Density and distribution patterns of the endangered species *Pinna nobilis* within the harbour bay of Favignana (Egadi Islands MPA)

The fan shell *P. nobilis* (Linnaeus, 1758) is the largest marine bivalve in the Mediterranean Sea which acts as ecosystem engineer, offering an adequate substratum to several associated benthic species. *P. nobilis* is threatened by the reduction and loss of its natural habitat and by increased anthropogenic inputs into coastal waters. The knowledge on the population of this species are scarce, especially as concerns Sicily and its coasts. This study focused on the density of population, spatial distribution, level of burial and orientation of the population of *P. nobilis* in the harbour area of Favignana island (western coast of Sicily, Italy). The fan shell surveys were carried out by SCUBA diving using a 50m-transect line perpendicular to the coastline. For each *P. nobilis* censused, maximum (W) width, minimum width (w) and unburied length (UL) were measured; shell orientation (Or) was determined using an underwater compass and considering the magnitude of the angle formed by the vector and the magnetic north. The specimen status (dead or alive), the depth (by using the electronic depth meter of a diving computer) were recorded. In addition, the geographical coordinates were marked for each individual along the transect by means of a Global Positioning System (GPS). Total shell height (HT) was estimated using a formula considered suitable for the populations of this studied area. The density of *P. nobilis* was ±11 ind. 100m^2, the total height (HT) and the maximum width (W) of the shells was 33 cm and 13,6 cm respectively. In the aim of the "MPA of Egadi Islands" to confirm the need of a new management to protect the biodiversity of the harbour area, more conservation measures are necessary in order to improve the preservation of this endangered species.

PeerJ PrePrints | https://doi.org/10.7287/peerj.preprints.1552v2 | CC-BY 4.0 Open Access | rec: 10 Dec 2015, publ: 10 Dec 2015

Authors:

1) Riccardo D'Agostaro (corrisponding author)

Grant holder,
Department of Earth and Marine Sciences, University of Palermo, Via Archirafi, 28 90123 Palermo (Italy)
e-mail: riccardo_dagostaro@yahoo.it

2) Stefano Donati, PhD

Executive manager,
Egadi Islands Marine Protected Area, Piazza Europa, 91023 Favignana (Italy)
e-mail: direttore@ampisoleegadi.it

3) Prof. Renato Chemello, PhD

Department of Earth and Marine Sciences, University of Palermo, Via Archirafi, 28 90123 Palermo (Italy)
e-mail: renato.chemello@unipa.it

Density and distribution patterns of the endangered species *Pinna nobilis* within the harbour bay of Favignana (Egadi Islands MPA)

The fan shell *P. nobilis* (Linnaeus, 1758) is the largest marine bivalve in the Mediterranean Sea which acts as ecosystem engineer, offering an adequate substratum to several associated benthic species.
P. nobilis is threatened by the reduction and loss of its natural habitat and by increased anthropogenic inputs into coastal waters. The knowledge on the population of this species are scarce, especially as concerns Sicily and its coasts.
This study focused on the density of population, spatial distribution, level of burial and orientation of the population of *P. nobilis* in the harbour area of Favignana island (western coast of Sicily, Italy).
The fan shell surveys were carried out by SCUBA diving using a 50m-transect line perpendicular to the coastline. For each *P. nobilis* censused, maximum (W) width, minimum width (w) and unburied length (UL) were measured; shell orientation (Or) was determined using an underwater compass and considering the magnitude of the angle formed by the vector and the magnetic north. The specimen status (dead or alive), the depth (by using the electronic depth meter of a diving computer) were recorded. In addition, the geographical coordinates were marked for each individual along the transect by means of a Global Positioning System (GPS). Total shell height (HT) was estimated using a formula considered suitable for the populations of this studied area.
The density of *P. nobilis* was ±11 ind. $100m^2$, the total height (HT) and the maximum width (W) of the shells was 33 cm and 13,6 cm respectively.
In the aim of the "MPA of Egadi Islands" to confirm the need of a new management to protect the biodiversity of the harbour area, more conservation measures are necessary in order to improve the preservation of this endangered species.