LIFE MareNatura

4th Training Seminar

"Management and conservation of the species *Larus audouinii & Puffinus yelkouan*"

The Audouin's Gull *Larus audouinii*. Biology – ecology, threats and distribution in Greece and Italy

ΣΧΟΛΗ ΘΑΛΑΣΣΙΑΣ ΔΙΑΤΗΡΗΣΗΣ
MARINE CONSERVATION SCHOOL

Camilla Gotti
Danae Portolou
Marco Zenatello

Με τη συγχρηματοδότηση της Ευρωπαϊκής Ένωσης





Ορνιθολογική
ΕΛΛΗΝΙΚΗ ΟΡΝΙΘΟΛΟΓΙΚΗ ΕΤΑΙΡΕΙΑ

ISPRA
Istituto Superiore per la Protezione e la Ricerca Ambientale

Larus audouinii - Payraudeau, 1826
Order: Charadriiformes (waders, gulls, alcids)
Family: Laridae
In past Genus *Ichthyaetus* – *now again!*





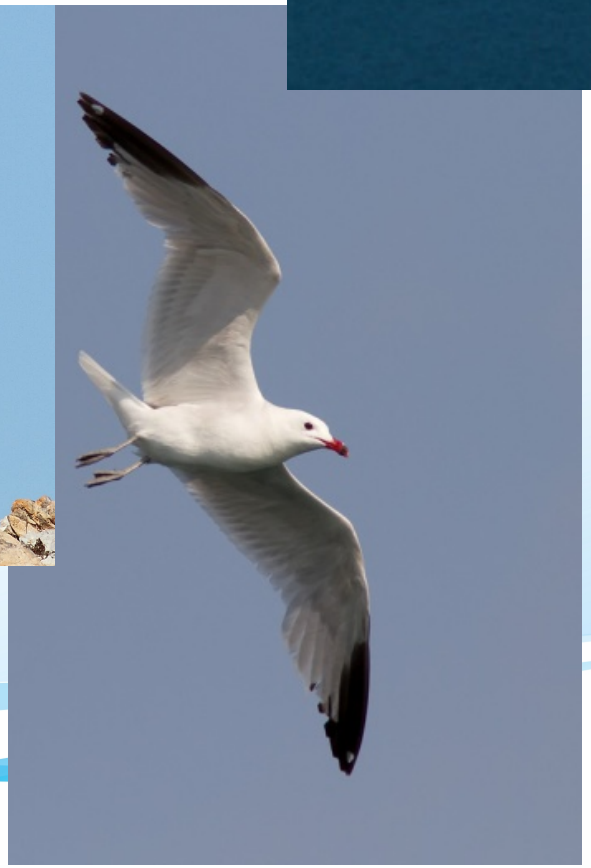
MCS
ΣΧΟΛΗ ΘΑΛΑΣΣΙΑΣ ΔΙΑΤΗΡΗΣΗΣ
MARINE CONSERVATION SCHOOL

LIFE
MareNatura









Red bill, dark legs, darker tips of wing
Fledgling darker colour
Flight lighter and distinct when foraging
Call more coarse

Με τη συγχρηματοδότηση της Ευρωπαϊκής Ένωσης

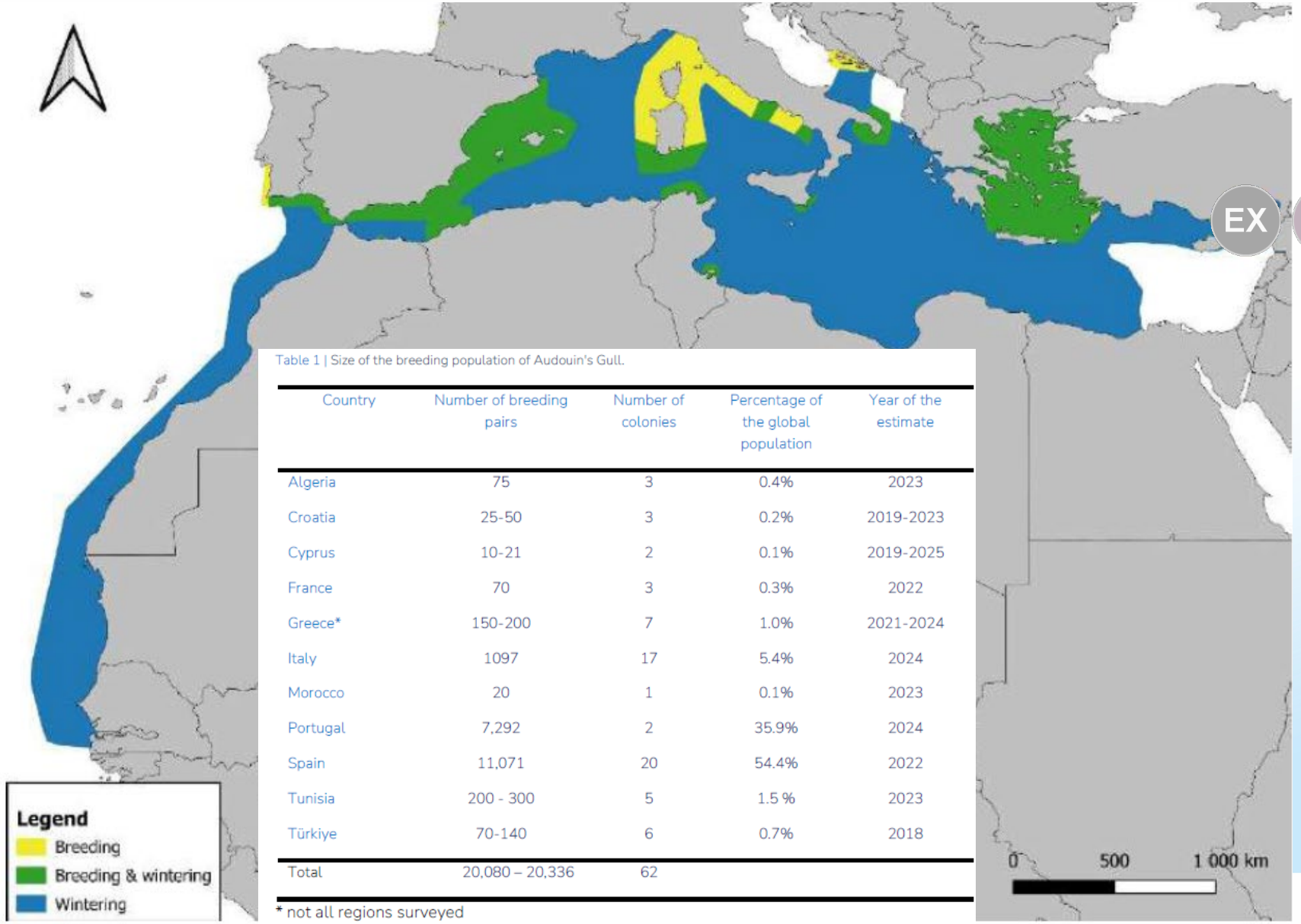


Table 1 | Size of the breeding population of Audouin's Gull.

Country	Number of breeding pairs	Number of colonies	Percentage of the global population	Year of the estimate
Algeria	75	3	0.4%	2023
Croatia	25-50	3	0.2%	2019-2023
Cyprus	10-21	2	0.1%	2019-2025
France	70	3	0.3%	2022
Greece*	150-200	7	1.0%	2021-2024
Italy	1097	17	5.4%	2024
Morocco	20	1	0.1%	2023
Portugal	7,292	2	35.9%	2024
Spain	11,071	20	54.4%	2022
Tunisia	200 - 300	5	1.5 %	2023
Türkiye	70-140	6	0.7%	2018
Total	20,080 – 20,336	62		

* not all regions surveyed

Figure 1 | Global distribution range of the Audouin's Gull. Adapted from BirdLife (2020) and updated under the scope of the present work.

Ορνιθολογική
ΕΛΛΗΝΙΚΗ ΟΡΝΙΘΟΛΟΓΙΚΗ ΕΤΑΙΡΕΙΑ

ISPRA
Istituto Superiore per la Protezione e la Ricerca Ambientale

Globally Threatened

EX EW CR EN **VU** NT LC DD

Vulnerable

Very rare, colonial seabird
Endemic of Mediterranean (+ Atlantic Portugal / Morocco)
Declining across all its range

European Red List → VU
Nationally evaluated as
EN (Greek Red List 2023)
LC (Italian Red List 2021)

Breeding concentrated in W Med (+Atlantic)

Migratory: main wintering areas: S Med AND Atlantic W Africa

LIFE18 NAT/PT/000927 Project

INTERNATIONAL SINGLE SPECIES ACTION PLAN FOR THE CONSERVATION OF AUDOUIN'S GULL (2025 - 2035)

LARUS AUDOUINII



European Union (EU)

Prepared in the framework of the LIFE Ilhas Barreira (LIFE18 NAT/PT/000927, coordinated by SPEA

Breeding phenology

	March				April				May				June				July			
Breeding stages																				
Census																				
Colony monitoring																				

- Adults present around their colony sites from March
- By mid to late April, birds have occupied their nesting sites
- Asynchronous
- Egg-laying in mid –April (**10 - 20/4)**
- Both adults alternate in incubation and lasts ~ 5 weeks
- Hatching: **13 - 25/5**
- Chicks fledge after 2 months – mid July



Με τη συγχρηματοδότηση της Ευρωπαϊκής Ένωσης



ITALY – BREEDING DISTRIBUTION

Stronghold in Central Thyrrhenian (Sardinia, Tuscany)

More recent breeding areas: C & S Thyrrhenian, Sicily, Ionian Apulia and Adriatic

Με τη συγχρηματοδότηση της Ευρωπαϊκής Ένωσης

National Census Results

GREECE – BREEDING DISTRIBUTION

2 National Censuses

Strongholds during MSFD (2021-23)

-60% in stronghold

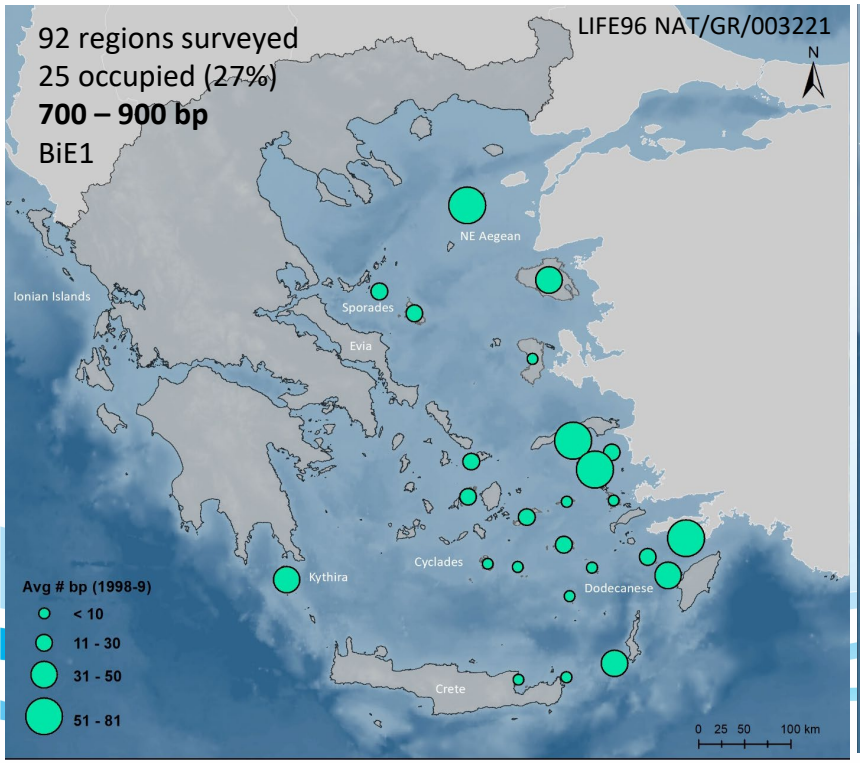
94 uninhabited islets have been used for nesting

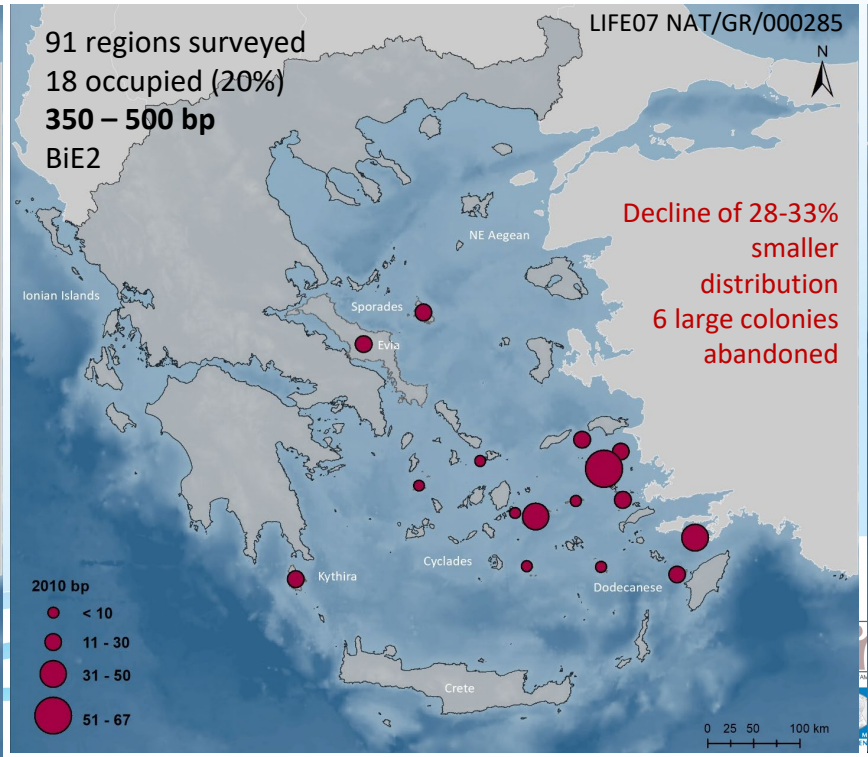
Colonies identified in 34 breeding regions

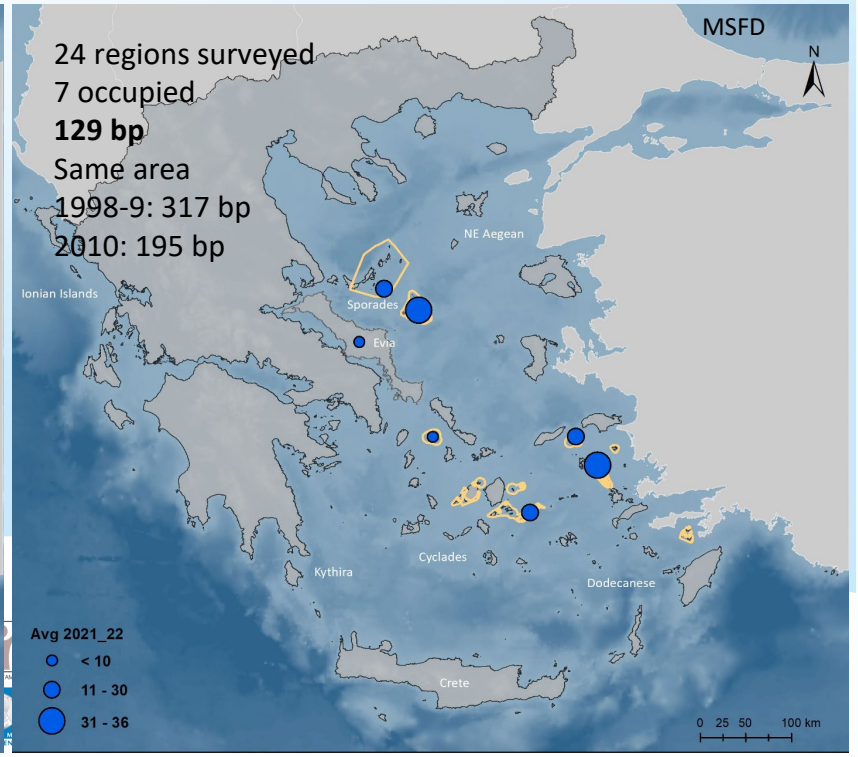
Colonies are small (1 - 86 breeding pairs)

No colony found in the Ionian Sea

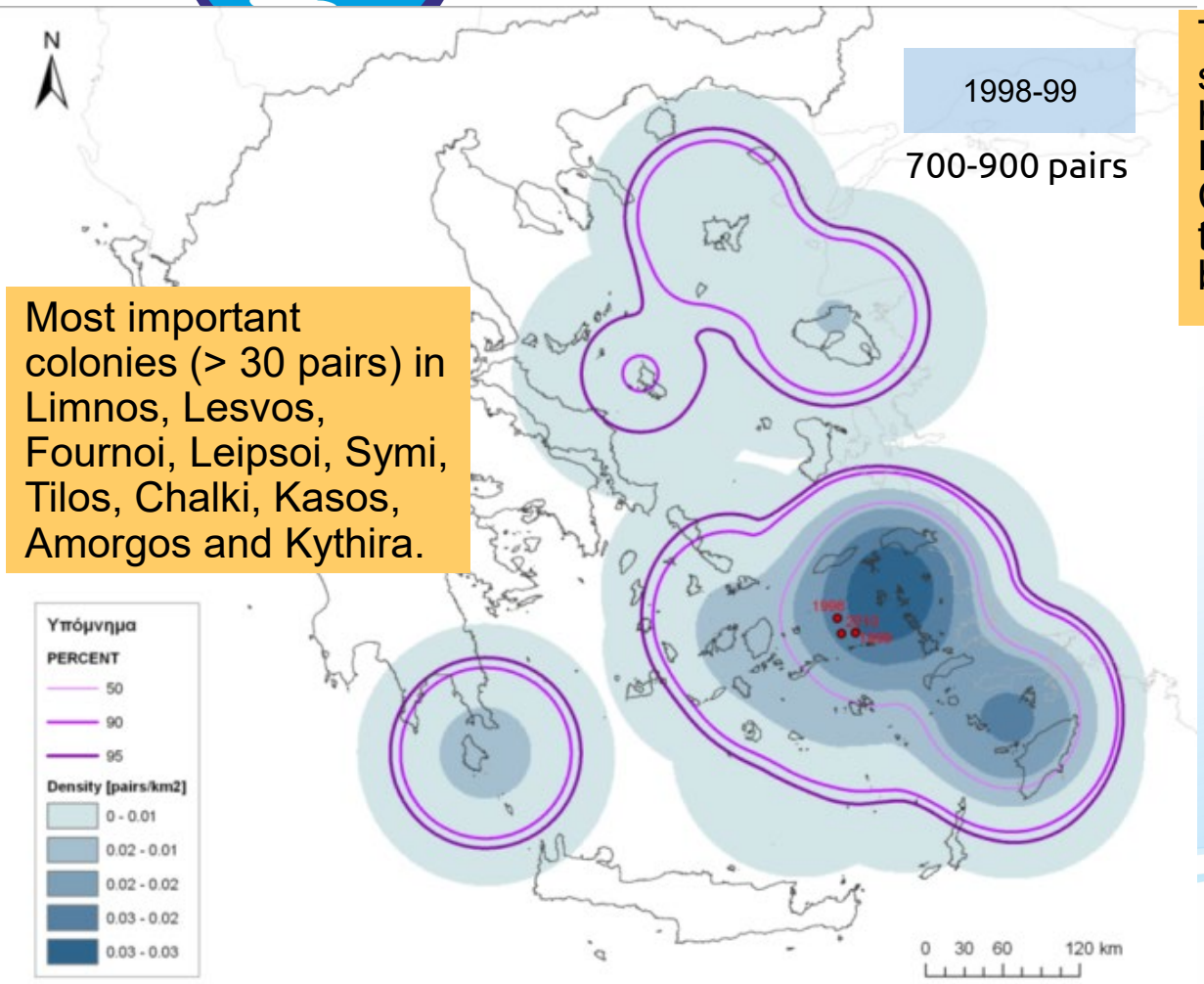
1998-99 -38% 2010 -34% 2021-23





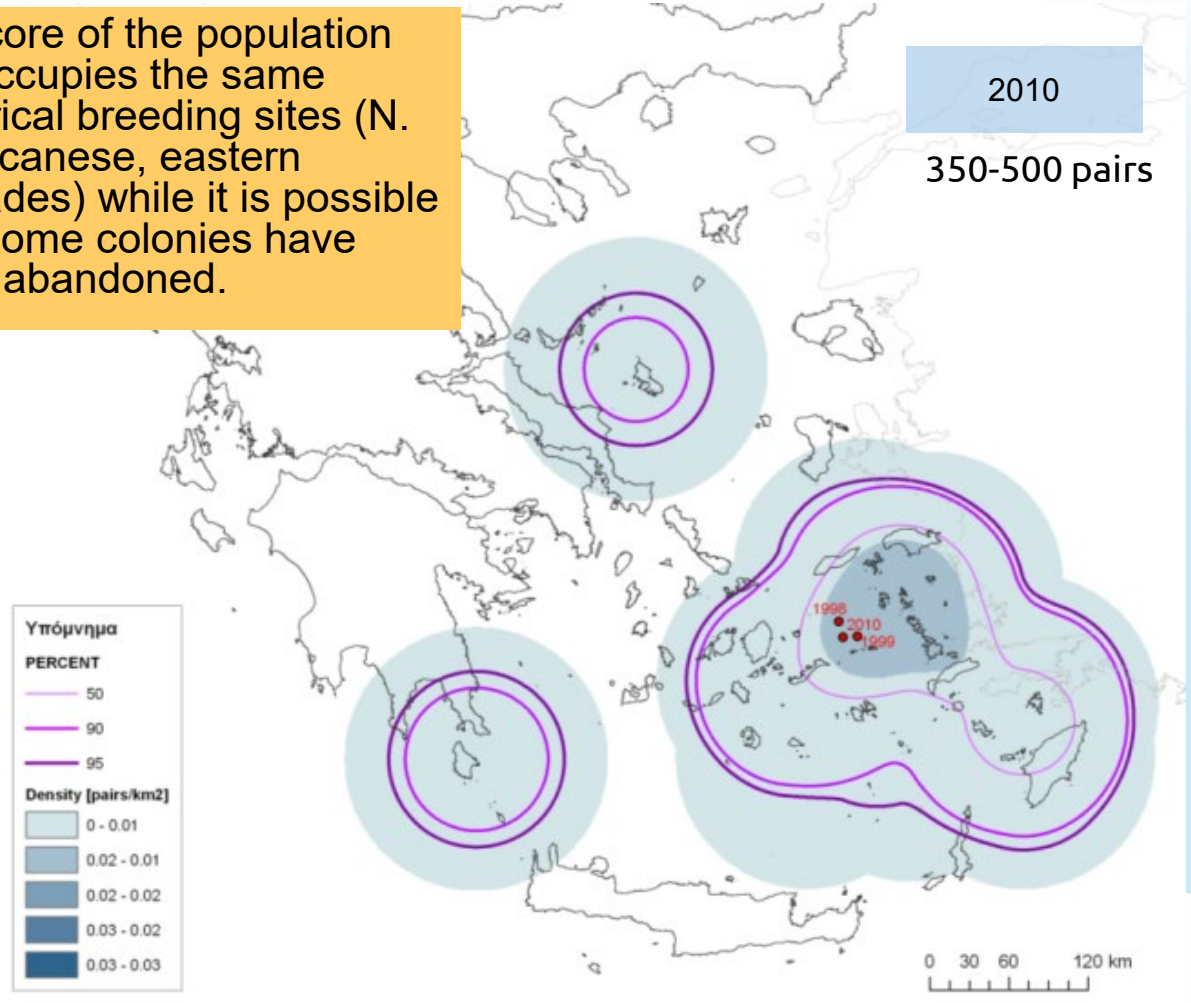


National Census Results



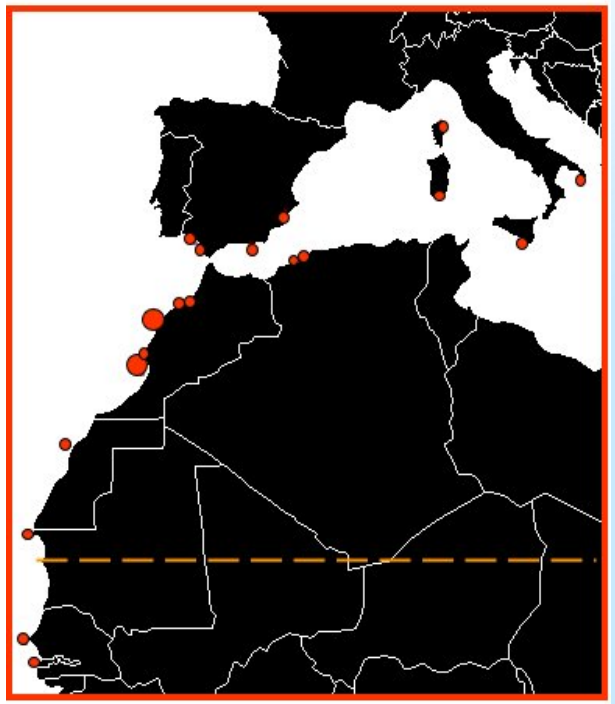
Most important colonies (> 30 pairs) in Limnos, Lesvos, Fournoi, Leipsoi, Symi, Tilos, Chalki, Kasos, Amorgos and Kythira.

The core of the population still occupies the same historical breeding sites (N. Dodecanese, eastern Cyclades) while it is possible that some colonies have been abandoned.

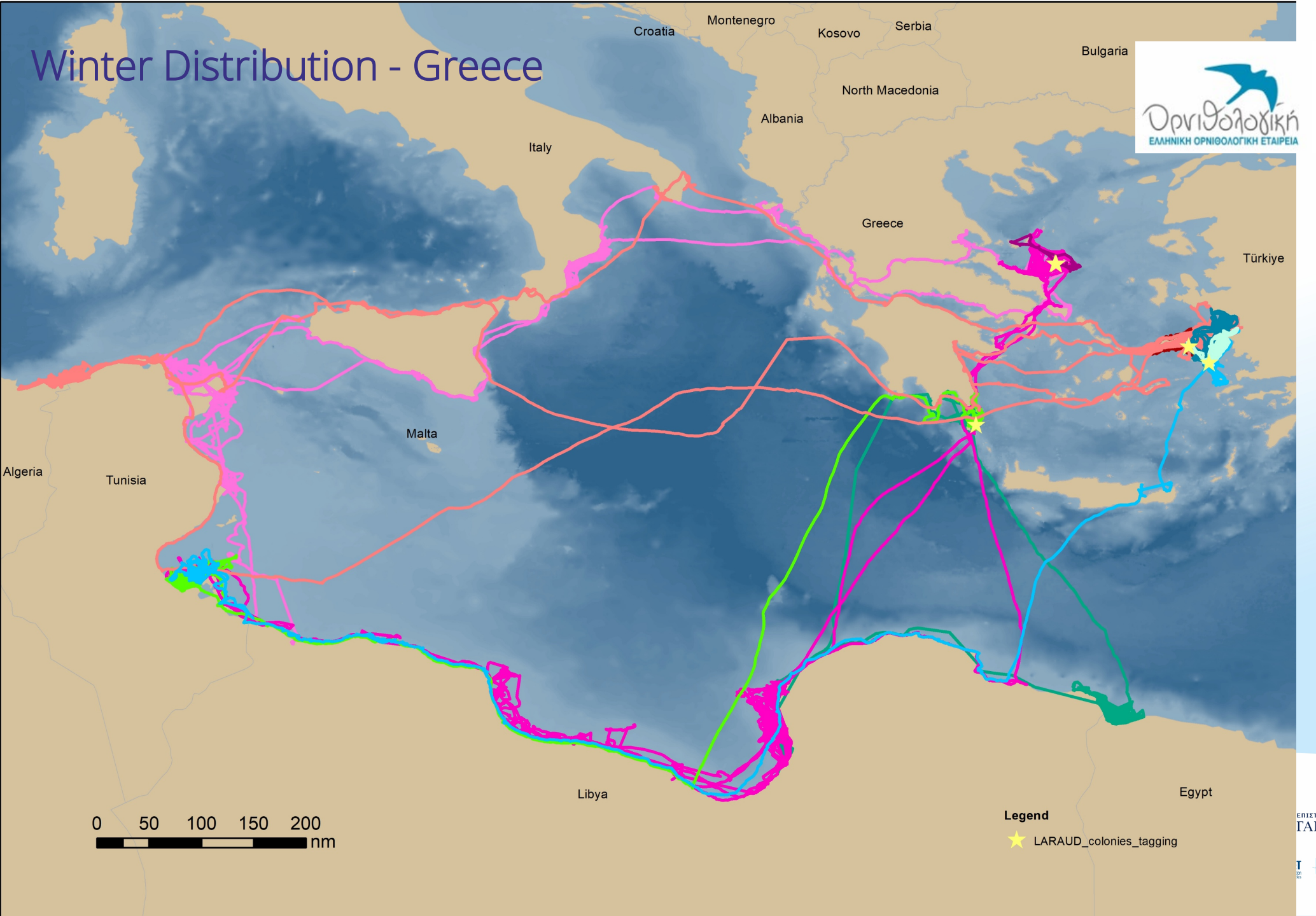


Με τη συγχρηματοδότηση της Ευρωπαϊκής Ένωσης

Winter Distribution - Italy



Winter Distribution - Greece



- Migration 1-2 days till North Africa
- Average 170 days in wintering grounds (Gulf of Tunis & Gabes, Libyan coast, Saloum Egypt & E coast Algeria)
- Start Return trip between 27/2 – 25/3 (1-7 days)

Colonies – breeding islets





Mostly breeds on small uninhabited islets

Rarely on inaccessible peninsulas of larger islands

Saltpans and harbour piers are locally used in IT (and Corsica)

Nesting colonies are low-lying with gentle slopes, but vertical cliffs also locally used

Simple nests & little nest material

Frequent interannual change of island/site affects monitoring strategy

Greece: Colonies – breeding islets

Factors such as **distance to rock and vegetation cover** seemed to be relatively important in nest site selection (Goutner et al. 2000)

Vegetation height and cover differ greatly among colonies







Greece: Breeding parameters

Colonies are monitored to a different extent

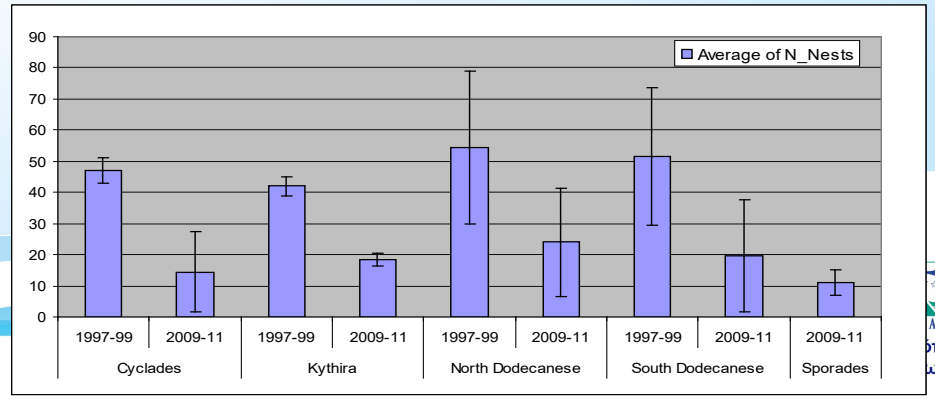
Period	regions	colonies
1997-1999	8	14
2009-2011	16	19
2021-2025	4	7



Colony size mean = **21 nests/colony**

Mean colony size showed a **decline** 50 to 20 nests/colony between 1997-99 and 2009-2011 in all regions and significantly so in the Cyclades and North Dodecanese.

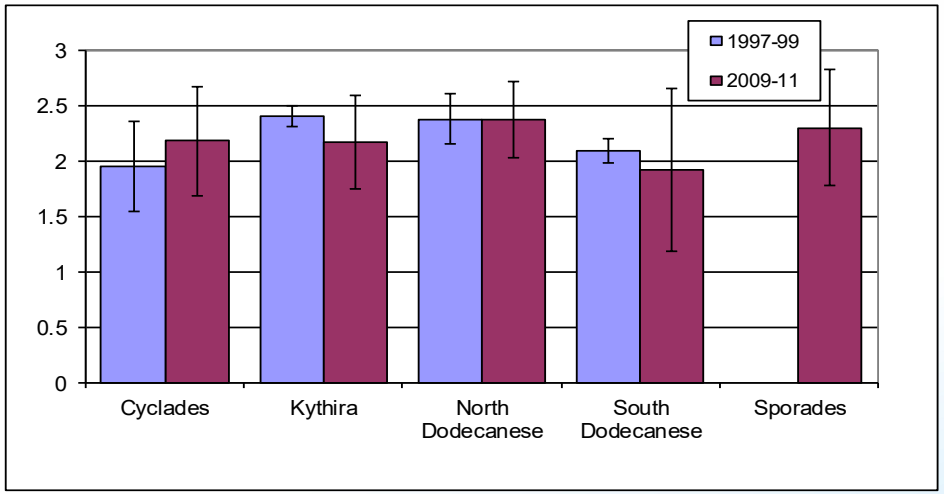
Colony size has not declined since 2010

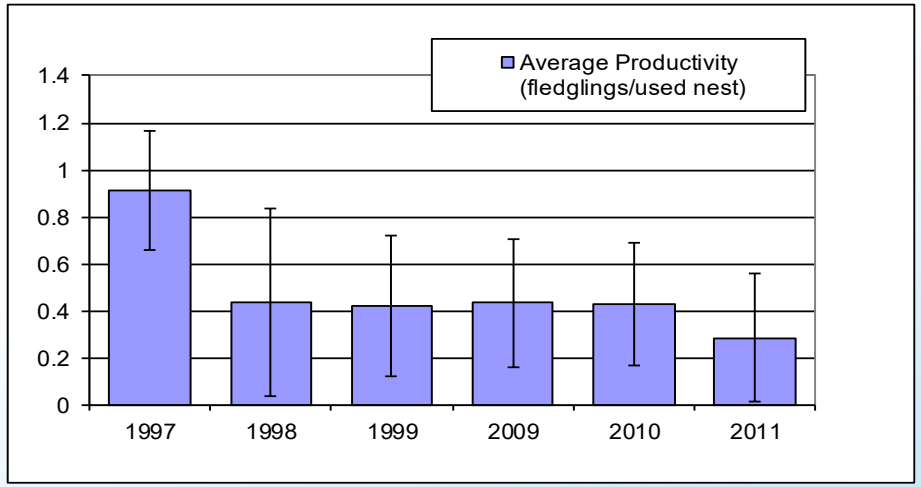




Greece: Breeding parameters

Period	Clutch size	# nests
1997-1999	2.28	725
2009-2011	2.12	542
2021-2025	2.08	423





Clutch size

Similar to that recorded in small island colonies in the rest of the Mediterranean

Mean clutch size does not differ significantly between years and regions

Productivity - mean = 0.47 fledgling/nest

Mean productivity did not differ significantly between 1997-99 and 2009-2011 nor between regions

2021-23 - productivity was close to 0

Chicks die at 1-2 weeks old, very few fledge per colony

Με τη συγχρηματοδότηση της Ευρωπαϊκής Ένωσης

Italy: Colonies – breeding islets









Με τη συγχρηματοδότηση της Ευρωπαϊκής Ένωσης

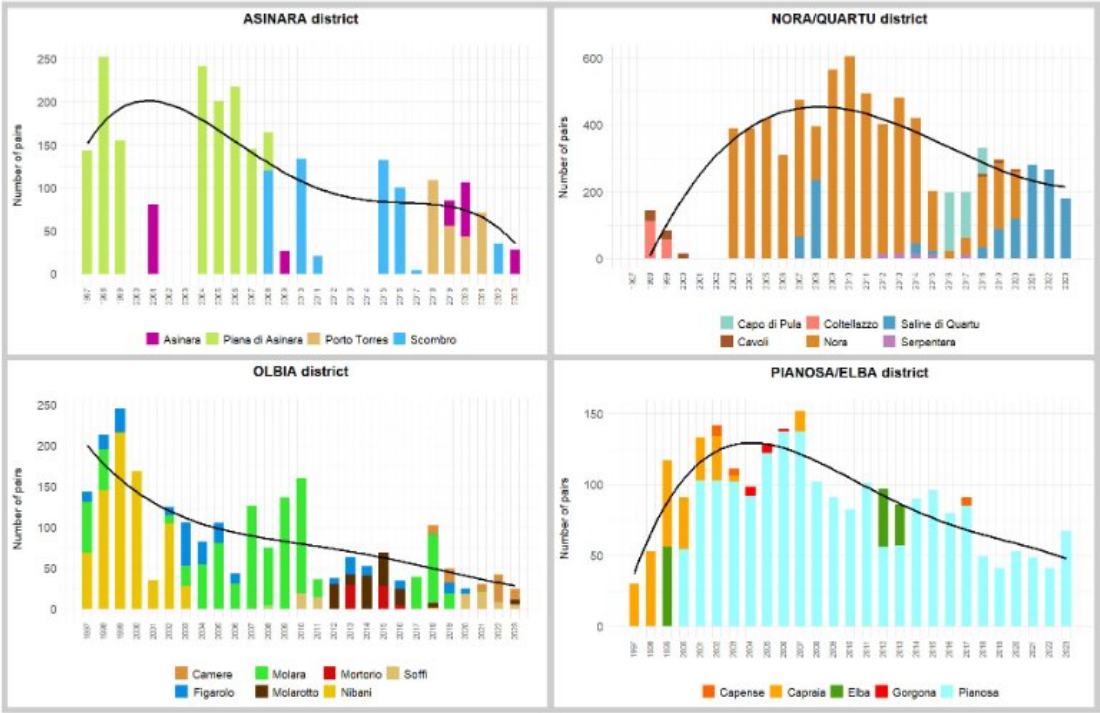
Italy: Colonies – breeding islets



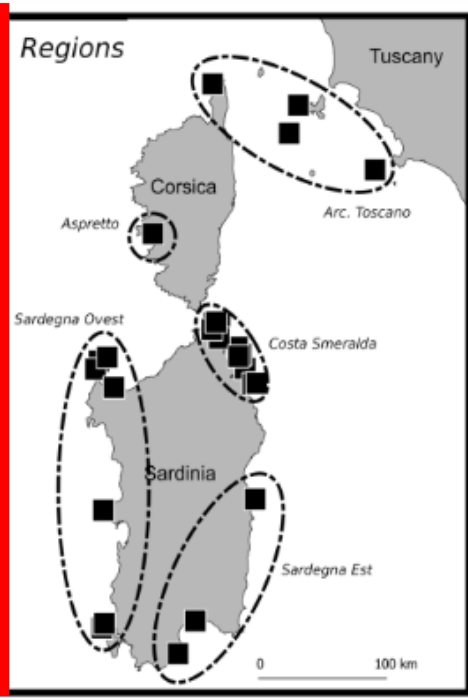
‘Unusual’ sites: mainland cliffs, wetlands, saltpans harbours are locally used in Italy (and Corsica)

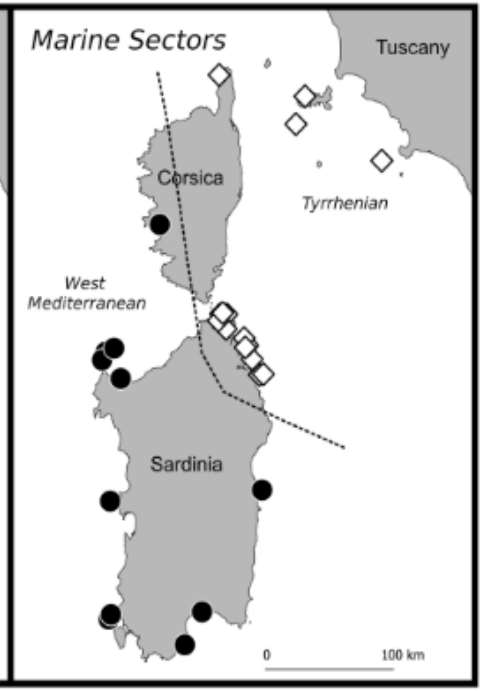


Με τη συγχρηματοδότηση της Ευρωπαϊκής Ένωσης









Italy: Breeding parameters

(Frequent) changes of breeding islands, or of breeding spot within the same island does not negatively affect survival

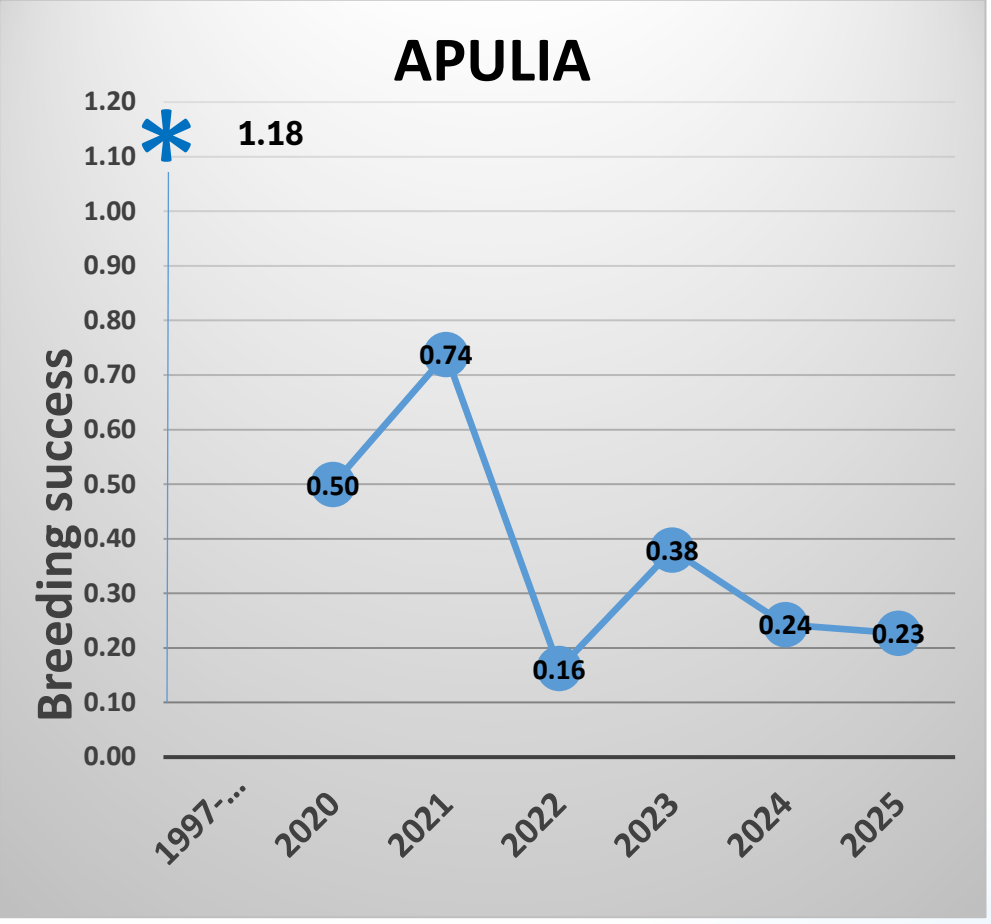
High fidelity to breeding districts is associated to higher individual survival

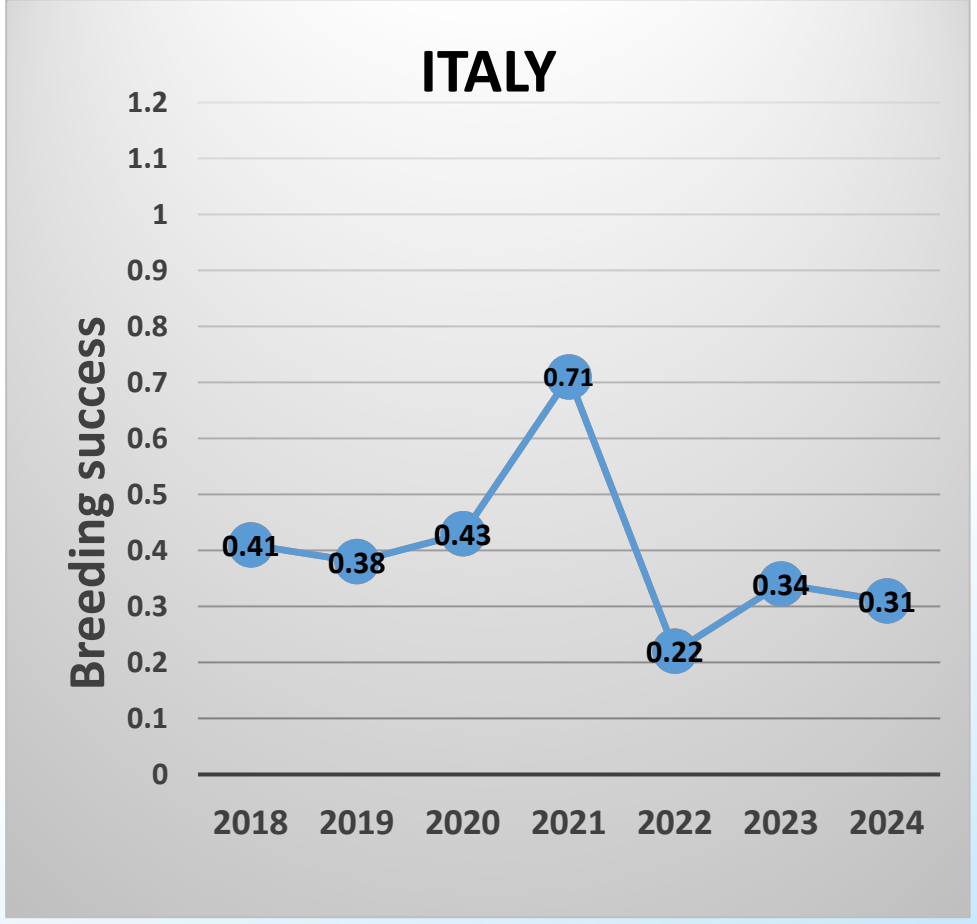
Local/regional trends can be extremely different





Με τη συγχρηματοδότηση της Ευρωπαϊκής Ένωσης





ISPRA
Istituto Superiore per la Protezione e la Ricerca Ambientale

Italy: Breeding parameters

Fluctuating br success

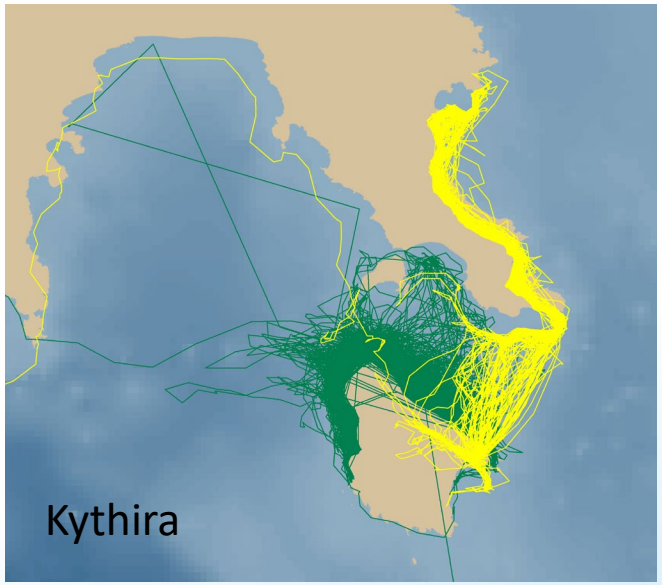
Similar population, with an increasing number of sites

	Breeding pairs	N sites			N sites per region					
Period	mean (SD)	mean (SD)	min	max	Sardinia	Tuscany	Campania	Apulia	Latium	Sicily
1998-2012	1146 (271)	16 (4)	9	26	31	3	5	5	1	1
2013-2022	1299 (182)	19 (3)	14	26	43	5	7	5	1	1

Diet

GREECE

- Very coastal and repetitive trips daily
- Foraging trips during breeding season 20-50 nm, become larger when chicks larger
- Fish prey contributed to more than 50% of the diet of L. audouinii
- Insects constitute much less than 35% of the prey items
- *Boops boops* is the main fish species in LA diet (32-37%)
- Other species:
  - *Spicara* sp., *Chromis chromis*, and *Mugil* sp.: – natural prey and
  - *Trachurus* sp. & *Sardina pilchardus* - from fishing boats bycatch



The species seems to be feeding mainly from the epipelagic layer.

Do not depend on trawlers for food (some evidence in IT).

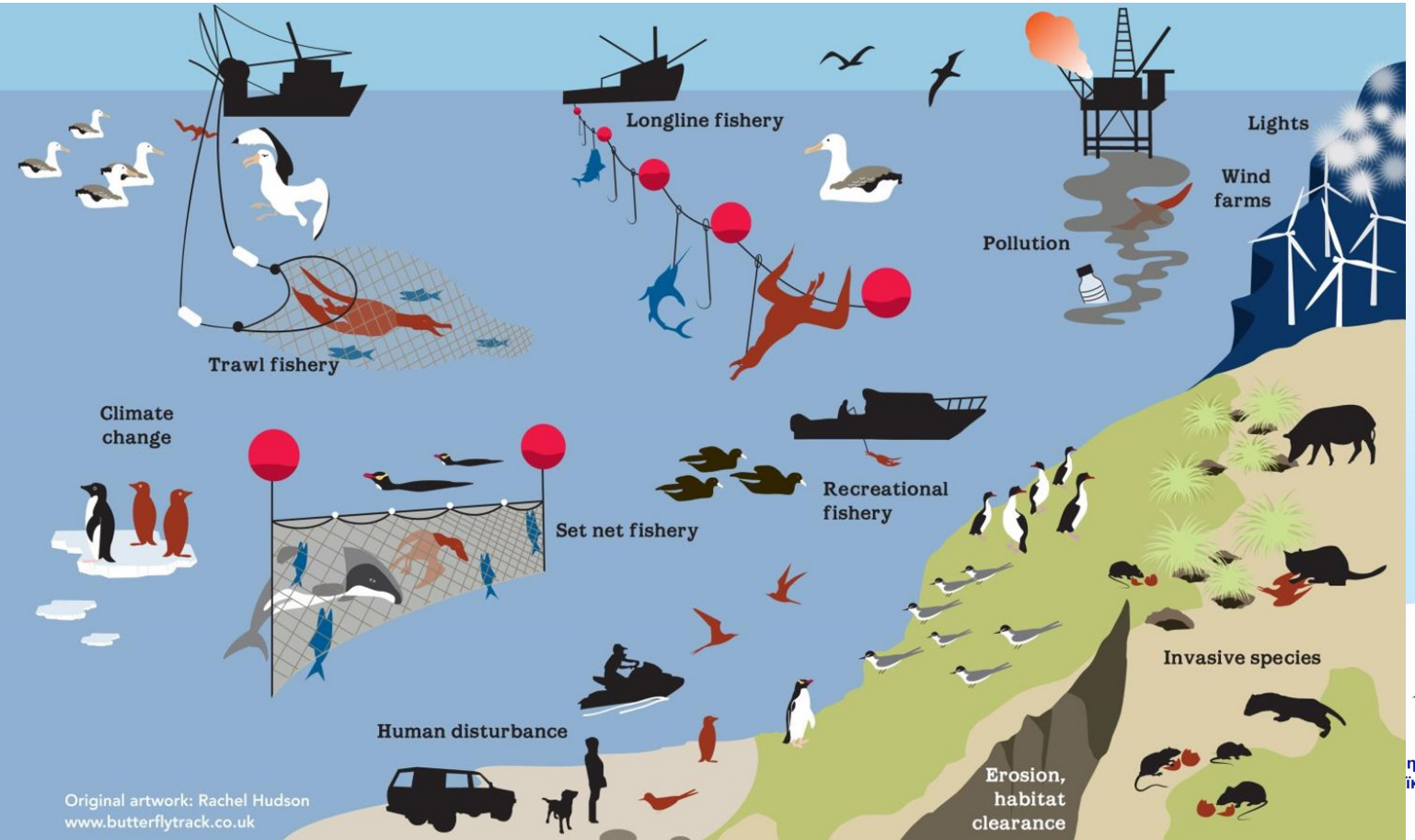
Competition behind these fishing boats was too great

Audouin's gulls do feed from the bycatch of purse seine fishing boats, mainly during the night.

Audouin's gulls feed often behind kaik fishing boats during the day

Με τη συγχρηματοδότηση της Ευρωπαϊκής Ένωσης

Threats



30% of seabird species are threatened (IUCN)

One of the most threatened groups

Cumulative impacts

Threats

Disturbance Use of islets (Tourism, Fishing, Stock-grazing, Military exercises)

Climate change / Islet habitat deterioration / Depletion of fish stocks

Predation (*F. peregrinus, C. corone, L. michahellis, B. ruffinus, H. fasciatus) and Wild Boar!!*

Bycatch in fishing gear (mainly demersal longlines & ghost recreational fishing gear)

Offshore Wind – displacement of foraging grounds & collision & barrier effect

Competition for nesting space

Kleptoparasitism and Competition with *Larus michahellis*

Pollution (through reduced incubation and hatching success, but also through direct mortality of adults, eggs and chicks)

Avian Influenza

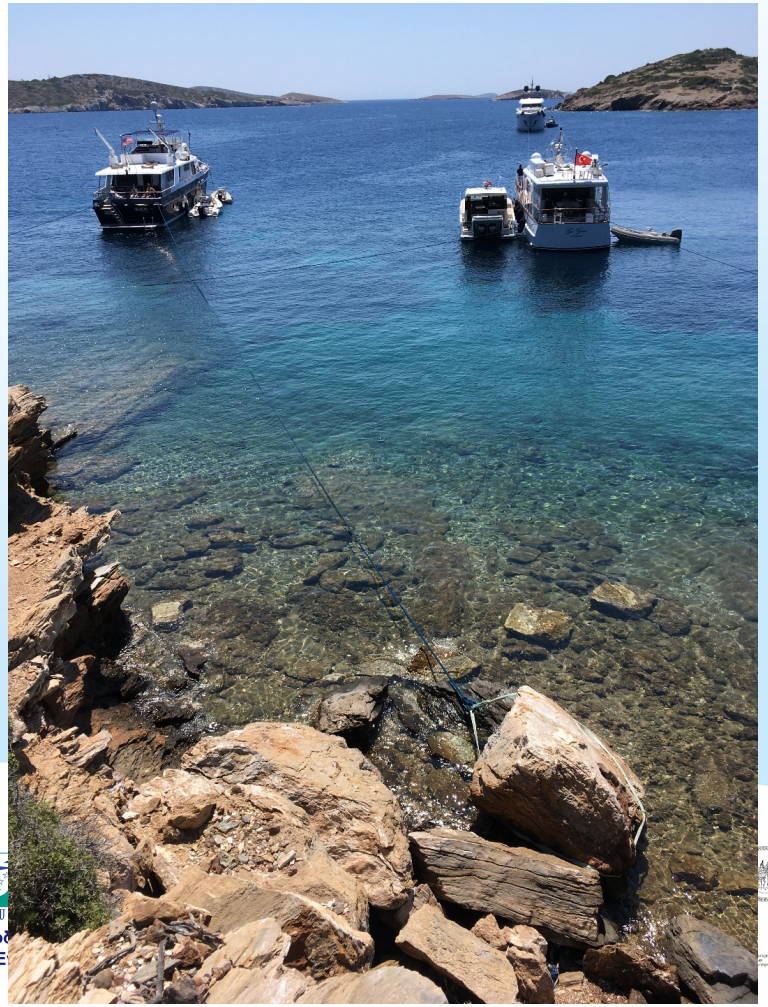


Με τη συγχρηματοδότηση της Ευρωπαϊκής Ένωσης

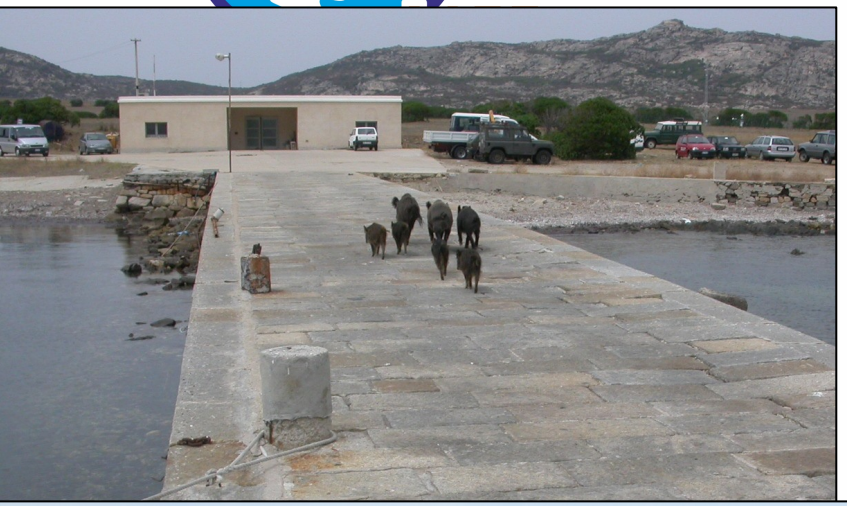
Threats - Disturbance

Disturbance by tourists, photographers, fishermen, livestock breeders, etc.





Threats – Predation from introduced species – wild boar





Large predators and ungulates







Threats – Competition/predation by Yellow-legged Gull

Maldiventre "free republic" (W Sardinia)

Early 2008: occupied by independentists who left in april 2008

Most YLG (ca. 3000) did not breed that year

The AG colony settled undisturbed in april, close to the camp of independentists



Conservation measures (seasonal)

- Colony protection by bans, fences, float chains, signposts, notice boards (Pros and Cons!)
- Identification of proper wording and placement (distance from the site)
- Proper timing according to site and threats
- The wildboar rolls



Threats - Bycatch in fishing gear

GR: Bycatch mainly in demersal longlines

Caught on hook during setting especially with fresh bait

Mainly during spring and summer

IT: bycatch mostly by recreational fishing close to colonies





Με τη συγχρηματοδότηση της Ευρωπαϊκής Ένωσης

Threats - Bycatch in fishing gear

Bycatch affects fishing activity and reduces fish catches, therefore there is great interest from LL fishers

Scary Bird Mitigation Measure Tested during setting (Paros, Syros & Rafina)

Testing also Time-Depth Recorders to see sinking rate

Place weights to line to increase sinking rate





Threats – Pollution by plastic

Chick/adult entanglement

Reduced development due to plastic ingestion









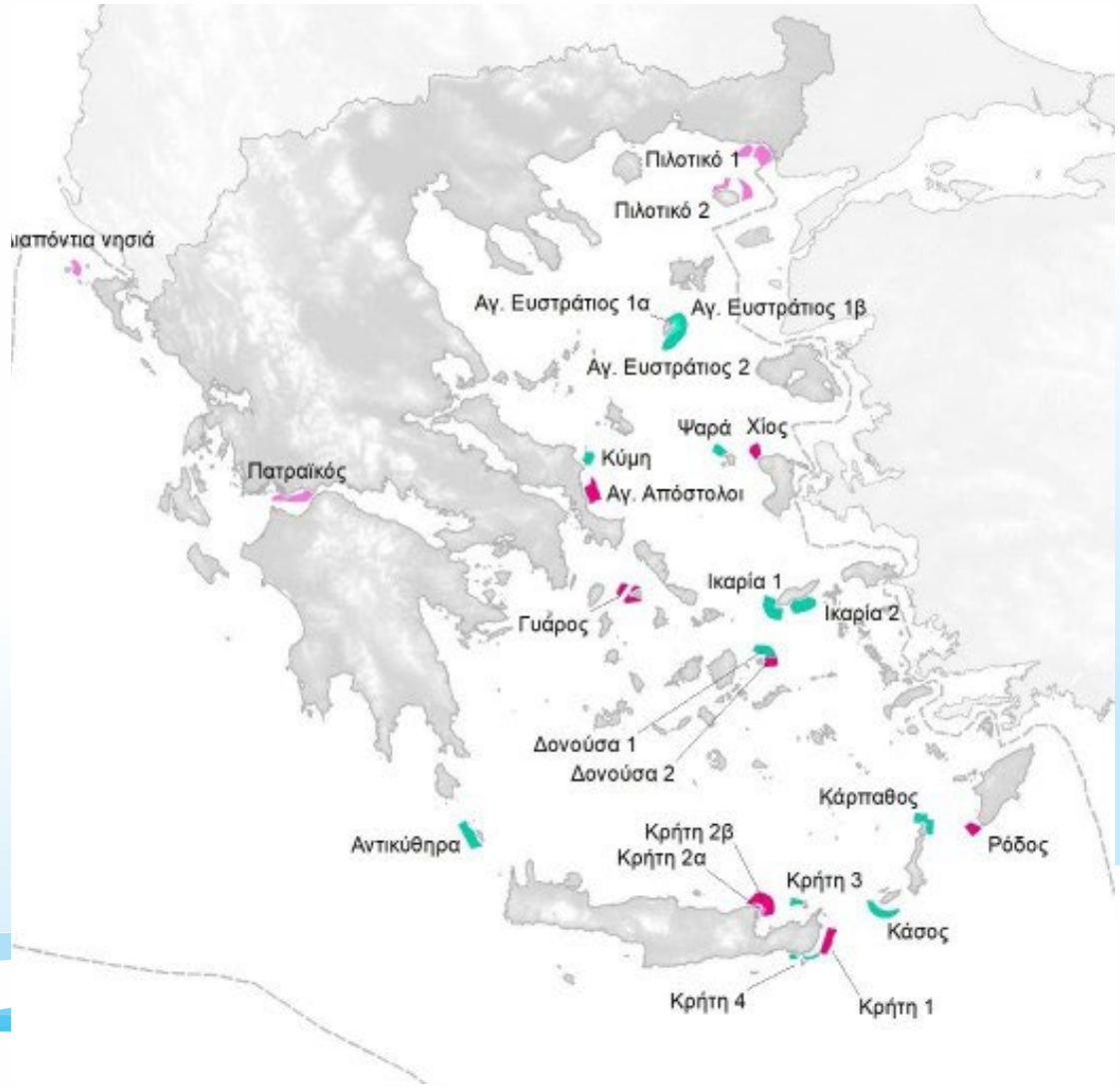
Threats – Off-Shore Energy plants

Unregulated development of wind (& floating solar!) plants & wrong planning





Threats – Off-Shore Energy plants



Thank you!



Με τη συγχρηματοδότηση της Ευρωπαϊκής Ένωσης