

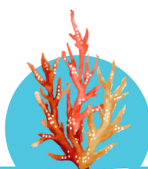
Healthy Reefs

Report Card 2023



1. CORAL COVER

2023 surveys show that coral cover in Little Cayman was the highest since CCMI's surveys began in 1999. This coral cover has increased from the lowest record in CCMI's data, which was in 2015, as a result of the 2014-2016 coral bleaching event.



2. HEALTH STATE

The health state of the reef reflects these data, showing an increase in the frequency of sites categorised as "very good" with a percent coral cover greater than 40%. Likewise, no sites were found to be in categorised in "critical" or "poor" condition, as all sites had more than 10% cover.



3. CORAL FAMILY FREQUENCY

The data continue to show changes in dominant coral species groups, where species in the families Agariciidae and Poritidae, which are typically smaller, continue to increase in frequency, while larger boulder corals, such as *Oribicella* spp. and *Siderastraea* spp. continue to decrease. Overall coral size has also continued to decrease over time, likely due to this shift from large boulder shaped species to smaller species, a trend seen throughout the Caribbean.

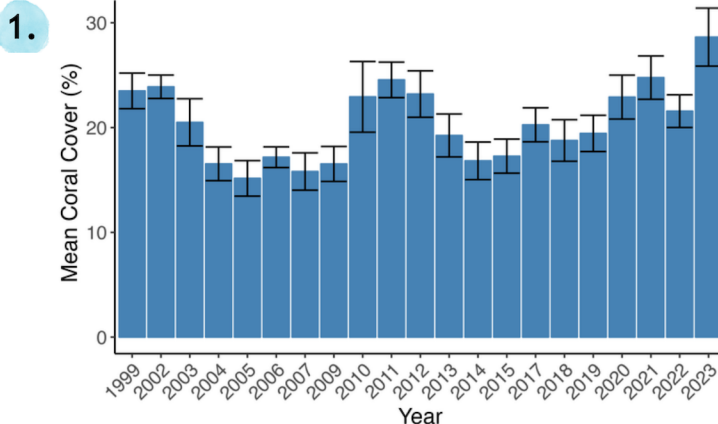
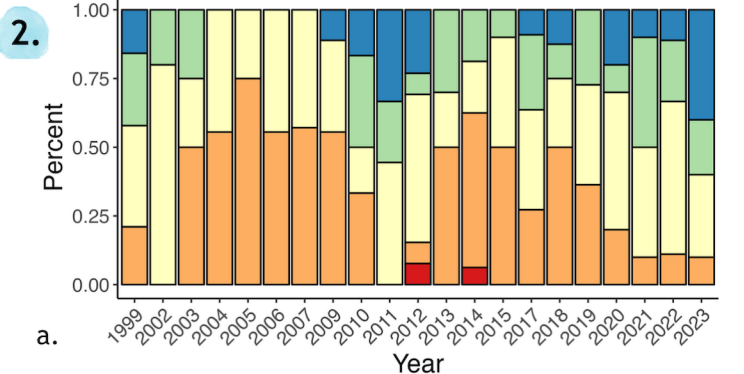
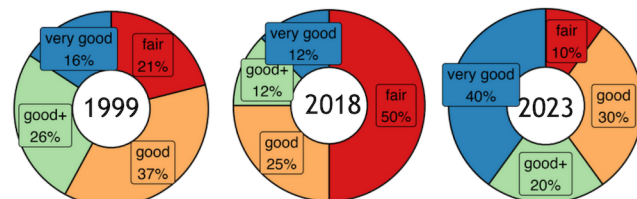


Fig. 1. Mean percent coral cover (+/- SE) over time from 1999 - 2023.



a.

Health State: poor (red), fair (orange), good (yellow), good+ (green), very good (blue)



b.

Fig. 2. Health state of surveyed reefs over time. See amended for further details.

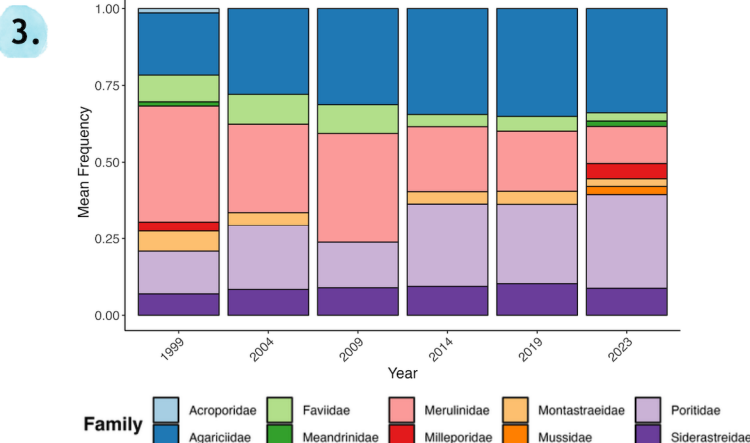


Fig. 3. Health state of surveyed reefs over time. See amended for further details.

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4. Fish communities

Fish communities maintain a positive trend, showing a continued increase in fish density and biomass over the past 5-6 years.



5. Herbivores

Herbivore density has increased exponentially in the past 8 years, in particular, parrotfish have shown a significant increase between 1999 and 2023. Densities of carnivorous fish are not increasing as dramatically as herbivores, but they are increasing in size.

4.

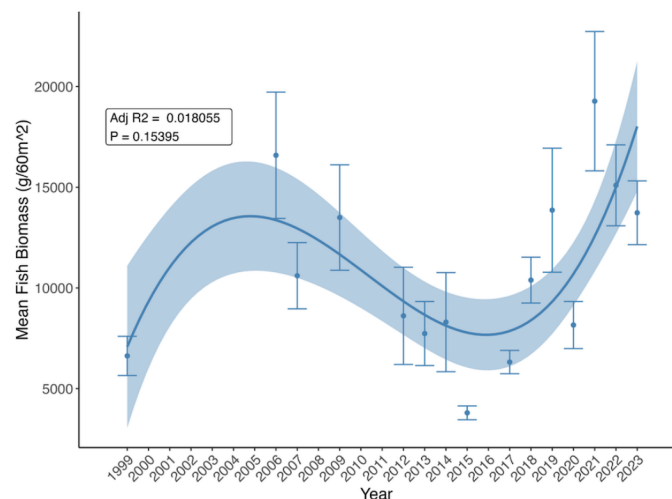
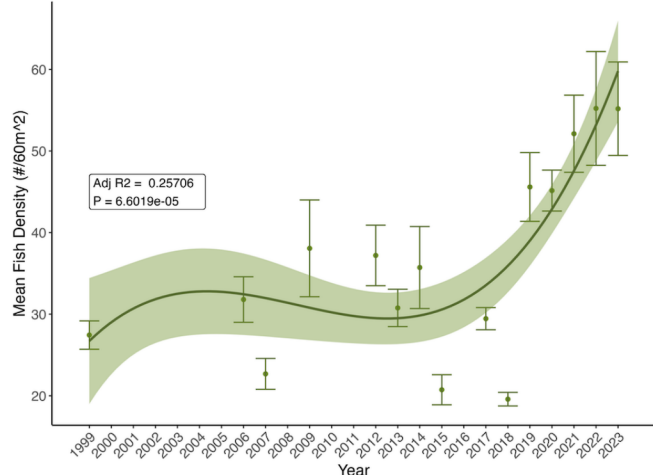


Fig. 4. Both fish density (top) and fish biomass (bottom) showing a marked increase since 2018.

5.

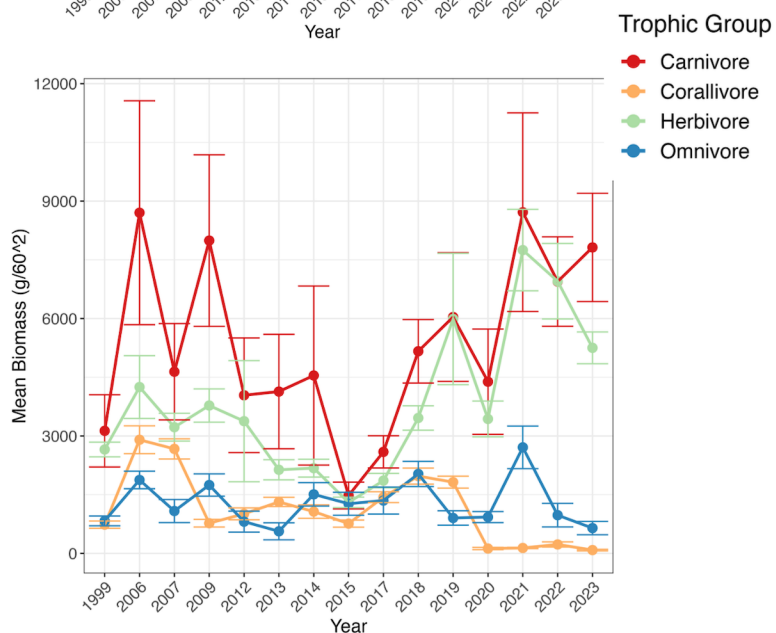
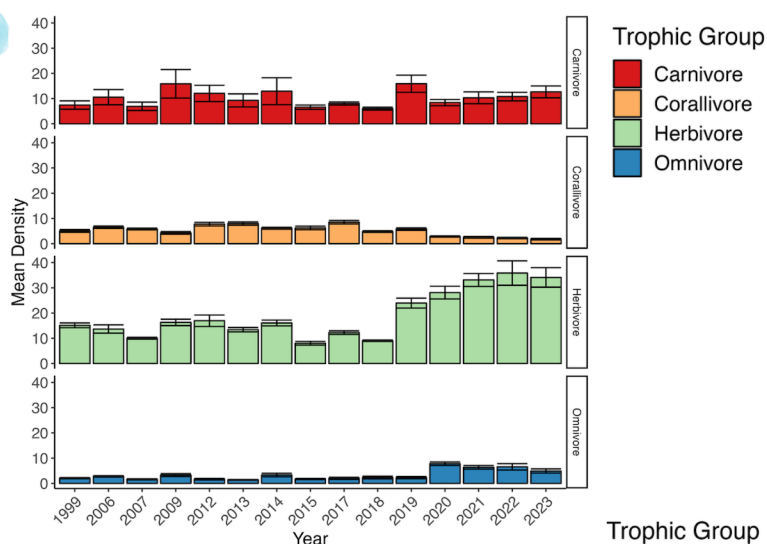


Fig. 5. Contributions of fish trophic guild to total fish density (top) and fish biomass (bottom) over time.

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6. PARROTFISH



6.

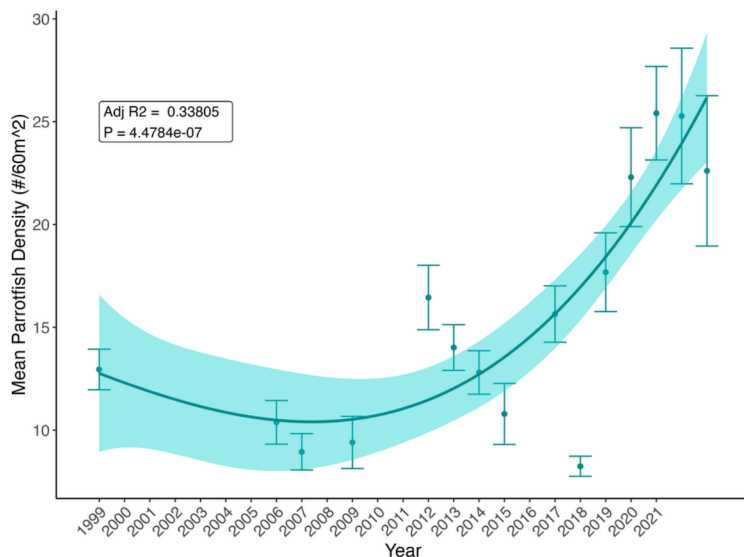
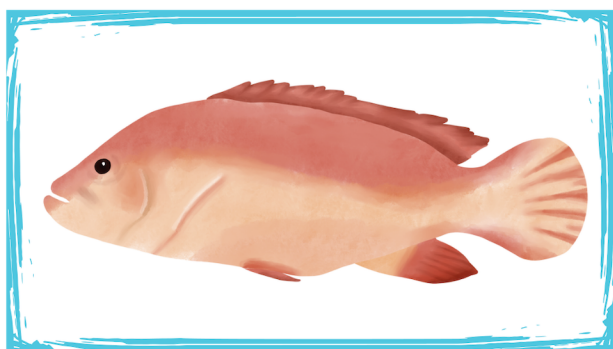


Fig. 6. Parrotfish density over time.

7. GROUPERS



7.

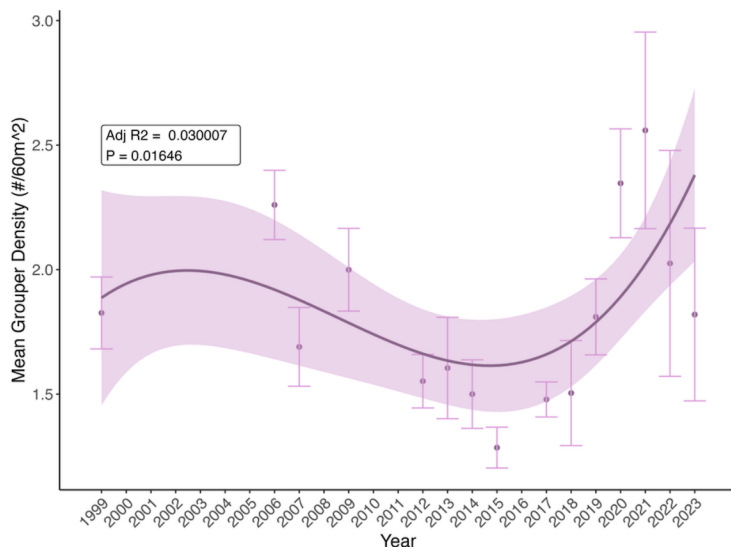


Fig. 7. Mean density of grouper over time.

8. MACROALGAE



8.

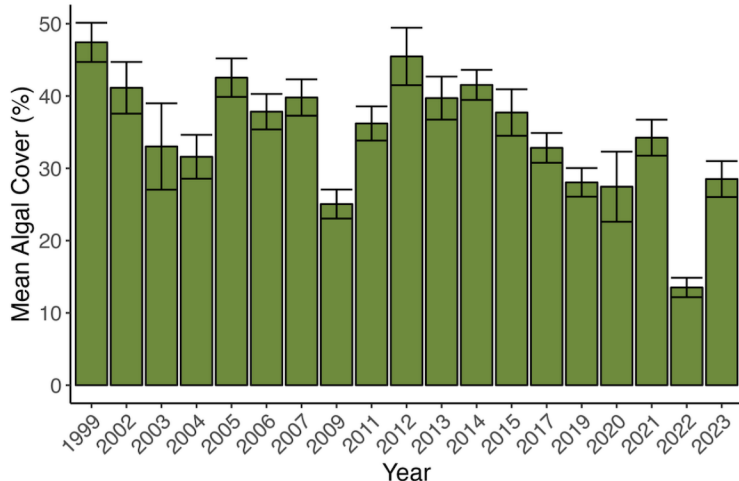


Fig. 8. Mean percent cover of macroalgae over time.

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9. 2023 BLEACHING EVENT

Shortly after CCMI's 2023 surveys, the world's reefs experienced the fourth global coral bleaching event. These data and associated report card does not reflect the impact of this bleaching event on Little Cayman's reefs, but CCMI has monitored the event closely. The results of which can be found in the 2023/24 coral bleaching report card.

EXPLANATION OF FIGURES

- Fig. 1. Mean percent coral cover (+/- SE) over time from 1999 - 2023.
Fig. 2.a.) Health state of surveyed reefs sites in Little Cayman from 1999 - 2022. Categories are based on percent coral cover using the following: Poor = 5 - 10 %, Fair = 10 - 18%, Good = 19 - 25%, Good+ = 25 - 30%, Very Good = 31 - 100%.
Fig. 2.b.) Percent frequency by health state in 1999 (left), 2018 (middle), and 2023 (right).
Fig. 3. Contribution of various coral families to overall percent cover at five year intervals.
Fig. 4.a.) Fish density showing a marked increase since 2018.
Fig. 4.b.) Fish biomass showing a marked increase since 2018.
Fig. 5.a.) Contribution of each fish trophic group to total fish density between 1999-2023.
Fig. 5.b.) Contributions of each fish trophic guild to total fish biomass over time.
Fig. 6. Parrotfish density over time.
Fig. 7. Mean density of grouper on reef sites surveyed in Little Cayman from 1999 - 2023.
Fig. 8. Mean percent cover of macroalgae on the benthos in Little Cayman from 1999 to 2023.

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About CCMI:

CCMI is dedicated to conducting and facilitating research, education, and outreach that will sustain marine diversity for future generations. Our vision is a world with vibrant oceans and healthy coral reefs. We will make this vision a reality by undertaking cutting edge, impactful research and transforming this research into conservation and education initiatives which will serve to bridge the gap between knowledge and action. CCMI is a US 501(c)3 nonprofit organization (ID# 22-3609293), a UK charity (#1104009) and Cayman Islands nonprofit (NP-03)

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