



# NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),  
Proposed Sites for Community Importance (pSCI),  
Sites of Community Importance (SCI) and  
for Special Areas of Conservation (SAC)

SITE IT5160023  
SITENAME Calafuria - Area terrestre e marina

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## 1. SITE IDENTIFICATION

1.1 Type	1.2 Site code	<a href="#">Back to top</a>
B	IT5160023	

### 1.3 Site name

Calafuria - Area terrestre e marina
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1.4 First Compilation date	1.5 Update date
2020-05	2020-12

### 1.6 Respondent:

Name/Organisation:	Regione Toscana - Direzione Ambiente ed Energia - Settore Tutela della Natura e del Mare
Address:	Via di Novoli, 26 - 50127 Firenze
Email:	parchiareeprotette_biodiversita@regione.toscana.it

### 1.7 Site indication and designation / classification dates

Date site classified as SPA:	0000-00
National legal reference of SPA designation	No data
Date site proposed as SCI:	2020-12
Date site confirmed as SCI:	No data
Date site designated as SAC:	No data
National legal reference of SAC designation:	No data

## 2. SITE LOCATION

### 2.1 Site-centre location [decimal degrees]:

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Longitude Latitude  
10.3451 43.4722

2.2 Area [ha]: 2.3 Marine area [%]

2.4 Sitelength [km]:

26.93

2.5 Administrative region code and name

NUTS level 2 code	Region Name
ITE1	Toscana

2.6 Biogeographical Region(s)

Mediterranean (100.0  
%)

3. ECOLOGICAL INFORMATION

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3.1 Habitat types present on the site and assessment for them

Annex I Habitat types						Site assessment			
Code	PF	NP	Cover [ha]	Cave [number]	Data quality	A B C D	A B C		
						Representativity	Relative Surface	Conservation	Global
1120 <i>B</i>			60.0		G	B	C	B	B
1170 <i>B</i>			120.0		G	B	C	B	B
1240 <i>B</i>			3.7		G	A	C	A	A
1410 <i>B</i>			0.1		G	C	C	B	C
1420 <i>B</i>			0.1		G	C	C	B	C
3130 <i>B</i>			0.5		G	C	C	B	C
3280 <i>B</i>			4.6		G	B	C	B	B
5210 <i>B</i>			1.07		G	B	C	A	B
5320 <i>B</i>			1.2		G	A	C	B	B
8330 <i>B</i>			0.001	2	G	C	C	B	B
9340 <i>B</i>			216.82		G	A	C	A	A
9540 <i>B</i>			127.25		G	A	C	A	A

- **PF:** for the habitat types that can have a non-priority as well as a priority form (6210, 7130, 9430) enter "X" in the column PF to indicate the priority form.
- **NP:** in case that a habitat type no longer exists in the site enter: x (optional)
- **Cover:** decimal values can be entered
- **Caves:** for habitat types 8310, 8330 (caves) enter the number of caves if estimated surface is not available.
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation)

3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species					Population in the site						Site assessment			
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D. qual.	A B C D	A B C		
						Min	Max				Pop.	Con.	Iso.	Glo.
B	A224	<a href="#">Caprimulgus europaeus</a>			p				P	DD	D			
R	1224	<a href="#">Caretta caretta</a>			p				P	DD	D			
B	A342	<a href="#">Garrulus glandarius</a>			p				P	DD	D			



P		<a href="#">Halimione portulacoides</a>						V						X
P		<a href="#">Helichrysum litoreum</a>						R						X
P		<a href="#">Jacobaea maritima ssp. maritima</a>						R						X
P		<a href="#">Juniperus macrocarpa</a>						R						X
P		<a href="#">Juniperus phoenicea ssp. turbinata</a>						R						X
P		<a href="#">Laurus nobilis</a>						R						X
P		<a href="#">Limonium multiforme</a>						R						X
B	A066	<a href="#">Melanitta fusca</a>						R						X
P		<a href="#">Parmena solieri lanzai</a>						P						X
B	A621	<a href="#">Passer italiae</a>						P			X			
P		<a href="#">Periploca graeca</a>						R						X
P		<a href="#">Polygala flavescens</a>						C						X
I		<a href="#">Potamon fluviatile</a>						R						X
A	1209	<a href="#">Rana dalmatina</a>						P			X			
B	A317	<a href="#">Regulus regulus</a>						P			X			
P		<a href="#">Scabiosa uniseta</a>						R						X
P		<a href="#">Silene badaroi</a>						V						X
P		<a href="#">Spergularia salina</a>						R						X
P		<a href="#">Tanacetum corymbosum ssp. achilleae</a>						R						X
P		<a href="#">Veronica barrelieri</a>						R						X
P		<a href="#">Vitis vinifera ssp. sylvestris</a>						R						X

- **Group:** A = Amphibians, B = Birds, F = Fish, Fu = Fungi, I = Invertebrates, L = Lichens, M = Mammals, P = Plants, R = Reptiles
- **CODE:** for Birds, Annex IV and V species the code as provided in the reference portal should be used in addition to the scientific name
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Unit:** i = individuals, p = pairs or other units according to the standard list of population units and codes in accordance with Article 12 and 17 reporting, (see [reference portal](#))
- **Cat.:** Abundance categories: C = common, R = rare, V = very rare, P = present
- **Motivation categories:** **IV, V:** Annex Species (Habitats Directive), **A:** National Red List data; **B:** Endemics; **C:** International Conventions; **D:** other reasons

## 4. SITE DESCRIPTION

### 4.1 General site character

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Habitat class	% Cover
N08	26.0
N17	16.4
N03	0.5
N01	27.5
N06	0.6
N18	28.0
N05	1.0
Total Habitat Cover	100

### 4.2 Quality and importance

La maggiore peculiarità del Sito considerato riguarda la popolazione del corallo rosso presente a soli 14 m di profondità

### 4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i o b]
H	F02.01		i
L	M01.03		i
L	B02.05		i
L	G01.07		i
M	G05.01		i
M	I01		i
L	M01.01		i
L	F03.01		i
L	M01.02		i
M	G01.03.02		i
L	B02.03		i
L	I01		i
L	G05.04		i
M	G01.04.02		i
H	F02.03.03		i
L	D01.01		i
L	J02.05.02		i
L	J02.06.01		i
H	G01.04.03		i

Rank: H = high, M = medium, L = low

Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,

T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions

i = inside, o = outside, b = both

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside /outside [i o b]

### 4.4 Ownership (optional)

### 4.5 Documentation

ABBIATI M., BIANCHI C.N., CASTELLI A. 1987. Polychaete vertical zonation along a littoral cliff in the Western Mediterranean. PSZNI Marine Ecology, 8: 33

ABBIATI, M., M. VIRGILIO, J. QUERCI. 1996. Spatial and temporal variability of species distribution on a sublittoral rocky cliff in the Ligurian Sea. S. It. E. Atti 17: 337-340.

AIROLDI L (1998) Roles of disturbance, sediment stress and substratum retention on spatial dominance in algal turf. Ecology 79: 2759-2770

AIROLDI L (2000a) Responses of algae with different life histories to temporal and spatial variability of disturbance in subtidal reefs. , Marine Ecology-Progress Series 195: 81-92

AIROLDI L (2000b) Effects of disturbance, life-history and overgrowth on coexistence of algal crusts and turfs. Ecology 8: 798-814

AIROLDI L, CINELLI F (1997) Effect of sedimentation on subtidal macroalgal assemblages: an experimental study from a Mediterranean rocky shore. Journal Of Experimental Marine Biology And Ecology 215: 271-290

AIROLDI L, VIRGILIO M (1998) Response of turf-forming algae to spatial variations in the deposition of sediments. , Marine Ecology-Progress Series, 165: 271-282

AIROLDI, L., F. PADULA, F. RINDI, F. CINELLI. 1994. Modificazioni e fenologia riproduttiva di un popolamento algale fotofilo del litorale livornese. Biol. Mar. Medit. 1: 225

AIROLDI, L., F. RINDI AND F. CINELLI. (1995). Structure seasonal dynamics and reproductive phenology of a filamentous turf assemblage on a sediment influenced, rocky subtidal shore. Botany. Mar. 38: 227-237.

AIROLDI, L., M. FABIANO AND F. CINELLI. (1996). Sediment deposition and movement over a turf assemblage in a shallow rocky coastal area of the Ligurian Sea. , Marine Ecology-Progress Series 133: 241-251.

BALATA, D., PIAZZI, L., CINELLI, F. (2004). A comparison among macroalgal assemblages in areas invaded by *Caulerpa taxifolia* and *C. racemosa* on subtidal Mediterranean reefs. PSZNI Marine Ecology, 25: 1-13.

BALATA D., ACUNTO S., CINELLI F., 2006 - Spatio-temporal variability and vertical distribution of a low rocky subtidal assemblage in the north-west Mediterranean. Estuarine Coastal and Shelf Science 67: 553-561.

BALATA D., NESTI U., PIAZZI L., CINELLI F. 2007. Patterns of spatial variability of seagrass epiphytes in the north-western Mediterranean Sea. Marine Biology, 151: 2025-2035.

BALATA D., BERTOCCI I., PIAZZI L., NESTI U. 2008. Comparison between epiphyte assemblages of leaves and rhizomes of the seagrass *Posidonia oceanica* subjected to different levels of anthropogenic eutrophication. Estuarine Coastal and Shelf Sciences. 79: 533-540.

BALESTRI E., CINELLI F., LARDICCI C., 2003. Spatial variation in *Posidonia oceanica* structural, morphological and dynamic features in a northwestern Mediterranean coastal area: a multi-scale analysis, Marine Ecology Progress Series. 250: 51-60

BENEDETTI-CECCHI L, (2000). Priority effects, taxonomic resolution, and the prediction of variable patterns of colonization of algae in littoral rock pools. Oecologia 123: 265-274.

BENEDETTI-CECCHI L, (2000). Predicting direct and indirect interactions during succession in a midlittoral rocky shore assemblage, Ecological Monographs, 70: 45-72.

BENEDETTI-CECCHI L. (2001). Variability in abundance of algae and invertebrates at different spatial scales on rocky sea shores, Marine Ecology-Progress Series, 215: 79-93.

BENEDETTI-CECCHI L., CINELLI F. (1992). Canopy removal experiments in *Cystoseira*-dominated rockpools from the Western coast of the Mediterranean (Ligurian Sea), Journal Of Experimental Marine Biology And Ecolog., 155: 69-83

BENEDETTI-CECCHI L., CINELLI F. (1992) Effects

of canopy cover, herbivores and substratum type on patterns of *Cystoseira* spp. Settlement and recruitment in littoral rockpools, *Marine Ecology-Progress Series*, 90: 183-191. BENEDETTI-CECCHI L., CINELLI F. (1993) Seasonality and Reproductive Phenology of Algae Inhabiting Littoral Pools in the Western Mediterranean, *Marine Ecology*, 14: 147-157. BENEDETTI-CECCHI L., CINELLI F. (1994). Recovery of patches in an assemblage of geniculate coralline algae: variability at different successional stages, *Marine Ecology-Progress Series*, 110: 9-18. BENEDETTI-CECCHI L., CINELLI F. (1995). Habitat heterogeneity, sea urchin grazing and the distribution of algae in littoral rock pools on the west coast of Italy (western Mediterranean), *Marine Ecology-Progress Series*, 126: 203-212. BENEDETTI-CECCHI L., CINELLI F., (1996). Patterns of disturbance and recovery in littoral rock pools: nonhierarchical competition and spatial variability in secondary succession., *Marine Ecology-Progress Series*, 135: 145-161. BENEDETTI-CECCHI L., CINELLI F., 1997. Confounding in field experiments: direct and indirect effects of artifacts due to the manipulation of limpets and macroalgae. *Journal Of Experimental Marine Biology And Ecology* 209: 171-184. BENEDETTI-CECCHI L., CINELLI L., (2000). Priority effects, taxonomic resolution, and the prediction of variable patterns of succession in littoral rock pools, *Ecologia*, 123: 265-274. BENEDETTI-CECCHI L., ACUNTO S., NUTI S., CINELLI F., 1995. Modalità di distribuzione di *Cystoseira compressa* (Fucales, Focophyceae) in un ambiente di transizione: un'analisi sperimentale nella frangia infralitorale a sud di Livorno. *S.It.E. Atti*, 16: 177-179. BENEDETTI-CECCHI L., NUTI S., CINELLI F., (1996). Analysis of spatial and temporal variability in interactions among algae, limpets and mussels, in low shore habitats on the west coast of Italy, *Marine Ecology Progress Series*, 144: 87-96. BENEDETTI-CECCHI L., BULLERI F., CINELLI F. (1998). Density dependent foraging in two species of sea urchins in shallow subtidal reefs on the west coast of Italy (western Mediterranean), *Marine Ecology-Progress Series*, 163: 203-212. BENEDETTI-CECCHI L., MENCONI M., CINELLI F. (1999). Pre-emption of the substratum and the maintenance of spatial pattern on a rocky shore in the northwest Mediterranean, *Marine Ecology-Progress Series*, 181: 13. BENEDETTI-CECCHI L., ACUNTO S., BULLERI F., CINELLI F. (2000). Population ecology of the barnacle, *Chthamalus stellatus* (Poli), in the northwest Mediterranean, *Marine Ecology-Progress Series*, 198: 157-170. BENEDETTI-CECCHI L., BULLERI F., CINELLI F. 2000. The interplay of physical and biological factors in maintaining mid-shore and low-shore assemblages on rocky coasts in the northwest Mediterranean. *Oecologia* 123: 406-417. BENEDETTI-CECCHI L., PANNACCIULLI F., BULLERI F., MOSCHELLA P., AIROLDI L., RELINI G., CINELLI F. (2001) Predicting the consequences of anthropogenic disturbance: large-scale effects of loss of canopy algae on rocky shores, *Marine Ecology-Progress Series*, 214: 137-150. BENEDETTI-CECCHI L., MAGGI E., BERTOCCI I., VASELLI E., MICHELI F., OSIO G. C., CINELLI F. (2003). Variation in rocky shore assemblages in the north-western Mediterranean: contrasts between islands and the mainland, *Journal Of Experimental Marine Biology And Ecology*, 293: 193-215. BENEDETTI-CECCHI L., BERTOCCI I., VASELLI S., MAGGI E. (2005). Determinants of spatial pattern at different scales in two populations of the marine alga, *Rissoella verruculosa* (Bertoloni) J. Agardh., *Marine Ecology-Progress Series*, 293: 37-47. BENEDETTI-CECCHI L., VASELLI S., MAGGI E., BERTOCCI I. (2005). Interactive effects of spatial variance and mean intensity of grazing on algal cover in rock pools., *Ecology*, 86: 2212-2222. BENEDETTI CECCHI L., BERTOCCI I., VASELLI S., MAGGI E. (2006). Temporal variance reverses the ecological impact of high mean intensity of stress in climate change experiments, *Ecology*, 87: 24-89. BENEDETTI CECCHI L., BERTOCCI I., VASELLI S., MAGGI E. (2006). Morphological plasticity and variable spatial patterns in different populations of the red alga *Rissoella verruculosa*, *Marine Ecology Progress Series*, 315: 87-98. BERTOCCI I., MAGGI E., VASELLI S., BENEDETTI-CECCHI L. (2005). Contrasting effects of mean intensity and temporal variation of disturbance on assemblages of rocky seashores., *Ecology*, 86: 2061-2067. BERTOCCI IACOPO, VASELLI S., MAGGI E., BENEDETTI CECCHI L. (2007). Changes in temporal variance of rocky shore organisms in response to the manipulation of mean intensity and temporal variability of aerial exposure., *Marine Ecology Progress Series*, 338: 11-20. BULLERI FABIO (2006). Duration of overgrowth affects survival of encrusting coralline algae, *Marine Ecology Progress Series*, 321: 79-85. BULLERI F., BERTOCCI I., MICHELI F. (2002). Interplay of encrusting coralline algae and sea urchins in maintaining alternative habitats, *Marine Ecology Progress Series*, 243: 101-109. BULLERI F., BENEDETTI CECCHI L. (2006). Mechanisms of recovery and resilience of different components of mosaics of habitats on shallow rocky reefs, *Oecologia*, 149: 482-492. BULLERI F., BENEDETTI-CECCHI L., CINELLI F. (1999). Grazing by the sea urchins *Arbacia lixula* L. and *Paracentrotus lividus* Lam. in the northwest Mediterranean, *Journal Of Experimental Marine Biology And Ecology*, 241: 81. CECCHERELLI G., PIAZZI L., BALATA D. (2002). Spread of introduced *Caulerpa* species in macroalgal habitats. *Journal of Experimental Marine Biology and Ecology*, 280: 1-11. CINELLI F. 1969. Primo contributo alla conoscenza della vegetazione algale bentonica del litorale di Livorno. *Pubbl. Staz. Zool. Napoli* 37: 545-566. CINELLI F., SALGHETTI DRIOLI U., SERENA F., 1984. - Nota sull'areale di *Acrothamnion preissii* (Sonder) Wollaston nell'Alto Tirreno. *Quad. Mus. Stor. Nat. Livorno* 5: 57-60. CINELLI F., PIAZZI L. 1990. Mappatura delle praterie a *Posidonia oceanica* (L.) Delile lungo le coste Toscane. *CIBM Livorno Relazione Tecnica interna*: 80 PP. GIANGRANDE A. 1988. Polychaete zonation and its relation to algal distribution down a vertical cliff in the Western Mediterranean (Italy): a structural analysis. *J Exp Mar Biol Ecol*, 120: 263. MENCONI M., BENEDETTI-CECCHI L., CINELLI F. (1999). Spatial and temporal variability in the distribution of algae and invertebrates on rocky shores in the northwest Mediterranean, *Journal of Experimental Marine Biology and Ecology*, 233: 1-24. PACCIARDI L. 2000. Variabilità spaziale e temporale di popolamenti coralligeni mediterranei in relazione all'orientamento della superficie del fondo. Tesi di Laurea, Università di Pisa. PARDI G., PIAZZI L., CINELLI F. (2000). Demographic study of a *Cystoseira humilis* Kutzing (Fucales: Cystoseiraceae) population in the western Mediterranean. *Botanica Marina*, 43: 81-86. PREVIATI M. 2003. Studio di una popolazione di *Paramuricea clavata* (Risso, 1826) (Anthozoa, Gorgonacea, Paramuriceidae) delle coste toscane. Tesi di Laurea, Università di Firenze. PIAZZI L., BALATA D. (2008). The spread of *Caulerpa racemosa* var. *cylindracea* in the Mediterranean Sea: an example of how biological invasions can influence beta diversity. *Marine Environmental Research*, 65: 50-61. PIAZZI L., BALATA D. 2009. Invasion of alien macroalgae in different Mediterranean habitats. *Biological Invasions*. 11: 193-204. PIAZZI L. & CINELLI F., 2000 - Effets de l'envahissement des Rhodophyceae introduites *Acrothamnion preissii* et *Womersleyella setacea* sur les communautés algales des herbiers à *Posidonia oceanica* de la Méditerranée occidentale. *Cryptogamie, Algologie* 21: 291-300. PIAZZI L., CINELLI F. (2001). The distribution and dominance of two introduced turf-forming macroalgae in the coast of Tuscany (Italy, northwestern Mediterranean) in relation to different habitats and sedimentation, *Botanica. Marina*, 44: 509-520. PIAZZI L, CINELLI F (2003) Evaluation of benthic macroalgal invasion in a harbour area of the western Mediterranean Sea. *European Journal of Phycology*, 38: 223-231. PIAZZI L., CECCHERELLI G. (2002). Effects of competition between two introduced *Caulerpa*. *Marine Ecology Progress Series*, 225: 189-195. PIAZZI L., ACUNTO S., CINELLI F. 1998. In situ survival and development of *Posidonia oceanica* (L.) Delile seedling. *Aquatic Botany*. 6: 103-112. PIAZZI L. ACUNTO S., PARDI G., CINELLI F. 2000. Mappatura delle praterie a fanerogame marine della Toscana. *Biol. Mar. Medit.*, 7: 594-596. PIAZZI L., BALATA D., CECCHERELLI G., CINELLI F. (2001). Comparative study of the growth of the two co-occurring introduced green algae *Caulerpa taxifolia* and *Caulerpa racemosa* along the Tuscan coast (Italy, western Mediterranean). *Cryptogamie, Algologie*, 22: 459-466. PIAZZI L., BALATA D., CINELLI F. 2002. Epiphytic macroalgal assemblages of *Posidonia oceanica* rhizomes in the western Mediterranean. *European Journal of Phycology*, 37: 69-76. PIAZZI L., PARDI G., BALATA D., CECCHI E.,



CINELLI F. 2002. Seasonal dynamics of a subtidal north-western Mediterranean macroalgal community in relation to depth and substrate inclination. *Botanica Marina*, 45: 243-252.

PIAZZI L., BALATA D., CECCHI E., CINELLI F. (2003). Co-occurrence of *Caulerpa taxifolia* and *C. racemosa* in the Mediterranean Sea: interspecific interactions and influence on native macroalgal assemblages. *Cryptogamie Algologie*, 24: 233-243.

PIAZZI L., CECCHERELLI G., BALATA D., CINELLI F. (2003). Early patterns of *Caulerpa racemosa* recovery in the Mediterranean Sea: the influence of algal turfs. *Journal of Marine Biological Association of United Kingdom*, 83: 27-29.

PIAZZI L., BALATA D., PERTUSATI M., CINELLI F. 2004. Spatial and temporal variability of Mediterranean macroalgal coralligenous assemblages in relation to habitat and substrate inclination. *Botanica Marina*. 47: 105-115.

PIAZZI L, BALATA D, CECCHERELLI G, CINELLI F (2005) Interactive effect of sedimentation and *Caulerpa racemosa* var. *cylindracea* invasion on macroalgal assemblages in the Mediterranean Sea. *Estuar Coast Shelf Sc*, 64: 467-474

PIAZZI L, BALATA D, CINELLI F (2007) Invasions of alien macroalgae in Mediterranean coralligenous assemblages. *Cryptogamie Algologie* 28: 289-301.

PIAZZI L., BALATA D., FORESI L., CRISTAUDO C., CINELLI F. 2007. Sediment as a constituent of Mediterranean benthic communities dominated by *Caulerpa racemosa* var. *cylindracea*. *Scientia Marina*, 71: 129-135.

RINDI F., CINELLI. F. (2000). Phenology and small-scale distribution of some rhodomelacean red algae on a western Mediterranean rocky shore. *European Journal of Phycology*, 35: 115-125.

PIAZZI L., GENNARO P., CECCHI E., SERENA F. 2015. Improvement of the ESCA index for the evaluation of ecological quality of coralligenous habitats under the European framework directives. *Mediterranean Marine Science* Indexed in WoS and SCOPUS. DOI: <http://dx.doi.org/10.12681/mms.1029>.

PIAZZI L., CECCHERELLI G., LA MANNA G., GUALA I., CECCHI E., SERENA F., BIANCHI C.N., MORRI C., MONTEFALCONE M., 2016. Differenze tra popolamenti coralligeni lungo un gradient di pressione antropica. *Biol. Mar. Mediterr.*, 23 (1): 194-197.

PIAZZI L., LA MANNA G., CECCHI E., SERENA F., CECCHERELLI G., 2016. Protection changes the relevancy of scales of variability in coralligenous assemblages. *Estuarine Coastal and Shelf Science* 175. DOI: 10.1016/j.ecss.2016.03.026

RINDI F., PAPI I., CINELLI F. (1996). New records of Ceramiales (Rhodophyta) for the North-western Mediterranean. *Cryptogamie Algologie*, 17: 223-238.

PIAZZI L., LA MANNA G., CECCHI E., SERENA F., CECCHERELLI G., 2016. Protection changes the relevancy of scales of variability in coralligenous assemblages. *Estuarine, Coastal and Shelf Science* 175, 62-69.

PIAZZI L., GENNARO P., CECCHI E., SERENA F., NIKE BIANCHI C., MORRI C., MONTEFALCONE M., 2017. Integration of ESCA index through the use of sessile invertebrates. *Scientia Marina* 81(2), doi: <http://dx.doi.org/10.3989/scimar.04565.01B>.

PIAZZI L., NIKE BIANCHI C. CECCHI E., GATTI G., GUALA I., MORRI C., SARTORETTO S., SERENA F., MONTEFALCONE M., 2017. What's in an index? Comparing the ecological information provided by two indices to assess the status of coralligenous reefs in the NW Mediterranean Sea. *Aquatic Conservation Marine and Freshwater Ecosystems*. DOI: 10.1002/aqc.2773.

SANTANGELO G., ABBIATI M. (2001). Red coral: conservation and management of an overexploited Mediterranean species. *Aquatic Conservation-Marine and Freshwater Ecosystems*, 11:253-259.

SANTANGELO G., BRAMANTI L., MAGAGNINI G. (2003) Settlement and recruitment: the first stages in the life cycle of two epibenthic suspension feeders. *Italian Journal of Zoology*, 70:175-178.

SANTANGELO G., CARLETTI E., MAGGI E., BRAMANTI L. (2003). Reproduction and population sexual structure of the overexploited Mediterranean red coral *Corallium rubrum*. *Marine Ecology-Progress Series*, 245: 211-220

SANTANGELO G, MAGGI E, BRAMANTI L, BONGIORNI L. (2004). Demography of the over-exploited Mediterranean red coral (*Corallium rubrum* L 1758). *Scientia Marina*, 68: 199-204.

SANTANGELO G., BRAMANTI L, MAGAGNINI G., DEMAIIO L. (2005). Recruitment. early survival and growth of the Mediterranean red coral *Corallium rubrum* (L 1758), a four-year study. *Journal Of Experimental Marine Biology And Ecology*, 314: 69-78.

SANTANGELO G., BRAMANTI L., IANNELLI M. (2007). Population dynamics and conservation biology of the overexploited Mediterranean red coral. *Journal Of Theoretical Biology*, 244: 416-423

SANTANGELO G., BRAMANTI L., ROSSI S., TSOUNIS G., GILI J.M. (2007). Settlement and early survival of red coral on artificial substrates in different geographic areas: some clues for demography and restoration. *Hydrobiologia*, 580: 219-224.

SERENA F., MANCUSI C. 2001 - Il progetto per la creazione di una zona di tutela biologica. Elementi legislativi per l'istituzione del Parco dei due Castelli. Atti del seminario ARPAT Prov. di Livorno "Parco dei due Castelli, un'area protetta costiera", Livorno 19 Aprile 2000. 15-33.

VIRGILIO M., AIROLDI L., ABBIATI M. 2006. Spatial and temporal variations of assemblages in a Mediterranean coralligenous reef and relationships with surface orientation. *Coral reefs* 25: 265-272.

PIAZZI L., GENNARO P., MONTEFALCONE M., BIANCHI C.N., CECCHI E., MORRI C., SERENA F. 2018. STAR: An integrated and standardized procedure to evaluate the ecological status of coralligenous reefs. *Aquatic Conserv: Mar Freshw Ecosyst*. 2018;1-13. <https://doi.org/10.1002/aqc.2983>.

PIAZZI L., GENNARO P., CECCHI E., SERENA F., NIKE BIANCHI C., MORRI C., MONTEFALCONE M., 2017. Integration of ESCA index through the use of sessile invertebrates. *Scientia Marina* 81(2), doi: <http://dx.doi.org/10.3989/scimar.04565.01B>.

PIAZZI L., NIKE BIANCHI C. CECCHI E., GATTI G., GUALA I., MORRI C., SARTORETTO S., SERENA F., MONTEFALCONE M., 2017. What's in an index? Comparing the ecological information provided by two indices to assess the status of coralligenous reefs in the NW Mediterranean Sea. *Aquatic Conservation Marine and Freshwater Ecosystems*. DOI: 10.1002/aqc.2773.

5. SITE PROTECTION STATUS (optional)

5.1 Designation types at national and regional level:

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Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
IT37	100.0				

5.2 Relation of the described site with other sites:

5.3 Site designation (optional)

6. SITE MANAGEMENT

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6.1 Body(ies) responsible for the site management:

Organisation:	Regione Toscana- - Direzione Ambiente ed Energia - Settore Tutela della Natura e del Mare
Address:	Via di Novoli, 26 - 50127 Firenze

Email: parchiareeprotette\_biodiversita@regione.toscana.it

## 6.2 Management Plan(s):

An actual management plan does exist:

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No, but in preparation
<input checked="" type="checkbox"/>	No

## 6.3 Conservation measures (optional)

## 7. MAP OF THE SITES

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INSPIRE ID:

Map delivered as PDF in electronic format (optional)

☐ Yes ☒ No

Reference(s) to the original map used for the digitalisation of the electronic boundaries (optional).