



CRETE ANNUAL REPORT 2022

Conservation efforts at the nesting habitats of
Caretta caretta in Crete, Greece

Rethymno (Natura 2000 site: GR4330004)

Chania (Natura 2000 sites: GR4340003, GR4340006)

Messara Bay (Natura 2000 site: GR4310004)

Athens, December 2022

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

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1 INTRODUCTION

ARCHELON has been systematically monitoring and protecting, on a yearly basis, the nesting activity of the Loggerhead sea turtle (*Caretta caretta*) in Crete since 1990.

The main nesting sites in Crete are included in the following Natura 2000 Network's sites:

- Rethymno: GR4330004 "PRASSANO FARANGI - PATSOS - SFAKORYAKO REMA - PARALIA RETHYMNOU KAI EKVOLI GEROPOTAMOU, AKR. LIANOS KAVOS - PERIVOLIA" (Illustration 2)
- Chania: GR4340003 "CHERSONISOS RODOPOU - PARALIA MALEME - KOLPOS CHANION" (Illustration 3) and (partly) GR4340006 "LIMNI AGIAS - PLATANIAS - REMA KAI EKVOLI KERITI - KOILADA FASA"
- Messara Bay: GR4310004 "DYTIKA ASTEROUSIA (APO AGIOFARANGO EOS KOKKINO PYRGO) " (Illustration 4)

2 RESULTS

During the nesting season of 2022, ARCHELON successfully completed the Field Project for the monitoring and protection of the nesting activity of loggerhead sea turtles in Crete. The project took place from May 5th to October 10th and was conducted by three separate groups of volunteers/researchers at the beaches of Rethymno, Chania and Messara Bay. Trained local volunteers also participated in the three Project areas.

According to preliminary data, a total of 379 nests were recorded and protected against inundation, trampling, and light pollution. Although the total number of nests appears to be down compared to last year (See 2021 Report), it should be noted that breeding activity fluctuates significantly from year to year and is influenced by other factors, such as conditions in the food fields that turtles resort to between two reproductive years.

Regarding sea turtle strandings, five (5) dead sea turtles were recorded at the nesting beaches of Crete during the summer and one (1) injured that was sent to the local Aquarium in order to get first aid. The port authorities in collaboration with ARCHELON's Rescue Network recorded a total of 46 dead sea turtles in Crete between January and October 2022.

Additionally, ARCHELON conducted Public Awareness actions on the beach, in various touristic facilities and at the seasonal Information Stations of each project area. More than 13,500 tourists and visitors were informed about sea turtles in Rethymno, 6,500 in Chania and 2,000 in Messara Bay. The total number of visitors informed in 2022 is significantly higher than that of the previous year (14,000) due to the increased number of tourists arriving at the island following the lifting of COVID-19 restrictions.



3 THREATS

Based on the Joint Ministerial Decision (Government Gazette B 1864/15-05-2020 as amended by the Government Gazette B 2198/05-06-2020) prescribing beach use, Municipalities can lease portions of the beach to tourism and leisure related businesses. Regarding the sea turtle nesting beaches, including Rethymno, Chania and Messara Bay, the competent Municipalities can concede to local businesses the “simple beach use”, provided that the implementation of protection management measures is ensured during the nesting and hatching season. These measures include the removal of beach furniture (sunbeds) at sundown, the prohibition of heavy vehicle usage during beach cleanings, the elimination of light pollution, the restriction of beach parties and the prohibition of vehicle traffic on the beaches.

For the enforcement of these measures the environmental authorities of Crete were activated, informing businesses and carrying out on-site inspections. It is worrying that even in 2022, too many cases of non-compliance with these management measures continued to be observed, making the reproductive process of sea turtles difficult. Equally worrying is the fact that many large-scale interventions, that have long-term consequences degrading the reproductive habitats of the protected species, were also observed. Assessing the overall situation in Crete in relation to threats, we find that no improvement was observed in 2022. Information for each nesting area is presented separately below.



3.1 RETHYMNO

The disturbances on the nesting beach continued despite the intensive efforts by the Environmental Department of Rethymno's Regional Unit.

Light and noise pollution remained the prevalent threats. There were extensive parts of the beach with intense lighting that prevented the turtles from coming out of the sea and nesting and, most importantly, disorientated the hatchlings making them unable to find their way into the sea. To deal with this threat, ARCHELON implemented a special measure to protect the hatchlings (shading of the nests). In Rethymno, shading was applied to 78% of the nests. However, disorientation incidents were observed despite the application of the protective measure in some nests (Photo 1). In total, it is estimated that 80% of the nests were affected by light pollution.

A second major threat is the extensive cover of the nesting beach with beach furniture and water sports equipment, dramatically reducing the space available for nesting. This creates a problem for both adult female turtles who do not have access to suitable places to nest (Photo 2), while it can also affect the emerging hatchlings. Contrary to the previous year, in 2022 over 75% of businesses did not comply with the measure of removing sunbeds from the beach after sunset.

In addition, the daily raking of the sand created problems in locating and protecting the nests. The extensive irrigation of the sand by some entrepreneurs can have negative consequences for the existing nests, because it affects the temperature and therefore the incubation of the eggs.

A significant number of incidents of vehicle and heavy machinery traffic on the beach were recorded, causing immediate danger to the existing nests (Photo 3). Despite the recommendation not to use heavy machinery for beach clean-ups between May and October, in 2022 many incidents (123 cases) were recorded during the sea turtle breeding season (Photos 4a, 4b).

Especially in 2022, extensive planting of non-native species was recorded on the beach of Rethymno. Planting was conducted using heavy vehicles, even during the nesting season (Photo 5). Such practices alter the natural vegetation of the dunes and can have unpredictable consequences for the coastal ecosystem as a whole.



The continuous urbanization and the installation of the biological treatment has particularly adverse effects (Photo 6). New hotel units and other businesses are still being built along the beach (e.g. operation of a new hotel in Adelianos Kampos, see the 2021 Report), destroying the sand dune zone and the beach and thus, degrading ecologically important parts of the habitat.

Coastal erosion is one of the most important long-term threats to the nesting beach in Rethymno, as some parts of it have already been found inundated by waves during the strong northerly summer winds (meltemia) (Photo 7). In order to deal with the nest inundation due to erosion, ARCHELON's researchers moved 71% of the recorded nests to safer parts of the beach.

3.2 CHANIA

Occupancy of valuable nesting space by beach furniture and water sports equipment at night was continuous along most of the beach. Over 90% of businesses did not comply with the measure of removing sunbeds from the beach after sunset, as a result of which turtles cannot access places suitable for nesting.

In addition, a significant number of incidents of vehicle traffic (219 cases) and heavy machinery on the beach (54 cases) were recorded, despite the existing recommendation not to use them during the breeding season (May – October).

The daily leveling of the sand with rakes in many places created problems in locating and protecting the nests. In Chania, in recent years, the use of machines for this purpose has also been noted (Photo 8).

The problem of light pollution was very serious for another year, as there are large sections of the beach without any dark spots, which would allow the hatchlings to access the sea without getting disoriented. In order to deal with the hatchling disorientation due to light pollution, ARCHELON applied the shading measure to almost all (98%) recorded nests in Chania in 2022. Despite the protective measures, hatchlings from many nests still showed disorientation due to light pollution.



In 2022, extensive planting of alien species was also recorded on the beach of Chania. The extension of the pre-existing coastal road in Minothiana of Chania is still having an impact, as it caused further destruction of the sand dunes in the area. Many coastal businesses in Kolymbari have destroyed the surrounding dunes for landscaping purposes since 2017 and continue to encroach on them.

The platforms (constructions of 2019) on the nesting beaches established by businesses in the Platania area were also not removed. On the contrary, the construction of new ones was recorded on the beach of Kolymbari (2021) (Photo 9) and Tavronitis (2022).

The construction of three breakwaters parallel to the beach (construction 2020, Photo 10) appears to alter the morphology of the beach, intercepting the severe erosion caused by the jetty construction, but causing more erosion to adjacent sites that are ecologically excellent nesting habitats for sea turtles (Photos 11a, 11b).

Generally, the coastal erosion threatens the long-term preservation of the beach, while the space available for nesting decreases every year. In order to deal with the consequences of erosion, it was necessary to move 51% of the nests that were recorded.

3.3 MESSARA BAY

On the beach in front of the Kalamaki and Kokkinos Pyrgos settlements, intense light pollution occurred, as well as in some places at the Kommos location. The measure of shading the nests to avoid hatchling disorientation was applied to 48% of the recorded nests.

In addition, disturbances from camping activities in the Kommos area were observed, such as increased human presence during the night hours, that can result in adult female turtles abandoning the nesting attempt and/or hatchlings being trampled.

In the same areas, valuable space on the nesting beach was observed to be occupied by beach furniture at night, as only 12% of businesses applied the relevant provision of the Joint Ministerial Decision.



A significant number of vehicle traffic incidents (69 cases), especially four-wheeled motorcycles, was recorded in many parts of the coastal zone and especially in Afrathia beach, where developed sand dunes are found. Also, cases of heavy machinery usage were recorded (Photo 12).

The coastal road that was built illegally in 2020 with the aim of connecting the village of Kalamaki with the area of Afrathia, has destroyed a large part of the rock that separates the two areas (Photo 13). The road is still in use to this day, further degrading the dune system at the Afrathia site, despite the Hellenic Ministry of Environment and Energy's plan to block vehicle passage with cement blocks.

4 POPULATION TRENDS

Genetic research has shown that the sea turtle population breeding in Crete is important at the Mediterranean level, since it contributes male turtles to the populations nesting in the Eastern Mediterranean (Lebanon and Israel). Hence, its protection is of vital importance.

Analysis of long-term data series on turtle reproductive activity shows that:

- In Rethymno, the turtle population seems to be stabilizing after a significant decrease recorded in previous years.
- The nesting population in Chania shows signs of recovery after a significant decrease recorded in previous years.
- The turtle population of Messara Bay shows a steady increase in recent years.

The above is the result of the conservation actions systematically carried out by ARCHELON volunteers/researchers for over 30 years.



5 CONSERVATION

Crete is considered the flagship of the Greek tourism industry that is now called to move towards sustainability and eco-tourism. However, the existing provisions on the Environmental Impact Assessments of planned projects within Natura 2000 areas were not applied in cases specified above and the ecological value of the areas was degraded.

Additionally, there is still no specific legislative framework regarding the protection and management of sea turtle nesting beaches in Crete, even though they have been integrated in N.E.C.C.A.'s (Natural Environment & Climate Change Agency) Samaria National Park and Protected Areas of Western Crete (Chania) and Eastern Crete Protected Areas (Rethymno, Messara Bay).

Until a management framework is established for each area based on environmental legislation, it is important to protect the nesting beaches through better implementation of the Joint Ministerial Decision prescribing beach use.

REFERENCES

ARCHELON, 2021. Short Report for the 2021 Project in Crete.



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ILLUSTRATIONS AND PHOTOS



Illustration 1

The Natura 2000 sites on the island of Crete. Arrows point at the three main reproductive habitats of the loggerhead sea turtle.



Illustration 2

The Natura 2000 site with the code: GR4330004 “PRASSANO FARANGI - PATSOS - SFAKORYAKO REMA - PARALIA RETHYMNOU KAI EKVOLI GEROPOTAMOU, AKR. LIANOS KAVOS -PERIVOLIA”. The arrows point the boundaries of the nestingsite from the east end of Rethymno town (west) to Skaleta (east).

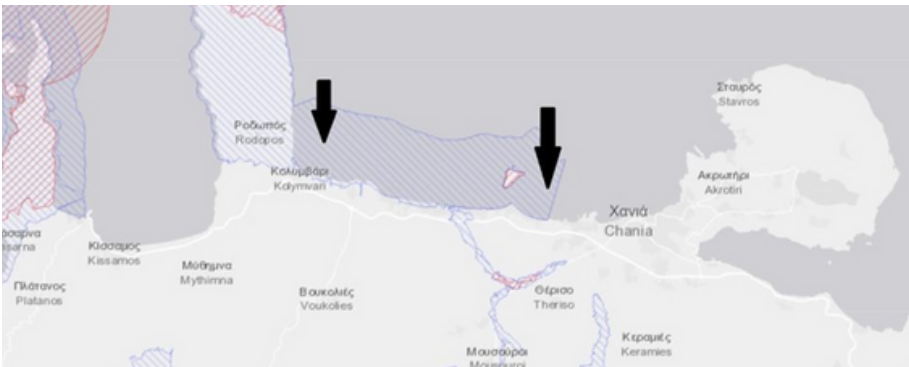


Illustration 3

The Natura 2000 sites with the codes: GR4340003 “CHERSONISOS RODOPOU - PARALIAMALEME” and GR4340006 “LIMNI AGIAS - PLATANIAS - REMA KAI EKVOLI KERITI- KOILADA FASA”. The arrows point the boundaries of the nesting site of Chania, from Kato Stalos (east) to Kolymbari (west).



Illustration 4

The Natura 2000 sites with the codes: GR4310004 “DYTIKA ASTEROUSIA (APO AGIOFARANGO EOS KOKKINO PYRGO)” and GR4310012 “EKVOLI GEROPOTAMOU MESARAS”. The arrows point the boundaries of the nestingsite of Messara Bay from Kommos (south) to Kokkinos Pyrgos (north).



Photo 1
Disorientation of hatchlings despite the nest shading measure. (Rethymno, August 2022)



Photo 2
Tracks of a female turtle (arrow) that was blocked by sea furniture and a wooden walkway during the nesting attempt. (Rethymno, June 2022)



Photo 3
Vehicle driven by lifeguard near a nest (arrow). (Rethymno, August 2022)



Photo 4a
Beach cleaning using heavy vehicle near a nest. (Rethymno, August 2022)



Photo 4b
Beach cleaning using heavy vehicle. (Rethymno, August 2022)

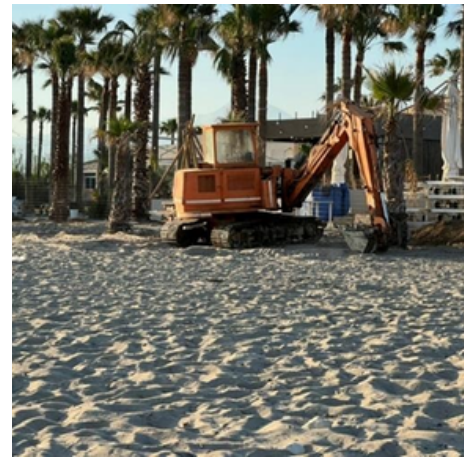


Photo 5
Planting of alien species (palm trees) using heavy vehicle. (Rethymno, May 2022)



Photo 6
The area of construction work for the biological waste treatment facility of Rethymno, on the nesting beach. (July 2021)



Photo 7
Tracks of a female turtle (arrow) that abandoned the nesting attempt due to lack of space at a point on the beach with severe erosion. (Rethymno, June 2022)



Photo 8
Usage of sand leveling machine.
(Chania, July 2022)



Photo 9
Platform built on the nesting beach,
using soil, by a hotel unit in the area of
Kolymbari. (Chania, July 2021)

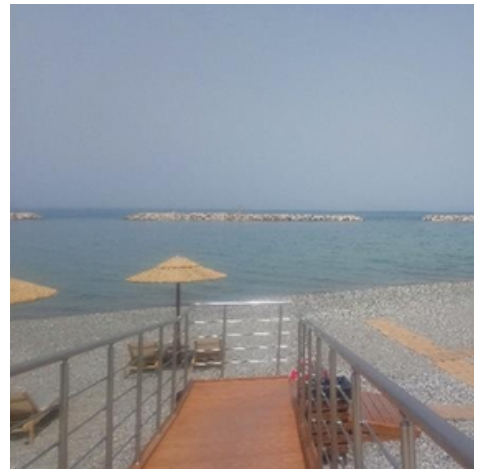


Photo 10
View of the three breakwaters that were
built alongside the nesting beach in
Kolymbari. (Chania, July 2021)

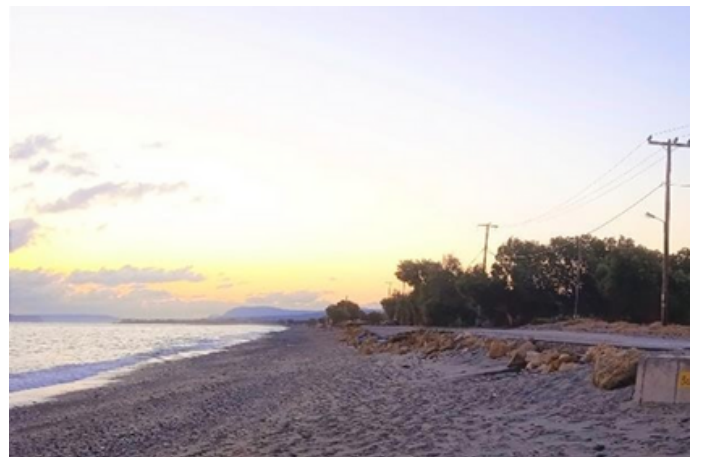


Photo 11a, 11b
View of the nesting beach at Kolymbari location before (11a, Left, June 2018) and after (11b, Right, June 2022) the construction of the breakwaters.

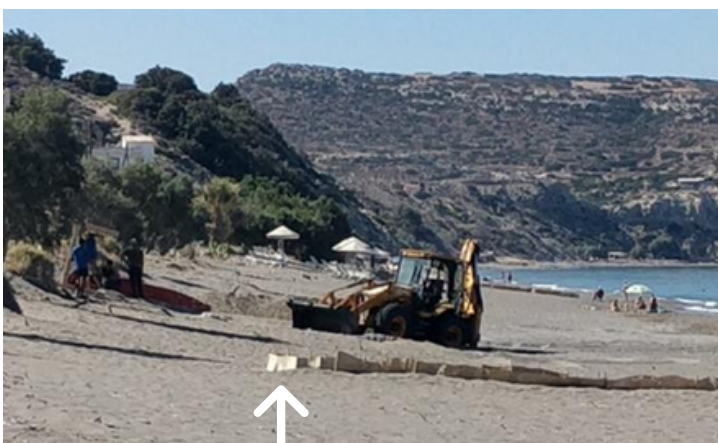


Photo 12
Usage of heavy vehicle near a nest (arrow), for the placement
of a lifeguard tower. (Messaras Bay, July 2022)



Photo 13
View from the top of the illegal road between Afrathia and
Kalamaki at Messara Bay. In the background you can see the
fragmentation of the dunes at the Afrathia site.
(September, 2022)