



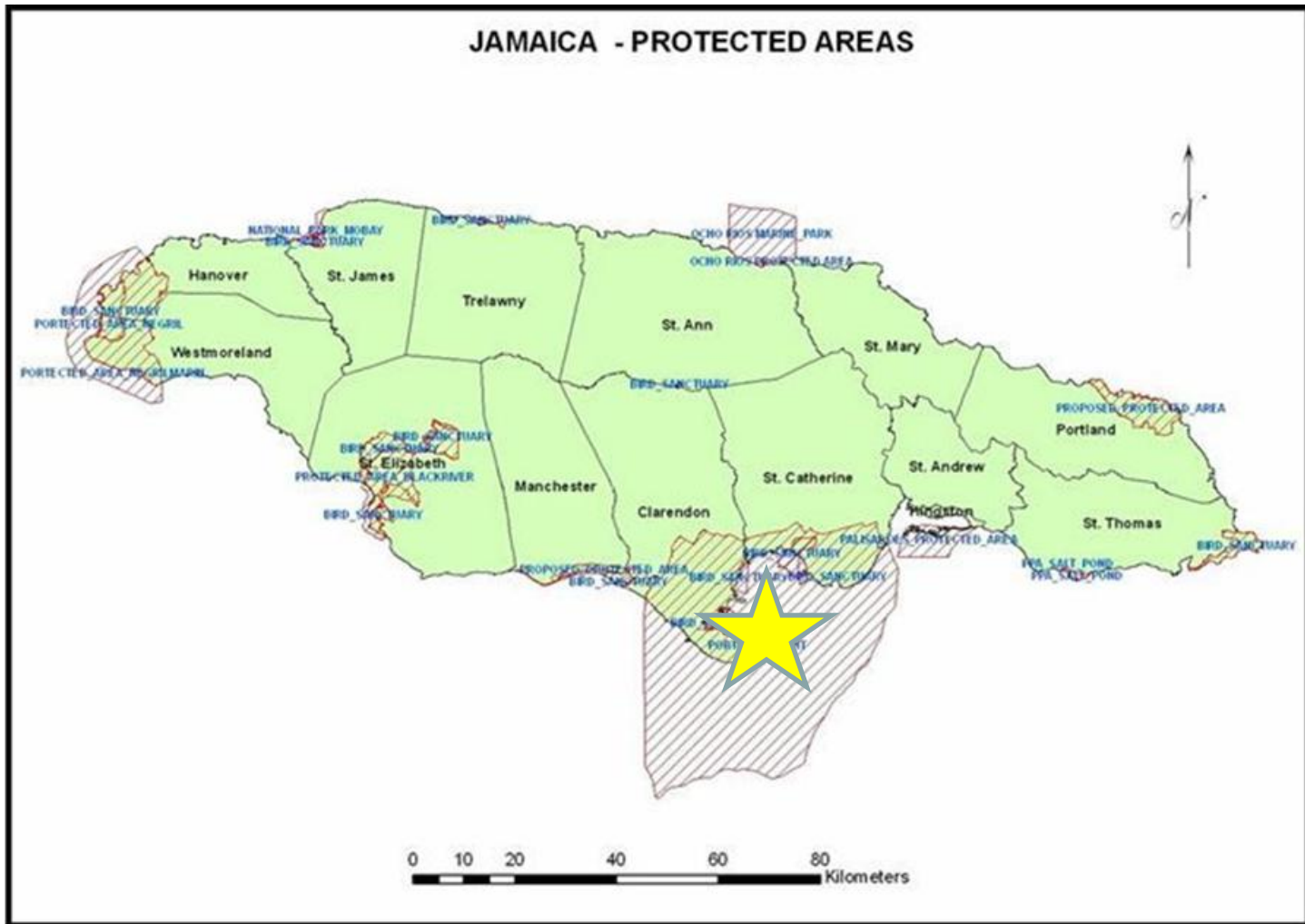
National Environment
and Planning Agency

Reef Health in the Portland Bight Protected Area



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Protected Areas

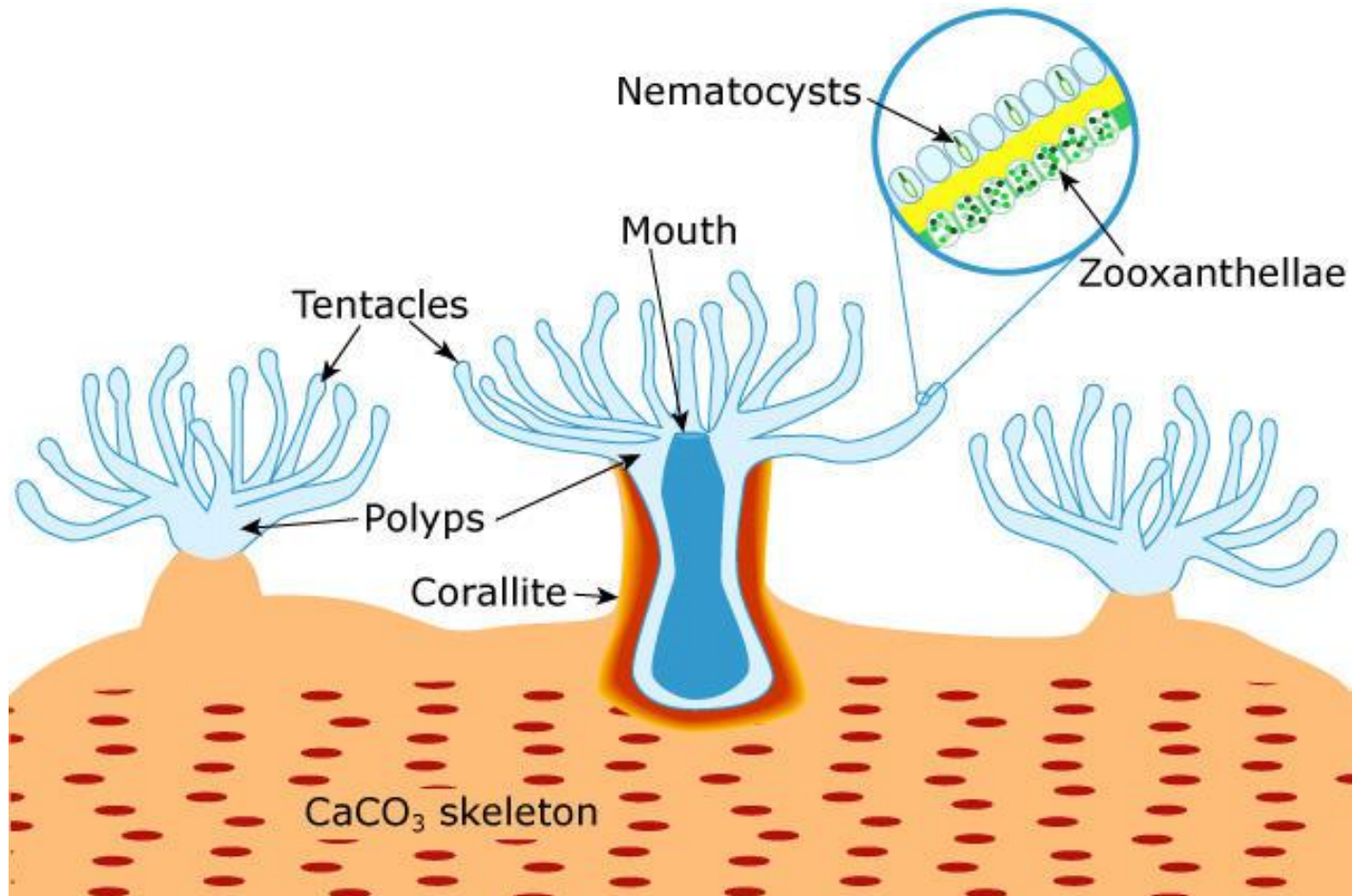


Coral Biology

- Scientific classification: Members of Phylum Cnidaria (similar to jellyfish);
- Made up of a calcium carbonate skeleton with polyps that have **nematocysts** (stinging cells) and **zooxanthellae** (photosynthetic symbiotic algae) in the tentacles;
- Contribute significantly to the rich biodiversity and economic productivity;
- Provide habitat and nursery for marine organisms;
- Act as barriers, protecting the coastline from erosion and high energy waves;



Coral Biology



Coral Bleaching

- Hard corals are very susceptible to disease, changes in sea temperature and water quality.
 - When they experience extreme or sudden changes in their environment (water quality) they become stressed and respond by expelling the symbiotic algae and turn white. This process is known as **coral bleaching**.



Consequences of Coral Bleaching

- Corals rely on symbiotic algae to make food for energy to grow (photosynthesis).
- When corals are severely bleached, they begin to starve.
- Coral bleaching and associated mortality have negative impacts on:
 - coral communities,
 - fish communities, and
 - human communities that depend on coral reefs and associated fisheries for livelihoods and wellbeing

Consequences of coral reef destruction

- Decrease in biodiversity
 - ‘bio’ refers to living/life and ‘diversity’ refers to variation/differences
- Decrease in seafood availability
- Coastal erosion
- Reduced ability to replenish sand
- Increased coastal vulnerability to storm activity
- Increased flooding
- Decrease in tourism appeal (aesthetics)



Directly and indirectly affects livelihoods including fishing industry, tourism industry, recreational activity and infrastructure

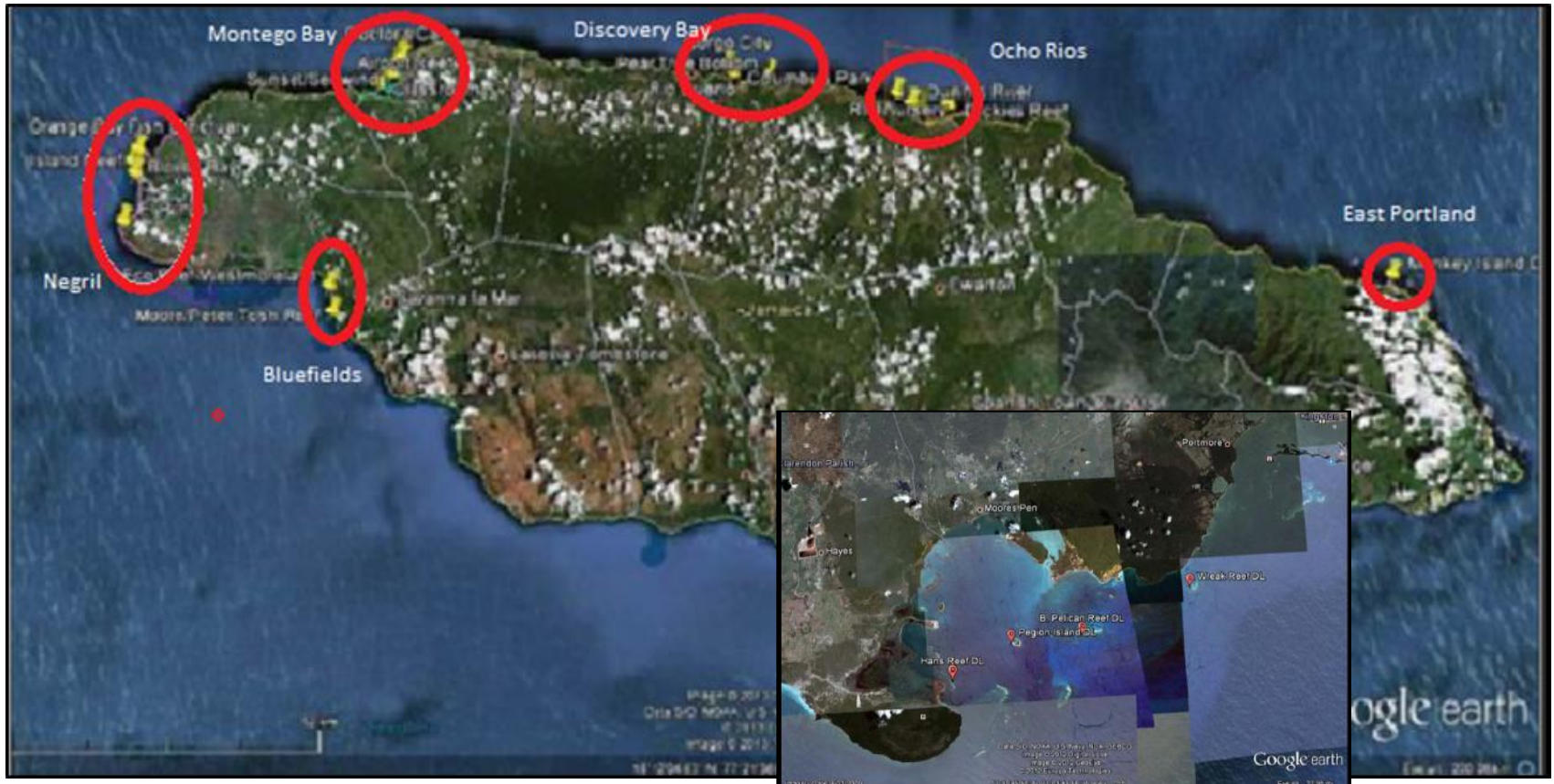
Sea Surface Temperature (SST)

- SST is an indicator of climate change.
- SST correlates to coral reef bleaching. Tracking SST allows for forecasting of bleaching events.
- Prolonged exposure to SST temperatures **exceeding 30 degrees Celsius** may lead to coral bleaching.
- SST recording commenced under the EU/UNEP/GOJ Climate Change Adaptation and Disaster Risk Reduction Project which ended in 2013.
- 27 HOBO pendant temperature data loggers deployed across 8 localities.



Parish	Location	Site
Kingston	Palisadoes Port Royal Protected Area	Lime Cay
		Maiden Cay
		South East Cay
		Drunkenman's Cay
St. Catherine/Clarendon	Portland Bight Protected Area	Wreck Reef
		Big Pelican Island
		Pigeon Island
		Hans Reef
Westmoreland	Bluefields Bay	Moore Reef
		Eco Reef
Westmoreland/Hanover	Negril Marine Park	El Punto
		Ireland Pen
		Bloody Bay
		Orange Bay
St. James	Montego Bay Marine Park	Classroom Reef
		Sunset Mooring
		Doctor's Cave
		Eco Reef
		Airport
St. Ann	Discovery Bay	Gorgo City
		Columbus Park
		Pear Tree Bottom
St. Ann /St. Mary	Ocho Rios Marine Park Protected Area	Dickies Reef
		Sewage End
		Dunns River
		RIU Nursery
Portland	East Portland Fish Sanctuary	Monkey Island

SST Localities



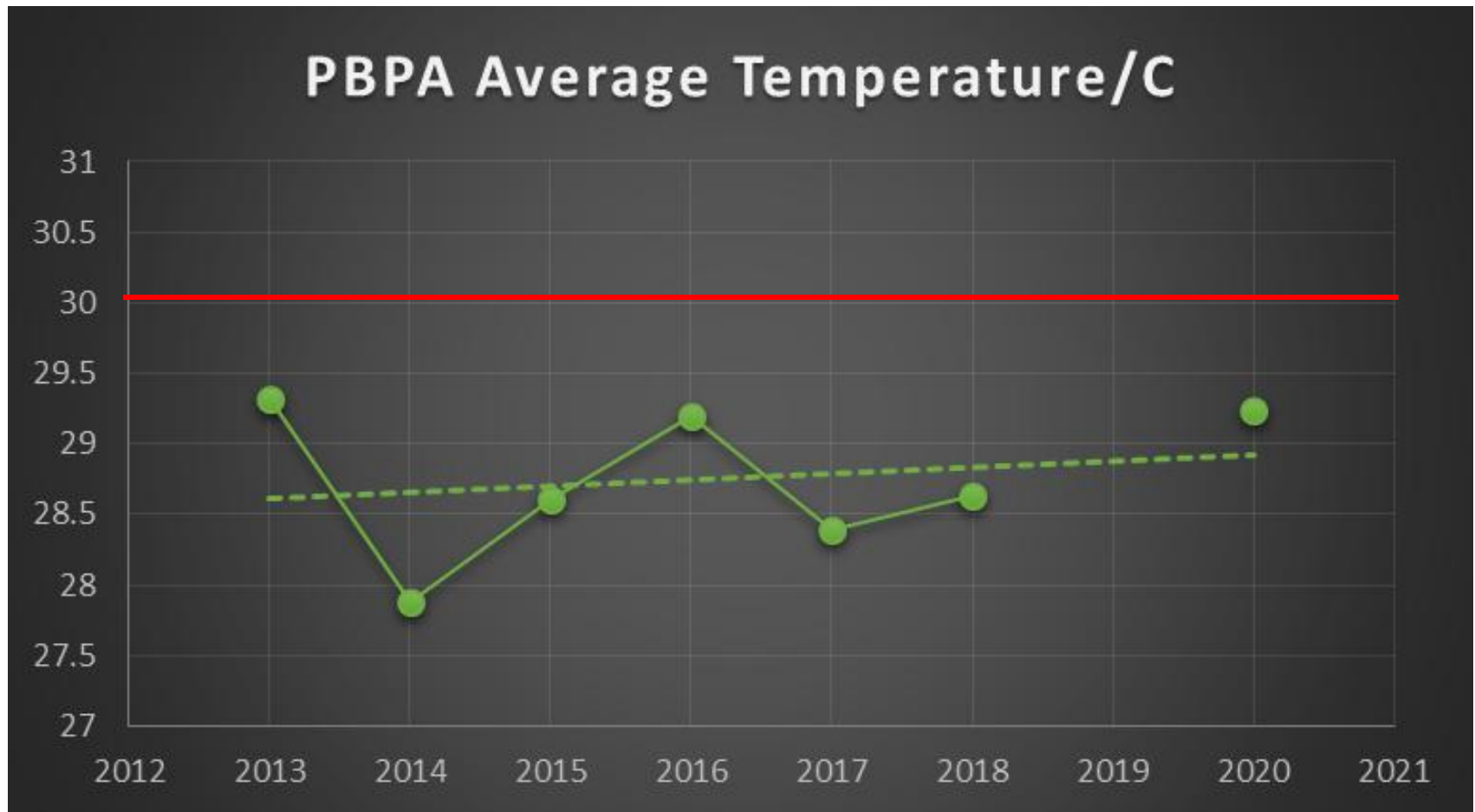
Warmest months

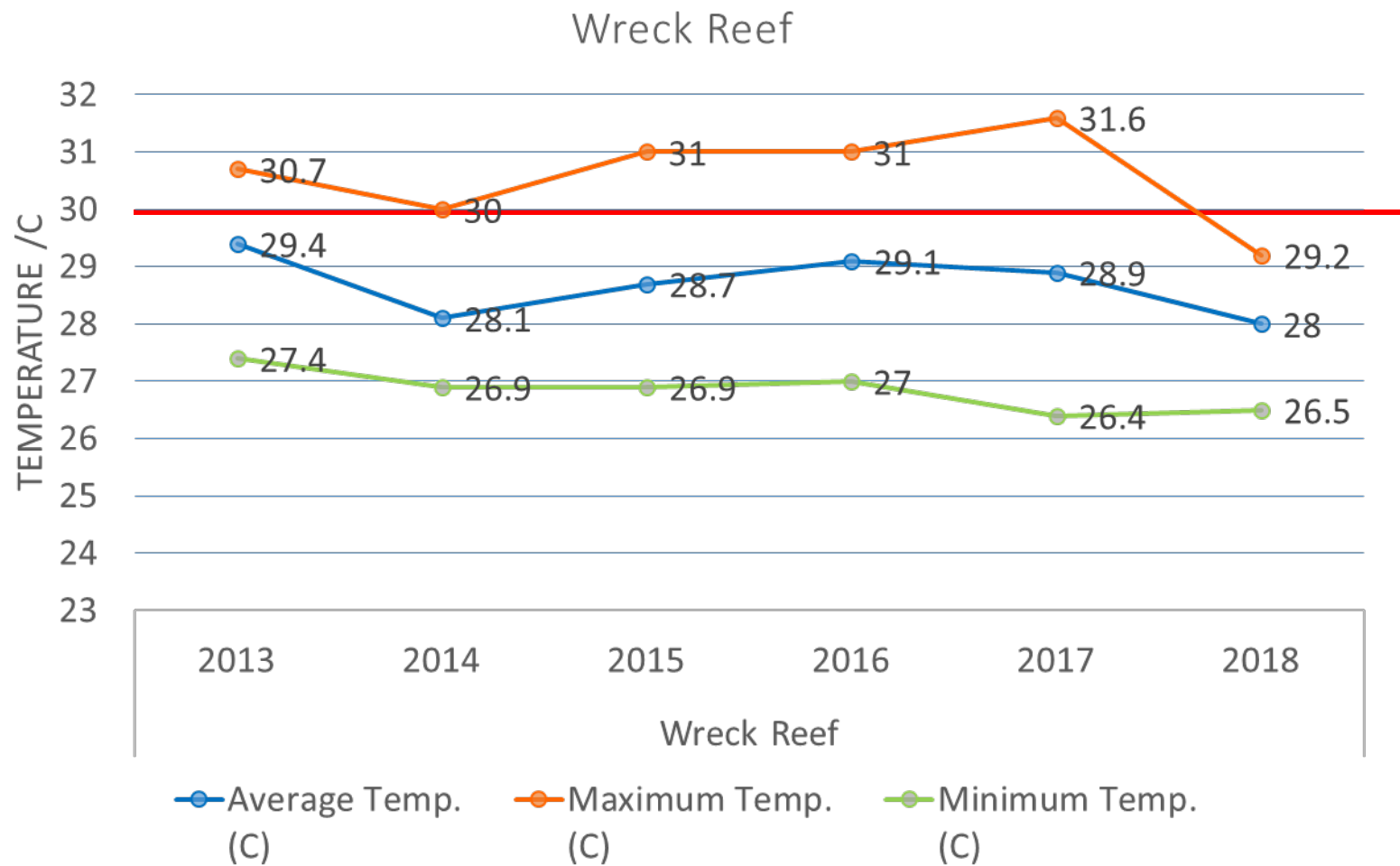
Months recording the warmest SST across the sites,
January 2018 to October 2019

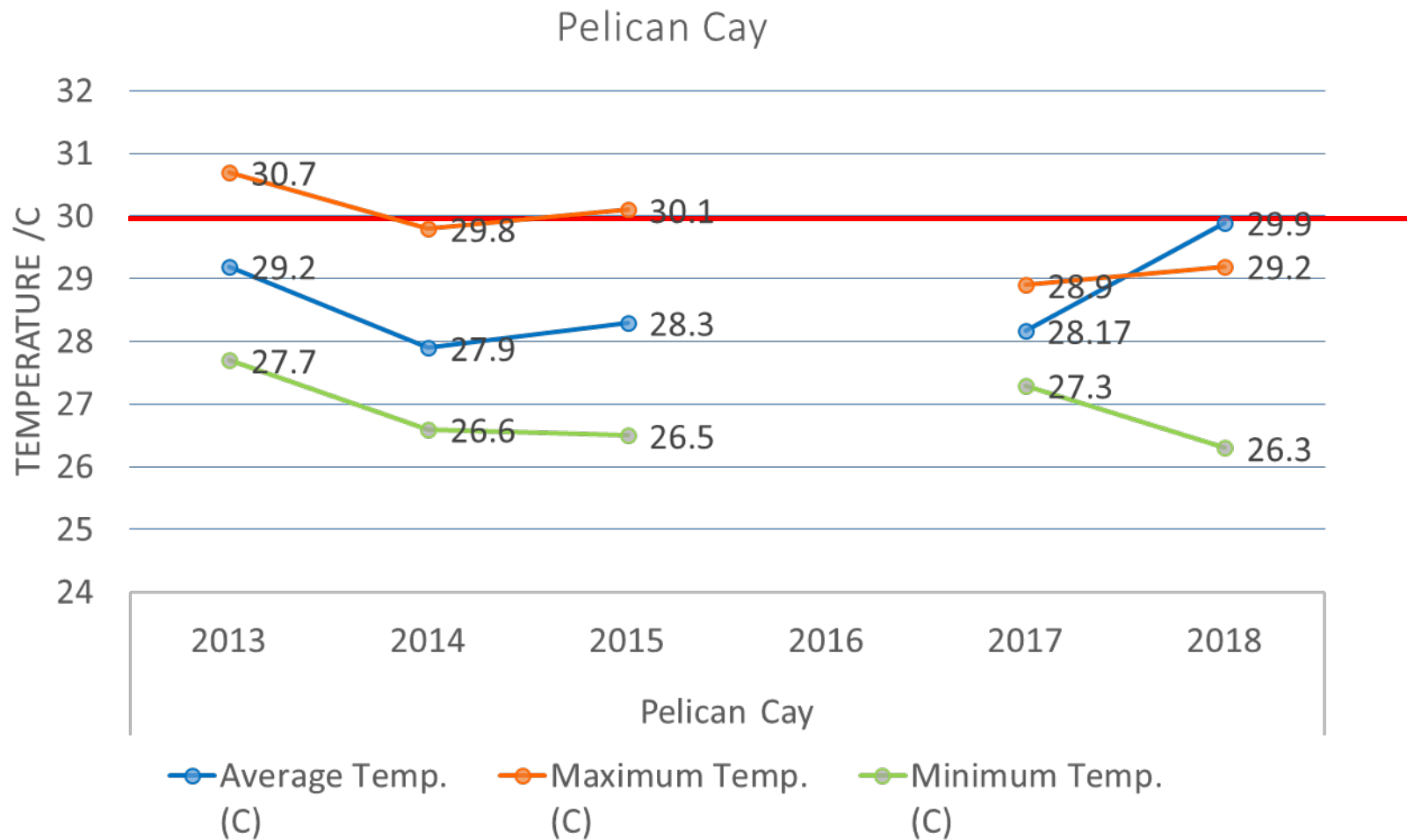


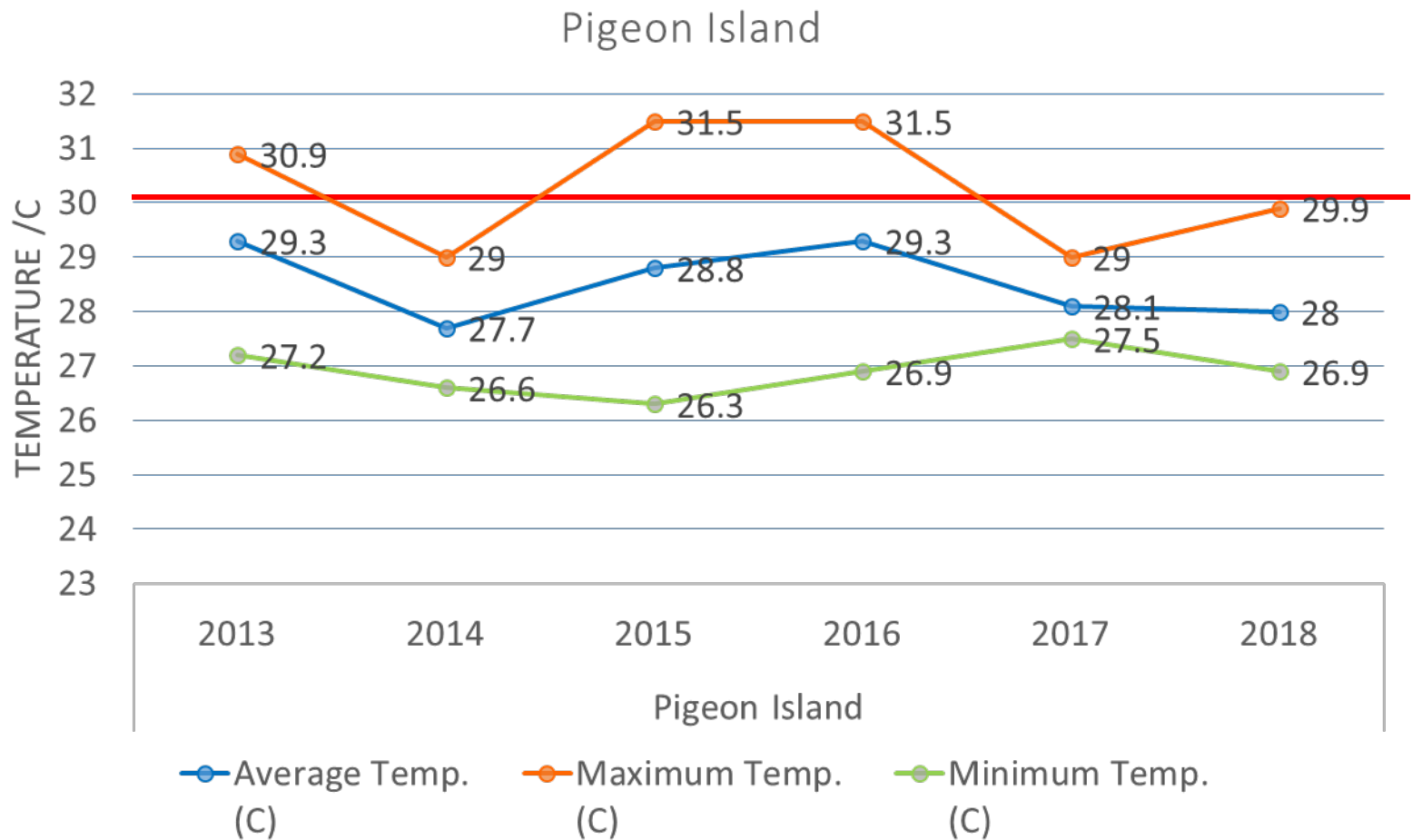
SST in PBPA

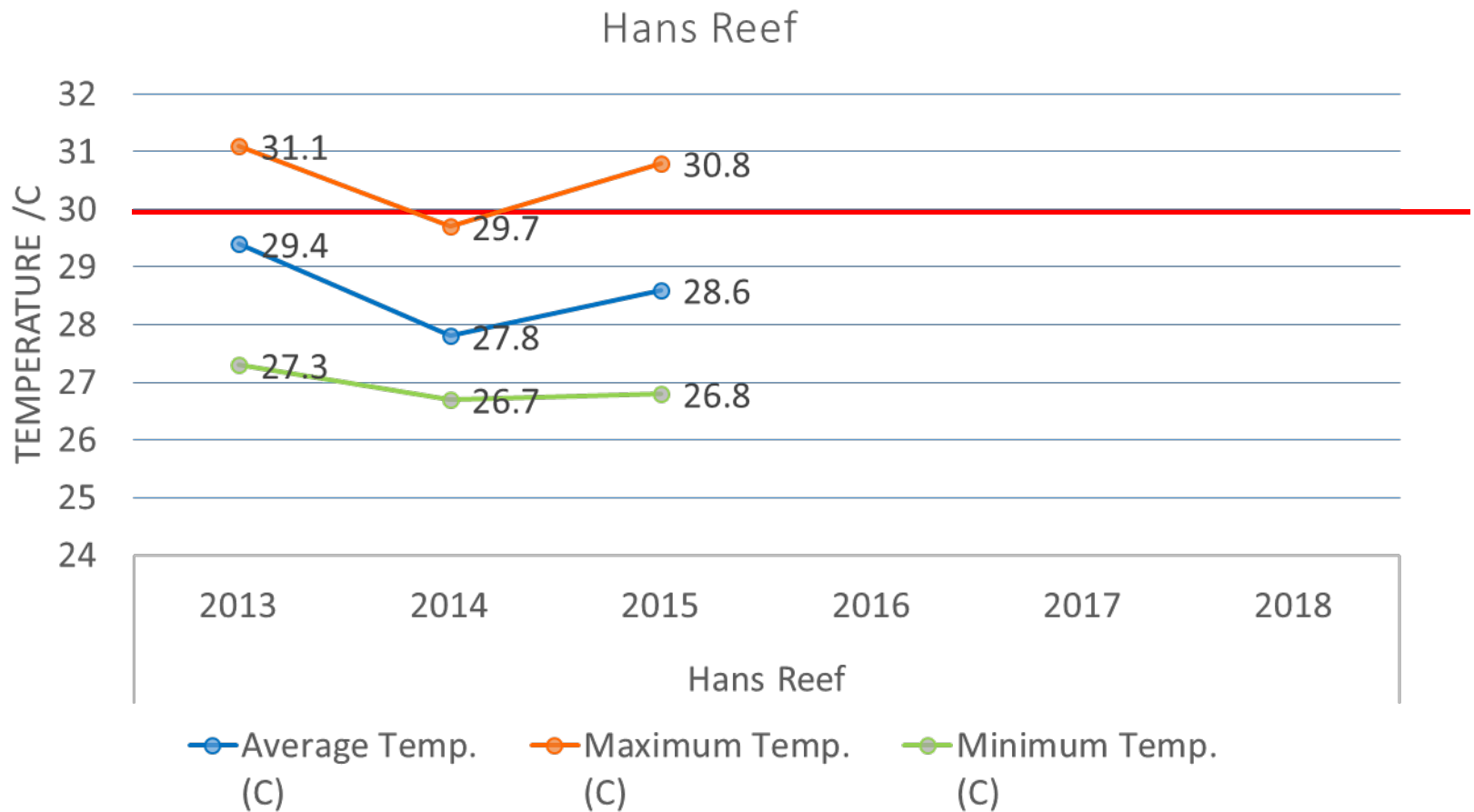
- Unfortunately, due to challenges in the SST monitoring programme, there are gaps in data collected.





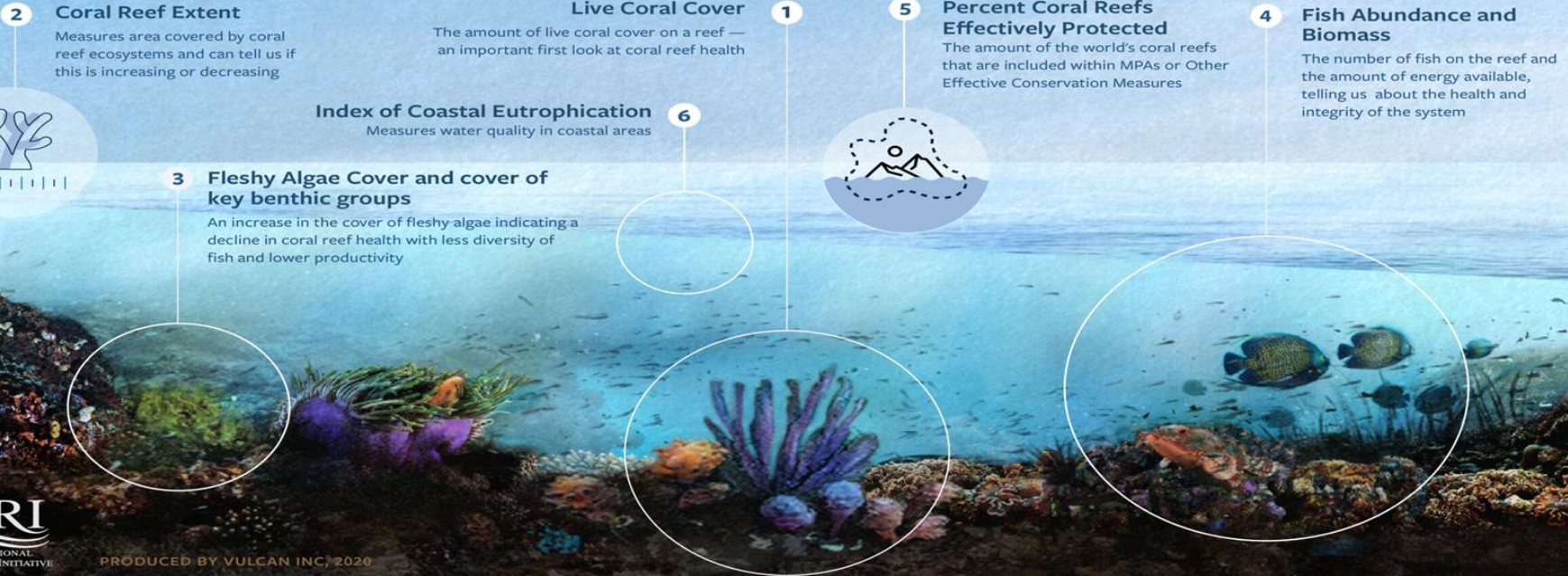






Coral Reef Health

HEALTHY CORAL REEF INDICATORS



ICRI
INTERNATIONAL
CORAL REEF INITIATIVE

PRODUCED BY VULCAN INC, 2020

Managing and protecting Jamaica's land, wood, air and water



**National Environment
and Planning Agency**

Coral Reef Health Index

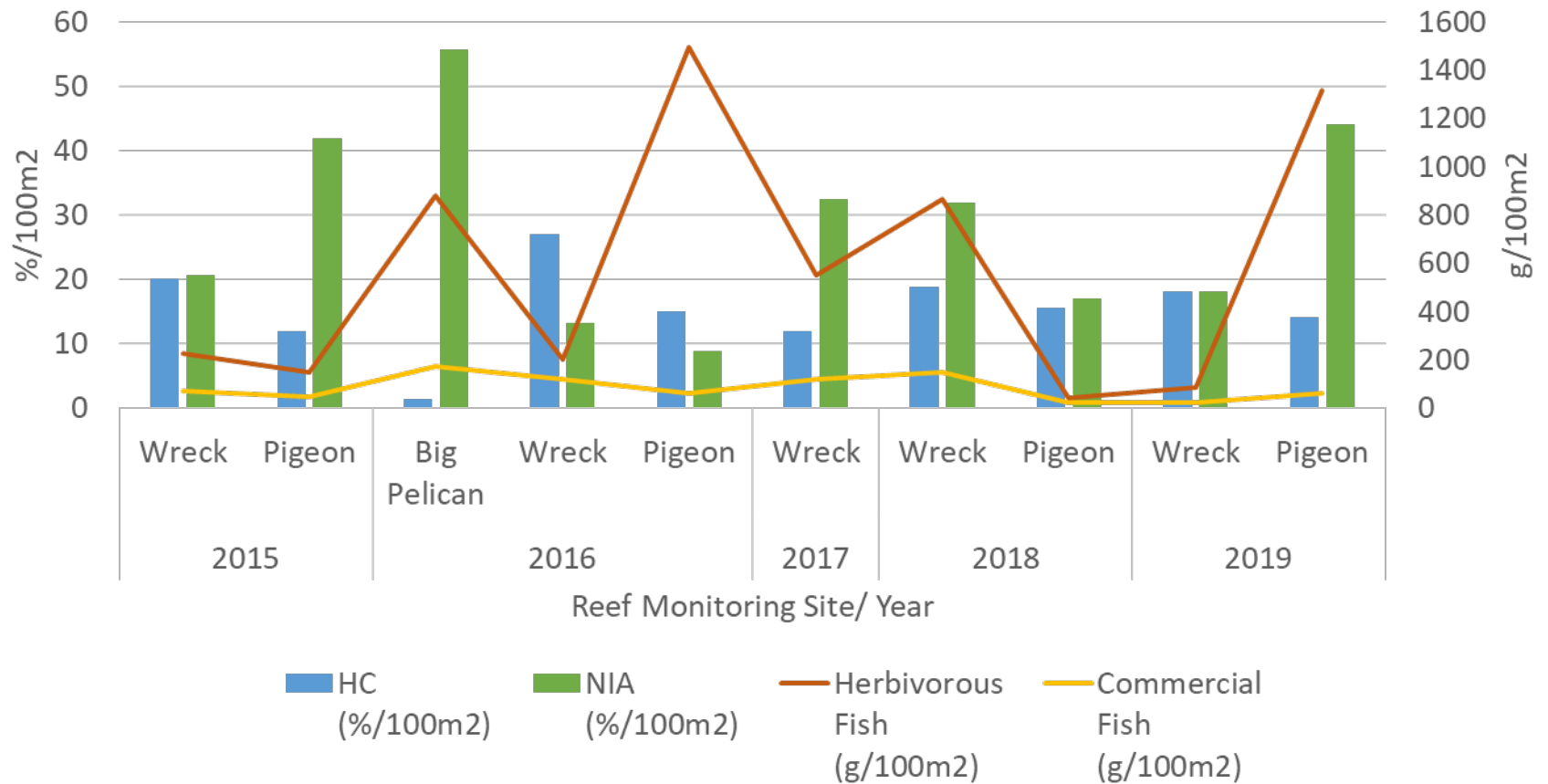
- Four key indicators: **coral cover**, **macro-algal cover**, **herbivorous fish abundance** and **commercially important fish abundance**.
- Effective method of tracking reef status and the health status on reef systems within various marine protected areas that have been repeatedly monitored.
- Data used to inform the implementation of adaptive management strategies for effective coral reef management.

2008 Index values	VERY GOOD (5)	GOOD (4)	FAIR (3)	POOR (2)	CRITICAL (1)
Coral Cover (%)	≥40	20.0-39.9	10.0-19.9	5.0-9.9	<5
Macro-algae Cover (%)	<10	10.0-19.9	20.0-39.9	40.0-59.9	≥60
Herbivorous Fish Abundance (g/100m ²)	≥4800	3600-4799	2400-3599	1200-2399	<1200
Commercial Fish Abundance (g/100m ²)	≥2800	2100-2799	1400-2099	700-1399	<700

PBPA Coral Reef Health

Location	Site	HC (%/100m2)	NIA (%/100m2)	Herbivorous Fish (g/100m2)	Commercial Fish (g/100m2)
2015	Wreck	20	20.6	226	69.6
	Pigeon	11.9	41.9	147.1	47.4
2016	Big Pelican	1.3	55.6	880.9	171.5
	Wreck	26.9	13.1	203.5	117.3
	Pigeon	15	8.8	1495.1	58.9
2017	Wreck	11.9	32.5	550.1	118
2018	Wreck	18.8	31.9	862.73	148.34
	Pigeon	15.6	16.9	39.27	22.48
2019	Wreck	18	18	84.69	23.03
	Pigeon	14	44	1313.41	62.29

PBPA Coral Reef Health



Annual Coral Reef Health Status, Jamaica

	HC %/100m2	NIA %/100m2	Herbivorous Fish g/100m2	Commercial Fish g/100m2	Overall CRHI
2011 (Baseline)	11.8	51.1	2447.00	1135.30	2.4
2013	20.3	28.3	1185.20	155.80	2.1
2015	23.3	29.4	790.60	82.50	2.2
2016	23.3	29	1145.70	337.30	2.4
2018	22.56	34.66	856.80	166.59	2.2
2019	18.7	27.64	610.07	64.66	2.2

The overall average index calculated for all sites, continues to point to Jamaica's reefs being in 'poor' condition.

Thank you