

MUTUAL MOTHER-PUP RECOGNITION IN GALÁPAGOS FUR SEALS AND SEA LIONS: CUES USED AND FUNCTIONAL SIGNIFICANCE

by

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(With 10 Figures)
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Mothers of colonially breeding seals regularly reunite promptly with their own pups after sometimes long absence at sea. This performance is astonishing as especially older otariid young move over considerable distances within the colony during the absence of their mothers and often gather in pods of about equal age. Individual recognition seems the only plausible hypothesis explaining the necessary discriminatory performance. Although experimental evidence on individual recognition in seals is almost nonexistent (except in the elephant seal, *Mirounga angustirostris*, PETRINOVICH, 1974), most authors agree that mothers take far the more active part in recognition, and that young pups react indiscriminately to any female approaching with a Pup Attraction Call (PAC) (BARTHOLOMEW, 1959; FOGDEN, 1971; LAWS, 1956; PETERSON & BARTHOLOMEW, 1967 (for pups less than two months of age), PETRINOVICH, 1974; McNAB & CRAWLEY, 1975). Other authors (RAND, 1967; SANDEGREN, 1970; PETERSON & BARTHOLOMEW, 1967 (for pups older than two months)) assume that pups too contribute specifically towards a reunion. The latter appears far more plausible as pups expose themselves to serious danger when inadvertently approaching a strange, and sometimes violently aggressive female (LE BOEUF & BRIGGS, 1977; FOGDEN, 1971; PETERSON & BARTHOLOMEW, 1967). Consequently one should expect strong selection on pups to develop a recognition system allowing early learning of the specific signals emitted by the mother.

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Indeed, during a study of the Galápagos fur seal (*Arctocephalus galapagoensis*) and Galápagos sea lion (*Zalophus californianus wollebaeki*), evidence accumulated indicating mutual recognition between mother and pup. Which cues could convey sufficient information to code the identity of the signaller? There are no indications that visual cues are involved and olfactory cues can function only in close proximity under the conditions in a crowded otariid colony. The most useful sense for identification from a distance is hearing. Therefore, and because acoustical cues lend themselves to experimentation through playback, these were explored first.

Background information on the biology of the two species.

The Galápagos fur seal.

This fur seal reproduces on Fernandina (the westernmost of the Galápagos islands) from August until November. Females nurse the pups for two or more years. If the mother does not bear another pup, even animals over three years old may suckle occasionally. The female remains with a newborn for about one week. Later on she regularly goes off to feed and returns to her pup every day or every few days and stays with it for half a day to three days (TRILLMICH & MOHREN, 1981). The young moult into adult fur when they are about four months old. They lose their milk teeth between the fifth and twelfth month. After this and increasingly during their second and third years they begin to hunt for themselves and become independent of their mothers.

The Galápagos sea lion.

This sea lion reproduces mainly during the cooler season (approx. May-January). The timing varies somewhat from island to island. Females nurse one pup until the next is born. Some mothers will then nurse pup and yearling together, rarely for more than a year. As long as the mother does not bear another pup she may continue nursing the young for up to three years. The mother stays with the newborn for 4-7 days after birth. She then regularly leaves to feed, coming back almost every night to suckle the pup. The young moult their pup fur when about 4-5 months old. Shortly after the moult they begin to hunt for themselves, thus becoming increasingly independent of their mothers' milk.

METHODS

Marking of seals.

Pups were marked soon after birth by cutting symbols into the fur of their backs. Female fur seals were marked either by fur clipping or fur bleaching with Clairol Born