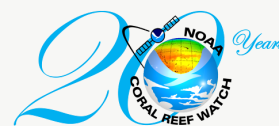




Red Sea



Overview of 35 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. Regional summaries: [Saudi Arabia](#), [Egypt](#).

0



5

Coral Health Index: 2.00/5

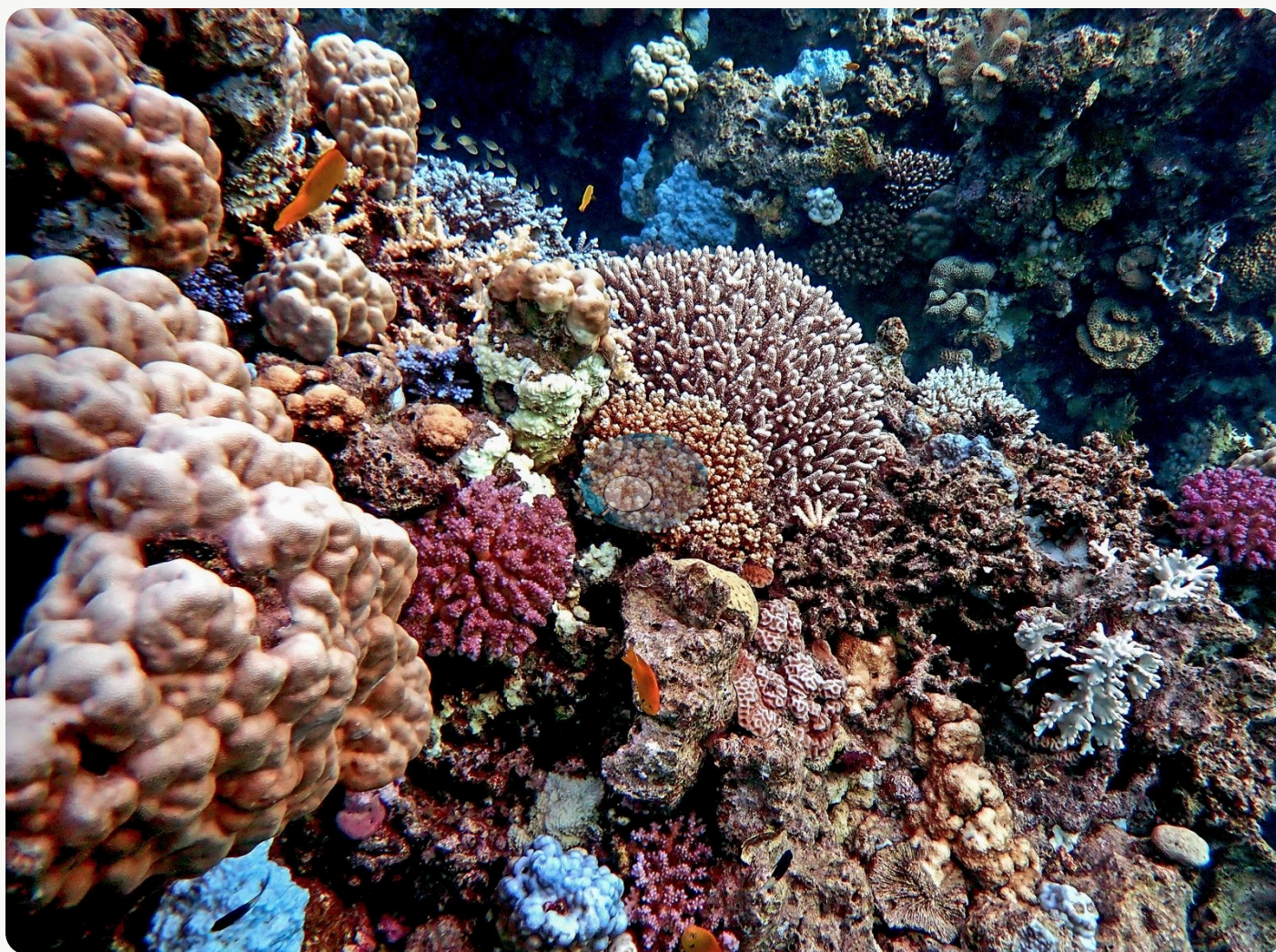


Photo: Anderson Mayfield/Coral Reef Diagnostics — Saudi Red Sea - Um Mankout ([Yanbu](#))

COUNTRIES

[Egypt](#), [Saudi Arabia](#)

SITES

35

each linked below

HARD CORAL COVER (OVERVIEW MEAN)

20% ± 4.7% (std. dev.)

n = 33 of 35 sites. range 13–30%

WATER TEMP. DURING
SURVEYS (OVERVIEW MEAN)

30.8°C

n = 25 of 35 sites; surveyed Sep
2023–Sep 2024

CORAL HEALTH INDEX
(OVERVIEW MEAN)

2.00 / 5

n = 2 of 35 sites; 2.5 = average
(slightly below average)

MOST RECENT WATER
TEMPERATURE RECORD

30.6°C

16 Sep 2026 · [Egypt](#)

MOST RECENT HEAT
STRESS RECORD

13.2°C-weeks 🔥

16 Sep 2026 · Alert Level 2+



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

14.7°C-weeks 🔥

2021–2025 · regional mean of 35
sites, 2 stations

HIGHEST ANNUAL HEAT
STRESS

26.2°C-weeks 🔥

in 2024 · Egypt

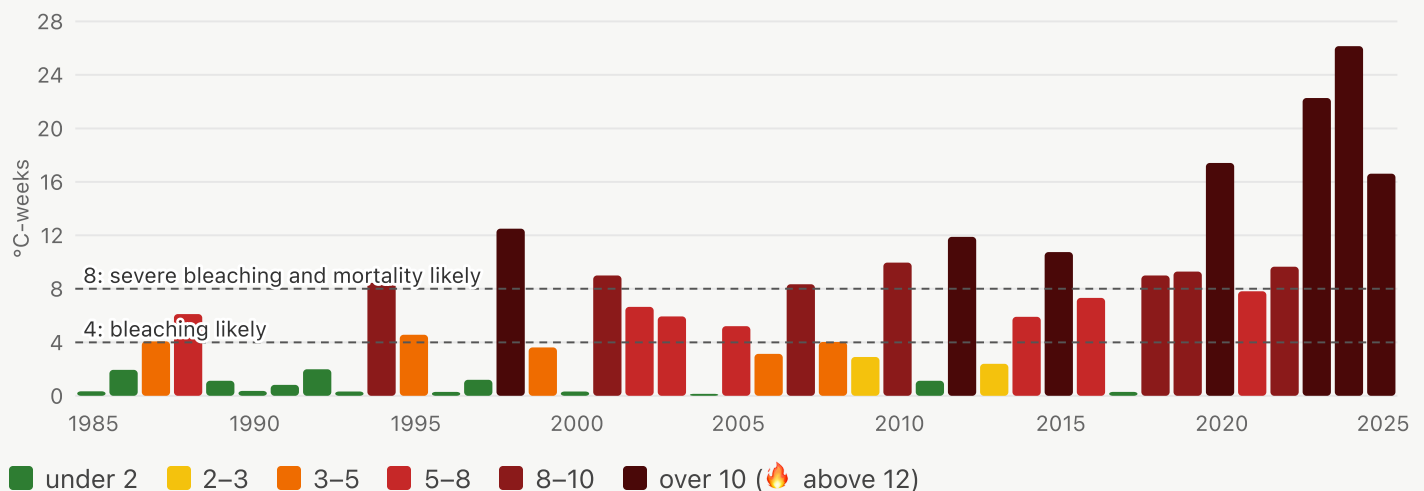
SEVERE HEAT-STRESS YEARS

14

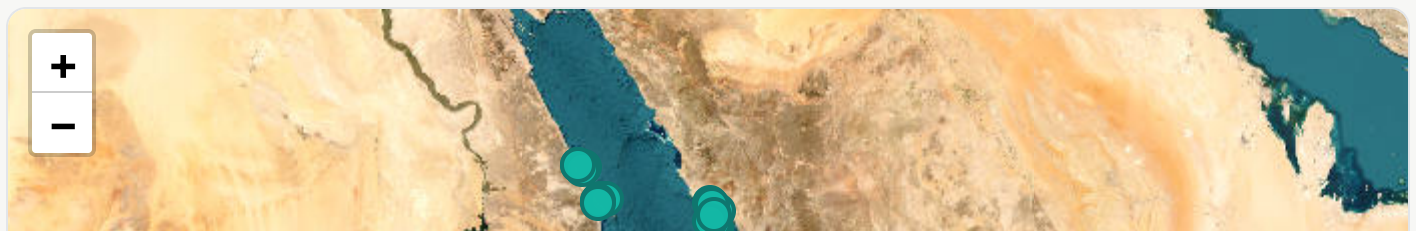
1985–2025 · 7 in the last 10 years

Heat-stress figures: [NOAA Coral Reef Watch](#) — [Egypt](#) and Makkah-Madine Saudi Arabia 5-km virtual stations. Each pill links its source record and carries the values behind it.

Heat stress, 1985–2025



Annual maximum Degree Heating Weeks, [NOAA Coral Reef Watch](#) 5-km virtual stations: Egypt, Makkah-Madine Saudi Arabia (highest station each year). DHW ≥ 4: bleaching likely; ≥ 8: severe bleaching and mortality likely. [Download the annual DHW data \(CSV\)](#).





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

Overview

The Red Sea is geologically a young ocean, a basaltic spreading rift that has been pulling Africa and Arabia apart for some 70 million years. Its shallow link to the Indian Ocean has closed many times, most recently during the Pleistocene, and many of today's reefs are thin modern veneers over older Pleistocene reefs (Spalding et al. 2001). Together with the Gulf of Aden it may be the most biologically diverse reef area outside Southeast Asia, with many endemic species. South of the Gulfs of Suez and Aqaba both shores are lined with fringing reefs that run unbroken for tens of kilometers, usually with narrow reef flats. On the Arabian side the continental shelf is narrow or absent in the north and broadens fairly rapidly south of about 20°N; offshore, the Al Wadj Bank holds a complex of fringing, patch and barrier reefs with small islands, and from Al Wadj to [Jeddah](#) runs a broken barrier-type structure that has been called the Little Barrier Reef. Surveys between 1997 and 1999 recorded about 260 hard coral species on the Saudi coast. Spalding et al. (2001) estimate about 6,660 km² of coral reef for Saudi Arabia, a national figure that includes its Arabian Gulf coast, and about 3,800 km² for Egypt; Souter et al. (2021) give 13,605 km² for the Red Sea and Gulf of Aden together and 7,800 km² for the northern and central Red Sea subregion, which is the subregion all but two sites on this page belong to; the two Al Qunfudah reefs sit south of it.

This page gathers 35 sites in two national branches. Saudi Arabia holds 24 in three units: Jeddah / [KAUST \(Thuwal\)](#) / [Rabigh](#) with 15 — eight off Thuwal worked with Coastline ([KAUST](#)), six off Jeddah, and one shore-entry reef north of Rabigh — Yanbu with seven offshore reefs in the Yanbu and Umluj area dived with Umluj Dive Center, and South of Jeddah with two unnamed reefs off Al Qunfudah, dived together on 30 August 2024 with Al Qunfudah Diver. Egypt holds 11 in one unit, four at Marsa Nakari and seven at Wadi Lahami, dived with Red Sea Diving Safari. Every one of the 35 pins carries the region label "Red Sea". Thirty-three fall in one [NOAA Coral Reef Watch](#) ecoregion, Northern and Central Red Sea; the two Al Qunfudah reefs fall in Southern Red Sea, so the page spans two heat-stress provinces, with 33 of 35 sites in the northern one. The settings run from a wave-lit reef flat a meter or two under the surface at Alrass Alakhdar

and low-relief house-reef pavement, rubble and sand at Marsa Nakari, through high-relief spur-and-groove honeycombed with swim-throughs at Cement Reef, submerged pinnacles at Habili El Ghadeer, Habili Daisy and Habili Gazella, and Porites-carpeted slopes at Um Mankout, Om Halhala and Salah, to near-vertical walls at Rose Reef and *Thetis* and eroded, heavily bioeroded caverns rising from sand at Cave Reef. Four members are artificial or barely coralline — the Cement Wreck and Chicken Wreck off Thuwal and Jeddah, and Drogon Corals, mostly a sand plain with isolated bommies — while a fifth, Abu Galawa-small, is a steel shipwreck heavily colonized by coral. Recorded depths run from 12.5 m at Cement Reef to 34.0 m at *Thetis* on the 21 pins that carry one. Two sites have no photographs and no cover value at all: Middle Reef off Thuwal and Al Shbareer reef off Yanbu.

Published point-count cover exists for 33 of the 35 sites and averaged 20.1%, a narrow band from 12.8% on the Cement Wreck to 29.6% at Alrass Alakhdar. The two branches are close together: 19.0% across the 22 Saudi sites with a value and 21.9% across all 11 Egyptian sites. Algal cover stayed low everywhere, from 3.4% at Om Halhala to 11.8% at Long Reef, with the Egyptian sites clustered at the low end. The community is consistent along both coasts — pocilloporids in lavender, magenta, rose, and hot-pink color forms, corymbose, digitate, staghorn, and table Acropora, knobby, and columnar Porites, Seriatopora hystrix, faviids, and Millepora-type fire coral, with electric-blue Acropora at Gazella Reef and Shabrour-south and cobalt Acropora on the upper slope at Cement Reef. Individual sites stand out for structure rather than for cover. Coral Gardens off Jeddah is built on giant Porites mounds several meters across; Um Mankout carries a near-continuous Porites framework with almost no bare pavement; Anderson's Reef-II is set apart by a bommie the size of a small building with its crown covered in lilac and gold arborescent soft corals; and Shabrour-north is a broad sand plain studded with bommies and low patch reefs.

What this set records is the 2023-24 Red Sea marine heatwaves, and it is the densest measured-bleaching cluster on the map: 33 of the 35 sites carry a bleaching percentage. Across them, bleaching averaged 41.5% of coral tissue and ranged from 13.8% at the first Al Qunfudah reef to 73.8% at Shabrour-north in Wadi Lahami. The two branches read very differently. The Egyptian mean is 58.9% and ten of the eleven Egyptian sites are above 50%; the Saudi mean is 32.9% and only four of the twenty-two Saudi sites with a value are. The worst site on each coast is within two points of the other, Shabrour-north at 73.8% and Shark Reef off Thuwal at 71.7%, where whole slopes were white and two crown-of-thorns starfish were photographed amid the bleaching. Branching, massive and fire corals were all affected on both coasts: at Om Halhala the Porites framework bleached en masse while nearby Acropora thickets held color, at Bhadur Reef soft corals, fungiids and anemones bleached along with the hard corals, and the corals on the Abu Galawa-small wreck were almost entirely white.

That country gap should not be read as a difference between Egyptian and Saudi reefs, because it is confounded with when each coast was dived. All eleven Egyptian sites were surveyed in a single four-day window, 20 to 23 September 2024, at about 21.8 to 21.9°C-weeks of

accumulated heat, with Anderson's dive computer reading 31°C at Marsa Nakari-North — a snapshot taken at the peak of a severe event. The 24 Saudi sites are spread over thirteen months, September 2023 to October 2024, at per-visit heat loads from 11.9 to 22.3°C-weeks and, at several sites, none recorded at all. Where the Saudi sites were dived at heat comparable to Egypt's, they bleached in the same band: Bhadur Reef 62.0% at about 22.3°C-weeks, Shark Reef 71.7% at 20.6 and 21.8, *Thetis* 62.1% at 19.9 in October 2023. Accumulated heat does not explain the scatter either, though. The clearest case is Al Qunfudah: its two reefs sat at about 20.4°C-weeks, among the heaviest loads recorded here, and bleached 13.8% and 18.1% — the two lowest figures on the page — while Bhadur Reef bleached 62.0% at a comparable 22.3°C-weeks. North Rabigh read 64.8% at about 16.9°C-weeks while Long Reef read 19.8% at 16.5; Anderson's Reef-I and Reef-II read 17.2% and 18.9% at 11.9; and two sites bleached with no accumulated heat stress recorded at all, Cave Reef at 26.8% in February 2024 and Abu Galawa at 25.3% in April 2024. Where the heat did bite, cover followed: *Thetis* went from 32.5% in October 2023 to 13.4% in August 2024, when the wall was darker and dominated by soft corals and [sponges](#).

Two independent comparisons sit beside these figures rather than being averaged into them. At Marsa Nakari, [Reef Check](#) stations 0.10 and 0.25 km from the two house-reef pins recorded 37.2% and 39.4% hard coral in 2024, against CRD's 25.1% and 23.3% — a different method on what may be the same reef, in the same year. At Wadi Lahami, [Reef Check](#)'s House Reef 2 station, 1.5 to 1.8 km from the two Shabroun pins, recorded 49.0% in 2009, against 24.1% and 24.8% in September 2024. These 33 sites are also the reference region for CRD's multi-model computer-vision comparison, in which several segmentation models are being scored against a set of frames hand-annotated by Anderson. That comparison is still running: nothing from it is used here, and every cover figure on this page is the published manual point count. For the longer view, Souter et al. (2021), writing before the 2023-24 heatwaves, had coral cover in the northern and central Red Sea falling from 35.2% in 1997 to 29.7% in 2002 and then climbing slowly to 39.1% by 2019, while algal cover rose from 5.2% in 2010 to 11.5%. They name tourism and coastal development as the main local drivers of loss in the northern Red Sea and land runoff, eutrophication and overfishing in the central Red Sea, with Saudi Arabia's Vision 2030 coastal tourism plans an added pressure; and they note that the region's only sampling units with more than fifteen years of data lie on the Egyptian coast, where more frequent disturbance has produced a stepwise decline, with half of those that lost at least a fifth of their coral never regaining 90% of it.

Highlights

- Shabrour-north (Wadi Lahami) had the highest bleaching in the whole Red Sea set, 73.8% of coral tissue; Shark Reef (Thuwal) was the worst on the Saudi coast at 71.7%.

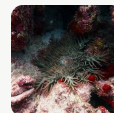


photo: Saudi Red Sea -

Shark Reef (Thuwal)

- All eleven Egyptian sites were dived in one four-day window, 20-23 September 2024, at about 21.8-21.9°C-weeks, and ten of the eleven were above 50% bleached.
- Anderson's Reef-I and Reef-II off Jeddah had the lowest bleaching in the set, 17.2% and 18.9%, in the same August 2024 window.



photo: Saudi Red Sea - Anderson's Reef-I (Jeddah)

- Published cover is nearly the same on the two coasts, 19.3% across 20 Saudi sites and 21.9% across 11 Egyptian sites, over a range of 12.8% (Cement Wreck) to 29.6% (Alrass Alakhdar).

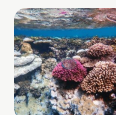


photo: Saudi

Red Sea - Alrass Alakhdar (Yanbu)

- At Marsa Nakari, [Reef Check](#) stations 100 and 250 m from the two house-reef pins recorded 37.2% and 39.4% in 2024, against CRD's 25.1% and 23.3% — a method difference on what may be the same reef.
- Thetis* (Yanbu) cover more than halved between October 2023 (32.5%, 62.1% bleached) and August 2024 (13.4%).

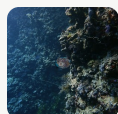


photo: Saudi Red Sea - *Thetis* (Yanbu)

- Two sites bleached with no accumulated heat stress recorded: Cave Reef at 26.8% in February 2024 and Abu Galawa at 25.3% in April 2024.

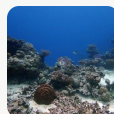


photo: Saudi Red Sea - Cave Reef (Thuwal)

- Rose Reef (Thuwal) is the most heavily sampled site in the set, 720 photographs over six visits, with bleaching from 24.3% to 61.8%.

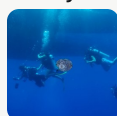


photo: Saudi Red Sea - Rose Reef (Thuwal)

- [Crown-of-thorns starfish](#) and disease lesions were recorded only on the Saudi coast — two [starfish](#) at Shark Reef, an annular white-band lesion on the Chicken Wreck, a dark depressed lesion on the Cement Wreck. None was resolved at any Egyptian site.

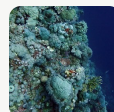


photo: Saudi Red Sea - Shark Reef (Thuwal)

- Masked butterflyfish (*Chaetodon semilarvatus*), a Red Sea endemic, and a requiem shark at Abu Galawa (Yanbu); a gray shark over a bommie field of mostly white colonies at Shabrour-north.

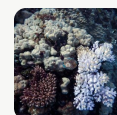
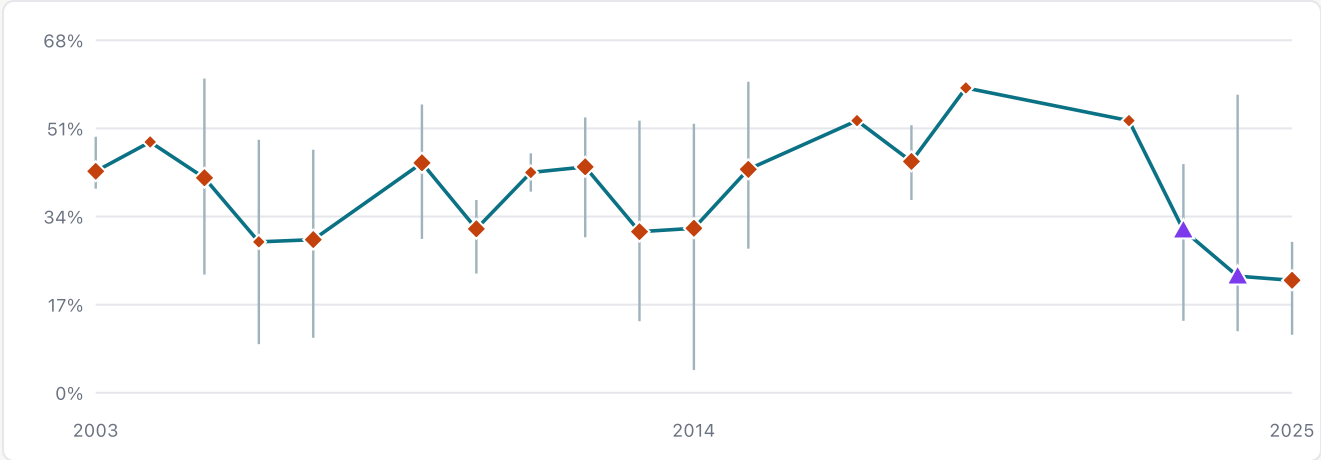


photo: Egypt Red Sea - Shabrour-north (Wadi Lahami)

► Notable observations (22)

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. One value above 70% was excluded as best-patch figures rather than site means. Years resting on fewer than three values are drawn as smaller points (2004, 2006, 2011, 2017, 2019, 2022). Non-CRD points are from [Reef Check Foundation](#). Marker shape: ● his own dives, ◆ other organizations’ surveys, ▲ a mix of both, that year.



► Sites in this region (35)

% coral cover by method

This page pools more than one published study area; each is tabulated separately below because their reference sets are different.

Saudi Arabia

Pooled across 4 published areas

Method	Mean % coral cover	Std. dev. between published areas	n published areas	Note
Manual point count (author)	20.4%	±3.9	3	frame-weighted 18.1% over 3,900 frames
Claude (Anthropic), blind point count	27.2%	±2.9	4	frame-weighted 28.2% over 588 frames
In-house DINOv3 point classifier	39.5%	±10	4	frame-weighted 39.4% over 211 frames

The mean is an UNWEIGHTED mean of the published area values — each published area counts once, whatever its photo count — which is the convention of the published tables and of every other figure on this page. The frame-weighted alternative is given per method in the Note column; where the two differ, the difference is a photo-count imbalance, not a coral-cover finding.

Closest to the reference

Over the published areas where an independent reference exists, Claude (Anthropic), blind point count sits closest to it — a mean absolute deviation of 6.5 pp across 2 published areas, then In-house DINOv3 point classifier 18.9 pp (n=2). A mean absolute deviation is not an accuracy score: a model with a consistent offset is correctable, while one with the same deviation scattered in both directions is not.

By published area

Published area	Manual point count	Claude	DINOv3
Thuwal	16.1% n=2,567	23.9% n=6	47.5% n=4
Jeddah	21.6% n=1,160	27.3% n=274	34.9% n=93
Rabigh	23.6% n=173	31.0% n=173	48.1% n=84
unassigned region	—	26.6% n=135	27.7% n=30

n under each value is the number of photographs that method scored at that published area. ⚠ marks a cell that is not an independent check.

Reference: point-count on the photographs (a human scoring the same pixels the models see). Denominator: coral points / (30 – WATER – FISH); `Unk` is IN the denominator (Mayfield 2025 convention); divers (`DVR`) are excluded as well, per the Red Sea paper. Source: published verbatim ([Mayfield 2025, Environments 12:248](#), Table 4) ⚠ These rows are REGIONS, not dive sites. The published paper reports cover by region only — no individual dive-site name appears in it — so no CRD dive site has its own manual value here. ⚠ The manual column and the computer vision (CV) columns are on DIFFERENT FRAME SETS. The published cover spans the region's full photo set (173–2,567 frames, most of them [CoralNet](#) robot-labeled); the CV arms ran only on the hand-scored reference subset, which is 6 frames at Thuwal, 274 at Jeddah and 173 at Rabigh. Read Thuwal's model columns as indicative only. [CoralNet](#) is n/a by design: the reference set IS the hand-scored set, so those frames carry no independent robot label to compare against. DINOv3 is restricted to frames it never saw, and reads roughly double the published cover at every Red Sea region. ⚠ 'unassigned region' is not a place: 135 frames carry no region label in the [CoralNet](#) metadata and map to no published row. It has no manual value and is excluded from the pooled reference.

Egypt

Pooled across 2 published areas

Method	Mean % coral cover	Std. dev. between published areas	n published areas	Note
Manual point count (author)	21.8%	±0.5	2	frame-weighted 21.8% over 1,854 frames
Claude (Anthropic), blind point count	27.9%	±0.2	2	frame-weighted 27.9% over 159 frames

In-house DINOv3 point classifier	41.2%	±0.8	2	frame-weighted 40.8% over 159 frames
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The mean is an UNWEIGHTED mean of the published area values — each published area counts once, whatever its photo count — which is the convention of the published tables and of every other figure on this page. The frame-weighted alternative is given per method in the Note column; where the two differ, the difference is a photo-count imbalance, not a coral-cover finding.

Closest to the reference

Over the published areas where an independent reference exists, Claude (Anthropic), blind point count sits closest to it — a mean absolute deviation of 6.1 pp across 2 published areas, then In-house DINOv3 point classifier 19.4 pp (n=2). A mean absolute deviation is not an accuracy score: a model with a consistent offset is correctable, while one with the same deviation scattered in both directions is not.

By published area

Published area	Manual point count	Claude	DINOv3
Wadi Lahami	22.1% n=1,180	28.0% n=129	40.6% n=129
Marsa Nakari	21.4% n=674	27.7% n=30	41.8% n=30

n under each value is the number of photographs that method scored at that published area. ⚠ marks a cell that is not an independent check.

Reference: point-count on the photographs (a human scoring the same pixels the models see). Denominator: coral points / (30 – WATER – FISH); `Unk` is IN the denominator (Mayfield 2025 convention); divers (`DVR`) are excluded as well, per the Red Sea paper. Source: published verbatim ([Mayfield 2025, Environments 12:248](#), Table 4) ⚠ These rows are REGIONS, not dive sites — the published paper reports cover by region only. ⚠ The manual column and the CV columns are on DIFFERENT FRAME SETS: the published cover spans 674–1,180 frames, the CV arms ran on the 30- and 129-frame hand-scored reference subsets. [CoralNet](#) is n/a by design: the reference set IS the hand-scored set. DINOv3 is restricted to frames it never saw.

Nearby external survey stations

77 independent survey records within 5 km of a site in this region (deduplicated across sites).

► Show all 77 records

All images from [Coral Reef Diagnostics](#). Data are from Coral Reef Diagnostics and [Reef Check Foundation](#) and [NOAA Coral Reef Watch](#).



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