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MEDITERRANEAN ACTION PLAN

Meeting of Experts on the implementation of the Action Plan for the conservation of Mediterranean marine turtles adopted within MAP

Arta, Greece, 27-29 October 1998

REPORT

MEETING OF EXPERTS ON THE IMPLEMENTATION OF THE ACTION PLAN FOR THE CONSERVATION OF MEDITERRANEAN MARINE TURTLES ADOPTED WITHIN MAP

UNEP
SPA/RAC - Tunis, 1998

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Introduction

1. Following a recommendation made by the Third Meeting of the National Focal Points for SPAs (Tunis, 25-27 March 1996), the Contracting Parties to the Barcelona Convention for the Protection of the Mediterranean Sea against Pollution at their Tenth Ordinary Meeting (Tunis, 18-21 November 1997) approved the convening by RAC/SPA in 1998 of a meeting of experts on the implementation of the three action plans for the conservation of species, adopted within the Mediterranean Action Plan. On the same occasion, the delegation of Greece expressed the willingness of the Greek Government to host the meeting and to provide additional funds necessary to its organization.

2. For organizational reasons, it was decided to divide the originally conceived single meeting into two separate expert meetings covering, respectively, the implementation of the Action Plan for the Conservation of Mediterranean Marine Turtles, and the implementation of the Action Plan for the management of the Mediterranean Monk Seal *Monachus monachus* and of the Action Plan for the Conservation of Cetaceans in the Mediterranean Sea.

3. The Meeting of Experts on the Implementation of the Action Plan for the Conservation of Mediterranean Marine Turtles, adopted within MAP was held at the Hotel Byzantino, Arta (Greece), upon the invitation of the Government of Greece, from 27-29 October 1998, with the main objectives of reviewing the implementation of the Action Plan so far achieved, revising the Action Plan itself in the light of new knowledge that had become available since its adoption, and discussing priorities and measures for its further implementation.

Participation

4. Experts designated by the following Contracting Parties to the Barcelona Convention attended the Meeting: Albania, Algeria, Croatia, Cyprus, Egypt, France, Greece, Israel, Italy, Lebanon, Libyan Arab Jamahiriya, Malta, Morocco, Slovenia, Spain, Syrian Arab Republic, Tunisia and Turkey. The European Commission also attended the meeting.

5. The following United Nations bodies, and intergovernmental and non-governmental organizations were represented by observers. Secretariat of the Bonn Convention for the Conservation of Migratory Species of Wild Animals (CMS), Convention on the Conservation of European Wildlife and Natural Habitats (Council of Europe), Mediterranean Association to save the Sea Turtles (MEDASSET), International Commission for the Conservation of Atlantic Tunas (ICCAT), MEDCOAST, WorldWide Fund for Nature (WWF), the Sea Turtle Protection Society of Greece (STPS), Acquario di Genova, Centro Studi Cetacei, International Commission for the Scientific Exploration of the Mediterranean Sea (ICSEM).

6. The Regional Activity Centre for Specially Protected Areas acted as the Secretariat of the Meeting.

7. The complete list of participants is attached as annex I to the present report.

Agenda item 1: Opening of the Meeting

8. The Meeting was opened at 9.30 a.m. on Tuesday, 27 October 1998, under the Presidency of Mr Theodoros Koliopanos, Deputy Minister of Environment, Physical Planning and Public Works of Greece. Mr Mohamed Adel Hentati, Director of RAC/SPA (Tunis), after having welcomed all participants and briefly outlining the background to the Meeting, said that its first

tasks were to assess the degree of implementation in each of the Parties, to revise the Action Plan itself, and to identify ways in which its application could be improved.

9. He concluded by expressing sincere thanks to the Government of Greece for its generosity in hosting the Meeting, to the heads of the local administration for their assistance and hospitality, and to ETANAM (the Development Agency for the Amvrakikos Gulf S.A.) for helping to organize the Meeting.

10. The Vice-Prefect of Arta, Mr Christos Gokas, welcomed all participants, wished them successful deliberations, and expressed the hope that all would have an opportunity to visit the region's biotopes and areas of natural beauty.

11. In their welcoming statements, the Mayor of Arta, Mr Costas Vagias, and the Mayor of Filothei, Mr Petros Rizos, wished the participants success in their important efforts to promote conservation.

12. The General Director of ETANAM, Mr Dimitris Xylogiannis, also made an opening statement of welcome.

13. Mr Lucien Chabason, Coordinator of MAP, warmly thanked the Greek authorities for their hospitality. The Arta region, with the Amvrakikos Gulf, its wetlands and the richness of its ecology and landscapes, was particularly appropriate for the aims of the current meeting. He welcomed the newly appointed Director of the RAC/SPA Centre in Tunisia, Mr Mohamed Adel Hentati, who was replacing Mr Mohamed Saied, whose term had greatly contributed to the reputation of the Tunis Centre. Biological diversity had become a significant dimension of MAP with the adoption in 1995 of a completely new protocol on Specially Protected Areas and Biological Diversity. It was now up to countries to ratify it as quickly as possible to permit its entry into force. Since 1985, the Contracting Parties to the Barcelona Convention had incorporated the conservation of species into their priorities and, in 1989, RAC/SPA had initiated an Action Plan for the Conservation of Marine Turtles which the participants were invited to assess today. The Secretariat believed that definite progress had been noted in the general awareness of the problem, in the enactment of national legislation, in the identification and protection of nesting sites, and in informing and sensetizing the public. But other aspects deserved more profound consideration: conservation had to be applied to the entire life-cycle of marine turtles, particularly with regard to their time in the open sea and the impact of fishing activities, and it was necessary to harmonize monitoring methods and better coordinate research activities. In conclusion, the Coordinator stressed that, at their Eleventh Ordinary Meeting (Malta, October 1999), the Contracting Parties would be informed of the results of the present Meeting and of the progress of work in the entire region.

14. After having welcomed the participants to Arta, Mr Theodoros Koliopanos, Deputy Minister of Environment, Physical Planning and Public Works of Greece, offcially opened the Meeting . He said that his country pursued an active policy for the conservation of species, in cooperation with NGOs and local authorities. With regard to the occurrence and especially nesting of marine turtles, Greece was one of the most important countries, and that created regional obligations for it. The establishment of the National Marine Park in Alonissos (Northern Sporades) since 1982 for the conservation of the monk seal, and of the National Marine Park in Zakynthos for the conservation of *Caretta caretta*, officially expected this year, were two important contributions to that end. Information networks had been set up and rehabilitation centres for endangered species had been operating in Greece, run by NGOs in collaboration with public services. Mr. Koliopanos said that the Government of Greece was committed to preserving its biological diversity and, within the framework of MAP, it was ready to promote

exchanges so that other countries could benefit from the experience it had acquired in conservation matters, and so that Greece could also learn from the experience of other countries.

Agenda item 2: Rules of Procedure

15. The Meeting noted that the Rules of Procedure adopted for meetings and conferences of the Contracting Parties to the Convention for the Protection of the Mediterranean Sea against Pollution and its Protocols (UNEP(OCA)/IG.43/6/Annex XI), as amended by its Eighth Ordinary Meeting, would apply *mutatis mutandis* to its deliberations.

Agenda item 3: Election of officers

16. In accordance with rule 20 of the rules of procedure, and after informal consultations, the Meeting unanimously elected the following officers:

Chairperson:	Ms Stavroula Spyropoulou (Greece)
Vice-Chairpersons:	Ms Ebru Kamiloglu (Turkey)
	Mr Abdulmaula Abdelmagid Hamza (Libyan Arab Jamahiriya)
Rapporteur:	Mr Jean Lescure (France)

Agenda item 4: Adoption of the agenda and organization of work

17. The Meeting adopted its agenda, based on the provisional agenda contained in document UNEP(OCA)/MED WG.145/1. The agenda is attached to the present report as annex II. The Meeting also agreed to follow the schedule of work proposed by the Secretariat as set out in the annotated provisional agenda contained in document UNEP(OCA)/MED 145/2.

Agenda item 5: Assessment of the implementation of the Action Plan for the Conservation of Mediterranean Marine Turtles

18. Introducing the item, the Director of RAC/SPA said that assessment of the progress made and of the difficulties encountered by countries in implementing the Action Plan were important to help identify areas of the Plan that needed to be revised and to set priorities for its more effective implementation.

19. In their presentations, the experts followed the format suggested by the Secretariat and addressed those aspects of implementation listed in paragraphs 20 to 35 below. The full texts of the reports presented to the Meeting by the experts are contained in annex IV to the present report.

Legal protection

20. Most countries had enacted legislation of relevance to the protection and conservation of marine turtles, with designated authorities and penalties to ensure its enforcement, and had ratified the international environmental conventions that were of relevance to the protection of marine turtles, particularly the Barcelona Convention and its Protocols, the Bonn Convention on Conservation of Migratory Species of Wild Animals, the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and CITES.

21. The four Mediterranean countries members of the European Union said that they had incorporated the “Habitats” directive into their national legislation, with specific provisions

applicable to marine turtles. However, the effective application of the directive sometimes met with difficulties at the local level, which they were striving to overcome. Other countries, not members of the EU, had noted with interest the possibilities of financing made available to them under EC instruments such as LIFE/Third Countries or MEDA.

22. Two countries reported no legal provisions for the protection of marine turtles and no real national programmes for their protection and conservation.

Protection and management of nesting beaches, feeding and wintering areas

23. Most Mediterranean countries had identified nesting beaches and the most important among them were the object of monitoring and management activities. In a few cases, countries and not been able to identify nesting sites and further survey work needed to be carried out.

24. Among the measures to reduce impacts on designated nesting beaches, were removal of physical pollutants, regulation of visotor access and exclusion of vehicles, banning of building activity on and near the sites, and prohibiting of night activity and lighting. In addition, in some cases cages were used to provide in situ nest protection against predators or clutches were transferred to hatcheries and the hatchlings later released. The seasonal banning of speedboats and fishing activities in the maritime areas around nesting beaches had also been applied to some areas, in order to reduce mortality at sea.

25. With regard to feeding and overwintering areas, for which knowledge was much more fragmentary, no specific protection or management measures were being applied.

26. One expert, referring to a proposed project in his country to survey the coastline for sites to be integrated into a specially protected area, requested assistance from RAC/SPA to implement the project.

Actions taken to minimize incidental catches of marine turtles in fishing gear

27. The impact of certain types of commercial fishing activities on the populations of marine turtles was noted in all countries, although few measures to reduce by-catches were in place. It was noted that the existing legislation governing fishing should be enforced.

28. Over and above the designation of specific areas as marine and coastal reserves, there were efforts to ban or regulate certain types of fishing activity in certain places at certain times and to identify the high-risk zones and formulate recommendations to reduce the impacts.

29. To mitigate turtle mortalities, one country paid compensation to fishermen who released turtles taken in long lines. In some other countries, injured turtles could be taken to turtle hospitals and rehabilitation centres. Experiments were being carried out using modern medical techniques to examine the effects of hooks and nets on marine turtles.

Information. Awareness and Education Programmes

30. Activities were being carried out at national and local levels in most countries to improve public awareness of the need for conservation of marine turtles, including press and media campaigns, posters, television documentaries, educational materials for schoolchildren, lectures, meetings and seminars, and use of the marine turtle as a flag species on currency.

Such activities often involved collaboration with NGOs. In such general awareness campaigns, the importance of targeting specific groups, particularly fishermen and tourists, was stressed.

Training initiatives

31. Several countries organized training courses in basic research and conservation techniques for students, rangers, managers and trainees. In that context, the particular effectiveness of the formal and informal training at the Lara marine turtle station in Cyprus was highlighted, as well as the assistance provided by RAC/SPA.

32. Attention was drawn to the need to provide increased training possibilities in the future, and also to the possibility of organizing joint training activities for the Mediterranean countries.

Research and monitoring

33. The fundamental importance of and need for basic research on marine turtles was noted. In many countries there were research and monitoring programmes to collect and collate data on population structure, behaviour, genetics, migration, strandings, mortalities and nesting sites; to study nest protection measures; and to tag animals. Attention was called to the need to standardize monitoring techniques and to increase cooperation between institutes both within and among countries, perhaps through joint programmes.

34. Among areas considered to be priorities for future research and monitoring activities were: migration paths, feeding and overwintering areas; impact of fisheries; surveys of coastal areas; importance of temperatures in the determination of sex; use of telemetry; and genetic analysis.

35. In a few countries, the lack of basic knowledge on the status of marine turtles due to a lack of financial means had been a major obstacle to the implementation of the Action Plan.

Interventions by Observers

36. The representative of UNEP/CMS outlined activities undertaken by the Convention on Migratory Species on a global scale in relation to marine turtles. These included sponsorship of training/strategic planning sessions and financing of field projects and awareness initiatives, with an emphasis on the Atlantic coast of Africa and the Indian Ocean. With regard to the Mediterranean region, he encouraged eligible countries to submit project proposals for possible funding by CMS.

37. The representative of the International Commission for the Conservation of Atlantic Tunas (ICCAT) said that ICCAT, in addition to considering its target fisheries, was also looking at the problems linked to by-catch of protected species. Within that framework, at the last meeting of the ICCAT/SCRS (Standing Committee for Research and Statistics), which had been held in Madrid in the course of the previous week, several observer programmes had been reported by Mediterranean countries, including Greece, Italy, Libya, Morocco and Spain, particularly on long-liners. He said that enhanced contacts between ICCAT and UNEP could be useful and would permit the use of expert knowledge to better assess the impact of various types of gear used in large-scale pelagic fishing.

38. The representative of MEDASSET took issue with the statement made by a previous speaker from the host country and asserted that there had been a serious delay in the creation of the national marine park of Zakynthos. The matter had now been brought to the attention of

the EC. She further pointed to two examples, in Cyprus and Turkey, where she considered that the protection of marine turtles was being ignored for the purpose of tourist development, to the detriment of nesting sites.

39. The representative of the Sea Turtle Protection Society of Greece (STPS) said that the host country had made significant progress to introduce protection measures for sea turtles and to set up the Zakynthos marine national park. However, he was concerned at the ability of national and local authorities to enforce existing legislation and safeguard the operation of the park. Decisive government steps were needed to deal with illegal activities at nesting areas. He called for immediate action to establish the national park and its management body, and to provide compensation for affected landowners. STPS would continue to work with local and national authorities and other stakeholders to ensure conservation of marine turtles in Greece.

Agenda item 6: Revision of the Action Plan for the Conservation of Mediterranean Marine Turtles

40. The representative of the Secretariat introduced the item, drawing attention to document UNEP(OCA)/WG145/3, which contained proposed revisions to the Action Plan. The document had been prepared by the Secretariat on the basis of discussions in a working group of independent experts on conservation of marine turtles, held in Tunis on 27-28 March 1998. He emphasized that, in drawing up the proposed revision and updating of the Action Plan, the working group had taken account of the need to protect all aspects of the life-cycle of marine turtles; the need to protect all marine habitats used by turtles at critical stages of their life-cycles; and the need for an integrated management approach.

41. After an extensive exchange of views on the proposed revisions contained in the report of the Secretariat, and the incorporation of a number of further amendments, the Meeting agreed to transmit the proposed amended version of the Action Plan for the Conservation of Mediterranean Marine Turtles to the 11th Ordinary Meeting of the Contracting Parties to the Barcelona Convention for adoption. The proposed amended version of the Action Plan is contained in annex III to the present report.

42. During the debate, the representative of the European Commission suggested that the Secretariat might establish contact with the Directorate General XIV (Fisheries) of the Commission, with a view to utilizing its experience and expertise with respect to the impact of fisheries on the environment, and obtain information on potential sources of financing for research activities.

Agenda item 7: Prospects for the further implementation of the Action Plan: Priorities for research and conservation

43. Introducing the item, the representative of the Secretariat drew attention to two information papers, UNEP(OCA)/MED WG.145/Inf.3 “Review and analysis of the available knowledge of marine turtle nesting and population dynamics in the Mediterranean” and UNEP (OCA)/MED WG.145/Inf.4 “Interaction of marine turtles with fisheries in the Mediterranean”. The papers had been prepared by independent experts at the request of RAC/SPA, with the aim of assisting the meeting to identify priorities in the action for the conservation of Mediterranean marine turtles. The Secretariat had also prepared a brief background paper (UNEP(OCA)/MED WG.145/CRP.1), summarizing the recommendations of the two information papers.

44. The meeting was unable to undertake an in-depth discussion of the important issues and problems of prioritizing activities for the conservation of Mediterranean marine turtles because of lack of time. Certain delegations proposed that a further meeting be held for this purpose. However, certain delegations insisted on the need of recommendations for urgent action to ensure the appropriate conservation of marine turtles. The recommendations are:

- evaluation of the interaction between turtles and Mediterranean fisheries by appropriate research programmes, giving priority to those situations where fishing activities interact with the largest size classes and/or in areas with a high density of turtles, and where the fishing activity is greater; in that respect, mention was made of the Gulf of Gabes;

- monitoring of certain marine turtle nesting beaches in Libya;

- organization of a meeting, bringing together fishermen organizations and stakeholders in the marine environment, to discuss fishing techniques and their impact and the possibilities of improving such techniques;

- saturation tagging campaigns at the main nesting sites, using double tagging or microchip tagging techniques;

- reduction of intentional mortality in those countries where marine turtle exploitation is still practiced.

45. It was recommended that RAC/SPA should endeavour to further clarify the priority issues of the proposed revised Action Plan by liaising with concerned international organizations and networking with the experts of the region.

46. With respect to interaction of marine turtles with fisheries, the representative of the Council of Europe informed the Meeting that the group of experts on the conservation of amphibians and reptiles established within the Bern Convention suggested, at its 5th meeting held in mai 1998, the preparation of a report on the impact of fisheries on Mediterranean marine turtles.

Agenda item 8: Any other matters

47. The representative of UNEP/CMS drew the attention to the under-representation of the Mediterranean region in the annual sea turtle symposium held in the United States of America. He proposed a joint effort to organize a pan-Mediterranean meeting which would consider progress reports from Range States; allow for the presentation of scientific papers; provide for smaller thematic workshops to discuss specific conservation issues in more detail; and possibly include training sessions led by international experts aimed at harmonizing methodologies. He suggested that the planning and coordination be initiated as a joint venture of CMS and RAC/SPA, perhaps with the involvement of the Bern Convention. He noted that a meeting of such a scale would take at least one year to prepare properly, and would require the active assistance of an organizing committee, which might usefully include representation of selected NGOs from the region.

48. Several representatives declared themselves in favour of the proposal made by the representative of UNEP/CMS, and the Meeting invited RAC/SPA to take the appropriate steps to follow up the proposal.

Agenda item 9: Adoption of the report of the Meeting

49. The draft report of the Meeting and the annex containing the draft revised version of the Action Plan for the conservation of Mediterranean marine turtles were adopted by the participants. The above annex will be submitted for adoption to the next meeting of the Contracting Parties.

Agenda item 10: Closure of the Meeting

50. After the customary exchange of courtesies, the Chairperson declared the Meeting closed on Thursday 29 October at 19.30 p.m.

ANNEX I

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LISTE DES PARTICIPANTS

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ANNEX II

AGENDA

1. Opening of the Meeting
2. Rules of procedure
3. Election of officers
4. Adoption of the Agenda and organization of work
5. Assessment of the implementation of the Action Plan for the Conservation of Mediterranean Marine Turtles
6. Revision of the Action Plan for the Conservation of Mediterranean Marine Turtles
7. Prospects for the further implementation of the Action Plan : Priorities for research and conservation
8. Any other matters
9. Adoption of the report of the meeting
10. Closure of the meeting

ANNEX III

ACTION PLAN FOR THE CONSERVATION OF MEDITERRANEAN MARINES TURTLES

INTRODUCTION

1. The Parties to the Barcelona Convention included among their priority targets for the period 1985-1995 the protection of Mediterranean marine turtles (Genoa Declaration, September 1985). To this purpose, they adopted in 1989 the Action Plan for the Conservation of Mediterranean Marine Turtles. In 1996, the Parties confirmed their commitment to the conservation of marine turtles by including the 5 species of marine turtle recorded for the Mediterranean in the List of Endangered and Threatened Species annexed to the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean (Barcelona, 1995). The Protocol calls on the Parties to continue to cooperate in implementing those action plans already adopted.

2. There is evidence of important negative impact on the populations of Mediterranean marine turtles by human activities. The most serious threats to the turtles are :

   - deterioration of the critical habitats for the life cycle of marine turtles, such as nesting, feeding and wintering areas, and migration routes;
   - incidental or intentional capture in fisheries;
   - pollution.

   These threats have to be taken into account in any plan for the conservation of marine turtles and appropriate protection measures proposed.

3. Many important aspects of the status, biology and behaviour of marine turtles remain too poorly known to plan a complete management strategy for the conservation of these species in the Mediterranean. Nevertheless, the information which has become available since the adoption of the Action Plan allows a revision of some of its provisions. This Plan will be readjusted if necessary, as further information becomes available.

4. Information from various sources is taken into account in this Action Plan. Coordinated programmes for scientific research (population dynamics, tagging, biology, physiology, etc.), public awareness campaigns, proposals for the management of nesting beaches, etc. can ensure the survival and help the reconstitution of populations of marine turtles.

5. An effective and durable protection of the Mediterranean marine turtles implies management of the Mediterranean as a whole, and should take advantage of the action of all the concerned actors, notably NGOs, and be carried out in cooperation with existing programmes and plans, in particular:

   - at the international level : the Mediterranean Action Plan (MAP); Fisheries

Management Plans (FAO/GFCM); Global Strategy for the Conservation of Marine Turtles (IUCN/SSC); International Commission for the Conservation of Atlantic Tunas (ICCAT); International Commission for the Scientific Exploration of the Mediterranean Sea (ICSEM);

- at the national level : the plans established by the various countries.

6. This Action Plan for the Conservation of Mediterranean Marine Turtles outlines objectives, priorities, and implementation measures in different fields and their coordination. The different components of the Action Plan are mutually reinforcing and must be taken together to have the best chance of success.

OBJECTIVES

7. The objectives of this Action Plan are :

a. Protection, conservation and, where possible, enhancing of the populations of marine turtles in the Mediterranean. Special priority should be accorded to Chelonia mydas, wherever appropriate.
b. Appropriate protection, conservation and management of the marine turtle habitats including nesting, feeding, and wintering areas and migration routes.
c. Improvement of the scientific knowledge by research and monitoring.

PRIORITIES

8. The following general priorities are recommended :

- protection and management of known nesting, feeding (benthic and pelagic) and wintering areas and migration routes;
- restoration of degraded nesting beaches;
- banning of exploitation and minimization of incidental catches;
- identification of feeding and wintering areas and migration routes;
- investigation of new nesting areas;
- more knowledge on the biology of the species, in particular aspects related to its life cycle.

9. The following priority actions are specified :

a. For the protection and management of the species and their habitats :

- development and implementation of legislation;
- protection and management of nesting areas;
- management of feeding and wintering areas;
- minimization of the impact of fisheries on marine turtles.

b. For research and monitoring :
Knowledge needs to be improved concerning the following priority topics:

- identification of marine turtle critical habitats;
- assessment of fisheries' interaction;
- population structure and dynamics;

- development of nesting beach management techniques;
- recording of dead, sick and injured sea turtles through stranding networks.

c. For public awareness, information and education :
The general public and local stakeholders have to be addressed and, in particular, depending on specific conditions - target groups such as:

- the local population and visitors to nesting areas;
- fishermen and other stakeholders;
- tourists and tourism-related organizations;
- schoolchildren and teachers;
- decision makers at local and regional levels.

In order to satisfy the set of priorities, emphasis should *inter alia* be given to :

- information media and, in particular, electronic media; for this purpose, the appropriate networks are to be used, wherever possible;
- production of Mediterranean information material, notably publications and audio-visual material ;
- national information campaigns.

IMPLEMENTATION MEASURES

10. An adequate implementation of the measures recommended in this action plan will only be possible in the presence of appropriate support by the Parties and competent international organizations, particularly as regards the provision of adequate financial support, through national and regional financing programmes and through support for applications to donors for relevant projects.

A. PROTECTION AND MANAGEMENT

With regard to management, the following measures are recommended :

A.1 Legislation

11. The Contracting Parties that have not yet extended legal protection to marine turtles should do so as soon as possible, especially having regard to the relevant international conventions.

12. Each Contracting Party should be encouraged to develop and implement the necessary legislation for the establishment, protection, conservation and management of protected areas for marine turtles.

A.2 Protection and Management of Critical Habitats

13. Integrated management plans should be drafted for terrestrial and marine areas which encompass marine turtle critical habitats.

14. Measures and regulations aimed at protecting critical habitats, on land and at sea, should be developed and implemented. In the case of nesting beaches, such measures should be in relation to public access, use of vehicles, use of artificial lights, noise, nautical activities, minimization of predation and inundation, etc.

15. Information campaigns directed at local authorities, residents, teachers, visitors, fishermen, and other stakeholders, are urgently needed in order to enlist their participation in the efforts for the conservation of marine turtles.

A.3 Reducing Mortality at Sea and Eliminating Local Consumption and Use

16. A reduction of accidental catch and mortality can be achieved by:

- applying appropriate fishing regulations concerning depth, season, gear, etc. especially in areas with a high concentration of turtles;
- the modification of fishing gear and methods. For instance, the use of Turtle Excluder Device (TED) and modified longlines could be tried and, as appropriate, introduced in fishing practices;
- regulating speedboats at areas frequented by turtles;
- education/training of fishermen to correctly haul, handle, release and record incidentally caught turtles.

17. Consumption, exploitation and deliberate killing of marine turtles should be eliminated by:

- designing and enforcing appropriate legislation;
- carrying out campaigns among fishermen in order to urge them to release marine turtles caught incidentally and to participate in the information networks on turtles (report sightings of turtles, of tags, participation in tagging programmes, etc.);
- carrying out campaigns for fishermen and local populations to facilitate the implementation of legislation to ban the consumption and trade/use of all products derived from marine turtles as well as to reduce mutilations and killings because of ignorance and/or prejudice.

18. Establishment of first-aid and rescue centres for the rehabilitation of sick and injured (accidentally or intentionally) marine turtles.

A.4 Establishment of a Mediterranean Network of Marine and Coastal Protected Areas for Marine Turtles

19. All the Contracting Parties that have critical habitats for marine turtles should make immediate efforts for the adequate protection, conservation and management of the areas encompassing those habitats.

20. An inventory of all the nesting areas all around the Mediterranean should be prepared urgently, for their inclusion in a network of protected areas for marine turtles. Such an inventory should include the known sites (protected and/or monitored) and should be regularly reviewed in the light of increased knowledge.

21. A network of marine and coastal protected areas throughout the Mediterranean should be created covering known areas for reproduction, feeding, migration and wintering of marine turtles.

A.5 Information, Education and Training

22. A public-awareness programme, including special documentary information material, should be developed for fishermen, local populations, tourists and tourism-related organizations to help reduce the mortality rates of marine turtles, to induce respect for nesting, feeding and wintering areas, and to promote the reporting of any useful information concerning sea turtles.

23. A widespread campaign for the protection of Mediterranean marine turtles should be carried out in order to sensitize the public and encourage it to support conservation measures.

24. Training programmes should be elaborated for the exchange of expertise among the Contracting Parties, and particularly for those Parties that have no experts with specialized knowledge of marine turtles, or for managers of specially protected areas, including critical habitats for turtles.

B. SCIENTIFIC RESEARCH AND MONITORING

B.1 Scientific Research

25. The development of research and exchange of information should cover all the priority fields for the conservation of marine turtle population by using various methods such as surveys, tagging, data logging, satellite telemetry, Geographic Information Systems (GIS), genetics, on-board observers, and modelling.

26. For some Contracting Parties there is little or no information on critical habitats and size of breeding populations of marine turtles. These Parties should be encouraged and assisted to undertake such research programmes.

B.2 Monitoring

27. All Contracting Parties should encourage monitoring programmes aimed at gathering information on population status and trends. For this purpose, important areas should be selected, included in the Mediteranean network, and a standardized methodology should be followed in order to allow statistical comparisons to be made.

C. COORDINATION STRUCTURE

28. It is necessary to develop cooperation among the Contracting Parties for the implementation of the Action Plan and to improve the coordination of activities within the region. It is considered that the Mediterranean Action Plan/Regional Activity Centre for Specially Protected Areas is the most appropriate existing mechanism for this coordination, in cooperation with other bodies concerned.

29. The major function of the coordinating mechanism with regard to marine turtles would be to :

- collect and evaluate the data at Mediterranean level;
- prepare inventories of existing and potential networks of protected areas for marine turtles;
- contribute to the creation of a Mediterranean network of protected areas for marine turtles;
- prepare a timetable of activities and financing proposals for the Contracting Parties' meetings;
- contribute to the dissemination and exchange of information;
- assist and/or organize expert meetings on specific topics regarding marine turtles, as well as training courses.

30. Complementary work carried out by other international bodies aiming at the same objectives should be encouraged, ensuring coordination and preventing possible overlapping.

31. The status of Mediterranean marine turtles and the content of this Action Plan for marine turtles should be reviewed whenever necessary.

ANNEX IV[1]

TEXTS OF THE PRESENTATIONS AND STATEMENTS MADE BY THE DELEGATIONS

TEXTES DES PRESENTATIONS ET DES DECLARATIONS FAITES PAR LES DELEGATIONS

[1] This annex includes the texts of the presentations and statements made by the delegations during the meeting and transmitted in writing to the Secretariat. The information and opinions given are the responsibility of the delegations, and do not imply the expression of any opinion whatsoever on the part of SPA/RAC and UNEP.

SOME DATA ON MARINE TURTLES IN ALBANIA

Prof. Dr Idriz Haxhiu* & Mr Selfo Uruci**

There are only a few publications on marine turtles in Albania. We can mention here: Haxhiu 1998, 1995, 1981, 1980; Zeko and Puzanov 1960. The material of these publications was based upon partial data gathered during the last 30 years. We must stress that there are no specified study programs on the issue in Albania. This happens for certain reasons. One is that there is only one specialist who since 30 years covers all the studies in the field of herpetofauna in Albania. Also this kind of approach is conditioned by the economic and financial difficulties.

The data on the Marine Turtles of Albania have been gathered through short expeditions in Adriatic and Ionian seacoasts. A good part of the information comes from the direct contacts with fishing specialists and fishermen.

In the Adriatic and Ionian seas *Caretta caretta* has been recorded. It also exists a single case of *Dermochelys coriacea* specimen (fig.1) that was caught 40 years ago, in the fishing zone of Shengjini in the North of Albania. This specimen is preserved in the Museum of Natural Sciences in Tirana.

Caretta caretta which can be found in the Ionian and Adriatic seas, is the most common marine turtle in our country. An evidence of this fact is the relatively high frequency of specimens caught accidentally along the coasts by fishermen. Furthermore dead individuals are found on the beaches (fig. 1). According to the says of old fishermen and the surveys of last years it seems that the number of marine turtles, which accidentally fall in gears decreases from year to year. This speaks for the concrete endangering of marine turtles populations in Adriatic and Ionian seas.

There is no legal protection in Albania for the species of turtles both marine and others of our fauna.

In general by the formal and informal surveys that we have done in different social categories and areas, results that the level of public awareness on turtles is very low, and that there is no special consideration of the turtles, they are just one of the most animals. This idea is illustrated by the fact that marine turtles caught by the fishermen have been used as food for pigs or hens. Even more, before 20 years in some localities occurred "organised hunting" to gather *Testudo hermanni,* which later were used to feed hens. This happened when the Albanian economy was totally managed by the state.

Another negative phenomenon of last years is mass dynamite fishing in some areas. This damages the fauna in general and also has a devastating result in the individuals of the marine turtles. This year near Saranda were found two dead individual of *Caretta caretta.* One of them is used as ornament on the walls of a restaurant of the city.

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*Tirana University
**Pedagogue at Gjirokastra University.

Based in the typical Mediterranean clime of Saranda unlike other parts of Albania perhaps there are to find nesting areas in this coast. In Saranda can be found subtropical flora and a few elements of tropical flora.

Along this coast there are some very interesting and very quiet bays. Two years ago in 1996 during the month of August, at *Kakome* Bay tracks of a *Caretta caretta* have been noticed. Nearby the *Kakome* Bay there are some other bays which are quiet areas with no villages around. We think there is a need for studies and researches for the possibility of nesting of *Caretta caretta* in the mentioned area.

The greatest part of fishermen consider bad luck the catch of marine turtles by their gear during fishing. To improve the public awareness on the scientific and ecological importance of marine turtles, the problems that threat them and endangered species, during the last years we organised a number of workshops and meetings with fishing specialists and fishermen. We also prepared posters that were distributed at the warehouses where the fish is gathered. A number of this posters was given to the captains of fishing boats and have been posted to the boats (figg. 2, 3). Anyway we are conscious that there is much more to do for the public awareness on marine turtles, their values and protection.

CONCLUSIONS:

Some concrete actions that need to be done as soon as possible in the best interest of marine turtle as an important and endangered part of our fauna are:

- A special law for the protection of marine turtles must be approved by the lawmakers of our country. There are a lot of scientific studies that specialists have to fulfil on the marine turtles.
- There is the need for more TV programs and scientific documentaries on the life of marine turtles and their importance, which will help increase not only the awareness but also the interest of the public on this species.
- It is necessary to raise up a specialised center for studies on marine turtles in Albania.
- Studies must be done to verify if there are or not areas of nesting of marine turtles in the Albanian coast.

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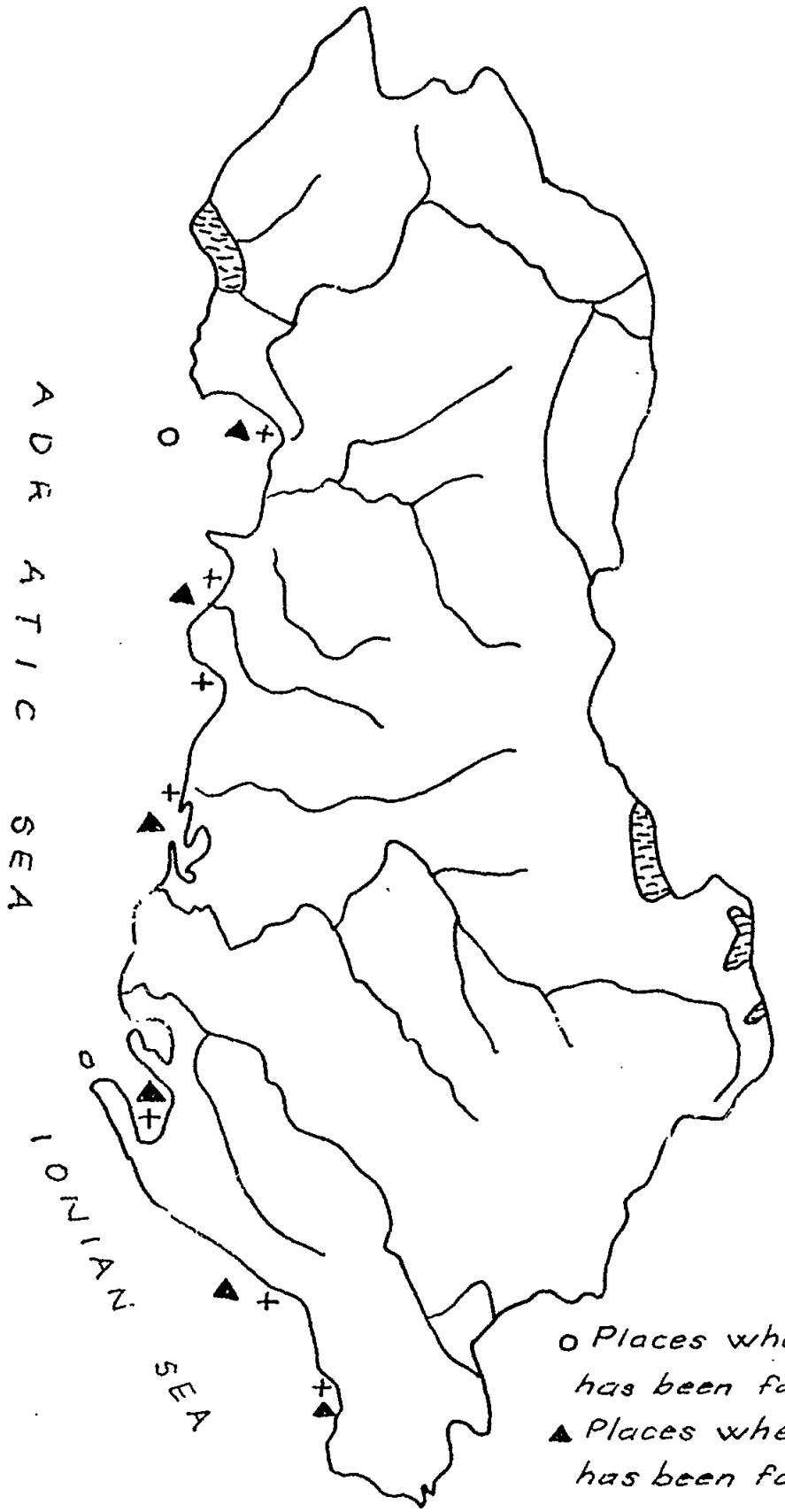

ADRIATIC SEA
IONIAN SEA
o Places where D.coriacea has been found.
▲ Places where C.careta has been found.
+ Places where dead C.careta have been found.

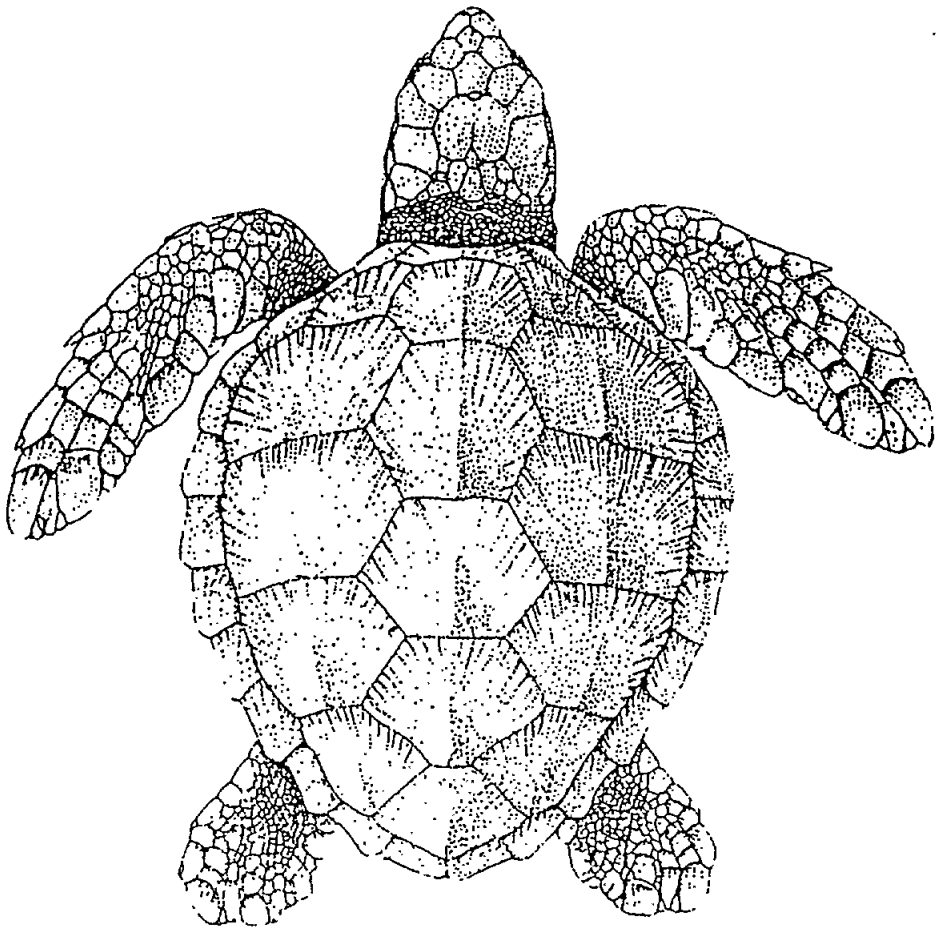
Figure 1

BRESHKAT E DETIT TE RREZIKUARA! T'I MBROJME ATO!

Qytetare dhe specialiste te peshkimit, eshte ne doren tuaj fati i breshkave detare. Ato jane kafshe shume te lashta; kane mbijetuar per te arritur deri ne ditet tona. Ato nuk paraqesin asnje lloj demi per njeriun dhe gjallesat e tjera.

Ne detet tona jetojne dy lloje breshkash detare: ***Dermochelys coriacea & Caretta caretta.***

Dermochelys coriacea eshte shume e rralle ne Mesdhe; me madhesi gjigande, gjatesia 110-275 cm dhe pesha 250-860 kg. Guaska e saj eshte e mbuluar me lekure, ku dallohen 7 kreshta gjatesore ne pjesen kurrizore.



Caretta caretta eshte me e perhapura ne ujrat tona detare me gjatesi 80-140 cm dhe peshe 80-450 kg. Guaska e saj eshte e ndertuar nga pllaka brinore simetrike. Shpesh here ajo eshte viktime e rrjetave te peshkimit.

PESHKATARE! Mbroni keto gjallesa te mahnitshme te natyres!

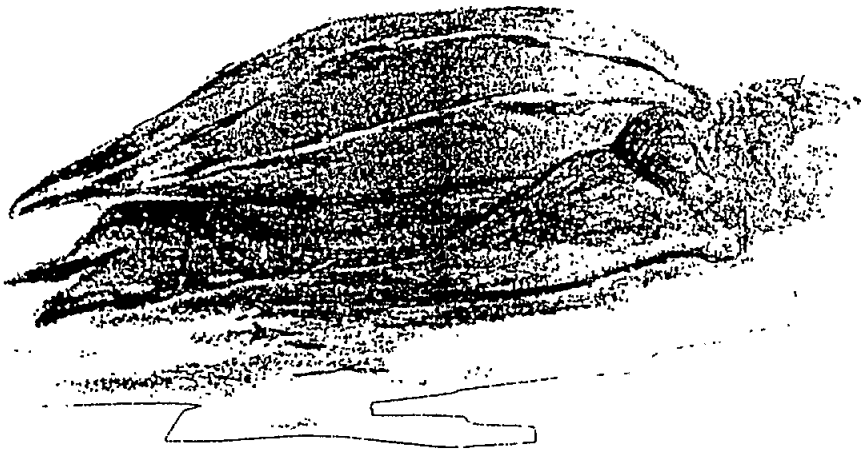
"Shoqata e Biologeve"
Falenderime Fond. "SOROS"
Shator 1997

POSTER-MARINE TURTLES PROTECTION

Figure 2

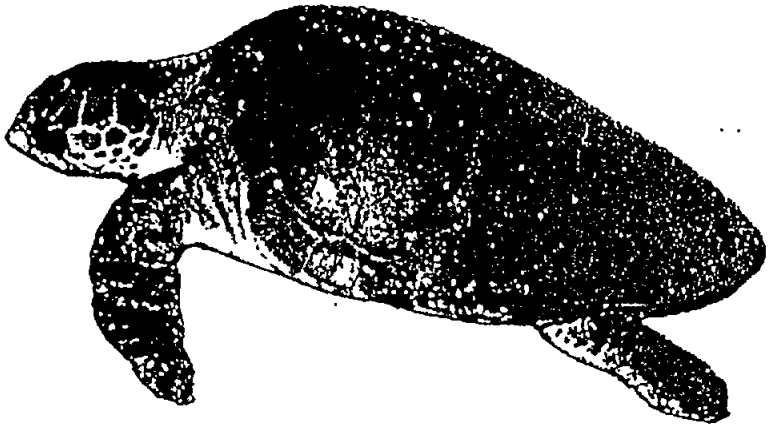
TË MBROJMË BRESHKAT!

S



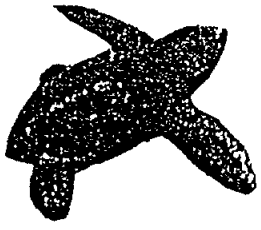
Dermochelys coriacea. Me peshë 250-860 kg.

O



Caretta caretta. Me peshë 80-450 kg.

S



Veza dhe i vogli i Caretta caretta

FALENDERIME FOND. "SOROS"
SHTATOR 1997

POSTER-MARINE TURTLES PROTECTION

Figure 3

RAPPORT SUR LES TORTUES MARINES EN ALGERIE

! **Délégué Expert d'Algérie:** Prof. Z. Boutiba
Laboratoire de Biologie et Pollution marine
Institut des Sciences La Nature
Université d'Oran - 31000 Algérie

! **Rapport de Synthèse:**

1) ***Protection légale***

Aucune protection légale des tortues marines en Algérie malgré que le pays a ratifié toutes les conventions internationales. Cependant les textes sont prêts et déposés auprès des administrations compétentes et concernent toutes les espèces de tortues marines qui utilisent les eaux marines algériennes comme route de migration.

2) ***Recherche et suivi***

Pas de véritable programme à l'échelle nationale pour l'étude des tortues marines. Toutefois, quelques études ponctuelles, ayant pour objectif de collecter les informations sur le statut des populations de tortues marines. Ces recherches entrent dans le cadre de projet de Diplômes d'Etudes Supérieures en Biologie marine où le thème "Tortues marines" est abordé. A titre d'information, 64 mémoires de D.E.S. ont été réalisés en 14 années!

Citons un travail intéressant effectué par Luc Laurent en 1988 sur les Tortues marines des côtes algériennes et un petit travail de synthèse que nous avons réalisé pour le compte de la Banque Mondiale dans le cadre d'un Audit environnemental sur la préservation des espèces côtières menacées en 1991.

Seulement à partir de 1992 qu'un programme de recherche sur ces reptiles marins est mis sur pied par l'équipe du Laboratoire de Biologie et Pollution marine (I.S.N., Université d'Oran).

3) ***Actions de formation***

Des stages de formation sont programmés pour l'année 1998 en collaboration avec les Institutions spécialisées du Muséum National d'Histoire Naturelle (Paris), d'Italie et de Tunisie.

4) ***Evaluation des interactions avec les activités de pêche***

Des enquêtes au niveau des ports de pêche montrent que les captures accidentelles par les engins de pêche s'élèvent entre **250 à 300 individus/an**.

5) ***Identification des habitats des tortues marines***

Pour des raisons sécuritaires, les missions en mer et sur les portions littorales, jusque là restées à l'état naturel et sauvage, sont difficiles d'accès, et ne sont pas encore explorées dans leur totalité.

6) ***Structures des populations des tortues marines en Algérie***

Nous basant sur les résultats obtenus, nous pouvons affirmer que:

- la Caouanne (*Caretta caretta*) fréquente les eaux territoriales algériennes;
- la Tortue Luth (*Dermochelys cariacea*) est rare dans ces eaux;
- la Tortue verte (*Chelonia mydas*) n'a jamais été observé dans le Bassin Algérien.

7) ***Sensibilisation, information et éducation du public***

Un programme de grande envergure de sensibilisation, d'information et d'éducation a été lancé ces deux dernières années (1997-1998) et est surtout ciblé vers les gens de la mer (pêcheurs, plaisanciers), touristes et écoliers, lycéens, étudiants (programme d'éducation). Des expositions, des prospectus, dépliants, maccarons, etc. ont été réalisés et dirigés vers le Grand public durant tout l'été 1998.

8) Des ONG oeuvrent avec acharnement pour la sauvegarde d'espèces marines menacées telles que les tortues marines, le phoque moine et les dauphins et baleines en Méditerranée.

STATUS OF MARINE TURTLES IN CROATIA

REPORT ON THE IMPLEMENTATION OF THE ACTION PLAN FOR THE CONSERVATION OF MEDITERRANEAN MARINE TURTLES

Prepared for the Meeting of Experts on the implementation of the Action Plan for the conservation of Mediterranean marine turtles adopted within MAP

Arta, Greece, 27-29 October 1998

Bojan Lazar [1,2] & Nikola Tvrtkoviæ[1]

Foreword

Despite adoption of the Action Plan for the Conservation of Mediterranean Marine Turtles within the framework of the Mediterranean Action Plan of the Mediterranean countries in 1989, Croatia started research into and conservation of marine turtles only in 1993. The institution leading and chiefly engaged in the *Adriatic Marine Turtle Research and Conservation Program* was the Department of Zoology, Croatian Natural History Museum in Zagreb, while research activities were carried out in collaboration with Croatian marine research institutes, aquariums and natural history museums along the Croatian coast, as well as with NG0s, local volunteers and students of biology, the Faculty of Science, University of Zagreb. For the first time, comprehensive research on the basic elements of the biology and ecology of marine turtles has been undertaken in Croatia. Although Croatia was a Contracting Party to the Barcelona Convention, until 1995 marine turtles were without legal protection.

Increased public awareness activities and education resulted in the establishment of a separate Education Project within the *Adriatic Marine Turtle Program.* This is planned and leaded within the framework of *Natura* - Society for the Nature Conservation of Croatia, from 1995.

The Adriatic Marine Turtle Research and Conservation Program is based on the UNEP/MAP Action Plan for the Conservation of Mediterranean Marine Turtles at the regional level. Therefore realisation and further planning of the Program activities is coordinated with the Regional Activity Centre for Specially Protected Areas - Tunis (RAC/SPA) activities, as well as with Croatian State Directorate for Nature and the Environment, Zagreb.

In this report basic results of research into, protection and public awareness of marine turtles in Croatia are presented, according to the objectives and priorities of the Action Plan for the Conservation of Mediterranean Marine Turtles .

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[1] Department of Zoology, Croatian Natural History Museum.
[2] *Natura* - Society for the Nature Conservation of Croatia.

1. INTRODUCTION

The first reference to the presence of marine turtles in the Croatian waters dates from the middle of the 19th century (ERBER, 1864). Three species (loggerhead turtle, green turtle, and the leatherback) were mentioned in several scientific and popular articles, as well as in museum and fauna catalogues during the second half of the 19th century (FABER, 1883; KATURIÆ, 1883; KOLOMBATOVIÆ, 1886,1895; DEPOLI, 1898; DAMIN, 1889; KOSIÆ,1899), continued through the first part of the 20th century (RÖSSLER 1904; BRUSINA, 1907; KRUMBACH, 1917; BABIÆ, 1920; BOLKAY, 1924; HIRTZ, 1927, 1932; VATOVA, 1928; KARAMAN, 1939), and recently (CVITANIÆ, 1956; CRNKOVIÆ, 1957; GASTON, 1960; RIEDL, 1983; PAVLETIÆ, 1964; POZZI, 1966; PETROVIÆ, 1970; DŽUKIÆ, 1972; MARCUZZI, 1972; BRELIH & DŽUKIÆ, 1974; BRUNO, 1978; HENLE, 1980; ÈEPE, 1983; LAPINI, 1984; MRŠIÆ, 1987; LIPEJ *et al.*, 1987; DE LUCA *et al.*, 1990). However, all the literature data were sporadic and poorly documented, relating to the observation of individual specimens.

The first comprehensive research on marine turtles, orientated towards research into the basic of biology and ecology of species in Croatia, the frequency and conditions of turtle-finding (incidental capture) and the interaction of marine turtles with Croatian fisheries, use (purpose) of captured specimens and migration patterns, was started in 1993, in order to determine the preliminary status of marine turtles in Croatian Adriatic Sea. The target species of research activities was the loggerhead sea turtle, the most common in the region. However, a historical review of all three species recorded in Croatia is given below.

1.1. Loggerhead Turtle *(Caretta caretta)*

The loggerhead is the most frequent species in Croatian waters (LAZAR & TVRTKOVIÆ, 1995), documented for the first time in Croatia in "Die Amphibien der Österr. Monarchie" by ERBER (1864). The species was also mentioned by BRUSINA (1878), while some notes were published by KOLOMBATOVIÆ(1881, 1882), as a part of an index of the fishes, amphibians, reptiles and mammals of the Split area. The loggerhead turtle was mentioned as "not rare", often caught by fishermen, specimens sometimes weighing even over 100 kg. On several occasions the species was recorded in brackish waters (BOLKAY, 1924), as well as in some fresh water lakes (BOLKAY, 1924; DE LUCA *et al.,* 1990).

1.2. Green Turtle *(Chelonia mydas)*

The first reference to the presence of the green turtle was provided by STOSSICH (1880). The author described the species as very rare. Although records of the green turtle were listed in several papers (PAVLETIÆ, 1964; MRŠIÆ, 1987), re-identification of existing specimens shows that these turtles were adult loggerheads (LAZAR & TVRTKOVIÆ, 1995). Therefore, the last data on this species date from the 19th century. According to the literature, this species is rare in the Adriatic (STOSSICH, 1880; FABER, 1883; RIEDL, 1983; Pozzi, 1966; LAZAR & TVRTKOVIÆ, 1995).

1.3. Leatherback Turtle *(Dermochelys coriacea)*

The leatherback should be considered as only an occasional visitor to the Adriatic. In Croatia only five specimens have been recorded in total (LAZAR & TVRTKOVIÆ,1995). The first record of this species is dated September 24th, 1894 (KOSIC, 1896).

2. RESEARCH AND MONITORING OF MARINE TURTLES IN CROATIA

The loggerhead turtle, the only species present regularly in the Croatian waters, is the subject of the research of the Adriatic Marine Turtle Programme's activities. The first, and in most cases

only preliminary, results of the research projects carried out within the Program are presented in this chapter.

2.1. Nesting Beaches

The first data on the observation of marine turtles on land in Croatia have been presented by LAZAR & TVRTKOVIÆ (1995). Although those data have not confirmed the nesting of loggerheads on the Croatian coast, due to evidence of sporadic cases of loggerhead reproduction on the Italian Adriatic coast (ARGANO *et al.,* 1992; BASSO, 1996), such a possibility was not excluded.

Therefore, in co-operation with RAC/SPA, a beach survey of southern Croatian coast was performed in summer 1997. Results show that due to beach dimensions, beach sand (texture, consistence, temperature) and vegetation, offshore approach and shoreline composition, 5 out of the 18 sandy beaches found in total seem physically suitable for loggerhead nesting, with a total length of 1040 m. (LAZAR *et al.,* 1997). Three sandy beaches on Mljet Island, less exploited by tourism, are stated to be the most suitable loggerhead nesting beaches in southern Croatia. Irregular observations of marine turtle tracks were reported by local inhabitants. Furthermore, according to an unconfirmed interview in one Croatian newspaper *(Veèernji list,* 22 March 1998:20), on Mljet, turtle eggs were in the past used for domestic consumption.

Although it seems that loggerhead emergences occasionally occur on Mljet Island, there are no data on actual loggerhead nesting activities in Croatia at present (LAZAR *et al.*, 1997).

2.2. Feeding and Overwintering Areas

Several authors suggested the existence of loggerhead overwintering and feeding areas in the Adriatic (GROOMBRIDGE, 1989; ARGANO *et al.,* 1992; LAZAR, 1995; LAZAR & TVRTKOVIÆ, 1995; GEROSA & CASALE, 1998). Adriatic recoveries of adult female loggerheads tagged on nesting beaches in Greece (MARGARITOULIS, 1988; ARGANO *et al.,* 1992; LAZAR *et al.,* in press) seem to prove non-random, purposeful migration into the Adriatic. Analyses of incidental catches (see § 3) show a high capture rate in winter bottom trawling in northern Croatian waters, which indicates the role of that area as an overwintering, and probable feeding ground (LAZAR, 1995; LAZAR & TVRTKOVIÆ, 1995; LAZAR *et al.,* in press; GEROSA & CASALE, 1998). Captures of large size loggerheads on overwintering ground in Gulf of Gabés in Tunisia occurred in the zone between 20 and 50 m deep (LAURENT & LESCURE, 1994), and therefore it is possible that the shallow continental shelf of the northern Adriatic, with deepness not exceeding 50 m, presents an appropriate overwintering habitat. Comparing the winter temperatures of the water (about 17EC in Gulf of Gabés, and about 12-13EC in the northern Adriatic), it is probable that turtles are not active, as is also supposed by GEROSA & CASALE (1998). Also, turtles caught in the Croatian waters belong to both age classes (subadults and adults)(LAZAR, 1995), but according to testimonies from professional fishermen, "smaller" specimens seem to be more common.

2.3. Migration Routes

Data on sea turtle migrations in the Adriatic Sea are extremely rare, and were presented, partially, by MARGARITOULIS (1988) and ARGANO *et al.* (1992). In the first 10 years of the implementation of tagging programs in the Mediterranean basin (1981/82-1992), 13 tagged loggerheads were recaptured in the Adriatic Sea (MARGARITOULIS, 1988: 6 specimens from 34 recaptured; ARGANO *et aL,* 1992: 7 specimens from 51 recaptured). From Croatian waters, only 4 tagged loggerheads have been reported.

New data, based upon recoveries of tagged loggerheads along the Croatian coast of the Adriatic Sea in the period between 1993 and 1996, are presented by LAZAR *et al.* (in press). During the

four year period, 11 tagged loggerhead females were recovered in Croatian waters, which is almost three times more than in the previous 10 years. All the recaptured specimens were tagged in Greece by STPS. However, it is possible that the number of recaptured specimens in Croatia was higher in the past, but due to the lack of a data-collecting network and of public awareness, the majority of recaptures were never reported. The mortality rate seems to be higher than the 60% described by ARGANO *et al.* (1992), while the highest mortality is caused by the gill net (LAZAR *et al.,* in press), recognised as the most deadly fishing method by ARGANO *et al.* (1 992) as well.

All 11 recaptured tagged loggerheads came from nesting beaches on Zakynthos or on the Peloponnesus in Greece. The longest migration, of about 1,200 km, was recorded for specimens recovered in the Northern Croatian Adriatic coast. The shortest period between the last record on the nesting beach and recovery in Croatia was 43 days. The specimen migrated at least 750 km, which indicates an average speed of about 17.5 km/day (LAZAR *et al.,* in press) This speed is in the range of the results of MARGARITOULIS (1988).

The 11 recoveries of migrants in Croatia (LAZAR *et al.,* in press), as well as data on recaptures by ARGANO *et al.* (1992) and MARGARITOULIS (1988), show that part of the Greek loggerhead nesting population migrates through the Adriatic Sea. Although migratory behaviour is unknown, it is probable that the Adriatic represents their feeding and developmental area. It is interesting that LAZAR & TVRTKOVIÆ(1995) presented data on three schools of mostly subadult marine turtles (probably *Caretta caretta)* observed in Croatian waters, while according to DODD (1988) group migrations are unknown in *Caretta.*

According to LAZAR *et al.* (in press), it seems that the loggerhead migratory route leads along the eastern Adriatic coast, toward the north. This route overlaps with the current that enters the Adriatic along the eastern coast and must surely have an influence on the direction of loggerhead migration. However, migration against the prevailing currents in the Adriatic can not be excluded, so the question about the active passage of loggerheads in the region is still without a proper answer.

2.4. Monitoring Activities

Collecting data on findings-at-sea of rare, pelagic animals like marine turtles is at present one of the major difficulties in the implementation of the Adriatic Marine Turtle Program activities. First field data within preliminary research have been collected through personal contacts with local people (specially fishermen), and through questionnaires distributed along the coast, all in co-ordination with scientists from oceanographic institutes, museums and natural history museums and local NG0s (LAZAR & TVRTKOVIÆ, 1995). The lack of available experts along the Croatian coast for more comprehensive research on turtle-fishery interaction showed the need for the establishment of a more sophisticated network in Croatian waters.

The monitoring and data-collecting network on marine turtles in Croatia today includes three links: (1) data-collectors, (2) data-transfer, and (3) data user. The target group of fundamental importance in the marine turtle conservation strategy is made up primarily of professional fishermen (GEROSA & CASALE, 1998), as well as fishing and diving societies. Educational material (leaflets, posters) with basic information on marine turtle species and status in Croatian waters, project activities and aims, also outlining a "what-to-do-if" procedure has already been prepared in co-operation with RAC/SPA-Tunis. Distribution of materials in 1988 has been arranged with the Directorate for Fishery, Ministry of Agriculture and Forestry of Croatia.

Transfer of data on marine turtles collected from fishermen to the Project Board (Dept. of Zoology, Croatian Nat. His. Mus. in Zagreb) is arranged through the following institutions along the coast:

- Surveillance and alert service, Ministry of Defence (phone: 385);
- Maritime police department, Ministry of the Interior (phone 92, or through direct radio contact to maritime police patrol);
- Harbour master offices and branches, Ministry of Maritime Affairs, Transportation and Communications;
- Fishing Inspectorate; State Directorate for Nature and the Environment.

All these institutions have a standing order to transfer information collected from fishermen to the Museum. Fishermen can also report directly to the Museum by phone, fax or e-mail.

The network for monitoring and collecting data on marine turtles in Croatia was established this year. At the moment, distribution of the leaflets to fishermen is going on, and therefore evaluation of network efficiency will be possible in the few next years.

3. INTERACTION BETWEEN MARINE TURTLES AND FISHERIES IN CROATIA

Data on interaction between marine turtles and fisheries in Croatia are quite limited. There is a little information on population structure, condition, mortality rates and the impact of fisheries on turtles in Croatian waters. The fishing fleet in the eastern Adriatic included 594 vessels registered for commercial fishing, the majority of which (about 75%) are trawlers (CETINIÆ, 1989). According to LAZAR & TVRTKOVIÆ(1995), a yearly incidental catch of 2,500 specimens has been estimated for the eastern Adriatic region.

Detailed analyses of incidental catches on 96 specimens was given by LAZAR (1995). Ninety four turtles were captured in nets, mostly by trawlers (66 ex., 70.2%), generally at depths of 20 to 50 m (62 specimens). All turtles were captured on a muddy or sandy sea bottom. Sixty seven specimens (71.3%) were caught during the "winter period" (between November and May), 62 of them by bottom trawling. In most cases, precise length of carapace is unknown (66%), but it seems that the ratio favourises sub-adults (<70 cm) than adults (>70 cm)(18:14). Turtles were generally captured alive, only 4 specimens being brought dead to the surface (LAZAR, 1995). On the other hand, a high mortality rate (>60%) is recorded for tagged loggerheads recaptured in Croatian waters, most of them being found dead in a gill net (LAZAR *et al.,* in press)(see § 2.3).

According to a preliminary analysis of incidental catches in Croatian waters (LAZAR, 1995, LAZAR & TVRTKOVIÆ, 1995), and due to the maximum peak of the incidental catch by bottom trawlers occurring during the winter months, it is not impossible that part of the Greek nesting loggerhead population overwinters in the Adriatic as well (LAZAR *et al.,* in press)(see § 2.2 and § 2.3).

4. LEGAL PROTECTION OF MARINE TURTLES IN CROATIA

4.1. Protection of the Species at the International Level

Protection of marine turtles in Croatia according to international conventions is based on the *Convention for the protection of the Mediterranean Sea against Pollution* (Barcelona Convention), 1976 - *Protocol concerning Mediterranean Specially Protected Areas* (Geneva,

1982). The Contracting Parties to this Protocol engage themselves to take all appropriate measures for protecting marine and coastal areas which are important for the safeguarding of natural resources and natural sites of the Mediterranean Sea Area. Marine turtles have been recognised as a species whose safeguarding is a priority within the framework of the Convention: in 1985, at their fourth ordinary meeting, the Contracting Parties adopted a declaration on the targets to be achieved as a matter of priority in the decade 1986-1995, referred to as the Genoa Declaration: among these objectives, there is the "protection of endangered marine species (e.g. the monk seal and Mediterranean sea turtles)". Following the Genoa Declaration, an Action Plan for the conservation of Mediterranean marine turtles was adopted within the framework of the Convention; this Action Plan represents a global strategy for the conservation of the species, providing for a series of marine turtle protection and management measures.

The Croatian Republic is a Contracting Party to the Barcelona Convention.

4.2. Protection of the Species at the National Level

Three species of marine turtles recorded in Croatian waters are protected by the Law for the protection of some reptile species of July 12, 1995. Therefore it is forbidden to catch and kill, hold in captivity, sell and export them.

5. PROTECTION AND MANAGEMENT OF HABITATS

There is no specially protected area regarding marine turtles in Croatia.

5.1. Nesting Beaches

The only protected areas are Saplunara and Blace Bays on the Island of Mljet, where emergences and occasional nesting may occur. However, legal protection of both bays is based upon the nature value of the sandy ecosystems in the localities. According to the Law of 1965, they are classified as a "protected landscape", which is not enough considering the restriction and rareness of such habitats in Croatia.

5.2. Feeding and Overwintering Areas

As the existence and precise position of overwintering and feeding areas has not been scientifically proved yet, there is no basis for legislative protection of some concrete area.

5.3. Migration Routes

Protection of migrants and migration routes along the Croatian coast (see § 2.3) is based on education of professional fishermen through leaflets produced by RAC/SPA and *Natura*, lectures, and personal contacts with fishermen. Distribution of the leaflets is arranged with the Directorate for Fishery, Ministry of Agriculture and Forestry of Croatia, and the Fishing Inspectorate of the State Directorate for Nature and the Environment (see § 2.4).

6. AWARENESS AND EDUCATION PROGRAMMES

Awareness and education programmes implemented in the Adriatic Marine Turtle Program is done within the activities of *Natura.* A series of about dozen lectures was given for fishermen's associations and schoolchildren along the coast, as well as for the students of biology at the Faculty of Sciences, University of Zagreb.

Popular science articles on marine turtles in general, as well as on the activities of the Adriatic Marine Turtle Program have been published in all relevant Croatian magazines and newspapers.

Further awareness and education of professional fishermen and pupils is planned through distribution of printed educative material (posters, leaflets), in co-ordination with State institutions (see § 2.4), as well as through the media and lectures.

7. TRAINING INITIATIVES

There is a lack of field training among the research teams of the Adriatic Marine Turtle Project. Officially, only one person in the Program activities has been trained within the RAC/SPA training courses for the conservation of sea turtle (Training courses for the conservation of sea turtles, 24-29 July 1995, Dalyan, Turkey). Absence of enough number of biologists trained in marine turtle conservation methods still presents one of the major problems in the realisation of the Program activities.

8. RECOMMENDATIONS AND PRIORITIES

On the base of the materials presented, the following research and conservation priorities are strongly recommended:

8.1. Research

1. Research on the overwintering and feeding ecology of the loggerhead sea turtle in the northern Adriatic Sea;
2. Study of migration patterns, population structure and dynamics of Adriatic loggerheads through the launching of the project for tagging specimens caught at sea;
3. Study of the impact of fisheries on the marine turtles in Croatian waters;
4. One month survey of sandy beaches of Mljet Island, throughout three seasons.

8.2. Conservation, Awareness, Training

1. Extension of the legislative protection of the sandy ecosystems of Saplunara and Blace Bays from the existing *protected landscape* category to the *protected botanical and zoological reserves* category;
2. Trawling restrictions in northern Croatian waters throughout the winter, in habitats less than 50 m depth;
3. Awareness and education of fishermen, and pupils in primary and secondary schools along the coast and on the islands;
4. Training of scientists in the Adriatic Marine Turtle Program within RAC/SPA training courses for the conservation of marine turtles.

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CYPRUS

Progress in the implementation of the Action Plan on Marine Turtles

Myroula Hadjichristophorou & Andreas Demetropoulos

Legislation

Turtles have been protected by Law (Fisheries Law CAP 135 and the Fisheries Regulations) since 1971. The relevant regulation (Reg 13.(1)) foresees that:

" Without a special written permit from the Director of the Fisheries Service, it is prohibited:

(a) to kill, pursue, take, buy, sell or possess any aquatic turtle, seal, dolphin, freshwater crab or sand crab of the species *Ocypode cursor;*
(b) to attempt to kill, pursue, take, buy or sell any of the above species; or
(c) to buy, sell or possess turtle eggs or any part of a turtle, seal, or dolphin."

Nesting habitat protection for Green Turtles was provided in 1989, under the same regulations. These provide for the protection of the main nesting beaches and adjacent waters in the Lara - Toxeftra area, on the west coast of Cyprus. All Fisheries Regulations were consolidated and approved by the House of Representatives in 1990 as a new piece of legislation (Regulations 273/90). The Lara-Toxeftra Protected Area encompasses the main Green Turtle nesting beaches. Loggerhead turtles also nest there. In this area, which stretches for about 10 km along the coast and out to sea to the 20 metre isobath, it is forbidden from the 1 June to the end of September to:

- Place any sun bed, umbrella, caravan, tent etc. in the Protected Area.
- Stay on the beaches or the coastal area at night (one hour before sunset until sunrise).
- Drive any vehicle on a beach or tolerate such action.
- Fish, except with a rod and line.
- Use or anchor a boat without a special permit or tolerate such action.

The basic law provides for a fine of up to £5000 (about $10000) or for imprisonment for up to 6 months or both penalties, for any contravention of the regulations.

Conservation and population recovery activities

In 1976 a project was conceived to help the marine turtles of Cyprus. Two years later, in 1978, the project was launched by the Fisheries Department. It includes a seasonal station and a hatchery at Lara.

The main thrust of the project aims at:

- Protecting the important turtle nesting beaches.
- Protecting eggs and hatchlings from predation and other threats.
- Protecting adult turtles.
- Monitoring the turtle population and nesting activity in Cyprus.

The Cyprus Government finances the project. Late in 1980, it received World Wildlife Fund support for three years, as an IUCN/WWF project. More recently it has also received assistance from the European Union as a MEDSPA Project.

On all the Lara-Toxeftra Reserve beaches nests are protected *in situ,* by placing special aluminium cages over them. These cages allow the hatchlings to escape to the sea as soon as

they hatch but prevent foxes from getting at the nest. A hatchery is used for nests that cannot be adequately protected where they were laid, e.g., on tourist beaches. It is a fenced off part of the beach where nests are transferred and reburied.

Though there are fluctuations in the number of turtles nesting from year to year, on average, over 7,000 hatchlings of both species are released every year from the Reserve area alone. Another 7,000 Loggerhead hatchlings reach the sea from protected nests on the Polis Limni beaches in Chrysochou Bay.

Monitoring and research

In addition to the actual conservation work carried out, monitoring and research have also been ongoing. Turtles have been tagged since 1979 and the population etc., has been monitored. Research into nest protection methods has also been ongoing over the years and the techniques actually used in conservation work have been evolving continuously. Information is dissipated through the training courses held at Lara and by the publication of the *Manual on Marine Turtle Conservation for the Mediterranean* in 1995. The publication of this was sponsored by RAC/SPA and the Cyprus Wildlife Society. An Addendum to the Manual is now nearing completion and includes *inter alia* information on the updating of the methods and equipment used at the project.

Training

Every year, since 1989, training courses in Turtle Conservation are held at the Lara Station for Mediterranean scientists and SPA managers. Many trainees at these courses are sponsored by RAC/SPA. The effectiveness of these courses is well known and the generation of new projects and new legislation initiated by trainees in many Mediterranean countries witnesses this effectiveness. Scientists from practically all Mediterranean countries have attended these courses. Though not formally taking part in the courses many university students and young graduates also receive training as volunteers at the project.

Public awareness

In the field of public awareness several TV documentaries have been made both by local TV stations and by European teams and networks. So far it is estimated that 27 different documentaries have been made. These were shown not only in Cyprus but also in many Mediterranean and other countries. Public awareness in turtle conservation has increased significantly in Cyprus in recent years. Turtles and turtle conservation are now in school books. Even fishermen (though not all) who have traditionally been killing turtles, incidentally caught in their nets, now often bring or report to the Fisheries Department live turtles caught in their nets or long lines. In 1996 a new £ 10 note was issued in Cyprus showing prominently a Green Turtle. In 1997 a new WWF commemorative coin was also issued by the Central Bank of Cyprus showing a Green Turtle. Information centers, posters, articles etc. have of course also been used.

The present situation

Though the number of turtles nesting on the beaches that are monitored (which includes all important nesting beaches) are more or less constant, though with significant fluctuations from year to year, there seems to be a large increase of juveniles (30 - 50 cm carapace length) seen at sea in Cyprus waters over the last 10 years or so. These activities and signs, however, in no way mean that all is well and that the turtles nesting or feeding in Cyprus waters have ceased leading a precarious existence.


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EGYPTIAN CONSERVATION ACTIVITIES ON MARINE TURTLES IN THE MEDITERRANEAN REGION

Mohamed Ibrahim Mohamed*

National Marine and Coastal Management Programme

The marine environment is the richest in Egypt in terms of biodiversity and encompasses some of the nation most important natural resources. However, development along most of the country's coastlines such as occupation or deterioration of the sandy shores is uncoordinated without sufficient consideration to environmental consequences. This is leading to the rapid degradation of the country's marine and coastal resources and jeopardizing future sustainable returns from these resources. In addition, there is no clear responsibility for the management of fisheries (both commercial and sport fishing) nor is there appropriate control over the exploitation by pharmaceutical and research bodies of marine resources.

Globally threatened fresh water and marine species protected under international agreements such as sea turtles are still caught and sold. Many important aspects of the biology and behaviour of marine turtles are too poorly known to plan a complete management strategy for the conservation of these species .

Concerning marine turtles there are 3 species of turtles in the Mediterranean: Loggerhead Turtle (*Caretta caretta*), Green Turtle (*Chelonia mydas*) and, Leatherback Turtle (*Dermochelys coriacea*). Only the loggerhead and green turtles breed in the Mediterranean. The populations of both species are known to have been much larger in the past than they are now.

- Green Turtle is distributed in Egyptian coastal water of the Mediterranean Sea. They nest on gently slopping sandy beaches in restricted areas of the world. The main threat to this and other marine turtles are the activities of man. Destruction of nesting grounds caused by different coastal developments including land filling of shallow coastal areas are adversely affecting this species. Water pollution with oil and other pollutants appears to have had a significant negative impacts on the populations of the turtle worldwide.
- Loggerhead Turtle are nesting in Mediterranean and Red Sea coasts in Egypt. Few nesting recorded in Egypt near Baltim and North Sinai of the Mediterranean coast. Its present status is endangered due to loss of nesting habitats.

No other species are known to nest in the Egyptian coast of the Mediterranean sea.

Both green and loggerhead populations are endangered and they have obviously suffered a dramatic decline recent years. Therefore, in addition to the complete protection of the turtles and their nesting beaches management measures aimed at increasing recruitment of new entrants into these populations should be envisaged in plans aimed at the recovery of turtle stocks. Conserving adult female turtles and their nesting habitats merits top priority in the conservation strategy. This strategy will solve the problem of predation by animals on turtles eggs and hatchlings, which has become a major problem with the decline in turtle numbers. Increasing recruitment into the populations can be achieved by reducing the incidence of predation. Turtles face different predators during their first stages of their life.

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* Egyptian Environmental Affairs Agency (EEAA), Department of Nature Protection

The most serious threats to the turtles are those occurring during the nesting period on land and catches by fishermen at the sea. Adopting and enforcing legislation concerning the landing, sale and possession of live turtles, turtle meat or products is necessary and will help to a degree in curbing the killing of turtles. Prohibiting the setting of nets in shallow waters, in particular near nesting beaches during the nesting season, will also reduce incidental catches and diminish conflicts with fishermen.

If turtles are to be effectively protected in the Mediterranean conservation efforts need to concentrate on protecting them from man's activities by reducing losses due to fishing and destruction of feeding ground habitat. The predation efforts should also aim at increasing recruitment into the population by protecting turtle eggs and hatchling from other dangers. Thus, protection and conservation of the marine turtles habitats including nesting, feeding and wintering areas are necessary.

Egyptian Efforts for Conservation of Marine Turtles

There is an existing project for studying the marine turtles along the Egyptian Mediterranean coast from Rafah to Sallum, the Darwin Initiative Marine Turtle Project. This project will extend over three years from first of January 1998 to first of January 2001 and is implemented in cooperation with Queen Mary Westfield College (University of London), Suez Canal University in Egypt and the Egyptian Environmental Affairs Agency (EEAA). To date Darwin Initiative for the Survival of Species Marine Turtle Project in Egypt (November 1997 - September 1998). has accomplished the following.

- Public awareness programmes for the people who are interested in the field of marine turtle. First programme convened in Arish 11/12/1997, second programme in Alexandria 25/8/1998. Both were attended by 50 participants from Institute of Oceanography & Fisheries (Alexandria), Cooperative Societies for fishing, General Authority for Fishing Development, Department of Environment in North Sinai, Water Police, Suez Canal University and other related societies.
- Printing marine turtle on cotton shirt and distributed to the trainees to increase public awareness.Training of 4 persons from Suez Canal University and Natural Protectorates Rangers in Queen Mary & Westfield College in London for 2 months through February 16 - April 16, 1998.
- Practical training for 2 persons in Lara Station, Cyprus 1-10 August, 1998, with the financial support of SPA/RAC.
- Beach survey for 3 months (June, July, August) 1998 by 2 rangers from Natural Protectorates & 2 researchers from Suez Canal University in addition to the manager of the project from England.

The future plan of conservation of marine turtles includes:

a. Convening a training course on the biology of marine turtles and its conservation for 4 days through next November, 1998, for 15 trainees from rangers of Protected Areas, Suez Canal University, Lake Bardawil Authority, Fishermen Societies and Coast guard.
b. Establishing a public awareness center in North Sinai which a suitable situation for conservation of marine turtles to promote the reporting of any useful information about this concern.
c. Convening programmes for public awareness and environmental education about marine turtles to be addressed to the local population and tourists in nesting areas and also fishermen.
d. Protection of nesting areas and completing investigation of new nesting and wintering areas.
e. Gathering data and more knowledge on behaviour of these species and also the biology and ecology of them.

Result of the beach survey concluded the following:

a. The coast area from Refah to Port Said is suitable for nesting. Survey located 103 tracks for marine turtles (28 nests with eggs and 75 nests without eggs). However tracks don't always lead to nests and on some beaches very few do.
b. Delta area to Alexandria no located nests but dead turtles recorded. This coastal area appears suitable for nesting.
c. The coast from Agamy to Alameen is not suitable for nesting due to the existence of tourists' villages.
d. The coast from Sidi Abdel Rahman to Matrouh shells of dead turtles located possibly victim of oil pollution
e. West Matrouh to Sedi Barrani is mostly suitable for nesting of loggerhead turtles.
f. West Sedi Barrani to Sallum some places suitable for nesting but mainly is rocky. No nests found.

In conclusion, the nesting beaches on the shores of the Egyptian Mediterranean coast are largely known. The most cost-effective way of identifying nesting beaches on extensive coastlines is by aerial survey. Results of aerial surveys, therefore, need to verified on the ground. Thus, multi-year surveys are necessary to work out average nesting activity on any beach.

The protection of eggs and hatchlings on nesting beaches should be prioritised as follow:

i. Declaring these beaches protected areas and thus controlling human interference or physical damage to the eggs or hatchlings.
ii. Protection of eggs *in situ* by placing protective cage on top of the egg chamber and with transplantation of eggs to a hatchery. This hatchery should use methods as close to nature as possible and replanting eggs in the sand on the beach.
iii. Tagging should be undertaken just after the turtle has finished laying and covering the eggs.

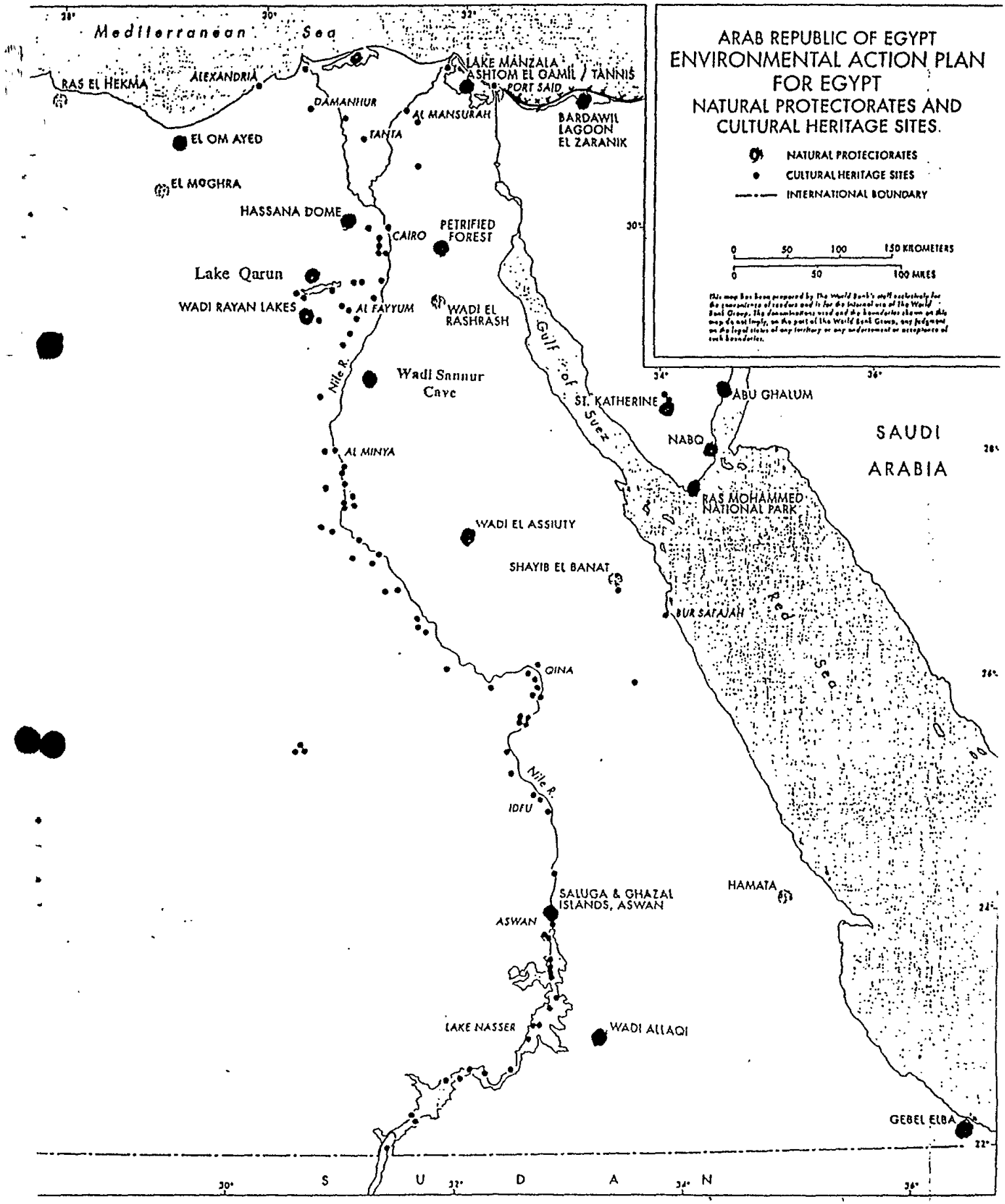
Beach management for turtle conservation purposes aims at protecting females and pre-nesting females , their eggs and the resulting hatchlings. Beach management relates to the control of human activity.

Biodiversity Conservation in Egypt

Egypt is one of the earliest civilisations known to have adopted some form of nature conservation. Many efforts have been made to address natural heritage issues outside the scope of protected areas. Hunting and trade in wildlife resources are problems which have received considerable attention by EEAA in recent years, with a fair amount of success.

Egypt has already issued legislation concerning prohibition of fishing, catching, annoying or disturbing marine turtles. From these decrees are the following:

1. Minister of Agriculture Decree No, 1403/1990 (Marine turtles).
2. Minister of Agriculture Decree No, 1012/1993 (Marine mammals).
3. Law 102/1983 for Natural protectorates. This is the most important nature conservation legislation in Egypt, establishing the legal framework for creation and management of protected areas.
4. Law 4/1994 for Protection of the Environment.
5. Law 124/1983 on Catching Fish and Aquatic life. These legislations should aim at regulating all fishing activities that have an impact on the capture of turtles at sea. It should also cover the possession and use, including sale of turtle or its parts.



Marine Turtles Nesting Area.

RAPPORT DE LA FRANCE

Jean Lescure
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En France, nous avons un Plan d'Action national Tortues marines depuis 1993. Ce Plan comprend trois grandes parties comme tous les autres Plans d'action nationaux pour la Biodiversité : bilan des connaissances, suivi des populations et gestion des espèces et des sites. Il a la particularité de s'étendre aux départements et territoires d'outre-mer, si importants pour les Tortues marines. Je rappellerai qu'avec ceux-ci la France a la responsabilité du plus grand nombre de plages de ponte de Tortues marines au monde.

I. Bilan des connaissances

L'objectif de ce bilan est de rassembler et d'analyser l'ensemble des données anciennes et récentes concernant les Tortues marines dans notre pays.

1- Recherches et études

En préalable, j'évoquerai les principales recherches effectuées depuis une vingtaine d'années en France sur la biologie des Tortues marines. Nous avons travaillé principalement sur la Tortue Luth : découverte de l'effet de la température sur la différenciation sexuelle, sex-ratio à l'éclosion dans la nature, description du caryotype et du développement de l'embryon, neuroanatomie des voies visuelles, analyse morphofonctionnelle de la locomotion, etc... Quant *à Caretta caretta,* Luc Laurent a étudié la génétique des populations méditerranéenne et atlantique, la dynamique de la population méditerranéenne et l'hivernage dans le sud tunisien. Il a prospecté les plages d'Afrique du Nord pour y déceler les sites de ponte.

2- Présence historique le long des côtes françaises

Il n'y a plus de site de ponte en France métropolitaine. Il y a eu des pontes de *Caretta caretta* sur les plages du côté d'Aléria en Corse vers les années 1935-1940 (Delaugerre, 1987). Une synthèse historique et une analyse des données sur la présence des Tortues marines le long des côtes méditerranéenne de la France (Corse comprise) a été effectuée par Luc Laurent en 1996. Pour la période 1985-1995, il est annuellement d'une petite dizaine de *Caretta caretta et* de quelques Luths (exceptionnellement 7 en 1985). La plupart des Caouannes rencontrées sont des jeunes (taille moyenne: 42,08 mm) de la classe J2 de Laurent, les adultes sont très rares (1,7 %). Une Tortue verte a été vue entre 1965 et 1975 et une autre en 1989. Une *Eretmochelys imbricata a* été vue en 1989, c'est la quatrième observation pour cette espèce. Le nombre de Tortues vues dépend de la pression d'observation, qui était relativement faible jusqu'à ces dernières années.

3- Réglementation française

Les Tortues marines sont totalement protégées en France métropolitaine par un arrêté du 17 juillet 1991 (J.0. du 17 août 1991), modifié par l'arrêté du 22 février 1993 (J.O. du 26 mars 1993). Elles le sont en Guyane par l'arrêté du 17 juillet (J.0. du 17 août 1991), en Guadeloupe par l'arrêté du 2 octobre 1991 (J.0. du 19 novembre 1991) et en Martinique par l'arrêté du 16 mars 1993 (J.0. du 26 mars 1993).

II. Suivi des populations

1- Méthodologie nationale

a/ Pour effectuer un suivi cohérent, nous avons élaboré une méthodologie nationale en établissant une fiche de description de site de ponte, une fiche d'observation, un document synthétique d'identification ainsi qu'un protocole et une fiche de cause de mortalité. Ces documents ont été validés par le groupe d'experts Tortues marines du Plan d'Action national.
b/ Le suivi proprement dit consiste pour la France métropolitaine à organiser et maintenir un réseau d'observateurs tout le long du littoral atlantique et méditerranéen de la France comprenant aussi bien des agents des Affaires maritimes, gendarmes, scientifiques, personnel des aquariums marins que des pêcheurs et des plaisanciers. Les informations sont rassemblées par G. Oliver en Méditerranée et par R. Duguy du côté atlantique. Le réseau méditerranéen se met en place alors que le réseau atlantique est plus ancien. Des synthèses annuelles des observations et des échouages sont publiées. Des pinces et des bagues ont été distribuées à des membres de ces deux réseaux.

2- Présence actuelle sur les côtes métropolitaines françaises

Le réseau d'observateurs en Méditerranée se met peu à peu en place. En 1996, on a observé 12 Caouannes, dont 4 en Corse, 4 Tortues Luths et 2 Tortues vertes, ce qui est exceptionnel; en 1997, 12 Caouannes, dont 3 en Corse, et 2 Luths. Il est très possible que ce nombre augmentera à mesure que le réseau s'organisera et s'étoffera mais on est loin des 104 et 286 Luths observés en 1996 et 1997 sur la côte atlantique française.

3- Baguages

Dans le cadre de notre Plan d'Action, une synthèse des campagnes de baguage effectuées en France méditerranéenne a été faite par Luc Laurent en 1996. Nous en extrayons les données que nous mentionnons et nous y ajoutons quelques informations récentes.

Trois types de bagues ont été utilisés pour marquer les Tortues marines en France méditerranéenne: la bague plastique circulaire de Monaco, la plaque plastique sécable du Seaquarium du Grau du Roi, fixée sur le bord de la carapace, et la bague métallique américaine (NTBC) NE 49. De 1987 à 1997, 34 *Caretta caretta on* été marquées et relâchées à la mer, une partie d'entre elles avait séjourné plus ou moins longtemps dans un Aquarium pour y être soignée. 3 de ces Tortues ont été recapturées.

4- Interactions avec les pêches, captures, mortalité en Méditerranée française

Selon une enquête de Laurent, les Caouannes sont principalement capturées par les filets trémails à sole, à poissons, trémails langoustiers, filets droits et chalutage. On peut estimer sommairement le nombre de captures accidentelles annuelles à 200. Les engins les plus meurtriers sont les filets trémails langoustiers, calés pendant plusieurs jours, les trémails à soles, à poissons, les filets droits (filets maillants fixes) calés une nuit à un jour et les chaluts. Les moins meurtriers sont les sennes des thoniers senneurs et des lamparos. On manque de données suffisantes sur les palangres flottantes et les filets dérivants. Le nombre de jeunes Caouannes tuées chaque années par les différents engins de pêche (mortalité halieutique) est de plusieurs dizaines voire plusieurs centaines d'individus. L'engin le plus meurtrier pour la Tortue Luth est le trémail langoustier mais nous constatons par ailleurs, sur la côte atlantique, la mort fréquente de Luths par occlusion des voies digestives provoquée par l'ingestion de sacs plastiques.

III. Information, Sensibilisation, Protection

Des campagnes nationales, régionales et locales de sensibilisation ont été réalisées par voies d'affiches, interviews à la télévision, radio et presse locale. Les Aquariums ont constaté une plus grande sensibilisation et un plus grand retour d'informations par les pêcheurs après un relâcher divulgué localement. Il faut citer comme exemple la campagne de l'Aquarium de La Rochelle "Devenez observateurs des Pertuis" auprès des plaisanciers et professionnels de la mer qui a permis de tripler le nombre d'observations du côté atlantique.

Les propositions envisagées actuellement sont l'accroissement du réseau d'informateurs en Méditerranée, notamment par une information officielle auprès de tous les services publics concernés, l'organisation de centres de soins agréés et la production de matériel pédagogique. Chélonée, la toute nouvelle Association française d'étude et de protection des Tortues marines, envisage de réaliser une exposition Tortues marines à dimensions variables, transportable et prêtable pour répondre aux nombreuses demandes des associations et collectivités.

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THE IMPLEMENTATION OF THE ACTION PLAN FOR THE CONSERVATION OF MEDITERRANEAN MARINE TURTLES IN GREECE

Report presented by the Greek Delegation

I. LEGAL ASPECTS

A. Nominal Protection

In Greece, sea turtles are protected nominally by the ratification of several international conventions:

1. The Protocol on Special Protection Areas of the Barcelona Convention, ratified in Greece by the law N1634/1986 (Government Gazette A104).
2. The Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) in which sea turtles are included in the Appendix II (strictly protected species). The Convention was ratified in Greece by the law 1335/1983.
3. The Convention of Migratory Species (Bonn Convention), ratified by the EC regulation 82/461, 24/6/1982 for the European Union Member-States.
4. The Convention for International Trade on the Endangered Species (CITES), which includes marine turtles. The Convention was ratified under the EEC Regulation No 3626/1982 for the European Union Member-States.

In addition, *Caretta caretta* is listed as a priority species under Annex II of the Habitats Directive (92/43) of the European Communities. According to the above Directive all Member States undertake the drafting of national lists for the conservation of certain species and habitats which will eventually comprise the NATURA 2000 European network. For every NATURA 2000 site, each Member-State will undertake appropriate conservation measures.

Furthermore, the following two Presidential Decrees (P.D.) provide nominal protection for sea turtles in Greece:

1. No 617 (Gov. Gazette 163A/18-7-1980) prohibits fishing of sea turtles, destruction of eggs and collection of hatchlings.
2. No 67 (Gov. Gazette 23A/30-1-1981 and 43A/18-2-1981) declares *Caretta caretta*, *Chelonia mydas* and *Dermochelys coriacea* as protected species and prohibits killing, mutilation, trade, intentional capture, etc.

B. Site Specific Protection

Priority for site specific protection has been given to nesting areas classified as "major" nesting sites under specific criteria (see Table 1).

<u>B.1. Major Nesting Sites</u>

B.1.1. Zakynthos

The nesting beaches of Zakynthos (the most important loggerhead breeding area in the

Mediterranean), are declared as Nature Reserves under a P.D. (Gov. Gazette 347D/5-7-1990). The P.D. includes measures for the Nature Reserves and more specifically for the nesting beaches (no human presence is allowed between sunset and sunrise; beach furniture is allowed only in limited specific sites; no vehicles are allowed; no lights are allowed to shine onto the nesting beaches). The P.D. regulates building and development in zones adjacent to the nesting beaches. It must be noted that the first protection measures for the nesting beaches of Zakynthos and the broader area were introduced in 1984 (Gov. Gazette 260D/13-4-1984).

The Local Port Regulations (Ref. Num. 19/91 and 20/94, Gov. Gazettes 585B/91 & 598B/94) regulate sea traffic within the Bay of Laganas, by means of three maritime zones, effective every year between 1 May and 31 October: Zone A, no boating or fishing activity is allowed; Zone B, speed limit of 6 knots and no anchoring or mooring; Zone C, speed limit of 6 knots. The first maritime zones were introduced in 1988, under a Ministerial Decision.

Zakynthos nesting beaches are included in the national list proposed for the NATURA 2000 European network (GR 2210002).

A Presidential Decree for the establishment of the National Marine Park of Zakynthos (NMPZ) and its management body is at its final stage. The NMPZ incorporates the existing Nature Reserves and maritime zones. It introduces new Nature Reserves (the islet of Strofadia, an important stop over for migratory birds and the wetland of Keri) and provides for integrated land and sea management. The P.D. makes provisions for the creation of a private non-profit body to manage the NMPZ under the supervision of the Ministry of Environment and in co-operation with other competent authorities and NG0s. Furthermore, the P.D. provides for the funds needed to run the NMPZ.

A draft of another Presidential Decree that will provide compensatory measures for landowners that are affected by building restrictions within the core area of the NMPZ, is pending.

B.1.2. Bay of Kyparissia

The coast along the Bay of Kyparissia, western Peloponnesus, is included in the national list proposed for the NATURA 2000 (GR 2550005) European network. The elaboration of a management plan for the southern part of the Bay of Kyparissia, the second most important sea turtle nesting area in Greece, is soon to be started by the STPS with the support of the European Commission under LIFE-Nature regulation, in co-operation with the Ministry of Agriculture and the Institute of Marine Biology of Crete. The management plan will result in a draft Presidential Decree for the legal protection of the area.

B.1.3. Rethymnon

The nesting area of Rethymnon on northern Crete is included in the national list proposed for the NATURA 2000 European network (GR 4330004). A management plan for this nesting area has been elaborated by the STPS with the support of the European Commission under LIFE-Nature regulation, in close co-operation with the Ministry of Environment, local authorities and local stakeholders. The management plan includes specific protection measures, which have already started to be implemented with promising results.

B. 1.4. Bay of Lakonikos

Most of the nesting beaches in the Bay of Lakonikos, southern Peloponnesus, are included in

the national list proposed for the NATURA 2000 European network (GR 2540003). The drafting of a management plan for the nesting beaches of Lakonikos Bay is currently under way by the STPS with the support of the European Commission and the Ministry of Environment under LIFE-Nature regulation, in co-operation with the Hellenic Ornithological Society and the local authorities. The management plan, expected to be completed by October 2000, will result in a draft Presidential Decree, that will lead to appropriate legislation for integrated protection of the beaches and the broader area.

B. 1.5. Bay of Chania

The nesting beaches of Chania Bay, on northern Crete, are included in the national list proposed for the NATURA 2000 European network (GR 4340003 and GR4340006). A management plan for this nesting area has been elaborated by the STPS with the support of the European Commission under LIFE-Nature regulation, in close co-operation with the Ministry of Environment, local authorities and local stakeholders. The management plan includes specific protection measures, which have already started to be implemented with positive results.

B.2. Other Nesting Areas

Three other nesting areas, not classified as "major" nesting sites, will possibly come under specific legal protection status.

- The nesting beach at Messara Bay on southern Crete is included in the proposed national list for the NATURA 2000 European network (GR 4310004), and a management plan has been drawn up.
- The same as above applies to the nesting beaches in the Kotychi Lagoon area, western Peloponnesus, protected as an important Ramsar site.
- A land planning study underway for the whole island of Cephalonia has pointed out the importance of the nesting beaches of Mounda and foresees certain protective measures.

II. PROTECTION AND MANAGEMENT OF NESTING BEACHES, FEEDING AND WINTERING AREAS, AND MIGRATION ROUTES

1. Nesting beaches

Of the two marine turtle species that breed in the Mediterranean only the loggerhead turtle *Caretta caretta* nests in Greece. Investigation of the 16,000 km Greek shoreline and 15 years of systematic monitoring work, has identified significant nesting potential in Greece (see Table 2). Under specific criteria, five (5) of the nesting areas are classified as major nesting sites (see Table 1).

The main threats to nests, nesting beaches and sea turtles in the water near the nesting beaches are: heavy tourist use and development of beaches with concomitant effects (e.g. light pollution); beach erosion owing to natural and anthropogenic causes; depredation of nests; sea inundation of nests, collision of sea turtles with speedboats, and sea turtle mortality, both incidental and intentional, due to coastal fisheries.

The "major" nesting areas are monitored and actively managed every season, by the Sea Turtle Protection Society of Greece (STPS), in the context of various projects. Active management comprises of locating all nests and mitigating abiotic, biotic and anthropogenic factors that may adversely affect incubation and hatching. Thus, almost all nests are fenced against predation

and human interference. Nests that are considered "doomed" (i.e. made very close to the water) and cannot be protected otherwise are relocated to especially constructed beach hatcheries. It is estimated that an average of 2,800 nests are monitored by the STPS every season in all major nesting areas of which over 1,000 nests are fenced and about 400 are relocated to beach hatcheries.

a) Zakynthos

A range of management measures, most of which are included in the 1990 P.D., has proved to be very successful in maintaining optimum nesting conditions: development of tourist facilities has been regulated; night flights have been banned to reduce the effect of light and noise pollution on nesting beaches; beach furniture is limited to certain sites; beaches are safeguarded by the STPS and wardens hired by the local authorities to minimise human presence at night; beach cleaning is effected manually or with limited use of machinery on selected beaches; beach visitors are informed of regulations and close co-operation with local authorities is achieved. Furthermore, private land behind a very important nesting beach has been purchased (with matching funds from the EC) to eliminate the possibility of any development. Major shortcomings include, the reluctance of local authorities to remove illegal buildings, reduce beach furniture to permissible quota and hire properly trained wardens for the land and the sea. Heavy losses of nesting females in the Bay of Laganas led, in 1994, to the total ban of speedboats in this turtle-frequented area of Zakynthos. Despite the inefficient law enforcement, from a high of (9) reported turtles killed by speedboats in 1993, turtle mortality from this cause dropped to two (2) turtles per season in 1997 and 1998.

b) Peloponnesus (Bay of Kyparissia and Lakonikos Bay)

All nests are protected against predation by foxes and jackals by means of special screens, nests close to the water's edge are relocated to hatcheries or further up the beach to avoid seasonal sea inundation; lights behind the beach in some cases are turned off during the hatching season; nests are shielded in order to minimise hatching disorientation; tourists are informed to avoid night time use of nesting beaches. Furthermore, there is a growing involvement of local authorities and inhabitants in sea turtle conservation. Elaboration of management plans are underway by the STPS for the integrated protection of the area (nesting beaches, sand dunes, wetlands and other sensitive ecosystems including threatened animal and plant species).

c) Crete (Rethymnon, Bay of Chania and Bay of Messara)

Within the context of relevant management plans drafted by the STPS in co-operation with local authorities, all nests are protected against trampling by tourists; beach furniture is either removed at night or arranged in such a way as to facilitate turtle emergence; most lights from hotels or streets shining directly on the beaches are either closed off or redirected or shielded to minimise hatching disorientation; close co-operation with hoteliers and tour operators, has been achieved; and beach cleaning is done in most cases without the use of heavy machinery. Co-operation with the Hellenic Society for the Protection of Nature (the national representative of the Blue Flags Award) led to the introduction of clauses, aimed at improving the conditions on the nesting beaches, for all candidates applying for the above European Communities award. Local authorities (the Wildlife Service) confiscated illegally imported stuffed sea turtle specimens on public display at various stores.

2. Feeding/Wintering Areas

A rather regular occurrence of immature loggerhead and green turtles is observed in Lakonikos Bay (southern Peloponnesus), where a pilot project of incidental catch is conducted by the STPS. This area is considered a possible feeding and/or wintering area of both loggerhead and green turtles of unknown origin. A management plan for this area is underway by the STPS with funds from the European Commission, under LIFE-Nature regulation, and the support of the Ministry of Environment.

Other possible feeding/wintering areas in Greece (i.e. northern Aegean) need further investigation. It must be noted that through analysis of long-distance tag recoveries of turtles tagged in Greece, within the context of a 15 year STPS tagging programme, major feeding/wintering areas have been discovered in Tunisia (Gulf of Gabes) and the Adriatic Sea.

3. Migration routes

Very little is known on possible migration routes of turtles that are nesting in Greece. Tag recaptures along Croatia indicate a possible migration route of loggerheads along the eastern coast of Adriatic after nesting on the western Greece beaches (e.g. Zakynthos, Kyparissia Bay). Further investigation (through genetic analysis and telemetry) of migratory routes is being planned by the STPS.

III. INCIDENTAL CATCH AND MORTALITY AT SEA

A pilot project to assess the magnitude of incidental catch is under way in Lakonikos Bay with support from the EC (LIFE-Nature regulation) and the Ministry of Environment. The project is conducted by the STPS with the participation of fishermen and includes recording of incidental captures and related mortality. A similar project is planned for western Peloponnesus (Ionian Sea) by the STPS in collaboration with the Ministry of Agriculture.

A Sea Turtle Rescue Network has been created by the STPS in collaboration with Port Police and Fisheries Departments throughout Greece and is currently being improved and expanded. Stranded sea turtles across the nation are reported to the local Port authorities and the STPS. Data from strandings provide valuable information on causes of death and areas where high mortality occurs. Such information can help in drawing up appropriate and specific conservation strategies.

The establishment of the Sea Turtle Hospital at Glyfada in 1994, by the STPS in co-operation with the Municipality of Glyfada and financial assistance from the Ministry of Environment, is a major tool for both treating injured and sick turtles, and also for public awareness. Over 100 turtles of both species (*Caretta aretta*, *Chelonia mydas*) have been admitted to the hospital since 1994, of which 60% have been released in the wild, following successful treatment. It is worth noting that 38% of these turtles were injured intentionally by humans, presumably by coastal fishermen after entanglement in gill/trammel nets and bottom long lines.

Taking into consideration that coastal fishing is widespread in Greece (more than 17,000 vessels, without taking into account the many thousands of sport fishermen) and that coastal fishermen are not organised in unions, unlike trawler fishermen, the problem of intentional mortality caused by coastal fishermen is of grave concern. A possible way of dealing with this

situation is the setting up of systematic and long term general public information campaigns.

It must be stressed that collision with powered pleasure boats is a significant cause of sea turtle mortality near nesting areas with intensive tourist development. It is estimated that over 17% of dead turtles reported near the nesting beaches of Zakynthos and Crete are due to impact with speedboat propellers.

IV. INFORMATION, AWARENESS AND EDUCATION PROGRAMMES

1. At nesting sites

Public awareness carried out by the STPS at the nesting sites is aimed at informing both inhabitants and visitors. It is carried out through Information Stations, slide shows at hotels, daytime beach patrols, beach safeguarding at night, participation in local environmental and cultural events, and the mass media.

It is estimated that over 160,000 tourists are approached yearly, through 600 slide shows, 13 seasonal information stations and daily beach patrols at the nesting beaches of Zakynthos, Peloponnesus and Crete. Large amounts of information material (leaflets, booklets, brochures, posters etc.) are produced and distributed by the STPS. Furthermore, information material in co-operation with local authorities and the STPS has been printed on Crete, Lakonikos Bay and Zakynthos.

Education programmes for schoolchildren have been developed at the nesting areas with emphasis on the sea turtles. Schoolchildren from Zakynthos, Crete and Peloponnesus are invited every year by the STPS to Athens to partake in environmental and cultural events. Environmental education seminars for primary and secondary school teachers, focused on the sea turtles, have been arranged in collaboration with the Ministry of Education and the Regional Government of Crete.

2. Nation-wide

Raising awareness of the general public nation-wide is achieved mostly through the mass media, lobbying competent national authorities, and environmental education programmes carried out by the STPS in co-operation with the Ministry of Education. Portable educational kits ("Turtle Briefcase" and "Life on the Coast") are lent to schools across the country. In the last two years many schools visit the Sea Turtle Rescue Centre at Glyfada, to attend special environmental education programmes. In 1997-98, over 10,000 pupils participated in the above educational programmes.

It must be noted that releases of sea turtles that have been treated at the Sea Turtle Rescue Centre are excellent opportunities to invite the mass media and put the message across to the public that sea turtles are endangered and therefore it is the personal responsibility of every citizen to protect them (especially fishermen who frequently encounter sea turtles).

V. TRAINING INITIATIVES

More than 400 Greek and foreign volunteers work on marine turtle projects each season in

Greece. All these volunteers, mostly young university students or graduates are trained in the field on basic sea turtle conservation methods. In several cases experienced volunteers from Greek projects become involved in sea turtle conservation in other parts of the world.

A Training Seminar on Basic Research and Conservation Techniques was organised by the STPS in Greece in the frame of the Action Plan for the Conservation of Mediterranean Marine Turtles, with the support of RAC/SPA and the Ministry of Environment. Participants from seven Mediterranean countries attended the seminar from 25 July until 4 August 1996 in Athens, Zakynthos and Kyparissia Bay.

VI. RESEARCH AND MONITORING

A research project in 1984-87, by the University of Thessaloniki (Department of Ecology) and University of Athens (Departments of Oceanography, Geology), supported by the E.C. and the Ministry of Environment, provided the first scientific assessment of various factors affecting sea turtles in Zakynthos.

Since 1984, systematic monitoring of nesting population at Zakynthos provides valuable data on nesting numbers, internesting intervals, remigration patterns and hatchability per season. Similar monitoring is done on the other four "major" nesting areas of *Caretta caretta* in Greece by the Sea Turtle Protection Society of Greece. All data collected are processed and recorded in technical reports for each nesting site.

A genetic study by the University of Georgia (USA) revealed that Mediterranean loggerheads originate from loggerhead populations in the south-eastern USA. Colonisation of the Mediterranean took place about 12,000 years ago, coinciding with the end of the last glacial period. Loggerheads in the Mediterranean have evolved local populations which differentiate from the Atlantic stock also in morphometrics (they are smaller in size). It is most probable that there are further population subdivisions within the Mediterranean. In order to define possible sub-populations a genetic study is under way by the STPS in collaboration with the Genetics Department of the University of Crete.

Every year students from Greece and other countries, conduct research work at undergraduate and post graduate levels under the supervision of their Universities and in co-operation with the STPS. All studies undertaken are conservation orientated and aim at assessing biotic and abiotic factors that affect the sea turtles, their nests and beaches.

Other fields of sea turtle research under planning in Greece are satellite telemetry and pivotal temperatures.

VII. RECOMMENDATIONS

- The continuous presence of research and conservation teams (NG0s or other agencies) on significant nesting beaches in order to undertake long term systematic research work is a prerequisite for ensuring reliable data on the sea turtles and their habitats and warranting the development and implementation of conservation measures.

- Systematic public awareness projects - very important conservation instruments - should be structured in such a way that the objectives and target groups are very clearly defined. Some

of the main target groups involve local residents and tourists at nesting sites, local and national authorities, schoolchildren , fishermen and recreational boat owners.

- Restoration of significant nesting areas that have seriously been degraded should be initiated.

- Assessing and elaborating relevant conservation measures to deal with sea turtle mortality, intentional or unintentional, caused by coastal fisheries and powered pleasure boats.

- Organising training seminars, at a Mediterranean level, on integrated management of marine and coastal habitats hosting sea turtles.

- Development of national networks to collect data on sea turtles strandings and establishment, where feasible, of sea turtle first aid and rehabilitation centres.

- Research priority should be given to the determination of pivotal temperatures, use of telemetry to investigate migratory routes and other biological factors, and genetic analysis to specify distinct nesting populations and population structures at feeding/wintering areas.

Table 1*

THE "MAJOR" NESTING AREAS OF THE LOGGERHEAD TURTLE IN GREECE AND THEIR NESTING POTENTIAL RECORDED OVER A NUMBER OF NESTING SEASONS

(A "major" nesting area has more than 100 nests/season and a density of more than 6 nests/km/season on the average)

Area	Beach length (km)	Maximum number of nests per season	Minimum number of nests per season	Average nesting density (nests/km)	Number of monitoring seasons
Laganas Bay, Zakynthos	5.5	2,018	857	235.6	14
Kyparissia Bay**	44.0	927	286	12.8	13
Rethymnon, Crete	10.8	516	316	36.6	8
Lakonikos Bay	23.5	220	107	7.3	6
Chania Bay, Crete	13.1	192	77	8.9	6
TOTAL	**96.9**	**3,873**	**1,643**		

** More than 83% of nests concentrate at the southernmost 10 km of Kyparissia Bay, where average nesting density reaches 47.2 nests/km/season.

Table 2*

ESTIMATION OF TOTAL LOGGERHEAD NESTING ACTIVITY IN GREECE (NESTS PER SEASON)

Category of nesting	Maximum number	Minimum number
In "major" areas (>100 nests/season)	3,873	1,643
In areas with "moderate" nesting (20<x< I 00 nests/season)	621	359
"Diffuse" nesting (15% of total)	793	353
TOTAL	**5,287**	**2,355**

*__Source:__ Margaritoulis, D. In press. An Estimation of the Overall Nesting Activity of the Loggerhead Turtle in Greece. In: Proceedings of the 18th International Symposium on Sea Turtle Biology and Conservation, 3-7 March 1998, Mazatlan, Mexico

THE PROTECTION OF MARINE TURTLES IN ISRAEL

Zeev Kuller, Israel Nature and National Parks Protection Authority

* Legal Protection

Recognition of the need to protect Israel's natural and landscape resources first led to the enactment of the National Parks and Nature Reserves Law in 1963. This law, which was first revised in 1992, and later in 1998, provides the legal structure for the protection of natural habitats, natural assets, wildlife and sites of scientific, historic, architectural and educational interest in Israel. The law provides a legal system for the establishment of nature reserves and for the listing of protected natural assets. According to this law it is illegal to destroy, possess, trade or harass any of the listed assets, unless given a special permit by the Nature and National Parks Protection Authority.

Seventeen reserves and national parks on the Mediterranean coast of Israel, including four important nesting beaches, are in different stages of declaration. Only 3 nature reserves and 2 national parks are legally declared. Out of 9 proposed marine reserves, none have yet been declared.

The marine environment is protected for pollution control by three laws: Prevention of Marine Pollution by Oil Ordinance, Prevention of Marine Pollution (waste dumping) Law, and Prevention of Marine Pollution from Land Based Sources Law.

***** Protection and Management

Marine turtles in Israel are extremely rare; in none of the nesting seasons did we find more than 40 to 50 Loggerhead turtle nests and only a few Green turtle nests on the entire 190km long coast. It is almost impossible to define the most important nesting beaches, even though Sella (1982) states that the northern beaches are the most frequently visited by the females.

A management program was prepared in 1992 and has been implemented since 1993. It seems to us that the main threat to turtle's nests is the intensive 4X4 traffic on the beaches, especially on weekends. During the nesting season, the entire coast, excluding urban areas and some inaccessible sections, is surveyed each morning by the Nature and National Parks Protection Authority rangers. All turtle's nests discovered during the survey are dug out and translocated to the closest hatchery, either at Bezet in Western Galilee, or at Atlit on the Carmel coast. The hatchery is protected against human activity by a simple fence and explanation signs. Each nest is mounted with a cylinder of wire net against predation. The hatchlings are sent to sea immediately after hatching, or on the following night, preferably at the original nesting coast. In those cases where the original nest was laid in an unsuitable beach for future nesting, hatchlings are released to sea in coastal nature reserves. To avoid the distraction of the hatchlings by terrestrial light sources, a special V shaped enclosure made of an opaque thick cloth, open to the sea, is mounted on the beach. This enclosure prevents the dispersion of the hatchlings and enables the presentation of the releasing process to the public, without causing any harm to the babies. Table 1 presents the number of nests and baby turtles released to sea in the years 1993 to 1998, for each of the two nesting species on our coast.

* Action taken to minimise incidental catching of marine turtles by fishing gear

To our knowledge, based on evidence collected from fishers, and data on dead turtles (20 Green and 17 Loggerhead between 1993 and 1998) washed ashore, the number of incidental catching of marine turtles along the Israeli coast is not high. In most cases, we were not able to define the cause of death because almost all the dead turtles were long decayed corpses. Considering the frequent currents in the Mediterranean, we assume that in most cases they died in the open sea,

somewhere west of the Israeli coast. We constantly meet fishermen for the collection of data and for making them aware of the need of protecting marine turtles.

* Information, Awareness and Education Programs
The media in Israel informs the public of important events concerning the marine turtles. This includes news regarding the first nest in the season, first hatching, or the release of a recovered turtle back into the sea. Even though marine turtles are not a dominant phenomenon in Israel, public awareness is increasing. The public frequently attends babies' release into the sea, but since the number of nests is so low, the number of people may not exceed several hundred each season. On such occasions, a ranger briefly presents the biology of marine turtles, the need for protecting them and the project's purposes.

One of the educational programs of our center on Mount Carmel includes a study on marine turtles designed for school children. In this study, children follow the physical conditions in an artificial eggs chamber, collect some data on the translocated nests in the hatchery and attend the babies' release to sea. At the end of the study, they present a short report, emphasising the threats to marine turtles on our coast and discussing means for their protection.

* Training initiatives
Some of our staff members participated in the marine turtles training session of the RAC/SPA program conducted by Dr. A. Demetropoulos and Ms. Myroula Hadjichristophorou in Lara Reserve in Cyprus. Others are being trained locally during field work.

* Research and Monitoring
At the end of each nesting season, we report the results of our activity to the academy's herpetologists , as well as to the science division of the Israeli Nature and National Parks Protection Authority. We keep constant contact with researchers in the academy, proposing to them subjects that are important to marine turtle protection. An ongoing research on the influence of temperature on the sex determination of Loggerhead turtle has not yet completed.
Dead baby turtles collected during the nesting season of 1996 have been sent to Mr.Luc Laurent in France for analysis of DNA fingerprinting, as part of a research on marine turtles' population in the Mediterranean.

All data collected in the project serves as a monitoring base and is accessible to any research on the subject.

Table 1

Number of nests and hatchlings released to sea in the years 1993 to 1998, by species.

Year	Loggerhead Turtle		Green Turtle	
	Nests	Hatchlings	Nests	Hatchlings
1993	10	597	0	0
1994	26	1552	8	593
1995	46	2743	1	59
1996	34	1946	0	0
1997	21	1089	2	0
1998	29	1639	10	855
Total	166	9566	21	1507

ITALIE

RAPPORT SUR LA MISE EN OEUVRE AU NIVEAU NATIONAL DU PLAN D'ACTION POUR LA CONSERVATION DES TORTUES MARINES DE MEDITERRANEE

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PROTECTION LEGALE

Par deux décrets de la Marine Marchande, du 21 mai 1980 et du 3 mai 1989, l'Italie a interdit la pêche des tortues marines dans ses eaux territoriales, ainsi que leur détention, leur transport et leur commerce dans l'ensemble du territoire national. De même, conformément à la Convention de Washington, l'exploitation alimentaire ou artisanale des ces animaux a été interdite.

PROTECTION ET GESTION DES PLAGES DE NIDIFICATION ET DES AIRES DE NUTRITION ET D'HIVERNAGE AINSI QUE DES ROUTES DE MIGRATION

Des trois espèces de tortues fréquentant régulièrement la Méditerranée, seule la *Caretta caretta* pond occasionnellement en Italie. Actuellement quelques nidifications se vérifient au Sud de la Sicile sur les plages des îles de Lampedusa et Linosa. Pendant la saison de reproduction les nids déposés sur ces deux plages sont surveillés jusqu''à leur éclosion par le Département de Biologie de Rome et par les volontaires d'associations de protection de l'environnement, tels que "Lega Ambiente" pour Lampedusa, "Idrosfera" et "Centro Turistico Studentesco" pour Linosa. Des campagnes d'information au niveau local mais aussi national sont promues afin de sensibiliser les usagers des plages intéressées par la nidification. Pour l'instant aucune forme de protection ni de gestion n'est concevable sur des aires d'alimentation et d'hivernage ni sur les routes de migration, car elles n'ont pas encore été bien identifiées. Mais les premiers résultats des recherches menées depuis quelques années dans ce domaine, grâce aussi au monitorage satellitaire, nous laissent à penser que l'on disposera bientôt d'éléments utiles pour la mise en place de mesures appropriées.

MESURES PRISES POUR EVITER LES CAPTURES ACCIDENTELLES DES TORTUES MARINES DURANT LA PECHE

Les données recueillies, grâce non seulement à l'activité de monitorage, organisée et coordonnée par le Centro Studi Cetacei le long des côtes italiennes, mais aussi ,à des recherches isolées (Fondazione Cetacea di Riccione, Acquario di Livorno, Istituto Biologia marina di Bari, Stazione Zoologica di Napoli), permettent d'affirmer qu'habituellement les captures accidentelles et les décès des tortues marines sont provoqués par les activités de pêche, sans pour autant oublier les collisions de bateaux et la pollution anthropique; pour ce qui concerne la pêche, les mesures actuellement adoptées pour en minimiser les effets sont:

A) Enquêtes sur l'impact de la pêche dans les captures accidentelles. En Sicile les chercheurs du Musée de Comiso qui collaborent avec les naturalistes de l'Association de Sauvegarde de l'Environnement "Fondo siciliano per la natura" ainsi que d'autres groupes de volontaires son très actifs. Leur organisation minutieuse, en stricte collaboration avec les pêcheurs, leur permet de rassembler des informations sur les captures et de déployer une large

activité de sensibilisation au niveau local. Les biologistes de la pêche de "Aquastudio" à Messine, avec leur participation directe aux campagnes de pêche au thon et à l'espadon dans le sud de la mer Thyrrénienne et dans la mer Ionienne fournissent depuis de nombreuses années des données importantes sur l'impact des systèmes de pêche dans les captures accidentelles des tortues marines. Dans la mer Adriatique le Groupe "Chelon" tout en participant activement à des campagnes de pêche, s'efforce, à travers l'autopsie des animaux morts , d'établir le type d'engin de pêche qui en a provoqué le décès. Des activités analogues sont menées dans de nombreuses villes italiennes grâce aux groupes de travail rattachés aux centres de recherches, aux universités, aux organismes privés, aux associations de protection de l'environnement. Voilà pourquoi le Centro Studi Cetacei s'efforce actuellement de recueillir et de classer les nombreuses informations provenant de l'ensemble du territoire et qui autrement se disperseraient, afin de créer une véritable banque de données. Le but final est de détecter les aires à haut risque qui jusqu'à présent n'avaient pas été prises en considération et de formuler autour d'elles des propositions, le cas échéant, afin de limiter la pêche dans certaines périodes de l'année.

B) Récupération, soins, réhabilitation des exemplaires blessés. Au cours des dernières années sur l'ensemble du territoire national le nombre des centres de récupération d'animaux endommagés s'est accru. Il s'agit pour la plupart d'organismes annexés à des centres de recherche, aquariums ou universités qui, grâce à une équipe de biologistes et de vétérinaires se chargent de soigner les exemplaires malades, souffrant, mais le plus souvent d'extirper les hameçons avalés ou de "restaurer" des parties du corps endommagées par les engins de pêche. Dernièrement, auprès de la Statione Zoologica "Anton Dohrn" on a expérimenté avec succès des techniques non invasives, comme l'utilisation du Vidéo endoscope pour l'extirpation des hameçons et HBO pour éviter des cas graves de nécrose provoquée par les engins de pêche. On étudie aussi les effets à long terme provoquée par les hameçons avalés. La recherche sur la durée des apnées en fonction des fluctuations de température typiques en Méditerranée est désormais achevée et en voie de publication. Cette étude pourra être utile pour évaluer la survivance d'une tortue prise dans un filet.

ACTIONS EDUCATIVES D'INFORMATION ET SENSIBILISATION

En Italie la prise de conscience des dangers qui menacent la survivance des tortues marines est dû, avant tout, à l'activité historique et infatigable du WWF Italia. Toutefois on ne doit pas oublier le rôle joué par des nombreuses associations disséminées sur le territoire.

Les actions éducatives destinées a sensibiliser et à informer tous le publics sont menées par: 1) la production et la diffusion des documents d'information tels que périodiques, vidéo, brochures etc.. ; 2) l'utilisation de Mass media, CD Rom, Internet etc.. ; 3) des collaborations avec l'éducation nationale par conférences itinérantes dans les collèges et par actions éducatives destinées à sensibiliser sur le milieu marin de la Méditerranée.

Face à des visiteurs de plus en plus sensibilisées aux problème de protection et défense des tortues marines, certains aquariums publics et musées ont commencé à développer des actions éducatives intéressantes, comme par exemple l'exposition temporaire de l'Aquarium de Genova visité par des milliers de personnes et celle du Museo di Storia Naturale di Pisa à caractère strictement scientifique. La production des documents pédagogiques est aussi très remarquable, parce que les aquariums ont la possibilité de le distribuer à tous les publics. Enfin des conférences nationales et internationales, effectuées par les responsables d'aquariums dans des universités et d'instituts scientifiques, ont contribué à faire une action de sensibilisation à un plus haut niveau.

RECHERCHE ET MONITORAGE

Il n'y a pas longtemps en Italie que l'on a commencé à se rendre compte que le problème de la survivance des tortues marines ne pouvait être affronté sans une participation concrète des universités, des instituts de recherche et des aquariums dans la recherche de base; autrement dit que l'activité tout aussi louable des associations pour la sauvegarde de l'environnement existant dans l'ensemble du territoire, doit forcément être menée et coordonnées scientifiquement.

Plusieurs régions (Liguria, Veneto, Toscana, Emilie Romagna, Lazio, Marche, Campania, Puglia, Basilicata, Calabria, Sicilia, Sardegna) ont commencé à rédiger des rapports, quoique de manière isolé pour l'instant, sur le nombre d'animaux récupérés vivants ou décédés, relevant leurs tailles et faisant des evaluations sur le contact anthropique de la zone. Parmi les études les plus récentes, quelques-unes sont à caractère biochimiques, comme celles des Universités de Chieti et de Messina, d'autres à caractère écologique, comme celles de l'Instituto Zooprofilattico di Messina.

La Stazione Zoologica "A. Dohrn" de Naples mène depuis plus de dix ans un programme de sauvegarde des tortues marines comportant un niveau pratique et un niveau scientifique. Depuis 1994 notamment, on étudie les migrations de *Caretta caretta* en Méditerranée, grâce à la technique du monitorage satellitaire. Jusqu'à aujourd'hui l'on a effectué trois expériences et trois autre sont en cours à présent. La compréhension des modalités de migration, et notamment la définition des aires les plus fréquentées, sont bien entendu d'importance fondamentale pour la mise en place de mesures aptes à la sauvegarde des exemplaires. En 1978, sur demande du IUCN, coordonné par le Dipartimento di Biologia dell'Uomo dell'Université "La Sapienza" de Rome, sous le patronage du WWF Italie, naissait le "Progetto Tartarughe". Le projet, qui pouvait compter sur un réseau de collaborateurs et de préposés résidant dans différentes régions italiennes, après avoir fonctionné pendant une dizaine d'années, a fini par se dissoudre. Depuis un an environ, dans l'attente d'une nouvelle organisation, la charge de coordination m'a été confiée, sous l'égide d'une solide organisation nationale, le Centro Studi Cetacei, rattaché à la Società Italiana di Scienze Naturali, officiellement reconnue par le Ministère de l'Environnement. En promuant cette initiative le C.S.C. a voulu non seulement éviter une éventuelle dispersion des précieuses informations recueillies par ses membres et collaborateurs épars dans le territoire, mais surtout contribuer à la tutelle de ces reptiles, ce qui faisait partie des enjeux de l'association. Voilà pourquoi une fiche de localisation a été élaborée que l'on a distribuée à tous les référents régionaux qui se chargeront de la transmettre dûment remplie au Centre de Coordination. A la fin de l'année le premier rapport sera élaboré, et il est souhaitable qu''il y en ait d'autre par la suite ; ce rapport pourra être considéré indicatif du "Statut" des tortues dans les eaux italiennes.

REPORT OF LEBANON

Dr. Ghassan RAMADAN-JARADI, manager of Palm Islands Reserve

All aspects of status, biology and behaviour of marine turtles in Lebanon are too poorly known owing to absence of studies related to these species. Subsequently, there are no existing independent programmes or plans to protect them in this country.

The main reason for this derives from the fact that Lebanon is a country attempting to eradicate the effects of almost two decades of turmoil, chaos, and destruction (civil war). Indeed during those troubled times, every aspect of Lebanon's social, natural and economic fabric was severely affected including the main components of human development, health, education, social services and natural resources. This fact highlights the need for great efforts in order to help the process of development, to make up for lost time and to catch up with the international community. With this in mind, Lebanon adopted several policies to repair what the war has done and consequently, the Ministry of Environment developed strategies to meet with some of the governmental policies. Among these strategies, the creation by parliament decrees of three protected areas. Of these, one is an IBA and SPA Marine Protected Area, the Palm Islands Reserve. Thus, another area, Tyre, is now in parliament and expected to be declared very soon a nature coastal/ marine reserve.

The Palm Islands Reserve (PIR) is managed by a Management Team since April 1997 and a draft management plan was set for it. This draft showed that:

1. one of the most important conservation values of PIR derives from the population of turtles visiting (Green Turtle: former breeder) and nesting (Logger-head Turtle) during the summer period.
2. the islands provide clearly outstanding opportunities for study of turtle breeding.
3. the main threats to the turtles are:
   - **!** accidental catches by fishermen
   - **!** heavy exploitation of most beaches for recreational and commercial purposes (not on PIR)
   - **!** human wastes in the sea, especially plastic bags eaten by turtles for jellyfish
   - **!** consumption of turtle eggs by locals that are considering them an aphrodisiac food
   - **!** consumption of turtle eggs by the accidentally introduced rat population
   - **!** consumption of baby turtles by the expanded population of Yellow-legged Gull
   - **!** superstitious beliefs that turtle's blood can cure from devil influences.

To face these threats some actions are currently implemented:

a) no visitors are allowed to visit Palm Islands Reserve during the breeding season of turtles.
b) despite (a), the public access to the beach used by turtles on PIR is prohibited throughout the year.
c) the beach is regularly cleaned by the rangers from all kind of rubbish brought by the sea. This is mainly to remove barriers that might alter the movement of turtles when they go to nest or the movement of babies when they leave the nest to reach the sea.
d) many pollutants, including plastic bags are considerably reduced after closing the coastal municipal rubbish dump as a consequence to efforts and co-operation between the Environment Protection Committee (an NGO concerned with the protection of PIR) and decision-makers.

e) the population of Yellow-legged Gull, *Larus cachinnans* which was increased considerably during the last two decades due to obtaining ample food from human wastes (Ramadan-Jaradi & Rainadan-Jaradi in press) is the main predator of baby turtles on PIR and is, today, subject to reduction of its size by simple elimination of its "waste-food".
f) the accidentally introduced rat population to PIR probably constitutes the only threat to eggs in the nest. These rats are today subject to an extensive eradication programme.
g) fishermen are paid 25000 LP (= US $17) per turtle accidentally caught and released back in the sea. This is also to reduce in somehow the feeling that turtles are their enemies.
h) in order to sensitise the public and encourage it to support turtle conservation, the Environment Protection Committee (EPC) carried out a campaign for the protection of marine turtles. As a result, some individuals reported useful information on nesting sites and saved two nests on a beach at Aquamarina/ Jounieh (20 km north of Beirut) where construction works are undertaken.

Recommendations

To plan and implement a complete management strategy for the conservation of marine turtles in Lebanon and by extension in the Mediterranean sea, we recommend the followings:

1. more knowledge on nesting and potential nesting sites, feeding and wintering areas of marine turtles in Lebanon.
2. study of the status of the different species occurring in Lebanon's water.
3. chart the migration, breeding and wintering patterns for all species recorded.
4. update the law of fishing in Lebanon particularly with regards to nets used by fishermen and ban of consumption and sale of products derived from turtles; and enforce the law especially with regards to ratified international conventions.
5. creation of tagging centre in PIR to contribute in charting migration patterns.
6. involve the Ministry of Environment, the Environment Protection Committee and Palm Islands Reserve in the proposed Mediterranean Network and in the dissemination and exchange of information.
7. carry out awareness campaigns in order to make fishermen and local communities partner in the conservation activities.
8. prepare an action plan to bring back green turtle to nest in Lebanon.
9. get financial support to implement most of the above activities.

THE STATUS OF MARINE TURTLES CONSERVATION IN LIBYAN ARAB JAMAHIRIYA

Abdulmaula A.HAMZA, Technical Centre for Environment Protection, Tripoli

INTRODUCTION:

Libyan Arab Jamahiriya's coastline extended 1,900 km on the south Mediterranean, including 1,144 km (64%) of sandy beaches, and due to the low human settlements in this area, such as towns, industrial centers or harbors, and based on the results of scientific studies, the nesting activity of loggerhead turtles ***Caretta caretta*** is relatively high, and Libya hosts a substantial proportion of Mediterranean nesting turtles each year (Laurent *et al.*,1995; Hadoud and Gomati,1996) .

In addition of Loggerhead turtle ***Caretta caretta,*** Libyan coasts inhabited by Leatherback turtle ***Dermochelys coriacea*** which first recorded on Tripoli and Benghazi coasts during 1927 and 1928 (Capra, 1949), and Green turtle ***Chelonia mydas,*** which firstly recorded in *Ain Algazala* lagoon (Hadoud and Essghaier, 1995)*,* **but** there is no evidence of nesting activity of the last two species.

LEGAL PROTECTION OF MARINE TURTLES

On the national level:

The law No.7 / 1982, dealing with Environment Protection /section 9 articles 60 and 61statements: All animal species (aquatic and terrestrial) should be protected from extinction and this section includes recommendation for establishment of natural reserves and protected areas which supervised by relevant scientific centers.

Law No.14/1989 on the exploitation of marine wealth / section 6 (marine protected areas) : this section includes four articles concerning:

- Identification of marine protected area.
- The management of marine protected area.
- Marine biology research center is responsible on the scientific direction of marine protected area.
- Implementation of plans and programs of conservation of marine endangered species, and collaboration with regional and international organizations in this field.

On the international level:

Libyan Arab Jamahiriya is a Contracting Party to the Protocol concerning Mediterranean Specially Protected Areas, ratified on 6.6.1989, and its modifications in Barcelona 10.6.1995.

PROTECTION OF NESTING BEACHES, FEEDING AND WINTERING AREAS, AND MIGRATION ROUTES

There are selected beaches proposed by researchers to be protected areas due to high nesting activity and high predation pressure i.e. 90% of nests predated, this includes:
Eastern beach of Ain-Algazala;
Beach of Aboulfraes;
Beach of Kouf national Park;
20 km west of Sirt.

The Marine Biology Research Centre (MBRC, Tajura) and the Technical Centre for Environment Protection (TCEP, Tripoli) and the other relevant authorities will establish this proposal in the next years.

Feeding, wintering area and migration routes are not fully studied yet.

Number of turtles have been tagged during the first and second phases, to know more about the origin and the route of migration of marine turtles.

ACTIONS TAKEN TO MINIMIZE INCIDENTAL CATCHES OF MARINE TURTLES IN FISHING GEAR

Because of absence of turtle meet consumption in Libya, no actions taken except some communications with fishermen to more awareness the protection of marine turtles in fishing gear.

INFORMATION, AWARENESS AND EDUCATION PROGRAMMES

Some lectures held in MBRC concerning the results of the first and second stages of marine turtle nesting activity 1995 and 1996, in addition to scientific seminar at Zoology Dept. Alfateh University –Tripoli, presented by Mr. Hadoud.

A videotape was produced on the phase 2 (Sirt-Misurata 1996) including many aspects of marine turtle biology and conservation.

TRAINING INTIATIVES

Due to the present status of marine turtles conservation in Libya, there is no program for training initiative done yet, and this is one of the near future steps in the national programme of marine turtle conservation.

RESEARCH AND MONITORING

Until 1995 the information regarding the status of Mediterranean marine turtles on the Libyan coasts were rare, except some notes about nesting activity of Loggerhead turtle in the Kouf National Park beach (Herbert,1979; Armsby, 1980; Schleich,1987). Then Laurent was suggested that Libyan coasts host a large Loggerhead colony (Laurent, 1993). During summer 1992/ 93 some nesting sites in the eastern coastal part of Libya has been recorded (Hadoud and Essghaier, 1995).

According to the above information, a survey was organized by RAC\SPA-MAP-UNEP (Phase 1) during: 16 June to 7 July 1995, and funded by Technical Center for Environmental Protection TCEP and Marine Biology Research Center MBRC, MEDASSET, and WWF.
This survey covers the area between the Egyptian border and Sirt city (1,195 km) which includes 743 km or 65% of Libyan sandy coastline, 15 coastal areas were sampled corresponding to 50 beaches and beach portions (totaling 141.65 km or 12% of the nations sandy coastline) .the final results of the survey were recording of 342 crawls including successful and nonsuccessful nesting attempts, the nesting densities ranged from 0.2-2 nests /km (average 0.86 nests/km). These data

would indicate that the Loggerhead colony nesting on Libyan coasts is one of the most important in the Mediterranean. this high level of nesting is due to long sandy shoreline in which have virtual absence of human settlement and the low activity of the fishing industry (Laurent *et al.* ,1997).

During the period 28 May to15 August 1996 the distance between Sirt and Misurata City (Phase 2) has been surveyed by Hadoud and El Gomati, this survey was organized and funded by MBRC and TCEP and covered 87 km divided to 8 beaches. 58 crawl tracks were recorded during nesting season's peak, with an average of 0.86 nest/km (Hadoud and Gomati, 1996), and this result supports the results of 1995 survey.

The rest of the coastline from Misratah to the Tunisian border (Phase 3) was surveyed during the period 2- 15 July 1998, within the framework of a joint project of TCEP, MBRC, WWF International Mediterranean Programme, Medasset and RAC/SPA. The survey was carried out by L. Laurent, M. Bradai, D. Hadoud and H. Gomati (MBRC) and A. Hamza (TCEP). The objectives of the mission were :

! Reviewing the results of the previous phase undertaken by Libyan researchers (Sirt-Misurata);
! Completing the rest of the coastline from Misratah to the Tunisian border.

This survey covered 105.7 km of the total 407 km of the coast concerned , 160 km of which are sandy beaches; the results show low nesting activity in this area, compared with the previous two areas of phase 1 and 2. The final report is under preparation.

THE PROPOSED LIBYAN ACTION PLAN FOR CONSERVATION OF MEDITERRANEAN MARINE TURTLES

MBRC, TCEP, and other relevant authorities proposed a national action plan for marine turtles conservation, summarized in the following steps:

! Implementation of a permanent scientific program for the study of marine turtles.

! Seasonal survey of selected beaches (which have high nesting density) in cooperation with volunteers along the nesting season to obtain an accurate statistics for estimation of Libyan coast stock of marine turtle population.

! Tagging marine turtles during nesting season and make communications with other Mediterranean countries in this practice.

! Protection of nests and newly hatched turtles (juveniles) against predators, such as jackals, red foxes, wild dogs, shorebirds, and crabs.

! Gathering of nests carefully in close areas of the selected beaches to guarantee more saving of newly hatching turtles.

! Activation of educational campaigns through the fishermen sector to avoid incidental catch, and direct connection with tourists , school children and local inhabitants using wall charts, booklets, television programs, newspaper articles and any other media.

! Cooperation with all regional and international organizations concerned with marine turtle conservation and exchange of information in this field among the Mediterranean countries.

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MALTA

REPORT ON THE IMPLEMENTATION AT NATIONAL LEVEL OF THE ACTION PLAN FOR THE CONSERVATION OF MEDITERRANEAN MARINE TURTLES

Alfred E. Baldacchino, Environment Protection Department, Malta

! Three species of marine turtles are recorded in the Maltese territorial waters: *Caretta caretta*, *Chelonia mydas* and *Dermochelys coriacea*. The most common species recorded is *Caretta caretta*. All marine turtles are legally protected and it is illegal to catch or try to catch, sell or try to sell, exchange or be in possession of any marine turtle, alive or dead, or any parts or derivates from marine turtles. Furthermore all those who had any carapace of marine turtles had to register them within one month from the publication of the regulations.

Malta is a party to the Convention on International trade in endangered species of flora and fauna (CITES), and also of the Council of Europe Convention on the protection of European Wildlife and their Natural Habitat (BERN Convention). The obligations arising out of these conventions are faithfully reflected in the local regulations for the protection of marine turtles.

! There are no breeding marine turtles recorded in the Maltese islands. The last record of a breeding *Caretta caretta* dates back to 50 years ago.

The marine turtles recorded in the Maltese territorial waters are either on migration or frequenting feeding grounds. More research is needed to establish the status of such marine turtles. In fact it is not even sure from which nesting population these originate. It is worth pointing out that the marine turtles recorded are mostly juveniles and those which have been controlled, dead or alive, were not tagged.

! Since the publication of the regulations, no marine turtles are being landed by fishermen, who used to take all accidentally caught turtles to the fish market. Occasionally marine turtles are brought even to the Environment Protection Department, when these are found injured or with fishing hooks in their mouth.

The present regulations provide for compensation to fishermen for damages done by marine turtles to their fishing lines.

! Although some awareness and education programmes are carried out, these are not enough, mainly because of lack of audiovisual material focusing on the Mediterranean region.

! Through the help of the Regional Activity Centre for Specially Protected Areas, officials of the Department attended training courses: two in Cyprus, one in Greece and one in Turkey. These training courses helped these officials in familiarising themselves with identification, monitoring, handling and even tagging.

! Also through the cooperation of RAC/SPA, the local marine turtles which are being recovered locally are being tagged by tags provided from RAC/SPA.

There is much more room to further expand local activity for the better appreciation and understanding of marine turtles, possibly involving fishermen. However, because of lack

of manpower and other pressure of work such ventures have not yet been tapped. To date only one marine turtle, a *Caretta caretta* has been tagged.

Admittedly, as pointed out above, there are still a lot of things to do in the field of monitoring and research. Perhaps some joint-programme can be planned and initiated to achieve such much needed data.

MAROC

RAPPORT SUR LA MISE EN OEUVRE AU NIVEAU NATIONAL DU PLAN D'ACTION POUR LA CONSERVATION DES TORTUES MARINES DE MÉDITERRANÉE

Mme Amina MOUMNI, Institut National de Recherche Halieutique

Protection légale

Au Maroc, aucune étude n'a été menée jusqu'à présent en raison d'un manque de spécialistes en matière de tortues marines. Les seuls travaux qui ont été faits sur la côte méditerranéenne ont été réalisés par Laurent (•'90).

N'ayant pas d'éléments d'information sur le statut des tortues marines sur les côtes marocains, le Maroc n'a pas instauré de protection légale pour ces espèces.

Protection et gestion des plages de ponte

Il est à souligner qu'aucune protection ni gestion d'aires de nidification n'a été effectuée auparavant étant donné que ces zones n'ont pas été déterminées.

Actions entreprises

Dans le cadre de la préservation de la biodiversité, l'Institut National de Recherche Halieutique a intégré parmi ces axes de recherche, le suivi des cétacés et des tortues marines et ce depuis 1990. Ce suivi avait pour objectif d'identifier les espèces, de connaître leur fréquence et de déterminer les causes éventuelles de leur échange.

Le suivi sur les tortues marines n'a malheureusement pas permis de dresser la situation des tortues marines puisque deux cas seulement d'échuage ont été signalés:

- *Dermochelys coriacea*
- *Caretta caretta*

Pour renforcer ce suivi, une prospection a été effectuée en Méditerranée en vue de déterminer des zones de ponte des tortues marines.

Suite à cette prospection, il s'est avéré qu'en Méditerranée, il n'existe pas de sites de nidification en raison de la configuration des plages dont la majorité sont des plages rocheuses et le parc de plages sableuses qui existent ne sont pas appropriées pour la nidification.

Les enquêtes effectuées également auprès des pêcheurs, nous ont révélé qu'un bon nombre de tortues marines, particulièrement l'espèce *Caretta caretta,* sont capturées accidentellement par les filets de pêche. Elles sont soit relâchées en mer, soit ramenées au port.

A noter qu'aucune alternative n'a été prise pour minimiser les captures accidentelles.

Activités de formation

Actuellement, il n'existe pas de structures qui assurent la formation. Par ailleurs, des chercheurs ont bénéficié de stages de formation à l'étranger (Chypre).

Programme d'information et de sensibilisation

Concrètement, il n'existe pas de programmes d'information et de sensibilisation. Les seules actions de sensibilisation qui sont menées ne se font pas dans le cadre de programme et sont ponctuelles.

Recherche et suivi

L'Institut National de Recherche Halieutique (INRH) envisage l'établissement d'un programme de recherche ayant pour objectif:

- l'étude des zones susceptibles de constituer des sites de ponte appropriés;
- l'étude de la biologie et écologie des tortues marines.

SLOVENIA

National Report on the Implementation of the Action Plan for the Conservation of Mediterranean Marine Turtles

Robert Turk
Regional Institute for Natural and Cultural Heritage Protection Piran
Nature Protection Dept.

Legal Protection

The legal protection of Mediterranean marine turtles in Slovenia has its basis in the national and international legislation.

According to the Natural and Cultural Heritage Law (1981) a governmental decree on the protection of endangered animal species was adopted in 1993. Among the marine species, listed in the provisions of the decree, there are also the three Mediterranean turtle species.

As the international conventions, dealing in their provisions with marine turtles are concerned, Slovenia has ratified (or notified) the Convention on the Protection of the Mediterranean Sea Against Pollution together with the Protocol concerning Mediterranean Specially Protected Areas (1993), the Convention on Biological Diversity (1996) and the Convention on Conservation of Migratory Species of Wild Animals (1998). The Convention on the Protection of European Wildlife and Natural Habitats is supposed to be ratified by the end of 1998, while the Convention on International Trade in Endangered Species of Wild Fauna and Flora should be ratified in the first half of the year 1999.

Implementation of the Action Plan

The presence of marine turtles in the Slovenian coastal waters is very limited. The northernmost part of the Adriatic is of course not a nesting, feeding or wintering area for marine turtles and it is at the same time far out of their migration routes. Nevertheless a rough estimate of the presence of marine turtles in the Slovenian waters would be 10 animals per year. According to this, the implementation of the Action Plan adopted by the Contracting Parties to the Barcelona Convention in 1998 is limited to tagging activity and to a lesser extent to information, awareness and education campaigns. Slovenia started the activities in the framework of the action plan in 1995, when a representative was designated to participate to a training session on marine turtles, that was organised in Turkey. The activities are however still at the very beginning. Captures are not reported regularly and most of the times the fishermen release the turtles without taking the appropriate data. In this case there are also no information on eventual tags and numbers. However in the past three years there were registered several observations of marine turtles in the Slovenian waters, while 7 (they were captured and brought to the aquarium in Piran) were tagged and released.

SPANISH REPORT ON THE MAIN NATIONAL ACTIVITIES CONCERNING THE ACTION PLAN FOR THE CONSERVATION OF MEDITERRANEAN MARINE TURTLES

by Juan A. CAMIÑAS *

1. INTRODUCTION

According to literature the loggerhead is the most common marine turtle species around the Spanish Mediterranean coast, including Balearic Island waters, and it is present during all months. Complementary other species as leatherback and green turtle could appear not so frequently.

By other hand nesting beaches corresponding some of the previously mentioned species do not exist within the Spanish territory. The most important period related to abundance of *Caretta caretta* is the summer, but some specimens remain in certain areas as Columbretes Island, near Valencia all around the year (Raga, pers. com.) and probably too in other near coast sites. Populations from Atlantic and Mediterranean origin are distributed from Gibraltar Strait to the east, and it is notable the migratory path in western Mediterranean. A spring migration from the Atlantic has been mentioned and, in opposite direction at the end of the summer period. As far as we know populations from western Atlantic nesting beaches and from eastern Mediterranean are the main components in western Mediterranean groups and only a global approach to the different populations present at the Mediterranean Sea could permit to know the real situation.

Dermochelys coriacea is an abundant species within the western Mediterranean, according a recent paper (Camiñas, 1998). The new data on incidental fishing captures and strandings indicate the importance of *Dermochelys coriacea* in the Mediterranean, where it is present all around the year. Western Mediterranean new data presented in this paper confirms the presence of the species near Gibraltar Strait mainly during the first and last months of the year and the presence in higher number at the Balearic Sea during summer and autumn. At the near Atlantic, mortality has been important during the last years (Camiñas & Gonzalez de la Vega, 1997) and could affect the Mediterranean abundance of this species.

2. LEGAL PROTECTION

From a legal point of view marine turtles are in Spain included in national legislation, including Mediterranean autonomous regions legislation. From the international obligations, Spain participate as a member of the most important Agreements as we will see in the next paragraphs.

International Agreements

Mediterranean marine turtles are included in many international Conservation Agreements. Spain has signed many of these agreements resumed in the next Tables:

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Table I

	BONN CONVENTION		CITES	
SPECIES	**Appendix I**	**Appendix II**	**Appendix I**	**Appendix II**
Dermochelys coriacea	+	+	+	
Cheloniidae spp.	+	+	+	
Chelonia mydas	+			
Eretmochelys imbricata	+			
Lepidochelys kempii	+			
Lepidochelys olivacea	+			
Caretta caretta	+			

Bonn Convention
Species included in Appendix I: Threatened Migratory Species
Species included in Appendix II: Migratory species that need specific Agreements

CITES Convention
Species included in Appendix I: Extinction Risk Species
Species included in Appendix II: Species whose commercialisation must be regulated.

Table II.

	BERN CONVENTION		C.D.92/43/EEC	
SPECIES	**Annex II**	**Annex III**	**Annex II**	**Annex IV**
Dermochelys coriacea	+			+
Cheloniidae spp.	+	(All species not included in Annex II)		
Chelonia mydas	+			+
Eretmochelys imbricata	+			+
Lepidochelys kempii	+			+
Caretta caretta	+		+	+

Bern Convention
Annex II: Species of fauna strictly protected.
Annex III: Species of protected fauna.

C.D.92/43/EEC Habitats Directive (European Union)
Annex II: Fauna of common interest whose conservation needs special protected areas
Annex IV: Fauna of common interest who need particular protection

National Legislation

National legislation concerning protected species is summarised in the next two Laws:

- the low 4/1989 of Conservation of the Natural Sites, Fauna and Flora.
- the Royal Decree 1997/1995 to protect the biodiversity by the conservation of the natural habitats.

The two basic national laws include the marine turtles as protected species (Table III) in the correspondent Annex.

Table III.

	NATIONAL CATALOGUE		R.D. 1997/1995	
SPECIES	**Annex I**	**Annex III**	**Annex II**	**Annex IV**
Dermochelys coriacea		+		+
Chelonia mydas		+		+
Eretmochelys imbricata		+		+
Lepidochelys kempii				+
Caretta caretta		+	+	+

National Catalogue
Annex II: Species and sub species catalogued as “in risk of extinction”.

Royal Decree 1997/1995
Annex II: Species of common interest (EU) who required special protected areas of conservation.
Annex IV: Species of common interest (EU) who requires particular protection.

Other national legislation referred to fisheries activities, including the driftnets ban in the Mediterranean in 1990 and the creation of several Marine Reserves are related in the next paragraph:

- Orden de 22 de octubre de 1990 por la que se prohibe el uso de los artes de deriva y se regula su empleo como artes menores en el área mediterránea (BOE Nº 255, de 24 de octubre de 1990).
- Real Decreto 277/1995, de 24 de febrero, por el que se aprueba el Plan rector de uso y gestión del Parque Nacional Marítimo Terrestre del Archipiélago de Cabrera (BOE Nº 92 de 18 de abril de 1995).
- Orden de 22 de junio de 1995 por la que se establece una reserva marina en el entorno del Cabo de Palos - Islas Hormigas (BOE Nº 161 de 7 de julio de 1995).
- Orden de 3 de julio de 1995 y Orden de 31 de julio de 1996, que modifica la anterior, por la que se establece la reserva marina de Cabo de Gata - Níjar (BOE Nº 207 de 27 de agosto de 1996).
- Orden de 31 de julio de 1997, por la que se establece una reserva marina y una reserva de pesca en el entorno de la isla de Alborán (BOE Nº 204 de 26 de agosto de 1997).
- Real Decreto 1315/1997, de 1 de agosto, por el que se establece una zona de protección pesquera en el mar Mediterráneo (BOE Nº 204 de 26 de agosto de 1997).

3. PROTECTION AND MANAGEMENT OF NESTING BEACHES, FEEDING AND WINTERING AREAS, AND MIGRATION ROUTES

There are not marine turtles nesting beaches in Spain. Feeding areas are relatively extensive (Camiñas, 1988; Camiñas & Serna 1995), mainly in summer period when thousand of loggerhead has been estimated around Balearic Island and within the continental shelf and continental slope region from the Ebro River mouth to the Gata Cape (Aguilar *et al.*, 1995; Camiñas, 1986; 1988).

Wintering areas in western Mediterranean Sea are not so good defined, but according to data

from the incidental captures in the Spanish long line fishery in winter months, residual population of *Caretta caretta* has been observed around Ibiza and north Palos Cape. Raga observations (pers. comm.) show a wintering group around Columbretes islands in front of Valencia.

With respect to the migration routes, a general migratory model in western Mediterranean Sea was defined by Camiñas & Serna (1995), including Atlantic to Mediterranean spring ways and Mediterranean to Atlantic autumn routes.

With regard to the protection we consider that specific actions to reduce the incidental captures by long liners has not been taken until now, although the legislation on Marine protected areas and Marine reserves in Spain has permit to create different areas where marine turtles can not be captures by two reason: the status of protected species and because into the protected areas and marine reserves are, in general prohibited fisheries activities.

We could considered a new perspective from the point of view of the marine turtles conservation at the EU waters. The Habitats Directive of the EU foresees the selection of Community Interest Sites that could be the framework for the preservation of nesting beaches, feeding areas and migratory routes within the four European and Mediterranean countries.

4. ACTION TO MINIMIZE INCIDENTAL CATCHES IN FISHING GEAR

Authors show that the main fisheries that affect marine turtles in Spain are surface long line (Aguilar *et al.*, 1995; Camiñas 1986; 1988) and in a low percentage bottom trawler (Aguilar, 1995) and drifting nets around Gibraltar Strait (Aguilar, 1995; Camiñas, 1992; 1995).

The main period of incidental captures in Spanish long line fisheries is summer in an polygonal area formed by the Ebro River mouth parallel and the Gata-Oran line, the Spanish coast line and the western Cerdeña meridian.

To protect bluefin tuna reproducers around Balearic island, the Spanish government approve in August 1997 a Royal Decree 1315/1997, to establish a fisheries protection zone in the Mediterranean. These national measure complement the ICCAT and national prohibition of tuna captures in the Mediterranean by using helicopters to increase the fishing power.

An ICCAT recommendation from June 1994 include the prohibition of fishing activities in summer period (June and July) for the biggest pelagic long liners over 24 Km. long to limit the fishing mortality, although big long liners has been fishing in 1994-1996 period in summer months (ICCAT, 1998). The European Union fisheries legislation limit the maximum long line length for boats from European countries to 60 km. in the Mediterranean Sea.

The above mentioned measures taken at national and international level to regulate the tuna fisheries activities in the Mediterranean could reduce the turtles captures, but we have no information on the effects of such as measures.

5. INFORMATION, AWARENESS AND EDUCATION PROGRAMMES

National competencies on information, awareness and education programs on marine turtles

has been implemented by the collaboration agreement between the Environment Ministry, trough the Tagging Office, the Spanish Herpetological Society and the collaboration of the Spanish Institute for Oceanography (Malaga Centre) putting into force in 1997 a National Programme for tagging and conservation of the Marine Turtles. The main objectives of the Agreement are:

- To tag all species of marine turtles in Spanish water (peninsular and insular waters) with common tags.
- To co-ordinate the different Spanish group working on marine turtles tagging.
- To implement a common data base .
- To awaken the public on marine turtles situation and measures to protected it.

Five specialist have the responsibility to co-ordinate activities at autonomous region level: Andalucia, Murcia, Levant, Baleares Island and Cataluña.

At regional level, the Environmental Departments from the Spanish Autonomous Communities faced to the Mediterranean (Cataluña, Baleares, Valencia, Murcia y Andalucía) have particular competencies on information, awareness and education in relation with the marine turtles. Specialised centres for education and recover injured animals exist in Cataluña (CRAM), Baleares and Andalucia (CREMA). Special education programmes directed to children and fishermen on the ecological and biological importance of marine turtles to conserve marine biodiversity has been implemented by regional and local centres.

6. TRAINING INITIATIVES

Due to shared competencies between central and autonomous governments, marine turtles training initiatives has been implemented by regional (autonomous regions) centres during the last years. Courses on biology, migration, fisheries effects and conservation are one of the main annual activities of these kind of centres whose objectives are related to education.

At the University, only summer courses or unofficial ones exist in Spain. Nevertheless some Professors of different Mediterranean Universities are working on these subject.

7. RESEARCH AND MONITORING

Researches on marine turtles at Mediterranean IEO Centres are focused on fisheries effects on *Caretta caretta* populations, tagging and migratory routes. The projects are part of the scientific research framework of the IEO within the Mediterranean. Due to the importance of the Spanish long line fishery, research and monitoring effort are concentrated on these activities.

Data from the fishing boats activities (fishing areas, effort, captures,...) are based on daily inquires at landings in Alicante, taking into account the importance of these port in Swordfish landings. Complementary information from the IEO Information and Sampling Net around the Mediterranean Sea fishing ports (RIM) and from IEO fisheries research campaigns are used by the IEO researchers. The main research fields are:

- Surface long line fishery effects on *Caretta caretta* populations at western Mediterranean.
- Observations and strandings of *C. caretta* at the Alboran Sea.

- Effects of drifnets on turtles populations at Gibraltar Strait area.
- Observations and strandings of *D. coriacea* at Alboran Sea.
- Other fisheries effects on marine turtles

Other Centres and institutions have regional projects.

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SYRIE

Rapport présenté à la réunion d'experts sur la mise en oeuvre du plan d'action pour la conservation des tortues marines de Méditerranée

par

Dr Mohamed ALNIMEH

Le plan d'action pour la conservation des tortues marines n'a pas été encore mis en oeuvre en Syrie, parce qu'un telle action nécessite avoir une base de connaissances suffisantes portées sur les sites de ponte et sur la taille de la population des tortues marines, ce qui n'est pas encore disponible en Syrie.

Cependant, la présence des tortues marines dans les eaux syriennes et sur les plages pendant la saison de reproduction est constatée par plusieurs auteurs; on peut citer parmi d'autres Gruvelle (1932) et Kasparek (1995). Ce dernier a eu l'occasion de surveiller la côte syrienne durant la période du 20 au 30 juin 1991. Ce travail lui a permis d'identifier 25 traces de tortues marines sur la plage comprise entre Lattaquié au nord et Jableh au sud, et 2 traces entre la ville de Tartous au nord et les frontières libanaises au sud. Mais malheureusement, tous les nids ont été dévastés par les prédateurs. De plus, des observations personnelles faites par nous-mêmes et par d'autres chercheurs syriens, ainsi que plusieurs témoignages des habitants locaux et des pêcheurs ont confirmé la présence des tortues marines sur la côte syrienne.

Malgré tout cela, les tortues marines n'ont pas jusqu'à présent fait l'objet d'une étude détaillée. Cette lacune de connaissances nous a incité à proposer en projet d'étude porté sur l'investigation des éventuelles plages de nidification des tortues marines, pour déterminer les sites de ponte les plus importants et évaluer la taille de la population. Cela nous permettrait d'intégrer les sites concernés dans une aire protégée marine et côtière destinée à la protection des tortues marines, et de mettre en oeuvre un plan d'action pour la conservation des tortues marines.

Enfin, je dois dire que ce projet a été présenté cette année à l'organisation "Accross the Waters" pour demander leur soutien, mais malheureusement ce projet n'a pas été retenu. Pour cela une assistance de la part du CAR/ASP pour la mise en oeuvre de ce projet serait appréciable.

RAPPORT SUR LA MISE EN OEUVRE DU PLAN D'ACTION POUR LA CONSERVATION DES TORTUES MARINES EN TUNISIE

par

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Deux espèces de tortues marines se reproduisent en Méditerranée, la caouanne *Caretta caretta* et la tortue verte *Chelonia mydas* et forment des populations génétiquement différentes. En Tunisie, la première espèce est commune et s'y reproduit, la deuxième est rarement signalée. Une troisième espèce *Dermochelys coriacea* est observée régulièrement jusqu'à 5 fois par an (Bradai & El Abed, 1998).

Les populations des caouannes et des tortues vertes sont soumises à de nombreuses pressions humaines. Les principales menaces sont les interactions avec les engins de pêche, les différentes formes de pollution et l'urbanisation et la destruction des plages de ponte.

Dans ce rapport, nous essayons de donner le maximum d'informations sur le statut des tortues marines et les principales actions menées surtout dans le cadre de la mise en oeuvre du plan d'action pour la conservation des tortues marines de Méditerranée.

PROTECTION LEGALE

La protection législative des tortues marines réside principalement dans la ratification par la Tunisie de :

- la convention sur le commerce international des espèces menacées de faune et de flore sauvage (CITES ou Convention de Washington, 1973) le 10 juillet 1974. Les signataires de cette convention s'engagent à ne pas pratiquer le commerce sous n'importe quelle forme des espèces dont les noms sont classés en espèces menacées d'extinction ou espèces en danger telle que la tortue marine *Caretta caretta* ;
- la Convention africaine ou de Lomé (1977) le 4 mars 1978. Dans cette convention, les tortues marines sont considérées comme espèces strictement protégées. Les Etats contractant s'engagent ainsi à ne pas les chasser ;
- la Convention pour la protection de la mer Méditerranée contre la pollution ou convention de Barcelone le 30 juillet 1977 et le Protocole relatif aux aires spécialement protégées de la Méditerranée le 26 mai 1983.
- la Convention relative à la conservation de la vie sauvage et du milieu naturel de l'Europe ou convention de Berne (1979) en 1995. *Caretta caretta* et *Chelonia mydas* citée en appendice II sont strictement protégées ainsi que leurs habitats par les parties contractantes.

Sur le plan national et en raison de la plupart de ces ratifications, le commissariat général à la pêche a adressé aux délégués régionaux à la pêche une note circulaire, n° 1155 du 10 juin 1987, pour leur demander de veiller à l'interdiction de la pêche des tortues marines.

Actuellement, la protection des espèces est assurées par un arrêté annuel (depuis 1992) du ministre de l'agriculture relatif à l'organisation de la chasse. Cet arrêté stipule que la chasse, la destruction, la capture, la vente, l'achat, le colportage et la détention des tortues marines sont prohibés en tout temps. L'arrêté du Ministre de l'Agriculture du 28 septembre 1995 relatif à l'organisation de la pêche interdit la pêche et aussi la collecte des oeufs de tortues marines.

PROTECTION ET GESTION DES PLAGES DE PONTE

En Tunisie la nidification de la tortue marine *Caretta caretta* a été mise en évidence pour la première fois en 1988 sur la plage située entre Ras ýDimas et Mahdia et sur l'île grande Kuriate au large de Monastir (Laurent *et al.*, 1990). Mais bien que non fondées sur des informations précises, plusieurs mentions de la nidification de cette tortue ont été évoquées auparavant dans la littérature et notamment dans le Sud-est du pays (Blanc, 1935; Knoepffler, 1962 ; Argano, 1979 & Parent, 1981). Par ailleurs des enquêtes menées auprès des pêcheurs confirment l'importance de la nidification dans le passé sur ces plages.

Dans le cadre de la mise en oeuvre du Plan d'action pour la conservation des tortues marines, un contrat a été établi en 1993 entre le CAR/ASP et l'APNES (Association de Protection de la Nature et de l'Environnement à Sfax) pour prospecter, entre autre, les plages sud - est du pays pour la détermination d'éventuels sites de nidification. Les prospections de ces plages ont montré l'importance de la nidification sur la grande Kuriate et la mise en évidence pour la première fois de la ponte de la caouanne sur l'îlot petite Kuriate (CAR/ASP (MAP/UNEP), 1993 ; Bradai, 1995).

Par ailleurs, trois nids de cette espèce ont été observés en 1994 et un autre en 1996 à la Chebba (Ellouze, 1996). Sur les autres plages, aucune trace de ponte n'a été détectée. La population reproductrice en Tunisie s'est donc nettement diminuée. Les causes résident principalement dans la capture accidentelle en mer et surtout l'occupation et la fréquentation abusive des plages constatée ces dernières années.

Toutefois, plusieurs témoignages évoquent ces dernières années la nidification de la tortue marine sur d'autres plages, parmi ceux -ci, nous citons l'observation de nouveau-nés sur les plages de Nabeul et de Kerkennah et d'une femelle nidifiante dans la zone touristique de Mahdia qui a été trouvée égarée loin de la plage le 13 juin 1997 à 4 heure du matin. Ces témoignages nous incitent davantage à prospecter plusieurs autres plages surtout au début de la saison de ponte et bien avant l'arrivée massive des estivants.

Toujours dans le cadre de la mise en oeuvre du Plan d'action pour la conservation des tortues marines, une coopération s'est établie entre le CAR/ASP et l'Institut National des Sciences et Technologie de la Mer (INSTM) pour suivre la nidification de *Caretta caretta* aux îles Kuriat par des prospections ponctuelles pendant les saisons de ponte 1994 à 1996. Cette coopération a été renforcée en 1997 et en 1998 par la signature d'une convention tripartite entre le CAR/ASP, l'INSTM et l'ANPE (Agence National pour la Protection de l'Environnement) pour suivre cette activité de nidification sur ces îles durant l'essentiel des périodes de nidification et d'émergence des nouveau-nés avec campement sur les lieux.

Ces missions accomplies par les chercheurs de l'INSTM et des volontaires ont pour but de:

- mesurer l'importance de l'activité de nidification par le nombre de nids déposés et la longueur des plages utilisées sur les îles Kuriate ;
- déterminer quelques paramètres écobiologiques de la reproduction et les caractéristiques des femelles nidifiantes et des nouveau-nés (caractères métriques et méristiques) ;
- procéder à un marquage des femelles ;
- recenser les sources de nuisance à cette activité ;
- Assurer la protection des femelles, des oeufs et des nouveau-nés ;
- sensibiliser le public aux problèmes encourues par ces reptiles.

Au cours de ce travail essentiellement de terrain, nous avons pu toucher à quatre volets :

- la biologie et l'écologie de la reproduction de la tortue marine *Caretta caretta* ;
- la conservation des nids et des nouveau-nés ;
- la sensibilisation ;
- la faune et flore marines.

Concernant la nidification, nous pouvons avancer que la tortue marine *Caretta caretta* nidifie aux îles Kuriate principalement aux mois de juin et juillet probablement tous les deux ans. La femelle nidifiante pond de 64 à 150 oeufs par montée avec une moyenne de 107 oeufs. L'émergence des nouveau-nés s'étend du mois d'août au mois d'octobre. L'incubation dure environ 68 jours. La ponte des premières femelles et l'émergence des derniers petits se feraient à l'abri de la fréquentation des îles qui est importante aux mois de juillet et août. Toutefois, ce phénomène et l'activité de pêche constituent les principaux facteurs de nuisance pour la nidification de la caouanne. Les campements des années 1997 et 98 ou le centre de suivi de la nidification de la tortue marine aux îles Kuriate ont contribué à la conservation et à la protection des femelles et de leur progéniture et à la sensibilisation des visiteurs et du public d'une façon générale aux problèmes encourus par ces reptiles. Onze nids au total ont été détectés et au moins 860 nouveau-nés, nés sur la grande Kuriate ont gagné la mer en 1997 avec principalement notre assistance. En 1998 uniquement 5 nids ont été suivi. Nous avons constaté en effet, durant six ans de suivi de la nidification de *Caretta caretta* aux îles Kuriat (de 1993 à 1998), que le nombre de nids est plus important pendant les années impaires que pendant les années paires (Bradai, 1996 et Bradai et Jribi, 1997).

CAPTURES ACCIDENTELLES ET ACTIONS PRISES POUR LES MINIMISER

Les tortues marines entrent en interaction avec les engins de pêche de très nombreuses pêcheries. Ces interactions sont différentes selon les engins utilisés , les lieux, les saisons de pêche et l'effort déployé. Toutefois, la pêche des tortues en Tunisie est accidentelle.

Les captures et les recaptures de caouannes par chalutage benthique dans le golfe de Gabès ont été estimées en 1991-1992 à environ 2000-2500 par an pour une flottille chalutière de 300 unités (Bradai,1992).

Pour ce qui est de la pêche côtière ou artisanale, les résultats d'une mission effectuée en 1993 de Monastir à la frontière tuniso-libyenne montrent, si on exclut les filets à requins et la tartaronne (ou mini chalut), engins dont les interactions avec les tortues marines sont peu étudiées, que la palangre et principalement celle de fond est l'engin qui engendre le plus les captures accidentelles des caouannes. En effet, un palangrier de fond capture en moyenne 22,83 tortues par an et un espadonnier 12,56 tortues alors qu'un chalutier n'engendre en moyenne que 6 à 8 captures par an (CAR/ASP (MAP/UNEP), 1993a & Bradai, 1995a).

Les tortues capturées par les différents engins utilisés arrivent généralement vivantes à bord et continuent à vivre une fois libérées immédiatement. La mortalité par chalut benthique est tellement faible, à cause de la durée des traits de chalut ne dépassant pas les deux heures, qu''il est exclu d'utiliser le système TEDs (Laurent *et al.*, 1996).

Quelques engins prohibés par la législation en vigueur capturent les tortues marines (ex. : le mini - chalut), l'essentiel des captures par chalutage benthique survient par des faibles profondeurs interdites à de telle activité. L'application de plus en plus rigoureuse de la réglementation de la pêche réduit énormément ces captures accidentelles surtout dans la région du golfe de Gabès reconnue comme étant une aire d'hivernage pour les caouannes.

FORMATION ET SENSIBILISATION

Dans le cadre de la mise en oeuvre du Plan d'action pour la conservation des tortues marines de la Méditerranée, plusieurs techniciens et chercheurs tunisiens (de l'INSTM, de l'Université et du Ministère de l'Environnement) ont profité de certains cycles de formation organisé par le CAR/ASP.

Dans le centre des Kuriate (Tunisie) de suivi de la nidification, il y a eu formation de quelques volontaires de l'enseignement secondaire et stagiaires et la préparation d'un DEA.

La sensibilisation des pêcheurs et du public d'une façon générale a suscité l'attention du gouvernement et de plusieurs organisations non gouvernementales. Les affiches, les dépliants, les photos collant, les séminaires, la presse, la radio et la télévision ont servi comme support à cet effort de sensibilisation qui est appelé à se développer davantage.

RECHERCHE ET SUIVI

Trois volets sont développés actuellement dans ce cadre :
- l'investigation d'éventuels nouveaux sites de ponte ;
- suivi de la nidification et constitution d'une banque de données pour les paramètres de la reproduction ;
- participation à un programme de marquage des tortues sur les sites de ponte et en mer.

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TURKEY

IMPLEMENTATION AT NATIONAL LEVEL OF THE ACTION PLAN FOR THE CONSERVATION OF MEDITERRANEAN MARINE TURTLES

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LEGAL PROTECTION

Turkey due to its geographical position as a natural bridge connecting Asia, Europe and Africa, and a large variety of climatic zones according to its topography, has a very rich biodiversity. Her varied ecological characteristics and the extremely diverse ecosystem she possesses have enabled Turkey to be a home to a large variety of species and sub-species. While there are 12.000 plant species in the whole of Europe, Anatolia alone hosts 9000 of which about 3000 are endemic. In case of animal species; the mammals found in Turkey consist of 120 species; the birds in Turkey consist of more than 400 species which most of them are migratory birds; and the number of reptiles are around 100.

Environmental issues have gained consideration in Turkey for the first time in 1937 in parallel to the "Hunting Law" and improved by "Environment Law" and "National Parks Law" in 1983. Within the conservation of species and natural habitats, Turkey has six major laws. These are: ***"Environment Law"***, ***"National Parks Law"***, ***"Hunting Law"***, ***"Water Products Law and Regulation"***, ***"Laws for the Protection of Cultural and Natural Assets"***, ***"The Coast Law"*** and ***"The Forest Law"***. Also, ***"Central Hunting Commission"***, constituted under the Hunting Law and ***"The Water Products Circular"***, constituted under the Water Products Law which are met and published annually, have principles to protect the threatened species and their habitat. This Circular states that on account of the breeding season of marine turtles, sea-bottom trawling is banned from May 15 to September 15; shrimp fishing is also banned from May 1st to September 15, except with long line trawling; the marine turtle breeding season falls approximately between these days. Between 1 June and 15 September the use of lights is restricted, and the use of boats at night is banned. Boats longer than 12 m. are not allowed, and boats with permission are restricted to a speed of 5 miles an hour. For the protection of the habitats; ***",Specially Protected Areas (SPAs)"***, which the requirements for the establishment and declaration of an SPAs are stated under Environment Law; ***"National Park", "Nature Park", "Nature Reserve"*** and ***"National Monuments"*** described in National Park Law; ***"Game Reserve"*** and ***"Captive Breeding Areas"*** within the terrestrial ecosystems described in Hunting Law.' ***"Natural and cultural Assets"*** status described in Laws for the Protection of Cultural and Natural Assets give responsibilities for protecting the natural environment.

In addition to national legislation Turkey is a party to most of the international, global and regional conventions or agreements addressing environmental problems of common nature. "The Conservation of European Wildlife and Natural Habitats Convention (Bern)", "The Convention for the Protection of the Mediterranean Sea Against Pollution (Barcelona)", "The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)" and "Convention on Biological Diversity" are some of the international conventions Turkey is a party and responsible for protecting the threatened species including the Mediterranean turtles in Turkish coasts according to its commitments.

In this connection, in 1990 the ***"Interministerial Marine Turtle Committee" (IMTC)***, was formed

under the coordination of Ministry of Environment. Its executive board includes representatives from various ministries (Ministry of Environment, Ministry of Public Works and Settlement, Ministry of Agriculture and Rural Affairs, Ministry of Forestry, Ministry of Culture, Ministry of Tourism), as well as from universities and NG0s. This Committee periodically comes together at least one time in a year and decides the necessary works on this issue in that year concerned. It also makes field studies to the important nesting beaches to implement and follow-up the decisions taken by the Committee. After these studies, a report is prepared and sent to the related ministries and local authorities for taking the necessary measures.

Almost half of the Mediterranean's *Caretta caretta* population and a large proportion of the *Chelonia mydas* population nest on Turkish beaches. The 17 beaches were found to be the most important breeding grounds in Turkey. These beaches are: Ekincik, Dalyan, Dalaman, Fethiye, Patara, Kale, Kumluca, Tekirova, Belek, Kizilot, Demirtas, Gazipasa, Anamur, Göksu Delta, Kazanli, Akyatan and Samanda. Of these beaches, Kazanli, Akyatan and Smanda in the eastern Mediterranean are important for *C. mydas* and the remainder are important for *C. caretta*.

The Dalyan-Ekincik, Fethiye, Patara, Belek beaches and the Göksu Delta all have SPA status. Protective measures are enforced on the Akyatan beaches by declaring as "Nature Reserve" status by the Ministry of Forestry.

All the activities related to the beaches within or outside the protected area, are controlled and monitored by the Marine Turtle Interministerial Committee.

RESEARCH AND MONITORING ACTIVITIES

There are several research activities on the marine turtle and their nesting places in Turkey. The research activities can be summarised:

Almost half of the Mediterranean's *C. caretta* population and a large population of the *C. mydas* population nest on Turkish beaches (Groombridge, 1988), Gelidiay *et al.* (1982), and Geldiay (1982) performed early broad-based surveys in 1977 and 1979 of beaches between Dalyan and Alanya. Other studies were carried out from 1980 to 1982 in the region between Silifke and Mersin. The second large study was carried out by the WWF in collaboration with DHKD along the southern Aegean and Mediterranean coasts.

The Ministry of Environment conducted 1996 survey with scientific consultation from Hacettepe University for Eastern Mediterranean nesting beaches. Ministry of Environment implement the new research from 1997 to now for nesting beaches in Western Mediterranean coasts. The main aim of these projects are, to research the ecology and biology of the *C. caretta* and *C. mydas*, to identify the population density in the nesting beaches as well as the negative impacts on the populations of the species. The Authority of Specially Protected Areas is still continue to research and monitoring studies within the specially protected areas: Dalyan, Patara, Fethiye, Belek and Göksu Delta since 1990.

INFORMATION, AWARENESS, AND EDUCATION PROGRAMMES

The project studies carried out by Hacettepe University and supported by the Ministry of Environment and the Authority of Specially Protected Areas cover the awareness and education programmes including training, especially for tourists, schoolchildren and local people.

ACTIONS TAKEN TO MINIMIZE INCIDENTAL CATCHES OF MARINE TURTLES IN FISHING GEAR

Turkish Scientific and Technical Research Council (TUBITAK) supported a research study to adopt Turtle Excluded Device (TED) for the Turkish Fishermen as a pilot scale. But, the financial difficulties are still remained due to high cost of this device for each fishermen.

RESULTS, AND RECOMMENDATIONS

For the areas which are important for the endangered species:

1. More international support to prepare management plans and to identify the migration routes and wintering areas should be provided.

2. The scientific researches should have more guidance guided for the preparation and implementation of management plans; priority should be given to these studies.

3. Common guidelines for the migration routes and wintering areas should be clarified.

STATEMENT BY WWF

WWF expresses concern on the fact that the meeting was unable to produce a specific list of recommendations to implement urgent conservation actions for sea turtles even if new scientific evidence has been made available. WWF stresses the importance to concentrate cooperation efforts in order to stop the continuous slaughter of *Caretta caretta* and *Chelonia mydas* in Egypt as a matter of priority.