Snapshot of the 2019 coral bleaching in Fiji

Impact of coral bleaching

Found in tropical oceans, corals are important reef builders that secrete calcium carbonate to form coral reefs. Corals live in a mutualistic relationship with symbiotic algae, which use sunlight to produce food for corals and get shelter in return. Under stress, such as elevated seawater temperatures for prolonged periods, corals can start to bleach.

Elevated seawater temperatures stress corals

Stressed corals start to expel the symbiotic algae

High seawater temperatures for weeks cause algae to be expelled from corals

Without the algae, corals turn 'white', starve and may eventually die

In 2019, the seawater temperatures in Fiji from January to May ranged from 27–31°C. There were anecdotal reports of coral bleaching from different parts of the country. To better understand the intensity and scale of coral bleaching, a group of scientists from the Wildlife Conservation Society, Manta Trust, Marine Ecology Consulting, Reef Explorer, Barefoot Manta Island and Reef Safari surveyed 64 sites across Fiji between February and June, 2019.

Measuring coral bleaching

- Surveys were carried out on fringing, barrier, atoll and patch reefs covering reef zones such as backreef, forereef, reef crest and pinnacles. Data were collected at two depths, <5 m (shallow) and 8–15 m (deep).
- The "roving observer" was the most commonly used method, where about 20 quadrats were surveyed in approximately 40 minutes. Within each quadrat, number of coral colonies were counted, and orals identified to genus or lifeform. Additionally, coral colonies were identified into normal, bleached and recently dead categories. Overall, benthic cover (including hard coral and macroalgae) was also recorded.
- Other data collection methods used were: (1) point intercept transect (PIT), where every benthic/lifeform category were recorded every 0.5 m interval along a 20 m, 30 m, 50 m or 60 m transect; or (2) random colony counts during a 10 minute drift dive or snorkel.

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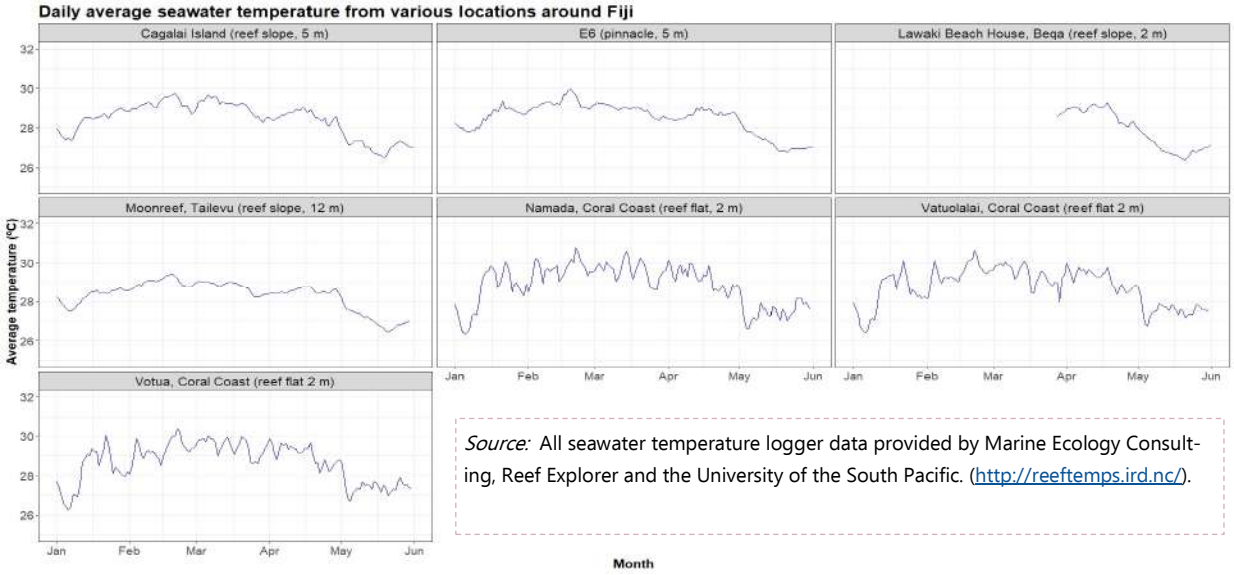
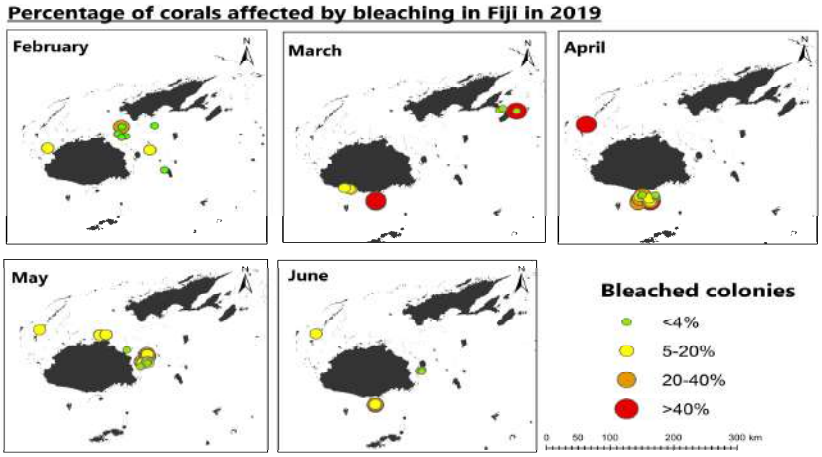
Intensity and scale of coral bleaching on Fiji's reefs



Source: All seawater temperature logger data provided by Marine Ecology Consulting, Reef Explorer and the University of the South Pacific. (http://reeftemps.ird.nc/).



Maps of Fiji showing the scale and intensity of coral bleaching in 2019 over 5 months. Coral bleaching was assessed based on the number of coral colonies affected by bleaching.

(Note: for many sites only one survey was done)

Benthic cover ranges widely across reefs in Fiji. Overall, hard coral cover ranged from 15.0–86.8% (median 43.5%) and macroalgae ranged from 0–28.3% (median 2.6%). Bleaching, expressed as the percentage of corals either partially or fully bleached, varied across sites. The highest levels of bleaching were recorded in March and April, primarily in the Yasawa, Taveuni and Beqa islands.

* **March**: Bleaching was >40% at Beqa and Taveuni islands, 5–20% along the Coral Coast, whilst the rest of the sites had <4% bleaching.
* **April**: Bleaching was 40% in the Yasawa islands, while reefs around Beqa Island varied from very low (<4%) on deeper reefs to low-moderate (5–40%) on shallow reefs.
* **May**: Bleaching in the Lomaiviti waters and Yasawa islands varied from very low (<4%) to low-moderate (5–30%).
* **June:** Bleaching at the majority of the sites were <4%, with only a few sites in Yasawa islands had >10%.

Bleaching was higher at on shallow (1–3 m) compared to deeper reefs (8–15 m). Overall, coral bleaching levels were considered low to moderate across Fiji in 2019 in comparison to bleaching levels recorded in 2000–2002 and 2006, when mass coral bleaching events caused coral mortality across Fiji. Field-based observations in 2019 suggest that the bleaching did not persist and most corals had returned to normal by May and June.