

# Mangrove sponges from Bangka Island (North Sulawesi, Indonesia)

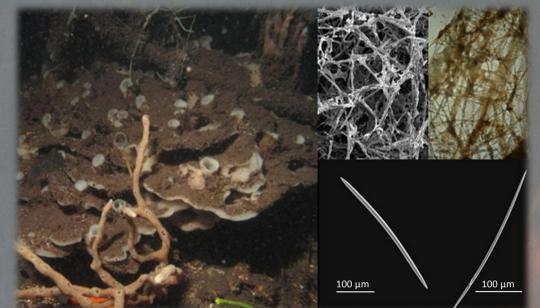
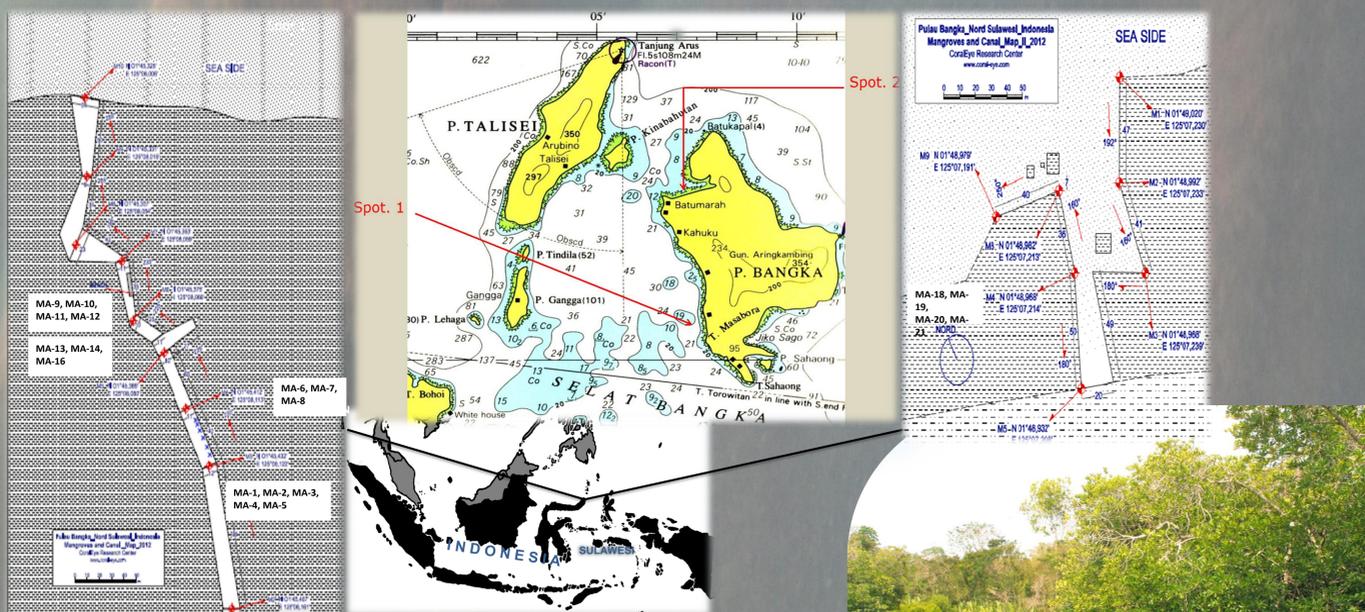
Barbara Calcinai<sup>1</sup>, Azzurra Bastari<sup>1</sup>, Mira Curin<sup>1</sup>, Giorgio Bavestrello<sup>2</sup>, Laurentius Theodorus Xaverius Lalamentik<sup>3</sup>, Marco Segre-Reinach<sup>4</sup>, Carlo Cerrano<sup>1</sup>

<sup>1</sup>Di.S.V.A., Università Politecnica delle Marche, Via Brecce Bianche, 60131 Ancona, Italy; <sup>2</sup>Di.S.T.A.V., Università di Genova, C.so Europa 26, 16126, Genova, Italy; <sup>3</sup>Fakultas Perikanan, Sam Ratulangi University, Manado, Indonesia; <sup>4</sup>Coral Eye, Bangka Island, North Sulawesi, Indonesia

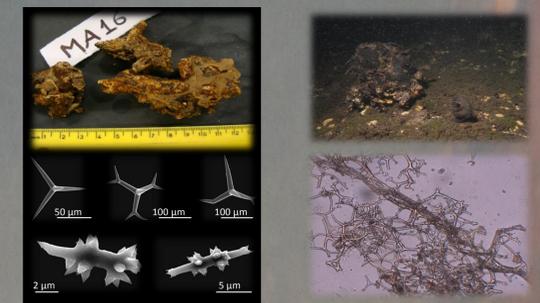
Despite their key ecological, economical and social role in subtropical and tropical areas, mangroves are among the most imperilled marine ecosystems since they are subjected to extreme anthropogenic environmental pressures, such as organic run-off from land, disturbances from suspended sediment, and damages from clear-cutting.

The mangroves of Indo-Malayan region are particularly extended in the Indonesian Archipelago (Tomascik et al., 1997). Mangroves create habitats for numerous species; in particular the prop-roots and pneumatophores create a complex hard bottom habitat on a soft sediment environment (Ellison and Farnsworth, 1992). The great majority of published information on mangrove sponge communities comes from the Caribbean, and the taxonomic knowledge on sponge associate to mangroves, from Indo-Pacific and, in particular from Indonesian Archipelago is very poor.

Studied material come from two different mangrove forests around Bangka Island (North Sulawesi). The first spot is an artificial, narrow channel cutting a *Rhizophora* forest. The second spot is a wide inlet, characterized by *Rhizophora* and *Bruguiera* trees. Specimens were collected by snorkelling during high tide period; the collections meant to be qualitative and all the specimens detected were collected from the inner to the outer side of the mangrove forest.



*Cladocroce* sp.



*Dercitus (Stoeba)* sp.

*Spongia cf. matamata*

*Haliclona (Reniera)* sp.1

*Nipahates* sp.

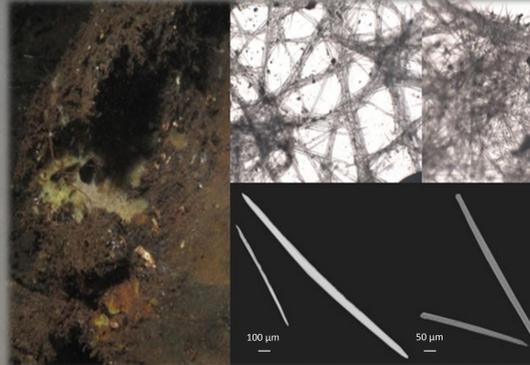
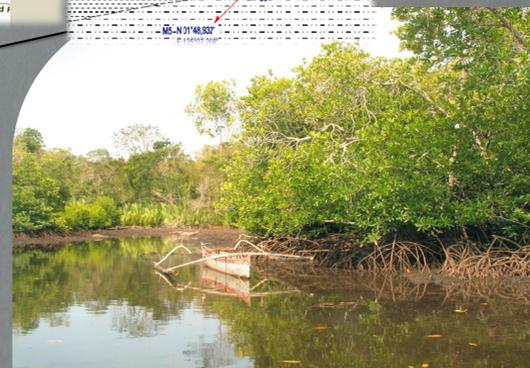
*Haliclona (Reniera)* sp.2



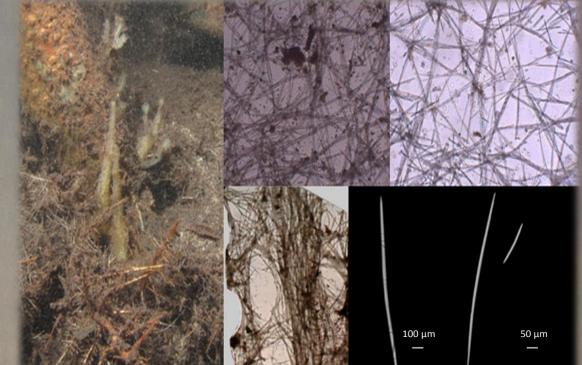
*Clathria (Microciona)* sp.

*Topsentia halichondroides*

*Cladocroce burapha*



*Amorphinopsis excavans*



*Ciocalypta* sp.

Sample	Species	Habitat	Depth	Distribution	References
MA-1, MA20	<i>Amorphinopsis excavans</i> Carter, 1887	coral reef	0 to 54 m	Indo-west Pacific Ocean, Australia	Thomas, 1973; Hooper et al., 1997
MA-15	<i>Amphimedon</i> sp.	mangroves	shallow water	Bangka Is.	present study
MA-11	<i>Biemna fortis</i> (Topsent, 1897)	buried in sand	shallow water	Red Sea, Indonesia, East Africa, Seychelles	Thomas, 1981
MA-6, MA19a, MA-19e	<i>Cladocroce burapha</i> Putchakarn et al., 2004	rocky shore	2-15 m	Thailand	Putchakarn et al., 2004
MA-14	<i>Cladocroce</i> sp.	mangroves	shallow water	Bangka Is.	present study
MA-13	<i>Clathria (Microciona)</i> sp.	mangroves	shallow water	Bangka Is.	present study
MA-5	<i>Ciocalypta</i> sp.	mangroves	shallow water	Bangka Is.	present study
MA-16	<i>Dercitus (Stoeba)</i> sp.	mangroves	shallow water	Bangka Is.	present study
MA-10	<i>Haliclona (Gellius)</i> sp.	mangroves	shallow water	Bangka Is.	present study
MA-4	<i>Haliclona (Haliclona) centrangulata</i> (Sollas, 1902)	not stated	shallow water	Malaysia	Sollas, 1902
MA-2	<i>Haliclona (Reniera)</i> sp. 1	mangroves	shallow water	Bangka Is.	present study
MA-7	<i>Haliclona (Reniera)</i> sp. 2	mangroves	shallow water	Bangka Is.	present study
MA-12	<i>Hyrtios cf. eubamma</i> (de Laubenfelds, 1954)	lagoon near mangroves	shallow water	East Caroline Is.	de Laubenfelds, 1954
MA-3	<i>Nipahates</i> sp.	mangroves	shallow water	Bangka Is.	present study
MA-10	<i>Scalarispongia</i> sp.	mangroves	shallow water	Bangka Is.	present study
MA-9	<i>Spongia (Spongia) cf. matamata</i> de Laubenfelds, 1954	lagoon	low tide, 6 m	Marshall Is.	de Laubenfelds, 1954
MA-21	<i>Tedania (Tedania) cf. dirhaphis</i> Hentschel, 1912	bottom with sand and coral fragments	low tide, 4-18 m	Indonesia	Hentschel, 1912
MA-17	<i>Tetilla cf. ridleyi</i> Sollas, 1888	coral reef	shallow water	Madagascar, Indonesia	Topsent, 1897; Ridley, 1884
MA-16	<i>Timea</i> sp.	mangroves	shallow water	Bangka Is.	present study
MA-18	<i>Topsentia halichondroides</i> (Dendy, 1905)	coral reef slope	5-35 m	Indian Ocean, Philippines, Great Barrier Reef	Dendy, 1905; Hooper et al., 1997

This preliminary survey has shown the presence of 20 species, the majority of them already known from coral reefs (e. g. *Biemna fortis*, *Amorphinopsis excavans*), while only two (*Spongia cf. matamata* and *Hyrtios cf. eubamma*) have been found exclusively in lagoon or in mangrove habitat; three species are new to science (*Dercitus (S.)* sp., *Ciocalypta* sp. and *Cladocroce* sp.).

Here, the two surveyed mangrove forests, host sponges of small size and light or dull colored. In this study Haplosclerid sponges are the most common (mainly *Haliclona*) with the record of a species of *Tedania* and *Biemna* conforming to the previous survey (Nagelkerken et al., 2008).

Our surveys suggest the importance to increase the study on Indonesian sponge mangroves, whose diversity seems, in this case, lower respect Caribbean counterpart, likely in relation to the low depth of the explored mangroves, with roots exposed to air during low tide.

Ellison A. M., Farnsworth E. J. 1992. The ecology of Belizean mangrove-root fouling communities: patterns of epibiont distribution and abundance, and effects on root growth. *Hydrobiologia* 247:87-98.

Nagelkerken I., Blaber S., Bouillon S., Green P., Haywood M., Kirton L.G., Meynecke J.O., Pawlik J., Penrose H.M., Sasekumar A., Somerfield P.J. 2008. The habitat function of mangroves for terrestrial and marina fauna: a review. *Aquatic Botany* 89(2): 155-185.

Tomascik T., Mah A. J., Nontji A. & Moosa M. K. 1997. The Ecology of the Indonesia Seas. Part II. Periplus, Singapore.