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PUP-MOTHER-ENVİRONMENT RELATIONS IN THE MEDITERRANEAN MONK SEAL, *MONACHUS MONACHUS* (HERMANN 1779), ON TURKISH COASTS

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ABSTRACT

Today the Mediterranean monk seal is one of the most severely endangered mammalian species. 15 or 20 years ago it was possible to find the monk seal nearly along all the Mediterranean and northwestern Atlantic coasts of Africa. However, at present the monk seal can be found almost only on the Turkish coasts and it is struggling for survival. We have been carrying on research beginning from March 1980 along our coasts to enable its survival. In one of our observation caves we have had the chance of observing a new-born pup and mother from the beginning of October 1980, to the end of February 1981. We have used Altmann's (1974) "Focal Animal Sampling Method". Observations have revealed that the mother does not suckle its young for two or three weeks as other seals, but for four months. The mother does not teach the pup to swim, but the pup learns it by itself. Some other information such as the pup-mother-other individuals and environmen relations, the pup's first experience in the open seas with mother, the effects of the cave's features on the survival of the pup have been gathered. Thus many clues to help the survival of the Mediterranean monk seal have been obtained.

INTRODUCTION

Aim of the Study

The First International Conference on the Mediterranean Monk Seal, Rhodes, 2–5 May, 1978, has revealed the tragic decrease of *Monachus monachus* populations in the last decades in their primeval range along all the Mediterranean coasts and the big gap of scientific information needed urgently to take immediate measures for their survival. As the Turkish coasts are still one of the last fortunate ones providing natural shelter to them, we began our researches at the first possibility; March 1979. Fisrt of all we made a survey of all the coasts

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to collect information on where the monk seal had been spotted 20 years ago and at present, the characteristics of their habitat and the breeding caves in order to find caves still inhabited by monk seals and to observe their behaviour, reproduction, feeding habits, daily and annual activities, etc. This paper is a small part of the main research.

MATERIAL and METHOD

The Study Site

A breeding cave 100 km from İzmir and 12. 8 km from the nearest settlement Alaçatı, is the study site. It is three and a half hours walk in summer, five and a half hours walk in winter from Alaçatı to the campsite near the study site. After reaching the campsite it takes half an hour to enter the cave by walking, then by wading and finally by swimming.

The characteristics of the breeding cave are of utmost importance for the survival of the pup and they have been given in detail Mursaloğlu (1984). Only a short summary has been given here. The cave has three entrances which face southeast. The first one is blocked by rocks and is accessible only to man, the second one permits small boats and the third is an underwater entrance for the seals. The lengths of the sea passages from the two entrances to the rocky shore of the cave floor are 11 m each, their width 1–1.5 m and 6–7 m respectively. They join at the shore line of the cave floor which contains big rocks of 0.5–2 m diameters and form a rocky barrier. Our observation tower is a rounded rock of 2 m height, which is in the middle of the barrier. The distance from the barrier to the furthest end of the cave is 24 m. The shape of the cave is like a pointed cap with a ceiling slowly going down and an oblique floor going slowly up. The ceiling above our observation tower is 2.5 m high. The floor is covered with rounded stones of 5–60 cm diameter. Inside the cave it is always dusky, damp and cooler than it is outside.

Method

During our survey along the Turkish coastline in 1979 and 1980 we found a breeding cave with an adult seal sleeping in it on 6 June 1980. Beginning from 6 June 1980 we visited this cave at about 20 days intervals to do observations. In our studies we used the direct visual observation method. Our observations in each visit lasted from

two to eight days. The period of observation depended on the weather and sea conditions and on the presence or absence of the inhabitant monk seals. We made observations both during the day and night. Meanwhile, we continued our survey along the coastline. On 6 October 1980 we found a new born pup with two adult females in the same cave. Taking utmost care not to disturb them we made observations by sitting calmly on our observation tower in the cave. Our observations continued from 6 October 1980 to the desertion of the cave by the seals 15–25 February 1981. During this time we would leave the cave for a few days to return back again when the seals became irritated by our presence. For observations Altmann's (1974) "Focal Animal Sampling Method" has been used.

Material

We have observed a mother and male pup, a female pup, an old female, a young female, an adult female, a sexually unidentified adult and an adult male in the vicinity of the cave. We have collected data on the characteristics of the cave, Mursaloğlu (1984), the habitat and the relations of the monk seal with human-beings.

RESULTS and DISCUSSION

Habitat

The caves inhabited formerly or at present were generally far from settlements and from intensive human activity. All breeding caves had either an under water access and/or a long entrance corridor, which prevented the penetration of the waves into the cave. At the opening of the corridor to the sea there were rocks that functioned as breakwater. The common characteristics of the location of the breeding caves are as follows: near the cave there are bays not open to seasonal winds, suitable for the feeding of the monk seal in all seasons. Secondly, there are little beaches or smooth slabs of stone near the caves where the monk seals can sunbathe.

Pup-environment Relations

The out-of-the-way location of the cave ensured the security against disturbances to a great extent. This is considered to be of utmost importance for the survival of a pup, because of the long lactation period and the prolonged dependence on the mother. The southwes-

tern direction of the boat or training passage and its entrance protected the cave from the direct effects of the prevaling strong southern winds of the coasts. Even in this situation the wild waves of the storms intruded into half of the cave floor, with water action digging into the rocky barrier rather badly during the two years of this study. This rocky barrier appears to be indispensable to protect the pup from being washed away in the early days. The presence and the continuous use of the underwater entrance allowed the mother to get away from the pup when she was leaving the cave and kept the pup "at home". Although it was never used by the seals for entering or leaving the cave, the boat passage appeared to be a safe training pool for the pup. The slant of the cave floor with a stone barrier on its shore prevented serious wave action from entering to the far end of the cave and allowed at least half of the floor to remain dry. Not only the pup, but also all the seals spent the stormy days resting on this dry floor. Moreover, they seemed to search for a dry area on the floor to sleep on. Several caves, known by the native people for a long time as breeding caves on the Turkish coasts, have almost the same principle features as described above. Tidal action is minimal in this region hence, providing suitable shelter for the seals.

Contact with Water

The two pups we observed in the two consecutive years, i.e., 1980–81 and 1982, were reluctant to enter the sea in the beginning and did so only when forced by necessity. However, later after having learned to swim it didn't appear to be so. Once we observed the first pup playing with a green tree branch for three hours in the sea passage.

Chances of Drowning

As the pup was extremely fat there was no danger of it being drowned even before it had learned to swim. The only danger seemed to be that of being washed away from the slanted floor of the cave and being thrown aganist the rocks by the waves of the heavy fall and winter storms.

The waves of the first storm of fall (8 October 1980) reached the sleeping pup in the cave and raised the fat body easily like a big drop of oil and carried it rolling down to the rocky barrier on the shore. This barrier prevented the pup from being washed away. The next wave carried it back up. The only reaction of the pup was trying to

gain balance between two waves. This was in vain. At the end of the two hours he took the form of a big, oval egg, somehow shortened its length and left himself to the waves. After another half hour the pup's body took the form of the letter "c". This form prevented him from being rolled on the floor, because he curled around the rounded rocks on the cave floor. When the sea calmed down the pup went up to the still dry part of the cave floor and fell asleep. The following day he was in the narrow corner of the sea passage in front of the rocky barrier. His body again in the form of a big egg, was bobbing up and down on the small waves. Whenever the pup was in the water and did not want to swim he took this form and rested on the waves for hours at a time.

Acquisition of Swimming Skills

The pup apparently learned to swim by himself. The pup seemed to move more easiliy in water than he did on the cave floor. By spreading his foreflippers to his sides in water he kept his balance just as if he were on the floor, then he moved forward moving them just like he did on the cave floor. In the early neo-natal period he used only his foreflippers. He sometimes changed his direction in water suddenly and lost his balance. He would then capsize and splash his hind flippers in a disorderly manner. Gradually he learned to manipulate his hind flippers and his body for a skilful swim. By the end of the ninth day the pup acquired the skill of swimming by long practice in the boat-sea passage.

Neither the mother nor the other individuals used the open boat sea passage, but used only the underwater passage. This might have been done consciously by the adults in order not to show the way out of the cave to the pup so that he would remain in the cave all the time.

Desertion of the Cave

Two months after molting and nearly four months after their first appearance in the cave all individuals including the pup deserted the cave. Molting of the pup began on 20 November 1980, when he was about six weeks old as recorded by King (1956) he molted completely into an adult pelage in six or seven day's time. After molting it was difficult to distinguish him from an adult individaual as he had also grown into an adult's size. The pup seemed to have instinctively ventured out into the sea to follow his mother, having acquired the necessary swimming skills and bodily growth.

Pup-mother Bond

The suckling pup and the mother communicated vocally and by physical contact. When the hungry pup bleated, if the mother was around, she answered with much shorter and almost affectionate bleatings and hurried to the pup, if not, the pup's bleatings turned into disorderly long bleatings and finally into crying similar to the wailing of a human being. If the mother was far away and there was no answer, the pup moved around nervously and in the end it woud begin to sleep with interruptions of irregular bleatings. Another sound made by the pup was murmuring contentedly or nervoulsy as he sucked. When the mother noticed our presence near the pup, she would make a very high pithed siren like sound. The pup hearing this sound would jump into the sea and flee from us.

When the pup was awake he apparently did not want the mother to leave the cave. He would press his cheek and body to those of the mother and try to cover her foreflippers with his body as if to hinder her and would bleat frequently. When the mother was disturbed, alert and ready to leave, she would press the head of the pup down and backwards by her foreflippers to keep him out of her way. Once the mother becoming aware of our presence in the cave and trying to avoid us, after several anxious-appearing efforts, reached the continually crying pup in the corner of the sea passage. She caressed his cheeks with her owns, then left the cave. The pup stopped crying shortly thereafter.

Lactation and Nursing

The lactation period continued nearly for four months beginning from 5–6 October 1980 to the desertion of the cave between 15–20 January 1981. This period contradicts the record by Wirtz (1968) stating five weeks' lactation period for the Hawaiian monk seal. Although the pup had completed his teething by the middle of the third month, we never observed him taking anything but milk or showing any interest in the fish swimming by as he dived or swam. Therefore we may assume that suckling is not limited to six or seven weeks as stated by Troitzky (1953), Ronald and Healey (1976) and Sergeant et al. (1979), but is longer than fourteen weeks.

The pup's principal activities consisted of suckling and sleeping, and during this period he grew rapidly. The suckling bouts in the first week occured at about 13:00 and 17:00 hours and then at night. After

the first week the mother did not come to the cave before dusk. When satisfied the pup fell asleep quickly. Sometimes he would suck again five or seven minutes later. If he was not satisfied he began to murmur nervously and then to cry. These cries took place only at nights when the mother could not leave the vicinity of the cave during the whole day, apparently because she saw us with the pup in the cave and could not risk to leave the pup with us in the cave, as recorded by Kenyon and Rice (1959) and Wirtz (1968) in the Hawaiian monk seal. Our observations revealed that the nursing mother does not fast, contrary to the findings of Kenyon and Rice (1959) and Wirtz (1968) for the Hawaiian monk seal.

Pup Other Individual Relations

After the desertion of the cave the pup, who had fully grown, and the old female were observed to return and spend one night in the cave together. The following morning the pup appeared to be ready to leave early, but the old female was not. The pup looked several times out of the cave and back at the old female, then went to her and rubbed his snout on her dorsum two times. She awoke, raised her head, looked at him and lay back again and began to sleep. The pup left the cave alone. No other communication of the pup with the other individuals was observed, although the pup spent several weeks with them in the cave.

Pup-human Relations

The fear of man is not inborn, but taught by the mother to the pup. Out of the seven seals inhabiting the cave, with intervals or regularly, only the mother was very sensitive to human presence and escaped immediately at the first unusual noise. At our first encounter with the male pup alone, he was fearless and tame as recorded by Kenyon and Rice (1959) for the Hawaiian monk seal and by Sergeant et al. (1979) for *Monachus monachus*. Everytime the mother sensed us near, she made the high siren like sound and the pup jumped immediately into the water. Thus the pup learned to avoid us. During the absence of the mother, when he met us in a corner he did not jump into the water, but only turned his back to us. We spent long hours and days with the pup in the cave. The tame behaviour of the pup and the long days spent together would be dangerous for him when he met other people, therefore, we had to treat him sometimes badly on purpose.

CONCLUSION

Contrary to the Hawaiian monk seal the lactation period in *Monachus monachus* is very long and since the pup takes no other food during this period until he reaches the mother's size, he is completely dependent on the mother. Therefore, the security and wellbeing of the mother is very important. The characteristics of the cave are also of utmost importance, because the completely vulnerable pup spends this long lactation period in the cave without ever going out. Although no relation between the pup and the other individuals that frequented the cave was observed, they were not hostile to the pup.

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