

The Sea Turtle Protection Society of Greece



**Short Report on  
Sea Turtle Conservation on Zakynthos Island,  
Greece, during 2007**

Submitted to  
the European Commission, and  
the Standing Committee of the Bern Convention (Council of Europe)

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## Foreword

*This short report includes progress made from January 2007 to 31 August 2007 regarding sea turtle conservation on Zakynthos Island, Greece. Presented nesting data are considered preliminary as analyses are still in process. Bronwen Gill, field leader of the ARCHELON project on Zakynthos during 2007, contributed to the drafting of this report.*

## 1. Background

Laganas Bay, at the southern coast of the Island of Zakynthos, western Greece, hosts the largest nesting aggregation of the loggerhead sea turtle *Caretta caretta* in the Mediterranean. The average number of nests in Laganas Bay account for about 26% of the total nesting effort of loggerhead turtles in the Mediterranean. The nesting habitat of Laganas Bay consists of six distinct beaches (Marathonissi, East Laganas, Kalamaki, Sekania, Daphni, and Gerakas), totalling about 5.5 km in length, plus the main inter-nesting area at sea (where female turtles remain between successive nestings), which is considered the entire marine area of the Bay.

ARCHELON, the Sea Turtle Protection Society of Greece (STPS), has been systematically monitoring the Bay's nesting beaches since 1984 and records annually the nesting levels and other associated data. ARCHELON's standardized monitoring project in Laganas Bay is the oldest in the Mediterranean and one of the oldest in the world. As a result Laganas Bay is used as an "index" nesting area, by the Red List Task Force of IUCN's Marine Turtle Specialist Group (MTSG), in assessing population trends for the loggerhead turtle in the Mediterranean.

The long-term project of ARCHELON involves monitoring of the nesting population, as well as protection of endangered nests. Further, it includes an extensive public awareness component towards residents and visitors. The project operates annually from May to October, under a research permit by the Ministry of Agriculture (Wildlife Department) and the approval of the Management Agency of the National Marine Park of Zakynthos. The project receives great assistance from a contingent of international volunteers who are organized, trained and supervised by experienced ARCHELON personnel.

Due to the significance of Laganas Bay as a sea turtle nesting habitat, and the threats it faces from increasing tourism pressure and development, the Greek state has attempted, since 1984, its protection through various legislative acts. However, these measures were not endorsed by part of the local community and generally were poorly enforced. Following substantial pressure from domestic, foreign and international NGOs, the Council of Europe (through the Bern Convention) and the European Union, and after several years of deliberations, the National Marine Park of Zakynthos (NMPZ) was eventually established in December 1999 and its Management Agency in July 2000.

The enabling Presidential Decree includes a zonation scheme with varying regulations on land and at sea. The marine area of Laganas Bay is divided in three zones controlling maritime traffic annually from 1 May to 31 October (Zone A: no boating activity; Zone B: speed limit 6 knots, no anchoring; Zone C: speed limit of 6 knots).

The Management Agency discontinued its operations in April 2004 because of lack of funds, the greater part of which came from the government. The Park became again operative since August 2005, after the appointment of a new President and a new Board by the Ministry of Environment. It must be noted that ARCHELON and WWF-Greece participate with one combined seat in the 11-member Board of the Agency, since its creation.

It should be noted that non-compliance with long-standing recommendations of the Council of Europe (incl. demolition of illegal buildings in Daphni) has led to a Ruling of the European Court of Justice, which threatened the Greek government with a severe penalty.

During 2006 the Management Agency worked towards establishing a conservation scheme, mainly through wardening, control of visitors and involving local people, especially in the problematic area of Daphni.

Herewith, we present the situation at the nesting habitat (on land and at sea) during 2007 (until 31 August), and the conservation status of the entire area, as these were witnessed through ARCHELON's fieldwork. Further, we provide a set of recommendations for the improvement of the conservation prospective of this regionally very important sea turtle population.

## **2. ARCHELON's Fieldwork during 2007**

### *General*

Fieldwork for the 2007 season commenced on 5 May and will continue until 20 October. The main research field station at Kalamaki was set up on 5 May, with a peripheral station based at Gerakas, operative since 10 May. Daily monitoring of all six beaches commenced on 15 May. A large part of ARCHELON's work is devoted to direct nest protection through the relocation or the caging of nests laid in vulnerable areas. Further, hatching nests affected by artificial lights are shaded to reduce hatchlings' disorientation. Regular beach patrols in cooperation with Marine Park wardens are also conducted to prevent accidental or deliberate damage to nests by visitors.

The public awareness (PA) programme, through which the public are informed about the plight of the loggerhead turtle and how they can utilise the beach without disturbing turtles and nests, started at 8 May. The PA programme is conducted in a variety of formats: information tables, presentations in hotels and on commercial tour boats, informing visitors on the nesting beaches, through an Information Station in Gerakas (opened on 10 May), and whilst present on Turtle Spotting Boats (see Appendix 2). A second information station, in the form of a wooden kiosk, was opened in Kalamaki on 8 August.

After the establishment of the Management Agency, ARCHELON conducts its monitoring and PA work in agreement with the Park. This partnership commenced in 2002 and continued throughout 2003, before the Park's functioning was discontinued in April 2004. From this time until August 2005, when the Management Agency was re-activated, ARCHELON carried out its monitoring and PA work with increased presence on the beaches to offset, as much as possible, the absence of the Park's staff and wardens. After the re-activation of the Management Agency, new agreements were signed to cover subsequent seasons. According to this year's agreement ARCHELON provides

to the Agency a fortnightly report, including preliminary nesting data per beach and observed violations of regulations; at the end of the year a detailed report will be submitted.

Partnership with the Agency foresees that ARCHELON project members work in conjunction with the Park wardens patrolling the beaches to supervise enforcement of regulations. Multi-lingual volunteers are of great assistance when conversing with international visitors on the beaches. For the first time during 2007 the Management Agency employed "fieldwork observers" who follow ARCHELON's beach monitoring teams and also take additional measurements. In addition, ARCHELON's volunteers act as independent observers on the Park-endorsed Turtle Spotting Boats, reporting violations on these boat trips as they occur (see Appendix 2). The ongoing relationship and cooperation between ARCHELON and the Agency is an essential component of the smooth operation of the Park.

Close cooperation continues with the Coast Guard of Zakynthos for incidents of turtle strandings and transportation of injured turtles to the ARCHELON's Sea Turtle Rescue Centre in Glyfada, Athens.

Once again local Municipalities have donated facilities for the volunteer base camp in Kalamaki, and the ARCHELON's Information Station at Gerakas is established on land owned by a local resident.

### *Results*

Preliminary data show that during the 2007 nesting season 3709 turtle emergences, of which 1096 resulted in nests, were recorded on all six beaches of the Bay. Additionally, the narrow beach sector to the east of the standard Daphni beach was also monitored, and gave 343 emergences of which 9 resulted in nests. This beach sector, largely unsuitable for nesting, was not monitored in previous years because of its low nesting success. Although the total number of recorded nests during 2007 is below the 23-year average (1984-2006) of 1251 nests, this is considered as being part of the intense annual fluctuations observed over the years. It is thought that intense annual fluctuations may hinder detection of any long-time trend in the annual number of nests.

Up to 31 August 2007, eleven turtles have been confirmed dead but it cannot be stated if these died within the Bay or drifted there by sea currents. Several other reports of dead turtles (but not sighted by ARCHELON personnel) indicate a higher number of mortalities throughout the summer. Three turtles were found alive with fresh injuries requiring transport to ARCHELON's Rescue Centre in Glyfada. All three had swallowed fishing lines. A further six turtles were removed from entanglements with fishing nets within the Bay (one was entangled at a buoy in Kalamaki). It is noted that the increased number of dead and injured turtles during 2007 should be further investigated and its causes assessed as high mortality rates, probably offshore, may undermine protection measures at the nesting habitat.

So far this season ARCHELON project members have carried out more than 411 slide show presentations, conducted 678 beach patrols, 20 information tables and participated in 80 all-day cruise trips, 25 cruising catamaran boats,

and 365 trips on Turtle Spotting Boats, providing to visitors information on sea turtle biology and informing/explaining the Park's regulations. In addition, project members were regularly informing beach visitors in the course of their monitoring duties. As a result of the above activities, from 5 May until 31 August, a total of 34664 visitors were informed by ARCHELON. The above number is analysed as follows: 6296 visitors through slide show presentations, 18957 on the beaches, 5272 on boat trips, 594 at information tables, 2545 at the Information Stations. Further, approximately 1000 people were informed during the morning survey fieldwork.

### **3. The Work of Management Agency during 2007**

The creation of the Marine Park in 1999 and the associated Management Agency in 2000 were major steps in protecting the most important nesting habitat for *Caretta caretta* in the Mediterranean.

The disruption of the Park's operation from about April 2004 to summer 2005 meant that there was neither official wardening nor supervision of regulations' enforcement pertaining to the nesting habitat on land and at sea. It is to be reminded that ARCHELON, being an NGO, can only provide advice and information. Since the Agency has resumed operation in 2005 it has been necessary to re-establish acceptable practices within the protected area. A major concern of the Management Agency since its re-activation was the collaboration of Daphni owners, in order to accept a minimum of conservation practices. Indeed during the 2006 nesting season several improvements were noted on Daphni beach, including wardening. Inevitably, in exchange for this cooperation the 15 illegal buildings were not demolished as the law orders.

In 2007 the Agency continued its efforts to acquire control in the problematic area of Daphni by involving in the process local owners. More details on Daphni can be found in section 4.1.

During 2007 the Management Agency took further steps to restrict vehicular access on the beaches by adding new barriers at unofficial entrances on the East Laganas beach used to gain illegal access in the past.

Wardening was affected on all protected beaches with 2007 seeing the addition of a part-time warden for Sekania beach (see Appendix 1).

As in 2006 control of beach furniture (umbrellas, sun beds) was attempted by the Agency by providing distinctive furniture carrying the Park's logo. In 2007 beach furniture owners on all protected beaches were made to remove beach furniture at night allowing an increase in available nesting area. It should be noted that beach furniture on Daphni is deployed on a flattened dune area behind the actual beach, and this furniture was not removed at night as it was not intervening with nesting.

As in 2006, signposting was implemented at the major entrances of the nesting beaches as well as on roads crossing the boundaries of the Park. Also the buoys, delimiting the protected marine area, were in place.

As in 2006 a restriction on vessels in the northern part of the Bay has been imposed with the intention of only NMPZ endorsed vessels (Turtle Spotting Boats) to sail in this area (see Section 4.2 and Appendix 2 for details).

In 2007, overall the NMPZ has continued in a positive direction improving the enforcement of the Park's legislation both on land and at sea. The wardens generally responded well to violations observed on the beaches and the cooperation between ARCHELON and the wardens was stronger than ever.

In Gerakas, despite a ticketing system supposed to control the number of visitors, tourist numbers in August exceeded the set quota of the Presidential Decree.

However the case of Daphni remains difficult to solve with an uneasy compromise between the NMPZ and local landowners. All the illegal buildings at Daphni still exist and create a false "precedent" for others to come, if circumstances permit.

## **4. Conservation Status of Nesting Habitat during 2007**

### **4.1. Protected beaches (in geographical order)**

#### Marathonissi (zone A2: Nature Protection Site, maritime zone B)

Marathonissi is a small island within the Bay and its nesting beach is characterized by low sand temperatures, because of its northern orientation and whitish colour, which render it a particularly important nesting site as this short beach produces the great majority of male hatchlings of Zakynthos sea turtle population. The beach is a popular destination for day-visitors who arrive by boat from several areas of the Bay. A NMPZ sign is in place to inform visitors of the beach rules and visiting boats are only allowed to land on a particular site. Despite being in maritime zone B, boats still stop at Marathonissi and still drop anchor in the waters just offshore as well as on the beach, often on dry sand more than 10 meters from shore. In order to inhibit this, buoys have been placed to create a zone where boats are allowed to pull up as well as marking a swimming-only boundary around the whole beach. Boat speeds above the permitted 6 knots are common near the island and even water sports, such as jet skis, have been observed. During high season wardens often have difficulty enforcing beach regulations resulting in moved nest markers, protective cages, and shadings of hatching nests.

#### East Laganas (zone Π3: Nature Protection Site, maritime zone B)

This beach, backed partially by an extensive sand dune field, stretches for about 2.7 km towards the western end of the protected beaches in the Bay. The international airport to the back of the beach is closed during the night and this avoids substantial light and noise pollution on the nesting beaches in the Bay. The main entrances to the beach each have a barrier to prevent vehicle entry, and adequate signs. A total of four warden kiosks were in place in 2007; however the warden kiosks between Kalamaki Beach Taverna and Stanis Taverna have not been staffed for much of the season due to a shortage of labour.

Vehicle traffic on the beach, a long-standing problem, was further restricted in 2007 with few violations being observed due to the addition of 15 new barriers along the back of the beach. Nevertheless, the westernmost end of the protected area (near Zante Beach Hotel) remains open during the night and one beach entrance remained unguarded with result that some visitors did gain

access to the beach at night (for more information, please see Appendix 1). The westernmost part of the beach also suffers from light pollution associated with local hotels, which deters nesting females and disorients hatchlings. Hatchling disorientation can also be observed in the centre of East Laganas beach due to the lights of a single house.

Beach furniture on East Laganas beach is split into areas as follows: Western part (Zante Beach Hotel): 116 umbrellas, 232 sun beds. Middle part (Kalamaki Beach Hotel): 62 umbrellas, 124 sun beds. Eastern part (Stanis Taverna) 24 umbrellas, 48 sun beds. As in 2006 there remain 3 sets of illegal beach furniture in the area between Kalamaki Beach Hotel and Stanis Taverna; totalling 60 umbrellas and 160 sun beds. These umbrellas and sun beds are set behind the actual beach on levelled areas in the sand dune system.

#### Kalamaki (zone Π3: Nature Protection Site, maritime zone B)

Despite that Kalamaki beach is in maritime zone B, meaning that boating traffic is not allowed, there are boats either on or anchoring near the beach. Access to Kalamaki is gained through a single beach entrance where the barrier preventing vehicle access was replaced in 2006. The western end of the beach has two sets of umbrellas and sun beds, totalling 56 umbrellas and 112 sun beds. The owners of the beach furniture, following the Park's regulations, remove them during the night.

#### Sekania (zone A1 : Absolute Protection Site, maritime zone A)

Sekania has one of the highest nesting densities for *Caretta caretta* in the world. It stretches at the centre of maritime Zone A meaning that no access is allowed by boat. It is reminded that WWF-Greece acquired the land to the back of the beach preventing development and vehicular access. In 2006 the NMPZ erected a sign on the land behind Sekania, advising that there is strictly no access to the beach. A barrier has been constructed at the entrance to the beach to further discourage access. In 2007 an NMPZ warden was present on the beach, from early morning until early afternoon, in order to further restrict access and to observe possible boating activity.

Minor hatchling disorientation was observed on the western part of the beach due to the lights of Laganas settlement, and also noise from the bars and clubs in the Bay. Due to its remote location and the high level of hatchling production Sekania beach is particularly susceptible to hatchling predation by sea gulls, most of them coming from the nearby landfill site (see section 4.3). In response to the issue of hatchling predation the NMPZ began a study, in collaboration with WWF and ARCHELON, to investigate the amount of the problem.

#### Daphni (zone Π1: Nature Protection Site, maritime zone A)

##### *Background of Daphni*

In 2003, there were 13 illegal buildings at Daphni, considered to be the second most important nesting beach on Zakynthos. In 2004, a newly constructed building was observed and subsequently reported to the relevant authorities on Zakynthos, as well as to the delegation of Public Administration Inspectors of Greece by the then Management Agency of the NMPZ. The removal of illegal buildings at Daphni has been an obligation of the Greek Government

since 1987, when only two buildings existed, following recommendations by the Council of Europe (Recommendation No. 9, Bern Convention).

Previous changes to the morphology of the beach have included levelling of the low dunes behind the beach, as well as deposition of soil to allow umbrellas to be utilised. Moreover, non-native plants were planted replacing the original vegetation.

It must be noted that land owners in Daphni, supported by the local community of Vassilikos, never accepted Park wardens and regulations before 2006. In 2006 the Management Agency came with landowners to a compromise, which led to several changes on the beach and the area behind. Some construction works, including demolitions of walls, new constructions and modifications took place. Daphni was closed to visitors in the evenings and vehicle access was restricted by a road barrier and the presence of wardens at the main entrance of the area. During daytime, tourists wishing to visit the beach were transported to the area by NMPZ vans; reportedly there were restrictions to visitor numbers and staying time. The control of visitor numbers during the day was enabled by the implementation of a pilot eco-tourism programme which included the operation of an education centre (located on the hills behind the beach) and guided tours on the beach. Moreover, the NMPZ removed obstacles and rubbish from the beach in order to provide a more suitable terrain to turtles attempting nesting. About 10 tamarisk trees were planted at the back of the beach (about 15-20 m from the sea), in areas where turtles choose to nest. It must be noted that the shallow roots of this tree species can expand to large distances and invade turtle nests destroying completely incubating eggs, as noted previously at the western end of the East Laganas beach (sector T).

In comparison to previous seasons, the incurred changes during 2006 generally provided a better space for turtle nesting on the beach, put some control over the number of visitors, and reduced other potential disturbances (lights, noise, traffic, etc.). Nevertheless, the above actions of the Management Agency do not stem from an integrated management plan which would have taken into consideration all possible factors towards the long-term conservation of the area.

#### *During 2007*

There are still 15 illegal buildings on Daphni. The Park's education centre, located in a rented house on the hills near the main road to the beach, continue to operate. However the Park abandoned this year the idea to bus people to the beach instead creating two large car parks close to the beach. On arrival to the car parks visitors were informed of beach regulations by Park wardens.

On the beach a special area was created for displaying sea turtle tracks and nests to interested visitors. The tracks were chosen and left each morning by the Park fieldwork observer and ARCHELON monitoring team.

The beach profile was once again altered when sand from the beach area was used to create a new lawn area replacing protected sand dune vegetation.

The tamarisk trees, planted during 2006, are still in place. It is noted that tamarisk roots grow quickly and can invade nearby turtle nests.

Fieldwork observers, employed by the Park, were staying in an illegal house at Daphni, rented by the Park.

Beach furniture numbers stand at 340 sun beds and 125 umbrellas which is a further increase on previous years. All beach furniture is set behind the beach at flattened areas previously occupied by native vegetation.

In conclusion it must be noted that after last October's conflict between the Park and local landowners, cooperation has been re-established to a great extent. The new compromise was facilitated mainly through the construction of the two car parks, and the rental of illegal buildings by the Management Agency (for the education centre and the fieldwork observers' accommodation).

Although the overall situation at Daphni in 2007 was not as good as in 2006, it would have been worse without the re-establishment of dialogue between the Management Agency and the local landowners.

#### Gerakas (zone Π2: Nature Protection Site, maritime zone A)

The Presidential Decree states that a maximum of 60 umbrellas, 120 sun beds and 350 visitors are permitted on the beach. Occasional counts of beach furniture showed the number of umbrellas to be consistently at or below the allowed number however the number of sun beds frequently exceeded 120. Use of private umbrellas was allowed only in the western end of the beach which was marked with an NMPZ chain.

The beach is free from development and light pollution, and access to the beach is through one entrance. In 2007 two barriers at the beach entrance prevent access by cars. In addition to this, the Management Agency restricted parking in the area closest to the beach with the 2006 parking area being left unused. Thus car parking close to the beach became more difficult and this helped to discourage excess beach users.

In 2007 the NMPZ continued to operate a ticket scheme and a time limit of 2 hours in order to control visitor access. Generally, the ticket scheme caused a notable reduction in visitor numbers however on several days the legal quota was exceeded.

## **4.2. Protected marine area**

### *General*

As in previous years, Laganas Bay was patrolled this season by the Coast Guard. In addition, the Management Agency patrolled the maritime zones with one boat. Buoys, delimitating the maritime zones, helped facilitate the patrolling of the marine protected area, and also boaters to know the zone boundaries. An improved cooperation was witnessed between the Management Agency and the local Coast Guard authorities and this led to an improvement in the enforcement of the maritime zones. However it must be stated that many of the regulations are still frequently broken, this is particularly the case with the 6-knot speed limit.

### *Maritime zone A*

By law all boating activity is prohibited within zone A, from May through October. However, a total of 26 boats were recorded in zone A from

May through August, many of which even dropped anchor or were observed at speeds in excess of 6 knots.

#### *Maritime zone B*

The beach of Marathonissi is a very popular destination for visitors hiring private boats. All of the boats which visit Marathonissi throw anchor either in the shallow water (prohibited in Zone B) or are dragged ashore and their anchors dug into the beach sand. By law only organised trips to Marathonissi are permitted; however many privately hired boats visit the island every day. Enforcement of this law by the Coast Guard has been haphazard at best. Private hired boat companies fail to inform customers of the protective maritime regulations.

#### *Special NMPZ zone*

As a pilot scheme, in 2006 a new maritime zone was introduced strictly for turtle spotting trips endorsed by the Park. This zone lies within maritime zone B and runs parallel to the shore, mostly along East Laganas beach, at a distance of about 1.4 km from the shore. As in 2006, many non-endorsed boats could be seen running turtle spotting trips in this area in 2007.

#### *Water Pollution*

Intermittently, poor water quality is observed associated with the rivulet of Bouka at the westernmost end of East Laganas beach or possibly with offshore boats. This is a continuing problem which needs to be addressed. Worries about water pollution from the nearby landfill site were also expressed (see Section 4.3).

### **4.3. The landfill site**

A landfill site is in place behind Vrondonero, between Kalamaki beach and Sekania beach, within the boundaries of the Park. The landfill site causes an artificially high level of sea birds to populate the area and this result in increased predation pressure on sea turtle hatchlings. This is particularly apparent at Sekania where sometimes the beach is covered with seagulls waiting for the hatchlings. In 2007 the NMPZ, in cooperation with WWF and ARCHELON, began a study in order to examine the extent of the seagull problem which will hopefully lead to appropriate management methods.

It should be noted that the landfill site is nearing its maximum capacity and any plans to expand the existing site or to make a new one within the boundaries of the Park would be illegal (national legislation does not allow landfill sites within protected areas).

## **5. Recommendations**

1. The Management Agency should put more emphasis on improving the conditions on the nesting beaches and at sea, and should become hard on tackling illegal activities. The respective local authorities should ensure that the NMPZ legislation is enforced at all costs.
2. A Management Plan for the NMPZ should be immediately elaborated. This will delineate the vision of the Management Agency, something that is very much needed.

3. Alternative measures and compensation schemes for confirmed affected landowners should be sought.
4. Removal of illegal buildings and restoration of damaged beach profiles.
5. Acquisition of a strip of land (approx. 4ha) at Sekania where an illegal road was built in 1995.
6. No single stretch of beach currently being used by turtles for nesting should be compromised; in fact stretches of the developed beach in West Laganas, not used any more by turtles, should be in the long term reclaimed - by means of simple light, noise and beach furniture control - for turtles. The westernmost part of East Laganas beach (Sector T) needs attention, as increased tourist use may eventually push out nesting turtles.
7. An environmental impact study must be elaborated in order to fully protect and restore the remaining sand dune ecosystem backing the East Laganas nesting beach.
8. A study should be carried out to minimise light and noise pollution.
9. The land planning survey for the rest of the island should be completed and implemented in order to secure balanced development.
10. The problematic landfill site will have to be removed from the Park boundaries and other sources of water pollution investigated.
11. The cause of increased turtle deaths at sea and particularly fishing practices in the wider area (Ionian Sea) should be investigated.
12. The NMPZ should enlarge its present management methods to include the entire area both terrestrial and marine to include protection measures for other threatened species in the area (monk seals, birds of prey, etc.).
13. The NMPZ should seek to protect the area both in summer and winter as damage caused at winter can not be rectified with summer time protection methods.
14. Removal of tamarisk trees from nesting beach areas due to the invasive nature of the root structure and the damage caused to sea turtle nests.

Furthermore:

1. Motorbikes, cars and any other kind of vehicles need to be kept off the beach and the dunes of East Laganas beach in both winter and summer.
2. All commercial and non-commercial activities related to observing turtles at sea should be strictly regulated by the NMPZ to ensure compliance with guidelines.
3. Continuation of the long-term standardized monitoring and public awareness programmes conducted systematically by ARCHELON, since 1984 and 1987 respectively, is vital in assessing nesting population trends, effectiveness of conservation measures and evaluating the operation of the NMPZ.
4. Continuous presence of the Coast Guard is essential, due to the Island's National Marine Park status and the lack of knowledge and/or abiding of regulations by the general public.

## **6. Appendices**

### **Appendix 1: The warden programme of the Park**

In 2006, the Management Agency has constructed permanent warden stations replacing the temporary huts from previous years. During 2007 there were 9 warden stations in the Park area, including Marathonissi, Sekania, Kalamaki, Gerakas, two on Daphni and three on East Laganas.

Signs have been erected by the NMPZ at the entrance to all of the nesting beaches. These inform tourists that they are entering a nesting beach, as well as describing the beach regulations. Wardening of the beaches commenced this year on 20 May, with ARCHELON multi-lingual volunteers assisting Park wardens in informing visitors. Adherence to beach regulations has improved this year as a result of the permanent warden presence.

The night presence of Park wardens and ARCHELON tagging teams on the nesting beaches has effectively prevented access to the public during the night. Nevertheless, incidents of turtles being disturbed whilst on the beach attempting to nest have still been noted.

### **Appendix 2: Turtle spotting boats**

In 2001, a Memorandum of Cooperation between the majority of the turtle-spotting-boat owners and the Management Agency was signed. Two turtle spotting boat stations, located close to Laganas settlement, were endorsed by the NMPZ in June 2003 via a written agreement. The agreement specified turtle spotting guidelines to be followed on commercial turtle spotting trips. One of the clauses specifies that turtle spotting operators must inform their customers about turtles during a turtle spotting trip. Under an agreement with the Management Agency, ARCHELON provides multilingual volunteers to go on turtle spotting boats, endorsed by the Park, with the task of informing tourists onboard about sea turtles and the conservation measures of the NMPZ.

Equally importantly, ARCHELON members report any violations of the agreed guidelines. This information is then passed onto the Management Agency on a regular basis in a report format. In general, the boats attended by ARCHELON show a high level of compliance with the guidelines, whereas endorsed boats not attended by ARCHELON are frequently observed flouting the guidelines.

One area of concern associated with turtle spotting is the regular incidence of private hired boats as well as commercial glass-bottomed boats violating the guidelines for viewing a turtle. Private hired boats are not regulated in any way and constantly follow endorsed turtle spotting boats in high numbers in order to view turtles. Visitors who are using these boats are very poorly informed and frequently cause stress to resting turtles. Violations associated with turtle spotting tend to worsen towards the end of the nesting season when there are less female turtles in the Bay and viewing a turtle becomes more difficult.

Regulation of turtle spotting activities has greatly improved in recent years, however further attention is still required, particularly in the area of private boats and some commercial turtle spotting trips. To remedy these problems, endorsements of turtle spotting companies should be revised regularly and revoked where necessary.

### **Appendix 3: Beach cleaning activities**

Rubbish on the beach and at sea poses serious threats to sea turtles and other marine species. During May ARCHELON together with Park wardens conducted beach cleans on the beaches of East Laganas, Kalamaki, Sekania, Daphni and Gerakas. Beach cleaning was continued during the season by Park wardens and ARCHELON volunteers as part of ARCHELON's public awareness program.