in the age distribution of harvested animals can be useful in identifying long-term population trends and short-term variability.
- Although there is annual variability in the proportion of pups in the harvest, the long-term trends indicate healthy populations.
- There were declines in the proportion of pups for ringed and spotted seals during the 2011 UME (Unknown Mortality Event) and for spotted seals in 2018 (indicated by arrows).



Annual proportions of age classes harvested.
** Sample sizes in these years were <10 seals.*

Conclusions

- Age distribution is useful for identifying changes in the population.
- Ringed, bearded, and spotted seals can live for over 40 years.
- Ribbon seals can live for up to 25 years.
- The proportion of pups in the harvest remains high.

References

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