



Australian Citizen Science Association (ACSA)

Submission to the Engagement Paper: Review of the Reef 2050 Plan

As ACSA is a volunteer organisation, with limited resources, this document was prepared with the assistance of AI (Claude) using guidance, prompts and documents already developed by ACSA, and edited, added to and reviewed by members of the ACSA Management Committee.

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Key messages

- Embed **specific citizen science actions** and associated resourcing within the Reef 2050 Plan.
- To amplify outcomes from citizen science actions, resource the **core or “backbone” activities of citizen science** organisations (e.g. coordination, communications, knowledge brokering, monitoring and reporting)
- Ensure all Reef citizen science data is made available under **FAIR principles**.
- Build connected and integrated **citizen science infrastructure** - including organisational infrastructure such as citizen science hubs, as well as technical infrastructure connecting people to projects.

Introduction

The Australian Citizen Science Association (ACSA) welcomes the opportunity to respond to the Engagement Paper: Review of the Reef 2050 Plan, led by the Department of Climate Change, Energy, the Environment and Water (DCCEEW) with the Great Barrier Reef Marine Park Authority (Reef Authority) and the Queensland Government Department of the Environment, Tourism, Science and Innovation (DETSI).

Formed in 2014, ACSA is the volunteer-led, member-based peak body for citizen science in Australia. Our mission is to advance citizen science through knowledge-sharing, collaboration, capacity building and advocacy in public and private policy and practice. Citizen science is defined by ACSA (2017) as public participation and collaboration in scientific research with the aim of increasing scientific knowledge, spanning the identification of research questions, design and conduct of investigations, data collection and analysis, development of tools and technologies, and problem-solving. ACSA also promotes the use of the [10 Principles of Citizen Science](#) to ensure best practice in citizen science.

This submission draws on five bodies of ACSA evidence directly relevant to the Reef 2050 Plan review:

- ACSA's 2024–25 review, *Citizen Science across the Great Barrier Reef*, (ACSA GBR Review) funded by DCCEEW through the Australian Government's Reef Trust, which mapped more than 40 citizen science activities delivered by over 140 groups across the Reef region, and produced Guidelines for future Great Barrier Reef citizen science projects, a set of Data Standards, and a Scientist and Technical Expert list.
- ACSA's March 2026 submission to the Queensland Government's *Accelerating Science and Innovation for a Better Future* discussion paper, which sets out the scale, value and tropical-expertise strengths of Queensland's citizen science community.
- The July 2026 co-produced research paper Nunn et al., *10 Recommendations for Strengthening Citizen Science for Improved Societal and Ecological Outcomes* (PLOS One, 2026), led by Science for All with ACSA support, which examines the sustainability of citizen science's "invisible" organisational backbone.
- ACSA's 2025-26 Pre-Budget Submission, which sets out three costed national priorities (a National Citizen Science Strategy, shared tools and protocols, and a National Citizen Science Fund) directly relevant to resourcing citizen science's contribution to the Reef.
- The February 2026 discussion paper *What next for fish and marine citizen science in Australia?*, co-produced by Reef Ecologic and ACSA, which provides the most detailed national picture available of fish and marine citizen science scale, funding and policy positioning. Much of which is Great Barrier Reef-specific.

ACSA's central message is that citizen science is already a valuable, substantial, active contributor to Reef stewardship, monitoring and community connection, but its long-term value to the *Review of the Reef 2050 Plan* depends on the sector being properly recognised, coordinated and funded, rather than treated as a free resource.

Responses to Guiding Questions

Question 1: What do you value most about the Reef and why is the Reef important to you?

For ACSA and the citizen science community, the Reef's value lies not only in its Outstanding Universal Value as a natural wonder, but in its capacity to connect people to place through direct participation in science and stewardship. The ACSA GBR Review review found more than 140 individual groups delivering over 40 different citizen science activities across the Reef, from CoralWatch's bleaching monitoring and Reef Check Australia's biodiversity surveys to MangroveWatch, Seagrass-Watch, the Great Reef Census and Traditional Owner-led ranger monitoring.

Critically, 94% of respondents to ACSA's survey of GBR citizen science project leaders reported that some or all of their participants were also involved in broader Reef stewardship activities — not just data collection. This demonstrates that citizen science is a valuable mechanism through which the Reef builds an engaged, informed and active community of custodians, consistent with the Plan's own "our Reef, our responsibility" ethos (Enabler A).

This local picture sits within a much larger national movement: recent analysis presented to the 2025 ACSA conference put the number of citizen (community) scientists in Australia at over 1 million people, up from earlier estimates of 100,000–130,000 (Smith 2025a). The Reef itself underpins a substantial part of the economy that citizen science helps protect — Australia's marine industry generated \$229 billion in economic output in 2023, including \$203 billion in value added (9.1% of GDP) and over 712,000 jobs, while diving tourism alone contributed an estimated \$4.2 billion

(Australian Government 2025). Citizen science is one of the few mechanisms that connects this economic value directly back to community stewardship of the Reef.

Question 2: *How could a revised Reef 2050 Plan more clearly recognise and reflect multiple and changing values?*

ACSA recommends the revised Plan explicitly name citizen science as a mechanism that operationalises "shared responsibility" and connects diverse values — cultural, scientific, recreational and economic — to the Reef. Practical suggestions include:

- Feature case studies of citizen science groups (e.g. CoralWatch, Eye on the Reef, Reef Check Australia, MangroveWatch, the Great Reef Census) as values-statements or call-out boxes, as the Plan itself proposes in Section 1.2.
- Recognise citizen science explicitly as a bridge between Traditional Owner, community and mainstream scientific knowledge systems, reflecting ACSA's observation (in its Queensland Government submission) that "enduring insights emerge from the overlapping space between Indigenous, citizen and mainstream science."
- Frame citizen science participants as co-owners of the Plan's vision, not simply data suppliers, reinforcing the Plan's existing but under-elaborated commitment in strategic action A.1 to "support and collaborate on citizen science initiatives that deliver new knowledge, partnerships or impact for the Reef."
- Provide resourcing so that Reef citizen science activities can be connected, coordinated and integrated in the reporting.

Question 3: *What actions are critical to be taken in the next 3 to 5 years to protect the Reef and your relationship to it?*

- Formally integrate citizen science data into the Reef 2050 Integrated Monitoring and Reporting Program and the Reef Knowledge System, using the Data Standards developed through the ACSA GBR Review so that citizen-collected data is accessible, standardised and usable across scales.
- Fund the organisational "backbone" of citizen science — coordination, community engagement, training, ethics oversight, data management and evaluation — rather than only field data collection. The PLOS One paper (Nunn et al. 2026) found this backbone work is consistently under-resourced despite being essential to safe, ethical and effective delivery. This type of support for Reef citizen science organisations would help scale and mobilise greater actions to protect the Reef.
- Continue greater and more sustained funding for specifically for citizen science projects in the Reef (e.g. Queensland Government [Engaging Science grants](#) (noting only small amounts within a \$4 million total budget, including \$1.2 million since 2019 for citizen science). Re-establish dedicated, longer-term national citizen science funding to access capability from across the country. For instance the Australian Government's Inspiring Australia Citizen Science Grants program (2017–2020) was oversubscribed and has not been repeated, leaving a gap that directly affects the Reef citizen science sector's capacity to plan beyond single grant cycles. Similarly, ACSA's 2025-26 Pre-Budget Submission proposes three concrete national priorities that would directly benefit Reef citizen science: support for ACSA to develop a National Citizen Science Strategy (\$500,000 over two years), which can include focus on key areas of impact and concern (e.g. the Reef); shared tools, platforms, guidelines and protocols, including an upgraded national project-finder (\$1.5 million over three years) with the ability to filter for topics (e.g. water quality) and places (e.g. GBR); and a national Citizen Science Fund to mobilise citizen science for environmental protection (\$20 million over three years). The Nunn et al. (2026) paper similarly recommends core funding of

around \$1.5 million per year to ACSA as the operationalising national body, alongside a dedicated Citizen Science Grants Fund.

- Adopt ACSA's GBR citizen science Guideline as a reference for project leaders (including agencies and researchers) designing new Reef monitoring or stewardship initiatives, to avoid duplication and lift consistency with the ACSA Ten Principles of Citizen Science.

Question 4: *What information is important to include in the Reef 2050 Plan and how should this information be presented and kept up to date, to support and empower you to take action to protect the Reef?*

- A clear, regularly updated register or map of active citizen science projects and their impact across the Reef (building on ACSA's project list and the SciStarter Australia platform) so that communities, tourism operators and researchers can find and join relevant monitoring efforts rather than duplicating them.
- Publicly accessible data standards and protocols (as developed in ACSA GBR Review project) so citizen-collected data can be readily compared with, and feed into, government monitoring programs such as AIMS's Long-Term Monitoring Program and the Reef 2050 Integrated Monitoring and Reporting Program. We note that the government funded Eye on the Reef citizen science project
- Transparent reporting on how citizen science contributions are actually used in Reef management decisions, to sustain volunteer motivation and public trust.

With resourcing ACSA would be able to lead these activities.

Question 5: *What is your or your sector's role in contributing to actions that support the long-term health of the Reef?*

ACSA's role is as the coordinating peak body for the citizen science sector: setting national standards (the Ten Principles of Citizen Science), building capacity among project leaders, and, through initiatives such as ACSA GBR Review, directly supporting the more than 140 groups and 40-plus activities operating across the Reef. ACSA's members and affiliated projects contribute species and habitat observations, water quality and microplastics data, coral bleaching and cover assessments, marine debris and ghost-net removal, marine megafauna monitoring, and Traditional Owner-led sea Country monitoring. As noted above, the majority of these participants also act as on-ground Reef stewards, extending the Plan's reach well beyond what government agencies and paid researchers can achieve alone.

Question 6: *How should responsibilities for protecting and sustaining the Reef be shared between government and non-government sectors?*

ACSA considers that government's core responsibility should be to fund and formalise the infrastructure that allows non-government and volunteer effort to be effective, safe and sustained, rather than assuming citizen science is a free resource. The July 2026 PLOS One paper co-authored with ACSA support makes this case explicitly: while volunteers are willing to give their time for tasks such as data collection, the coordination, ethics, training, data management and evaluation work that keeps projects running is rarely funded and is not sustainable on goodwill alone.

Consistent with the Plan's existing investment principles (Enabler D), ACSA recommends government partners commit to multi-year, non-project-tied funding for citizen science coordination bodies (such as ACSA and its regional chapters, and development of regional hubs), complementing continued volunteer and philanthropic contributions of time, expertise and in-kind resources.

Question 7: Are you or your community already taking actions to increase resilience to climate change or implementing adaptation plans? If so, what are your priorities and timeframes for action?

Yes. Reef citizen science groups already contribute directly to climate resilience monitoring, including:

- CoralWatch's Coral Health Chart, used globally to track bleaching in near-real time during marine heatwave events;
- Reef Check Australia, Virtual Reef Diver and the Great Reef Census, which crowd-source large-scale reconnaissance of coral cover and condition across reefs that agency monitoring cannot cover at the same spatial scale;
- MangroveWatch and Seagrass-Watch, tracking the condition of blue-carbon and climate-buffering coastal habitats; and
- Indigenous Land and Sea Ranger-supported monitoring (e.g. through MangroveWatch's Torres Strait and Gulf of Carpentaria ranger partnerships).
- Gladstone Healthy Harbours Project which produces a report card on the health of the harbour including recreation and social not just water and fish health.
- Queensland Waterwatch.

ACSA's priority over the next 3–5 years is to see these efforts formally resourced and integrated into Reef-wide adaptive management and coordination (see responses to Questions 3 and 9), rather than continuing on an ad hoc, project-by-project basis.

Question 8: What information, tools or resources could help support your planning and decision-making regarding management of the Reef?

- A centralised / federated technical platform/infrastructure for citizen science data, identified as a gap in ACSA's 2026 research (participants pointed to a lack of centralised support structures, including technical infrastructure).
- ACSA's Scientist and Technical Expert list, developed through the 2024–25 GBR review, connecting project leaders with named scientific advisors by area of expertise — this resource could be promoted and expanded through Reef 2050 governance channels.
- Rapid-response monitoring protocols and funding that can be activated quickly around acute events such as bleaching, cyclones or spills, drawing on the citizen science network's geographic spread.

Question 9: How could Plan-level monitoring and evaluation be improved or supported under a revised Reef 2050 Plan?

The Plan's Enabler C already commits to strengthening coordination and integration of monitoring activities and to "support and improve inclusion of Traditional Owner monitoring activities in established monitoring programs" — ACSA recommends this be extended explicitly to citizen science more broadly. Specific recommendations:

- Adopt ACSA's GBR Data Standards (2025) as the reference standard for citizen-collected Reef data feeding into the Reef 2050 Integrated Monitoring and Reporting Program and Reef Knowledge System.
- Use ACSA's project register to add citizen science projects as well as identify and close monitoring gaps rather than commissioning duplicate effort.
- Report citizen science's contribution to Plan-level outcomes (e.g. stewardship indicators, habitat condition indicators) in the Plan's outcomes and annual reporting, consistent with

the objective that "people and communities take individual and collective action to maintain Reef resilience" (Box 2).

- Address the monitoring funding trend directly: Biodiversity Council (2025) analysis shows total Australian Government ocean program investment (of which the Great Barrier Reef receives the majority) declining from around \$150 million in 2024–25 towards roughly \$90 million by 2028–29, with no dedicated funding line for citizen science or community-led ocean stewardship identified within it. A revised Plan should close this gap explicitly rather than assume citizen science monitoring capacity will persist unfunded.

Question 10: *What would help guide and encourage non-government investment in the Reef?*

- Clear articulation in the revised Plan's investment priorities (Enabler D / Figure 7) that citizen science coordination and infrastructure is an investable, high-return priority, not merely an in-kind volunteer activity.
- Improved visibility of specific, fundable citizen science projects and backbone functions (per the PLOS One paper's recommendations) so philanthropic and corporate partners can identify where their investment has the greatest leverage.
- Co-investment models modelled on the DCCEE-funded, Reef Trust-supported 2024–25 ACSA GBR review, which paired government funding with ACSA's coordination capacity and volunteer networks to produce durable, reusable tools (the Guideline, Data Standards and Expert list).

Question 11: *What should be the priority areas for new government Reef investments?*

- Reinstating and scaling a dedicated citizen science grants program (building on the discontinued Inspiring Australia Citizen Science Grants program, 2017–2020, which was oversubscribed relative to demand), with a Reef-specific stream.
- Longer-term, non-project-tied funding for the coordination, data management, training and ethical oversight functions that keep citizen science projects safe and effective — the "invisible" work identified in ACSA's 2026 research as the sector's most significant unmet funding need.
- Investment in shared technical infrastructure for citizen science data collection, storage and integration with Reef 2050 monitoring systems.
- Continued and expanded support for Traditional Owner-led and co-designed citizen science partnerships, consistent with the Plan's Enabler A commitments on Traditional Owner co-management.
- Extend investment to recreational fishing citizen science, an under-recognised but substantial contributor to Reef knowledge: over 100,000 recreational fishers already participate in citizen science through programs such as DPI Gamefish Tagging, Infofish Australia and Redmap (Reef Ecologic and ACSA 2026), yet citizen science does not currently feature among recognised recreational-fisher stewardship activities. Reef 2050 investment should support integration of this data alongside existing GBR-focused citizen science.
- Align investment with international commitments that already recognise citizen science, including the UNESCO Recommendation on Open Science (2021), the UN Ocean Decade (2021–2030) and the Kunming–Montreal Global Biodiversity Framework's invitation to Parties to support community-based monitoring and citizen science — positioning a resourced Reef citizen science sector as a demonstrable contribution to Australia's international reporting obligations.

Conclusion

ACSA supports the Reef 2050 Plan's continued focus on collaboration, monitoring and adaptive management, and encourages the review to recognise citizen science not as a peripheral or free activity, but as core Reef infrastructure, one that already engages over 140 groups and 40-plus activities, delivers measurable stewardship outcomes (94% of project leaders reporting participant involvement in stewardship), and stands ready to scale further with appropriate, sustained investment. ACSA welcomes the opportunity to work directly with DCCEEW, the Reef Authority and DETSI as the revised Plan is developed and to lead supporting greater citizen science outcomes for the Reef.

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