ALBATROS PROJECT *MONOGRAPH* *2012*

MEDITERRANEAN STORM-PETREL,

Hydrobates pelagicus melitensis

Updated state of knowledge & conservation of the nesting populations of the Mediterranean Small Islands

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CONTEXT

Mediterranean Small Islands Initiative:

The Conservatoire du Littoral has been coordinating, since 2005, an international programme for the promotion and assistance for the management of Mediterranean insular micro-spaces, known as the Pim Initiative for the Mediterranan Small Islands, which is financed by the Fonds Français pour l'Environnement Mondial (FFEM) (French Global Environment Facility) the Agence de l'Eau Rhone Méditerranée-Corse, and the city of Marseilles. The PIM Initiative is developing a mechanism for the exchange and sharing of knowledge which is necessary for the emergence of good management practices of exceptional spaces. The Albatross project has been set up within the framework of this programme to enhance the knowledge of Mediterranean nesting bird species. To update the knowledge on these species, the PIM Initiative has coordinated the preparation of monographs for each of the project species.

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SUMMARY

GENERAL DATA

Scientific name : *Hydrobates pelagicus melitensis*
French name : Océanite tempête de Méditerranée
Spanish name : Paiño europeo
Italian name : Uccello delle tempeste europeo


CEN PACA - Marseille

Protection Code :
Birds Directive: Annex I
Berne Convention : Annex II
IUCN code: Least Concern
Barcelona Convention: Annex II

DESCRIPTION OF SPECIES

The European Storm-petrel is the smallest European pelagic bird with a length of between 14 and 17 cm and a span of between 36 and 39 cm. Its weight is between 20 and 38 g with an average weight of 28 g.
Its plumage is almost completely black-brown and only its rump is white. A light coloured line can be seen on the upper part of the wing (after moulting) and a white or light coloured band can be clearly seen on the lower part of the wing and can be seen easily from a short distance. It has a square tail and its black feet do not protrude from under the tail. Its short black beak has tubular nostrils and the eyes are dark brown to black. Both sexes look alike, it is a monomorphic specie. However, the white band of the rump is wider in the females than the males (Albores-Barajas *et al.,* 2010).

Description of flight
Its flight is direct or fluttering close to the water similar to that of a bat and its wing beats alternate with short gliding moments.

Description of song
At sea the bird is silent but back in the colony is emits long « arrr-r-r-r-r-r-r… » Buzzing sound on it site and then stops with an abrupt « chikka ». During its nuptial flights it emits piercing « terr-CHICK » sounds.

Possible confusion with other species :
The European Storm -petrel is the only petrel with a white strip on the lower side of the wing. The Leach's Storm-petrel (*Oceanodroma leucorhoa*) is bigger with longer and more pointed wings, a bifurcated tail and the white strip of the rump is not as noticeable as that of the European Storm-petrel.

ECOLOGY AND HABITAT

The European Storm-petrel is to be found on rocky islands and islets where the breeders find refuge under rocks, in burrows or crevices in the cliff and for the rest of the year this pelagic species lives at sea.

This bird is in the colonies from the beginning of April to the end of October. The breeding adults return to the nesting sites at nightfall.

Mating takes place in April and a single egg is laid at the bottom of narrow cracks on the ground. The 28 mm eggs are entirely white. If the egg is lost then no re-laying is generally observed. (Even if some rare cases have been observed according to Minguez, 1997)

The Mediterranean Storm-petrel's diet is completely pelagic as it feeds at sea, mainly on fish (Albores-Barajas et al., 2011), whereas Atlantic subspecie mainly feed on krill. Zooplankton (anthozoans, copepods), crustaceans and small cephalopods are also part of the diet. (Snow & Perrins, 1998 ; Martin & Lorenzo, 2001). The main prey is *Gymnammodites cicerellus* , a pelagic fish. Storm Petrels dive for their prey and can reach up to 5 m in depth. They also make short foraging trips just outside the colony where they capture Opossum Shrimps *Misydacea*.

Moulting

Average onset of primary moult differed among areas, being earlier in southern than in northern areas. These different patterns of moult among areas are probably due to differences in breeding phenology. Primary moult start on average in Late June in Benidorm and one month later in Atlantic. (Arroyo *et al.,* 2004)

DISTRIBUTION OF POPULATION NUMBERS

The total world population number of the nesting European Storm-petrel is estimated at 430 000 – 510 000 pairs, over 95 % of which represent the nominal form and breed in the Atlantic islands, in the north European countries, (Denmark, United Kingdom, Irland, Iceland and Norway) and the Breton islands (France),the Spanish coasts and as far as the Canary islands (BirdLIFE international 2004).

The distribution of the European Storm-petrel throughout the Mediterranean Sea is still not well known, partly because of its particularly discrete nature, nesting sites which are difficult to access and its low numbers. The available census and monitoring data make it possible to estimate the known Mediterranean population at between 10 969-16 079 breeding pairs, with three main population cores identified in Malta, Sicily and the Balearic Islands (cf. following table).

COUNTRY	LOCATION		BREEDING STATUS	BREEDING PAIRS	YEAR	REFERENCE
ALGERIA	West Algeria	Habibas islands	Possible	Possible nesting	2000	Isenmann & Moali ,2000
SPAIN	Almeria (Andalusia)	I Terreros island	Certain	30	1999	Minguez & Paracuellos
	Murcia	Hormigas	Certain	100	2011	*Pers. comm.* Ana Sanz
		Grosa	Certain	10-20	2011	
		Palomas	Certain	200	2011	
		Cueva de lobos	Possible	N/A	2011	
		Total Murcia		310-320		
	Valencia	Benidorm island	Certain	400-600	2010	Sarzo B. D.G. Medio Natural, Conselleria de Medio Ambiente *pers. comm.* Mínguez E., 1994
		Columbretes island	Certain	>29	2010	Sarzo B. D.G. Medio Natural, Conselleria de Medio Ambiente *pers. comm.* Ana Sanz *pers. comm.*
		Isla Mitjana island	Certain	50-60	2010	Sarzo B. D.G. Medio Natural, Conselleria de Medio Ambiente *pers. comm.* Ana Sanz *pers. comm..*
		La Galera (Tabarca)	Certain	25	2010	Sarzo B. D.G. Medio Natural, Conselleria de Medio Ambiente *pers. comm.* Ana Sanz *pers. comm..*
		Total Valencia		*504-714*	2010	Sarzo B. D.G. Medio Natural, Conselleria de Medio Ambiente *pers. comm.*
	Balearic islands	Espartar and the other Islets of West Ibiza	Certain	1500-2500	2011	

		Natioanl Park of Cabrera	Certain	500-700	2011	Conselleria d'Agricultura Medi Ambienc i territory *Pers. comm.* Joan Mayol Serra
		Islets between Ibiza and Formentera	Certain	150-250	2011	
		Murada Island (Ibiza)	Certain	20-40	2011	
		Peripheric Islands of Majorca	Certain	20-50	2011	
		Minorque	Certain	10-20	2011	
		Total Balearic islands		*2200-3560*	2000	
	TOTAL SPAIN			**3044-4624**		
FRANCE	Riou archipelago (Bouches du Rhône)	Plane	Certain	?	1918	Lavauden & Mourgue 1918
			Certain	13-50	1977 à 1983	Walmsley 1983
			Extinct ?	0	1994	Cadiou B., 2004
		Congloués islands	Certain	?	1918	Lavauden & Mourgue 1918
			Extinct ?	0	1930	Guyot *et al., 1985*
		Riou	Certain	?	1918	Lavauden & Mourgue 1918
			Extinct ?	0	1930	Guyot *et al.,1985*
		Jarre	Certain	2[1]	2005-2006 2011	CEN PACA *pers. comm*.
	Frioul archipelago (Bouches du Rhône)	Pomègues[2]	Possible		1997-2000	Tranchant & Lascève 2009/ Cadiou B.,2004

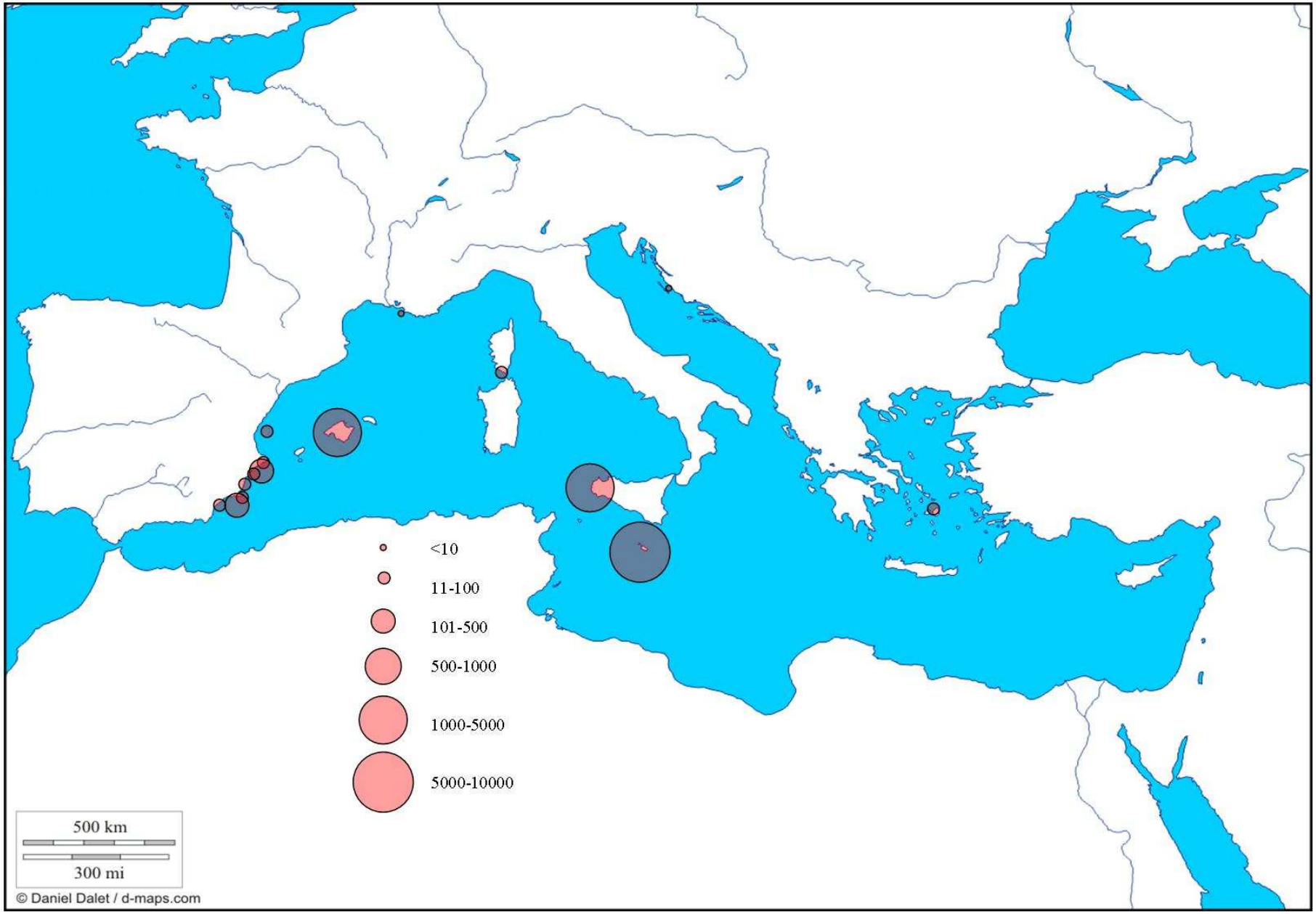
[1] Authenticated breeding in artificial nest and in natural burrow
[2] Individuals contacted during breeding period

	Total Bouches du Rhône			*<10*	2009-2010	Cadiou *et al.,* 2011
	Hyères archipelago (Var)	Ile du Levant[3] island	Extinct ?		1897	Guyot *et al.,* 1985
		Porquerolles[4] island	Extint ?		End 19ième s	Guyot *et al.,* 1985
		de la Gabinière [5] island	Possible		1997-2000	Tranchant & Lascève 2009
	South Corsica	Iles Cerbicales	Certain	?	1912	Jourdain 1912
		(Vacca)	Certain	60 to 120-150	1989	B. Cadiou 2004
		Cerbicales islands	Certain	?	1972	B. Lanza 1972
		(Toro)	Certain	10-15 to 20-30	1989	B. Cadiou 2004
		Lavezzi islands	Certain	6-15	1979	Papacotsia & Thibault
		Total South Corsica updated		*33-40*	2010	Cadiou *et al.,* 2011
	TOTAL FRANCE			**40-50**		
GREECE	Elba island	Prasouda Nisida island	Certain	?	1983	Akriotis & Handrinoa
	TOTAL GREECE			**10 - 30**	2004	BirdLife International
ITALY	Sicily	Marettimo island	Certain	2 500 – 3000	2011	Albores-Barajas *et al*., 2007, Soldatini *et. al* 2012
		Lampione islet	Certain	A few pairs	1970	E. Moltoni
	Sardinia	Foradada islet	Certain	<350	1988	Bacetti *et al.,* 1988/ Grussu & Poddesu 1988/
	Total Italy			**2850-3350**		
MALTA		Filfla island	Certain	8 000 à 10 000	1968	Sultana & Gauci
			Certain	5 000 à 8 000	2011	Borg & Sultana *pers. comm.*

[3] Adults and chicks gathered
[4] Eggs gathered
[5] Individuals contacted during the breeding period

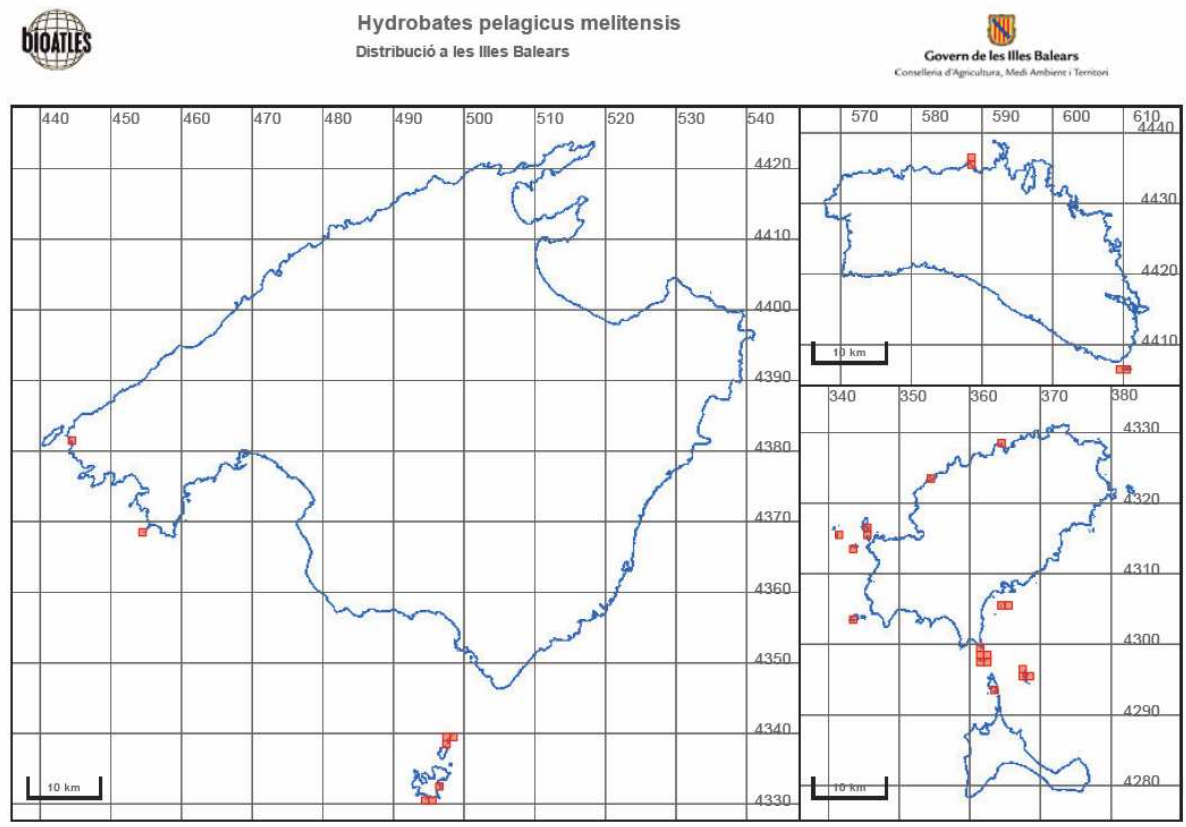
		Gozo island	Certain	?	1994	Borg & Sultana
			Certain	>25	2011	Borg & Sultana *pers. comm.*
	TOTAL MALTA			**5 025 à 8 025**		
MOROCCO			Probable	?	2003	Thévenot *et al.,*
TUNISIA		Galite Archipelago	Certain	?	2005	Isenmann et al.,
TOTAL				**10 969-16 079**		

- map outlining the Mediterranean breeding populations elaborated with the previous data is presented next page



Hydrobates pelagicus melitensis - Geographical distribution of the Mediterranean breeding populations—PIM 2012

In addition, here is presented a map with the localisation of Balearic colonies of the Mediterranean sub-species. (Data provided by the species protection department, Govern de les Illes Balears)



Balearic Islands, breeding pairs localization

Majorca and Cabrera (left map) Minorca (upper right) Ibiza and Formentera (lower right)

- **Breeding phenology :**

The breeding season is from April (formation of pairs) to September-October (fledging of the last juveniles).

The pair's single egg is laid between the second fortnight of April and the first week of July, with an optimum in May.

The chicks hatch between mid-June and the Middle of August after six weeks of incubation and are left alone in the nest when they are 1 week old and the adults return only at night to feed them. When the chicks are about 10 weeks old, they fly off and the last juveniles leave the colonies in October.

The majority of the birds does not seem to leave the Mediterranean basin during the internuptial period. (Hémery & d'Elbée 1985, Paterson 1997). Only a few were reported in Portugal.

	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct
Mating												
Egg laying												
Hatching												
Fledging												

- **Table of field work periods**

	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct
Prospection at sea												
Prospection on land												

The European Storm petrel is the most difficult seabird to observe. Only its characteristic smell and thorough inspections of the burrows make it possible to count them.

The census of the nesting sites of the European Storm -petrel is based on visual and olfactory inspection of the suitable crevices followed by a nocturnal inspection with the help of the bird call system.

Prospection at sea:

The search for nesting sites starts at sea from a boat. Powerful audio equipment with a separate and adjustable loudspeaker makes it possible to play the pre-recorded songs of the breeding European Storm -petrel and so this equipment on the boat is used to attract any individuals present.

The coastal strip is prospected at night at a very low speed and at a distance of between 1 and 5 meters from the land. Prospection takes place between April and July during periods of moonless nights, i.e. at an interval of approx. 10 days before and after the new moon nights.

All the contacts established make it possible to map the presence of the species in the prospected sector, thus determining the most favourable sites for nesting for petrels.

Prospection on land:

The census on land takes place between May and September which are periods of the greatest activity of the breeding individuals. This takes place in the sectors identified as the most suitable ones because of their topography (tumbled blocks, cracks and other material). The numbers are also counted when contact is made during prospections at sea.

The protocol is in two stages:

- a visit during the day to identify all the cavities with suitable characteristics for the nesting of the species. (Marking of nest can be very dangerous because it can attract the attention of visitors in this)

- a visit at night during which the bird call system is used to check the occupation of these cavities by breeding individuals. The songs are played so as to provoke a response from the breeder birds but only when there is no vocal activity on the site. If the bird call system does not evoke any reaction (many individuals do not respond to vocalization), the marked cavities are inspected visually with a lamp.

- **State of population dynamics**

In the absence of regular and coordinated censuses in the last thirty years, it is somewhat difficult to speculate about the demographic trends of the Mediterranean population of this storm petrel.
Even if a global diminution of the number of individuals is suspected to be declining (BirdLife 2012).

The main threats causing a reduction or disappearance of the Mediterranean colonies of Storm-petrel and affecting the whole Mediterranean population are:

- Direct predation by the black rat (*Rattus rattus*) preying directly on the eggs and the adults, this is probably the main cause of threat for the species, it seems that the two species cannot coexist together,
- Predation by the yellow-legged Gull *Larus michahellis*, (Oro *et al.,* 2005)
- Loss and degradation of the breeding habitats,
- Light and noise pollution,

Oil slicks and chemical pollution at sea can, to a lesser extent, affect the colonies of the European storm petrel. Nautical frequentation, tourism development which disturbs the colonies and increase the risk of exogenous species introduction, light pollution and variations in the abundance of food resources at sea are threats to be taken into account as well.

A particular case of predation occurred in the colonies of the Columbretes islands, the guards found the rests of the Storm-preyed by Eleonora's Falcon (*Falco eleonorae*) (Martinez-Abrain *et al*., 2005)
In the Balearic, Barn Owl (*Tyto alba*) is a predator of the specie, a few individuals can destroy a entire colony.

CONSERVATION CHALLENGES AND ACTIONS UNDERTAKEN HITHERTO ON MEDITERRANEAN SMALL ISLANDS

▪ Conservation challenges identified

- Better knowledge of distribution of the species
- Better knowledge of the biology and ecology of the species
- Knowledge of the state of health of the populations
- Better knowledge of the threats and their impacts
- Limit the causes of mortality
- Limit the factors impacting breeding success
- Limit the degradation of the habitat

▪ Actions undertaken so far in the insular environment

- In Italy, the colony of the Marettimo island has been monitored since 1985 with approx. 6 000 ringed individuals (Lo Valvo & Massa, 2000; Sanz Aguilar *et al*., 2009). The ecology and breeding biology of the species is studied in Marettimo main colony since 2007 (Albores-Barajas *et al.,* 2008, 2010, 2011). Besides, there is a continuing project on

vocalizations, stress response, chick growth and a continuous monitoring/ringing program every year.

- In France 2 LIFE project were carried out in Hyères Islands (2003-2007) and Marseilles Islands (2003-2007),

- In Spain, numerous activities for knowledge and conservation have been undertaken:

Monitoring and prospections of the colonies in Andalusia.

- Projects Life co- financed by the European Union: Valencia Community with actions in the Benidorm island (setting up rat invasion detectors and monitoring of the colony).

Installation of artificial nests in the Valencia community : 86 artificial nests installed in 1996 in the Benidorm island, 29% occupied in 2001,

Monitoring of individuals and nests of the Benidorm colony since 1993 (>2700 individuals ringed)

Control of specialized predators (Yellow-legged Gull) in Benidorm. (Sanz-Aguilar *et al., 2009*)

- Drafting of conservation plan (Murcia), and setting up a capture-recapture programme (Sanz-Aguilar *et al.,* 2010)

ZEPA Declaration (Murcia, Grosa island in 2000),

- Projects Life co -financed by the European Union: Valencia Community with actions in the Benidorm Island (setting up of rat invasion detectors and monitoring of the colony).

- Rat eradication of Dragonera island in 2011 by helicopter
- A big effort of ringing has been carried out in the Balearic (13000 individuals ringed from 1973 to 2010. Control was signals in Baleares, Medes islands, in Sardinia and in Morocco. Thus, the population is moving within the Western part of the Mediterranean and also to Atlantic.

CONSERVATION ACTIONS ADVOCATED FOR THE MEDITERRANEAN SMALL ISLANDS

▪ Enhance knowledge on the distribution of the species in the Mediterranean

- Prepare an inventory and map of the colonies for the whole Mediterranean :

Very little monitoring has been done in the Adriatic Sea, on the African coast and the eastern coast of the Mediterranean whereas the species can breed in considerable numbers on small islets. Numerous colonies are therefore still to be discovered in all the islands and islets of the Mediterranean.

- Enhance the transfer of experiences and exchanges between the conservation stakeholders concerned with the species (site managers, researchers).

- Continue monitoring or set up monitoring of the listed colonies :

Set up a harmonized and synchronized protocol for monitoring the populations (prospection of colonies, monitoring of breeding etc.), and enhance annual exchanges between the actors involved in the monitoring.

- **Eliminate or limit the impact of unfavourable factors on the maintenance of the colonies**

- Evaluate and limit the impact of introduced predators :

Monitor the evolution and impact of the predator populations on the colonies (black Rat, yellow-legged Gull …).
Limit or eliminate the introduced predatory species populations, if need be.

Limit the impact of human activities:

- Through awareness creation of the public and pleasure boaters as to the presence of this heritage species :
- By limiting human disturbance by limiting access to the breeding sites :
- By eliminating possible disturbances linked to the use of lighting or sources of noise nuisance close to the known breeding colonies.

- **Enhance the establishment of new breeding colonies on sites formerly occupied by the species**

- After eliminating the predators, artificial sites (nests) can be prepared and connected to bird call systems.
Potential natural sites are to be kept in a good state.

- **Identify feeding areas at sea**

The identification of these feeding areas and the setting up of measures to protect them are absolutely vital as well as the wintering areas

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