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**Document for information**

**Update Report on Marine Turtle Conservation  
in Zakynthos, Laganas Bay (Greece)**

**Report by the NGOs:**

**ARCHELON, the Sea Turtle Protection Society of Greece**

*Document  
prepared by  
The Directorate of Culture and of Cultural and Natural Heritage*



ARCHELON, the Sea Turtle Protection Society of Greece

## **SHORT REPORT ON SEA TURTLE CONSERVATION ON ZAKYNTHOS, GREECE, 2003**

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Submitted to  
the European Commission and  
the Standing Committee of the Bern Convention

### **Foreword**

This short report includes progress made from January 2003 to 1 September 2003 regarding sea turtle conservation on Zakynthos. Nesting data are preliminary as analyses are still in process.

Christina Davy and Katie Wollerton, field leaders on Zakynthos during 2003 contributed to the drafting of the report.

### **1. Background**

Studies carried out by ARCHELON, the Sea Turtle Protection Society of Greece since 1982, have proven the Bay of Laganas on the island of Zakynthos in Greece to be the most important known nesting aggregation of the loggerhead sea turtle (*Caretta caretta*) in the Mediterranean. An average of 1,300 nests per season are made on six beaches (Gerakas, Daphni, Sekania, Kalamaki, East Laganas and Marathonissi), 5.5 km in length, which hold some of the world's highest loggerhead nesting densities.

Due to the significance of Zakynthos as a sea turtle nesting ground and the threats it faces from increasing tourism pressure, the nesting beaches have been protected by law since 1984. Following years of deliberations, in December 1999 the National Marine Park of Zakynthos was established and its Management Agency followed in July 2000.

### **2. The ARCHELON Summer Fieldwork on Zakynthos**

ARCHELON has a branch office on Zakynthos to promote on an annual basis its objectives for the conservation of marine turtles and their habitat. Every year fieldwork is carried out by ARCHELON during the nesting season. The fieldwork consists of turtle and beach monitoring, active beach management, and raising public awareness. Fieldwork in 2003 was conducted for the 20<sup>th</sup> consecutive year.

For a second year fieldwork was carried out under an agreement signed by the National Park Management Agency and ARCHELON.

Summer fieldwork started on 3 May 2003 and will continue through mid-October. The Ministry of Agriculture (Wildlife Department) renewed the research permit required for working with endangered species. Base camp was set up on 9 May 2003 and peripheral research stations were set up on Sekania (14 May 2003), Marathonissi (20 May 2003), and Gerakas (5 May 2003). Three information stations operated by ARCHELON in co-operation with the NMPZ: Gerakas (opened 5 May 2003), Laganas (opened 26 May 2003) and Zakynthos town (opened 7 July 2003).

**During the 2003 nesting season about 3,350 emergences were recorded of which just under a 1,000 resulted in nests.** This is considered a rather “low” year. It must be noted that annual

fluctuations in numbers of nests laid occur naturally, ranging on Zakynthos between 857 nests (in 1985) to 2018 (in 1995).

**It is estimated that about 35,000 visitors received direct information from the project members through the information stations, slide shows, co-operation with “turtle spotters» and beach patrols.**

### **3. Conservation Status of Nesting Area During the 2003 Nesting Season**

#### **3.1. Illegal Buildings at Daphni.**

All 13 illegal buildings constructed behind the beach of Daphni, once the second most important nesting beach on Zakynthos, have not been removed. 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) and has yet to be met. **Repair works and improvements of buildings took place during 2003.**

Two illegal tavernas and two bars continued to operate at Daphni throughout the season, in some cases well into the night (especially on weekends). Occasionally ARCHELON researchers during early morning surveys noted human tracks around nests.

#### **3.2. Illegal Beach Furniture and Degradation of Beach Profile on Daphni**

On 10 May 2003, there were 170 illegal umbrellas and 341 sunbeds on land flattened behind a portion of the beach where significant nesting occurs. On 12 August 2003, the number of umbrellas counted was 177 and the sunbeds 355. The beach furniture took up 380 metres behind the nesting beach (total length about 600 metres). **There was an increase in beach furniture as in 2002 there were 160 umbrellas and in 2001 there were 120 umbrellas.**

The owners of the illegal businesses have levelled the dunes behind the beach and laid soil in order to deploy umbrellas. They have also planted exotic vegetation. The erosion caused by other illegal earthworks has altered the beach profile. The dirt roads to Daphni were altered over the winter. There was a rock-fall over the winter at the east part of the beach making the area narrower. Also, sand dunes were flattened behind the western side of the beach, in order to create parking space. There were two large clay deposits on the beach, taking up 25% of the area. The clay ranges between 5-15 mm thick. The clay was broken up, but not removed. Further, 4-5 wooden corridors were placed by the owners at several locations along the beach in order to facilitate tourist access from the tavernas and umbrellas to the water's edge. These corridors reduce area vital for nesting. If less in number and designed better the corridors could serve as a visitor management technique.

#### **3.3. Beach Furniture on Gerakas, Kalamaki and East Laganas**

Despite the fact that for the second year, the Management Agency had the jurisdiction of renting out the umbrellas (viz the legal umbrellas quoted in the enabling Presidential Decree) to private bidders, the number of umbrellas exceeded the legal quota. Regular counts of beach furniture and water sport gear was carried out by ARCHELON. The findings of two representative counts (one in the beginning of the season and the second in the peak) are presented in the table below.

	Gerakas		Kalamaki		E. Laganas	
	26 May	11 August	3 June	13 August	20 May	13 August
umbrellas	62	89	60	67	78	122
sunbeds	124	180	120	134	158	244
pedaloos	0	0	15	8	14	14
canoes	0	0	5	6	4	8
boats	0	0	0	5	3	4

According to legislation only 60 umbrellas and 120 sunbeds are allowed at one end of Gerakas beach where it has been observed that nesting activity is relatively low, under the condition they are removed before sunset. The quota was exceeded by 48% during the peak season. The umbrellas were deployed in two rows and took up about 150 metres of the 600 metres long beach (25% of beach

length). Beach furniture was not removed at night; however, sunbeds were stacked to allow unhindered turtle emergence. Further, since 26 May 2003, 4 umbrellas have been deployed on the top part of the beach, behind the rows of the rented umbrellas. These are used by the umbrella owners and remain on the beach all night. By law, the number of tourists on the beach at any one time should not exceed 350. Easy access to the beach by vehicle and the ad hoc parking lot just above the beach (142 parked cars were counted on 21 August 2003) attract larger numbers of tourists on the beach. Certainly, the creation of a parking lot well above the beach and control of number of cars allowed to park will help the NMPZ regulate beach use.

According to legislation only 150 umbrellas and 300 sunbeds are allowed on the nesting beaches of E. Laganas and Kalamaki. These are to be removed every night. The number though ranged from 138 umbrellas and 278 sunbeds (in the beginning of the season) to 189 umbrellas and 371 sunbeds (during the peak season). On 2 September 2003, the number of umbrellas was 182 and sunbeds 376. In 2001 during the peak season the number of umbrellas was 239 and sunbeds around 500. No beach furniture was removed before sunset as required by law. **However, sunbeds were stacked for the first time ever, but unfortunately not every night. Overall, there was an improvement on the nesting beach of E. Laganas and Kalamaki compared to previous years.**

However, 13 August 2003, 62 umbrellas and 124 sunbeds (about 70 in 2002 and 25 in 2001) were deployed on flattened dunes behind the beach of East Laganas, hence destroying the beach profile and the sand quality. The umbrellas increased to 73 and sunbeds to 146 during a count on 1 September 2003. **This problem needs to be seriously addressed by the NMPZ as the continuation of this practice will further degrade beach profile and sand quality.**

The part of the beach in front of the “Luis Zante Beach Hotel” (Sector T) has been used for nesting. It is not officially in the strictly protected beach (Zone II3), which starts at the eastern border of the hotel premises. On 13 August 2003 there were 148 umbrellas, and 296 sunbeds taking up the entire beach length (330 metres). According to an agreement with the NMPZ, the number of umbrellas allowed in front of the hotel was 80 (120 umbrellas in the entire T Sector). The number was decreased following intervention by NMPZ. For the first time since the last three years, the sunbeds were stacked, but not every night. Effectively, Sector T is the western part of the East Laganas nesting beach, which needs immediate action by means of controlling beach furniture and light pollution otherwise it may become unsuitable for nesting. There were also 8 pedaloes, 7 anchored boats and 2 canoes.

Additionally, along the Kalamaki and E. Laganas nesting beach, there were about 22 pedaloes, 14 canoes, and 9 small boats with outboard engines. The numbers rise to 30 pedaloes, 16 canoes, and 16 small boats with outboard engines when sector T is included. In most cases, pedaloes and canoes are stacked at night on the beach, creating an obstacle to emerging sea turtles. **There is a need to determine the maximum number of such vessels allowed to operate in the Bay.**

### 3.4. Vehicles and Horses on the Nesting Beach of East Laganas

Law allows no vehicles or horse riding on the nesting beaches as they pose threats to nests and turtles. On East Laganas ARCHELON project members recorded vehicle tracks at least 10 days in June, 12 days in July and 15 days (of the 23 days monitored) in August). **Vehicles on the beach are a continuous threat to nests. A solution is needed immediately by controlling access to the beach.** It must be noted that from November to April, cars and motorbikes use the beach and the dunes every day. This is against the law and needs to be seriously dealt with.

Horse tracks were only recorded three times (17/5/2003, 3/7/2003, and 1/8/2003). **This is a definite improvement from previous years.** But horseback riding was a regular occurrence in the sand dunes and this poses a great threat to this sensitive ecosystem.

### 3.5. Degradation of the Sand Dune System in East Laganas

Sand dunes (an ecosystem of Community interest included in Annex I of the EU-Habitats Directive 92/43), behind the nesting beach of East Laganas are continuing to face serious degradation because of motor bikes, free campers, horse riders, litter and construction debris and the opening of paths. In 2001, a concrete path was made through the dunes and forest, connecting a newly opened

hotel above the main Laganas–Kalamaki road and the beach. As mentioned above, horseback riding is a regular occurrence in the sand dunes, the effect of which needs to be assessed.

### 3.6. Patrolling of Maritime Zones

In 1999, the Ministry of Environment purchased a special boat to be used by the Port Authorities to patrol the Bay of Laganas. To date patrolling by the Port Authorities seems to be quite effective. In August 2002, buoys were placed by the Management Agency to delimit maritime zones within the Bay. Following actions by the NMPZ, a Port Police Station is being planned for Laganas Bay to improve daily surveillance, coupled with an increase in seasonal staff.

**Patrolling of maritime zones by Port Authorities, despite improvement over the past years, remains somehow insufficient.** According to information provided by the Port Authorities of Zakynthos, the patrol boat was out of order from 7 July 2003 to 17 July 2003, and the inflatable boat was out of order from 1 July 2003 to 18 July 2003. According to data collected by the ARCHELON field teams, the following were recorded:

Gerakas: 5 violations of Zone A, for 3 of which the Port Police were called by the wardens of the NMPZ. The Port Police acted immediately on one occasion.

Marathonissi: almost all boats that stop at Marathonissi throw anchor either in the shallow water (not allowed in Zone B). There were at least 26 incidents recorded by ARCHELON of boats travelling well over 6 knots. Law allows only organised trips to Marathonissi, but many small privately hired boats mostly visit it. Many larger boats anchor just off the back of the islet (not a nesting beach).

Sekania: 12 boats were recorded in Zone A, travelling at speeds exceeding 6 knots. One boat and two canoes landed on the beach. Sekania is a strictly protected beach and no public access is allowed day and night.

**Despite enforcement of regulations, 3 turtles were confirmed as killed by speedboats in 2003.** It is not known though if they were killed in the Bay. However, as 2-3 such cases are still being reported annually despite the ban of speedboats in 1994, there is a need to investigate the causes.

### 3.7. Wardens Employed by the NMPZ for the Season

This is the third year the Management Agency effected wardening. Twenty-five wardens and 3 supervisors were hired by the NMPZ on 19 May 2003. Eight warden stations were set up (1 at Gerakas, 1 at the top of Sekania beach, 5 along Kalamaki and E. Laganas and 1 on Marathonissi). No wardening took place on Daphni, due to local landowners' objection. **With few exceptions, the work of the wardens this year was better than previous years. Co-operation with the ARCHELON personnel improved.** There has been a positive feedback by both ARCHELON project members and Park wardens regarding the good working spirit, which wasn't the case in previous years.

In keeping with the agreement signed with the Management Agency, ARCHELON project members co-operated with wardens in informing visitors on all beaches. Specifically, on Gerakas, Kalamaki and E. Laganas, ARCHELON project members were rostered for daily wardening duties (10am to 6pm) even covering for absences or illness.

### 3.8. Co-operation with "Turtle Spotters"

In 2001 a memorandum of co-operation between turtle spotting entrepreneurs and the Management Agency was signed. **Turtle spotting boats were endorsed by the NMPZ, on 20 June 2003 in a signed agreement.** The agreement included guidelines regarding the conduct of turtle spotting. One of the clauses specified that turtle spotting operators inform on-board their clients. In an agreement with the Management Agency, ARCHELON undertook the task of informing tourists on the boats about sea turtle biology and conservation.

**Co-operation with turtle spotters was reasonably good, considering it was the first year it was done on a full scale.** ARCHELON project members were, with some exceptions, on all boats providing direct information to hundreds of tourists. **However, guidelines for behaviour were not always observed.** Violations regarded turtle spotting boats coming too close to swimming turtles, or staying too long with them, or revving their engines when observing a turtle. Turtle spotting was agreed to take place between 11am and 5pm, but in most cases it was extended to 6pm. Problems

intensified at the end of nesting season (August), as most turtles after egg-laying left the Bay, hence the pressure to locate turtles mounted.

### **3.9. Co-operation with Eco-tourist Company**

Following some pilot activities in 2002, this year ARCHELON, co-operated with a local private company, recently established to conduct environmentally friendly trips for tourists. An agreement was signed between the two parties. The co-operation was endorsed by the NMPZ who has signed a memorandum of co-operation with the new company.

To date, more than 35 four-hour trips on a catamaran, and 4 walks have been conducted. On almost all occasions ARCHELON project members were present providing first hand information to clients.

**Co-operating with local business people in promoting turtle friendly activities is a great opportunity to raise awareness amongst tourists and a means to generating local support to the objectives of the NMPZ.**

### **3.10. Erosion on Sekania**

Following a devastating bush fire in 2001, immediate erosion works were carried out by WWF Greece in co-operation with ARCHELON, which proved very successful. In July 2003, WWF Greece fitted several anti-erosion barriers to counter the cliff's slippage. The work was performed over a 1-week period. Two barriers were erected on the east sector, and one on the west sector. The barriers were placed to encourage vegetation regeneration, which should itself prevent clay run-off.

Following summers storms, there was some clay run-off. It was in two large sections of the beach and was up to 50 mm thick. It covered up to 20 m of the length of the beach. Some nests are known to be covered by the clay, but their fate has not been determined yet.

### **3.11. Beach Cleaning**

ARCHELON and WWF Greece co-operated to clean the beach of Sekania on 23 May 2003. ARCHELON personnel cleaned Gerakas beach on 14 May 2003. NMPZ wardens regularly cleaned Kalamaki and East Laganas.

### **3.12. Water Pollution in the Bay**

On several occasions polluted water (soapy water and floating sewage) was recorded in Zone A near Sekania. Whether this comes from the nearby landfill, rivulet of Bouka (Laganas) or boats offshore is yet unknown but certainly the problem merits further investigation.

### **3.13. Other Facts**

Legal delimitation of the shoreline was completed for E. Laganas and Kalamaki and is currently proceeding with the area of Vassilikos. The preparation of the land register (cadaster), has been completed in the boundaries of the Park and is currently at the stage of legal appeals by the public. This progress is very important and has been for years ardently recommended by ARCHELON, as it will facilitate any decisions concerning compensation measures.

## **4. The National Marine Park of Zakynthos (NMPZ)**

The establishment of the National Marine Park of Zakynthos and the Board of the Management Agency is definitely a major breakthrough in sea turtle conservation in Greece and the Mediterranean. ARCHELON and WWF Greece are jointly represented on the 10-member Board. Being the first Management Agency established in a proposed Natura 2000 site in Greece, it is also a major breakthrough in nature conservation in this country.

ARCHELON has expressed its support and has made positive contributions to ensure the Management Agency's success. Despite the lack of experience concerning the operation of management agencies in Greece, the Zakynthos Management Agency has made an effort to establish itself locally and proceed with its institutionalised objectives. **However, following more than three years of operation the Agency has yet to reach a satisfactory level of conservation initiatives to protect and manage the area and set long-term goals providing alternatives for affected**

**landowners. It is moving in the right direction. It is important that the Ministry of Environment fully supports the Park and assumes its responsibility in dealing with the problem on Daphni.**

In 2002, the Management Agency signed a memorandum of co-operation with ARCHELON and WWF Greece. Further, for 2003 ARCHELON undertook the tasks of conducting monitoring and public awareness projects following a specific agreement with the Management Agency. This is a major progress for nature conservation in Greece, as it is the first time an NGO and a national park Management Agency are officially co-operating for the management of a protected area. **It will definitely serve as an exemplar for the other park management agencies that are currently being set up in areas where NGOs are already active.** To date, ARCHELON is on the Boards of two newly established Management Agencies, those of Amvrakikos Bay and Mesolonghi Lagoons.

## **5. Recommendations**

1. The Ministry of Environment should give ample political and fiscal support to the Management Agency in order to achieve its goals.
2. 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. Daphni is a case where the NMPZ needs to enforce legislation as the conditions get worse every year.
3. 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.
4. Alternative measures and compensation schemes for confirmed affected landowners should be sought. The efforts currently being made by the Park should receive the support of the Ministry of the Environment. This will mitigate local pressure to relax protection measures in the Park.
5. Immediate purchase of land at Daphni, where the habitat is being seriously degraded. This should be combined with the immediate removal of illegal buildings, restoration of beach profile and alternatives to affected landowners. The Greek government should provide funding and support to the NMPZ
6. Acquisition of a strip of land (approx. 4ha) at Sekania where the illegal road was built in 1995.
7. No single stretch of beach currently being used by turtles for nesting should be compromised, in fact stretches of beach in Western Laganas should be in the long term reclaimed- by means of simple light and beach furniture control- for turtles. Sector T in E. Laganas, needs attention, as increased tourist use may eventually push out nesting turtles.
8. An environmental impact study must be elaborated in order to fully protect and restore the remaining sand dune ecosystem backing the Laganas-Kalamaki nesting beaches.
9. An environmental impact study should be carried out to minimise light pollution.
10. The land planning survey for the rest of the island should be completed and implemented in order to secure balanced development for the whole island of Zakynthos.
11. The problematic sanitary landfill will have to be removed from the NMPZ and other sources of pollution investigated.
12. The cause of turtle deaths by speedboats should be investigated.

Furthermore:

1. Immediate emphasis should be given to effective sign posting and propagation of information to visitors
2. Motorbikes and cars should be kept off the beach and the dunes of E. Laganas in winter and summer as they cause damages to the beach and nests.
3. An interpretation centre needs to be established for the public and a long-term campaign to inform the local population of the benefits gained from the NMPZ should be carried out.
4. Visitor access to Gerakas beach should be controlled, by means of a parking lot well above the actual beach on land provided by a local landowner.

5. All activities related to observing turtles at sea should be closely monitored and evaluated by the NMPZ to ensure good conduct of enterprises. Additionally, there should be a plan for the number and types of activities that can be allowed before they become a problem to the turtles. Studies must be carried out to assess possible impacts of tourist activities on turtles and nests.
6. Wardens should be posted on Daphni, despite reactions.
7. The Port Police Station planned to be established in the Bay of Laganas to facilitate surveillance of the Bay must be established by next May.
8. Seasonal increase of Port Police staff to run longer and more effective daily patrols in the Bay.
9. Continuation of the monitoring and public awareness programme conducted by ARCHELON is vital to assessing effectiveness of conservation measures and ensuring the success of the National Park.