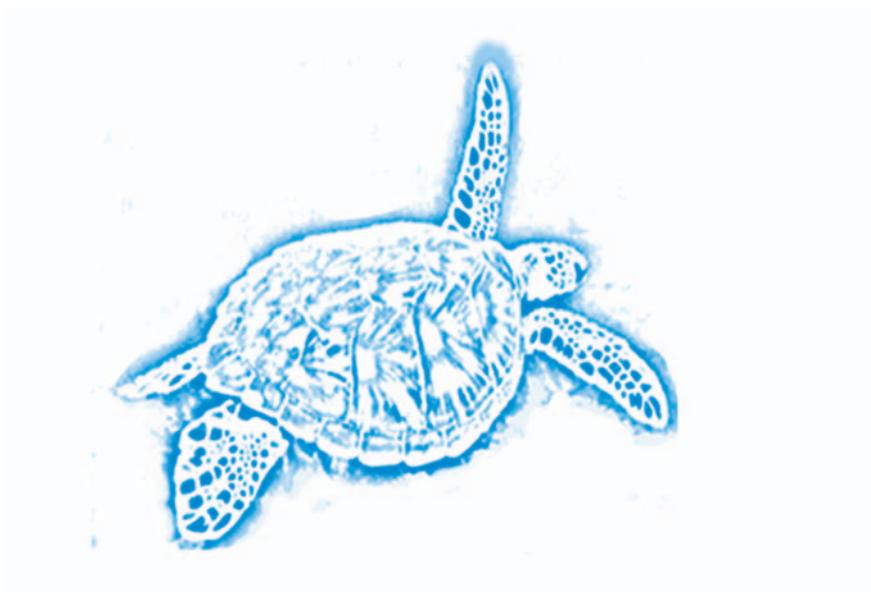


PROCEEDINGS OF THE FIRST MEDITERRANEAN CONFERENCE ON MARINE TURTLES

Rome, 24-28 October 2001

Editors:
Dimitris Margaritoulis
Andreas Demetropoulos



Barcelona Convention - Bern Convention - Bonn Convention (CMS)

Nicosia, Cyprus, December 2003

CONSERVATION PERSPECTIVES OF THE MAJOR CRITICAL NESTING HABITATS OF *CARETTA CARETTA* IN GREECE

Dimitrios DIMOPOULOS, Thomas ARAPIS and Dimitris MARGARITOULIS

ARCHELON, the Sea Turtle Protection Society of Greece, Solomou 57,
GR-10432 Athens, Greece

INTRODUCTION

The loggerhead turtle (*Caretta caretta*) is listed world-wide an endangered species under the recent IUCN criteria. In the Mediterranean the loggerhead turtle has established local populations (Bowen et al. 1993, Laurent et al. 1998) and is the only marine turtle species to nest in Greece (Margaritoulis 1988). There is evidence that loggerhead stocks in the Mediterranean have been depleted due to human exploitation, restriction and degradation of nesting areas and incidental catch. In Greece *Caretta caretta* is protected under various international conventions (Barcelona, Bern, Bonn, CITES) and national legislation (Presidential Decrees 1980 and 1981) as well as through the European Habitats Directive (EEC 92/43).

Sea turtle nesting activity in Greece was first recorded in 1977 on the island of Zakyntos (Margaritoulis 1982). Systematic monitoring projects were initiated in 1982. The Sea Turtle Protection Society of Greece (ARCHELON) was formed in 1983 mainly from the people who worked on the first sea turtle projects (Theodossopoulos 1997). In 1983, an important nesting area was confirmed in the Bay of Kyparissia (Margaritoulis 1988). In 1984, ARCHELON starts working in Lakonikos Bay. During 1989-1992 ARCHELON surveyed about 7,500 km of the coastline of Greece to document existing nesting areas (Margaritoulis et al. 1995). As a result areas with high nesting concentration (e.g. Rethymnon on the island of Crete) were identified.

RESULTS AND DISCUSSION

After 18 years of work in Greece, ARCHELON has delimited all known nesting areas and divided them into three categories, according to certain criteria: "major" nesting areas, "moderate" nesting areas and areas of "diffuse" nesting (Margaritoulis 2000). This has been done in order to assess the relative significance of a nesting site and thereby initiate accordingly conservation measures. Total nests estimated annually in Greece fluctuate between 2,335 and 5,287 and nests in the five "major" areas from 1,643 to 3,873

(Margaritoulis 2000). Therefore, the “major” nesting beaches account for an average of 72% of nesting activity in Greece. The beach length and the annual number of nests (minimum and maximum) per “major” nesting site are presented in Tab. 1.

Nesting site	Beach length (km)	Minimum number of nests/season	Maximum number of nests/season
Zakynthos	5.5	857	2,018
Kyparissia Bay	44.0	286	927
Rethymnon (Crete)	10.8	316	516
Lakonikos Bay	23.5	107	220
Bay of Chania (Crete)	13.1	77	192
TOTAL	96.9	1,643	3,873

Tab. 1. Loggerhead nesting effort per “major” nesting area in Greece (from Margaritoulis 2000).

On all “major” nesting sites ARCHELON runs management projects that include monitoring, on-site protection and public awareness (Dimopoulos 1991, Kremezi-Margaritoulis 1996, Irvine et al. 1998) in line with the priorities set by the Mediterranean Action Plan for the Conservation of Marine Turtles (Barcelona Convention) and the Global Strategy for the Conservation of Marine Turtles (IUCN/SSC/MTSG).

Monitoring involves daily recording of emergences and nests, tagging and determination of other factors affecting nesting activity. On-site protection involves, amongst other, measures against predation, human trampling, vehicle use and sea inundation; operation of natural hatcheries; beach safeguarding; beach litter removal; and controlling of beach furniture, noise and light pollution. Public awareness is carried out through information stations, slide shows, beach patrols, leaflet distribution, environmental education for schoolchildren, participation in local events, lobbying, and mass media. The results of the projects are communicated to policy makers and government officials and provide the information upon which legal protection measures can be taken. The projects are carried out annually by trained personnel and over 400 international volunteers. All “major” sites have been proposed by the Greek government to be included in the NATURA 2000 network under the European Habitats Directive. For these sites Greece is obliged to introduce specific legislation and implement management schemes. In addition Zakynthos enjoys a specific legal conservation status since 1984 and recently (1999) was declared a National Marine Park with a Management Agency (Dimopoulos 2001). In the context of various European LIFE funded projects, management plans have been drafted by ARCHELON and are currently being implemented on Crete (Irvine et al. 1998) and Lakonikos Bay or are under way (Bay of Kyparissia). The management plans aim at preventing or mitigating the impacts of development (mainly tourism) in the nesting sites

and the adjacent buffer areas. Emphasis is placed on actively involving local communities in sea turtle conservation. This has been achieved in various degrees in all “major” areas.

CONCLUSION

It is important to have the full picture of the nesting activity at a national level. As sea turtles are long lived animals, with late maturation period, long-term monitoring is required to develop the full picture. It is also important to be able to assess the “nesting value” of a site and prioritise management measures. Focusing on the significant critical nesting habitats rather than dispersing conservation efforts may prove to be wiser in terms of achieving survivorship of an endangered species. As sea turtle populations are philopatric to specific nesting beaches it is also wise to ensure that a wide spectrum of individual nesting beaches are protected in order to preserve the genetic diversity of the *Caretta caretta* metapopulation (Schroth et al. 1996).

REFERENCES

- Bowen B.W., J.I. Richardson, A.B. Meylan, D. Margaritoulis, S.R. Hopkins-Murphy, and J.C. Avise. 1993. Population structure of loggerhead turtles (*Caretta caretta*) in the West Atlantic Ocean and Mediterranean Sea. *Conservation Biology* 7(4): 834-844.
- Dimopoulos D. 1991. Zakynthos 1990: An update on the public awareness programme. *Marine Turtle Newsletter* 54: 21-23.
- Dimopoulos D. 2001. The National Marine Park of Zakynthos: A refuge for the Loggerhead Turtle in the Mediterranean. *Marine Turtle Newsletter* 93: 5-9.
- Irvine C., T. Belalidis, and I. Siori. 1998. Management policies for the conservation of the nesting habitat of *Caretta caretta* on the island of Crete, Greece. Pages 201-203 in *Proceedings of the Seventeenth Annual Sea Turtle Symposium* (compilers: S.P. Epperly, J. Braun). Orlando, Florida, 4-8 March 1997. NOAA Technical Memorandum NMFS-SEFSC-415, Miami, USA.
- Kremezi-Margaritouli A. 1996. From the beach to the classroom: an environmental education programme in Greece. Pages 157-159 in *Proceedings of the Fifteenth Annual Symposium on Sea Turtle Biology and Conservation* (compilers: J.A. Keinath, D.E. Barnard, J.A. Musick, B.A. Bell). Hilton Head, South Carolina, 20-25 February 1995. NOAA Technical Memorandum NMFS-SEFSC-387, Miami, USA.
- Laurent L., P. Casale, M.N. Bradai, B.J. Godley, G. Gerosa, A.C. Broderick, W. Schroth, B. Schierwater, A.M. Levy, D. Freggi, E.M. Abdel-Mawla, D.A. Hadoud, H.E. Gomati, M. Dominco, M. Hadjichristophorou, L. Kornaraky, F. Demirayak, and Ch. Gautier. 1998. Molecular resolution of marine turtle stock composition in

- fishery bycatch: a case study in the Mediterranean. *Molecular Ecology* 7: 1529-1542.
- Margaritoulis D. 1982. Observations on loggerhead sea turtle *Caretta caretta* activity during three nesting seasons (1977-79) in Zakynthos, Greece. *Biological Conservation* 24: 193-204.
- Margaritoulis D. 1988. Nesting of the loggerhead sea turtle *Caretta caretta* on the shores of Kiparissia Bay, Greece, in 1987. *Mesogee* 48: 59-65.
- Margaritoulis D., M. Dretakis, and A. Kotitsas. 1995. Discovering new nesting areas of *Caretta caretta* in Greece. Pages 214-217 in *Proceedings of the Twelfth Annual Workshop on Sea Turtle Biology and Conservation* (compilers: J.I. Richardson, T.H. Richardson). Jekyll Island, Georgia, 25-29 February 1992. NOAA Technical Memorandum NMFS-SEFSC-361, Miami, USA.
- Margaritoulis D. 2000. An estimation of the overall nesting activity of the loggerhead turtle in Greece. Pages 48-50 in *Proceedings of the Eighteenth International Sea Turtle Symposium* (compilers: F.A. Abreu-Grobois, R. Briseño-Dueñas, R. Márquez-Millán, L. Sarti-Martínez). Mazatlán, México, 3-7 March 1998. NOAA Technical Memorandum NMFS-SEFC-436, Miami, USA.
- Schroth W., B. Streit, and B. Schierwater. 1996. Evolutionary handicap for turtles. *Nature* 384: 521-522.
- Theodossopoulos D. 1997. Turtles, farmers and 'ecologists': The cultural reasons behind a community's resistance to environmental conservation. *Journal of Mediterranean Studies* 7(2): 250-267.