

**SEASONAL MIGRATIONS OF ADULT WEDDELL SEALS IN THE WESTERN ROSS SEA**

B. S. Stewart<sup>1</sup>, P. K. Yochem<sup>1</sup>, T. S. Gelatt<sup>2</sup>, D. B. Siniff<sup>3</sup>

<sup>1</sup>Hubbs-SeaWorld Research Institute, San Diego, California, United States, <sup>2</sup>NOAA Fisheries, National Marine Mammal Laboratory, Seattle, Washington, United States, <sup>3</sup>University of Minnesota, Department of Ecology and Evolutionary Biology, Minneapolis, Minnesota, United States

**Introduction:** Weddell seals (*Leptonychotes weddellii*) have generally been assumed to be obligate year-round inhabitants of fast-ice habitats. Nonetheless, limited evidence has indicated that pups, at least, leave the fast ice for several years and that some adults and juveniles may forage in pack-ice and open-ocean habitats. Clarifying this as either an exception to the general rule of obligate fast-ice life versus common behaviour is important for understanding regional demographic patterns, life history, and gene flow.

**Methods:** We outfitted ten known-age adult seals (4 females, 6 males) with satellite-linked radio transmitters following the post-breeding season molt in Erebus Bay, McMurdo sound in early 2000 and then monitored their movements until the subsequent breeding season or until radio contact was lost.

**Results:** All ten seals moved north after molting and then spent the autumn, winter and early spring foraging in open-ocean and pack ice habitats, though they remained over the broad continental shelf of the western Ross Sea. The females returned to the Erebus Bay breeding colony the subsequent breeding season at a lesser rate than expected and none of the adult males returned.

**Discussion:** These results are important for interpreting the demographic patterns of Weddell seal colonies, particularly in Erebus Bay where population studies have been conducted without interruption for nearly five decades. They suggest that killer whales and leopard seals, which occur in the northern habitats but are generally excluded from fast-ice habitats, may be important predators. They also suggest that open, rather than closed, demographic models may be more appropriate for evaluating population trends and the factors that may limit and regulate Weddell seal populations. The more extensive fast ice cover that formed in winter 2000 owing to the presence in eastern McMurdo Sound of a large iceberg that calved from the Ross Ice Shelf in summer 2000 may account for the low return rates of adults to the breeding colonies in spring that year and since.