

Conservation of the endangered Sea Turtles Chelonia mydas and Caretta caretta in Israel

Shoshana ASHKENAZI and Avner SOFER

Nature Reserves Authority, 78 Yirmeyahu Street, 94467 Jerusalem (Israel)

Four species of sea turtles occur on the sea-shores of Israel. Two of these, the Green Turtle Chelonia mydas and the Loggerhead Caretta caretta, nest regularly on the Mediterranean coast. The Hawksbill Eretmochelys imbricata occurs occasionally on the Red Sea shore in Elat, and the Leatherback Dermochelys coriacea is observed on rare occasions on both the Mediterranean and Red Sea coasts.

Since 1979, both Caretta caretta and Chelonia mydas are monitored in Israel by the Nature Reserves Authority. During the breeding season (May-September), the Mediterranean sandy shores are surveyed once or twice a week (either by vehicle or on foot), in order to study nesting habits, preferred habitats, environmental factors and the survival rates of eggs and hatchlings.

Any tracks which are discovered are checked for "false" or "true" nests, and environmental features, e.g. habitat type, distance from the sea, phase of moon are recorded accordingly. Nests found are marked with an inconspicuous sign, and are checked again around the estimated hatching date. During the hatching process (24-48 hrs), the nest is being guarded by rangers until all hatchlings have reached the sea. Unhatched eggs or dead hatchlings are collected and checked.

Each year, 5-20 nests of both species are found. Of 86 nests that were checked over the years, 75.7% were found to be Caretta caretta and 24.3%, Chelonia mydas. Clutch size is $x=76.3$, $Sd=15.2$, $n=31$ and $x=105.9$, $Sd=31.2$, $n=12$, for Caretta caretta and Chelonia mydas respectively. Incubation period in most of the nests in situ, is 50-55 days.

During the 1986 nesting season, several nests were monitored for physiological features such as air and nest temperatures, and humidity and oxygen content of nest during the incubation period.

The best hatching successes in Caretta caretta nests, were obtained in egg pits at 27 cm depth, with 2-6% humidity in nest air and 2-3% in nest sand. Nest temperature rises by 6°C during the incubation period. The temperature gradient in the egg pit is about 1.5°C (Silberstein, 1988).

During 1979-1984, artificial incubation and indoor raising and marking experiments were carried out. Hatching success of artificially incubated eggs was found to be lower ($x=51.3\%$, $Sd=29.4$, $n=8$ and $x=32.3\%$, $n=2$) than of eggs hatched in situ ($x=91.0\%$, $Sd=7.0$, $n=13$ and $x=94.4\%$, $Sd=5.6$, $n=3$) for Caretta caretta and Chelonia mydas respectively.

The main causes of nest losses were sea storms flooding the nests, and predation of eggs and emerging hatchlings by the crab Ucypode cursor. Predation by man and domestic animals were also recorded.

Preliminary results of artificial incubation and raising experiments show that the best conservation strategy for nests of both sea turtle species on Israel's Mediterranean shore is incubation in their natural beach setting under weekly surveillance. Artificial incubation is considered only where nests are in immediate danger of flooding or predation by animals or by man.

Silberstein, D. 1988. Physical conditions prevailing in nests of the Loggerhead Sea Turtle Caretta caretta and their effects on egg development. MSc Thesis, Tel-Aviv University.

The endangered loggerhead of Zakynthos relative to the Mediterranean Sea Turtle conservation problem

Lily E. VENISELOS

Governing Council of the Hellenic Society for Protection of Nature,
3 Merlin Street, 10671 Athens (Greece)

and
Management of the Greek Animal Welfare Society,
24 Park Towers, 2 Brick Street, London W1Y 7DF (England)

THE ENDANGERED LOGGERHEAD OF ZAKYNTHOS RELATIVE TO THE MEDITERRANEAN SEA TURTLE CONSERVATION PROBLEM

A Recommendation at the Council of Europe's most important meeting on wildlife conservation on the 11th December 1987, was unanimously accepted by the Greek Government. This Recommendation concerned itself in great detail with the essential measures to protect, on the island of Zakynthos (Laganas Bay), the largest known concentration of nesting Loggerhead sea turtles in the Mediterranean. Additionally, a co-ordinated three Ministerial Decision was signed in Greece in December 1987, to control traffic in the Bay.

In the summer of 1987, research by the Sea Turtle Protection Society (STPS) revealed that fewer sea turtles nested, compared with any previously recorded year. Furthermore, half of the nesting turtles were injured, some very seriously, presumably by motorboats which constantly criss-cross the entire Bay.

Human related disturbance presents the greatest hazard to successful nesting... night-time beach use; beach obstruction by boats and sunbeds; the digging of pits and building of sand-castles; compaction of the sand from constant use by humans and vehicles; excessive dynamite fishing; machine cleaning of the beaches; accumulated litter; the planting of Tamarisk trees altering the sand temperature and ground humidity; the fatal attraction to hatchlings of unshielded lights inland; low frequency sound of the discos heard all over the Bay; sand removal for the recent building boom; horse riding along the beaches; destruction of nests by beach umbrellas stuck in the sand; man-made walls on certain beaches preventing sea turtles from nesting; and the most serious disturbance, touristic development.

The Kalamaki area aims at 30,000 beds and at a distance of only 150-200 metres from the water edge of the nesting beaches. If one also adds the 300,000 tourists who, according to the Prefect's official statement in the Greek press in November 1987, will be visiting the island in 1988, I ask you: how will it be possible for nesting areas to be protected in the face of this invasion? For anyone to believe that guards will be able to control such a vast number of people is quite unrealistic!

I quote: "Greece has agreed (Recommendation No. 12. Council of Europe 11.12.1987) that Laganas Bay should qualify for a stricter protection category, such as marine park, natural monument or other appropriate legal status." How could such a protected area survive the impact of mass tourism? I am greatly concerned at the lack of available information on comparative studies, data, etc. collected in Zakynthos and the Peloponnese over the last four years. I am also worried that research and conservation efforts are concentrated mostly on the two small nesting beaches of Sekania and Daphni, which appear to sustain the largest number of female sea turtles (approximately 63% of the whole of the Bay), although these beaches are actually losing many of their nests due to this unprecedented overcrowding. Almost no effort is being made to conserve the equally important and as yet undeveloped beaches at East Laganas and Kalamaki! This is due, of course, to the vocal opposition of a minority which puts at risk the very survival of the Zakynthos Loggerhead.

By concentrating all short-term efforts on the small and grossly overcrowded beaches, one is surely guaranteeing that the Zakynthos turtle population will continue to decline, perhaps even to the point of extinction. There must be an urgent redirection of research and monitoring to the other beaches. It is of vital importance, therefore, that over the next few years a comparative applied research programme and study be carried out, in order to establish the rate at which the species is threatened with extinction.

In addition to the above problems, there is an even more serious national legal issue which does not appear to have been understood by organizations outside Greece: the Ministerial Decision of 29th January 1987, Controlling Residential Development, Restricting Building and Defining Zones for the protection of sea turtles is valid for three years only! In January 1990 Laganas Bay will remain without any legal protection!

In April 1988 the appeal launched by about nine out of the twenty landowners of Laganas denouncing the Ministerial Decision as illegal, is to be tried by the highest Greek court. It is very possible that the landowners could win their case.

The long promised Presidential Decree, if signed and published before April 1988, alone could prevent the above-mentioned disasters, but the problems of the Zakynthos Loggerhead will never be solved until and unless the laws are scrupulously enforced.

I cannot stress sufficiently that this is not a local issue but a national and international Mediterranean one.

There is now a serious danger that the Mediterranean Loggerhead turtle will not survive. New problems emerge daily and conservation measures are few. Some scientists consider that sea turtles could already be extinct as a breeding species in the Mediterranean.

I believe that one responsible body should co-ordinate Mediterranean sea turtle conservation projects, research, funding and lobbying, e.g. The Mediterranean Association to Save the Sea Turtles (MEDASSET) in which all European countries, international organizations and individuals could work together to ensure the future survival of the highly endangered Mediterranean sea turtle.