

Loggerhead Nesting Effort and Conservation Initiatives at the Monitored Beaches of Greece during 2002

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Approximately 99% of the documented nesting effort of the loggerhead turtle, *Caretta caretta*, in the Mediterranean occurs in Greece (60.6%), Turkey (27.1%) and Cyprus (11.4%) (Margaritoulis *et al.* in press). Libya may host large numbers of nests (Laurent *et al.* 1997) but this has not yet been quantified by a monitoring programme.

Following nesting data from several seasons, nesting areas in Greece have been classified as “major” or “moderate” (Margaritoulis 2000). “Major” nesting areas are those hosting on average more than 100 nests/season and over 6 nests/km/season. Five areas in Greece fulfill the requirements for “major” areas: Laganas Bay (Zakynthos island), Kyparissia Bay (western Peloponnesus), Rethymno (Crete), Lakonikos Bay (southern Peloponnesus) and the Bay of Chania (Crete island) (Margaritoulis 2000). The above locations are monitored each season by ARCHELON as part of a systematic and standardised long-term monitoring project. However, of the 44-km Kyparissia Bay, only the southernmost 9.5 km are monitored as they host 83.9% of the total nesting effort along the entire Bay (Margaritoulis & Rees 2001). Further, whenever resources permit, some “moderate” areas are also monitored. During the 2002 nesting season, besides the above five “major” areas, two “moderate” areas were also monitored: Bay of Messara (Crete) and Koroni (southern Peloponnesus) (Fig. 1).

During 2002, a total of 9991 emergences, of which 2496 (25.0%) resulted in nests, were recorded in the above seven nesting areas, totaling in length 73.2 km (tab. 1). The five “major” areas hosted in total 9575

emergences, of which 2380 (24.9%) resulted in nests. The number of nests per area, during 2002, was within the range of values recorded during previous seasons (Table 2) and nesting density varied correspondingly (from 7.5 nests/km in the Bay of Messara to 213.6 nests/km in Laganas Bay) thus each nesting area maintained its ranking according to Margaritoulis (2000).

Nesting success varied from area to area; the lowest nesting success was recorded in Lakonikos Bay (21.1%) and the highest in southern Kyparissia Bay (33.2%) (Table 1). Inter-area variation in nesting success is generally caused by diversity of nesting habitat. Highest success is generally recorded on extensive beaches with ample sand and lower success for more narrow or pebbly beaches. Anthropogenic disturbances can further reduce the nesting success on all beach types.

Loggerhead nesting in Greece is highly seasonal. The nesting season usually extends from end of May to late August (Margaritoulis & Rees 2001). For 2002, the duration of the nesting season (from first to last nest) ranged from 70 days in Rethymno to 94 days in southern Kyparissia Bay (Table 3).

Conservational aspects

All five “major” nesting areas in Greece plus the Bay of Messara are included in the proposed network of protected areas entitled NATURA 2000, as part of the Habitats Directive of the European Union. Further, the nesting beaches in Laganas Bay and surrounding marine and terrestrial areas were declared a National Marine Park in 1999 (Dimopoulos 2001). The nesting areas of southern Kyparissia Bay, Rethymno,

Nesting area	Beach length (km)	Number of emergences	Number of nests	Overall nesting success (%)	Nesting density (nests/km)
Laganas Bay (Zakynthos)	5.5	5123	1175	22.9	213.6
Southern Kyparissia Bay	9.5	1784	593	33.2	62.4
Rethymno	10.8	1347	325	24.1	30.1
Lakonikos Bay	23.5	888	187	21.1	8.0
Bay of Chania	13.1	433	100	23.1	7.6
Bay of Messara	8.1	227	61	26.9	7.5
Koroni	2.7	189	55	29.1	20.4
Total	73.2	9991	2496	25.0	34.1

Table 1. Main nesting data for seven areas monitored during 2002 in Greece.



Figure 1. Sketch map of Greece, showing the approximate position of the seven nesting areas, monitored during 2002. Map produced with: SEATURTLE.ORG Maptool

Lakonikos Bay and Bay of Chania feature specific Management Plans, which are implemented by ARCHELON in cooperation with local authorities and stakeholders (Irvine *et al.* 2000, Margaritoulis & Rees

2001).

In all seven areas there is a strong public awareness component operated through seasonal information stations, slide presentations mainly given at tourist

Nesting area	Minimum number of nests/season	Maximum number of nests/season	Number of monitoring seasons	Data source
Laganas Bay (Zakyntos)	857	2018	14	Margaritoulis 2000
Southern Kyparissia Bay	331	779	8	Margaritoulis & Rees 2001, Rees <i>et al.</i> 2002
Rethymno	316	516	8	Margaritoulis 2000
Lakonikos Bay	107	220	6	Margaritoulis 2000
Bay of Chania	77	192	6	Margaritoulis 2000
Bay of Messara	15	80	8	Margaritoulis <i>et al.</i> in press
Koroni	35	66	8	Margaritoulis & Rees in press

Table 2. Maximum and minimum annual numbers of nests recorded per monitored area in Greece during previous seasons.

Nesting area	Date of first nest	Date of last nest	Duration of nesting (days)
Laganas Bay (Zakynthos)	23 May	22 August	92
Southern Kyparissia Bay	25 May	26 August	94
Rethymno	1 June	9 August	70
Lakonikos Bay	3 June	14 August	73
Bay of Chania	30 May	18 August	81
Bay of Messara	4 June	21 August	79
Koroni	31 May*	16 August	78

* Estimated at first survey (4 June)

Table 3. Start/end dates and duration of nesting season per monitored area in Greece during 2002

installations, on-site instructions provided to visitors and participation in various local cultural events. It is estimated that over 165,000 visitors were provided turtle information during 2002 in the seven nesting areas. Further, in the course of projects co-funded by the European Commission, two permanent Environmental Centres have recently been created in strategic locations in Lakonikos Bay and in southern Kyparissia Bay (Margaritoulis & Rees 2001; Rees *et al.* 2002). These Centres, established in collaboration with local communities, feature residential facilities for researchers and exhibitions for visitors; they also offer guided tours to nearby ecosystems (e.g. coastal forest, dunes). The Centres operate throughout the year and are mostly visited by Greek schoolchildren.

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