



- CCC CARRIED OUT AN ASSESSMENT OF THE REEFS IN THE COASTAL WATERS OF BARANGAY ESTELA IN APRIL AND MAY 2016



- THERE IS POOR CORAL COVER WITH THE REEF ALSO SHOWING SIGNS OF OVERFISHING. THE AREA WOULD BENEFIT FROM A PERMANENTLY ESTABLISHED NTA WITH 50M BUFFERING ZONES TO MITIGATE AGAINST LOCAL STRESSORS



- ELECTRONIC AND HARD COPIES OF THE FULL TECHNICAL REPORT ARE AVAILABLE FROM OUR PROJECT SCIENTIST: lrcp@coralcay.org

Barangay Estela

Proposed MPA

The coral reefs of Barangay Estela are host to a diverse array of habitats and coral reef associated organisms, offering a beautiful, aesthetically appealing ecosystem. Protection of this coral reef will greatly benefit the communities that reside here, opening possibilities to eco-tourism through diving and snorkelling.

The Current Status of the Estela Coral Reef

Following CCC surveys, fishes were found at a density of $42.09 \pm 9.48 \text{ } 500\text{m}^{-3}$, which were low in comparison to the density of fish found on the Napantao reef ($93.33 \pm 19.03 \text{ } 500\text{m}^{-3}$ in 2015).

The mean abundance and biomass (kg) of commercially important species surveyed was low across the site whilst being classed as small in size (11-20cm) with no individuals larger than 30cm.

Results of commercially important species are concerning and indicative of overfishing.

Parrotfish held the greatest standing biomass ($0.35 \pm 0.18 \text{ kg} \cdot 500\text{m}^{-3}^{-1}$) on the reef in

comparison to other commercially important fishes.

The abundance of obligate Butterflyfish was lower than that observed for facultative Butterflyfish which may be a direct result of hard coral found in relatively low composition ($10.31\% \text{ } 20\text{m}^{-1}$).

Incidents of coral bleaching, and disease were minimal with not Crown of Thorns Seastars (CoTs) recorded.

Competitor corals dominated areas of reef; a positive sign that the reef is subject to low levels of anthropogenic inducing environmental stress though their low composition is concerning.



Why Are MPAs Important?

Marine Protected Areas (MPAs) protect areas of reef from human impacts. Within an MPA, fish are protected and can grow larger, producing more off-spring. This leads to 'overspill', increasing fish numbers outside the MPA. In the Philippines many very successful MPAs have been created including the famous Apo Island MPA. Not only do these well managed MPAs help to enhance fish stocks, they also provide income from tourism and other benefits such as protection of coastal habitats and communities from storms.



CCC's assessment of the Estela Coral Reef

The coral reef of Estela would greatly benefit from protection. Furthermore, the amount of small sized commercially important fish and low coverage of hard coral is a concern.

Fish must reach a specific length (cm) before they become sexually mature and can therefore produce offspring. By removing too many juvenile fish, as well as large adult spawning fish, will cause the population to decrease as exploitation surpasses recruitment.

The coral reef will benefit from an established no-take area (NTA) that is protected by 50m buffer zones. Protecting a proportion of the coral reef will protect fishes and invertebrates from fishing practices allowing them to grow, become sexually mature and produce offspring. Over time, this will lead to a "spill-over" effect, increasing the size, abundance and diversity of organisms in the area.

Protection may also lead to an increased hard coral recruitment, increasing the composition across the site.

As the coral reef's health and the cover of hard coral increases, the

potential for dive tourism will increase.

Key Recommendations:

- It is recommended that an NTA of 6.88ha is established that prohibits all fishing activity. This NTA should be further protected by 50m buffer zones (4.41ha) that allows single-hook and line and spear fishing equating to a total of 11.25ha of Estela coral reef being protected.
- Reduced fishing activity will be of great benefit to the Barangay of Estela as valuable fish such as *Lapu Lapu* (Grouper) and *Mul Mul* (Parrotfish) increase in abundance, diversity and biomass.
- It is further recommended that community members be involved in the decision making process to increase compliance.



Left: *Coradion chrysozonus*
(Orange-Banded Coral fish)

Coral Cay Conservation

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Nudibranchs: What are they?



Kingdom: Anamalia

Phylum: Mollusca

Class: Gastropoda

Clade: Nudibranchia

To date, there are over 2,300 documented species of Nudibranchs. Found in oceans around the world, they are identifiable by their wondrous colours and beautiful shapes. Nudibranchs use colourful patterns and textures as well as digested nematocysts to defend themselves against predators. Despite their defence mechanisms, Nudibranchs are still prey to some organisms and thus hold a significant role in coral reef food chains as prey and predators. Nudibranchs are carnivores, feeding on sponges, ascidians and anemones with some reports also suggesting cannibalism. Coming in a range of sizes from 0.4cm to 60cm, be sure to keep a look out on the reef for these beautiful creatures!

