

## Appendix 1:

### COSEWIC Executive Summary Ringed Seal *Pusa hispida*

#### Wildlife Species Description and Significance

Ringed Seal is a phocid seal with five subspecies, one of which occurs in Canada: Arctic Ringed Seal (*Pusa hispida hispida*). They are one of the smallest pinnipeds, with average adults being 1.5 m long and weighing 70 kg—males being slightly larger than females. Ringed Seal is important both economically and culturally to northern peoples and are important prey for the Polar Bear (*Ursus maritimus*).

#### Distribution

Ringed Seal has a circumpolar distribution over Arctic and subarctic waters, relying on sea ice as habitat. Their Canadian distribution ranges from Yukon in the west to southern Labrador in the east, with occasional sightings of vagrants south of the seasonal ice zone in both Pacific and Atlantic Oceans.

#### Habitat

Ringed Seal is strongly ice-adapted. Their habitat requirements follow the annual cryogenic cycle, with adults establishing territories during fall freeze-up. Prime breeding habitats occur on stable ice, which tends to be landfast ice occurring over relatively shallow waters (< 150 m). Breeding also occurs on mobile pack ice. Ringed Seal moults on sea ice in late spring and is widely distributed over waters of varying depths during the open-water season, presumably in response to prey distribution. Ringed Seal can be negatively affected by both extreme heavy-ice years (longer ice seasons) and extreme low-ice years (short spring ice seasons).

#### Biology

The Ringed Seal mating system is thought to be one of weak polygyny, but observations suggest that alternative strategies exist depending on region. Gestation (10–11 months) is divided into ~2–3 months of embryonic diapause and ~8 months of fetal growth. Pups are born in spring, in subnivean birth lairs, and are nursed for 5–8 weeks. Females mate near the end of lactation or directly after. Age at maturity is variable, but is 6 years on average, with males entering the breeding population later than females. Maximum life span has been recorded at 45 years, but average adult life span is likely about 20 years.

During the open-water season, they feed on a wide variety of pelagic and benthic prey to build up blubber reserves. The most common prey across their range are pelagic schooling fish such as Arctic Cod (*Boreogadus saida*), Sand Lance (*Ammodytes* spp.) and Capelin (*Mallotus villosus*), as well as amphipods, euphausiids, shrimp and other crustaceans.

Individual movements are variable across the range and are dictated by prey distribution. Movements can be extensive during the open-water season, and likely consist of both seasonal migrations and dispersal events for subadults. At freeze-up, when adults move into breeding areas and establish territories, subadults are either driven out or choose areas

of mobile ice and polynyas where the costs of maintaining breathing holes are lower. Adults have been shown to exhibit breeding site fidelity.

Ringed Seal is the primary prey for the Polar Bear but is also preyed upon by Killer Whales (*Orcinus orca*), Walruses (*Odobenus rosmarus*), Greenland Sharks (*Somniosus microcephalus*), and humans. The Arctic Fox (*Vulpes lagopus*) can also be important predators on pups, particularly when snow cover is very low.

### **Population Sizes and Trends**

Most information on Ringed Seal population size comes from aerial surveys, which are conducted when seals are hauled out on ice to moult. Because these surveys are sporadic and localized, estimates are uncertain and dated. However, species abundance is thought to be high, with an estimated 2.3 million seals (1.15 million mature individuals) in Canada and adjacent waters (West Greenland, Alaska, Russian Federation).

### **Threats and Limiting Factors**

The Arctic has undergone substantial climatic change since the late 1970s: annual, perennial, and multi-year Arctic sea ice extent, as well as Arctic sea ice thickness and volume, have decreased while the Arctic ice-free season has lengthened. Over the 1967-2012 period, Northern Hemisphere snow cover extent also decreased in all months and especially during spring. For ice-dependent Arctic marine mammals such as Ringed Seal, these extensive unidirectional changes in sea ice and snow cover can equate to habitat loss and cascading ecological impacts. For example, a very warm year in 2010 resulted in poor Ringed Seal body condition in Hudson Bay. Seals experienced increased stress, giving birth to fewer pups in the following years. In the long term, the loss of habitat due to climate change poses the most significant threat. Decreases in sea ice extent also increase opportunities for commercial shipping, tourism and industrial development, which could increase disturbance, habitat modification and pollutants. Predation by the Polar Bear is the most significant mortality source. Hunting by humans may also be a limiting factor, but removal rates are likely an order of magnitude lower than those for Polar Bear. Pollutant levels are variable amongst regions, with some levels of increase having known effects on Polar Bear but unknown effects on seals.

### **Protection, Status and Ranks**

There are no international agreements or conventions specifically intended to protect Ringed Seal, but the International Agreement on the Conservation of Polar Bears and their Habitat provides some measure of protection. Ringed Seal is not listed on any appendices of the Convention on International Trade in Endangered Species, and they are “Least Concern” on the International Union for the Conservation of Nature (IUCN) Red List (as both species and Arctic subspecies). They are ranked “N5B, N5N, N5M” in the latest Wild Species (General Status) Report (CESCC 2016). COSEWIC assessed the species as Special Concern in November 2019; it was previously assessed as “Not at Risk” in 1989, and they are currently not listed under the *Species at Risk Act*. The Arctic subspecies is listed as threatened under the United States *Endangered Species Act*. Ringed Seal is ranked as Least Concern in Greenland, Vulnerable in Norway (Svalbard), and is not listed in Russia.

In Canada, Ringed Seal is managed under the authority of the Marine Mammal Regulations (SOR/93-56) of the *Fisheries Act*. Seal hunting in marine waters of the Northwest

Territories, Nunavut, Nunavik and Labrador are co-managed by various wildlife management boards, with scientific advice from the Department of Fisheries and Oceans. Existing national parks, national wildlife areas and other lands owned and managed by the Government of Canada afford little habitat protection. Existing and proposed marine protected areas and national marine conservation areas potentially afford some protection.