USA - Dry Tortugas

Regional summary of 5 dive sites. Figures are averages across the sites that report them (n = sites with a value); each site's own page has its individual values.

0 — 5

Coral Health Index: 0.75/5

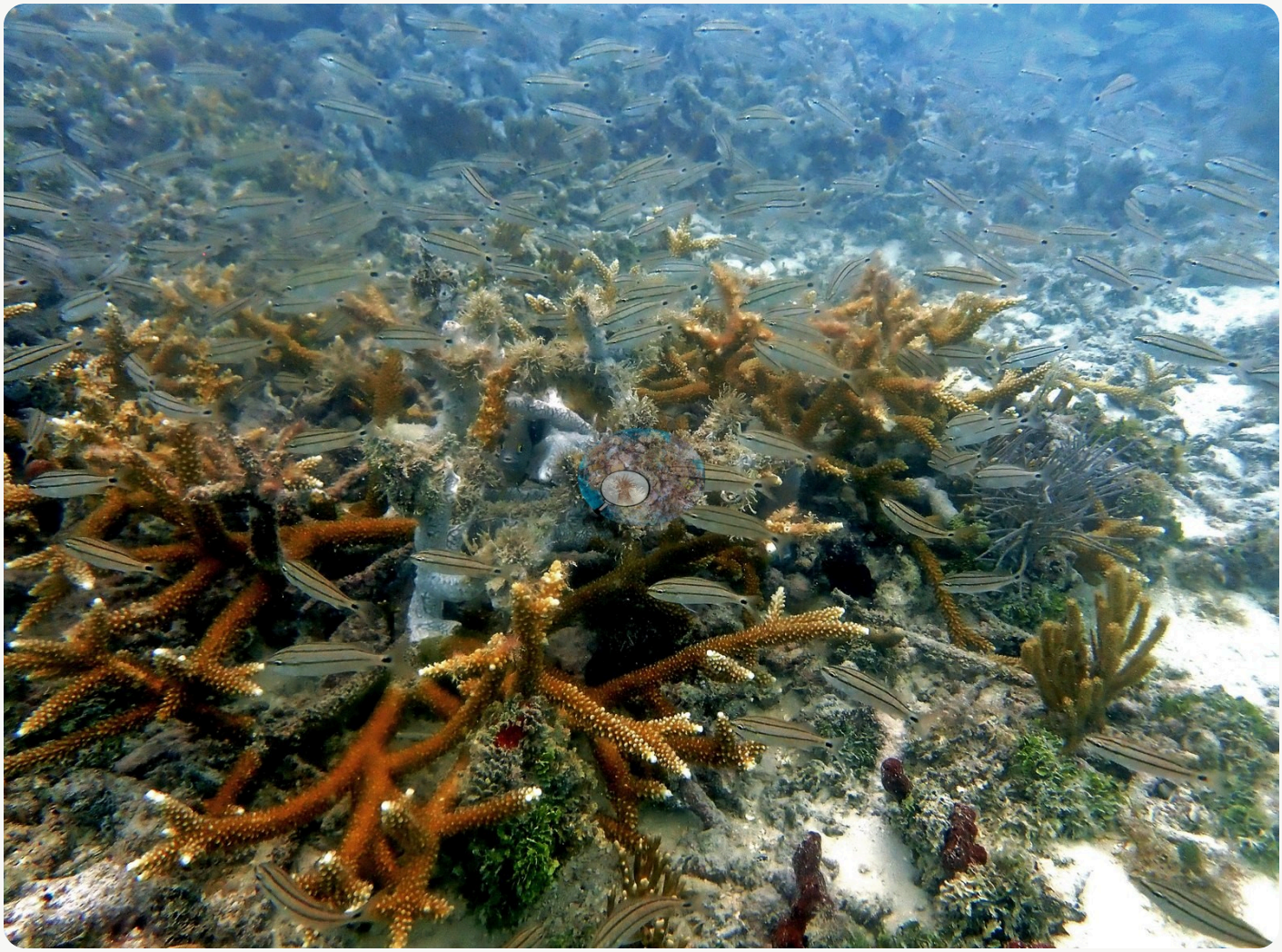


Photo: Anderson Mayfield/Coral Reef Diagnostics — NOAA - White Shoal, Dry Tortugas

COUNTRY

USA (Florida)

SITES

5

each linked below

HARD CORAL COVER (REGIONAL MEAN)

6.9% ± 4.0% (std. dev.)

n = 4 of 5 sites. range 3.3–12%

WATER TEMP. DURING SURVEYS (REGIONAL MEAN)

28.7°C

n = 4 of 5 sites; surveyed Jun 2021; 1 site logged as a range, counted at its midpoint

CORAL HEALTH INDEX (REGIONAL MEAN)

0.75 / 5

n = 1 of 5 sites; scale of zero to five, higher is healthier

MOST RECENT WATER TEMPERATURE RECORD

28.5°C

26 Oct 2026 · Florida Keys

MOST RECENT HEAT STRESS RECORD

13.7°C-weeks 🔥

26 Oct 2026 · NOAA alert that day: no stress (water now below the bleaching threshold; 13.7°C-weeks built up over the last 12 weeks)

MEAN ANNUAL MAX DEGREE HEATING WEEKS (DHW), LAST 5 YEARS

12.5°C-weeks 🔥

2021–2025 · Florida Keys

HIGHEST ANNUAL HEAT STRESS

22.3°C-weeks 🔥

in 2023 · Florida Keys

SEVERE HEAT-STRESS YEARS

9

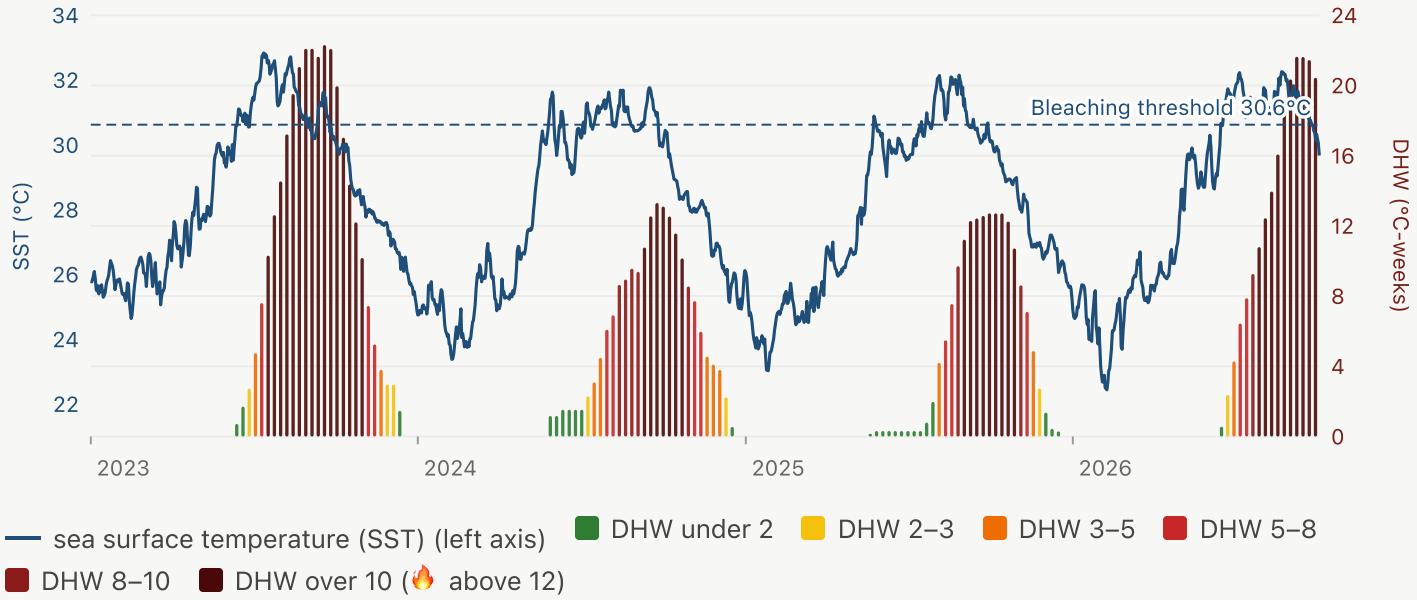
1985–2025 · 6 in the last 10 years

Heat-stress figures: NOAA Coral Reef Watch — Florida Keys 5-km virtual station. Each pill links its source record and carries the values behind it.

REGIONAL SUMMARY

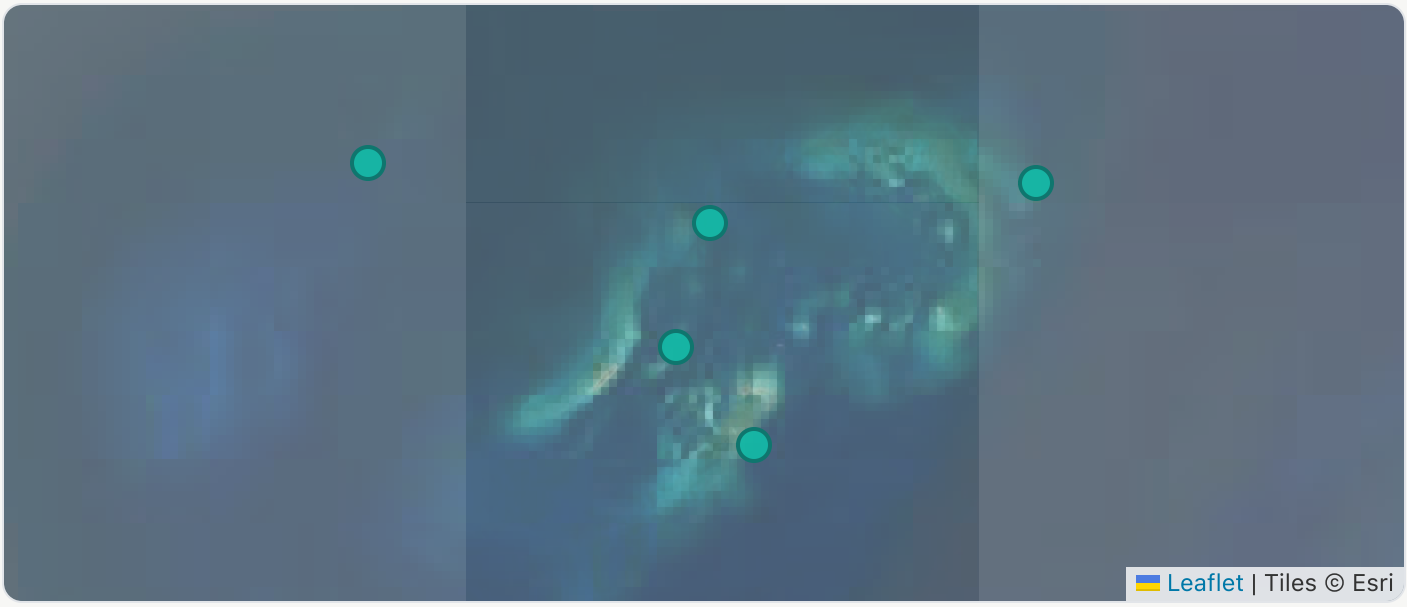
Five Dry Tortugas sites, four of them dived in late June 2021 and the fifth, Pulaski Shoal, visited only to service a temperature recorder, range from White Shoal's continuous staghorn thickets to deeper, cooler hard-bottom with scattered coral heads. Hard coral is sparse overall: the 2021 FWC Dry Tortugas CREMP station means nearest the four dived sites read 3.3% to 12%.

Heat stress



Daily SST (line) and weekly maximum Degree Heating Weeks (bars), Jan 2023–Oct 2026, NOAA Coral Reef Watch 5-km Florida Keys virtual station. Dashed line: bleaching threshold (maximum monthly mean 29.6°C + 1°C). DHW ≥ 4: bleaching likely; ≥ 8: severe bleaching and mortality likely. A bar is drawn only where DHW exceeds zero, so a stretch with no bar is accumulated heat stress of zero, not missing data — the SST line runs the full period.

Long-term record: 9 years from 1985 through 2025 reached 8 or more °C-weeks at NOAA's Florida Keys station. Download the annual DHW data (CSV).



5 sites in this region — click a marker to open that site.

Regional setting

The Dry Tortugas, about 116 km west of Key West, form a pseudo-atoll of seven keys on three main banks, Pulaski, Loggerhead, and Long Key, which ring a lagoon 12–23 m deep; roughly 100 km of open water separates them from the main Florida reef tract (Wells 1988). When the reefs were mapped in 1976, living reef occupied under 4% of the seafloor shallower than 18 m. Bank

reef, confined to a narrow band on the southeastern edges of Long Key and Pulaski Banks, accounted for a mere 0.6% of the complex and had almost no *Acropora palmata*. Staghorn (*A. cervicornis*) reef covered 478 ha and supplied 55% of stony coral cover, mostly in one 220 ha reef northwest of Loggerhead Shoal, and coral-head buttresses of *Montastraea annularis* and *Siderastrea siderea* lined Pulaski Shoal. Research here is long-standing: the Carnegie Institution's laboratory on Loggerhead Key operated from 1904 until fire destroyed it in 1937. Wells (1988) ranks the Tortugas, far from mainland runoff, among the western Atlantic's least-disturbed reefs, but winter cold fronts periodically chill the shallows to lethal levels: a "black water" event killed nearly all staghorn in 1878, and a front in 1976–77 killed about 90% of its colonies, while the 44 ha elkhorn stand mapped on the Long Key reef crest in 1881 had been reduced to rubble by 1976. Spalding et al. (2001) give about 1,250 km² of coral reef for the USA's Atlantic sector as a whole, a figure that includes the Tortugas.

Souter et al. (2021) report recent trends only for their Gulf of Mexico and Florida subregion, where mean hard coral cover slid steadily from about 13% (1999) to 9.1% (2019), and algal cover, after dipping to 16.9% in 2005, rose about 2.3-fold to 39% by 2015. The same report records that stony coral tissue loss disease (SCTLD) emerged in Florida in 2014, during a severe bleaching event and beside a dredging project on an urban reef, and calls it the deadliest disturbance on record in the Caribbean, with population losses above 90% in the most susceptible species. Earlier, Spalding et al. (2001) noted that bleaching in 1997 and the more intense bleaching of 1998, followed by Hurricane Georges, caused considerable coral loss in Florida's shallow reefs. Wilkinson (2006), drawing on the 2004 status report for the American Caribbean, described heavy losses from disease, bleaching, and human damage in the 1980s and 1990s that seemed to have leveled off at much lower cover.

Overview

The five Dry Tortugas sites are NOAA monitoring locations visited during the AOML climate-monitoring leg of late June 2021, with logged dives on 25-28 June. Logged maximum depths were 14.3 m at White Shoal (6.1 m average), 22.6 m at Bird Key Reef, 17.1 m at Texas Reef, and 25.6 m at Black Coral Rock, with Pulaski Shoal, near the park's northeastern boundary, a long-term USGS and NOAA location for tracking staghorn coral.

The stations differ sharply in character. White Shoal is carpeted in continuous thickets of staghorn, *Acropora cervicornis*, on a shallow rubble bottom, with mounding heads, brain corals, and gorgonians filling the gaps. Bird Key Reef is a gorgonian-draped hard-bottom instrumented with pH, light, and current sensors, where well-spaced massive heads, including *Montastraea cavernosa* and *Orbicella faveolata*, rise from stands of orange gorgonians. Black Coral Rock (logged to 25.6 m, 28.3°C dive average) is a low-relief rubble-and-turf bottom with scattered brain corals and mounding heads and far more fish than coral. Texas Reef, not one of the fixed

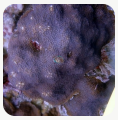
stations, is a low rocky hard-bottom threaded with small swim-throughs, with scattered coral domes and tube sponges. Pulaski Shoal's surroundings are described as rubble, carbonate sand, seagrass, and remnant reef.

Hard coral is sparse across the group. The FWC-FWRI Dry Tortugas CREMP point counts of 2021, the year of these visits, read 3.3% at White Shoal, 6.8% at Texas Reef, 7.8% at Bird Key Reef, and 12% at Black Coral Rock, where the four stations ranged from 9.5% to 17%; the NOAA NCRMP station 0.58 km from Pulaski Shoal recorded no stony coral in September 2021. Shallow-station temperatures ran from the low 20s to nearly 32°C. Black Coral Rock has a Coral Health Index of 0.75 (0-5 scale). At Bird Key Reef one *Siderastrea* head showed white patches of tissue loss, and on 27 June at least two more massive colonies carried tissue-loss fronts consistent with stony coral tissue loss disease (SCTLD), beside a recently dead colony; Black Coral Rock had one more SCTLD-consistent front. The Pulaski Shoal site record also notes published USGS work documenting severe heat stress and loss of elkhorn coral, *Acropora palmata*, across the Dry Tortugas in the 2023 marine heatwave, two years after these visits.

Highlights

- White Shoal: continuous thickets of staghorn, *Acropora cervicornis*, on shallow rubble
- Bird Key Reef: an instrumented NOAA station with massive *Montastraea cavernosa* and *Orbicella faveolata* heads among gorgonians  photo: NOAA - Bird Key Reef, Dry Tortugas
- Texas Reef: a low rocky hard-bottom threaded with small swim-throughs, scattered coral domes, and tube sponges  photo: NOAA - Texas Reef, Dry Tortugas
- Black Coral Rock (25.6 m): a NOAA temperature-logger station with a Coral Health Index of 0.75 (0-5 scale)
- 2021 FWC-FWRI CREMP point counts read 3.3% at White Shoal to 12% at Black Coral Rock; the NCRMP station nearest Pulaski Shoal recorded no stony coral

Notable observations

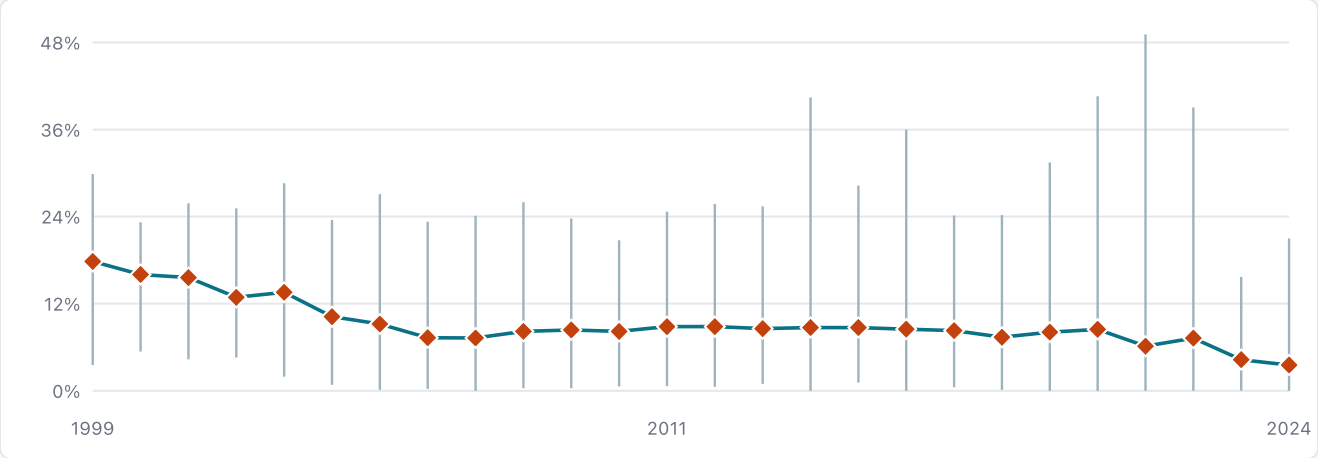
- NOAA - Bird Key Reef, Dry Tortugas: Tissue loss: one Siderastrea head carries sharp white patches of tissue loss, even at this closely watched monitoring station; on the 27 June dives at least two more massive colonies carry tissue-loss fronts consistent with SCTLD, beside a recently dead stark-white colony. 
- NOAA - Pulaski Shoal, Dry Tortugas: Heat stress (published USGS work, regional): severe heat stress and loss of elkhorn coral, Acropora palmata, across the Dry Tortugas in the 2023 marine heatwave, two

years after the June 2021 visit; not specific to this shoal, and the site has no photographs.

- NOAA - Black Coral Rock, Dry Tortugas: Disease: one massive colony with a tissue-loss front consistent with stony coral tissue loss disease (SCTLD). 
- NOAA - White Shoal, Dry Tortugas: Debris and algae: an old, heavily fouled rope coiled around a small branching colony; red filamentous algae on some live staghorn (recorded as biofouling). 

Coral cover over time (pooled)

One point per year: the mean of every hard coral cover value available for this region that year — Anderson's own dives and every independent survey station within 5 km of them. The vertical bar is the full range behind that mean. Different programs use different methods at different stations, so this is a regional summary, not a single comparable series. Non-CRD points are from FWC-FWRI CREMP (Florida Fish and Wildlife Conservation Commission), NOAA National Coral Reef Monitoring Program, and FWC-FWRI CREMP 2021 point-count survey.



Sites in this region

- NOAA - Bird Key Reef, Dry Tortugas — 5.1% coral cover
- NOAA - Black Coral Rock, Dry Tortugas — 12% coral cover
- NOAA - Pulaski Shoal, Dry Tortugas — 0.0% (nearest survey station, not this site: NOAA NCRMP Florida (NCEI 0253452), Tortugas PSU 1570-1 station, 2021-09-20, 0.58 km away)
- NOAA - Texas Reef, Dry Tortugas — 6.8% coral cover
- NOAA - White Shoal, Dry Tortugas — 3.3% coral cover

Nearby external survey stations

948 independent survey records within 5 km of a site in this region (each record counted once).

▶ Show all 948 records

All images from Coral Reef Diagnostics. Data are from Coral Reef Diagnostics, FWC-FWRI CREMP (Florida Fish and Wildlife Conservation Commission), and NOAA National Coral Reef Monitoring Program.

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References

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