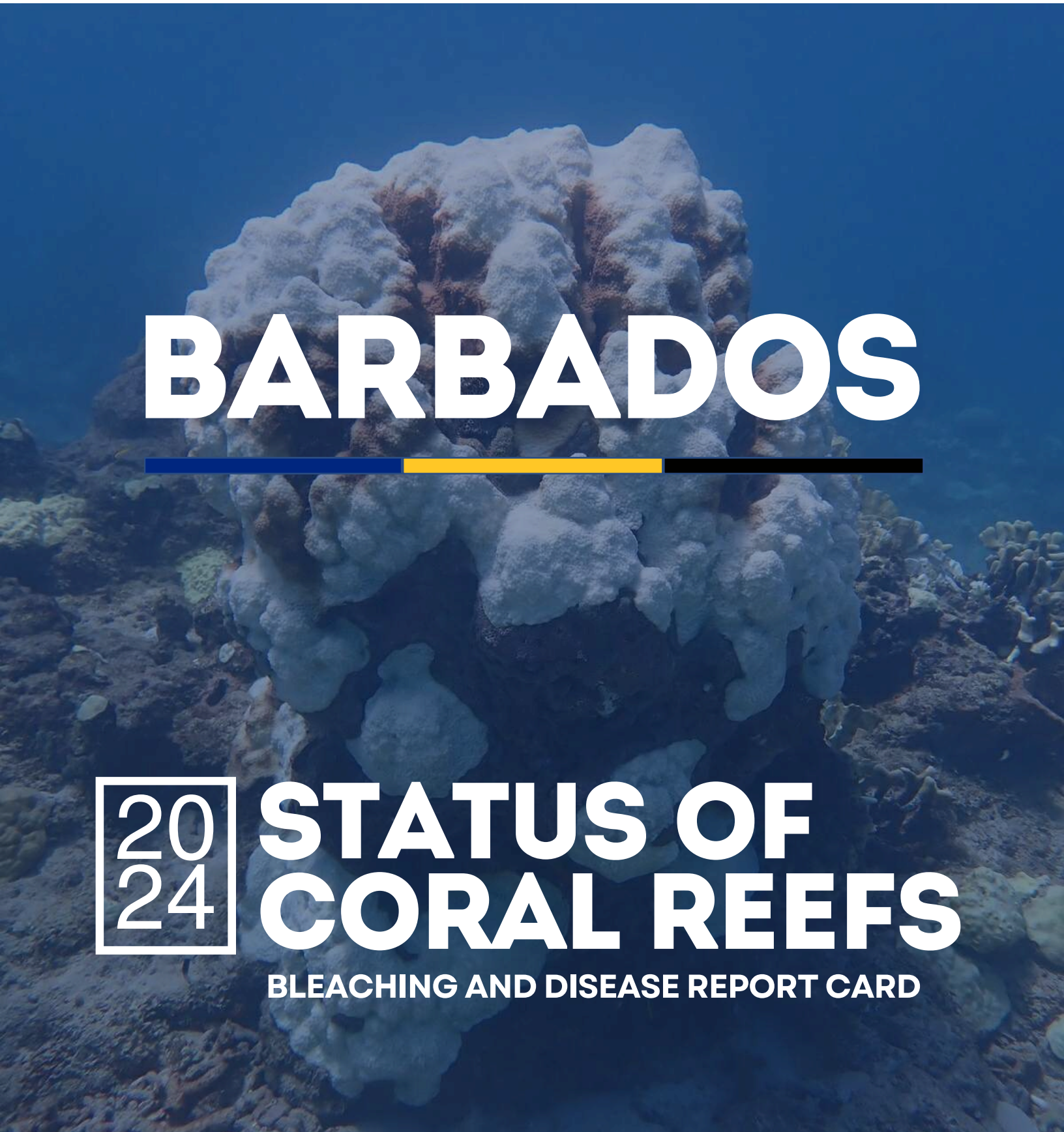
CZMU
COASTAL ZONE
MANAGEMENT UNIT

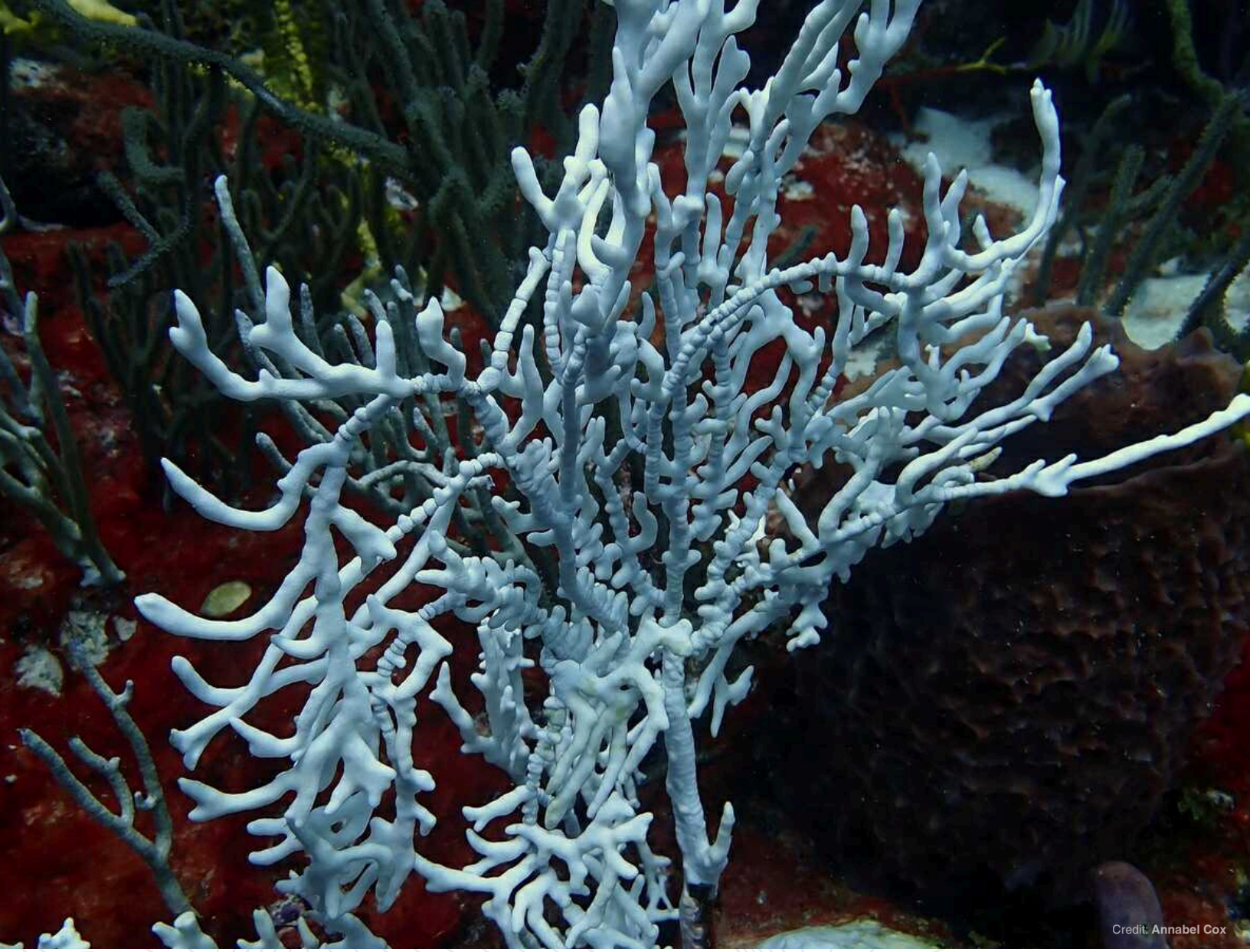


BARBADOS

2024

STATUS OF CORAL REEFS

BLEACHING AND DISEASE REPORT CARD



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A MESSAGE FROM THE DIRECTOR

Coral reefs are uniquely distributed along the entire coastline of Barbados. The fringing, patch and bank reefs play a critical role in the economic, social, environmental and recreational activities of the coastline. More importantly, coral reefs are the first line of natural defense for shorelines and beaches. It is essential that the health of these reef systems are maintained.

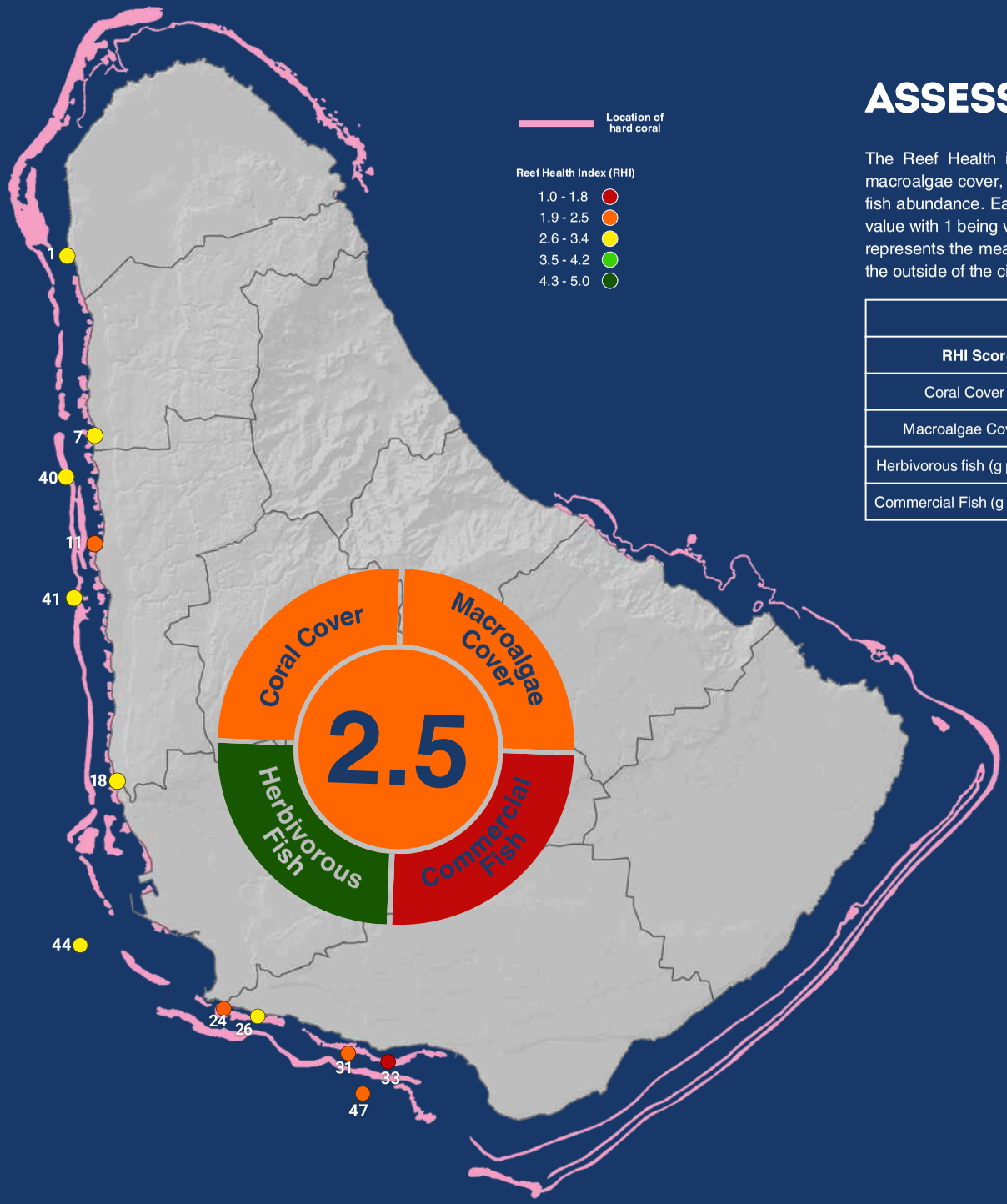
One of the routine functions of the Coastal Zone Management Unit (CZMU) is to regularly monitor the health status of the reefs along the west and south coasts. This has been ongoing every five years since 1982. The information gathered from these routine monitoring events allows for the general identification of changes occurring on reefs over time and assist in the development of management strategies for the ecosystems.

The 2024 Bleaching and Disease Coral Reef Report Card captures the impacts on coral reefs resulting from the arrival of Stony Coral Tissue Loss Disease in 2022, the mass coral bleaching event in 2023 and the passage of Hurricane Beryl in 2024. It is designed to support the Coastal Zone Management Unit's (CZMU) public awareness and education outreach programme by presenting scientific information about coral reefs in a clear and accessible manner. This Report Card aims to inform the public and decision-makers about the current status of coral reef ecosystems and to support the development of new strategies for their conservation and sustainable management.

L. Brewster

Dr. Leo Brewster

Director, Coastal Zone Management Unit,
Barbados



ASSESSING REEF HEALTH

The Reef Health is assessed using four standard indicators, namely: coral cover, macroalgae cover, key herbivorous fish abundance and key piscivorous or 'commercial' fish abundance. Each indicator is then assigned a score (from 1-5) based on its actual value with 1 being very poor and 5 being very good. The overall Reef Health Index (RHI) represents the mean score across the four indicators. These scores are shown around the outside of the circle and the overall RHI score is given in the centre.

	Very Good	Good	Fair	Poor	Very Poor
RHI Score	5	4	3	2	1
Coral Cover (%)	≥40.0	20.0 - 39.9	10.0 - 19.9	5.0 - 9.9	<5.0
Macroalgae Cover (%)	0 - 0.9	1.0 - 5.0	5.1 - 12.0	12.1 - 25.0	>25.0
Herbivorous fish (g per 100m^2)	≥3480	2880 - 3479	1920 - 2879	960 - 1919	<960
Commercial Fish (g per 100m^2)	≥1680	1260 - 1679	840 - 1259	420 - 839	<420

West Coast Fringing Reefs

1 Six Men's
7 Greensleeves
11 Bachelor Hall
18 Batts Rock

South Coast Patch Reefs

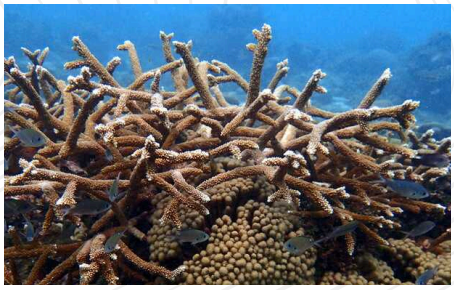
24 Asta
26 Ocean View
31 Josef's
33 Rainbow Reef

Bank Reefs

40 Allens
41 Holetown Bank
44 Shark's Bank
47 Casuarina Bank

REEF HEALTH INDICATORS EXPLAINED

The Reef Health is assessed using four standard indicators, namely: coral cover, macroalgae cover, key herbivorous fish abundance and key piscivorous or 'commercial' fish abundance.



Coral cover describes the amount of reef surface that is taken up by living hard corals

Herbivorous fish is a measure of the biomass of important grazers on seaweeds that could overgrow the reef - namely parrotfishes and surgeonfishes

Macroalgae cover describes the amount of reef surface that is taken up by seaweeds

Commercial fish is a measure of the biomass of carnivorous fish species that are commercially important to people - namely snappers and groupers

COMMON BENTHIC COMPONENTS OF BARBADOS' REEFS

HARD CORALS

Living animals that build the reef's 3D structure of calcium carbonate. This provides shelter and living space for the diverse reef community and protects our coastlines.

MACROALGAE

Seaweeds, that when too abundant, outcompete corals for space on the reef.

CORALLINE ALGAE

Hard encrusting seaweeds that can form a coating over hard surfaces in the reef that looks like pink paint, and acts as a "reef cement". They provide a good surface for young corals to settle on and grow.

TURF ALGAE

Small or young seaweeds that cover hard surfaces in the reef and are continuously grazed by herbivores like fish and urchins.

SPONGES

Simple living animals with semi-rigid bodies that filter large amounts of water through their many pores and provide food and shelter for other reef organisms.

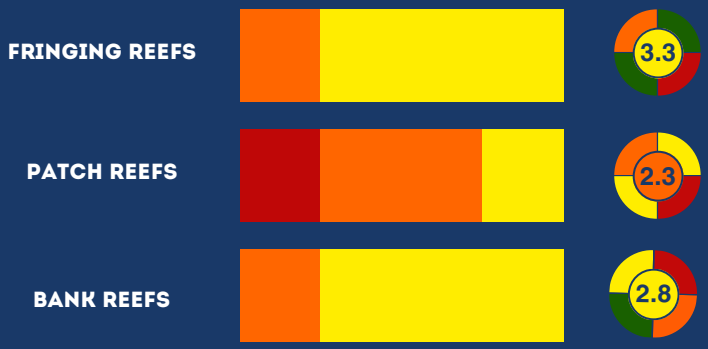
OTHER SUBSTRATE

Other components of the reef such as coral rubble, sand, crevices and other encrusting invertebrates (e.g. anemones, tunicates, gorgonians)

STATUS OF CORAL REEFS

2022

2024



* The data presented is a subset (12 of 47) of the 5-year Coral Reef Monitoring Programme locations.

Very Poor | Poor | Fair | Good | Very Good

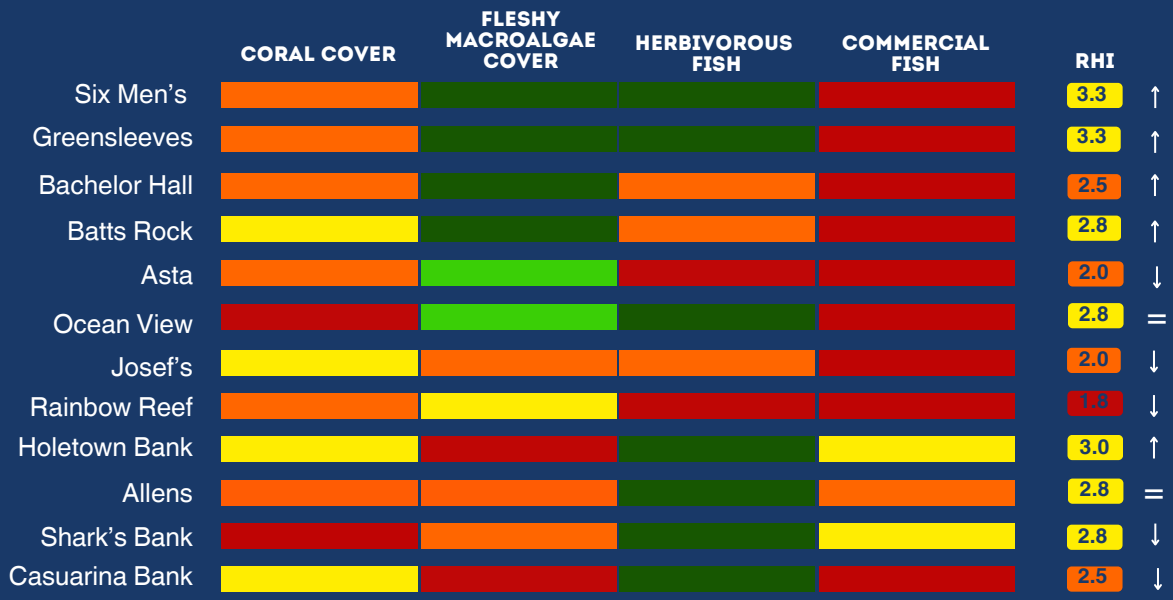
SITE-BY-SITE BREAKDOWN (2024)

↑ Increase in RHI (compared to 2022)

↓ Decrease in RHI (compared to 2022)

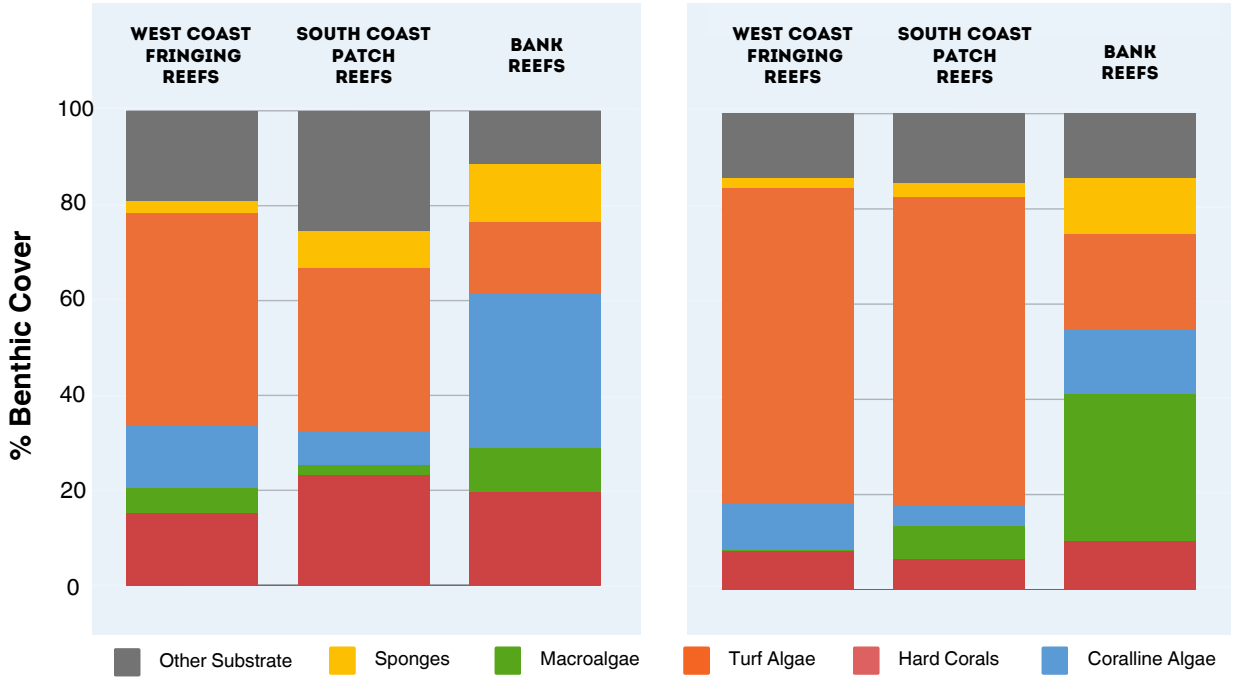
= No change in RHI (compared to 2022)

ALL REEFS	
=	2
↑	5
↓	5



COMPARING REEF COMPOSITION AND HEALTH

REEF COMPOSITION



GORGONIANS
individuals/100 m²

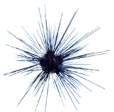
2022 WEST COAST FRINGING REEFS	2022 SOUTH COAST PATCH REEFS	2022 BANK REEFS	2024 WEST COAST FRINGING REEFS	2024 SOUTH COAST PATCH REEFS	2024 BANK REEFS
1	178	153	no data	no data	no data

COMMERCIAL FISH
(LUTJANIDAE & SERRANIDAE)
g/100 m²

2022 WEST COAST FRINGING REEFS	2022 SOUTH COAST PATCH REEFS	2022 BANK REEFS	2024 WEST COAST FRINGING REEFS	2024 SOUTH COAST PATCH REEFS	2024 BANK REEFS
16	84	710	3	none	651

HERBIVOROUS FISH
(SCARIDAE & ACANTHURIDAE)
g/100 m²

2022 WEST COAST FRINGING REEFS	2022 SOUTH COAST PATCH REEFS	2022 BANK REEFS	2024 WEST COAST FRINGING REEFS	2024 SOUTH COAST PATCH REEFS	2024 BANK REEFS
540	804	2072	3919	2081	8138



BLACK SEA URCHINS
individuals/100 m²

2022 WEST COAST FRINGING REEFS	2022 SOUTH COAST PATCH REEFS	2022 BANK REEFS	2024 WEST COAST FRINGING REEFS	2024 SOUTH COAST PATCH REEFS	2024 BANK REEFS
2	6	none	18	1	none

LIONFISH
g/100 m²

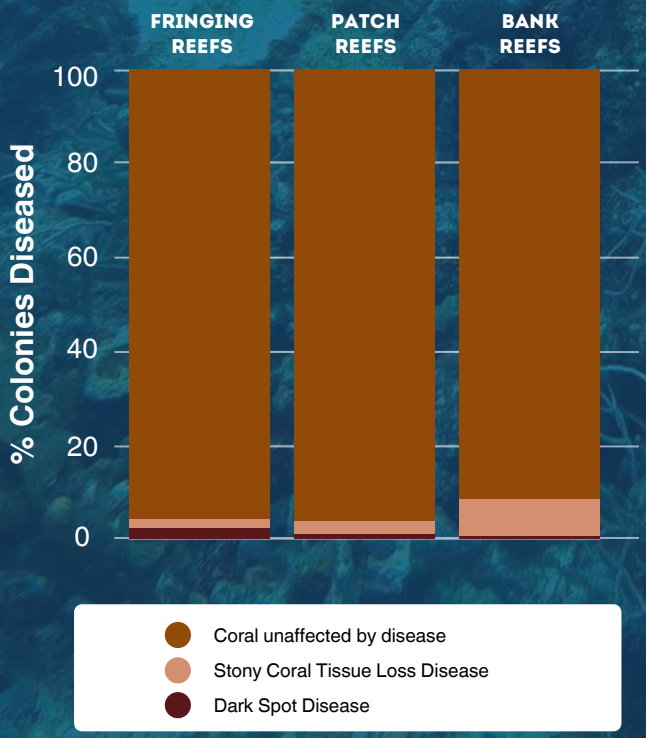
2022 WEST COAST FRINGING REEFS	2022 SOUTH COAST PATCH REEFS	2022 BANK REEFS	2024 WEST COAST FRINGING REEFS	2024 SOUTH COAST PATCH REEFS	2024 BANK REEFS
1	3	92	165	none	287

STONY CORAL TISSUE LOSS DISEASE

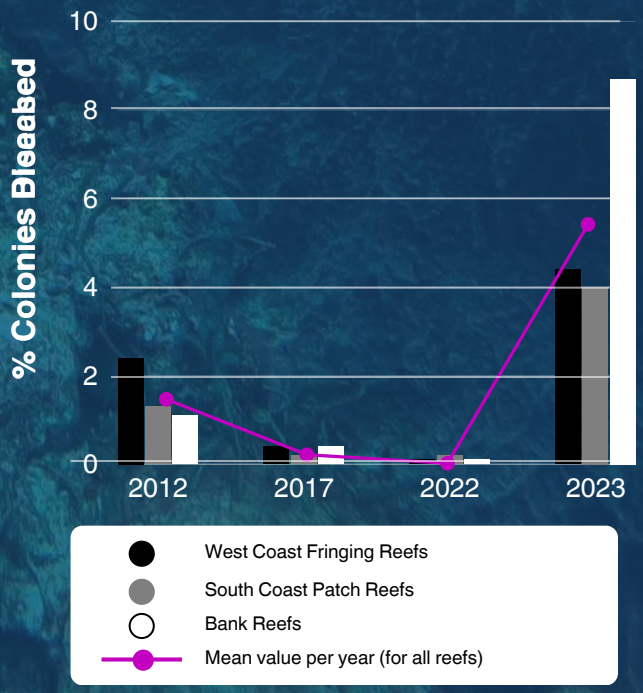
Stony Coral Tissue Loss Disease (SCTLD) was first identified off the coast of Florida in 2014 and became one of the greatest threats to Caribbean coral reefs as a highly prevalent, rapidly spreading disease with high mortality rates. The disease progressed quickly, decimating reefs within weeks to months and impacting more than 20 of the approximately 45 Caribbean reef-building coral species. Since its arrival in Barbados in November 2022, the CZMU actively monitored progression of the disease, conducting surveys, educating stakeholders, and implementing interventions such as antibiotic treatments to mitigate its effects on the island's reefs. Treatments arrested the disease for a short period of time but ultimately treated corals also died. Maze coral (*Meandrina meandrites*) was affected most on our reefs, experiencing the highest mortality.

Dendrogyra cylindrus colony being treated after showing signs of SCTLD

STATUS OF REEFS (2023)



TRACKING CHANGES OVER TIME

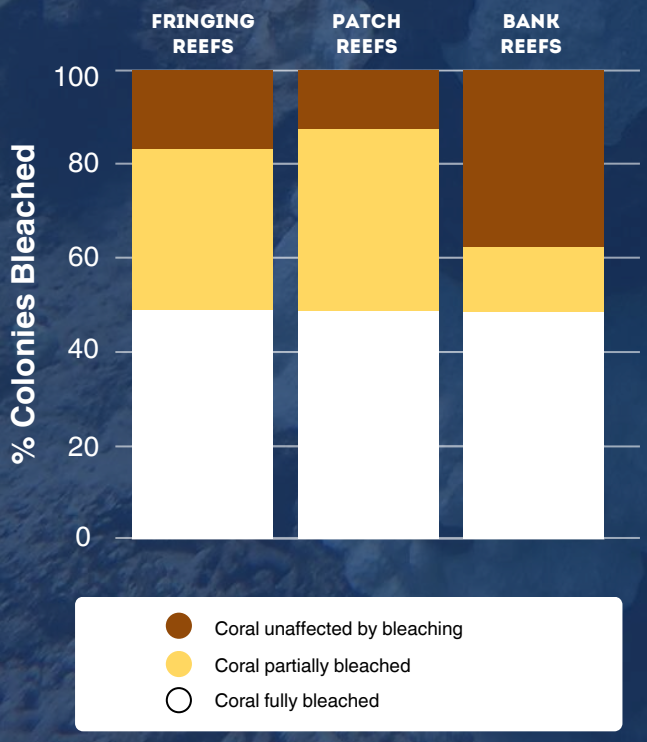


CORAL BLEACHING

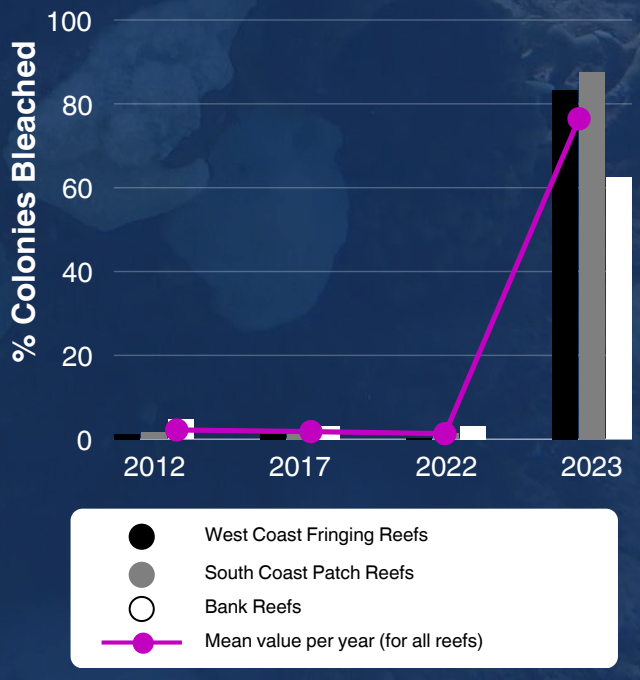
Barbados' coral reefs are essential for tourism, coastal protection, and fisheries, significantly supporting the local economy. However, these reefs have faced decline since the 1970s due to human activities and climate change. Recent years have brought increasingly severe climate-related damage, including extensive bleaching recorded from September 2023. The National Oceanic & Atmospheric Administration (NOAA) and the International Coral Reef Initiative (ICRI) confirmed the fourth global bleaching event on April 15, 2024. As the reefs were recovering from this bleaching, Hurricane Beryl, a category 4 hurricane, passed south of the island on July 1, 2024, causing substantial damage to coral reef structures. The Coastal Zone Management Unit (CZMU) conducted rapid, qualitative assessments of selected reef sites and undertook quantitative assessments of a subset of the CZMU's longstanding monitoring locations to produce visualizations included in this report.

Acropora palmata colony fully bleached, and *Montastrea cavernosa* colony partially bleached

STATUS OF REEFS (2023)



TRACKING CHANGES OVER TIME



KEY FINDINGS

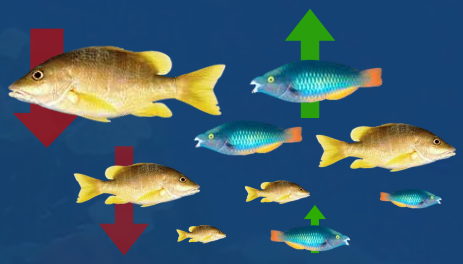
2.3 → 2.5

OVERALL RHI VALUE
INCREASED

(HOWEVER, THIS COULD BE DUE TO ONLY HAVING A SUBSET (12) OF THE 47 REEFS.)

67% OF REEFS HAD A REDUCTION IN CORAL COVER, AND COULD BE DESCRIBED AS 'POOR' TO 'VERY POOR'.

MACROALGAE INCREASED, WITH **42%** OF REEFS DESCRIBED AS 'FAIR' TO 'VERY POOR'



ALTHOUGH HERBIVOROUS BIOMASS ARE NOW 'VERY GOOD', COMMERCIAL FISH BIOMASS REMAINS UNFAVOURABLE.

SINCE JANUARY 2023, BARBADIAN REEFS HAVE BEEN AFFECTED BY A **GLOBAL MASS CORAL BLEACHING EVENT.**

THE MEAN NUMBER OF COLONIES AFFECTED BY BLEACHING SIGNIFICANTLY INCREASED TO A MEAN OF **78%** IN 2023.

THE MEAN NUMBER OF DISEASED COLONIES **INCREASED TO 5.7%** IN 2023, PARTICULARLY ON BANK REEFS

STONY CORAL TISSUE LOSS DISEASE (SCTLD) WAS THE PROMINENT DISEASE RECORDED ON BARBADIAN REEFS.

RHI SCORE IMPROVED
5
out of 12

RHI SCORE DECLINED
5
out of 12

RHI SCORE UNCHANGED
2
out of 12