

Coral Reef Condition: a status report for U.S. Coral Reefs based on 2012-2018 data from NOAA's National Coral Reef Monitoring Program



Erica K. Towle, Ph.D.

Virtual ICRI update Feb. 3, 2021

National Coral Reef Monitoring Program (NCRMP)



- NOAA implements NCRMP biological, climate, and socioeconomic data collection across 10 priority jurisdictions
- Cycle: 3 years in Pacific (bio/climate), 2 years in Atlantic (bio/climate), Coral Reef Watch daily via satellite data
- Socioeconomic cycle: 7 years (for inhabited jurisdictions)

NCRMP indicators

Monitoring Themes	Tier 1 (Critical) Indicators
Biological <ul style="list-style-type: none"> • Coral and Benthos • Reef Fish 	<ul style="list-style-type: none"> • Coral abundance and size structure • Coral condition (bleaching and disease incidence, mortality) • Benthic percent cover • Benthic key species • Rugosity • Fish abundance and size structure • Fish diversity • Fish key species
Climate <ul style="list-style-type: none"> • Thermal Stress • Ocean Acidification • Ecological Impacts* 	<ul style="list-style-type: none"> • Temperature/thermal stress • Vertical thermal structure • Carbonate chemistry • Coral growth rate* • Bioerosion rate* • Community structure* (cryptofauna diversity)
Socioeconomics	<ul style="list-style-type: none"> • Knowledge, attitudes, and perceptions of coral reefs • Participation in coral reef activities • Population changes and distribution • Economic dependence on coral reefs

Jurisdictional status reports

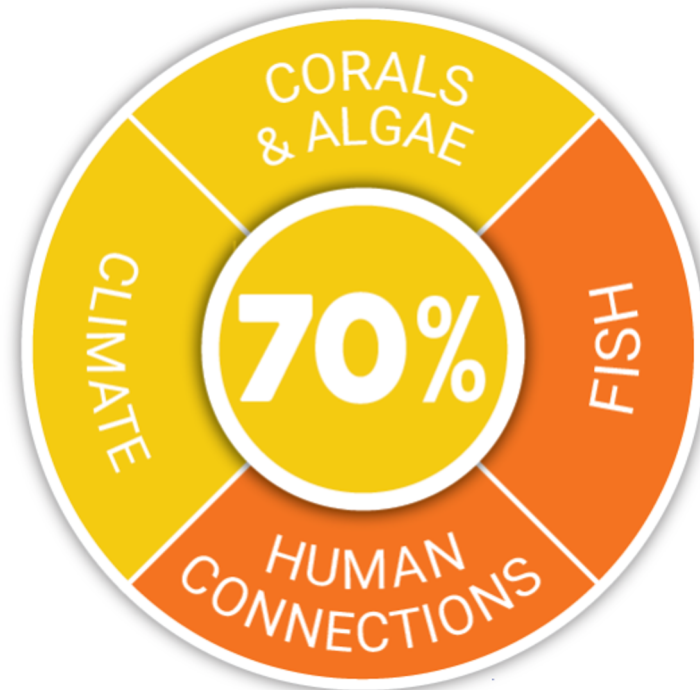
- Pacific reports released Dec. 2018; Atlantic May 2020; National summary Nov. 2020. Audience is policy makers and public
- Data from 2012-2018
- “Snapshot” of coral reef status, but reflect better circumstances than present day



All Atlantic jurisdictions

Highlights:

- Atlantic reefs are fair but on cusp of impaired.
- Corals & algae are fair but declining. Corals are experiencing a multi-year outbreak of SCTLD, unique for its geographic range, progression, & mortality rate.
- Climate score is fair, but many reefs are experiencing habitat loss.
- Fish populations are experiencing fishing impacts. Removal of commercially and recreationally important fishes from reefs is not sustainable for future populations.
- Human connections are impaired. Residents demonstrate moderate support for coral reef management; have limited awareness of coral reef threats; rarely engage in pro-environmental behaviors.



What do the scores mean?

90–100% Very Good

All or almost all indicators meet reference values. Conditions in these locations are unimpacted, or minimally impacted or have not declined. Human connections are very high.

80–89% Good

Most indicators meet reference values. Conditions in these locations are lightly impacted or have lightly declined. Human connections are high.

70–79% Fair

Some indicators meet reference values. Conditions in these locations are moderately impacted or have declined moderately. Human connections are moderate.

60–69% Impaired

Few indicators meet reference values. Conditions in these locations are very impacted or have declined considerably. Human connections are lacking.

0–59% Critical

Very few or no indicators meet reference values. Conditions in these locations are severely impacted or have declined substantially. Human connections are severely lacking.

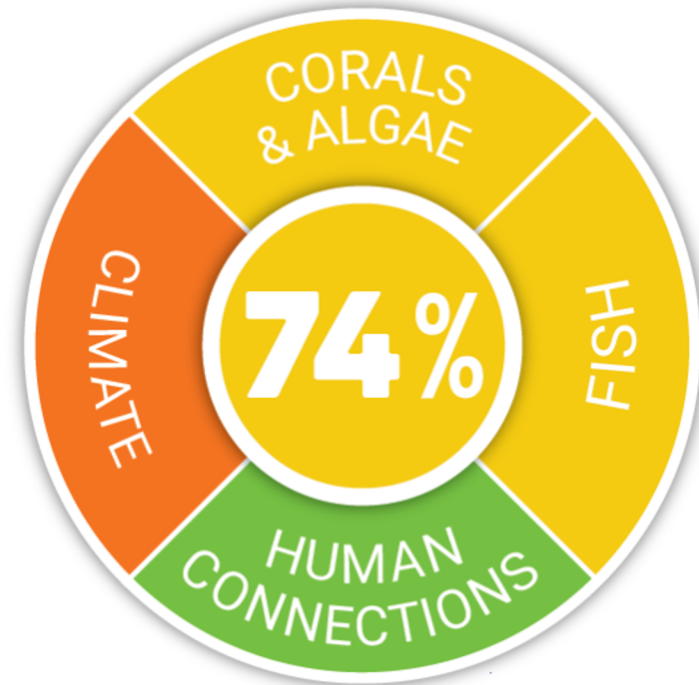
Insufficient Data

Not scored.

All Pacific jurisdictions

Highlights:

- Pacific reefs are in fair condition.
- Frequent and severe heat stress has led to bleaching and mortality. Water chemistry is becoming less suitable for reef material growth due to ocean acidification.
- Corals & algae are fair, representing a range of degraded to pristine reefs. Degradation due to both local and global impacts
- Fish indicators are fair - reflects inclusion of reefs in remote areas not subjected to fishing pressure. Fish in populated areas are less abundant.
- Human connections to coral reefs are good: residents are moderately aware of coral reef threats; show moderate support for coral reef management; demonstrate high engagement in pro-environmental behaviors.



What do the scores mean?

90–100% Very Good

All or almost all indicators meet reference values. Conditions in these locations are unimpacted, or minimally impacted or have not declined. Human connections are very high.

80–89% Good

Most indicators meet reference values. Conditions in these locations are lightly impacted or have lightly declined. Human connections are high.

70–79% Fair

Some indicators meet reference values. Conditions in these locations are moderately impacted or have declined moderately. Human connections are moderate.

60–69% Impaired

Few indicators meet reference values. Conditions in these locations are very impacted or have declined considerably. Human connections are lacking.

0–59% Critical

Very few or no indicators meet reference values. Conditions in these locations are severely impacted or have declined substantially. Human connections are severely lacking.

Insufficient Data

Not scored.

Main Hawaiian Islands



Northwest Hawaiian Islands



Guam



Commonwealth of the Northern Mariana Islands



American Samoa



Pacific Remote Island Areas



Florida



Puerto Rico



United States Virgin Islands



Flower Garden Banks



Conclusions

- Overall, U.S. coral reefs are in fair condition, but declining and vulnerable.
- Impacts from climate change are the greatest threat to coral reefs globally.
- Coral reefs adjacent to highly populated areas are more degraded than coral reefs adjacent to remote areas.



Questions?

Erica.Towle@noaa.gov

If you want to read the full reports or learn more about how the scores were calculated, please check out https://www.coris.noaa.gov/monitoring/status_report/ All reports and accompanying methods documents are free and open-access, as are all NCRMP datasets.