

**203. NEW RECORDS FOR THE BENTHIC MARINE FLORA OF CHAFARINAS ISLANDS (ALBORAN SEA, WESTERN MEDITERRANEAN)**

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*Nuevas citas para la flora bentónica marina de las Islas Chafarinas (Mar de Alborán, Mediterráneo occidental)*

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Palabras clave. Islas Chafarinas, corología, macroalgas marinas, Mediterráneo.

The Chafarinas Islands, of volcanic origin, are located in the Alboran Sea, in front of the north coast of Morocco, less than 2,5 miles far away from Ras el Ma, and near the frontier with Algeria (UTM coordinates 30SWD59). It is formed by three islands, named Isla del Congreso, Isla del Rey and Isla de Isabel II, the latter being the only one housing a permanent military population.

The marine biota of the Chafarinas Islands is very rich, mainly because of the influence of both Atlantic and Mediterranean waters, which define the biogeographical importance of the archipelago. The knowledge on the marine flora of the islands has been achieved in a scattered way in time (Conde 1984, Navarro & Gallardo 1989, González & Conde 1994, Flores & Conde 1998, Benhissoune *et al.* 2001, Benhissoune *et al.* 2002a, Benhissoune *et al.* 2002b, Benhissoune *et al.* 2003), with no new record since more than ten years ago (Altamirano 1999). Up to now the marine flora has revealed to include more than 130 specific and infraspecific taxa, including cyanobacteria,

macroalgae and the seagrass *Posidonia oceanica* L.

The aim of this work is to provide 12 new records to the marine flora of the Chafarinas Islands, 6 Rhodophyta, 2 Phaeophyceae, 3 Chlorophyta and 1 seagrass. One taxa, *Bryopsis cupressina* J.V. Lamouroux, represents a new record for the coast of Morocco. We confirm the presence and expansion of the invasive species *Asparagopsis taxiformis* (Delile) Trevisan in the three islands after the first record of the species in 1999 (Altamirano 1999). Furthermore, we report the presence of *Asparagopsis armata* Harvey in sympatry with *A. taxiformis* in the islands.

Samples were collected from Isla del Congreso, Isla del Rey and Isla de Isabel II in April 2010 by SCUBA diving and snorkeling, carried to the laboratory of the Estación Biológica Islas Chafarinas and immediately identified. Herbarium sheets of the different taxa have been included at the University of Málaga Herbarium (MGC). Herbarium acronyms follow Holmgren *et al.* 1990.

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RHODOPHYTA  
BANGIACEAE

*Bangia fuscopurpurea* (Dillwyn) Lyngbye  
“Muelle Chico”, Isla de Isabel II. 05.04.2010.  
MGC Phyc 5134. On harbour slide.

## BONNEMAISONIACEAE

*Asparagopsis taxiformis* (Delile) Trevisan  
Isla del Congreso: “Barco Hundido” MGC Phyc 5101. “Las Cuevas” MGC Phyc 5103. “La Sangre” MGC Phyc 5113. “El Pedregal” MGC Phyc 5114. The gametophyte of the species was present in the infralittoral zone of the three islands with different coverage degrees and batimetric range, from 0 to -14 m depth always on hard substrata. The hosting community was mainly the photophilic ones formed by *Halopteris filicina* (Grateloup) Kützing and *Dictyota dichotoma* (Hudson) J.V. Lamouroux; some thalli have been observed to grow on the rhizome of *P. oceanica* of Isla del Rey. It was found in sympatry with *A. armata* in Isla del Congreso, in “La Laja” at -7 m depth and at “La Sangre”, at -1 m depth. This species is considered among the ten most invasive macroalgal species in the Mediterranean Sea and presently is spreading widely along Andalusian coast (Altamirano *et al.* 2008), although the invasive status on the north coast of Morocco is still unknown, with the species not recorded yet (Benhissoune *et al.* 2002b). The tetrasporophytic stage *Falkenbergia* has been observed in the islands, although we cannot confirm the species.

*Bonnemaisonia asparagoides* (Woodward) C. Agardh  
“La Sangre”, Isla del Congreso. 03.04.2010. MGC Phyc 5115. -4 m depth. The species was very frequent in the infralittoral zone of the three islands.

## CORALLINACEAE

*Halptilon attenuatum* (Kützing) Garbary & H.W. Johansen  
Isla del Congreso. 02.04.2010. MGC Phyc 5107. Infralittoral.

*Phymatholithon calcareum*  
“Baños de la Reina”, Isla del Rey. 04.04.2010.

MGC Phyc 5137. In *Posidonia oceanica* meadow at -12 m.

## PLOCAMIACEAE

*Plocamium cartilagineum* (L.) P.S. Dixon  
“La Sangre”, Isla del Congreso. 03.04.2010. MGC Phyc 5126. -6 m depth.

PHAEOPHYCEAE  
CLADOSTEPHACEAE

*Cladostephus spongiosus* (Hudson) C. Agardh  
“La Sangre”, Isla del Congreso. 03.04.2010. MGC Phyc 5117. -6 m depth.

*Zonaria tournefortii* (J.V. Lamouroux) Montagne  
“La Laja”, Isla del Congreso. 03.04.2010. MGC Phyc 5132. At -17 m depth in a sciaphilic habitat.

CHLOROPHYTA  
BRYOPSIDACEAE

*Bryopsis cupressina* J.V. Lamouroux  
“Dique roto”, Isla de Isabel II. 03.04.2010. MGC Phyc 5116. Eulittoral. This is the first record of this species for the whole Mediterranean African coast.

*Bryopsis hypnoides* J.V. Lamouroux  
“El Pedregal”, Isla del Congreso. 02.04.2010. MGC Phyc 5104. Infralittoral.

## CODIACEAE

*Codium effusum* (Rafinesque) Delle Chiaje  
El Pedregal”, Isla del Congreso. 03.04.2010. MGC Phyc 5119. Infralittoral.

MAGNOLIOPHYTA  
CYMODOCEACEAE

*Cymodocea nodosa* (Ucria) Ascherson  
Isla de Isabel II. 04.05.2010. MGC Cormof-72178. Abundant drifted fresh material of rhizomes with leaves was found around the islands. We suggest the presence of *C. nodosa* in the sandy bottoms of the islands, as an associated species of *P. oceanica* L.

meadows inhabiting the seabottoms of the islands.

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