STUDIES OF THE EFFECTS OF ENTANGLEMENT ON INDIVIDUAL NORTHERN FUR SEALS

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ABSTRACT

During the field seasons of 1985 and 1986, studies were conducted to determine the effects of entanglement on the northern fur seal, *Callorhinus ursinus*. These included surveys of entanglement rates among pups and adult females, an experiment on the effects of entanglement on adult females, and a study of the selectivity of mesh size in the entanglement of pups. Complementing these studies are data on the history of the development of wounds for entangled juvenile males that have been seen more than one time.

In 1985, 40 parturient females and their pups were captured at Zapadni Reef rookery on St. Paul Island. Half of the females were treated as controls and tagged with both flipper tags and radio tags and released. Pieces of trawl net weighing 200 g were placed on the other 20, simulating entanglement common to fur seals. The attendance cycles and rates of return of these animals were then compared for the two groups for several feeding cycles, and the rates of return were compared the following season. Three of the entangled females freed themselves of the debris. Of the remaining 17, 3 failed to return after their first trip to sea, 4 failed to return after their second trip, and 2 did not return after their third trip. One control did not return after her second trip to sea. The time spent at sea by the entangled animals was twice as long as for the control animals. In 1986, 2 of the 17 entangled animals were observed, whereas 12 of the 20 controls were observed.

In R. S. Shomura and M. L. Godfrey (editors), Proceedings of the Second International Conference on Marine Debris, 2-7 April 1989, Honolulu, Hawaii. U.S. Dep. Commer., NOAA Tech. Memo. NMFS, NOAA-TM-NMFS-SWFSC-154. 1990.

Ground surveys for females were conducted on rookeries chosen for ease of access to observe animals. Entangled females were counted during these surveys, and the counts were converted to entanglement rates by using the numbers of pups estimated for each of the rookeries as an indication of the number of females present. Rates calculated on this basis ranged from 0.06 to 0.23% for the sample rookeries with a mean of 0.15%. This is to be compared to the 0.4% seen for the juvenile males.

Between 11 September and 16 October 1986, 39 entangled pups were observed. Of these, five were in a single piece of trawl webbing that had become wrapped around a channel marker, and another five were in a piece of blue trawl webbing that washed ashore. As with other components of the population, trawl webbing comprised the highest portion of the entangling debris (19 out of the 39 observed). Entanglement rates for these animals are not known because we have no information on the portion of the pup population that had already departed for sea. The live entangled pups were tagged and released.

During 1985, experimental studies of pup entanglement showed that pups of the size of those found on the islands in October can become entangled in trawl debris with mesh sizes as small or smaller than 16 cm (stretched). All experimental pups placed in a tank with pieces of net with mesh sizes between 18 and 22 cm became entangled within 5 h or less. Some became entangled about their face in pieces with mesh sizes as small as 14 cm.

Data on the interannual history of a small number of entangled subadult males indicate that growth in body size and abrasion brought about by movement cause wounds to increase in size.