DISCUSSION PAPER 2026-1

What next for fish and marine citizen science in Australia?

6 February 2026 – draft for discussion

Initiative of
Reef Ecologic
&
Australian Citizen Science Association

Reef Ecologic
For a better planet

Australian Citizen Science Association

PURPOSE

The purpose of this document is to support discussion, feedback, identify gaps and suggest a way forward for action and collaboration around the role of citizen science in the fish and marine environment in Australia. We pose a number of questions and recommendations that require more information, consultation and greater analysis at both a regional (e.g. Queensland) and national level:

1. *What is the **value** of citizen science in nature and the fish/marine environment?*
2. *What is the **extent** of fish and marine citizen science projects in Australia?*
3. *Where does citizen science sit within the Australian government **policy and funding landscape?***
4. *How is citizen science recognised in an **international** policy context?*
5. *What is the **role of peak bodies** or "backbone" organisations in supporting and enhancing the impact of citizen science?*
6. *What are some **recommendations to make change**?*

We welcome your thoughts and comments to this draft document through the following form: https://forms.gle/uRicYSo3eSQvkgUu6

1. What is the value of citizen science in nature and the fish/marine environment?

Citizen scientists change the world (Austen et al. 2024). Citizen science is the engagement and collaboration between the public/community and scientists to conduct research and generate new knowledge or understanding. Participants or volunteers contribute by not only collecting and analysing data (e.g. environmental monitoring), but also the co-design of research questions and approaches. Citizen scientists can provide not only scale, scope and depth in their activities but also passion, diversity and care. Many citizen science projects are now led by citizens, not scientists or government, and focus on practical, real-world issues (Smith 2025a) in diverse sectors in the environment space but also climate change, disasters, public health, air quality and even astronomy. Citizen science empowers communities to take action with a sense of agency and ownership, it builds awareness, understanding and scientific literacy, while also promoting collaboration and social connection.

If Australians care about community, citizen science, and the marine environment, we need to have conversations between the people who participate in citizen science and those who make decisions. Nationally, recent events in SA (algal blooms and fish kills) and WA (commercial and recreational fishing closure for demersal species) highlight the need for trusted information and collaboration with the community about fish knowledge to monitor impact, fill knowledge gaps, act on evidence, drive behavioral change and avoid contestation and misinformation.

Globally, nature is in decline. Biodiversity is declining faster than we have ever witnessed (Commonwealth of Australia 2024). Australia's economy and future growth potential are inextricably linked to our natural resources (including plants, animals, water and even microbes), many of which are finite or may be irreparable if managed unsustainably (Commonwealth of Australia 2024). Overcoming the challenges and threats to Australia's nature is only achievable if all sectors and organisations work together. Governments, the private sector, civil society, academia, First Nations peoples, local communities and individuals all have a role to play (Commonwealth of Australia 2024). In some cases, it may be appropriate for governments to lead; in other cases, leadership by other groups, such as community groups or First Nations groups, may make the most sense (Commonwealth of Australia 2024).

Australia's Strategy for Nature 2024–2030 has a goal to connect people with nature and enhance their desire to care for nature, which in turn builds knowledge that can be shared to improve our care

for nature and the benefits we receive from connecting with nature (Figure 1). Citizen science can be key contributor to achieving government (and societal) outcomes.

Figure 1. *How people are the key to support Australia's biodiversity goals (extract from (Commonwealth of Australia 2024).*

Until very recently, the accepted number of citizen scientists in Australia was between 100-130,000 people (Australian Government 2015, Inspiring Australia 2020, CSIRO 2024, UNSW 2024). However, according to research recently presented at the 2025 Australian Citizen Science Association conference, there are now over 1 million community (citizen) scientists in Australia (Smith 2025a). An international report from 2015 estimated that globally 1.3 – 2.3 million volunteers contributed $667-$2.5 billion in-kind annually to biodiversity citizen science (Theobald et al 2015), an estimate likely to be exponentially increased in 2026. More recently in an Australian context, citizen scientists now contribute more data than scientists for some national research infrastructures such as the Atlas of Living Australia (ALA) (Figure 2). National research infrastructure such as the ALA (which has no specific mandate on citizen science) has still enabled open access to citizen science data and improved its discoverability and use in research and decision making (Roger et al 2023, Roger et al 2024).

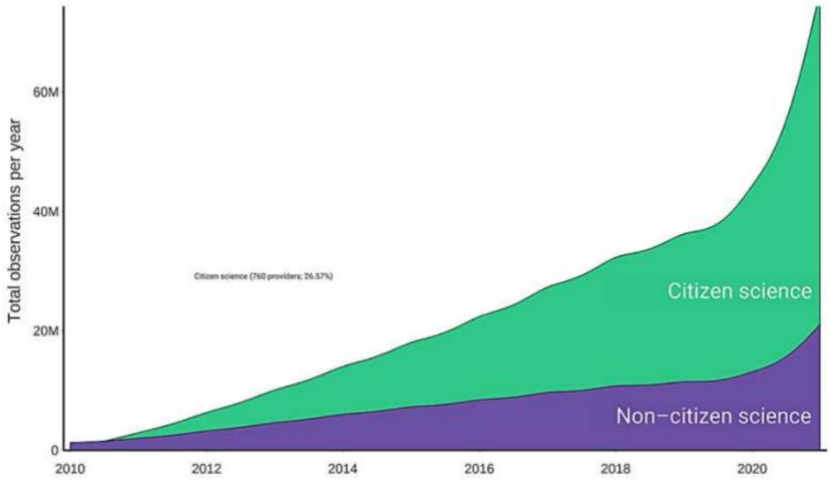

Figure 2. *Proportion of observations from citizen scientists in Atlas of Living Australia (from Roger et al. 2023).*

Key citizen science based technical infrastructures have primarily enabled this growth in available and shared data – in particular iNaturalist (a platform dependent on philanthropic investment, donations and some in-kind corporate support) and eBird. Within the Australian marine and fish technical infrastructure space, the ALA has over 6 million fish occurrence records, with over 2 million from

human observation and about 350,000 specifically identified as citizen science. Other data infrastructures include Redmap (Range Extension Database and Mapping project); Reef Life Survey (RLS); the Australasian Fishes project on iNaturalist; Eye on the Reef led by GBRMPA; and the Australian Marine Debris Initiative (AMDI) Database led by Tangaroa Blue. From a place-based perspective ACSA reviewed not only the citizen science projects in the Great Barrier Reef (over 40 different projects) but also data standards for collection (ACSA 2025) – with open access to the data being foundational. Private companies such as Infofish Australia limit the availability of their data to their clients.

Beyond these data repositories and platforms, it is also important that we invest in other technologies to support citizen science such as AI/ML, eDNA, sensors, tagging, remote sensing etc. and effective usage by citizen scientists. Socio-technical approaches are also fundamental in a transdisciplinary space such as citizen science including human centred design, governance systems, co-design/co-development, behavioural science (e.g. incentives), evaluation measures, working across knowledge systems (e.g. Indigenous and local), futures thinking etc. (Sbrocchi et al 2025) – with the social often being more important than the technical for success.

Citizen scientists, including recreational and commercial fishers, are crucial partners in fisheries, environmental research and management. They provide vast amounts of valuable data on fish stocks, species sightings (even unusual ones via Redmap can be used to help monitor ecosystem shift), and environmental health, helping fill critical gaps for management, especially for large or remote areas. Citizen scientists use tools such as tagging (Suntag, Infofish) and apps to monitor catches, migration, and biodiversity, complementing formal scientific efforts for better resource understanding and conservation. There is, however, a need for ongoing two-way communication between citizen science and those using the data for decision making (e.g. government) or further research (e.g. universities). Greater feedback loops to citizen scientists are required - not only in how data is being used and outcomes achieved and formal recognition of contributions (e.g. publications) but also guidance, direction and support on areas for effective citizen science activity and mobilisation (e.g. specific conservation areas, species, targets, threats etc).

Fish are of critical importance in Australia, providing significant ecological, economic, cultural, and social benefits to the nation. They are integral to the health of the environment, a major part of the economy and diet, and a key aspect of Australian culture and well-being. Australia's marine industry is a massive economic force, with its 2023 economic output reaching $229 billion, contributing $203 billion in value added (9.1% of GDP) and supporting over 712,000 jobs. The fishing and aquaculture industries contribute over A$2.5 billion to the Australian economy and support thousands of jobs, particularly in regional coastal communities (Australian Government 2025).

Recreational fishing is one of Australia's largest outdoor activities, with over 4 million adults participating annually. This activity injects more than A$11.5 billion into the GDP and supports around 100,000 jobs through tourism, tackle shops, and charter services (Recfish Research et al 2024). Australia's diving tourism industry is a significant economic contributor, with an estimated total economic impact of $4.2 billion (Australian Government 2025). Interestingly, citizen science was not identified as a recreational fisher stewardship activity by Recfish Research (Figure 3). However, Table 1 indicates that over 100,000 recreational fishers have participated in citizen science. Citizen science offers the opportunity to advance research in recreational fishing, and contribute valuable insights for fisheries management, conservation, and sustainability, as well supporting greater understanding of scientific approaches and environmental issues by recreational fishers.

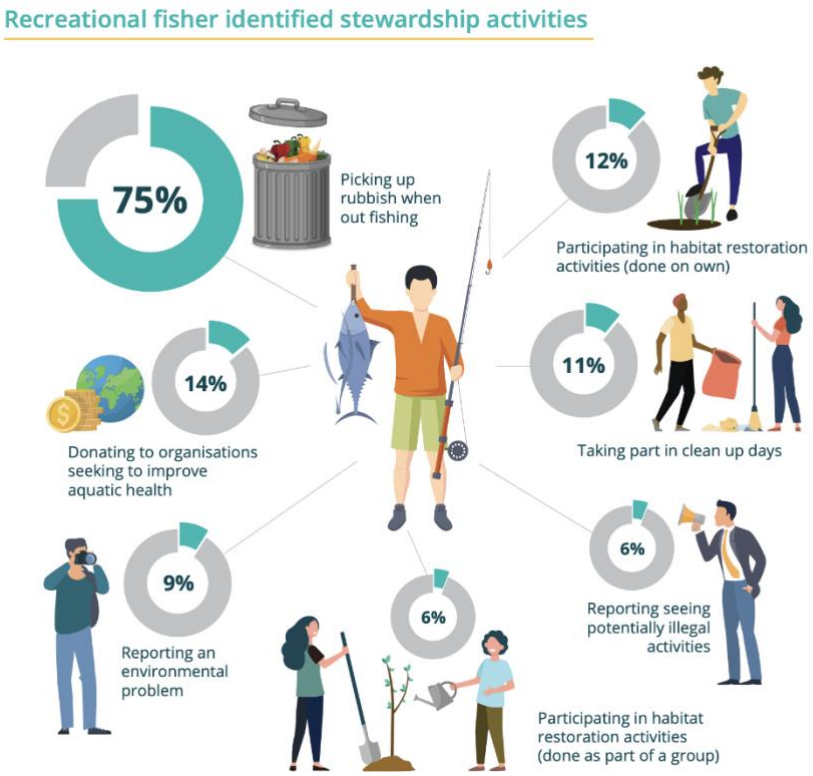

Figure 3. *Recreational fisher identified stewardship activities from Recfish Research et al (2024).*

The economic value of citizen science in Australia is significant and growing but unknown. It is time that we assessed not only the economic impact of citizen science but also its social and environmental impact within Australia and comparatively. Beyond the provision of cost-effective data for conservation and biosecurity surveillance for instance, there are also contributions to reducing management costs, fostering community stewardship and resilience, improved species/landscape protection, and even jobs and businesses created or supported by citizen science. We anticipate a significant return on investment for funding in citizen science, especially considering the volunteer nature of much citizen science activity.

Citizen scientists are primarily volunteers usually supported by not-for-profit community organisations with limited funding usually from membership and government or philanthropic project grants. It is estimated that Australia invests approximately $10 million pa (or $10 per person) in citizen science. Its peak body, the Australian Citizen Science Association (ACSA) is volunteer run with a budget of less than $250,000 per year sourced primarily from membership fees and project-based grants and consultancies. By comparison, the Australian government's budget for science, research, and innovation in 2024–25 was $14.4 billion – including more than $4 billion investment over 12 years in national collaborative research infrastructures such as the ALA, Terrestrial Ecosystem Research Infrastructure (TERN), Integrated Marine Observing System (IMOS) and the Australian Research Data Commons (ARDC). Another interesting statistic is that the avoided healthcare costs arising from participation in environmental volunteering were $2,182 per year for each person, which can be calculated as a health benefit of $2.8 billion for a million citizen scientists (or potentially over $10 billion for recreational fishers).

Citizen science at a national and global scale represents the opportunity for a paradigm shift in our ability to inform, enrich and engage with our diverse communities. Yet, to take this further requires leadership, resources and government willingness to facilitate and enable citizen scientists to be part of the process.

2. What is the extent of fish and marine citizen science projects in Australia?

To answer this question currently requires a significant desktop analysis. There have been a number of studies that have generally reviewed the extent of citizen science projects in Australia, including a review in 2018 (Queensland Office of the Chief Scientist) of citizen science in Queensland which identified 138 citizen science projects in Queensland, with the majority of projects investigating biodiversity (77.7%). Approximately 25% of projects have been running for more than 10 years. Although the specific research outcomes were unclear for the majority of projects (66.6%), it appears projects that reported outcomes rarely did so in reports and peer-reviewed, academic publications (3–5% of projects in this survey). Other studies include the extent of citizen science in the GBR (ACSA 2025), urban environments (Roger and Motion 2022), a general landscape mapping survey (Golumbic 2019) and a recent FRDC project (FRDC 2023-108) which identified 79 worldwide citizen science recreational fishing programs and projects, 39 of which are based in Australia.

Having a central resource to identify and share citizen science projects in Australia is in a state of flux. Previously the Atlas of Living Australia, in collaboration with ACSA, hosted the Australian Citizen Science Project Finder online database (using the ALA tool Biocollect). The hub has over 5000 projects listed, but many are now inactive/completed and with only about 230 projects actively including data through the tool. The ALA Biocollect tool is being reviewed and likely to be dedicated more to specific data collection for projects rather than as a project finder. Instead ACSA, Adelaide University and SciStarter with funding from the South Australian government has established SciStarter Australia as a platform to make citizen science projects more discoverable and enable greater public participation. The hope is with greater visibility and resourcing it will become the central citizen science project hub for Australia. It can also create domain specific collections and campaigns including targeting fish and marine citizen science.

A scan of some citizen science projects associated with recreational fishing is collated in Tables 1 and 2. There are several relevant scientific publications, including flathead (Pollack 2018), tailor (Brodie et al. 2018), blue swimmer crab (Harris et al. 2021), spearfishing catch and shark depredation (Smith et al. 2022) and billfish (Williams et al. 2015, Goddard et al. 2024, Smith et al. 2025).

Table 1. *Projects related to citizen science and fish in Australia from contact with selected fish and fisheries organisations.*

Name	People	Data	Type	Comments
DPI Gamefish Tagging	64,000	550,000+	tagging	Started 1973. Ongoing
Infofish Australia	40,000	1,000,000+	tagging & competition	Started 1984
Research angler program	937		Fish frames	Fisheries Queensland
Redmap	1600		observation	UTAS
iNaturalist	25,235	3,644 species 530,136 obs	observation	Australasian Fishes
Reef Life Survey	300	3,300 sites 11,941 surveys	survey	UTAS, $1.8M in kind 77 sci papers
Ozfish	11,150		Habitat restoration	Started 2016 47 chapters

More detail on the fish species, location and people involved in the iNaturalist fish project is in Figure 4.

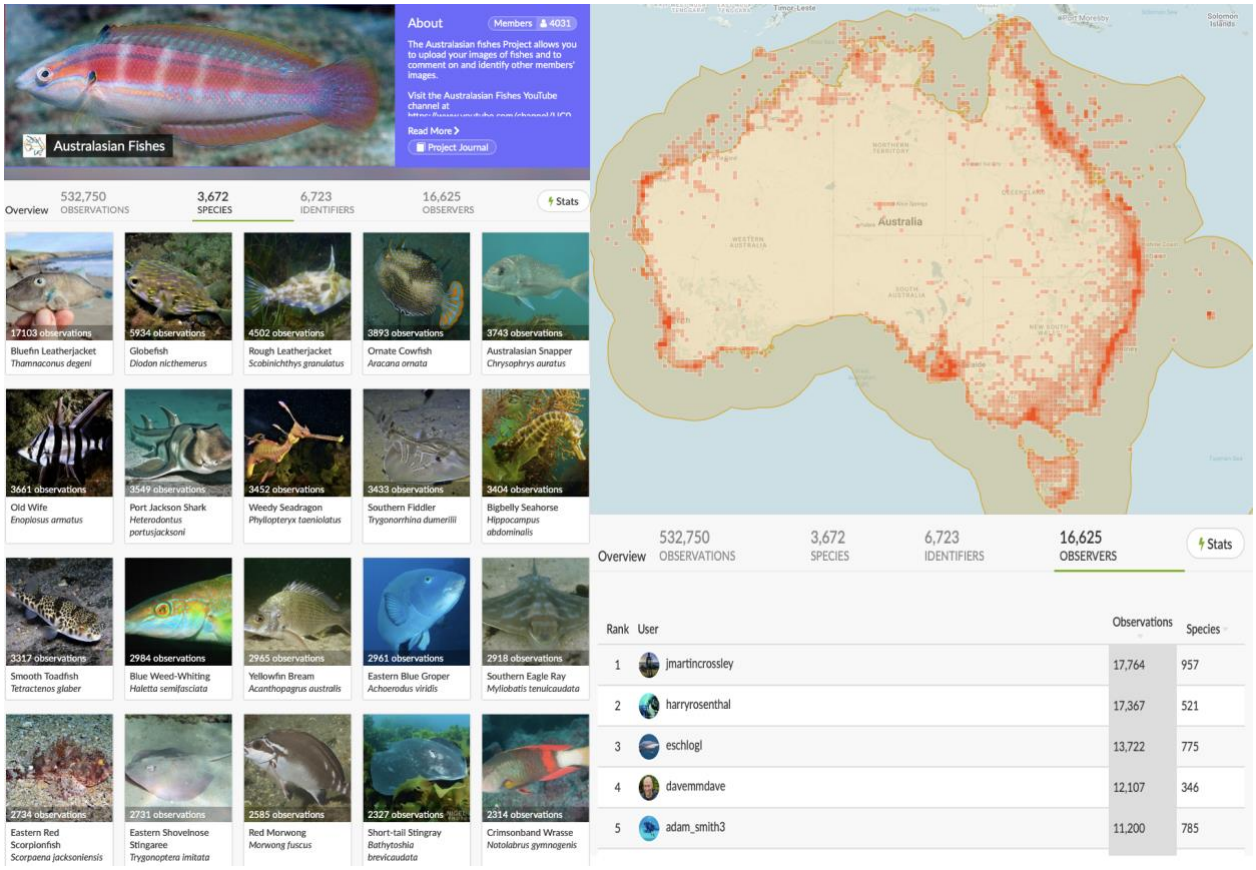

Figure 4. *Citizen science observations of fish, 20 most observed species and top 5 observers using iNaturalist.*

There was a limited similarity between the projects associated with fish in Table 1 from direct contact with organisations and the projects listed as relevant to 'fish' in Table 2. The two common projects/methods were Redmap and iNaturalist.

Table 2. *Relevant Australian and Global PROJECTS from SciStarter using keyword 'fish'*

NAME	METHOD
Sharks and Rays Australia	10 Expeditions
Fishwatch - Wet Tropics, Queensland	iNaturalist
FishWatch Queensland	iNaturalist
Fish Watch Magnetic (Yunbenun) Island	iNaturalist
Reef Life Survey	Underwater visual
Redmap	Out of range sightings
BRUVNet	Artificial intelligence
REEF Volunteer Fish Survey Project	Underwater visual
Global Fishing Watch	Commercial vessel effort
Digital Fishers	analyze deep-sea videos
Size Matters: Innovative Length Estimates (SMILE)	underwater fish length
Tangled in Trash	debris
Good Catch Seafood Survey	seafood
Reef Check Tropical EcoDiver Training	course
Marine Citizen Science Certification	course

3. Where does citizen science sit within the Australian government policy and funding landscape?

Australia does not have a dedicated national plan, policy or strategy for citizen science, other than the organisational strategy of ACSA and other relevant organisations. However, over the last 5-10 years there has been greater embedding of the concept of citizen science within government policies and policy delivery approaches at both the national and state/territory levels. Examples with express recognition include:

- Australia's Strategy for Nature 2024–2030
- Australia's Threatened Species Strategy 2019-2030
- National Marine Science Plan 2015-2025 – noting reference in white papers to form the new plan
- National Biosecurity Strategy 2022 - 2032
- South Australian Environmental Citizen Science Strategy
- Nature Positive Plan: better for the environment, better for business (2021) – interestingly citizen is part of the public accountability section in helping monitor compliance
- Framework for the Victorian State of the Environment Report – noting also similar inclusion in NSW and ACT approaches, as well as strong reference in the national State of the Environment Report (2021)

What is missing from this list are other key science policies such as the National Science and Research Priorities / National Science Statement and the National Collaborative Research Infrastructure Strategy, although citizen science concepts of public engagement, science engagement and co-design are all implicit.

Several research organisations and universities have dedicated citizen science programs – including Adelaide University, University of Sydney, Australian Museum, Murray Darling Basin Authority, Australian Marine Parks and CSIRO. Similarly, many not-for-profit organisations support and include citizen science in their strategies and approaches: e.g. Oceanwatch, OzFish, RecFish, BirdLife Australia, Earthwatch, National Parks Association, Bush Heritage Australia, Conservation Volunteers Australia and Landcare. Many state, territory and local governments are active in citizen science, with dedicated officers, or citizen science as a key responsibility for community engagement roles, including specific strategies (e.g. Biodiversity Conservation Trust NSW, NSW Natural Resources Commission).

While there is an increased mention of citizen science in key policies there is little direct funding for citizen science in its own right. Back in 2017 and 2021 there was a specific citizen science grant program through Inspiring Australia for a total of $10 million – noting over $30 million in grant proposals were submitted, illustrating the demand. A good exemplar of backing strategy with funding is the South Australian government who not only developed a South Australian Environment Citizen Science Strategy, but also established a $2 million Citizen Science Fund and a Citizen Science Award. The Fisheries Research and Development Corporation (FRDC) is currently undertaking a project to develop citizen science guidelines in recreational fishing, including the characterisation of relevant citizen science programs, projects, and frameworks and facilitating the identification, design, and impact measurement of marine-based citizen science programs.

Funding for citizen science research mainly goes to universities and research organisations through grant programs such as Australian Research Council (ARC) Discovery or Linkage grants or the National Environmental Science Program (NESP) – including the Marine and Coastal NESP Hub which had a number of citizen science related projects. The Great Barrier Reef Foundation also had a strong citizen science program, and more recently DCCEEW announced a $4.3 million GBR Citizen Science Program supporting 4 projects. Funding for citizen science is usually topic based (e.g. biodiversity, species, place) with citizen science being one of the "modes" for delivery. Many citizen science related not-for-profits rely on donations and philanthropic support to fund citizen science activities within their specific remit.

A key gap in government funding is for enabling citizen science technical infrastructure. As previously mentioned, there is significant funding for research infrastructures such as the ALA, TERN and IMOS – which have some citizen science overlaps. Note also e-Atlas is supported by NESP, a OzFish dataset by AIMS/ARDC, and Eye of the Reef by GBRMPA. While there are a variety of citizen science apps collecting data (e.g. Coral Watch, Project Manta, Sea Search, NatureMapr), iNaturalist and eBird dominate in the biodiversity space – yet they are primarily donation/institution funded. Funding for "organisational" citizen science infrastructure is also limited (see section 5).

A key Australian Government policy for citizen science could be Australia's Strategy for Nature 2024–2030 (Commonwealth of Australia 2024) and its proposed Implementation Plan. The strategy has 3 goals, 12 objectives and 55 progress measures. Four potentially relevant objectives and progress measures for citizen science are extracted below:

- **Objective 2:** Empower Australians to be active stewards of nature
  Progress measure 2B: Number of people contributing information through citizen science programs
- **Objective 3:** Increase Australians' understanding of the value of nature
  Progress measure 3C: Extent of funding delivered nationally for biodiversity from both private and public sector finance
- **Objective 8:** Use and develop natural resources in an ecologically sustainable way
  Progress measure 8B: Level of innovation and implementation of agricultural practices that maintain and restore soil and water health
- **Objective 11:** Share and use information effectively
  Progress measure 11B: Extent of robust data on Australia's nature provided by citizen science programs to public information sets

Australia's Strategy for Nature outlines how the Australian Government intends to deliver its international obligations, and has apparently committed $250 million over the next five years. However, detailed expenditure for each objective, priorities and delegation of responsibility for delivery and monitoring progress have not been provided. Perhaps all of this budget goes to land and none to marine systems.

The Biodiversity Council (2025) reported on the long-term decline in federal funding for ocean/marine with the vast majority for the GBR (Figure 5), stable investment in biodiversity research (Figure 6) and re-prioritising stewardship and biosecurity (Figure 7). These programs have approximately $290 million investment per annum, of which apparently most is allocated to Federal Government Departments and some Traditional Owners, Indigenous rangers and Landcare. Apparently, there is no dedicated program for citizen science or community-led ocean stewardship.

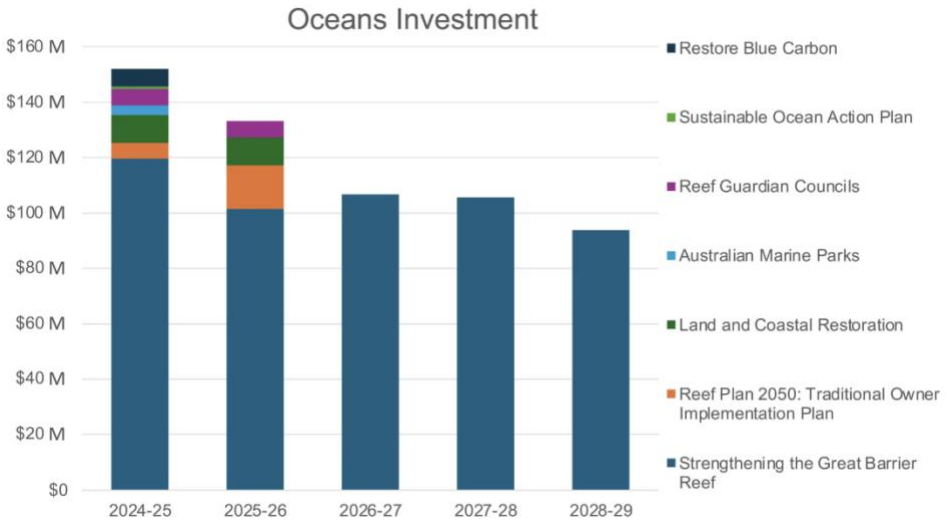

Figure 5. *Australian Government investment in Ocean Programs 2024-29 (from Biodiversity Council 2025).*

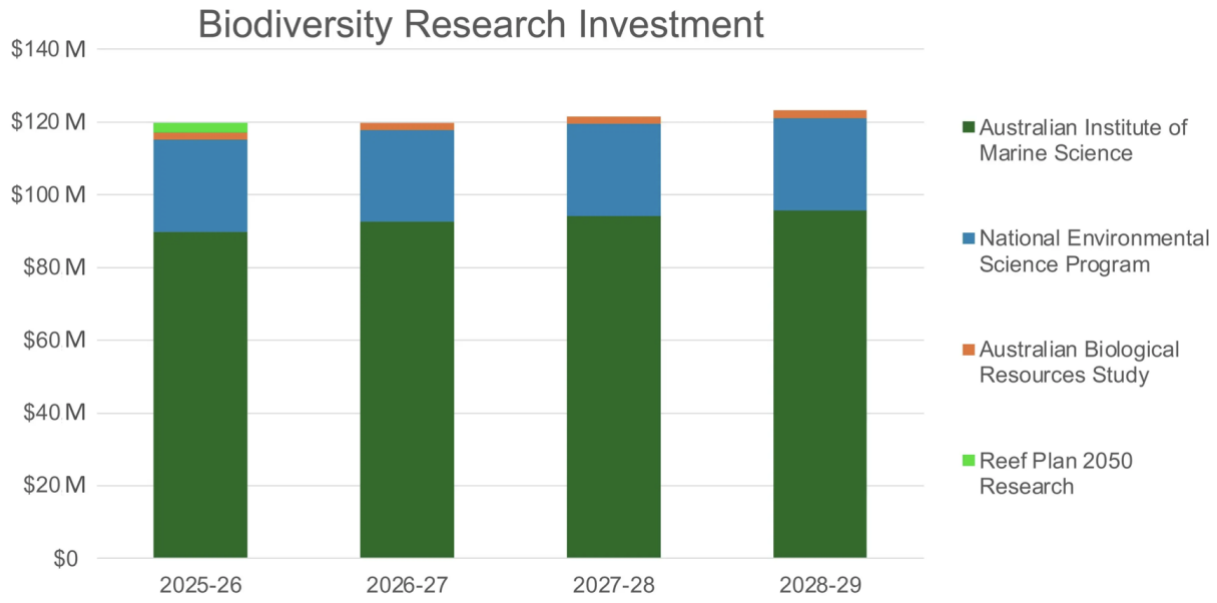

Figure 6. *Australian Government investment in biodiversity research (from Biodiversity Council 2025)*

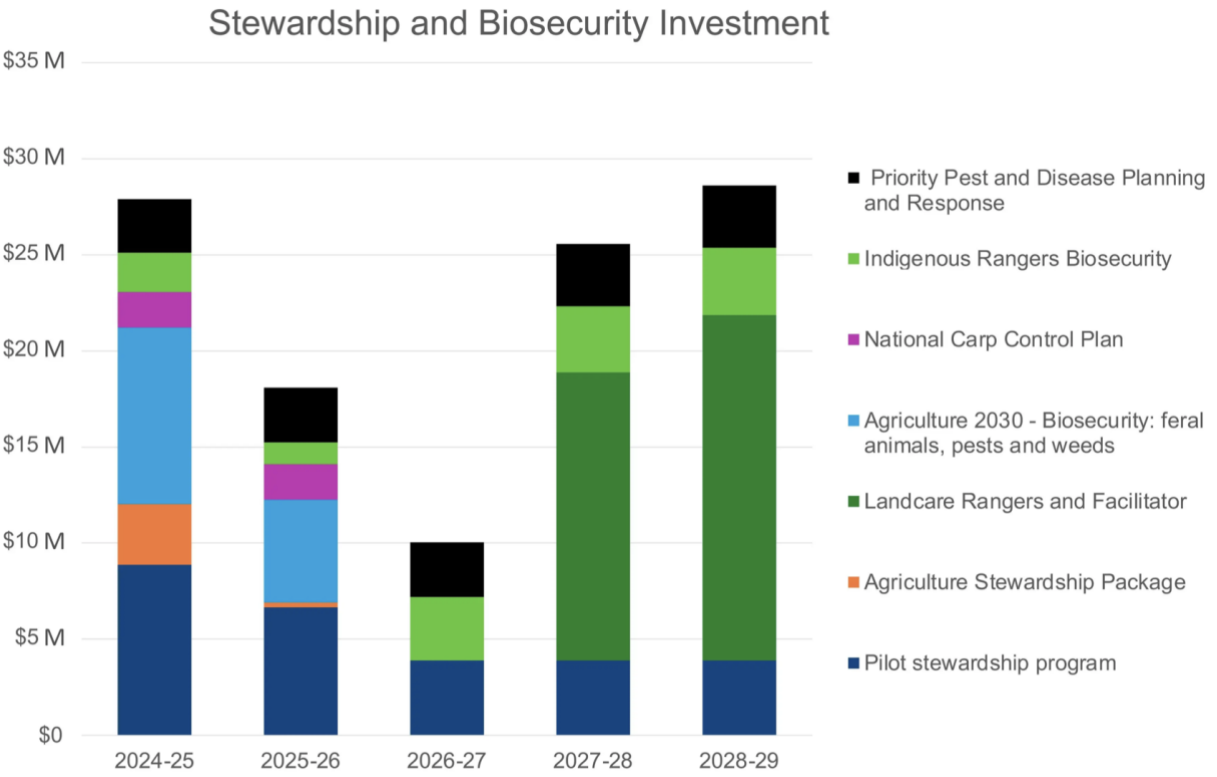

Figure 7. *Australian Government investment in stewardship and biosecurity programs (from Biodiversity Council 2025).*

Of interest is that there are some small targeted programs such as *Priority Conservation and Recovery Actions for the Maugean Skate* which has a budget allocation of over $26 M over 4 years and *Reef Guardian Council* of $11.7M over 2 years and *Agriculture 2030 - Soil and Stewardship - deliver a community and education program on the benefits of processed organic waste* for $1.1M over 2 years.

A catalyst for marine science was the US National Ocean Policy (2010), which led to Australia's 2013 position paper *Marine Nation 2025: Marine Science to Support Australia's Blue Economy* and the *National Marine Science Plan 2015-2025: Driving the development of Australia's blue economy*

(National Marine Science Committee 2015) (Figure 8). The National Marine Science Committee (NMSC) has begun a process to develop a new national decadal strategy for marine science 2025-2035, and an associated plan to deliver on this strategy. This is a complex task, and the committee are counting on the broad science and end-user communities to collaboratively develop a strategy and plan they can collectively support. So far 8 enabler white papers and 13 challenges/opportunities white papers, have been developed of which the 'Biodiversity and Ecosystem Health' White Paper discusses priorities, benefits and gaps (Figure 9). Based on lead authors and organisations from the 21 white papers it appears there has been significant government and academic contribution and very limited community contribution to the strategy so far.

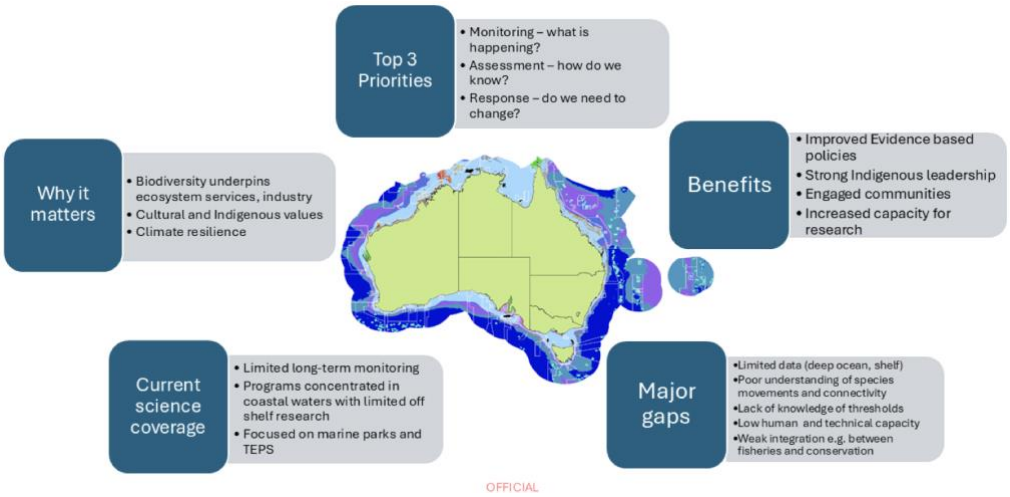

Figure 9. *Priorities, benefits, gaps from Biodiversity and Ecosystem Health' White Paper (NMSC).*

4. How is citizen science recognised in an international policy context?

Citizen science is recognised and applied internationally – not only in the form of a network of citizen science associations across most of the globe and represented by the Citizen Science Global Partnership (CSGP), but also in key international policy agendas:

- UNESCO Recommendation on Open Science (2021) – formally recognises citizen science as a key pillar for bridging the gap between science and society.
- UN Ocean Decade (2021 – 2030) – incorporates citizen science programs such as GenOcean and the MINKA citizen science observatory.
- IUCN Taskforce on Citizen Science (2025) – including motion 126 "advancing citizen science to support and democratise conservation" through the integration of citizen science into all possible IUCN activities and considered as standard practice.
- Kunming–Montreal Global Biodiversity Framework – "invites Parties and relevant organizations to support community-based monitoring and information systems and citizen science" – noting recent research has indicated that citizen science can support governments in reporting against key indicators (Danielsen et al 2024).
- UN Sustainable Development Goals - while not explicit in the text, citizen science is increasingly recognised as a key tool in contributing to and reporting against the SDG indicators (Fraisl et al 2020).

The OECD (2025) *Embedding Citizen Science Into Research Policy* is a report primarily intended for research policymakers in ministries and funding agencies to help them recognise the potential for the use of citizen science and to plan, implement and evaluate effective citizen science policies. This is a comprehensive review with some data and processes (Figure 8), and figures to illustrate the complexity (OECD 2025). It also provides key recommendations to support citizen science.

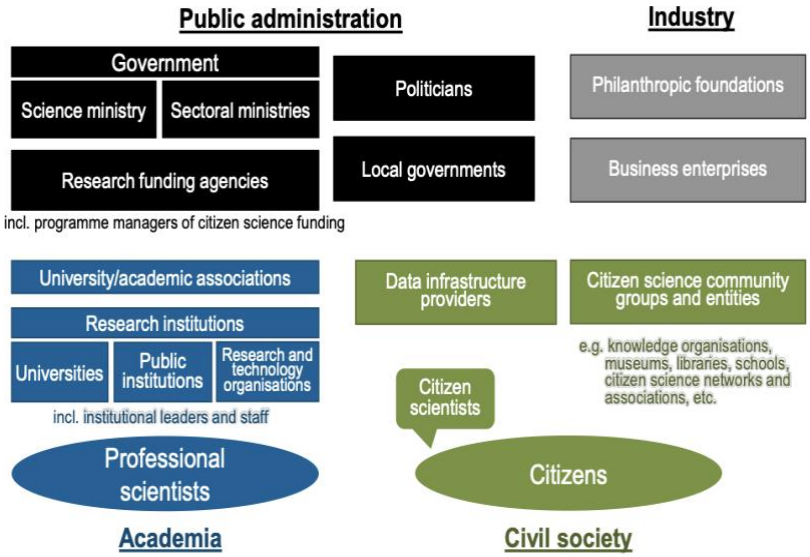

Figure 8. *Citizen science in scientific knowledge production: a complex ecosystem (from OECD 2025).*

A global review of citizen science and marine conservation (Kelly et al 2020) provided a general baseline of 74 surveyed marine citizen science projects globally that aligned with the Ten Principles of Citizen Science, with most centering around biological and ecological data collection (in different marine environments). It also recognised the need for greater global integration and connection if citizen science is to contribute to achieving the objectives of the Ocean Decade.

5. What is the role of peak bodies or "backbone" organisations in supporting and enhancing the impact of citizen science?

While some citizen science can be achieved by an individual contributing to the "crowd" of data collection, of fundamental importance is the organisational "infrastructure" that supports effective and meaningful citizen science. There is an array of concepts here from "socio-technical systems", "backbone organisations for collective impact", "citizen observatories" (Soacha-Godoy et. al. 2025) with the key point being that beyond technical infrastructure (see section 2) to have real impact we need organisations that can drive and sustain public participation, connect people science and technology, build relationships, ensure standards, consistency and ethical practices and advance policy, funding and vision.

As mentioned previously, citizen scientists are mainly volunteers, usually supported and coordinated by not-for-profit community organisations with limited funding. The Australian Citizen Science Association is the national peak body for citizen science in Australia and part of the Citizen Science Global Partnership with sister international associations. ACSA focuses on encouraging broad, meaningful participation in citizen science through building collaborative partnerships and a community of best practices, knowledge and tools and to champion the value and impact citizen science and its outputs. While ACSA received some start-up funding from Inspiring Australia this finished a number of years ago, and since then it is reliant on volunteer contributions, membership fees and project-based grants, though recent DGR status will hopefully improve donation opportunities.

Australia has several peak bodies associated with fish and science, including the Australian Society for Fish Biology (ASFB), Australian Recreational Fishing Foundation (ARFF), Australian Seafood Industry Council (ASIC), Seafood Industry Australia (SIA) and Fisheries Research and Development Corporation (FRDC). One of the objectives of ARFF is "to educate the fishing community on ethical,

environmental and safety aspects of sustainable recreational fishing". Some of these organisations are industry supported, others government, others volunteer. Again, core funding for the backbone roles (e.g. project management, coordination, advocacy, teaching, communication, knowledge brokering) that these types of organisations and other citizen science specific organisations undertake are limited, and often has to be negotiated within project specific funding and often on a short-term basis.

6. What are some recommendations to make change?

The following provides a simple SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) of fish/marine citizen science in Australia.

Table 3. *Draft SWOT analysis of fish citizen science in Australia*

STRENGTH - 1 million citizen scientists - 4.2 million fishers - Universities/Research organisations - Technology - Outdoor activity health benefits - Long-term government-led projects (tagging) - ACSA, Tangaroa Blue, Reef Life Survey and iNaturalist (MOUA) - leaders - Knowledge of fish species (62%) - Australasian Fishes Project	**WEAKNESS** - Limited strategic planning - No core funding for community citizen science - Limited corporate/business funding of citizen science - Limited Indigenous participation
OPPORTUNITY - National Marine Citizen Science Plan? - Update to National Marine Science Strategy 2025-2035 (?launch March 2026) - Queensland Fishing and Seafood Action Plan - Develop a clear messaging and dissemination strategy - Develop meaningful partnerships - National research funding (?1%) - National leadership and policy framework - National capacity building - State/local partnerships, schools, uni, community - State/local partnership with fishers, scientists, divers, and government - Fish Australia (similar to Birds Australia) - Community-led report cards - $10-50 M funding pa + - Trust (US examples)	**THREAT** - Perceived competition by academic/research organisations for limited research resources - Limited capacity for citizen science leaders to engage and advocate for their support - Overcoming the perception that citizen science is 'free'- there are costs of coordination, facilitating access, equipment and ongoing training, but these can be offset with co-benefits - Old mindsets - held by Governments of the value of community/citizen science data and recreational and commercial fishers in sharing data (mutual distrust) - Need for long-term investment in a new paradigm to enhance outcomes (although innovation has been successful in the past, e.g., the Landcare movement).

Recent research and analysis have also provided some guidance on ways forward, including:

- FRDC Project 2023-150 – A Behavioural Science Approach to Normalising Voluntary Catch Reporting on the QLD Fisheries 2.0 App.
- FRDC Project 2023-108 – Citizen Science guidelines in recreational fishing
- Gonzalez et al 2024 – Improving digital citizen science b learning from volunteer practices in biodiversity monitoring
- Nunn et al 2025 – "10 recommendations for strengthening citizen science for improved societal and ecological outcomes: A co-produced analysis of challenges and opportunities in the 21st century"

Table 4 contains the ten recommendations from Nunn et al. (2025). These have been further developed into some SMART (Specific, Measurable, Achievable, Realistic, Timely) actions. Timelines for delivery will be dependent on availability of funding, recognising the need to prioritise and scaffold some of the different actions.

Table 4. *Ten recommendations for strengthening citizen science and draft actions/objectives:*

Recommendations from Nunn et al 2025	**DRAFT objectives and recommendations to SMART actions**
1. Strengthen institutional and government support, and develop publicly led 'hubs'	• Core funding of $1.5M pa to ACSA as an operationalising central support entity, and 500K pa for up to 7 national/state/sector bodies to develop and implement 5 federated hubs • Develop a National Citizen Science Strategy to guide the development and coordination of initiatives across the country, increase diversity of participation, foster collaboration, and innovation, and reduce duplication of effort - include specific domain strategies e.g. marine/fish, air quality, biodiversity, health etc. - $750,000.
2. Improve partnerships with schools and educational institutions	• Allocate $5M pa for schools/higher education to: • partner with training and events during National Science Week and Citizen Science Month • enhance STEM education /career pathway opportunities • support curriculum development of regionally appropriate citizen science initiatives • upskill and support teachers and create mentoring opportunities with experts
3. Improve communication about citizen science	• Allocate $2M pa to create content for TV, radio, podcasts, magazine, social media, Netflix, video; events, games – to improve science / citizen science literacy • Includes support for publication writing and open access fees for citizen science projects and participants • Includes support for conference participation
4. Improve citizen scientist support and recognition	• Allocate $10M pa for a Citizen Science Grants Fund (CSGF) led by the Australian Government (co-designed with ACSA and partners). Identify co-investment / coordination opportunities with other policy specific domains/agencies (e.g. nature strategy, biosecurity, health & environment, Indigenous). • Fund an Impact Assessment/Evaluation of citizen science in Australia, and associated communication - $250,000 over 1 ½ years. • Introduce / enhance 1-2 citizen science categories (individual and program) to existing award programs, including financial awards - $500,000 pa.
5. Improve transparency about methodology and processes	• Develop and optimise the adoption of shared tools, platforms, guidelines and protocols (e.g. Indigenous engagement, data management, impact evaluation) to facilitate connection and learning across citizen science initiatives - $2 million over three years. • Includes support for SciStarter Australia ($250,000 pa).

6. Follow FAIR data principles	• Support organisations to adopt and follow FAIR principles by prioritising funding for proven organisations (ongoing). • Co-design protocols for application of CARE principles to Indigenous data and citizen science. • Support “orphan” citizen science datasets to be digitised / mobilised – potential co-funding with ALA / ARDC - $2M over 3 years.
7. Improve public involvement in all stages of research	• Establish government targets for funded research bodies to allocate 1-10% of budget for community/public engagement and participation (including TOs) in all stages of research. • Ensure social science approaches embedded across citizen science projects and research.
8. Expand training opportunities	• Train 10,000 citizen scientists a year by 31 December 2027. • Develop online training modules across different citizen science domains and techniques.
9. Encourage transparent and ethical research partnerships	• Key research bodies must have written agreements (MOU) with the government and community scientists. • Peak national citizen science organisations should be members of National Marine Science Plan, and other key policy initiatives.
10. Improve consistency and terminology	• See 1, 2, and 3. Enable greater terminology consistency through leadership, networking, capacity building and support (ongoing).

ACKNOWLEDGEMENTS

This discussion / white paper has benefited from knowledge shared at conferences, workshops, webinars, articles and scientific papers and discussions with hundreds of people involved in fish and (citizen) science. In particular our thinking has been developed by attendance, presentations and feedback from four conferences in 2025: Australian Coral Reef Society (Townsville - September), Australian Citizen Science Association (Melbourne - October), 2025 Reef Forum (Townsville - October) and Reefs of Hope (Mission Beach - November).

The discussion (white) paper has been drafted by Professor Adam Smith, CEO of Reef Ecologic, affiliated with JCU and member of ACSA, ACRS and HWPDT, and Stephanie von Gavel, Chair of ACSA. The draft has been improved with comments from Dr Julian Pepperell and Sue Sargent

The author(s) declare that they received no funding for this discussion (white) paper.

Cover image from oceanimagebank.theoceanagency.org

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