

Rapid health assessment of coral reefs: a standardised, quick, and reliable tool developed and tested during the 2024/25 global bleaching event

Pietro Pollo^{1,2*}, Paige Sawyers²; Justin Gilligan³, Caitlin Woods³, William Leggat¹, Tracy Ainsworth²

¹ School of Environmental and Life Sciences, University of Newcastle, Newcastle, NSW, 2308, Australia

² School of Biological, Earth & Environmental Sciences, University of New South Wales, Kensington, NSW, 2052, Australia

³ New South Wales Department of Primary Industries and Regional Development, Lord Howe Island Marine Park, Lord Howe Island, NSW, 2898, Australia

* Corresponding author: pietro_pollo@hotmail.com

15 **ORCID**

16 Pietro Pollo: <https://orcid.org/0000-0001-6555-5400>

17 Paige Sawyers: <https://orcid.org/0009-0008-8429-1568>

18 William Leggat: <https://orcid.org/0000-0003-4148-2555>

19 Tracy Ainsworth: <https://orcid.org/0000-0001-6476-9263>

20

Abstract

Coral reefs worldwide are experiencing increasingly frequent and severe degradation events driven by rising sea surface temperatures, yet reliable and scientifically comparable data remain sparse for many coral reefs. Park managers, rangers, and community-led groups in areas lacking scientific studies could contribute to data records by collecting relevant data on coral reefs. However, these stakeholders often face logistical constraints that limit their ability to undertake ecological surveys and assess coral reef conditions in ways that are comparable to scientifically collected records. Here, we demonstrate a rapid health assessment protocol that is comparable to traditional, scientific methods, enabling stakeholders other than scientists to contribute robust data on coral bleaching to global-scale analyses. This protocol combines existing citizen science tools with standardised sampling approaches to generate monitoring high-quality data quickly. We compare estimates derived from the proposed methodology with those obtained with the traditional, research-grade, long-term photoquadrat-based coral reef monitoring approach across two distinct and understudied Australian coral reef ecosystems, Lord Howe Island and Norfolk Island. We show that the rapid health assessment methodology provides data comparable to photoquadrats, although some divergences may arise. For example, the rapid health assessment is less likely to detect sparsely distributed conditions, such as partial mortality within coral colonies, compared with methods that assess the benthos in detail. Our study improves accessibility for coral reef stakeholders, allowing them to contribute data to coral reef health monitoring and global monitoring databases.

Keywords: coral health, coral reef degradation, hard corals, heat stress, Scleractinia.

Introduction

Coral reefs are major biodiversity hotspots, harbouring 5% of life on Earth (Reaka-Kudla 1997) despite covering less than 0.1% of the ocean's surface (Spalding & Grenfell 1997). Coral reefs provide critical ecosystem services to humans (Moberg & Folke 1999), including socio-economic benefits from activities such as fishing (Teh et al. 2013) and tourism (Spalding et al. 2017). However, the benefits provided by coral reefs are at risk as these ecosystems are increasingly threatened by a combination of local and global stressors (Hughes et al. 2003; Bellwood et al. 2004). Climate change has led to rising sea temperatures over recent decades, increasing the frequency and intensity of marine heatwaves (Dong et al. 2025). Under such sustained stress, corals bleach due to a breakdown of the coral endosymbiosis with microorganisms that provide 90% of their nutrients (Glynn 1993; Hoegh-Guldberg 1999; Douglas 2003; Baker et al. 2008). As a result of the accelerating pressures on coral reefs, numerous mass bleaching episodes have now been documented worldwide, often leading to widespread mortality and loss of reef structure (Glynn 1993; Brown 1997; Hughes et al. 2017). Reliable, standardised methods for monitoring coral reefs' condition are thus urgent to understand the dynamics related to bleaching events and decline across world coral reef ecosystems, particularly in understudied coral reef systems. Although a variety of methods have been used to survey coral reefs over the past decades (van Woesik et al. 2022; Khen et al. 2023; Rivera-Sosa et al. 2025; Voolstra et al. 2025), most have been developed by researchers for researchers to address scientific goals, potentially limiting the involvement of other stakeholders in reef monitoring.

Coral reef monitoring options span different spatial scales and resource trade-offs (Khen et al. 2023; Rivera-Sosa et al. 2025; Voolstra et al. 2025). Although recent technological advancements (e.g. drones, remote sensing) have further expanded coral reef monitoring

possibilities (e.g. Bennett et al. 2020; Piñeros et al. 2024), underwater surveys currently represent the most common methodology to evaluate coral reefs and also the most accessible (Khen et al. 2023; Rivera-Sosa et al. 2025). Underwater surveys involving photoquadrats, in which photographs of the benthos are taken and later analysed, are considered one of the most reliable approaches to assess and record the state of coral reefs (Leujak & Ormond 2007). Even though geo-referenced photoquadrats offer detailed, permanently archived data (Bohnsack 1979), analysing the images generated by this method requires specialised software (e.g. CoralNet [<https://coralnet.ucsd.edu>]; ReefCloud [<https://reefcloud.ai>]; MERmaid [<https://datamermaid.org>]), training to correctly identify organisms, and a significant time investment (Williams et al. 2019). Traditional *in situ* underwater surveys are not necessarily less demanding as they also require considerable experience and logistical support despite not involving cameras. Consequently, stakeholders that do not have the necessary time, equipment, and/or expertise may struggle to implement the photoquadrat method or other traditional approaches. This is often the case for park managers, rangers, and community-led groups, who need to quickly evaluate the condition of coral reefs to inform local policy and community actions but commonly lack the resources to apply traditional approaches. While tools to assess coral health have been created with these alternative stakeholders in mind (e.g. colour reference cards; Siebeck et al. 2006), the lack of standardised easy-to-use underwater methodology hinders their integration into global coral reef monitoring data networks. This gap thus reveals the need for alternative, accessible methods designed with stakeholders other than scientists in mind.

Abnormally high sea temperatures were predicted for early 2024 in parts of the Pacific ocean, exposing corals in the region to prolonged heat stress and increasing the risk of another mass bleaching event. To obtain a fast yet reliable evaluation of coral reef health during this period

at two locations at risk (Lord Howe Island and Norfolk Island), we conducted a rapid health assessment alongside scientific-grade monitoring assessment (photoquadrats).

Here, we describe this rapid health assessment method designed for users without the resources and underwater research equipment required for traditional monitoring approaches, enabling them to quickly generate robust insights on reef conditions. We then compare our proposed methodology with the widely used photoquadrat technique to determine whether it can provide similar outputs to a traditional method. By doing so, we hope to encourage non-scientist stakeholders to contribute to global coral reef monitoring data networks with reliable data.

Material and methods

Study sites

Benthic surveys were conducted in Lord Howe Island (31°33'S, 159°05'E; Fig. 1A, B) from 26th January to 2nd February, 27th February to 1st March 2024, and from 15th May to 23rd May 2024 by both research trained staff and marine park management staff. In total, eight sites were surveyed (Fig. 1B): seven on the western side of the island within the lagoon (Sylphs Hole, North Bay, Comets Hole, Stevens Hole, Acropora Gardens, Horseshoe Reef, and Potholes) and the remaining site on the eastern side of the island within a designated sanctuary zone (Neds Beach).

Benthic surveys were also conducted on the inshore reefs of Norfolk Island (29.06°S, 167.96°E; Fig. 1A, C) from 18th March to 28th March 2024, and from 15th May to 26th May 2024, across three sites (Slaughter Bay, Emily Bay, and Cemetery Bay; Fig. 1C) by a team of entirely research trained staff.

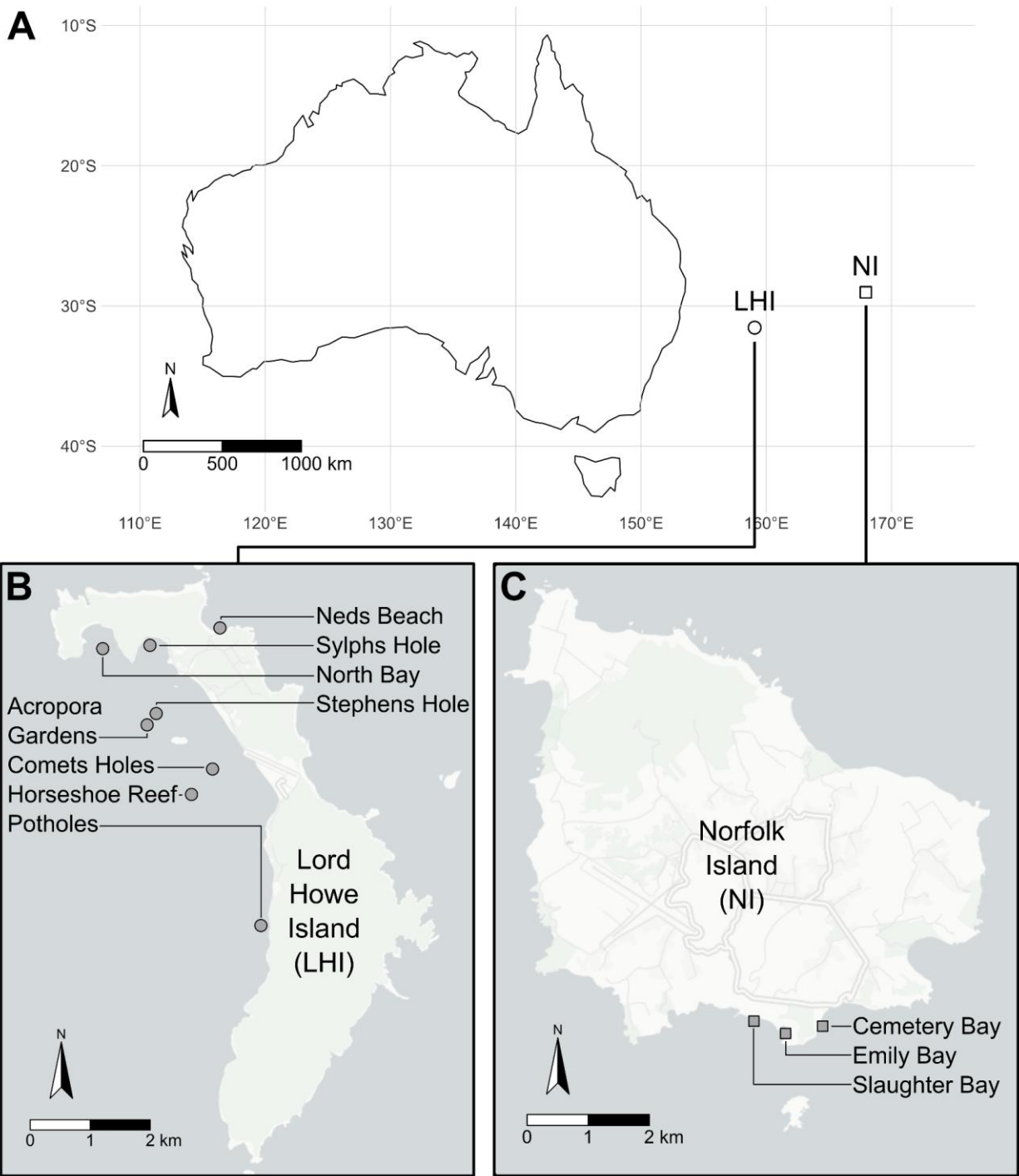


Figure 1. Study sites, shown in relation to Australia (A) and in detail for Lord Howe Island (B) and Norfolk Island (C).

Surveys using photoquadrats

The photoquadrat method was used as a long-term monitoring program (LTMP; Fig. 2A). Quadrats (0.5m x 0.5m) were photographed with a TG-6 Olympus underwater camera via snorkelling every 2.5 m along 50 m transects (20 photoquadrats per transect, three transects per site) in Lord Howe Island and every 1 m along 10 m transects (10 photoquadrats per transect, variable number of transects per site and per method, see below) in Norfolk Island. Transects were positioned at depths of 0.5-2 m and were laid parallel to each other with a minimum spacing of 10 m. At each transect, photoquadrats were placed on a consistent side of the transect line (either left or right). Photographs of each quadrat included colour cards in the frame (Siebeck et al. 2006; Fig. 2A). Each photograph was uploaded to the web-based annotation program CoralNet (<https://coralnet.ucsd.edu>), where 100 uniformly placed fixed points were overlaid to the quadrat area. Each point was then evaluated regarding the genus and the health category (healthy, pale, bleached, dead) if the point corresponded to a coral colony.

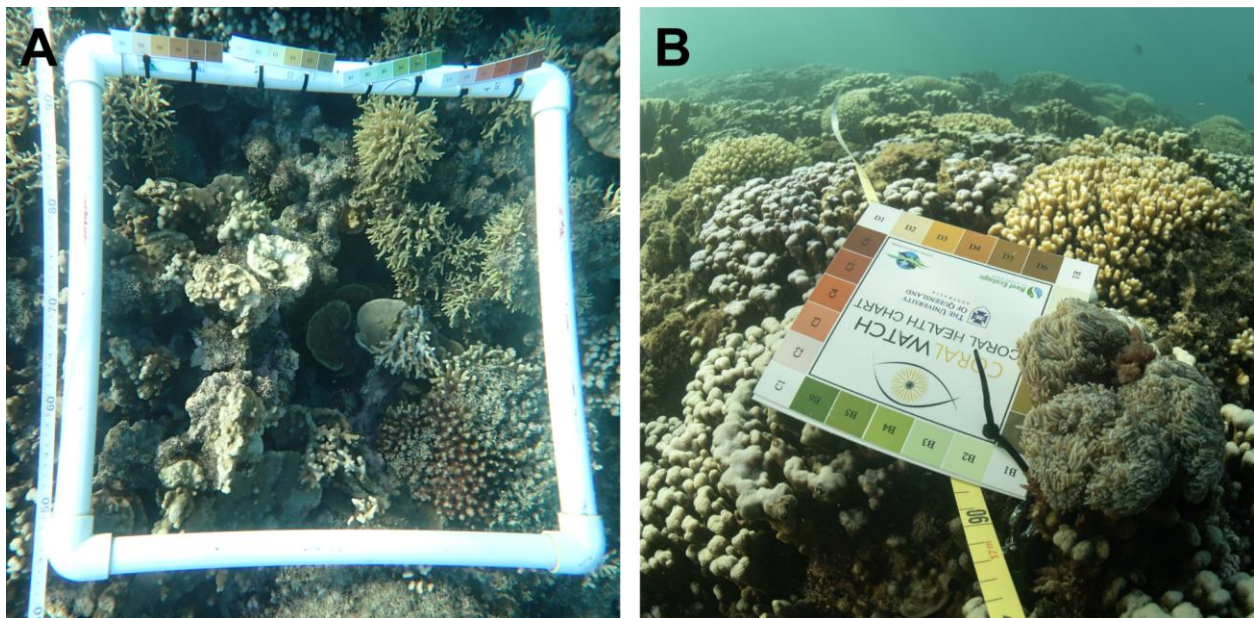


Figure 2. Pictures taken for the (A) photoquadrat method and the (B) rapid health assessment.

131

132 *Rapid health assessment*

133 Coral colonies that intercepted the first 20 m of each transect line that was used for the
134 photoquadrat method were photographed in their entirety (Fig. 2B). Coral colonies needed to be
135 at least 20 cm diameter to be photographed and included in the health assessment, and were
136 classified by diameter as small (20-50 cm), medium (50-100 cm), or large (>100 cm). Photographs
137 were taken with a coral health card in view (for scale and colour; Siebeck et al. 2006; Fig. 2B),
138 being used to analyse and classify coral colonies to the required taxonomic level (genus) and health
139 status (similar to Table S1).

140

141 *Statistical analyses*

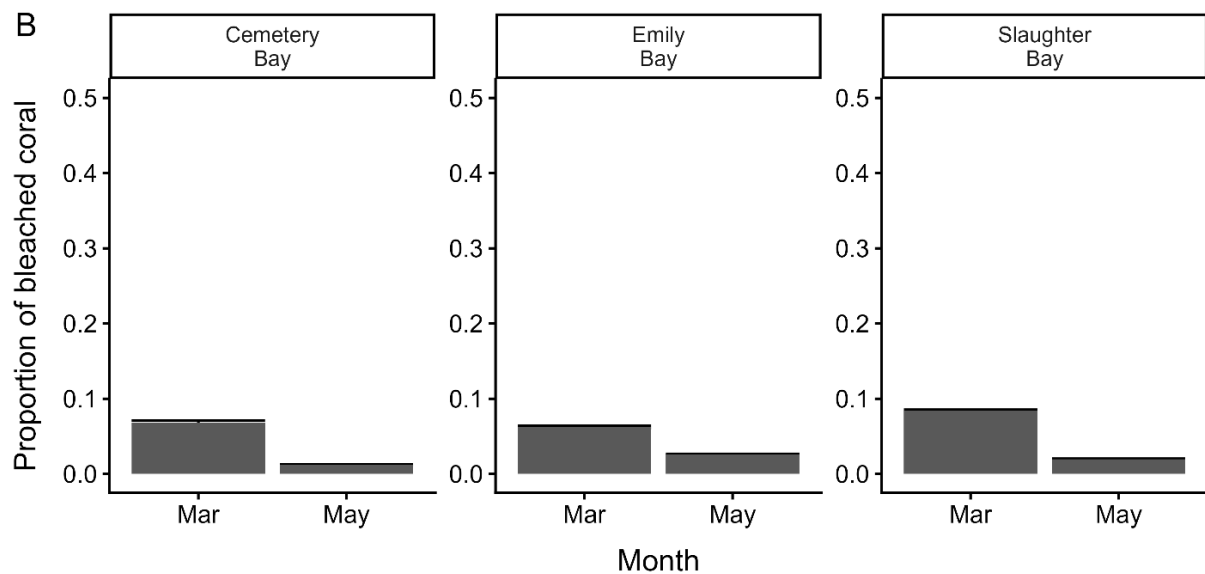
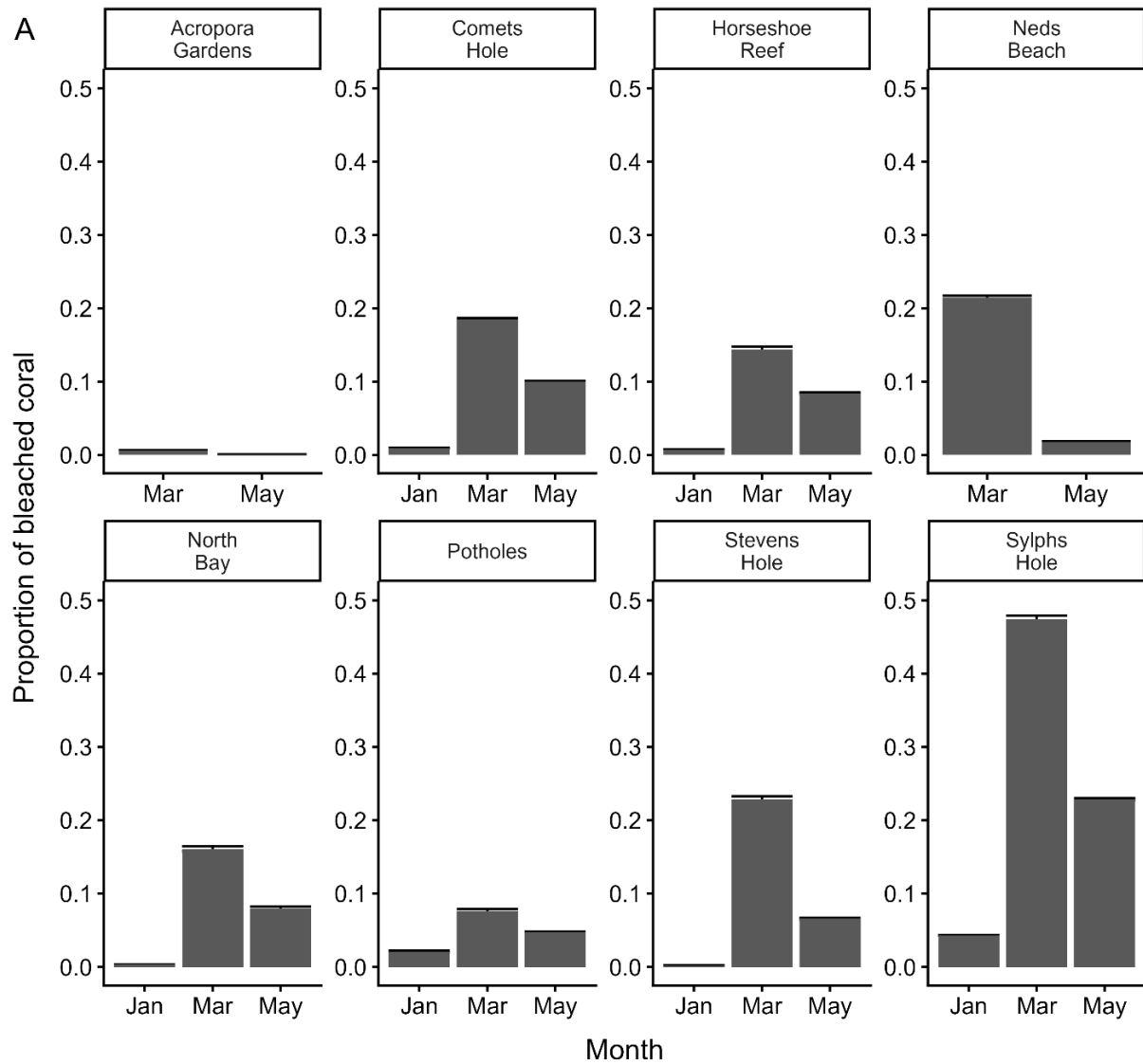
142 For all our analyses, we multiplied the number of labels of large colonies by three and of medium
143 colonies by two to better incorporate the area occupied by colonies assessed in the rapid health
144 assessment. We first fitted several Bayesian generalised linear models (BGLMs) using a Dirichlet
145 error distribution to estimate the proportion of coral pertaining to each possible health status
146 (healthy, pale, bleached, or dead) for each site, month, and method of data collection, where sample
147 size within a transect was used as weight. We then compared the estimates from these regressions
148 with four linear mixed models (LMMs), one for each of the four possible health conditions in the
149 current study dataset. In these LMMs, the estimate obtained from the LTMP method was the
150 response variable, the estimate obtained from the rapid health assessment method was the predictor
151 variable, the intercept was forced to zero, and island, site, and month (nested within island) were
152 used as random factors. We complemented this analysis by computing the repeatability of

estimates, i.e. the proportion of the variance related to the method of collection (photoquadrat vs. rapid health assessment) from the total variance observed.

All analyses described above were conducted in R v. 4.5.1 (R Core Team 2025). We conducted BGLMs using the package *brms* v. 2.23.0 (Bürkner 2017, 2018, 2021) and the package *cmdstanr* v. 0.9.0 (Gabry et al. 2025), obtaining their predictions using the package *marginaleffects* v. 0.31.0 (Arel-Bundock et al. 2024). For these BGLMs, we ran three chains, each with 5,000 iterations plus another 5,000 burn-in iterations, adopting Stan's standard uninformative priors and default parameters. We fitted LMMs using the package *glmmTMB* v. 1.1.12 (Brooks et al. 2017; McGillicuddy et al. 2025) and obtained their predictions using the package *emmeans* v. 1.11.2-8 (Lenth 2025). We estimated repeatability using the package *rptR* v. 0.9.23 (Stoffel et al. 2017).

Results

Coral bleaching occurred mainly in March (Figs. 3, 4, 5). While bleaching was high at some Lord Howe Island sites (e.g. nearly half of the coral cover at Sylphs Hole; Figs. 3A, 4), it was minor at others (e.g. Acropora Gardens and Potholes; Figs. 3A, 4) and remained low at all Norfolk Island sites (<10% of coral cover; Figs. 3B, 5).



171 Figure 3. Proportion of coral that bleached throughout the 2024 global bleaching event for Lord
172 Howe Island (A) and Norfolk Island (B). Error bars represent upper credible intervals.

173

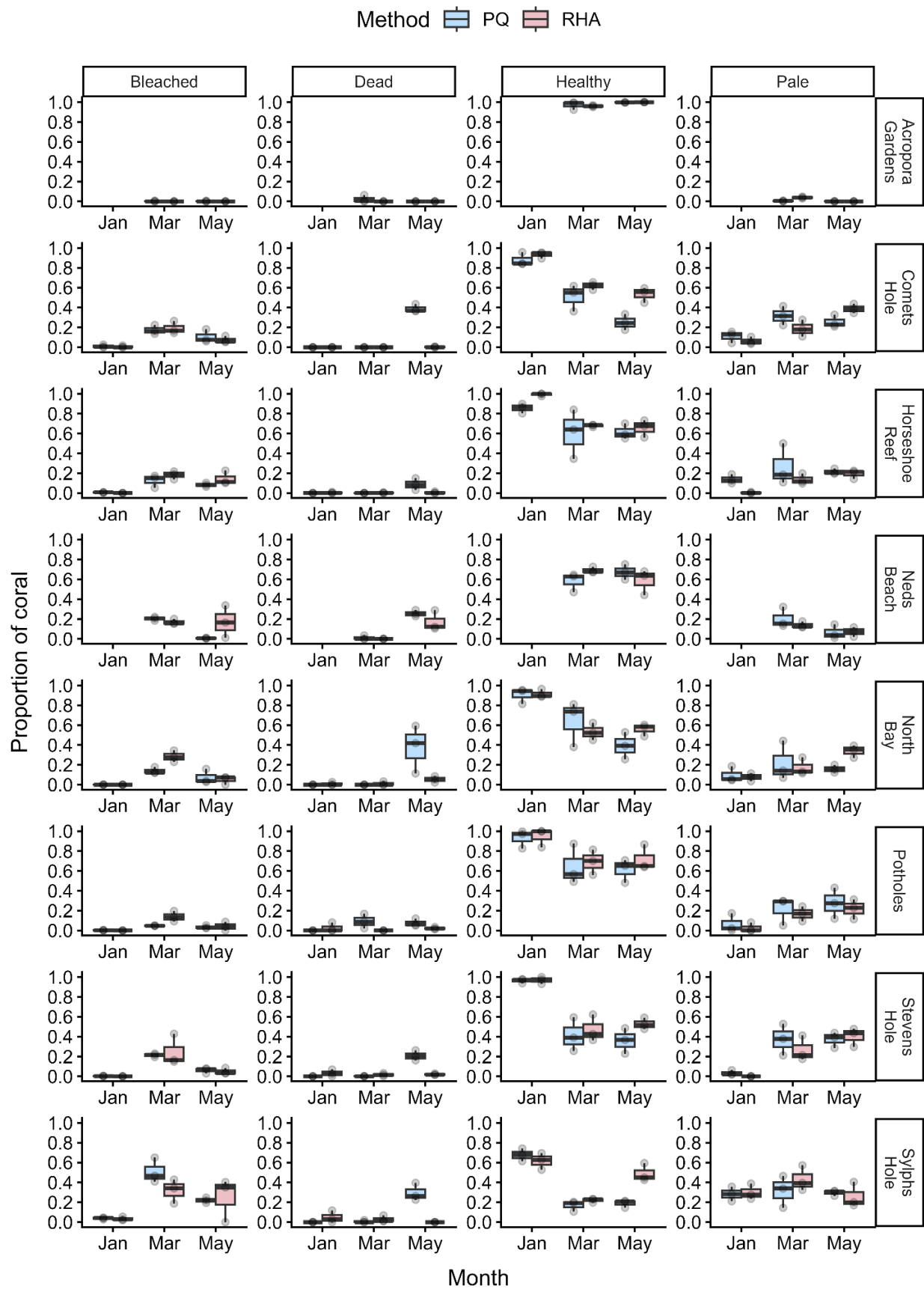


Figure 4. Proportion of coral in each of Lord Howe Island's sites (rows) across health categories (column) for each month and sampling method. Dots represent individual samples (transects), boxes enclose 50% of the data (interquartile range), the whiskers contain values up to 1.5 times the interquartile range, and the solid line within the boxes represents the median.

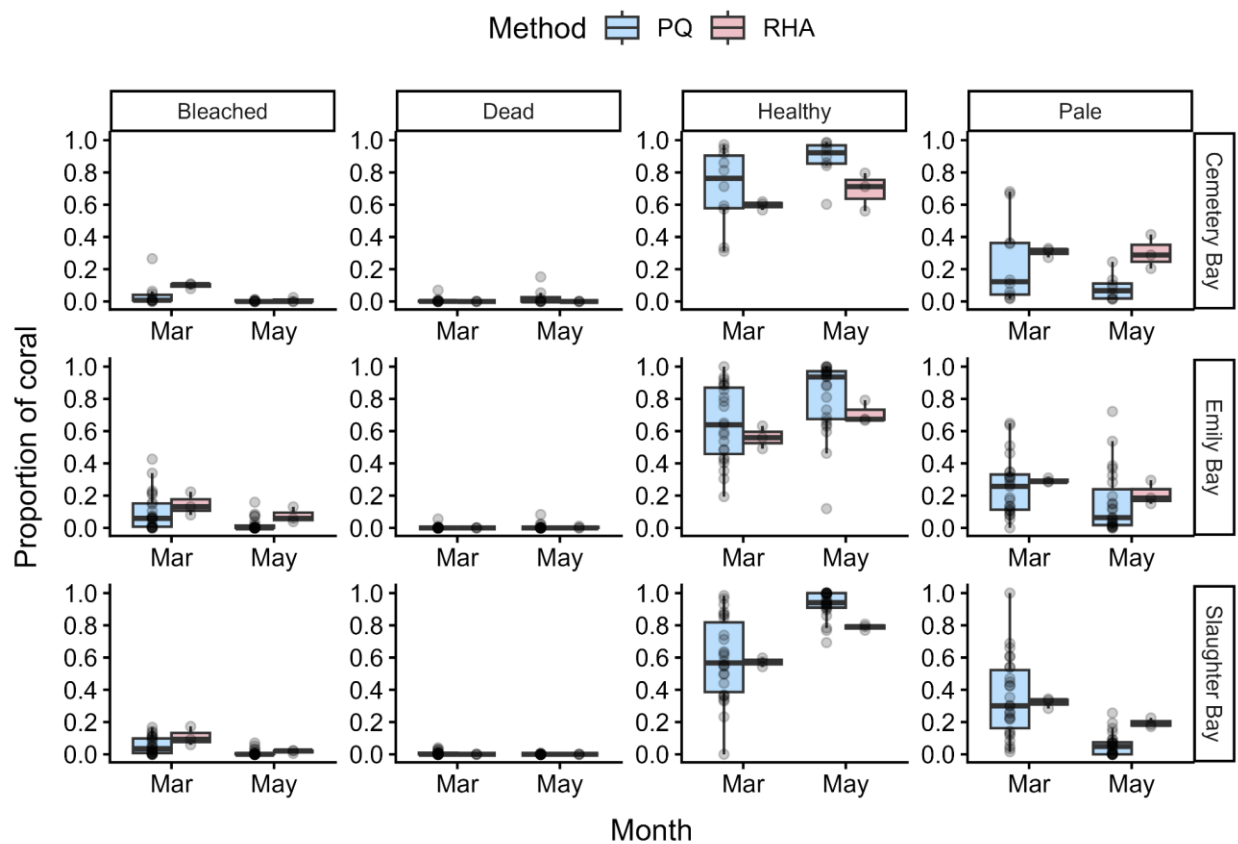
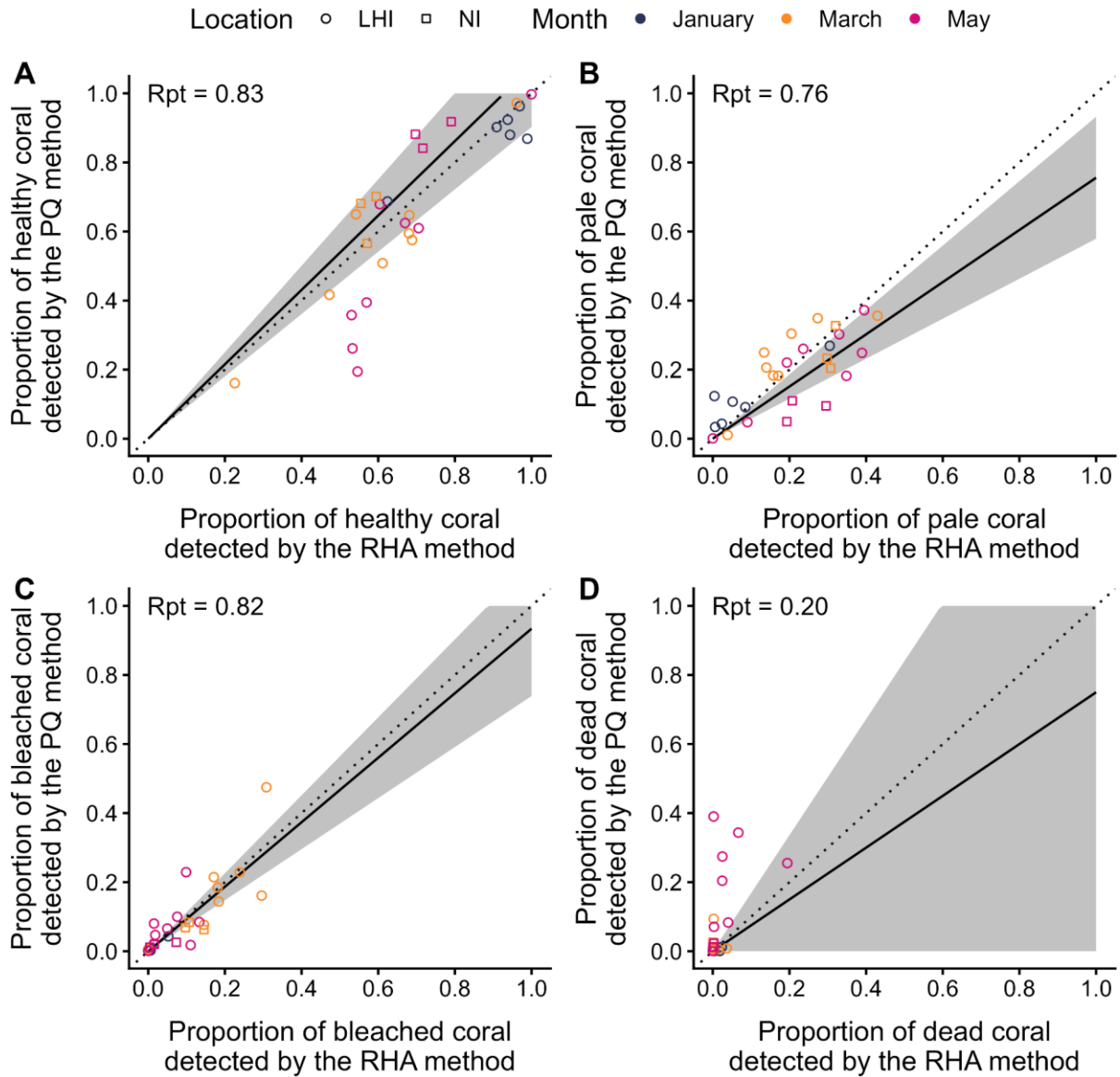


Figure 5. Proportion of coral in each of Norfolk Island's sites (rows) across health categories (column) for each month and sampling method. Dots represent individual samples (transects), boxes enclose 50% of the data (interquartile range), the whiskers contain values up to 1.5 times the interquartile range, and the solid line within the boxes represents the median.

Overall, the two data collection methods we assessed (i.e. photoquadrat and rapid health assessment) yielded highly repeatable estimates (repeatability = 0.94, 95%CI = 0.92 to 0.96; Figs. 4, 5, 6). Although the repeatability of these two methods for healthy, pale, or bleached coral proportions was high (i.e., greater than 0.76; Fig. 6A-C), the rapid health assessment tended to overestimate pale and bleached coral proportions compared with the photoquadrats (Fig. 6B, C). By contrast, the estimated proportion of dead coral was the most disparate between methods: coral in this condition, which occurred in moderate proportions in some sites of Lord Howe Island in May according to photoquadrats, virtually remained undetected in the rapid health assessment (Fig. 6D). Nonetheless, the 95% confidence interval of regression slopes between the two methods included 1 for all but one comparison (pale; Fig. 6B), indicating that these methods are mostly comparable.



199

200 Figure 6. Relationship between estimated proportions of healthy (A), pale (B), bleached (C), and
 201 dead (D) coral from two different methods (PQ: photoquadrats, RHA: rapid health assessment).

202 Solid lines represent a linear regression between these two methods (intercept was forced to zero),
 203 while shaded areas represent their 95% confidence interval. Dotted lines highlight a perfect
 204 relationship between methods. 'Rpt' stands for repeatability of estimates.

205

Discussion

In the present study, we propose and test the rapid health assessment, a tool to quickly evaluate the health state of coral reefs for various stakeholders with limited resources. We show that this method produces estimates similar to research-grade photoquadrat surveys. However, we also found some key discrepancies that stem from inherent differences between these two methods, which may reflect important limitations of the proposed method.

Our findings show that the estimates obtained with the rapid health assessment method are reliable in most cases (Fig. 4). Nonetheless, the estimates of dead coral from four sites of Lord Howe Island in May were much lower according to the rapid health assessment than according to photoquadrats (Fig. 4D). This probably occurred because these specific sites were under abnormal low tide in this period, causing the top of coral colonies to die (see details in Sawyers et al. *in prep*). As photoquadrats rely on photographs taken from above, such colonies contributed to greater estimates of dead coral using this method. By contrast, the rapid health assessment method considers the overall health state of colonies, which remained healthy or pale even after experiencing some mortality from low tides. In other words, colonies evaluated may have received distinct labels depending on the method used. This highlights that the proposed rapid health assessment is a simple tool that may overlook nuances when coral colonies present multiple health states.

We emphasise that, despite our use of underwater cameras to conduct the rapid health assessment, this method can be applied just as easily through direct in-water surveys. This flexibility allows stakeholders without photographic equipment to rapidly implement this approach, albeit at the cost of not generating a permanent visual record. Given the ease and reliability of the rapid health assessment we propose here, this method can be particularly useful

for environmental managers who need to quickly identify bleaching events to inform managing authorities and the public. Coral bleaching events are highly impactful to local communities and tourists (Prideaux et al. 2018), so we hope that the rapid health assessment will support stakeholders not only in documenting the state of coral reefs to build scientific records, but also in communicating with and engaging concerned members of the public.

Code and data accessibility

All data and code used in this study are available at <http://doi.org/10.5281/zenodo.23679917>.

Author contributions

PP: conceptualisation, formal analysis, data curation, writing - original draft, writing - review & editing, visualisation.

PS: conceptualisation, investigation, writing - review & editing, visualisation.

JG: investigation, writing - review & editing.

CW: investigation, writing - review & editing.

WL: conceptualisation, methodology, project administration, writing - review & editing.

TA: conceptualisation, methodology, project administration, writing - review & editing.

Competing interests

The authors declare no conflicts of interest.

References

- Arel-Bundock V, Greifer N, Heiss A (2024) How to interpret statistical models using
marginaleffects for R and Python. *J Stat Softw* 111(9):1–32
- Baker AC, Glynn PW, Riegl B (2008) Climate change and coral reef bleaching: an ecological
assessment of long-term impacts, recovery trends and future outlook. *Estuar Coast Shelf Sci*
80:435–471
- Bellwood DR, Hughes TP, Folke C, Nyström M (2004) Confronting the coral reef crisis. *Nature*
429:827–833
- Bennett MK, Younes N, Joyce K (2020) Automating drone image processing to map coral reef
substrates using Google Earth Engine. *Drones* 4:50
- Bohnsack JA (1979) Photographic quantitative sampling of hard-bottom benthic communities.
Bull Mar Sci 29:242–252
- Brooks ME, Kristensen K, van Benthem KJ, Magnusson A, Berg CW, Nielsen A, Skaug HJ,
Mächler M, Bolker BM (2017) glmmTMB balances speed and flexibility among packages
for zero-inflated generalized linear mixed modeling. *R J* 9:378–400
- Brown BE (1997) Coral bleaching: causes and consequences. *Coral Reefs* 16:S129–S138
- Bürkner P-C (2017) brms: an R package for Bayesian multilevel models using Stan. *J Stat Softw*
80(1):1–28
- Bürkner P-C (2018) Advanced Bayesian multilevel modeling with the R package brms. *R J*
10:395–411
- Bürkner P-C (2021) Bayesian item response modeling in R with brms and Stan. *J Stat Softw*
100(5):1–54

272 Dong T, Zeng Z, Pan M, Wang D, Chen Y, Liang L, Yang S, Jin Y, Luo S, Liang S, Huang X,
 273 Zhao D, Ziegler AD, Chen D, Li LZX, Zhou T, Zhang D (2025) Record-breaking 2023
 274 marine heatwaves. *Science* 389:369–374

275 Douglas AE (2003) Coral bleaching—how and why? *Mar Pollut Bull* 46:385–392

276 Gabry J, Češnovar R, Johnson A, Bronder S (2025) cmdstanr: R interface to ‘CmdStan’. R package
 277 version 0.9.0. <https://mc-stan.org/cmdstanr/>

278 Glynn PW (1993) Coral reef bleaching: ecological perspectives. *Coral Reefs* 12:1–17

279 Hoegh-Guldberg O (1999) Climate change, coral bleaching and the future of the world’s coral
 280 reefs. *Mar Freshw Res* 50:839–866

281 Hughes TP, Baird AH, Bellwood DR, Card M, Connolly SR, Folke C, Grosberg R, Hoegh-
 282 Guldberg O, Jackson JBC, Kleypas J, Lough JM, Marshall P, Nystrom M, Palumbi SR,
 283 Pandolfi JM, Rosen B, Roughgarden J (2003) Climate change, human impacts, and the
 284 resilience of coral reefs. *Science* 301:929–933

285 Hughes TP, Kerry JT, Álvarez-Noriega M, Álvarez-Romero JG, Anderson KD, Baird AH,
 286 Babcock RC, Beger M, Bellwood DR, Berkelmans R, Bridge TC, Butler IR, Byrne M,
 287 Cantin NE, Comeau S, Connolly SR, Cumming GS, Dalton SJ, Diaz-Pulido G, Eakin CM,
 288 Figueira WF, Gilmour JP, Harrison HB, Heron SF, Hoey AS, Hobbs J-PA, Hoogenboom
 289 MO, Kennedy EV, Kuo C-Y, Lough JM, Lowe RJ, Liu G, McCulloch MT, Malcolm HA,
 290 McWilliam MJ, Pandolfi JM, Pears RJ, Pratchett MS, Schoepf V, Simpson T, Skirving WJ,
 291 Sommer B, Torda G, Wachenfeld DR, Willis BL, Wilson SK (2017) Global warming and
 292 recurrent mass bleaching of corals. *Nature* 543:373–377

293 Khen A, Wall CB, Smith JE (2023) Standardization of in situ coral bleaching measurements
 294 highlights the variability in responses across genera, morphologies, and regions. PeerJ 11:1–
 295 26

296 Lenth RV (2025) emmeans: estimated marginal means, aka least-squares means. R package
 297 version 1.11.2-8. <https://CRAN.R-project.org/package=emmeans>

298 Leujak W, Ormond RFG (2007) Comparative accuracy and efficiency of six coral community
 299 survey methods. J Exp Mar Biol Ecol 351:168–187

300 McGillicuddy M, Warton DI, Popovic G, Bolker BM (2025) Parsimoniously fitting large
 301 multivariate random effects in glmmTMB. J Stat Softw 112(1):1–19

302 Moberg F, Folke C (1999) Ecological goods and services of coral reef ecosystems. Ecol Econ
 303 29:215–233

304 Piñeros VJ, Reveles-Espinoza AM, Monroy JA (2024) From remote sensing to artificial
 305 intelligence in coral reef monitoring. Machines 12:693

306 Prideaux B, Pabel A (2018) Coral reefs: tourism, conservation and management. Routledge,
 307 London

308 R Core Team (2025) R: a language and environment for statistical computing. R Foundation for
 309 Statistical Computing, Vienna, Austria. <https://www.R-project.org/>

310 Reaka-Kudla ML (1997) The global biodiversity of coral reefs: a comparison with rain forests. In:
 311 Reaka-Kudla ML, Wilson DE, Wilson EO (eds) Biodiversity II: understanding and
 312 protecting our biological resources. Joseph Henry Press, Washington, DC, pp 83–108

313 Rivera-Sosa A, Muñiz-Castillo AI, Charo B, Asner GP, Roelfsema CM, Donner SD, Bambic BD,
 314 Bonelli AG, Pomeroy M, Manzello D, Martin P, Fox HE (2025) Six decades of global coral

315 bleaching monitoring: a review of methods and call for enhanced standardization and
316 coordination. *Front Mar Sci* 12:1–20

317 Sawyers P, Leggat W, Pollo P, Heron SF, Ainsworth T (*in prep*) Beyond the tropics: thermal stress
318 at the world’s southernmost coral reef in 2024.

319 Siebeck UE, Marshall NJ, Klüter A, Hoegh-Guldberg O (2006) Monitoring coral bleaching using
320 a colour reference card. *Coral Reefs* 25:453–460

321 Spalding MD, Grenfell AM (1997) New estimates of global and regional coral reef areas. *Coral*
322 *Reefs* 16:225–230

323 Spalding M, Burke L, Wood SA, Ashpole J, Hutchison J, zu Ermgassen P (2017) Mapping the
324 global value and distribution of coral reef tourism. *Mar Policy* 82:104–113

325 Stoffel MA, Nakagawa S, Schielzeth H (2017) rptR: repeatability estimation and variance
326 decomposition by generalized linear mixed-effects models. *Methods Ecol Evol* 8:1639–1644

327 Teh LSL, Teh LCL, Sumaila UR (2013) A global estimate of the number of coral reef fishers.
328 *PLoS One* 8:e65397

329 Voolstra CR, Alderdice R, Colin L, Staab S, Apprill A, Raina J-B (2025) Standardized methods
330 to assess the impacts of thermal stress on coral reef marine life. *Ann Rev Mar Sci* 17:193–
331 226

332 van Woesik R, Shlesinger T, Grottoli AG, Toonen RJ, Vega Thurber R, Warner ME, Marie Hulver
333 A, Chapron L, McLachlan RH, Albright R, Crandall E, DeCarlo TM, Donovan MK, Eirin-
334 Lopez J, Harrison HB, Heron SF, Huang D, Humanes A, Krueger T, Madin JS, Manzello D,
335 McManus LC, Matz M, Muller EM, Rodriguez-Lanetty M, Vega-Rodriguez M, Voolstra
336 CR, Zaneveld J (2022) Coral-bleaching responses to climate change across biological scales.
337 *Glob Chang Biol* 28:4229–4250

338 Williams ID, Couch CS, Beijbom O, Oliver TA, Vargas-Angel B, Schumacher BD, Brainard RE
339 (2019) Leveraging automated image analysis tools to transform our capacity to assess status
340 and trends of coral reefs. *Front Mar Sci* 6:222

341 **Supplementary material**

342 Table S1. Example of rapid health assessment data sheet.

Date	Site	Transect	Morphotype	Size	Primary health category	Colour	Notes
22/03/25	Potholes	1	<i>Acropora</i>	L	Healthy	E4	Some paling on tips of branches, partial mortality from low tide
22/03/25	Potholes	1	<i>Isopora</i>	M	Healthy	D4	
22/03/25	Potholes	2	<i>Acropora</i>	L	Healthy	E4	Partial mortality from low tide
22/03/25	Potholes	2	<i>Isopora</i>	S	Pale	D2	
22/03/25	Potholes	3	<i>Pocillopora</i>	S	Pale	D3	Partial mortality from bleaching
22/03/25	Neds Beach	1	<i>Pocillopora</i>	S	Dead		Whole colony mortality from bleaching
22/03/25	Neds Beach	1	<i>Pocillopora</i>	S	Bleached	D1	
22/03/25	Neds Beach	2	<i>Isopora</i>	M	Healthy	D4	
22/03/25	Neds Beach	3	<i>Xenia</i>	L	Healthy	D5	
22/03/25	Sylphs Hole	1	<i>Porites</i>	L	Healthy	D5	Patches of hypermycosis
22/03/25	Sylphs Hole	2	<i>Porites</i>	M	Healthy	D4	
22/03/25	Sylphs Hole	3	<i>Isopora</i>	L	Healthy	D4	Paling basal edges and column tips

343