

Strasbourg, 27 October 2021
[files80e_2021.docx]

T-PVS/Files(2021)80

CONVENTION ON THE CONSERVATION OF EUROPEAN WILDLIFE
AND NATURAL HABITATS

Standing Committee

41st meeting
Strasbourg, 29 November - 3 December 2021

Specific Sites - Files open

**Threats to marine turtles in Thines Kiparissias
(Greece)**

-REPORT BY THE NGO-

*Document prepared by
ARCHELON*

ARCHELON, the Sea Turtle Protection Society of Greece



Conservation efforts during 2021 at the nesting habitat of *Caretta caretta* in Kyparissia Bay, western Peloponnese (Natura 2000 - GR2550005 “Thines Kyparissias”)

Short report submitted to the European Commission and the Standing Committee of the Bern Convention

Athens, October 2021

Copyright © 2021 by ARCHELON

No part of this report may be reproduced in any form or by any means without the written permission of ARCHELON

ARCHELON, the Sea Turtle Protection Society of Greece

Solomou 57

GR-104 32 ATHENS
Greece

Tel./Fax: (+30) 210 5231342

e-mail: info@archelon.gr
URL: www.archelon.gr

Contents

Summary	p. 4
Foreword	p. 5
1. Background	p. 5
2. The 2021 nesting season	p. 6
I. Monitoring and Conservation work	p. 6
II. Threats	p. 6
3. Discussion and Recommendations	p. 8
ANNEX 1: Illustrations and photos	p. 11

Acronyms:

PD: Presidential Decree

SES: Specific Environmental Study

MP: Management Plan

SCI: Sites of Community Importance

SAC: Special Areas of Conservation

MA: Management Agency

Summary

This short report outlines the main events and presents the issues related to the protection of the loggerhead sea turtles (*Caretta caretta*) and their habitats in Kyparissia Bay, during the 2021 reproductive period, with focus on the 9,5km core nesting area (from rivers Arkadikos in the south to Neda in the north). For this part of the Bay, the Judgment of the European Court of Justice of 10 November 2016 (case C-504/14) as well as the Bern Convention Recommendation No. 174 (2014) have been issued. The core nesting area is entirely included in the Natura 2000 site GR2550005 “Thines Kyparissias: Neochori – Kyparissia” and it is part of a Nature Protection Area designated in 2018 by a PD. Basic information regarding the neighboring sites GR2330005 “Thines kai Paraliako Dasos Zacharos, Limni Kaiafa, Strofylia, Kakovatos” and GR 2330008 “Marine area of Kyparissia Bay: Katakolo Cape – Kyparissia” is also provided, when necessary, as they are included in the Nature Protection Area designated by the same PD.

ARCHELON’s presence in Kyparissia Bay is regular since the early 80’s, carrying out monitoring and conservation work, while systematic nest counts commenced in 1984. Since 1992 the great majority of nests, within the core area, are protected against predation by mammals, inundation by the sea and disorientation of hatchlings. As a result of this massive protection of nests, a gradual increase in the number of nests, and therefore of adult females, is being recorded since 2006. During 2021 sea turtle nesting was completed successfully, with more than 3,200 nests recorded on the core nesting beach (9.5km), and approx. 1,100 more nests in the northern part of the Bay (34.5km) (i.e., in the northern part of GR2550005 and in GR2330005). Approximately 98% of the recorded nests, were protected against predation, inundation, trampling and light pollution. Regarding sea turtle strandings, 15 turtles were recorded by ARCHELON from early May until late September. Overall, more than 36 dead sea turtles were found in Kyparissia Bay (44km) since the beginning of the year according to data from the competent Coast Guards.

Disturbance to nesting turtles and disorientation of hatchlings occurred with presence of vehicles on the beach, the non-stacking of beach furniture during night hours and light pollution from private and public sources, in violation of the PD provisions. None or little action was taken to mitigate threats bearing a long-term impact on both the nesting habitat and the reproductive activity, despite the commitments of the Ministry. Specifically, no action has been taken regarding the demolition of the illegal wooden platforms at Kalo Nero village. Even though the authorities had placed concrete barriers on the 5 roads, which were constructed illegally by a real estate firm, these did not prevent the access of vehicles to the beach and created further degradation of the surrounding area. Moreover, and despite the PD prohibition, the sand dunes and beaches of the core nesting area (hereafter southern Kyparissia Bay) were once more a very popular destination for free camping. High pressure from campers and their beach equipment, which obstruct nesting females and hatchlings was observed again this summer. In July and August there was increased human presence on some parts of the nesting beach during nighttime, as campers wanted to watch the nesting turtles. In several cases, the disturbance was so intense that forced turtles to abandon nesting attempts.

One of the issues that have not been addressed by the PD is the operation of beach bars. These light constructions, installed on the sand dune zone, in 2021 attracted many beach users which eventually led to further degradation of sand dunes, primarily caused by the uncontrolled parking of vehicles. Nowadays, there is clear evidence of a gradual establishment of illegal parking lots in progress.

In conclusion, although the high ecological value of this coastal area is the main visitors’ attraction, local authorities, local operators and visitors do not generally respect environmental legislation, and especially regulations concerning the nesting beach and the coastal habitats. This disrespect of environmental legislation is repeated year after year; Together with the delays in the SES’s and MP’s elaboration on the one hand, and the recent legislative developments (i.e., article 218, law 4782/2021) on the other hand, which allow “developmental projects” to be conducted within protected areas, creates great concern about the future of the habitat.

Foreword

This short report, a follow up to previous reports submitted annually, outlines the main events and presents the issues related to the protection of the loggerhead sea turtles and their habitats in southern Kyparissia Bay, i.e. in the core nesting area, within the Natura 2000 site GR2550005 “Thines Kyparissias: Neochori – Kyparissia”, during the 2021 reproductive period. It contains information on the monitoring and conservation work and the threats in the terrestrial, as well as the marine habitat, as recorded through the fieldwork of ARCHELON. Where appropriate, information related to the northern part of GR2550005, as well as the neighbouring sites GR2330005 “Thines kai Paraliako Dasos Zacharos, Limni Kaiafa, Strofylia, Kakovatos” and GR 2330008 “Marine area of Kyparissia Bay: Katakolo Cape – Kyparissia”, is also presented (Illustration 1).

ARCHELON was founded in 1983, aiming at the protection of sea turtles and their habitats and is a non-profit, non-governmental environmental organization. It has been carrying out systematic monitoring and conservation work in Kyparissia Bay every year since 1984. Volunteers trained on-site and supervised by ARCHELON personnel, carry out the field work.

1. Background

Kyparissia Bay, in western Peloponnese, hosts one of the largest reproductive populations of the loggerhead sea turtle (*Caretta caretta*) in the Mediterranean, alongside other important and protected ecological features. Its coastline consists of approximately 44km of continuous sandy beach, backed by dunes and coastal forests, from the river Alfios in the north to the river Arcadikos in the south, with a small number of additional beaches separated by rocky outcrops further south. The significance of the Bay as a sea turtle nesting habitat was recognized during the setup of the Natura 2000 network in Greece in the 90's, and has since been included in 3 sites of the Natura 2000 network, which are now designated as SCI and SAC.

Part of the site GR2550005 “Thines Kyparissias: Neochori – Kyparissia”, where approx. 84% of the total nesting activity was recorded during the initial years of monitoring (1984-1989), is considered the core nesting area (Illustration 2), hereafter southern Kyparissia Bay.

Touristic development pressure and numbers of visitors in southern Kyparissia Bay started to increase around 2000, affecting the sea turtle habitat and the other ecological features of the site. Despite the commitments of the Ministry to take appropriate measures to safeguard the core nesting area, most of the conservation issues remained unresolved. This led the European Commission to take the Greek State to the Court of Justice in March 2014. The Court hearing took place on 13 January 2016 and the relevant Judgment was posted on 10 November 2016, declaring the failure of the Greek State to fulfill its obligations under Directive 92/43/EEC. A case file also opened by the Bern Convention. In December 2014, the Standing Committee of Bern Convention issued the Recommendation No. 174 on the conservation of the nesting habitat in southern Kyparissia Bay. The Recommendation consists of 12 points, which address the main anthropogenic threats for sea turtle nesting. The case file is reviewed annually during the Bureau and the Standing Committee meetings since December 2015. During the meeting in December 2020, the Standing Committee decided to keep the case file open, because neither has the PD yet been properly enforced, nor any penalties have been imposed on illegal activities.

Almost two years after the Judgment of the European Court of Justice (November 2016) and four years after the Bern Convention Recommendation (December 2014), the whole of Kyparissia Bay was designated a Nature Protection Area by PD. The Decree was issued in October 2018 (Government Gazettes D 391/03-10-2018, D 414/12-10-2018) and includes the three Natura 2000 sites GR2550005, GR2330005 and GR2330008.

The long term project of ARCHELON, carried out yearly from early-May through mid-October, involves monitoring of the nesting activity, protection of nests and hatchlings and recording of turtle strandings. During the same period, the ARCHELON field team monitors the threats that may persist on site and carries out public awareness activities to inform visitors and residents of the area.

2. The 2021 nesting season

I. Monitoring and Conservation work

During 2021, ARCHELON carried out the annual monitoring and conservation work in Kyparissia Bay from 12 May until 30 September. The number of researchers/ volunteers participating in the project was lower compared to previous years, in order to ensure the effective implementation of protection measures against the spread of COVID-19.

According to preliminary data, more than 3,200 nests were recorded in the 9,5km core nesting area, where the great majority of nests were protected against predation, sea water inundation and disorientation of hatchlings due to artificial lights. In addition to southern Kyparissia Bay, approx. 1,100 more nests were monitored and protected on the rest 34.5km (i.e., in the northern part of GR2550005 and in GR2330005). Tagging of nesting females continued for one more year aiming to a better understanding of the sea turtles' inter-nesting and remigration patterns.

Public awareness activities by ARCHELON were less extensive than previous years due to the pandemic, reaching approximately 1,300 people. Unfortunately, the Municipality of Trifylia refused to grant ARCHELON the permission to operate a seasonal information station at Kalo Nero, for the 2nd year in a row. Finally, the station operated from 6 August until 8 September within a private property in Kalo Nero village, far from the beach. This was a severe draw back in the public awareness activity and affected negatively the efforts to minimize disturbances to sea turtles by visitors.

During the 2021 nesting season, a total of 15 dead turtles, one of them a juvenile *Chelonia mydas*, were recorded in Kyparissia Bay by ARCHELON. Of these, 11 cases were found within the southern Kyparissia Bay. In addition, 21 stranded turtles were recorded by the Coast Guard in the rest 34.5km of the Bay, bringing the total to 36 dead turtles. It was not possible to accurately define the cause of death of most stranded turtles, since they were in a highly decomposed stage when found. Evidence of entanglement in fishing gear was found on 3 dead animals (Photo 1).

II. Threats

This section focusses on the anthropogenic disturbances that resulted in direct and indirect damage to sea turtles (adults and hatchlings), their nests and the nesting habitat in Kyparissia Bay, as recorded by ARCHELON in each of the Natura 2000 sites. For monitoring purposes, the core nesting area (i.e., part of the GR2550005) is divided into four beach sectors (O, A, B, C), while the remaining 34.5km (northern part of GR2550005 & GR2330005) is divided into seven sectors (D to K) (Illustration 3).

A. Southern part of GR 2550005 “Thines Kyparissias: Neochori – Kyparissia” – core nesting area

Threats in Sector O

Unsustainable touristic development: The distinction of Kalo Nero (sector O) from the rest of the core area is necessary because this part of the beach is already severely affected by tourism development. As in previous years, during 2021 a large part of the nesting beach was occupied by sunbeds, umbrellas, wooden paths, showers, and other structures (Photo 2), while the light pollution remained a serious conservation problem (Photos 3a, 3b). Despite the relevant demolition protocols, for one more year no action was taken for the removal of the 7 illegal wooden platforms of the coastal businesses and no restoration works took place (Photo 2). Moreover, despite the provisions of the PD, neither the beach furniture was stacked correctly during nighttime (Photos 4a, 4b), nor the existing intensive light pollution (from private and public light sources) was decreased at all.

It must be noted that light pollution in Kalo Nero is so strong that renders useless the standard method of “nest-shading”, used by ARCHELON in other areas to protect emerging hatchlings from light disorientation, and forces the unorthodox practice of “nest-boxing”. According to preliminary data, in total 60,9% of all nests laid in Kalo Nero were affected by light pollution. “Nest-boxing” was applied on 258 nests in that sector in 2021, representing 44% of all nests laid and more than 6,200 hatchlings were protected through this method against disorientation caused by light pollution in the area. Apart from the above-mentioned anthropogenic disturbances in Kalo Nero, the Municipality gave permission for a local music festival to take place on 5 August 2021, just behind the nesting beach (Photo 5), while the PD clearly prohibits such activities in this zone. The participation of approx. 400 people and a live band on a stage (with floodlights) caused both noise and light pollution, although hatchlings were already emerging.

Threats in Sectors A-B-C

Sectors A, B and C of the core nesting area include the beaches of Vounaki, Agiannakis and Elaia respectively. These sectors host about 75% of all nests in the 9.5km core nesting area and if sea turtles are to be effectively protected in Kyparissia Bay, they must be maintained in a pristine condition. This area is characterized by a

very wide beach with an appropriate inclination for nesting turtles, backed by low sand dunes with vegetation. Unfortunately, each of these beach sectors face several challenges caused by anthropogenic activities, while most of the main conservation issues remained unresolved for one more season. The interventions at the natural landscape lead to a slowly but steady ecosystem degradation.

Beach bars: The beach bars in sectors B and C operated for one more year (4th year in a row for sector C, and 2nd year in a row for sector B), resulting in destruction of dune vegetation. Not only the beach bars themselves are located in the sand dune zone, but also the resulted increase in visitors (especially during the high touristic season, from mid-July to end-August) led to numerous vehicles parking in the surrounding areas, establishing in that way new illegal parking lots (Photos 6a, 6b).

Free campers: A huge number of free campers occupied the beach during August, the peak of the hatching season. As a result, in the coastal forest behind C sector ARCHELON estimates that during August 2021 more than 3,000 people were camping simultaneously, while more than 805 temporary beach shelters, caravans, tents, and sleepovers on the sand dunes or on the nesting beach were recorded by the ARCHELON researchers (Photos 7a, 7b). Not only the recorded equipment was an obstacle for sea turtle nesting (Photo 8), but also the intense human presence on the nesting beach during nighttime was observed to having evolved into a “turtle hunt”, as free campers wanted to watch the animals during the nesting process and thus disturbing the nesting females, forcing them to abandon the nesting attempt. Additional consequences of the free camping are the extensive trampling of the sand dunes by people walking to the beach and back (Photo 9), as well as increase of light pollution.

Vehicles on the dunes: Regarding sand dune degradation and fragmentation, it must be noted that in sectors A, B and C a large number of vehicles, was observed on the beach almost on a daily basis (Photo 10), while at the exit to the beach of legal and illegal roads the sand dune vegetation is totally destroyed (Photo 11). It must be noted that on 4 June 2021, the Ministry placed concrete barriers for vehicles on the 5 roads constructed illegally by the real estate firm “NEOS KOTINOS S.A.” in 2011 and 2012 (Photo 12). However, this measure not only wasn’t efficient, but also caused further deterioration of the surrounding habitats, as the vehicles had clear access from the sides (Photo 12). No action was taken for the rest beach entrances.

Agriculture: Mostly on the sectors A and B extensive stretches of land are used for agriculture and negatively affect the state of the sand dunes (Photo 13).

Coastal constructions: In addition to the above, the 2 newly built houses since 2019 are on ongoing construction and almost finished (Photos 14a, 14b).

Light pollution: Regarding light pollution in sectors A, B and C, no efforts have been made to reduce this threat from the relatively small number of artificial lights (2 private houses with floodlights and a few public streetlights), which eventually affect a large number of nests due to nest density in the area. According to ARCHELON’s preliminary data for 2021, a significant percentage of nests was affected by light pollution in these three sectors of the core area (15,2% of all nests in sector A, 33% in B, and 37% in C).

B. Northern part of GR 2550005 “Thines Kyparissias: Nechoori – Kyparissia” & GR 2330005 “Thines kai Paraliako Dasos Zacharos, Limni Kaiafa, Strofyliia, Kakovatos”

Threats in Sectors D-K

A similar range of anthropogenic disturbances was recorded outside the core nesting area. These include a large number of vehicles on the beach (at least 94 records), temporary beach shelters, caravans, tents, sleepovers (more than 729 records), light pollution and the presence of beach bars with illegal constructions on the sand dune zone (Photos 15a, 15b). Fishing activities were also occurring widely across all sectors, with many small boats anchored or stationed on different parts of the beach, creating potential obstacles for incoming turtles (more than 225 incidents were recorded). From the Neda River to the south to Zacharo and Kato Samiko to the north (i.e., in the northern part of GR 2550005 and in the southern part of GR 2330005) there were numerous businesses operating on the nesting beach, continuously displaying disrespect and disregard to the PD. The most prevalent issues regarding the beach bar’s operation are light pollution, occupation of the nesting habitat by beach furniture and the rapid degradation of the dunes due to intensive vehicles’ use and consequently creation of illegal parking lots (Photo 16).

C. GR 2330008 “Marine area of Kyparissia Bay: Katakolo Cape – Kyparissia”

Professional and recreational fishing remain a threat for sea turtles during the mating and nesting season. In 2021, fishing boats and stationary nets were observed very close to the shore in all beach sectors, in some cases at distances less than 30m from shore. Set nets are usually left for the entire duration of the night, so any females attempting to emerge for nesting are at risk of getting trapped. The fisheries conservation issue is not addressed in the PD and therefore needs to be included in the under-elaboration MP.

3. Discussion and Recommendations

The long-term field project of ARCHELON

As mentioned, ARCHELON has been systematically monitoring the Bay's nesting beaches since 1984. By 1992, it was known that many nests in southern Kyparissia Bay were affected by predation from mammals (average of 52.5% of nests /year) and by sea water inundation (average of 27% of nests /year). To mitigate these threats, ARCHELON started in 1992 to implement protection measures to the great majority of nests within the core nesting habitat against predation by animals, inundation by the sea and disorientation of hatchlings due to artificial lights. The applied protection measures resulted in a notable decrease of nests affected by predation down to the 13,6% of the annual total and of nests affected by sea water inundation down to 8,5% respectively.

The long term survival of the loggerheads (*Caretta caretta*) depends mainly on the number of hatchlings entering the population. However, sea turtles are long-lived animals, so any positive effects on their population are to be expected when the adult females return to the beach they were hatched from, to lay their eggs.

A significant trend of increased number of nests and therefore of adult females is being recorded since 2006 in the core nesting area, raising the average number of nests from 552 in the period 1994-2005, to 1,345 in the period 2006-2019. Parallel analysis of turtle tagging data showed an increase in the percentage of "neophyte" turtles, i.e. turtles that lay eggs for the first time. Given that the estimated age of sexual maturity for loggerheads in the Mediterranean is 14-16 years, the observed 144% increase in nests is shown to be the result of the protection measures that have been taken since 1992, which have significantly reduced the aforementioned threats in the core nesting area.

2021 is the 9th year in a row (2013-2021) that the number of nests in the core nesting area of Kyparissia Bay (i.e., part of GR2550005) exceed those recorded in Laganas Bay (Zakynthos Island).

Since the PD was issued in 2018, the competent Municipality of Trifylia as well as part of the local community have not been welcoming the continued presence of ARCHELON in the area, as sea turtles are considered the main reason for the imposed building and development restrictions. In particular, the efforts of ARCHELON to raise public awareness were hindered by the Municipality, even though there is a noted lack of information and educational activities about sea turtles and the other ecological features.

Governance and Law enforcement issues

Despite the designation of the whole Kyparissia Bay as a Nature Protection Area in 2018 and the successful sea turtle nesting and hatching of this summer, very little progress is made concerning the implementation of the 12 points of the Bern Convention Recommendation, or the compliance with the European Court of Justice Judgment of 10 November 2016.

The first main issue is that the PD provisions and the rest of the environmental legislation are not implemented and enforced adequately, even after the 7 cancellation requests against the PD, submitted to the Hellenic Republic Council of State, were rejected in early 2021 (Decisions (164/2021 until 170/2021)). The trial hearing was conducted on 3 June 2020. ARCHELON intervened in defense of the PD, in cooperation with MEDASSET and WWF Greece.

The second main issue is that there are important conservation issues that were not regulated by the PD, and should be addressed by a MP. These include an Annex/Map with the legally existing road network- which does not exist at the moment, fisheries regulations, operation of beach bars in the core nesting area, measures to control light pollution, regulation and management of human presence on the nesting beach during night hours. These are expected to be addressed by the on-going review and elaboration of SESs and MPs for all Natura 2000 sites at a national scale, as a part of a project conducted by the Ministry of Environment and Energy.

It is also important to note, that recent national legislative developments affecting protected areas alarmed the environmental NGOs. In particular, through article 218, law 4782/2021 “developmental projects” can be conducted in protected areas (with exception of the Absolute Protection Areas). The conduction requires the issue of a specific PD, which will be valid parallel to the protection PD, and which will designate the project area, as “sub-area”. Through this unpleasant development, the plans of a real estate firm for construction of 47 villas behind the core nesting beach (sectors B & C), remain a constant threat for the conservation status of the habitat.

With regard to governance, it is important to note that responsibilities for the management of the Nature Protection Area of Kyparissia Bay were given to the MA of Kotychi, Strofyliia Lagoon & Kyparissia Bay, by the PD and the law 4519/2018. The MA, based close to Patras, is mainly dealing with the National Wetland Park of Kotychi-Strofyliia and has not been active yet in managing and protecting Kyparissia Bay. Moreover, fundamental changes have occurred to the governance of protected areas in Greece, which were induced by law in May 2020 (4685/2020). According to it, all MAs of protected areas will become Management Units, supervised and coordinated by a central agency - the Natural Environment and Climate Change Agency (known by its Greek acronym as “OFYPEKA”). The transition process is characterized by great delays and various organizational problems.

On a positive side, the 6-year National Action Plan for the protection of marine turtles in Greece was issued in August 2021 (Government Gazette B 3678/108-2021) and hopefully its implementation will start soon.

Recommendations

- Strict enforcement and implementation of the PD provisions is essential for the conservation of this valuable coastal ecosystem. Competent authorities must ensure that: (i) no vehicles (including 4X4 vehicles, caravans, heavy vehicles etc) will enter the nesting beach or the sand dune zone, (ii) the free camping will be controlled, (iii) all beach equipment (sunbeds etc.) will be managed correctly and (iv) all existing illegal constructions will be demolished and the natural habitat will be restored.
- The adoption of a MP, which will address the threats of illegal road network, light pollution, fisheries regulations, human presence at night, visitor management and operation of beach bars is quite necessary. The on-going review and elaboration of SESs and MPs for all Natura 2000 sites at a national scale must be completed as soon as possible.
- Sand dunes in the area of Kyparissia Bay are very important and they should be restored to a good conservation status, as soon as possible.
- Public awareness activities of ARCHELON must be supported by the competent local authorities. Public awareness activities in general must be encouraged, supported and considered as a priority at local and national level.
- The transition to the new Management Units of OFYPEKA must be completed and the respective Management Unit must undertake actions for the management of the Nature Protection Area of Kyparissia Bay.

ANNEX 1: Illustrations and photos

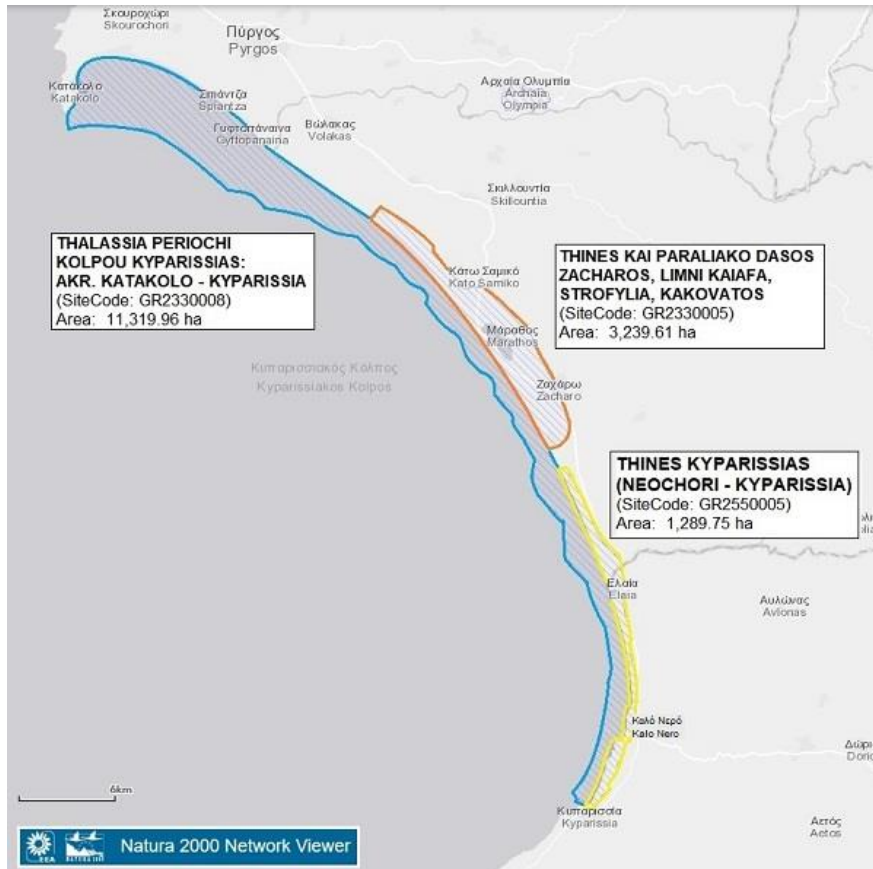


Illustration 1: Map of the Kyparissia Bay showing the three Natura 2000 sites, which are included in the Presidential Decree issued in October 2018.

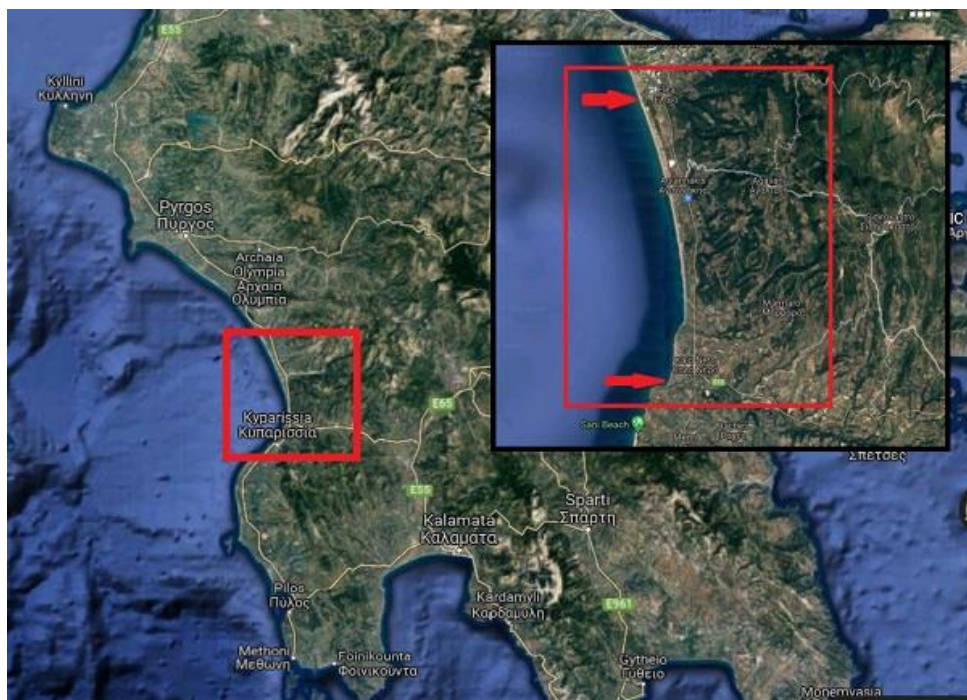


Illustration 2: Kyparissia Bay on the map. The arrows indicate the boundaries of core nesting area, from Arcadikos river to the south, to Neda river to the north.

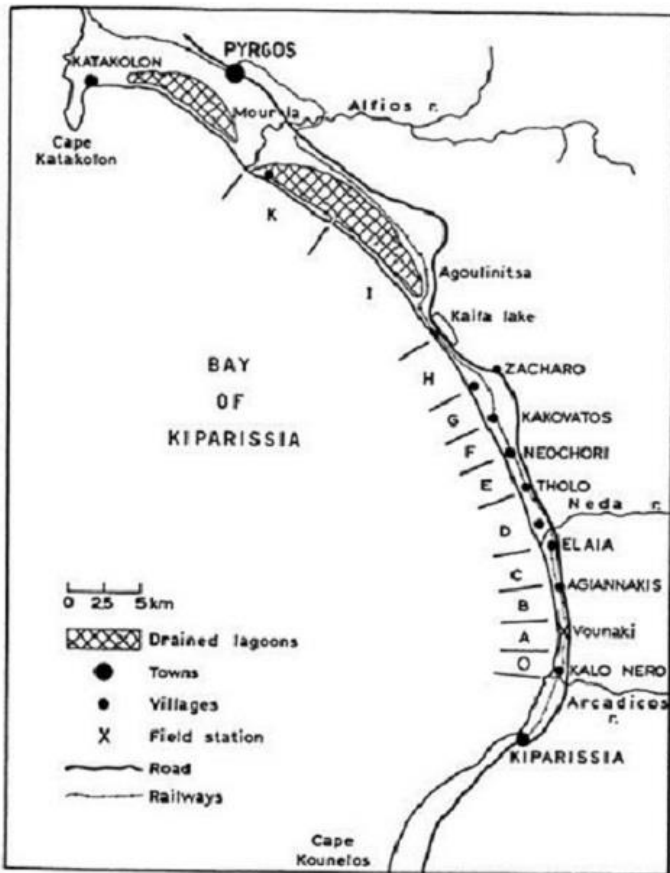


Illustration 3: Map of the entire Kyparissia Bay and the separation by sectors used by ARCHELON for the monitoring of *Caretta caretta* nesting activity.

Photo 1: Sea turtle stranding with evidence of entanglement in fishing gear. June 2021.

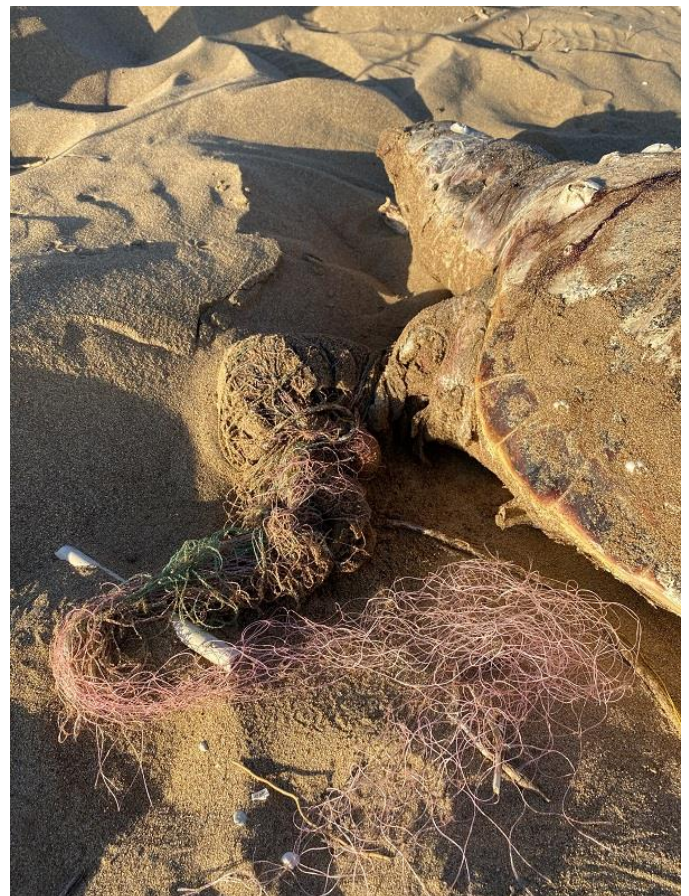




Photo 2: The nesting beach of Kalo Nero village, June 2021. A large part of the beach is being occupied by beach furniture limiting in that way the available space for nesting. The arrows show the illegal permanent wooden p platforms.

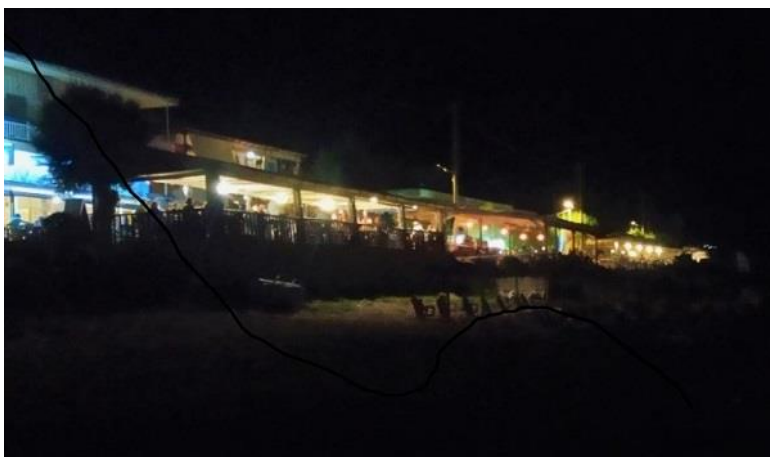


Photo 3a: Light pollution remains an unsolved conservation issue at Kalo Nero village.



Photo 3b: Female sea turtle emerged to nest under a business at Kalo Nero village, June 2021. Nests in that area are exposed to extreme light pollution and it is unlikely for hatchlings to survive.



Photo 4a: Beach furniture remain unstacked during the night reducing the available space for nesting, July 2021. No enforcement of the PD took place during the nesting season. Photo was taken in early morning hours (i.e. before 7 a.m.)



Photo 4b: Failed nesting attempt after hitting on unstacked sunbed. The sea turtle returned to the sea without laying eggs, June 2021.



Photo 5: A music festival with live music and floodlights took place few meters from nesting beach at Kalo Nero village, despite the clear prohibit of the PD for such activities in this zone. Arrows show the short distance from the nesting beach and the floodlights that were added for the festival, August 2021.



Photo 6a: Surrounded area near beach bar (in circle) on Elaia beach (sector C), August 2021. The arrows show the degradation of the sand dunes due to intensive use of vehicles.



Photo 6b: Similar issues on Agiannakis beach (sector B) near beach bar (in circle), August 2021. The red arrows show the large degradation the habitat suffered due to vehicle use, which slowly established the surrounded area as illegal parking lot. The sand dune vegetation is almost completely damaged. The green arrows show the shaded nests on the beach.



Photo 7a: Caravan entered and drove over sand dunes for 200m before parked and spend several nights at Vounaki beach, causing permanent damage to sand dune fragile ecosystem. June 2021.



Photo 7b: Free camping tent on the nesting beach. The arrows show the recorded nests nearby. August 2021.



Photo 8: Failed sea turtle nesting attempt. Tracks show that the turtle returned to the sea without making any nesting attempt, after being disturbed by camping equipment on the beach during the night. July 2021.



Photo 9: Sand dune system in front of Elaia pine forest (sector C) which is traditionally used by most free campers. Sand dunes have been destroyed and numerous paths have been created instead, due to intense sand dunes trampling by campers. September 2021.



Photo 10: Vehicles tracks on the core nesting beach (sector B), August 2021. The vehicle entered the nesting beach and passed at least over 2 incubating nests, while 2 more nests were in short distance.



Photo 11: Evidence of disturbance nearby legal and illegal roads. In the picture 3 roads are shown and the entire area shows important habitat degradation, due to intense illegal vehicle entrance on the sand dune zone. Agiannakis beach, August 2021.



Photo 12: Blue arrow shows the concrete barriers which have been placed by Ministry of Environment and Energy on one of the illegal roads (behind sectors B & C). Red arrow shows that the vehicles not only kept entering the area, but also the area has been established as a parking lot. This photo is evidence that this measure did not improve the situation and caused further degradation, due to open access from the sides. August 2021.



Photo 13: Sand dune destruction due to agricultural use of land behind sectors A & B, September 2021.



Photos 14a, 14b: New built houses at Vounaki beach (left) and Agiannaki beach (right) are almost finished. September 2021.



Photo 15a: Giannitsochori beach June 2021. The disturbed area is used by beach bars during the summer. The area shows clear evidence of habitat loss and fragmentation due to human activities.



Photo 15b: Giannitsochori village, September 2021. Same location with photo 15a, while the beach bars are operating. Wooden constructions are installed, the surrounded area is used as parking lot, while the establishment of illegal dirt road is obvious. The circles show the shaded sea turtle nests as a protection measure due to light pollution.



Photo 16: Beach bar on northern Kyparissia Bay (sector E). Arrows show the surrounded area which has been used as parking lot by beach users, fragmenting the sand dunes. In addition, a new illegal road on the sand dune zone is slowly established. September 2021.