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PUP MORTALITY AND POPULATION REGULATION OF ELEPHANT SEALS

In 1890, there were fewer than 100 northern elephant seals in the world; there are now more than 80,000. We are trying to understand the dynamics of this species' impressive recovery from near extinction and would like to predict which factors will regulate its population. At the Año Nuevo rookery in central California, we censused breeding females and weaned pups each season from 1967-1986. The number of breeding females increased each year, and pup mortality varied from as low as 7% to as high as 70%, increasing with harem density. In years of bad winter storms, high surf augmented pup mortality by forcing harems into smaller areas. The major cause of pup mortality was mother-pup separation, which was much more likely in crowded harems. Population models indicate that the span of values of pup mortality we observed is sufficient to reverse population growth. We thus believe that pup mortality is the critical factor in population control, and that the availability of appropriate beach space will regulate the numbers of northern elephant seals.