



BIOLOGICAL CONSERVATION & MARINE PROTECTED AREAS

- **MARINE PROTECTED AREAS (MPAs) and Sustainable management: the case study of the National Marine Park of Zakynthos**



BIOLOGICAL CONSERVATION & MARINE PROTECTED AREAS (MPAs)





What is a MARINE PROTECTED AREA ?

A Marine Protected Area is an area of sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means.

- IUCN, the World Conservation Union



Seas and oceans the world over are at risk, and under severe threat from the actions of mankind. Marine Protected Areas are designated for the protection of the marine environment and the life that it supports, so as to ensure that future generations can enjoy the full benefits of the marine environment in all its glory.

Marine Protected Areas do not exclude access to humans - they encourage the sensible use of marine resources and ensure that the activities that take place are not harmful to the area.

MARINE PROTECTED AREAS


... is an area of sea especially dedicated to the protection and maintenance of biological diversity, and natural and associated cultural resources through legal or other effective means (IUCN)...





N.M.P.Z main facts

PROTECTED AREA of NMPZ

- Marine area : 89 km²
- Terrestrial area : 14.2 km²
- Peripheral area: 31 km²
- Natura 2000: 2 Sites Community interest, 1 Site Special Protected Area (SPA)
- Priority species 92/43 EC: e.g. Loggerhead Sea Turtle (*Caretta caretta*), Monk seal (*Monachus monachus*), Cory's shearwater (*C. diomedea*), Eleonora's falcon (*F. eleonora*)
- Priority & Community interest habitats 92/43 EC : e.g. *Posidonia* beds (1120), Sandbanks (1110), Reefs (1170), Marine caves (8330)
- Number of *C. caretta* - Loggerhead Sea Turtle nests (average): 1200
- Importance of nesting activity: Zakynthos holds about 35-40 % of the Greek nests and about 20 % of the nesting effort in the Mediterranean 

NMPZ-MANAGEMENT AGENCY (PRESEDENTIAL DEGREE/99 - established in 2000)

- Administrative and Scientific staff : 13 (3/10)
- PARK RANGERS (Wardens): 19 all year round + 23 seasonal wardens
- Management Board : 11 Members (Head of the NMPZ - Scientific Community; Representatives from MINISTRIES OF ENVIRONMENT, AGRICULTURAL DEVEL., MARITIME, Regional & Local Authorities, Stakeholders – Hotels, Fishermen, e.t.c.)

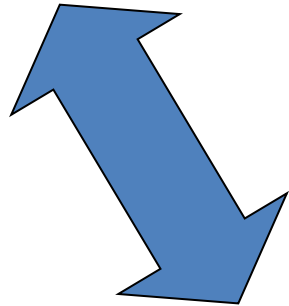


NMPZ Institutional roles

**Presidential Decree
906/D/1999
Zakynthos
National Marine Park**



*1650/86 Law for the protection of the environment
2742/99 Law on "Spatial Planning and Sustainable
Development"
3937/2011 Law on "Biodiversity conservation"*



**CONSERVATION
MANAGEMENT
SUSTAINABLE DEVELOPMENT
PROMOTION
COOPERATION
NETWORKING**

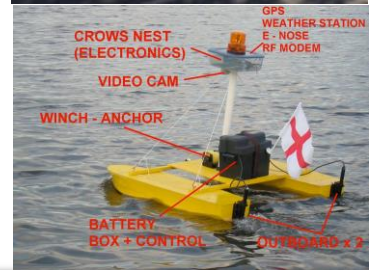


*Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora
Directive 79/409/EEC on the conservation of wild birds
Directive 2008/56/EC on Marine Strategy*



NMPZ Main activities

- **Management measures** and **Innovative** programmes with two main priorities: habitats - species conservation and sustainable development.
- **Guidelines** for ecotourism, hiking, turtle watching, environmental friendly agriculture, artificial lighting within ZNMP' area.
- Participation in **European funded programmes** (ex. CSF, 7th Framework programme "ArgoMarine", Interreg III C – Med "Medpan", Interreg III B Archimed "Archicharter")
- **Scientific research – Monitoring on:**
 - Sea turtles' nesting beaches (Research – Monitoring)
 - Marine and coastal area
 - Terrestrial area
- **Wardening**
- **Environmental education**
- **Public Awareness**
- **International cooperation**





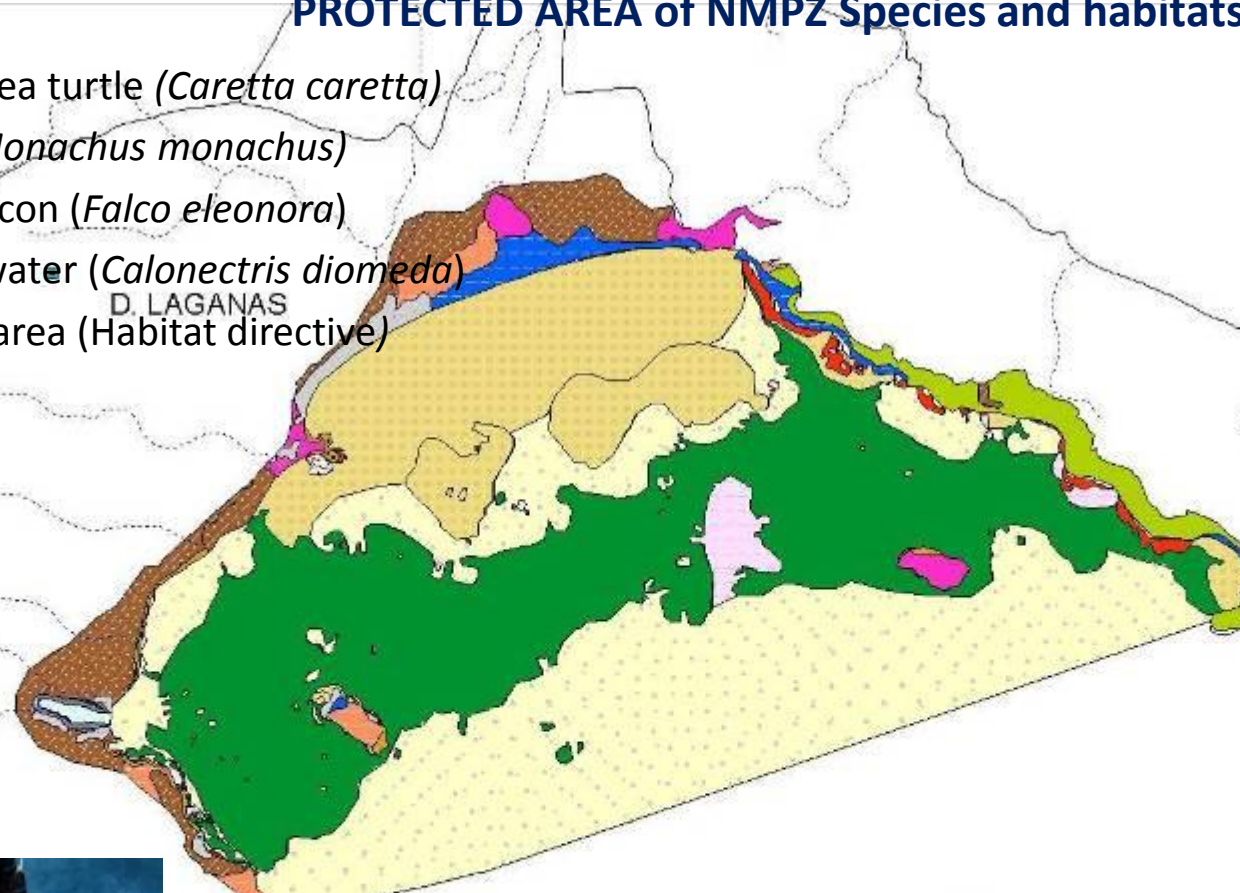
BIOLOGICAL CONSERVATION & MARINE PROTECTED AREAS (MPAs)

PROTECTED AREA of NMPZ Species and habitats



- Loggerhead sea turtle (*Caretta caretta*)
- Monk seal (*Monachus monachus*)
- Eleonora's falcon (*Falco eleonora*)
- Cory's shearwater (*Calonectris diomedea*)
- Natura 2000 area (Habitat directive)

D. LAGANAS



1:80000

●	River-streams
■	Laganas mainland (ER 221-0002)
■	1020. arable land
■	1050. settlement
■	1200. Vegetated sea cliffs of the Mediterranean coast (with endemic Limonia)
■	1410. Mediterranean salt meadow (<i>Juncus</i> & <i>maritimi</i>)
■	2110. Embryonic shifting dunes
■	8180. open water-pelagic zone of lakes
■	8420. Aegean phrygians (<i>Sarcopoterium spinosum</i>)
■	7240. Reed beds mixed with 7210 (7240 x 7210)
■	9320. Olive and Caralonia forests
■	9540. Mediterranean pine forests with endemic Mesogean pines (including <i>Pinus</i> Laganas bay (ER 221-0002)
■	1110. Sandbanks which are slightly covered by sea water all the time
■	1120. <i>Posidonia</i> beds
■	1170. Beach
■	118A. unregulated sand bed
■	118B
■	LAND
■	Water
■	Towers_difol ship



Spatial & temporal Regulations Management Measures

Spatial and Temporal Zoning scheme



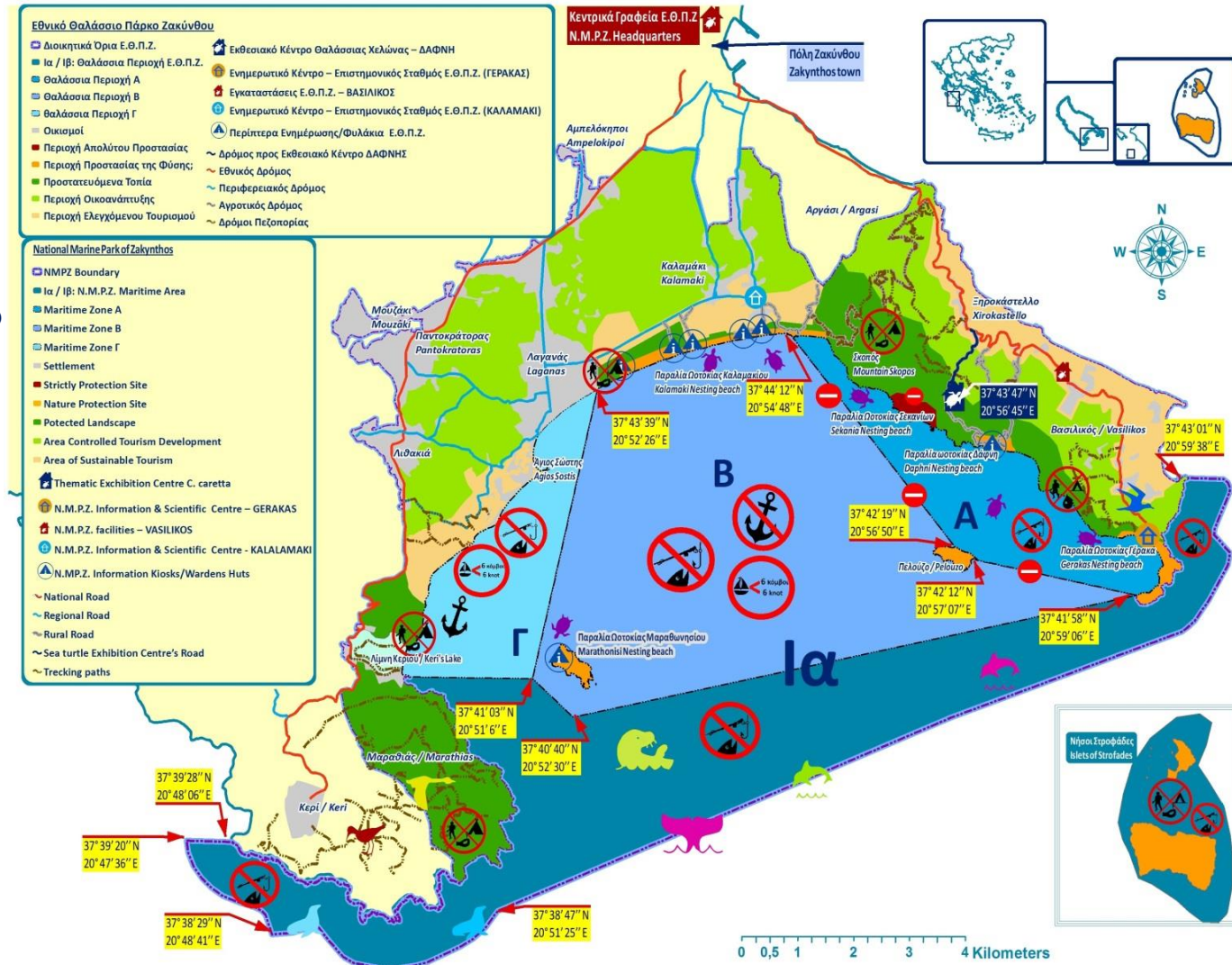
Conservation objectives (e.g. carrying capacity according to the species, habitats, anthropogenic pressures)



Regulation of human Activities (e.g. Tourism, Fishing, Urbanization, Shipping)



Favourable Conservation Status Sustainable development

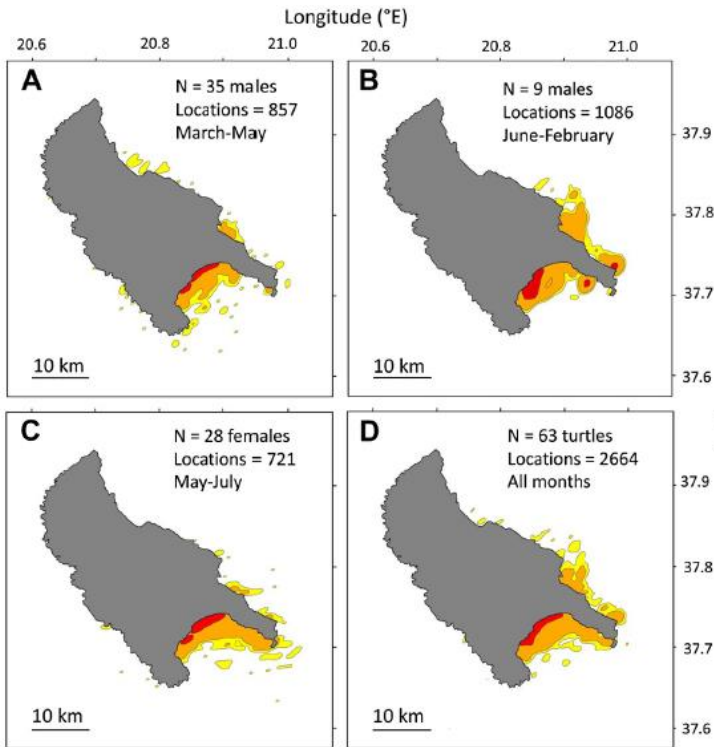




Monitoring & Adaptive Management

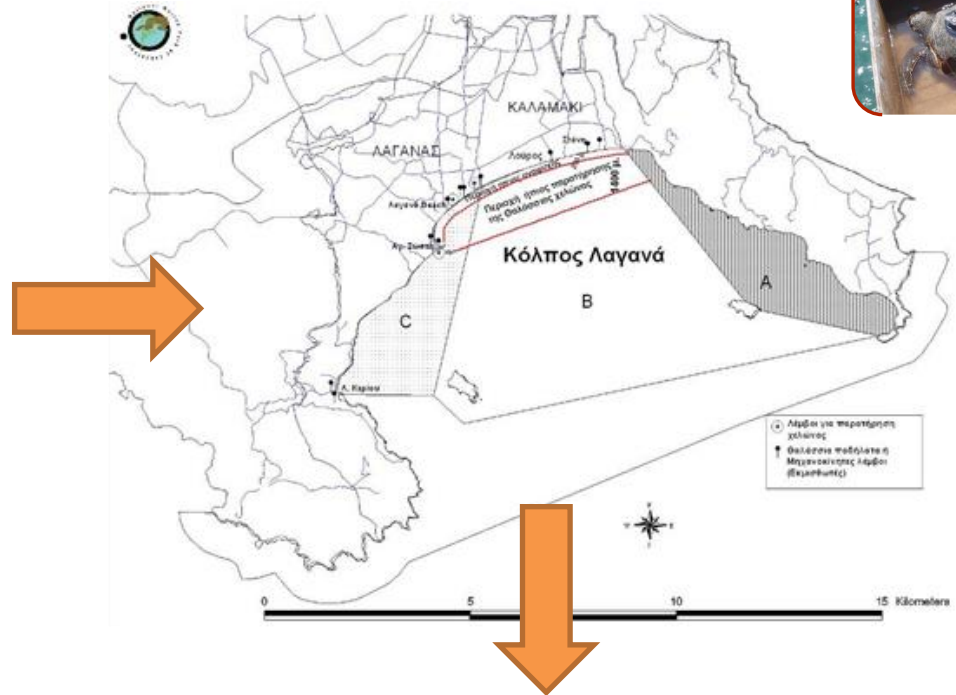
Breeding & Resting Marine Area of *Caretta caretta*

Scientific Monitoring



Scofield et al., 2013

Management measures



Stakeholders Involvement

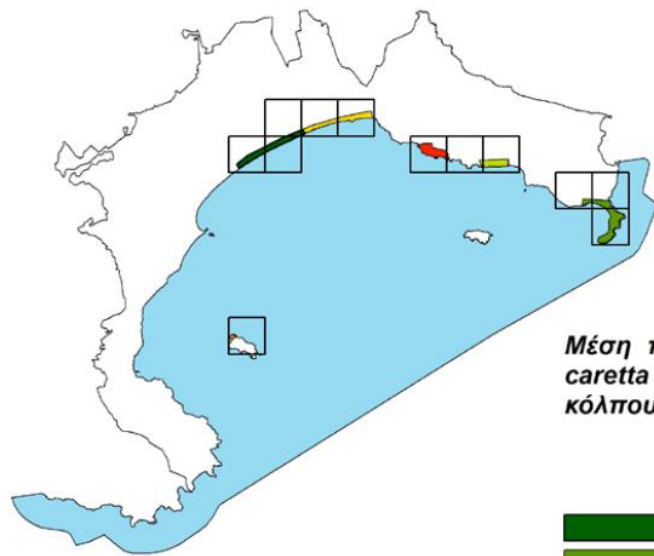
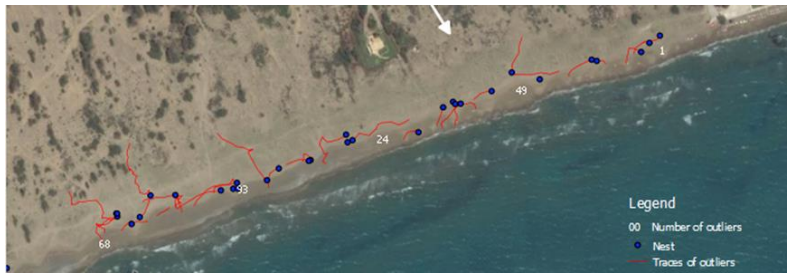
Cooperation with specific groups of in-water turtle watching businesses, and incentives to follow the regulations by signing codes of conduct & ECO-LABEL



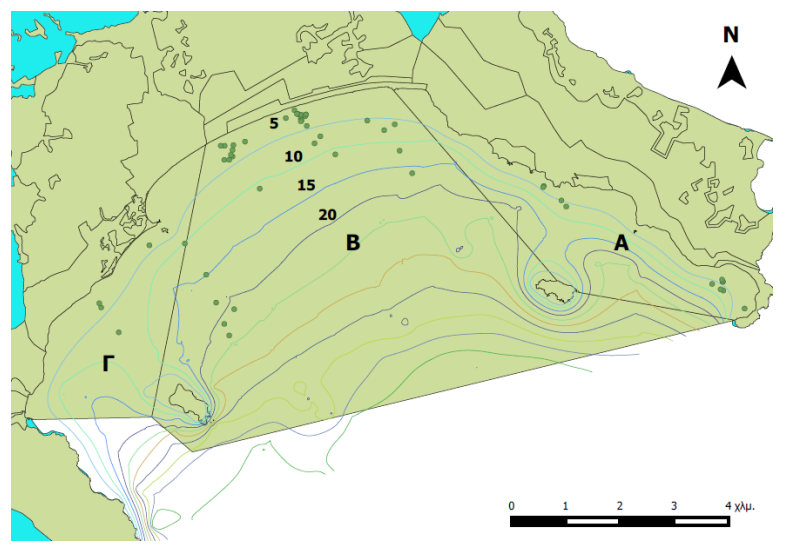
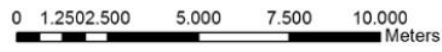
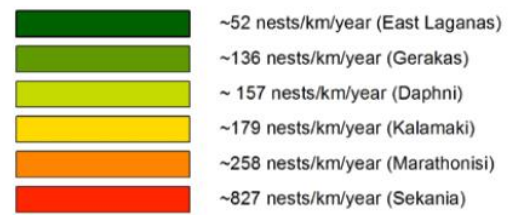


Monitoring & Adaptive Management

Monitoring of the Nesting beaches of *Caretta caretta*



Μέση πυκνότητα φωλιών της *Caretta caretta* στις 6 παραλίες ωτοκίας του κόλπου του Λαγανά

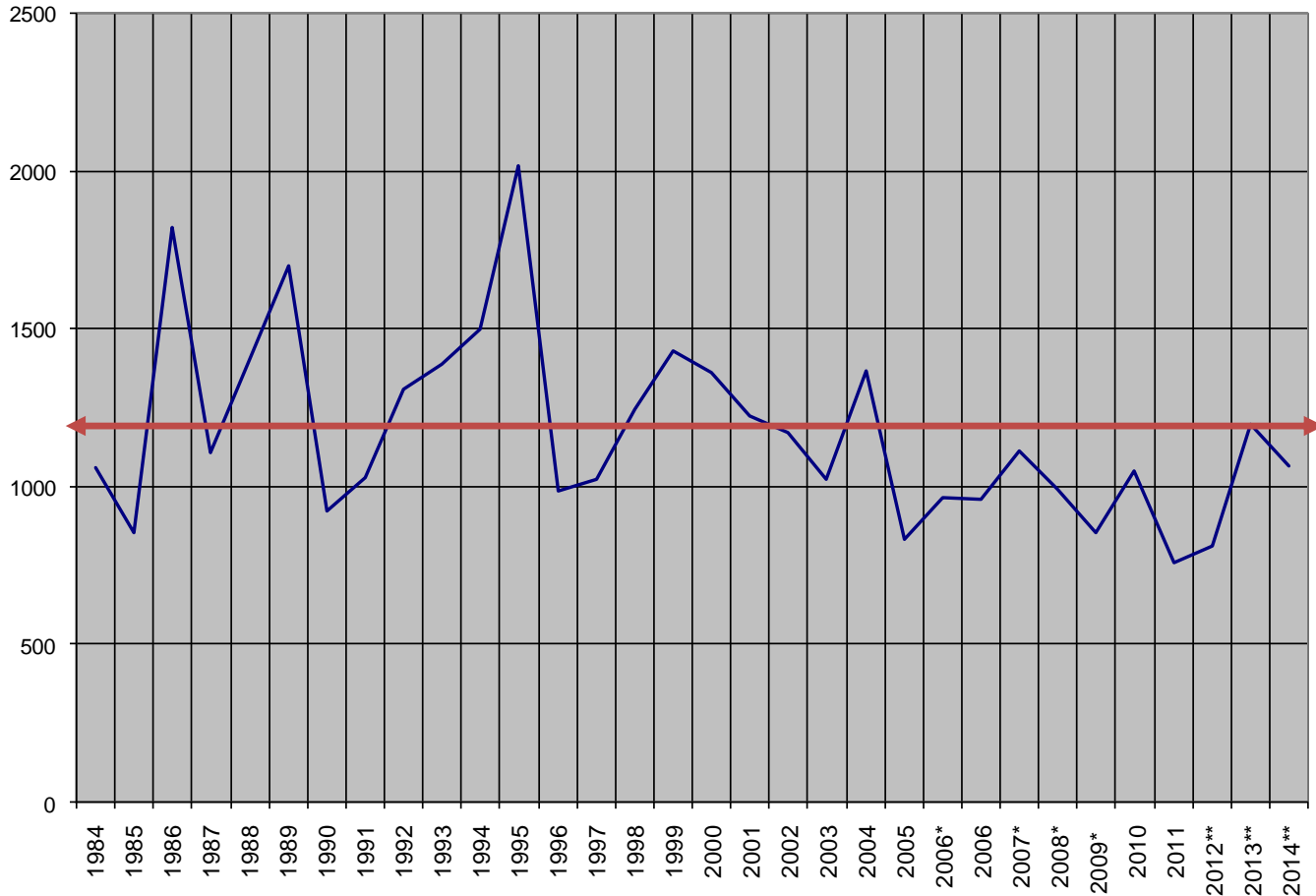




BIOLOGICAL CONSERVATION & MARINE PROTECTED AREAS (MPAs)

Monitoring of the Nesting beaches of *Caretta caretta*

Sea turtles *Caretta caretta* : Number of nests in the area of the National Marine Park of Zakynthos (total)



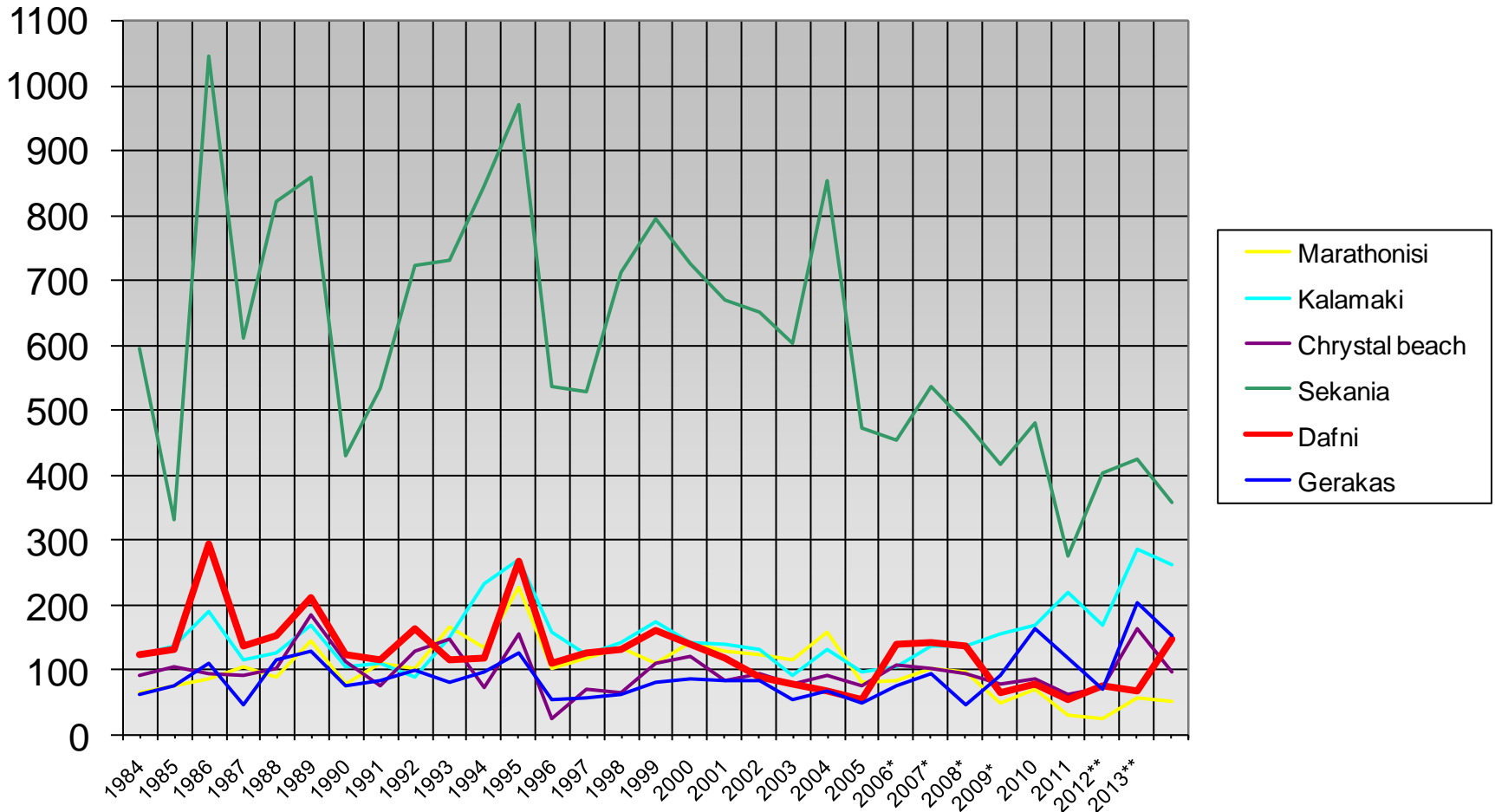
The conservation is being evaluated within the framework of the “Second assessment report of conservation status” (Natura 2000 sites).

Source : NGO Archelon 1984-2006/2010-2014, Management Agency NMPZ 2007-2009 2010-2014, Φορέας Διαχείρισης ΕΘΠΖ για το 2007-2009



Monitoring of the Nesting beaches of *Caretta caretta*

Sea turtles *Caretta caretta*: Number of nests in the area of the National Marine Parko of Zakynthos (nesting beaches)



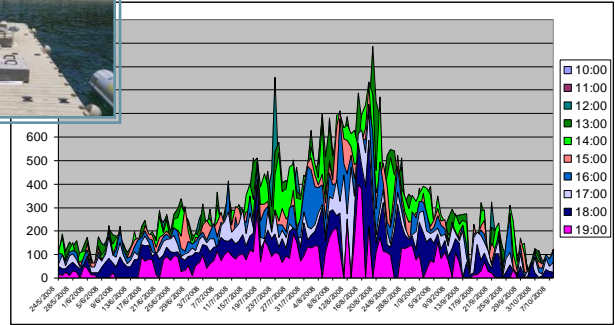
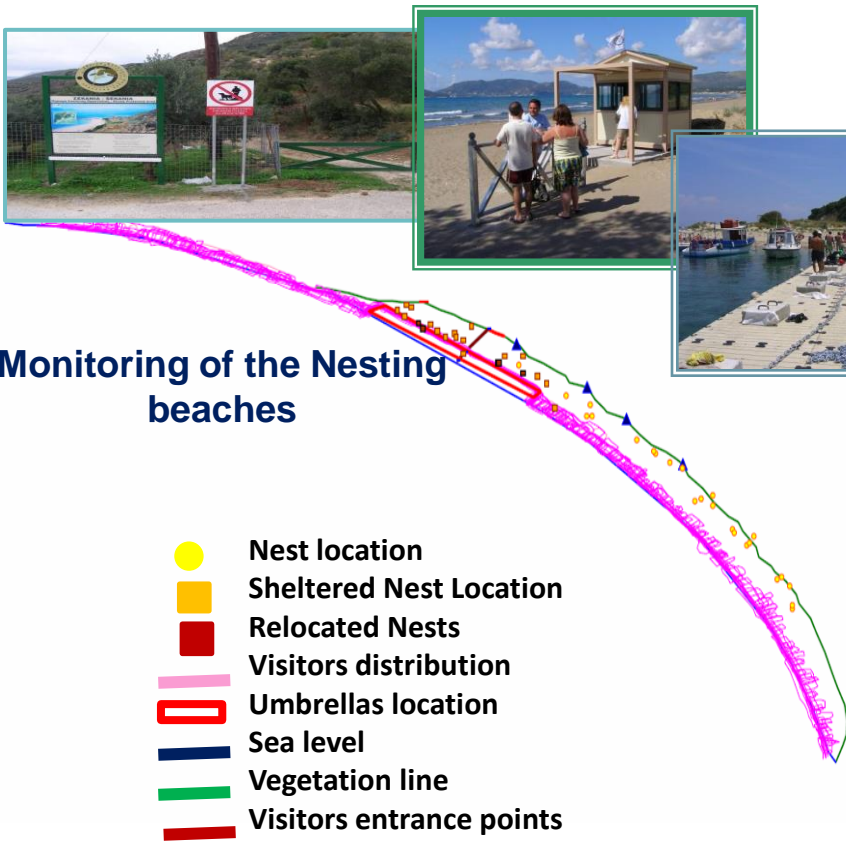
Source : NGO Archelon 1984-2006/2010-2014, Management Agency NMPZ 2007-2009



Monitoring & Adaptive Management

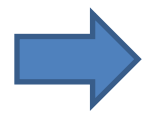
Management of *Caretta caretta* Nesting Beaches

GERAKAS N.B. Carrying capacity according to law = 350 persons at the same time on the nesting beach



Considering the number of visitors at the same time, the total number of visitors and nests' location, the visitors' length of stay on the beach is reconsidered each week.

Daily Based Adaptive Management



Daily Monitoring - Regulation of human use

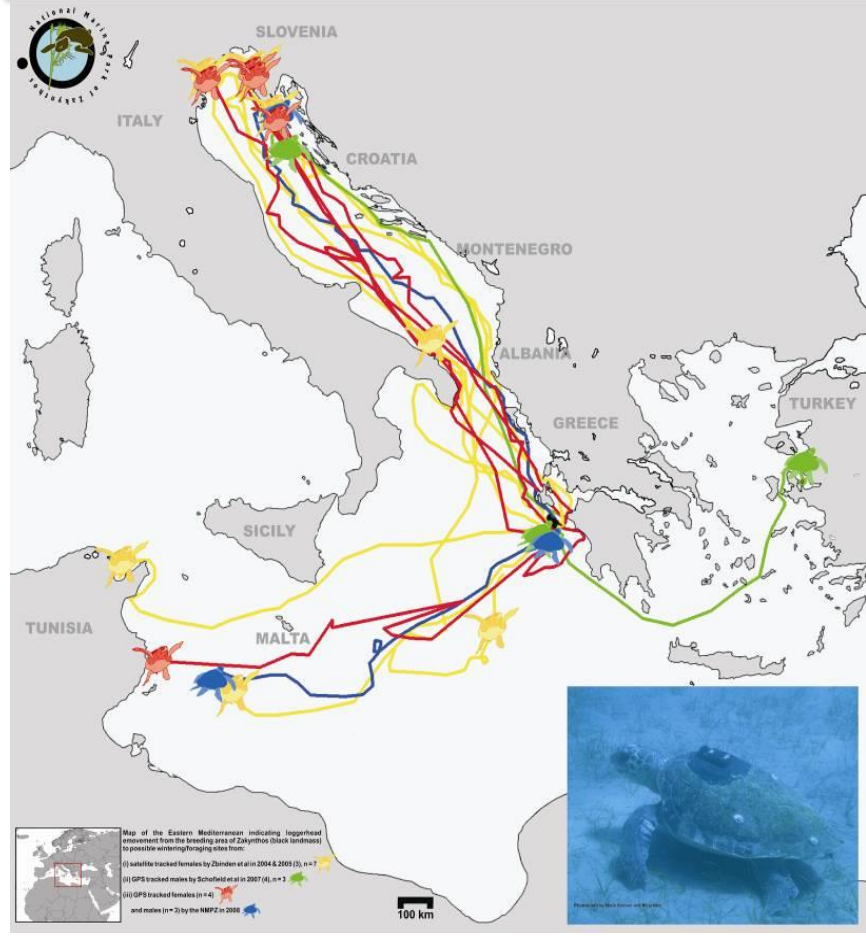


Favourable Conservation Status



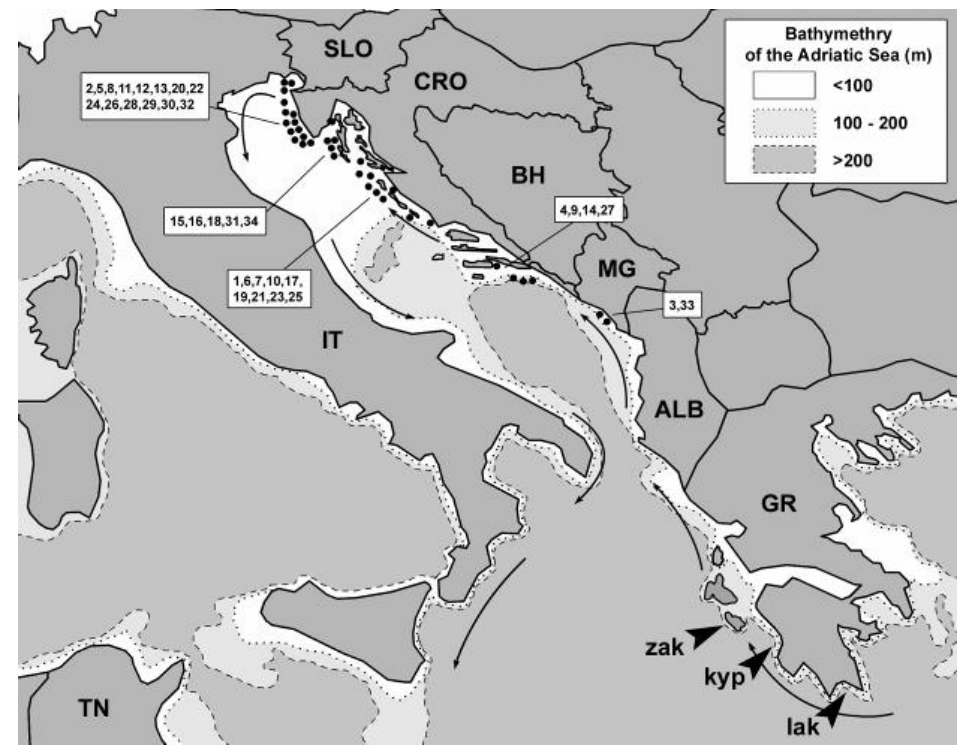
MPAs and MSP: *Ecological coherence*

MSP - National & Mediterranean scale



Caretta caretta - Highly mobile species

Need for large scale integrated management of species & habitats taking into consideration the species life-cycle

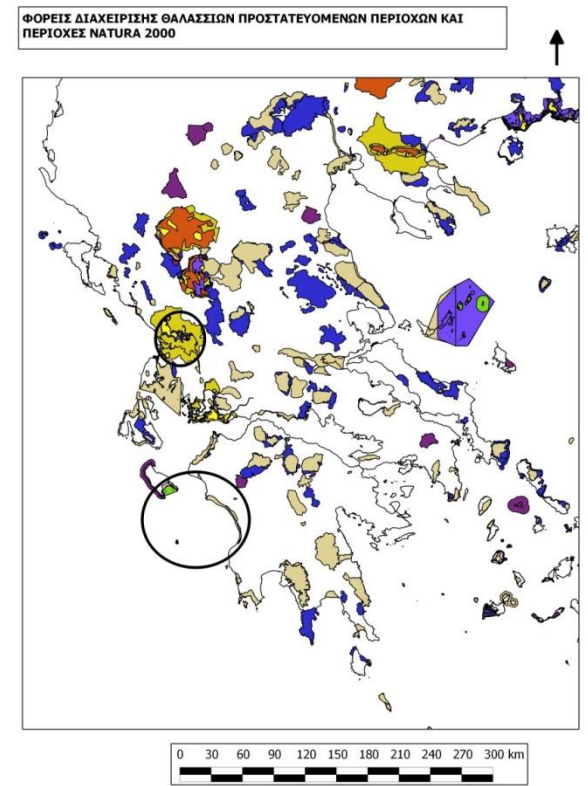




MPAs and MSP: *Ecological coherence*

MSP - National & Mediterranean scale

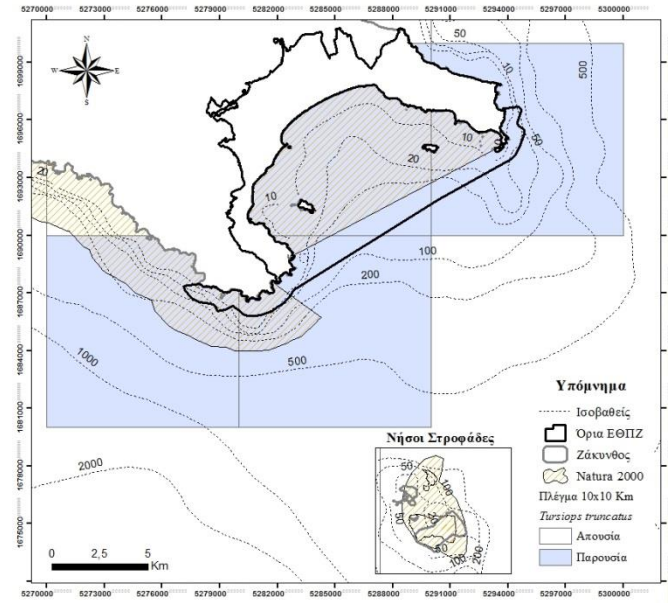
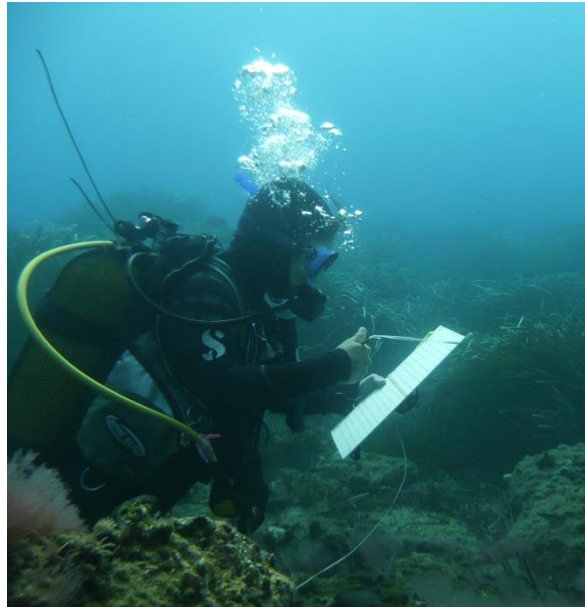
Need for large scale integrated management of species & habitats taking into consideration the species life-cycle





Monitoring

Mediterranean Monk Seal *Monachus monachus*, Sea Mammals, Fish/Megabenthic Fauna



Tursiops truncatus

Παρακολούθηση του πληθυσμού της μεσογειακής φώκιας, θαλάσσιων θηλαστικών και γηθοπανίδας/μεγαβενθικής πανίδας

ΦΑΣΗ Α. Παρακολούθηση Α4: "Γεωγραφική αποτίμηση δυναμικής εξάπλωσης ειδών"



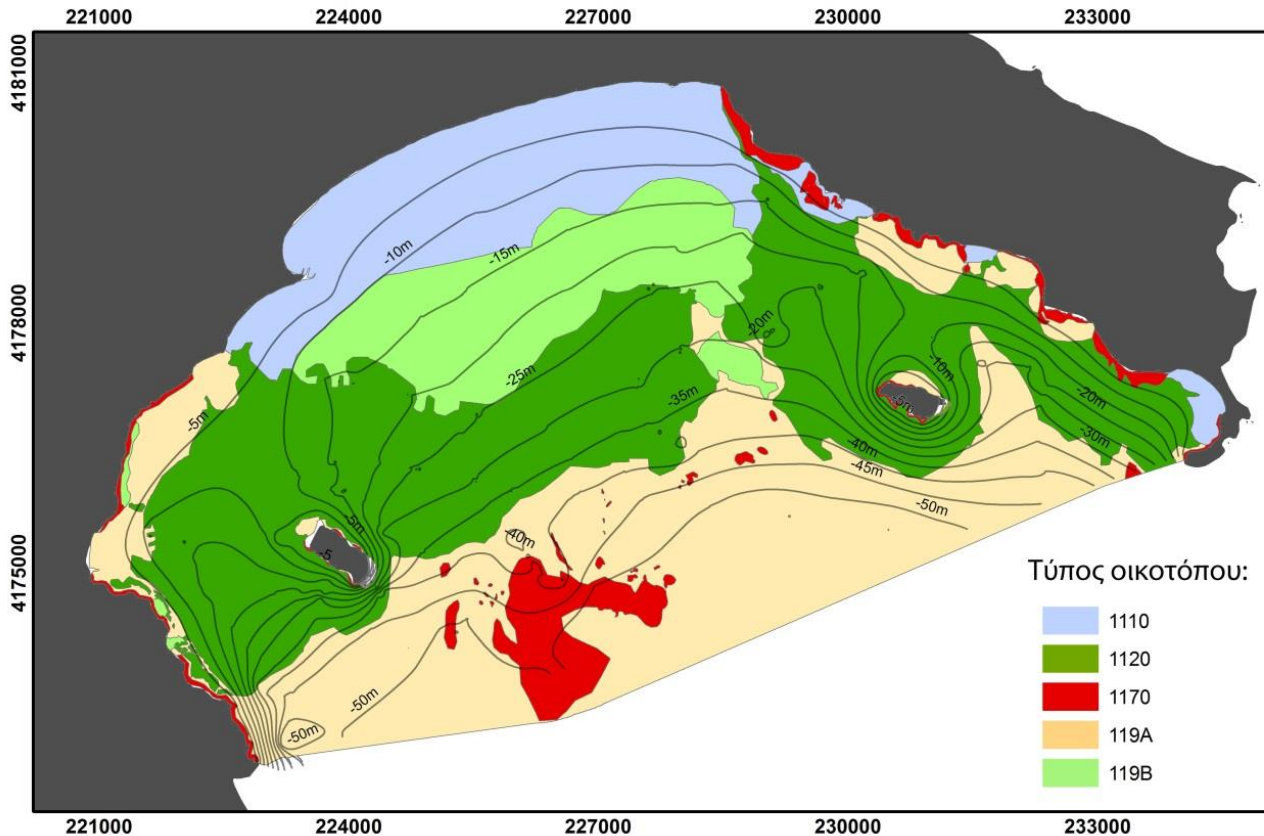
ΑΠΡΙΛΙΟΣ 2015





Monitoring

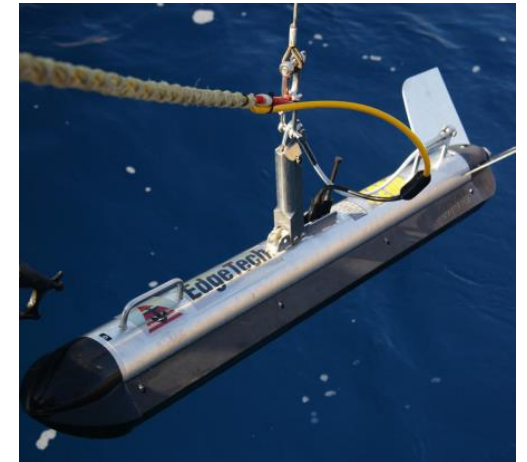
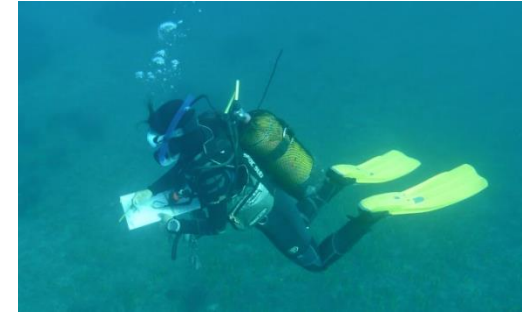
Ecotopes (Habitats) of Community Interest and EU Priority



1110: Sand Banks

1120: *Posidonia oceanica* Meadows

1170: Reefs





Monitoring

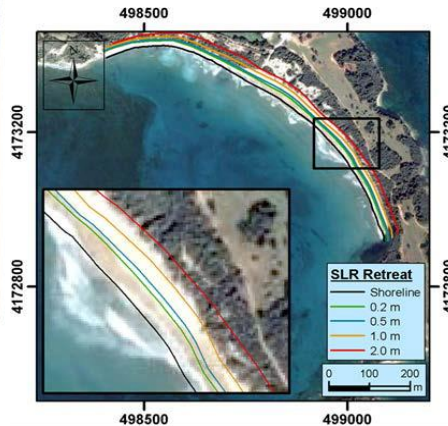
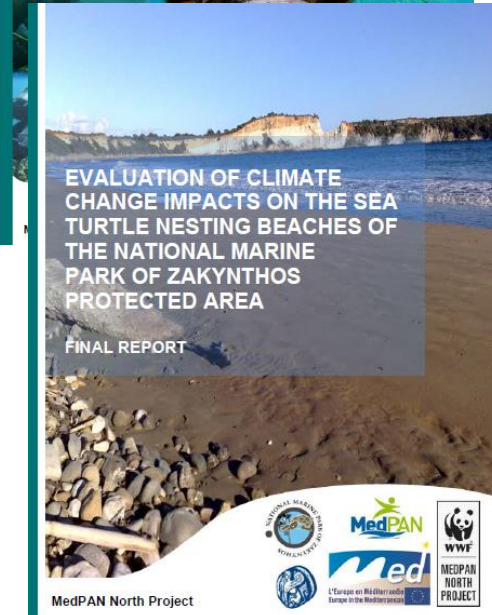
Fisheries and Climatic Change impact

MedPAN NORTH

'MED Project for the Management of MPAs in the NW Mediterranean Sea – 12 Partners/7 Mediterranean Countries'



1. Management Activities for Sustainable Fisheries in the NMPZ
2. Impct of Climatic Change in the nesting beaches of the NMPZ

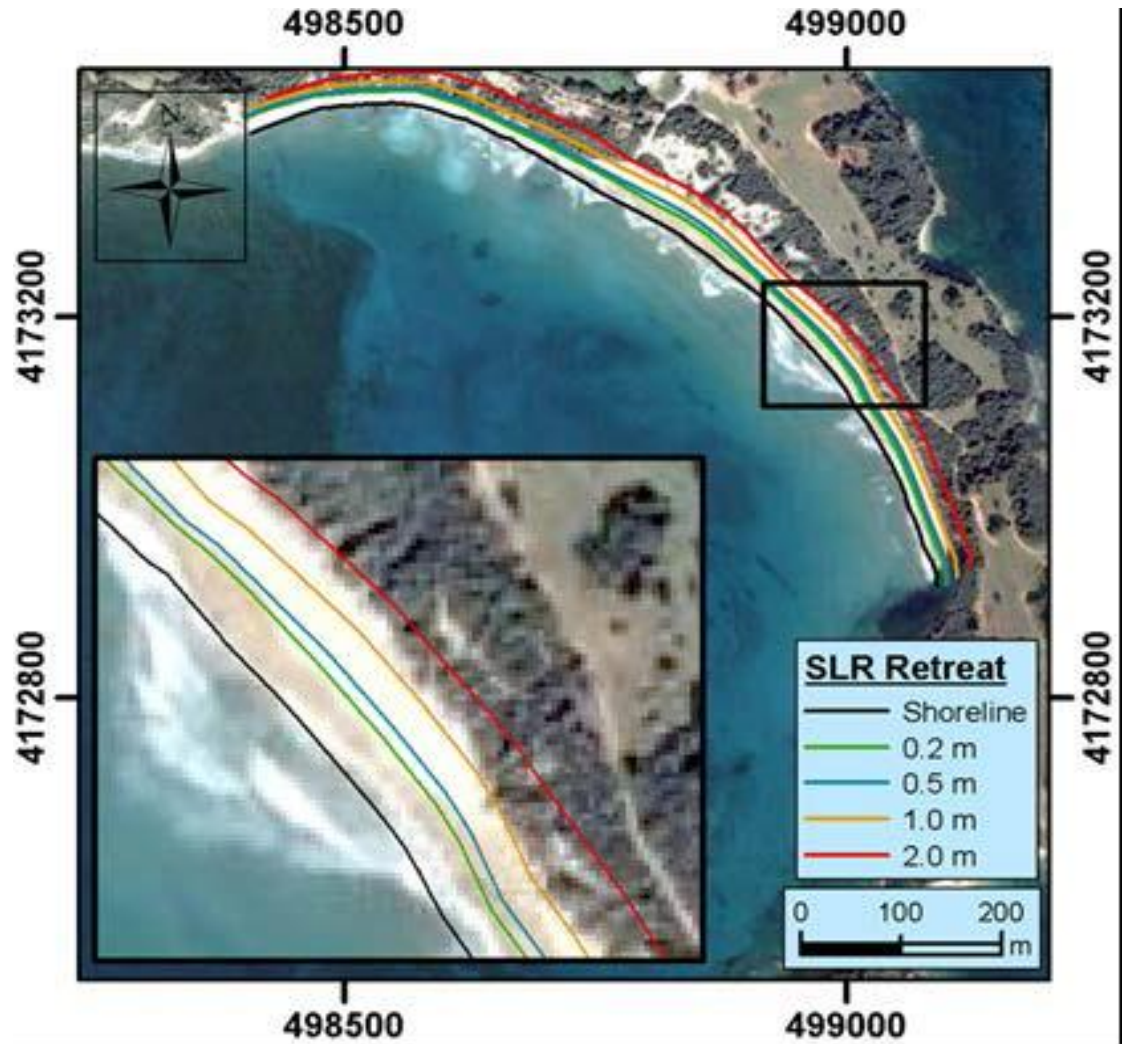
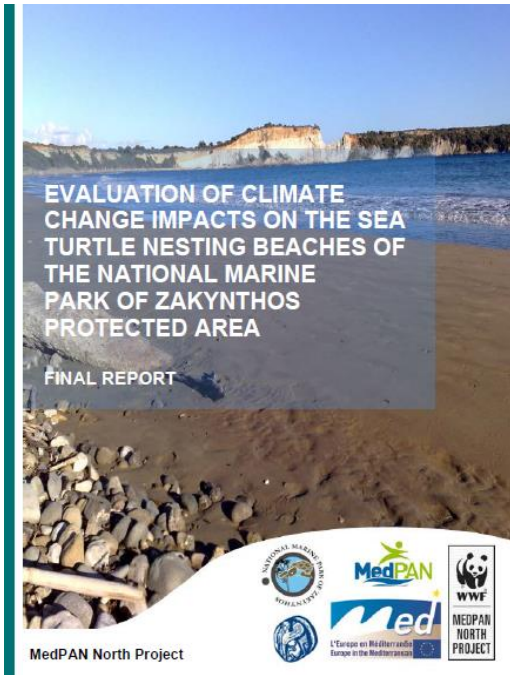




Monitoring

MedPAN NORTH

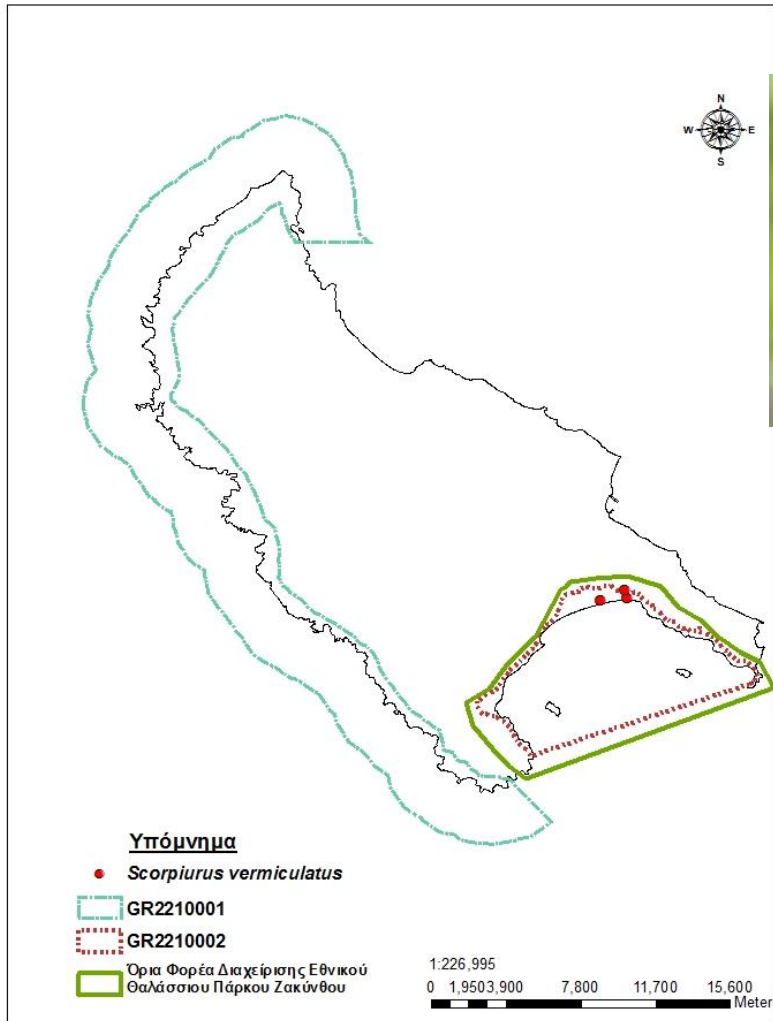
Impact of Climate Change in the nesting beaches of the NMPZ



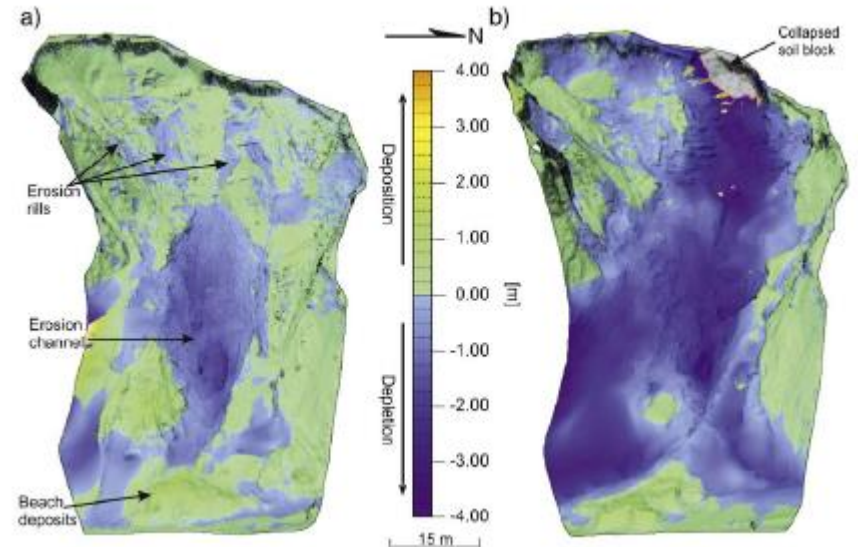


Monitoring

Terrestrial Habitats, Flora and Geo-environment



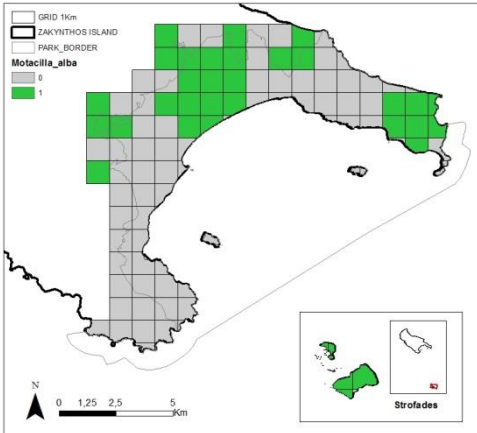
Κωδικός Τύπου Οικοτόπου	Περιγραφή	GR2210002	GR2210003	ΕΘΠΖ
1210	Μονοετής βλάστηση μεταξύ των ορίων πλημμυρίδας και άμψιτης	+	+	+
1240	Απόκρημνες βραχώδεις ακτές με βλάστηση στη Μεσόγειο με ενδημικά <i>Limonium</i> spp.	+		+
1410	Μεσογειακά αλίπεδα (<i>Juncetalia maritimi</i>)	+		+
2110	Υποτυπώδεις κινούμενες θίνες	+	+	+
2120	Κινούμενες θίνες της ακτογραμμής με <i>Ammophila arenaria</i> (Λευκές θίνες)	+		+
2190	Υγρές κοιλάτες μεταξύ των θινών	+		+
2210 (2220)	Σταθερές θίνες των παραλίων της <i>Crucianellion maritimae</i>	+		+
2240	Εκτάσεις θινών με <i>Brachypodietalia</i>	+		+
2250*	Θίνες των παραλίων με <i>Juniperus</i> spp.			+
2260	Θίνες με βλάστηση σκληρόφυλλων θάμνων (<i>Cisto-Lavanduletalia</i>)	+		+
2270*	Θίνες με δάση από <i>Pinus pinea</i> και/ή <i>Pinus pinaster</i>	+		+
3170*	Μεσογειακά εποχικά τέλματα		+	+
5210	Δενδρώδη <i>matorrals</i> με <i>Juniperus</i> spp.	+	+	+
5330	Θερμομεσογειακές και προερημικές λάχμες	+	+	+





Monitoring

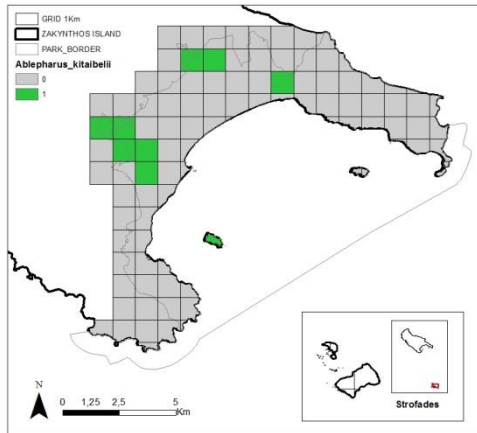
Bird Fauna, Reptiles and Amphibians



Παρακολούθηση ορνιθοπανίδας, ερπετών και αμφιβίων στο ΕΟΠΖ



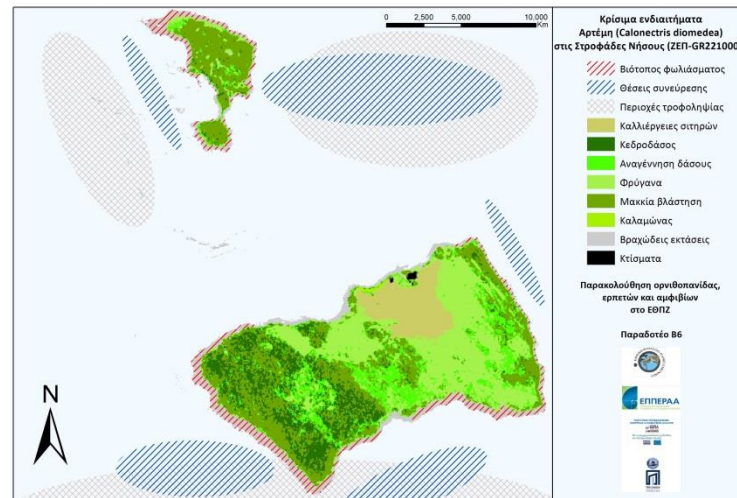
ΔΕΚΕΜΒΡΙΟΣ 2014



Παρακολούθηση ορνιθοπανίδας, ερπετών και αμφιβίων στο ΕΟΠΖ



ΔΕΚΕΜΒΡΙΟΣ 2014



Κρίσιμα ενδιαιτήματα Αρέμη (Calonectris diomedea) στις Στροφάδες Νήσους (ΖΕΠ-GR2210004)

- Βιότοπος φυλάξιματος
- Θέσεις συνυψρώσεως
- Περιοχές τροφοληψίας
- Καλλιέργειες αιτηρών
- Κεδρόδασος
- Αναγέννηση δάσους
- Θρύγανα
- Μακκία βλάστηση
- Καλαμώνας
- Βραχώδεις εκτάσεις
- Κτίσματα

Παρακολούθηση ορνιθοπανίδας, ερπετών και αμφιβίων στο ΕΟΠΖ



ΑΝΤΙΟ
και ΕΥΧΑΡΙΣΤΩ για τα ΨΑΡΙΑ

