# Fiji - Moala Group (Moala / Totoya / Matuku)

Regional summary of 24 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. Part of the Fiji - Lau overview. Island summaries: Totoya, Matuku, Moala.

0 — 5

## Coral Health Index: TBD

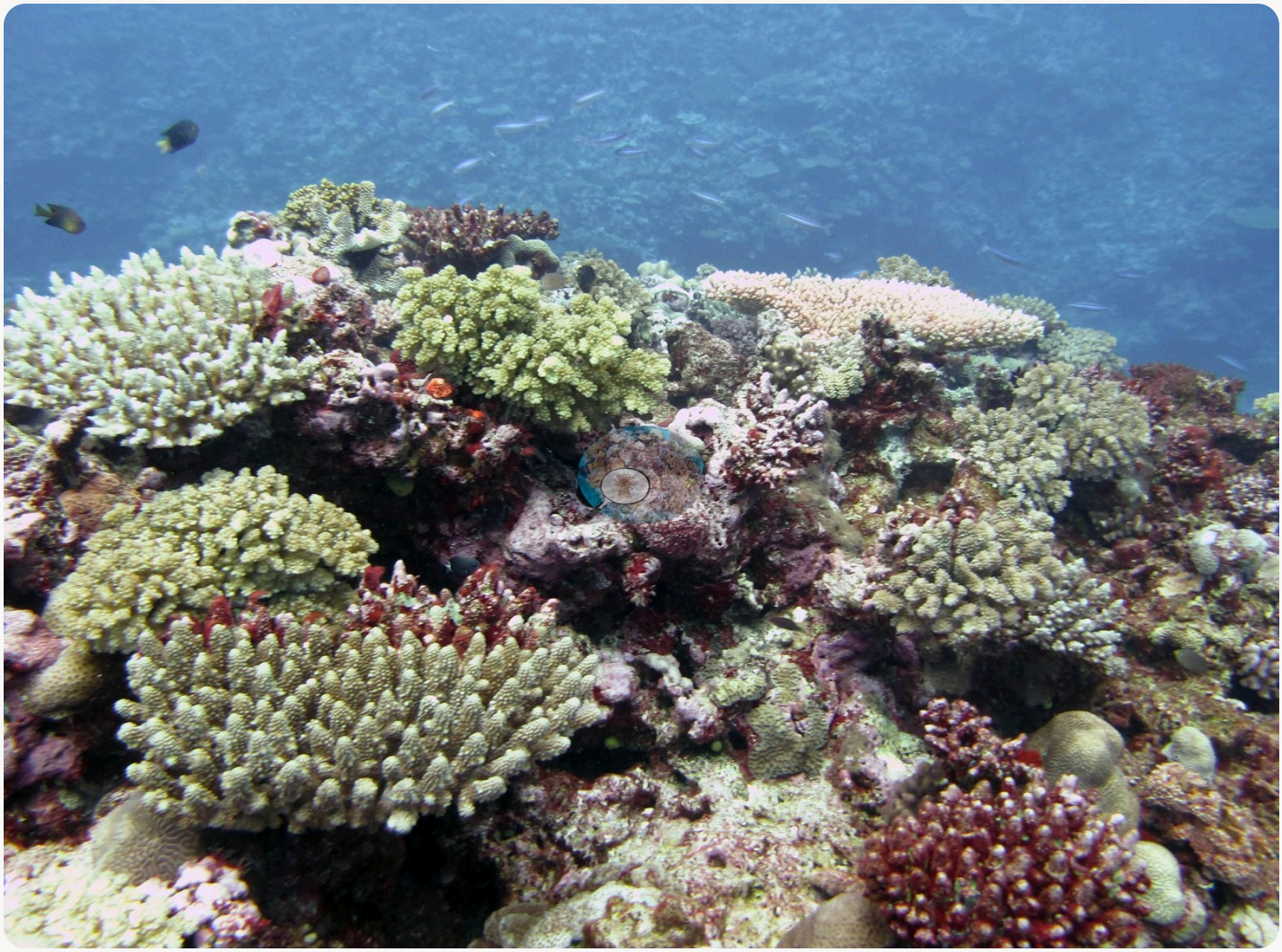


Photo: Anderson Mayfield/Coral Reef Diagnostics — Fiji - Moala (FJML16)

COUNTRY

**Fiji**

SITES

**24**

each linked below

HARD CORAL COVER (REGIONAL MEAN)

**32% ± 8.5%** (std. dev.)

n = 23 of 24 sites. range 12–51%

WATER TEMP. DURING SURVEYS (REGIONAL MEAN)

**27.1°C**

n = 23 of 24 sites; surveyed Jun 2013; all are station CTD-cast midpoints, not dive readings

CORAL HEALTH INDEX (REGIONAL MEAN)

**not yet scored**

n = 0 of 24 sites

MOST RECENT WATER TEMPERATURE RECORD

**25.8°C**

26 Oct 2026 · Fiji

MOST RECENT HEAT STRESS RECORD

**0.0°C-weeks**

26 Oct 2026 · No heat stress

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

**8.9°C-weeks**

2021–2025 · Fiji

HIGHEST ANNUAL HEAT STRESS

**16.7°C-weeks** 🔥

in 2026 (to date, 26 Oct) · Fiji

SEVERE HEAT-STRESS YEARS

**11**

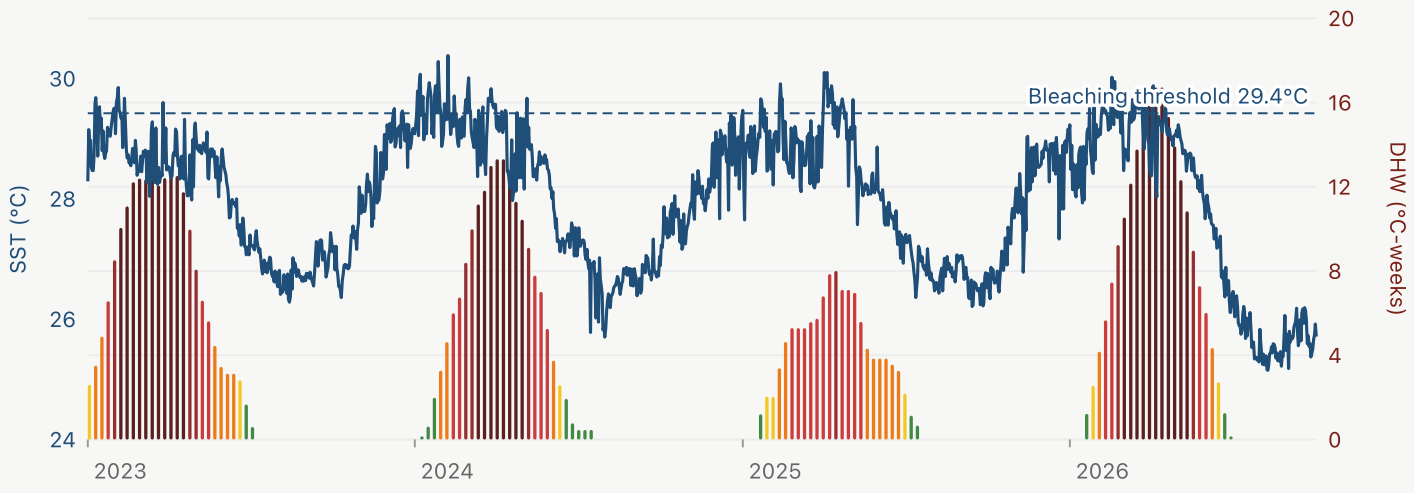
1985–2025 · 6 in the last 10 years

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

REGIONAL SUMMARY

The volcanic Moala group's fore-reef terraces, spur-and-groove ridges, and steep slopes, surveyed in June 2013, also hold a coral canyon, a cave passage, and a small seamount. Cover ranged from 12% to 51%, and no crown-of-thorns starfish were recorded.

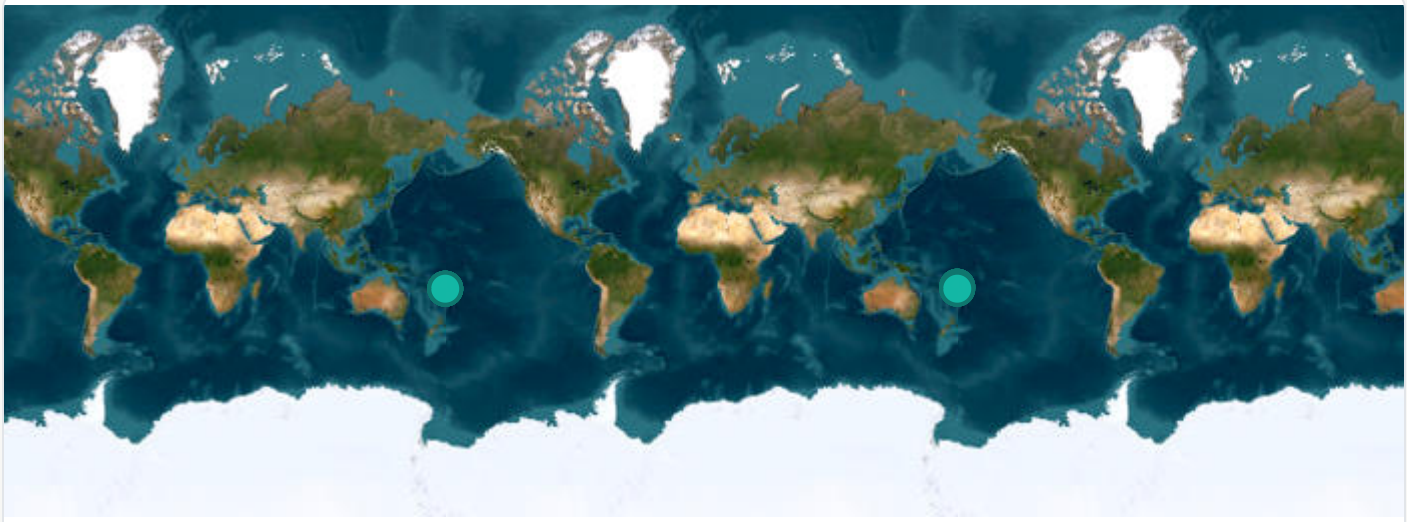
## Heat stress



sea surface temperature (SST) (left axis) DHW under 2 DHW 2–3 DHW 3–5 DHW 5–8 DHW 8–10 DHW over 10 (🔥 above 12)

Daily SST (line) and weekly maximum Degree Heating Weeks (bars), Jan 2023–Oct 2026, NOAA Coral Reef Watch 5-km Fiji virtual station. Dashed line: bleaching threshold (maximum monthly mean 28.4°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: 11 years from 1985 through 2025 reached 8 or more °C-weeks at NOAA's Fiji station. Download the annual DHW data (CSV).




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

Read this summary in: English Vosa Vakaviti

## Regional setting

Spalding et al. (2001) place Fiji's islands on two shallow geological foundations, the Fiji Platform in the west and the Lau Ridge in the east, and they treat the Moala group separately from the Lau Islands. The Moala group appears in their account of the Koro Sea, the relatively enclosed body of water between the Lau Islands and Viti Levu, where only a few islands are scattered. South of the mostly volcanic Lomaiviti group, the atlas describes the Moala group as three high volcanic islands ringed mainly by fringing reefs, a contrast with the Lau chain to the east, where carbonate islands, atolls, and near-atolls are common. For Fiji as a whole, Spalding et al. (2001) estimate about 10,020 km² of coral reef and list some 298 recorded scleractinian coral species, which they relate to Fiji's position near the Indo-Pacific center of diversity and to its wide variety of reef types. They add that most study had been concentrated near Suva and on the Great Astrolabe Reef, so that much of Fiji's reef area remained poorly known. As of 2001, the most recent major disturbance they record is a warming event early in 2000 that bleached 50–100%

of corals over wide areas and down to 30 m, after which many corals died, chiefly along the southern coasts of Viti Levu and Vanua Levu.

None of the sources report on the Moala group after 2000; the recent picture is regional. Wilkinson (2006), summarizing the 2004 Southwest Pacific assessment that included Fiji, found the region's reefs mostly in good shape even after widespread bleaching in 2000–2002, although recovery was uneven. In Anderson's account, cyclones and human activities posed the greatest threats, with crown-of-thorns starfish and disease also noted, and overexploitation and pollution were focused around towns and lagoons. Souter et al. (2021) record that coral cover in the Fiji Islands subregion rose from 2002 to 2008. For the Pacific as a whole, they show average cover dropping from roughly 37% before 1998 to 31% in 2019, with bleaching the main driver and El Niño conditions in 2015 and 2016 causing considerable coral mortality.

## Overview

This unit holds 23 Global Reef Expedition benthic stations in the Moala Group of Lau Province, on Totoya, Matuku, and Moala, plus an island-level marker for Totoya, 24 members in all. Totoya was surveyed on 3-5 June 2013, the first Fiji stops of the expedition, Matuku on 6-7 June, and Moala on 8-10 June. Maximum depths dived ran from 12.5 m at FJML17 to 30.8 m at FJML23, and most stations lay on fore-reef terraces, spur-and-groove ridges, and steep slopes. The group also has more unusual settings: a lagoon pinnacle crowned with large *Acropora* tables at FJML21, a narrow coral canyon at FJML23, a small seamount top off Matuku at FJMT14, and spurs, walls, and an overhung cave passage at FJTO09.

Coral cover ranged from 12% at FJTO06, a Totoya lagoon channel where algae sheets the old framework, to 51% on Moala's west-side fore reef (FJML19), where coral continues past 40 m. FJTO05 (46%) is a crest of large tables and continuous staghorn stands, and FJML18 held 40%. Moala's survey notes describe coral build-ups on massive framework, spaced 15-20 m apart and topped by branching acroporids, with *Porites rus* plates and staghorn down the slope. Totoya alternates between dense, diverse patches and broad coralline-crusted pavement; FJTO08 is a flat, low-relief terrace. Matuku ran from 26% (FJMT12) to 38% (FJMT10), in poor, silty visibility: plating *Pachyseris* and *Echinopora* at the base of the slope, and monospecific stands of *Pavona clavus* and *Porites rus* covering almost 20 m of substrate in the FJMT12 channel.

Pink crustose coralline algae is conspicuous throughout, and at FJMT14 it covers more visible surface than live coral. No station carries a Coral Health Index. Island-pooled physiological outlier scores were 4.50 at Moala, 4.44 at Matuku, and 3.89 at Totoya on a 0-5 scale (5 = no outliers; Mayfield et al. 2017, PLoS ONE); at Totoya, the one coral with an outlier score from each of FJTO05 and FJTO07 was flagged. The surveys recorded *Drupella* snails and recent mortality

scars on acroporids at Matuku, table and plate corals scarred by cushion-star (*Culcita*) feeding at Moala's west-side stations FJML19 and FJML20, cyanobacteria over 13% of the transects at FJML15, one bleaching *Pocillopora damicornis* and a fully bleached tagged probe colony (tag 097) at FJML21, a small bleached colony at FJTO04, and a pale, partly bleached young colony in one FJMT13 frame; Anderson's sampling sheet also records partly bleached sampled colonies, including about 80% at FJMT13, about 50% at FJML16, and about 10% on three of five at FJML17. No crown-of-thorns seastars are recorded for this group.

Sightings include a whitetip reef shark and a giant clam at FJTO04, a reef shark and a giant clam at FJTO09, a school of yellow-striped snapper over the FJTO05 staghorn, a giant clam in the shallows at FJML23, and a school of small blue-black fish streaming over the FJMT14 seamount.

## Highlights

- Cover from 12% on an algae-sheeted Totoya slope (FJTO06) to 51% on Moala's west-side fore reef (FJML19). 
- A narrow coral canyon at Moala and an overhung cave passage at Totoya (FJML23, FJTO09). 
- Large *Acropora* tables and continuous staghorn on the Totoya crest, crossed by yellow-striped snapper (FJTO05). 
- A small seamount top off Matuku where pink coralline algae covers more surface than live coral (FJMT14). 
- A lagoon pinnacle crowned by large *Acropora* tables under clouds of electric-blue damselfish (FJML21). 
- A whitetip reef shark and a giant clam on a Totoya reef (FJTO04). 

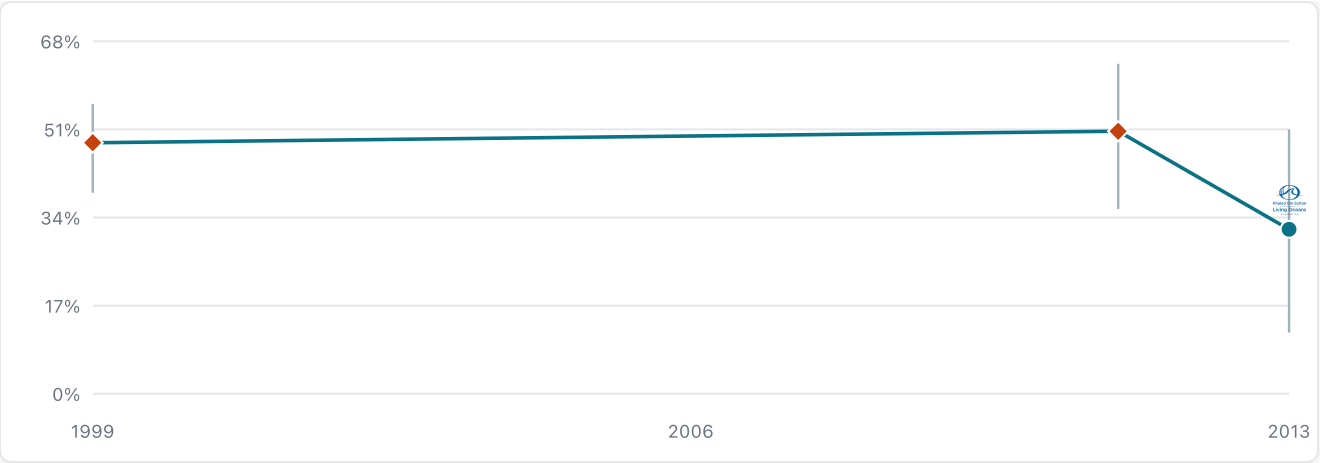
## Notable observations

- Fiji - Moala (FJML19): Corallivores: some evidence of feeding scars on table and plating corals, likely due to an increase in cushion stars (Culcita) at the two west-side stations, FJML19 and FJML20 (Moala survey note). 

- Fiji - Moala (FJML21): One Pocillopora damicornis labeled by Anderson as bleaching, a stark chalk-white colony beside pigmented neighbors; no extent inferred. A tagged probe colony (tag 097) is fully bleached. 
- Fiji - Moala (FJML18): Old coral rubble along the overhang edges; the survey note says it could be evidence of a storm surge event (same note on FJML17). Of the four colonies here with an outlier score, one was flagged as a physiological outlier (Mayfield et al. 2017); Anderson's sheet records all five colonies sampled as healthy, four with small pale spots or tips (5–10%). 
- Fiji - Moala (FJML15): Cyanobacteria covered 13% of the transects on this exposed east-side slope, alongside 66% total algae.
- Fiji - Totoya (FJTO08): No disease lesions or crown-of-thorns feeding scars in the eleven frames; white patches on the branch tips of one Pocillopora colony (which Anderson identified as P. damicornis) are over-exposure, not tissue loss. 
- Fiji - Totoya (FJTO02): No bleaching front, disease lesion, or crown-of-thorns feeding scar in any of the 15 frames. 
- Fiji - Totoya (FJTO07): Physiological stress outliers: the one coral colony from this site with an outlier score was flagged (Mayfield et al. 2017, PLoS ONE), as was the one from FJTO05; island-level screening flagged 2 of the 9 corals with an outlier score. 
- Fiji - Matuku (FJMT11): Corallivores and recent mortality: Drupella snails were found on several colonies, which could account for some recent mortality scars on the acroporids (same survey note on FJMT10, FJMT13, and FJMT14). 
- Fiji - Matuku (FJMT14): Possible paling: two frames show a small cream-and-tan Pocillopora damicornis colony, darker at the branch bases and pale at the tips. Tissue is intact with no exposed skeleton, and natural pale pigmentation cannot be ruled out; no bleaching is claimed. 

## 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/LOF points are from Reef Check Foundation and WCS Fiji. Marker shape: ● Anderson's own dives, ◆ other organizations' surveys, the year includes Global Reef Expedition dives made with the Khaled bin Sultan Living Oceans Foundation (CRD+LOF data).




### ▼ Sites in this region (24)

- Fiji - Lau Islands: Totoya
- Fiji - Matuku (FJMT10) — 38% coral cover
- Fiji - Matuku (FJMT11) — 30% coral cover
- Fiji - Matuku (FJMT12) — 26% coral cover
- Fiji - Matuku (FJMT13) — 26% coral cover
- Fiji - Matuku (FJMT14) — 29% coral cover
- Fiji - Moala (FJML15) — 23% coral cover
- Fiji - Moala (FJML16) — 33% coral cover
- Fiji - Moala (FJML17) — 33% coral cover
- Fiji - Moala (FJML18) — 40% coral cover
- Fiji - Moala (FJML19) — 51% coral cover
- Fiji - Moala (FJML20) — 37% coral cover
- Fiji - Moala (FJML21) — 22% coral cover
- Fiji - Moala (FJML22) — 29% coral cover
- Fiji - Moala (FJML23) — 29% coral cover
- Fiji - Totoya (FJTO01) — 28% coral cover
- Fiji - Totoya (FJTO02) — 36% coral cover
- Fiji - Totoya (FJTO03) — 33% coral cover
- Fiji - Totoya (FJTO04) — 25% coral cover
- Fiji - Totoya (FJTO05) — 46% coral cover
- Fiji - Totoya (FJTO06) — 12% coral cover
- Fiji - Totoya (FJTO07) — 42% coral cover
- Fiji - Totoya (FJTO08) — 36% coral cover
- Fiji - Totoya (FJTO09) — 29% coral cover

## % coral cover by method

### Pooled across 5 dive sites

| Method | Mean % coral cover | Std. dev. between dive sites | n dive sites | Note |
|---|---|---|---|---|
| CoralSCOP (SAM-based mask-sum), edited photos | 38% | ±11 | 5 | 5 of these 5 values rest on 10–19 photographs (*) |
| Claude (Anthropic), blind point count | 31% | ±13 | 5 | 5 of these 5 values rest on 10–19 photographs (*) |
| In-water diver transect (line/point intercept) | 35% | ±4.4 | 5 | — |

The mean is an UNWEIGHTED mean of the dive site values — each dive site counts once, whatever its photo count — which is the convention of the published tables and of every other figure on this page. Each value is the one printed on that dive site's own page; a page that prints no value for a method (fewer than 10 photographs) is left out of that method's mean.

This table pools only the 5 dive sites in this unit that have a method comparison; the table for all 10 dive sites is on the Fiji - Lau page.

### Deviation from the reference

Over the dive sites where an independent reference exists, Claude (Anthropic), blind point count has a mean absolute deviation of 10.6 pp from it across 5 dive sites. Not in this ranking: CoralSCOP (edited), which measures coral area rather than points. 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 dive site

| Dive site | CoralSCOP (edited) | Claude | Diver transect |
|---|---|---|---|
| FJML16 | 41%*<br>n=19 | 35%*<br>n=19 | 33% |
| FJML18 | 38%*<br>n=10 | 24%*<br>n=10 | 40% |
| FJML20 | 54%*<br>n=13 | 51%*<br>n=13 | 37% |
| FJTO02 | 34%*<br>n=12 | 26%*<br>n=12 | 36% |
| FJTO09 | 25%*<br>n=13 | 18%*<br>n=13 | 29% |

n under each value is the number of photographs that method scored at that dive site. ⚠ marks a cell that is not an independent check. * marks a value resting on only 10–19 photographs, which is less certain.

Reference: Living Oceans Foundation (LOF) Global Reef Expedition in-water transects (mean of all the station's transects, Living Oceans Foundation per-transect benthic data). Denominator: line/point intercept along the transect; not a photo-point denominator. Source: LOF Global Reef Expedition 2013, per-transect benthic data ('GRE data-full benthic'): the mean of all of each station's transects For all 10 dive sites in the comparison: The transect is THE coral-cover value at every site; the Claude photo estimate is a methods comparison only, never averaged with the transect and never a headline. Site-level only: the photos come from the survey dives, not from the transect points. Few usable habitat photos exist for Fiji: only 10 sites have 10 or more, and 9 of them have fewer than 20 (low-n), so these are not confident site estimates. Accuracy, Claude vs transect, 10 sites: mean difference -5.4 pp (95% CI -12.7 to +1.9), mean absolute difference 10.3 pp, r 0.35. Claude reads lower than the transect at most sites and does not track it from site to site. This is a methods comparison, not a ranking.

## Nearby external survey stations

13 independent survey records within 5 km of a site in this region (each record counted once; 11 lines, and a line that pools several records says how many).

- Reef Check — Dabu Passage (1999): 51% hard coral cover, 4.23 km from Fiji - Matuku (FJMT11)
- Reef Check — Maccadame Reef (1999): 56% hard coral cover, mean of 2 surveys (2 m and 10 m), 0.53 km from Fiji - Matuku (FJMT11) (2 records)
- Reef Check — North of Arua (1999): 39% hard coral cover, 0.88 km from Fiji - Matuku (FJMT11)
- WCS Fiji via MERMAID — TY01 (2011): 36% hard coral cover, 0.18 km from Fiji - Totoya (FJTO06)
- WCS Fiji via MERMAID — TY02 (2011): 53% hard coral cover, 0.32 km from Fiji - Totoya (FJTO06)
- WCS Fiji via MERMAID — TY04 (2011): 58% hard coral cover, 0.05 km from Fiji - Totoya (FJTO07)
- WCS Fiji via MERMAID — TY06 (2011): 46% hard coral cover, 0.68 km from Fiji - Totoya (FJTO06)
- WCS Fiji via MERMAID — TY08 (2011): 53% hard coral cover, 1.26 km from Fiji - Totoya (FJTO06)
- WCS Fiji via MERMAID — TY10 (2011): 53% hard coral cover, 1.27 km from Fiji - Totoya (FJTO07)
- WCS Fiji via MERMAID — TY13 (2011): 64% hard coral cover, 1.24 km from Fiji - Totoya (FJTO06)
- WCS Fiji via MERMAID — TY15 (2011): 43% hard coral cover, mean of 2 surveys, 0.99 km from Fiji - Totoya (FJTO06) (2 records)

All images from Coral Reef Diagnostics. Data are from the Khaled bin Sultan Living Oceans Foundation Global Reef Expedition, Coral Reef Diagnostics, Reef Check Foundation, and WCS Fiji.


© Coral Reef Diagnostics.

## References


- Souter D, et al. (eds) (2021) *Status of Coral Reefs of the World: 2020*. International Coral Reef Initiative / Global Coral Reef Monitoring Network. [PDF]

- Spalding MD, et al. (2001) *World Atlas of Coral Reefs*. University of California Press, Berkeley. [PDF]
- Wilkinson C (2006) Status of coral reefs of the world: summary of threats and remedial action. In: Côté IM, Reynolds JD (eds) *Coral Reef Conservation*. Cambridge University Press, Cambridge. [PDF]
- Mayfield AB, Chen CS, Dempsey AC (2017). Identifying corals displaying aberrant behavior in Fiji's Lau Archipelago. PLOS ONE 12:e0177267. PDF