



# Black rat eradications on Italian islands: successes, obstacles to project implementation and perspectives

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# Main characters



## 1) Black rat (*Rattus rattus*)

- ✓ The most widespread mammal on Mediterranean islands



## 2) Yelkouan shearwater (*Puffinus yelkouan*)

- ✓ Impact on chicks and eggs

## 3) Scopoli's shearwater (*Calonectris diomedea*)

- ✓ Impact on chicks and eggs



## **Rat eradication actions have been founded either by Life Projects or protected areas**

### **LIFE PROJECTS:**

**Capraia e Isole Minori (LIFE97 NAT/IT/004153)**

**Isole di Toscana (LIFE04 NAT/000172)**

**Montecristo 2010 (LIFE08 NAT/IT/000353)**

**Pelagic birds (LIFE11 NAT/IT/00009)**

**Puffinus Tavolara (LIFE12 NAT/IT/000416)**

**Resto Con (LIFE13 NAT/IT/000471)**

**PonDerat (LIFE14 NAT/IT/000544)**

### **PROTECTED AREAS:**

**Marine Protected Area of Tavolara - Punta Coda Cavallo**

**Circeo National Park**



## **1999-2001: the first rat eradication projects**

**Black rat eradication on 7 small islands in the Tuscan Arcipelago National Park (area between 1 and 6.5 ha)**

**Rodenticide bait placed inside bait station (6-10 bait station/ha)**

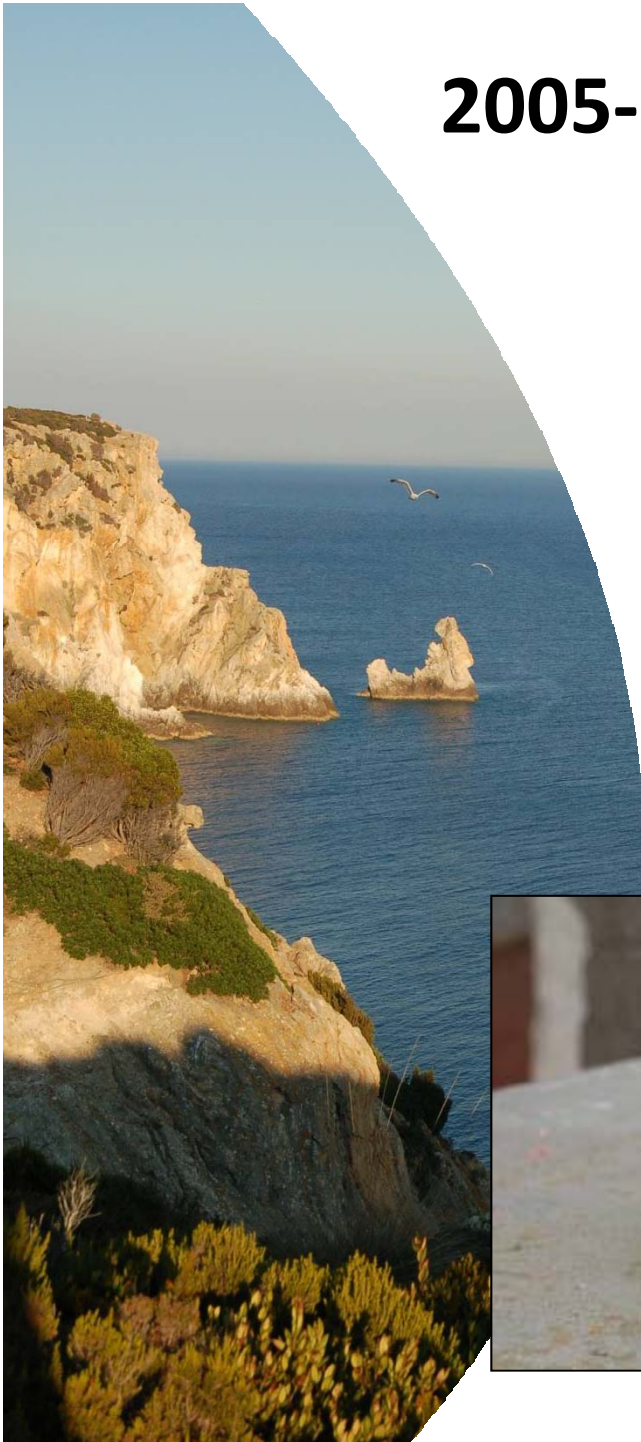
**Islands closer 350 m from mainland were reinvaded**



# 2005-2007: facing larger islands



- ✓ Rat eradication on Giannutri (239 ha, Tuscan Archipelago NP) and Zannone (104 ha, Circeo National Park)
- ✓ Bait inside bait stations, at an average density of 4 per ha
- ✓ No rat reinvasion
- ✓ Mixed distribution in Zannone, both aerial and ground-based



# 2008: the riddle of Molara (430 ha)



First aerial broadcast in the Mediterranean basin, reinvaded in 2010 (after 21 months)

The invaders were genetically different from “native” population

Too distant from mainland or rat-inhabited islands (swimming distance >1500 m)

Along with rats, rabbits also appeared

The hypothesis of a man-driven reinvasion (sabotage) is most likely



# 2010 to 2017: Montecristo, Linosa, Tavolara...

Main colonies of *C. diomedea* and *P. yelkouan*

Montecristo successful, Linosa to be confirmed, Tavolara next months

A positive outcome at Linosa and Tavolara may reverse the shearwater conservation status

Aerial distribution is crucial for Tavolara

but...





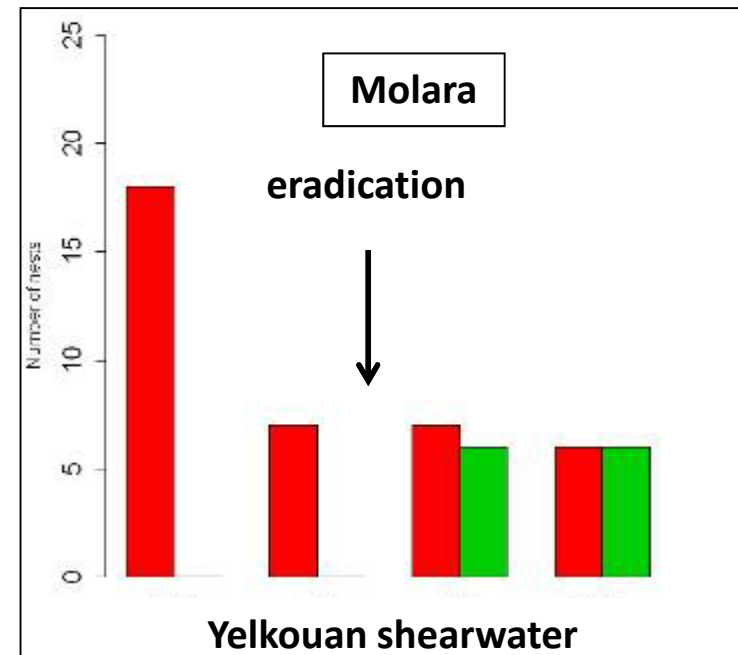
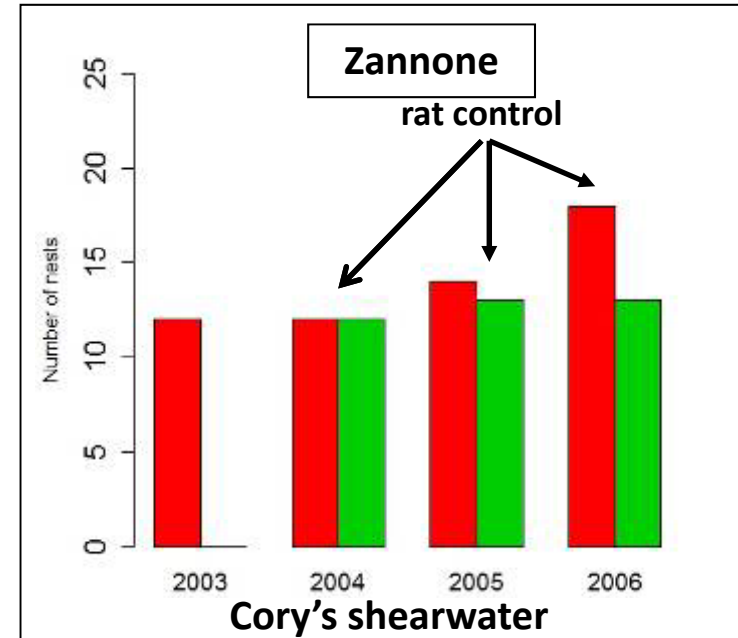
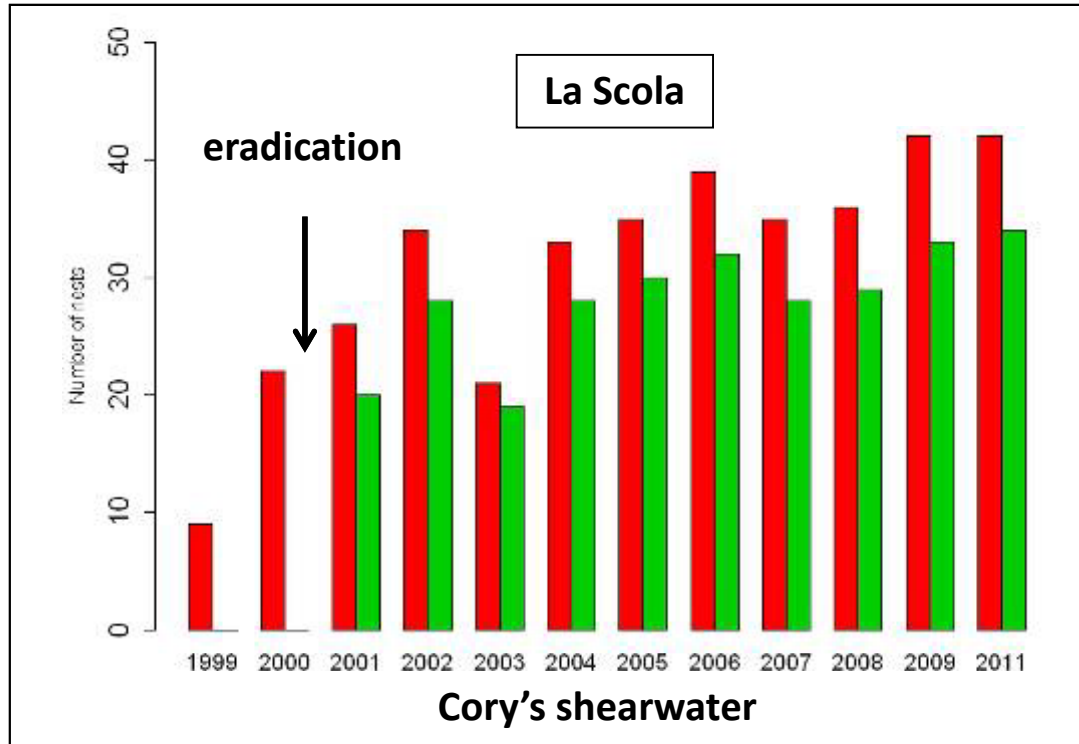
## The Tavolara dispute

- ✓ Tavolara is the main colony of Yelkouan shearwater at the global level
  - ✓ We asked for a derogation for aerial broadcast (according to art. 55 EU Biocides Regulation 528/2012)
  - ✓ We obtained permission after struggling for more than one year with Italian Health Ministry
  - Main argument: “The extinction of a species is not a valid reason for granting a derogation”
- There is a need for awareness raising also with regard to authorizing authorities, who do not know much about conservation biology





## Examples of benefits for target species



■ sampled      ■ successful

Shearwater nesting success before and after rat eradication

Data from: Baccetti et al. (2009)

## Impact on non-target species on Italian islands

SPECIES	ISLANDS	IMPACT
<i>Oryctolagus cuniculus</i>	Giannutri, I. Porto Ercole, Montecristo	No impact a G. and P.E, feral rabbits extinct at Montecristo (aerial baiting)
<i>Ovis musimon</i>	Zannone	No impact (population stable at 45 individuals)
<i>Podarcis muralis/sicula</i> , <i>Chalcides ocellatus</i>	12 islands	No impact (populations stable or increasing, no extinction)
<i>Hemidactylus turcicus</i> , <i>Tarentola mauritanica</i> , <i>Euleptes europaea</i>	9 islands	No impact (populations stable or increasing, no extinction)
<i>Hierophis viridiflavus</i> , <i>Vipera aspis</i>	4 islands	No impact
<i>Tyto alba</i>	Giannutri, Molara	Extinct? (1-2 pairs per island)
<i>Falco peregrinus</i>	all islands	No change in the number of nesting pairs
<i>Corvus corax</i>	4 islands	No change in the number of nesting pairs, short term impact at Montecristo



# 2017-2018: dealing with inhabited islands



**Ventotene (700 residents) and Linosa (500), problems for:**

**Impact on pets (cats and dogs)**

- **First bait administrations with bromadiolone or difenacoum (less toxic), last with brodifacoum**

**Risks for snails-eaters**

- **Snails collection must be forbidden**

**Access to private properties**

- **Important to communicate properly in meetings and social networks**

**Biosecurity...**



# Estimating socioeconomic benefits from rat removal

Ventotene hosts 700 residents, eradication is planned in early 2018

Monetary costs associated to rats have been estimated to about 10.000 € per year

5.000 €: costs for private owners rodent control

3.000 €: cost for municipality rodent control

2.000 €: damage from rats to poultry and cultivations

Other aspects to be considered:

Environmental impact: 250 kg/year of rodenticide placed without bait stations

Zoonotic risk: analyses on rats for pathogens and parasites (still ongoing)

Everyone in Ventotene is in favor of rat eradication



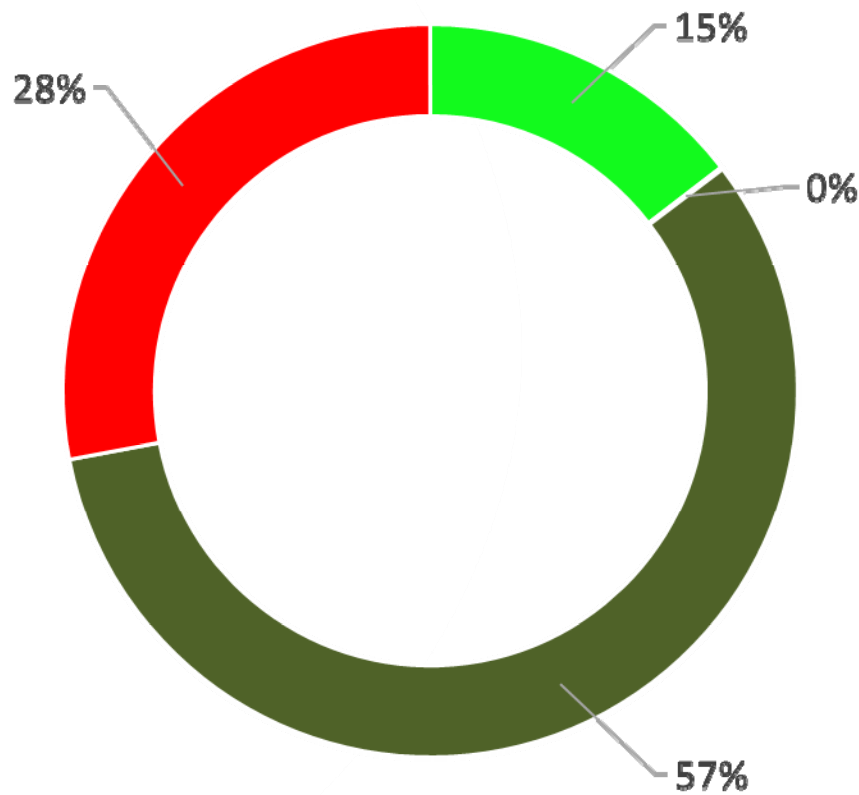
## Outcome of priority list for rat eradication on Italian islands based on cost/effeciveness

Rank	Island	Region	Area (ha)	
1	TAVOLARA	Sardinia	602,0	Eradication planned in 2017
2	PALMAROLA	Latium	125,1	Eradication planned in 2018
3	BARRETTINI	Sardinia	10,3	
4	MONTECRISTO	Tuscany	1071,7	Eradicated 2012
5	GIANNUTRI	Tuscany	239,5	Eradicated 2006
6	ZANNONE	Latium	104,7	Eradicated 2007
7	Soffi group	Sardina	4 islands	
8	SANTO STEFANO	Latium	31,0	Eradication not necessary (rats gone extinct!)
9	MOLARA	Sardinia	347,9	Eradicated, reinvaded, new eradication?
10	MORTORIO	Sardinia	55,7	
11	LA VACCA	Sardinia	9,1	
12	S. Maria group	Sardinia	14 islands	
13	PIANOSA-LA SCOLA	Tuscany	2 islands	Eradicated in La Scola (2001), ongoing in Pianosa (2017)
14	ROSSA DI TEULADA	Sardinia	10,5	
15	SPARGI	Sardinia	421,9	
16	SERPENTARA	Sardinia	31,3	
17	CAVOLI	Sardinia	42,1	
18	Corcelli group	Sardinia	3 islands	

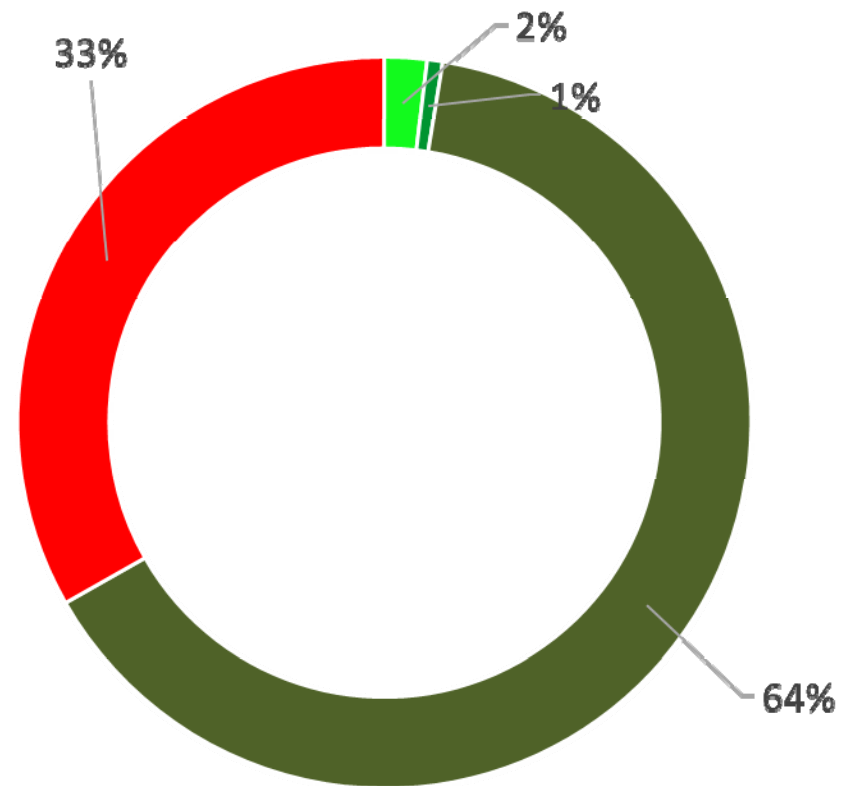
From: Capizzi, Baccetti, Sposimo (2010) Biol. Cons.

% of pairs on Italian islands with respect to rats presence

*Puffinus yelkouan*  
(Italian population 6700 pairs)



*Calonectris diomedea*  
(Italian Population 15600 pairs)



■ eradicated   ■ to be confirmed   ■ planned   ■ rats present

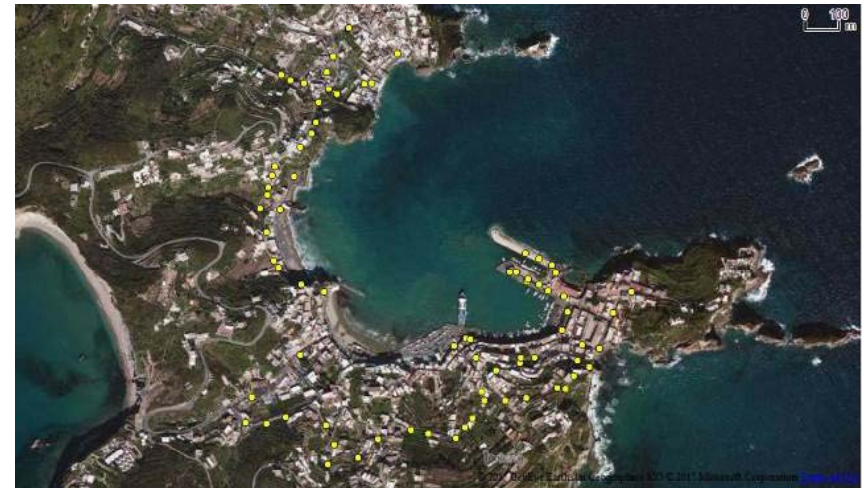


## Biosecurity

Early warning system and rapid response (EU Reg. 1143/2014)

Best solution: bait stations on ferries and in harbours

Problems with permanent baiting, no longer allowed in EU (in Italy especially)





## Who is doing the job?

In the Ponziante Islands, Latium Region is doing the job with its own personnel (Technicals, rangers)

A good solution for Early warning system and rapid response (EU Reg. 1143/2014)







## 19 years of lessons

- ✓ There is a need for awareness raising also with regard to authorizing authorities, who do not know much about conservation biology
- ✓ Highlighting socioeconomic benefits from rat removal increases consensus towards conservation projects
- ✓ Although brodifacoum is more effective in rat eradication, other active ingredients may be considered when dealing with inhabited island, where pets might be affected by eradication activities
- ✓ Long term biosecurity and human resources devoted to continuous awareness raising and sensibilization is crucial to avoid voluntary release of rats in rat-free islands





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Thanks for your attention..





...and thanks for your help!

