

SOME UNDERWATER OBSERVATIONS OF HOODED SEAL, *CYSTOPHORA CRISTATA* (ERXLEBEN), BEHAVIOUR

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Abstract

In a study of the hooded seal's on-ice and submerged behaviour, observations in the Gulf of St. Lawrence recorded inflation and deflation of the nasal sac while underwater.

Introduction

Like most pinnipeds, hooded seals spend a considerable part of their lives in a pelagic environment. Man therefore, has been able to learn little of their social behaviour. Each March, however, the seals haul-out onto the ice to whelp, and can be observed more easily.

At the whelping sites, the seals separate into what are termed "family groups". Each group usually consists of a lactating female, her pup and one or more mature males. When several males are present, one is dominant and is termed the "alpha" bull. He is not thought to be the pup's sire but rather waiting for the female to come into oestrus (R.E.A. STEWART; pers. comm.). Subordinate or "attendant" males in the group may challenge his position. The successive inflation and deflation of the male's hood appears to act as an agonistic signal (MERRIAM, 1884; OLDS, 1950; BERLAND, 1966; MILLER and BONESS, 1979).

Methods

In March of 1981, several hooded seals were filmed in the waters southwest of the Magdalen Islands. Ice conditions were poor, resembling those of late spring break-up. Small pans of ice (measuring up to 6 m across) were strung together in long diffuse flows, making it difficult to find suitable observation sites. The diver wore a black Unisuit (Parkway Fabricators Inc.) which resembled the underwater colour of the hooded seals. A Paillard-Bolex 16 mm movie camera with a 10 mm lens (all held in a plexiglass housing) was used for filming.

Results

On land, hooded seals are aggressive to the standing human; therefore, caution was exercised when approaching them in the water. The seals only allowed the diver in their proximity after he had been in the water approximately 0.5 - 2.0 hours.

Hood inflation by a submerged male was observed on several occasions. This took two forms. In the first, inflation began immediately prior to surfacing, and lasting up to 2 sec.

In the second, both inflation and deflation occurred while the animal remained underwater, and lasted a duration of 4 sec. The latter occurred only at depths of less than 4 m and usually when the animal was near the surface. No air bubbles were released. Although limited underwater phonation does occur (TERHUNE and RONALD, 1973), it is not known whether sounds were produced in conjunction with these displays. All displays were made by an attendant male, and as no other seals were present in the water, were apparently directed towards the diver.

The hood inflation was filmed. From these recordings it was noted that one male inflated the hood for 2.6 sec. prior to inhalation, then dived for 6.5 sec. The hood was reinflated 1 sec prior to surfacing again. A 28 sec dive followed, during which the seal inflated the hood for approximately 3 sec while looking up and swimming below the diver. The animal swam beneath an ice pan, and approached the surface, again inflating the hood underwater for 3.8 sec. He continued swimming beneath the surface for 2.3 sec before reinflating the hood for 1 sec prior to surfacing. While at the surface he extended his head and neck out of the water, then dived, and swam away beneath a pan of ice.

Hood inflations were seen on four other occasions: Once when the seal was swimming away from the observer; twice while the seal was at right angles to him and one time with the seal directly above him. In the latter, the seal was observed at the surface looking across the ice. This was accomplished by the animal's stretching its head and neck up and out of the water. The seal looked straight down, inflated his hood, shook his head up and down, deflated his hood, looked out across the ice again and then dived and swam away out of camera range.

Discussion

Due to their aquatic life, seals have a limited number of possible behavioural display adaptations. The harp, ribbon and ringed seals use pattern colouration while cephalic adornment is displayed by the hooded, elephant and grey seals. Cephalic adornments have developed as male secondary sex characteristics, probably because of a need for males to communicate at the water surface and on land (MILLER and BONESS, 1979). The hood also appears to be used underwater to signal aggression. Due to limited visibility underwater the hood can only be seen at close proximity (2-7m). Observations of aggression in seals on land, however, show it is also conducted at close range (5-20m). Hood inflation, therefore, could be expected to play a viable role in underwater agonistic behavior.

Summary

Hooded seals in the Gulf of St. Lawrence can and do inflate the hood while underwater. This behaviour was filmed in subdominant males. Two methods were employed, inflation of the hood immediately prior to breathing, and inflation and deflation while the animal was swimming underwater. This behaviour appears to be agonistic signalling.

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