

**The Biogeography and Population Structure of Spotted Seals (*Phoca largha*) using Mitochondrial DNA**

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Spotted seals inhabit the arctic and sub-arctic waters surrounding the North Pacific ocean, and are closely associated with the seasonal sea ice. They occur primarily in the frontal zone throughout much of the year, but also haul out at several coastal and insular locations in the summer and autumn. Little is known about the evolutionary history, population structure, and dispersal patterns of this species. In order to address some of these issues, we examined variation in mtDNA from 150 seals sampled at both coastal and sea ice locations in the Sea of Japan, and the Okhotsk, Bering, and Chukchi Seas. Haplotype diversity was high ( $H = 0.95$ ) indicating the maintenance of large populations over evolutionary time-scales. Differentiation was observed among seasonal strata and between geographic regions from Peter the Great Bay in Russia to the Chukchi Sea coast of Alaska. Phylogeographic partitioning was evident among seals in the Sea of Japan, the western Okhotsk Sea, and the Bering-Chukchi Seas ( $st = 0.070$  to  $0.284$ ). No differentiation, however, has been found, as yet, between eastern and western Bering Sea locations or between either area and summering concentrations in the Chukchi Sea. The phylogeographic pattern suggests a separation, possibly ancient, among populations in different ocean systems. The preliminary data from the Bering and Chukchi Seas suggests extensive movement of seals within this region, a finding consistent with recent satellite telemetry data that recorded individual movements in this region in excess of 1,000 km with a number of seals moving from northwest Alaska and eastern Kamchatka to the Chukotka peninsula. The biogeography, population structure, and movement patterns of spotted seals appears to be greatly influenced by sea ice. The seasonal expansion of the ice pack both necessitates and facilitates movement and gene flow of this pinniped across what would otherwise be large expanses of open ocean.

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