

Ecological units in the mesophotic coral ecosystems (MCEs) of San Andrés island, Colombian Caribbean.

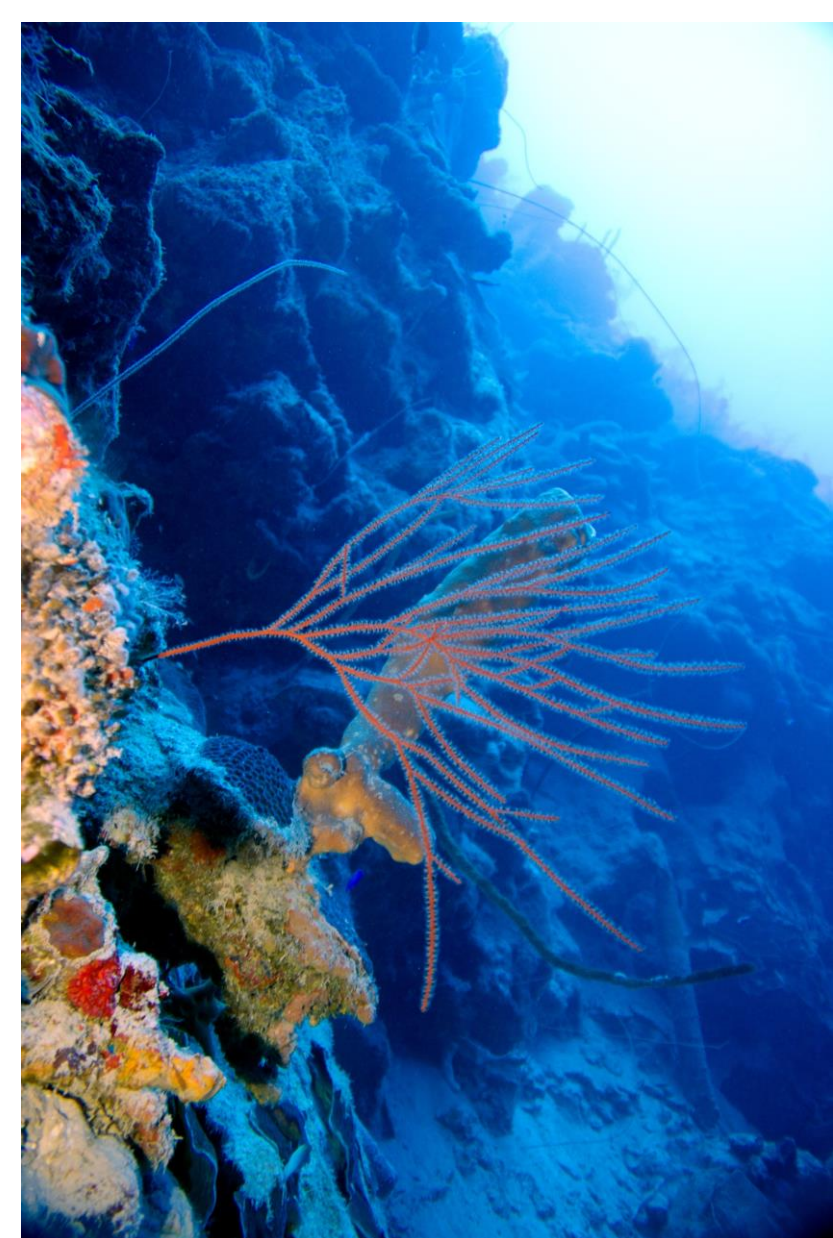
Luis Chasqui¹, Juan David González¹, Katherine Mejía-Quintero¹ y Nacor Bolaños-Cubillos²

¹Instituto de Investigaciones Marinas y Costeras - Invemar. Grupo de investigación para la conservación de la biodiversidad marina y costera.

²Corporación para el Desarrollo Sostenible del Archipiélago de San Andrés, Providencia y Santa Catalina – Coralina.

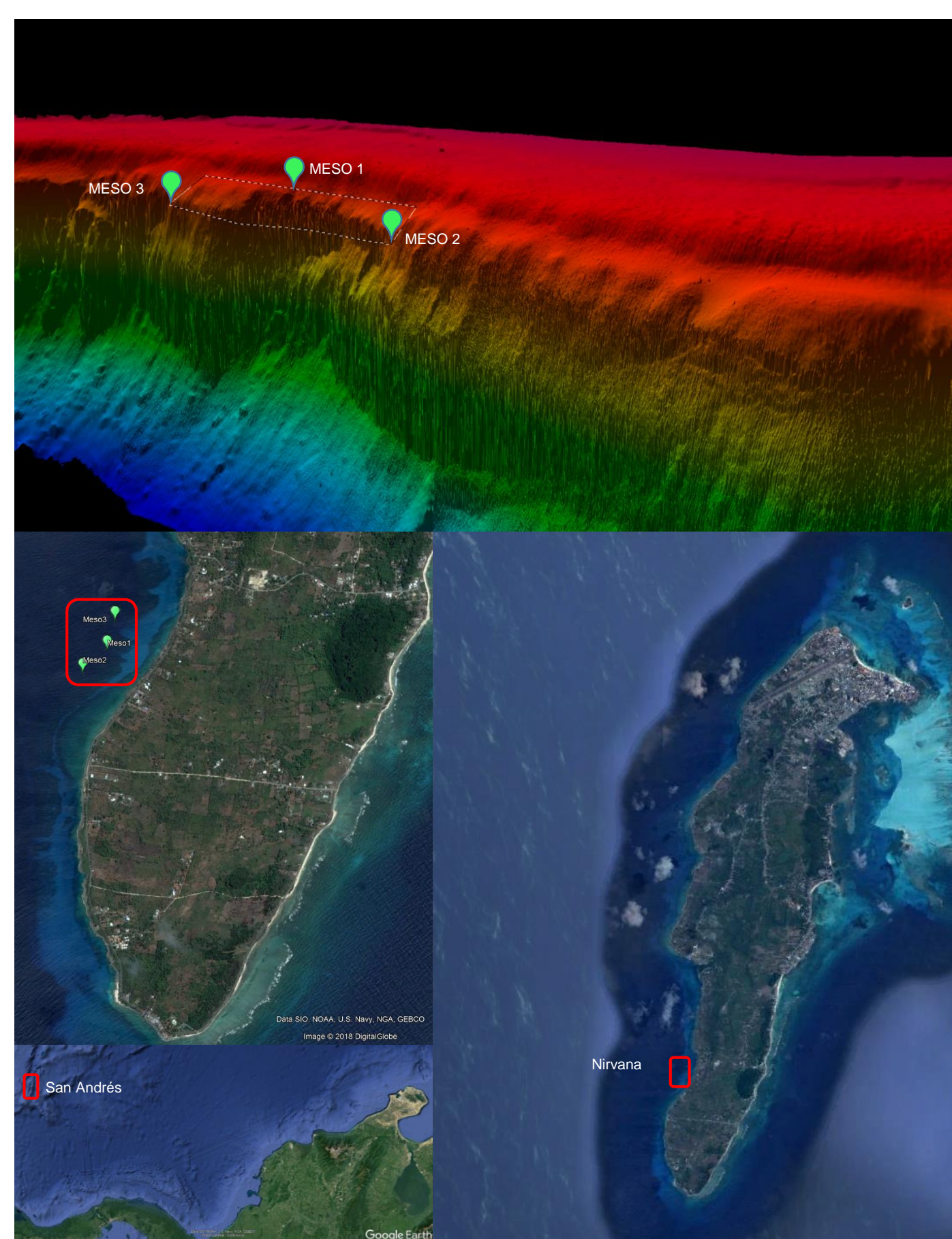


MCEs



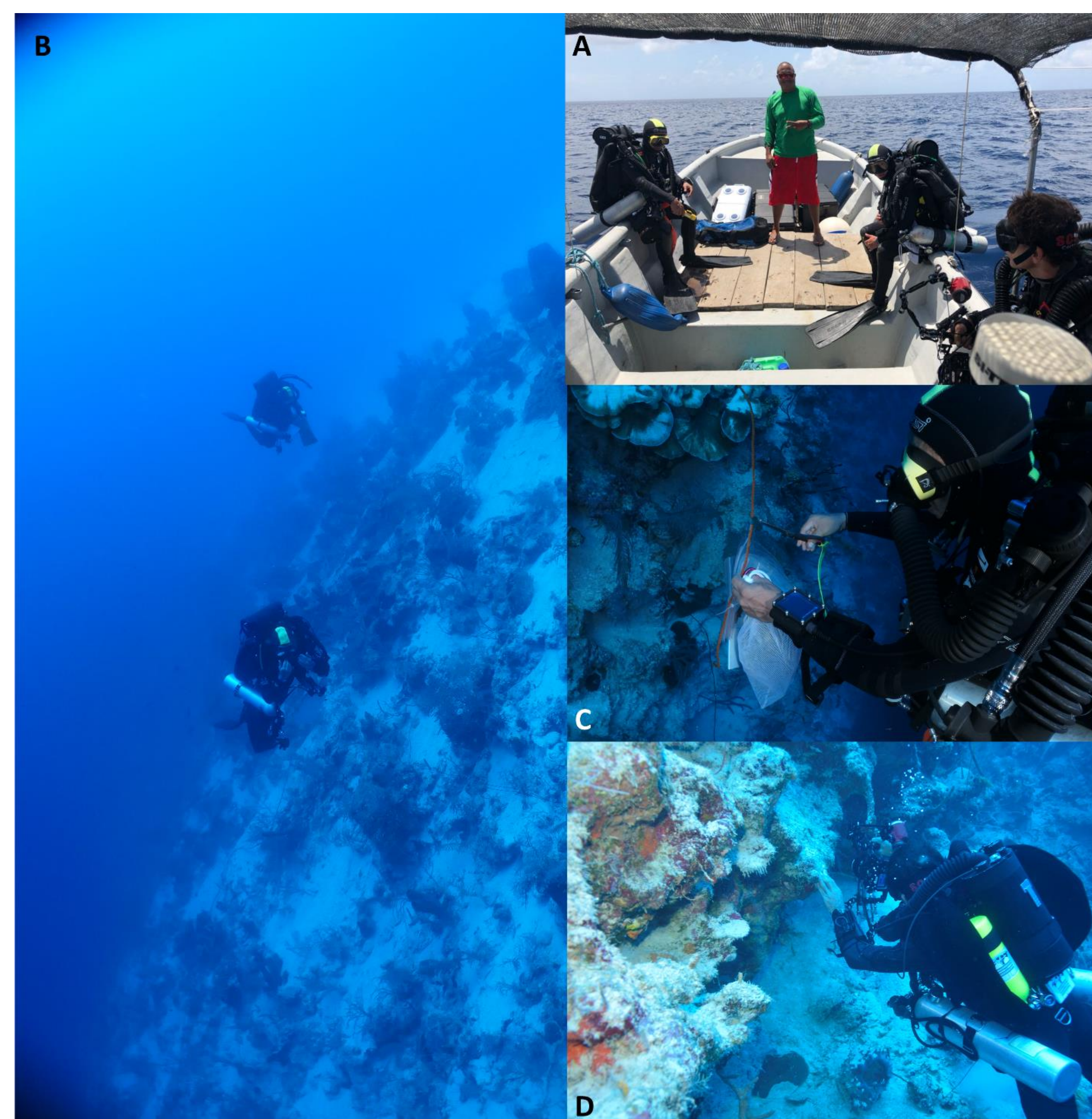
Coral formations in tropical and subtropical regions between approx. 30-150 m depth are globally known as mesophotic coral ecosystems (MCEs), because light attenuation. MCEs are characterized by the presence of light-dependent corals and associated biotic communities. The main habitat providers in the mesophotic zone can be hard corals, soft corals, sponge and algae (Hinderstein *et al.* 2010).

This work is a first approach to the exploration, definition and characterization of ecological units in the MCEs of San Andrés island (Seaflower Biosphere Reserve)



Study area in the western side of San Andrés island

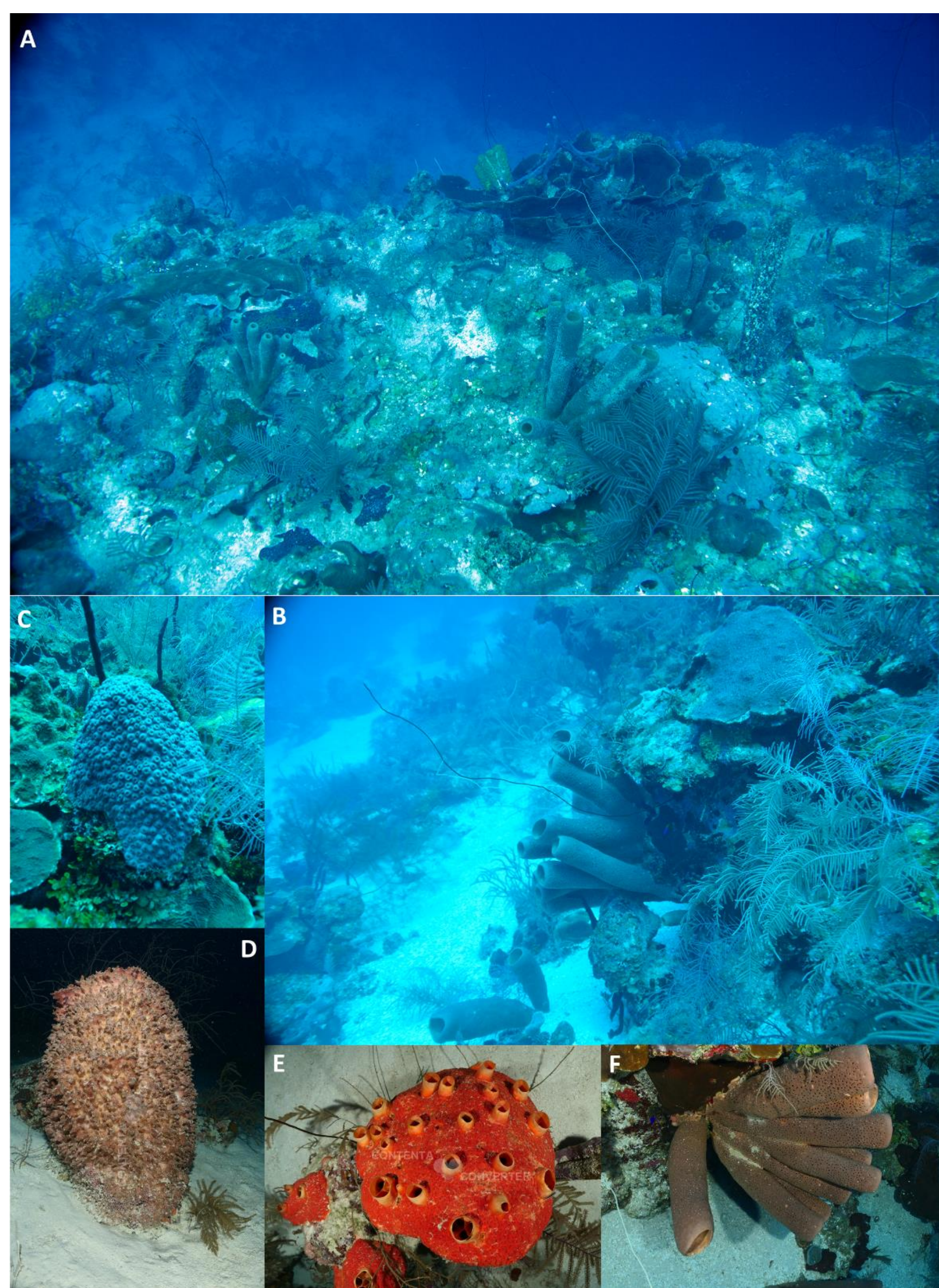
In march and april 2008 six CCR dives until 70 m depth were done in three spots 200 m apart in the Nirvana sector, western side of San Andrés island, during which three divers made photos and videos, biological sample collection and fish counts between 40-70 m depth.



A. CCR Briefing. B. Diving up to 50-70 m depth. C. Sample collection and photo capture.

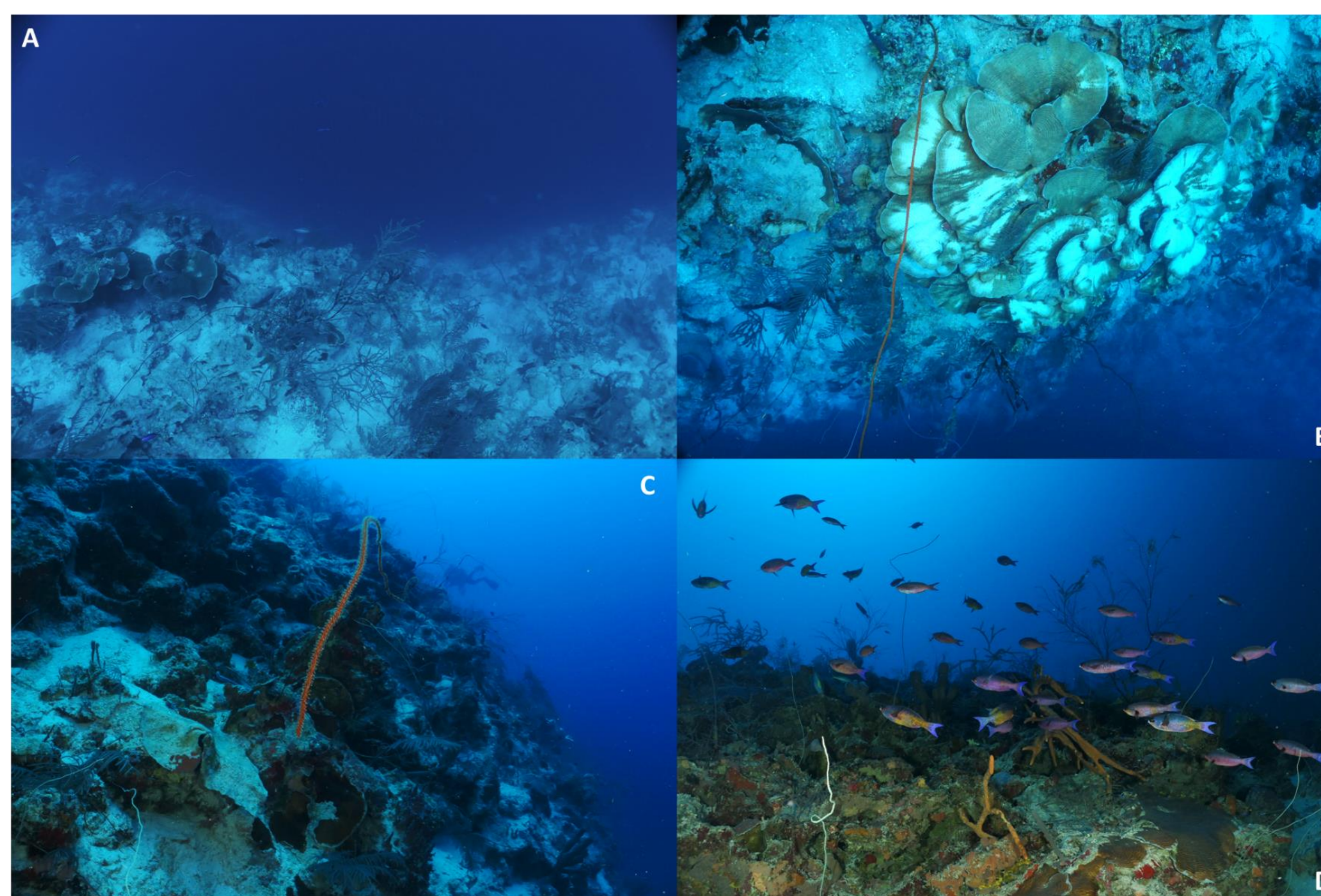
What we did

What we got



A. The abrupt change in sea floor marks the beginning of the slope. B. Habitat forming species in the Oct-Esp-Cmix: sponge *Agelas* sp., hard coral *Orbicella franksi*, octocorals of the genera *Antillologorgia*, sea whips *Stichopathes* sp. C. Hard coral *Montastraea cavernosa*. D. Sponge *Xestospongia muta*. E. Sponge *Cliona delitrix*. F. Sponge *Agelas* sp.

Between 40-50 m the bottom is a deep pre-reef terrace that turns suddenly into the reef slope with $\geq 80^\circ$ of inclination, which deepens to around 200 m. In the terrace (40-50 m depth), the main biotic components are octocorals, sponges and scattered hard corals, corresponding with the Octocorals-Sponges-Mixed corals ecological unit.



A, B. Top view of the ecological unit Agar-Cmix in the upper slope of Nirvana, western side of San Andrés: big colonies of lettuce coral *Agaricia* sp., octocorals and black corals; some bleaching is apparent in B. C, D. Lateral and bottom view of the upper slope: some colonies of *Agaricia* sp., arborescent black corals, sea whips, octocorals and branching sponges *Agelas* sp.

The upper slope (50-70 m depth) is an irregular wall with crevices and small ledges, in which some coralline sand that slides off the terrace accumulates. In this zone, some barrel, tubular and branched sponges, branching octocorals, branched and whip black corals and scattered hard corals, mainly *Agaricia* spp., are the conspicuous biotic components. This scenery corresponds with the *Agaricia* spp.-Mixed coral ecological unit.

The biota recorded in this exploratory work of the MCEs in San Andrés island amounts 128 species: 65 among Cnidaria, Porifera, Tunicata and Algae, and 63 fish species, three of them are new reports for San Andrés island, two are threatened species and one is an invasive alien species (lionfish).

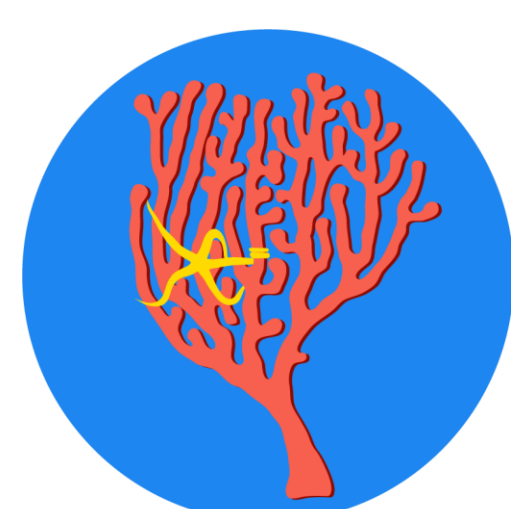
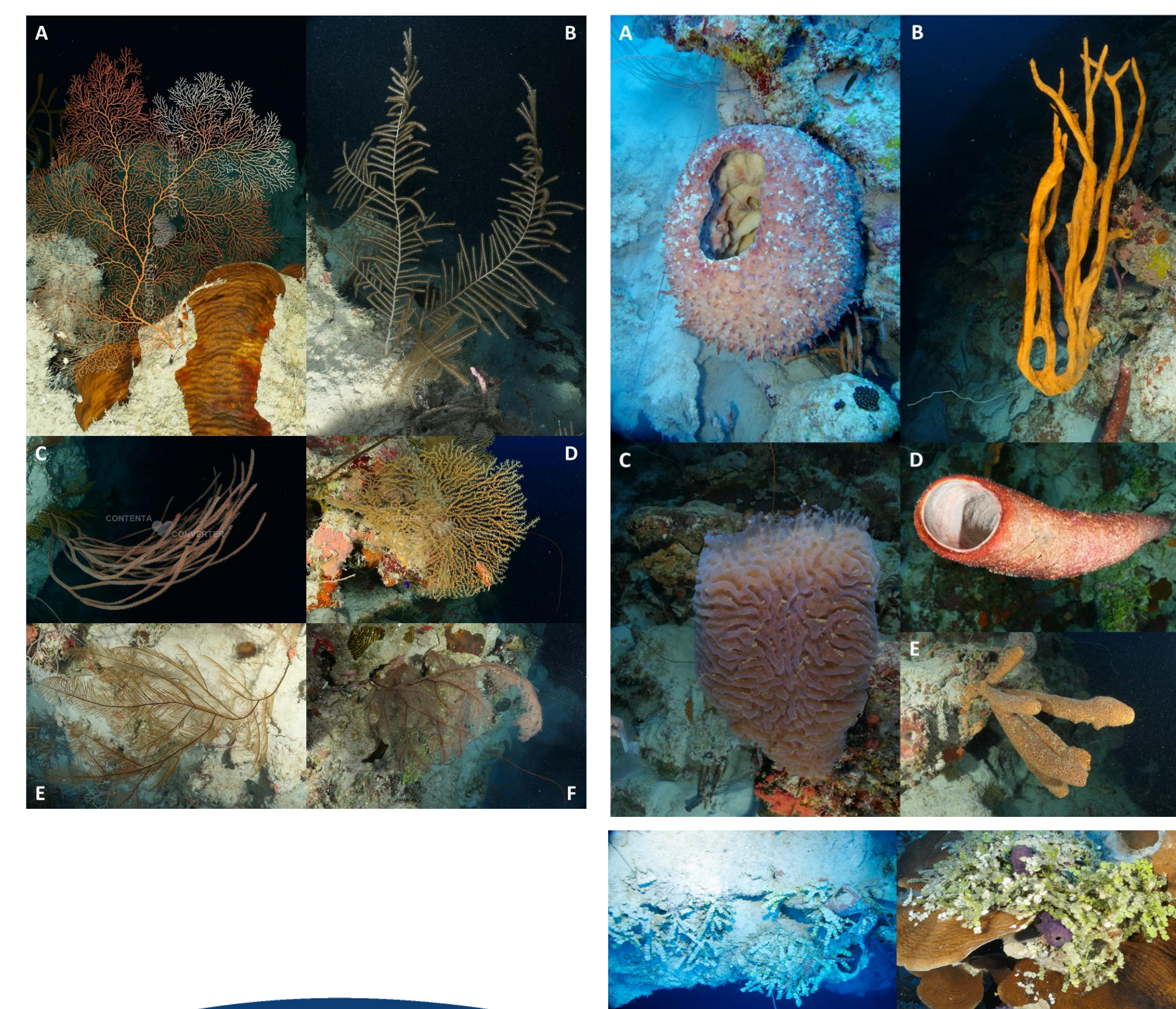
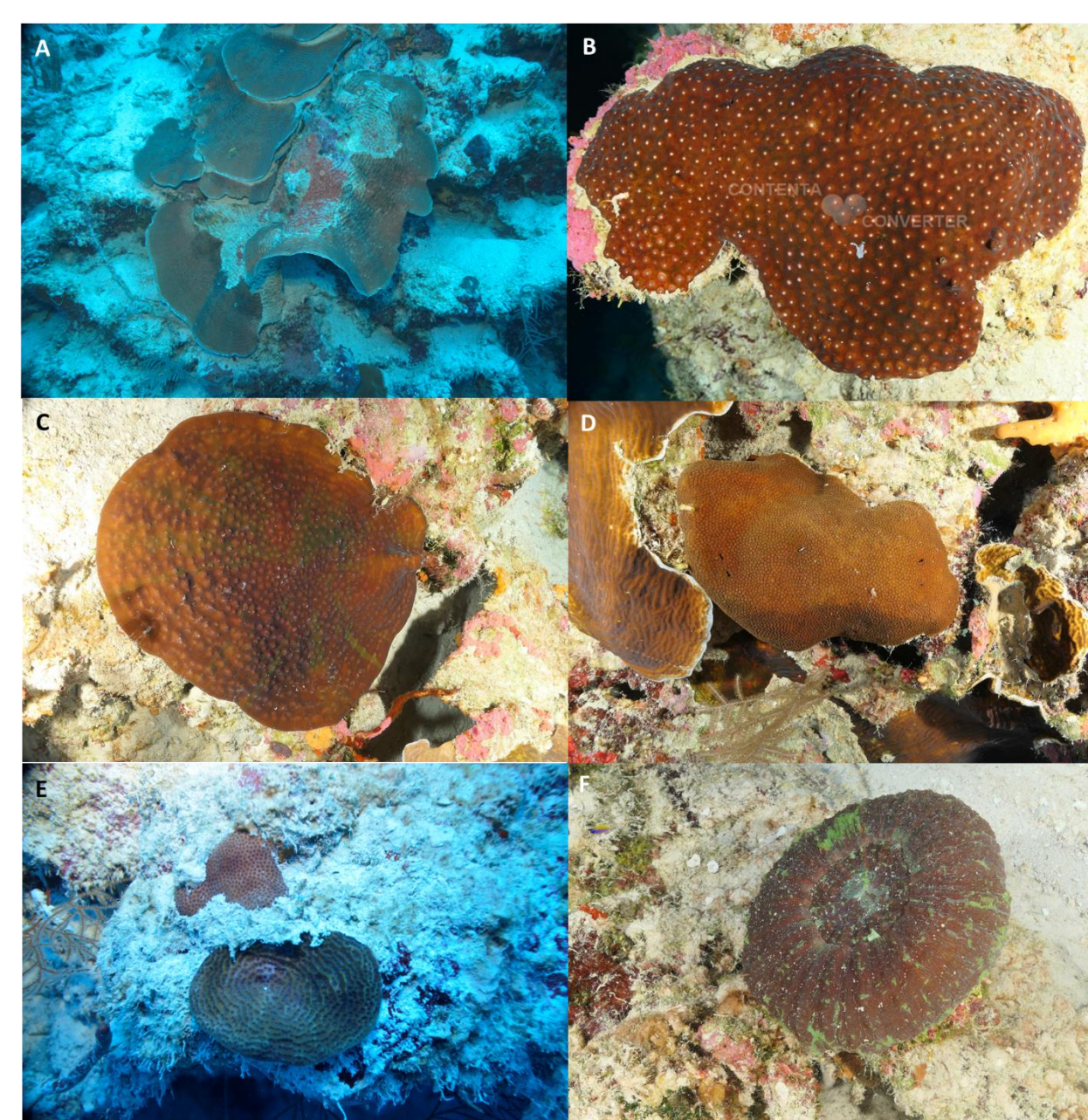
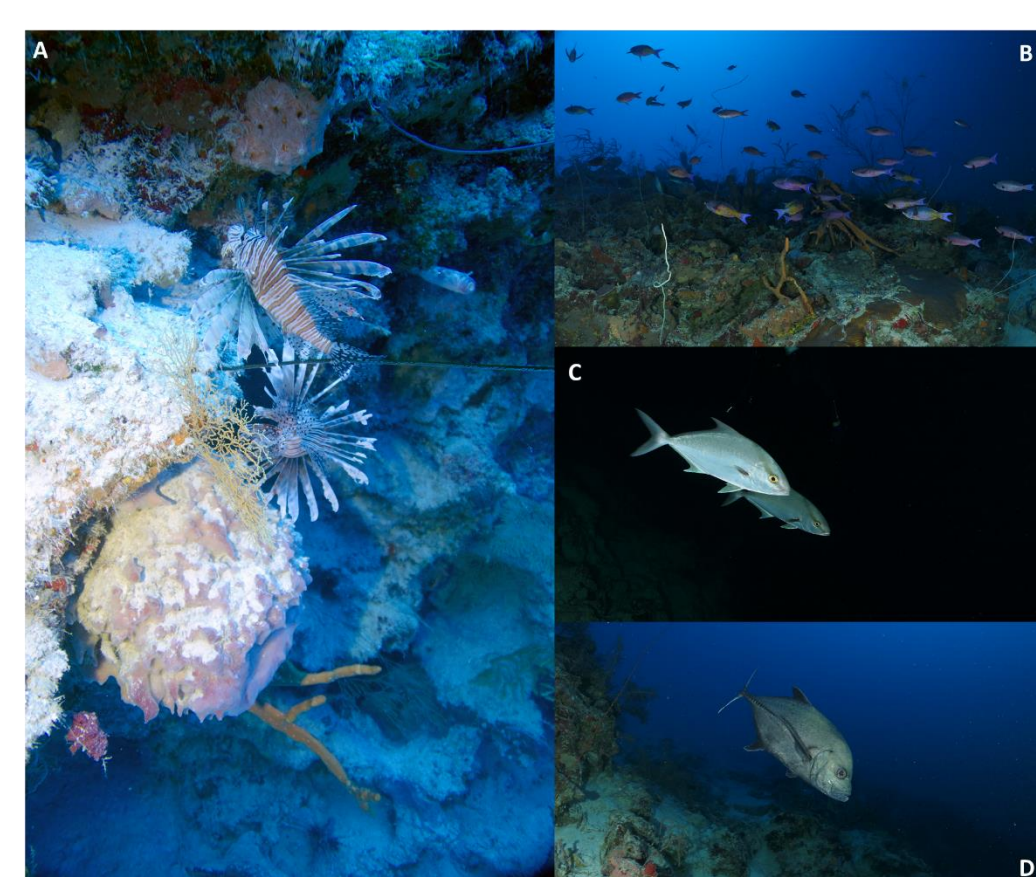
What we gonna do

Project: Evaluation of deep ecosystems in the Seaflower Biosphere Reserve. Cooperation agreement 001-2019 CORALINA-INVEMAR.

Product: mapping of MCEs ecological units of San Andres (along western side) between 30-120 m depth.

REFERENCES: Hinderstein, LM, JCA Marr, FA Martinez, MJ Dowgiallo, KA Puglise, RL Pyle, DG Zawada & R. Appeldoorn. Theme section on "Mesophotic Coral Ecosystems: Characterization, Ecology, and Management". Coral Reefs, 29: 247-251.

ACKNOWLEDGMENTS: We thanks to staff of CORALINA for support in the field work; Deibis Seguro (Tech Bull SAS) for support in CCR dive logistics and security and photo capture. The work was funded by Cooperation Agreement 007-2017 CORALINA-INVEMAR.



7th INTERNATIONAL SYMPOSIUM
DEEP-SEA CORALS
July 29-August 2, 2019 | Cartagena, Colombia