

DIVERSITY

Extending conservation of coastal and oyster reef restoration for First Nations cultural revitalization

Mitchell Gibbs¹ | Pauline Ross²  | Elliot Scanes³ | James Gibbs⁴ |
Raphaela Rotolo-Ross⁵ | Laura Parker⁶

¹Dunghutti Nation, Schools of History and Philosophy of Science and Geosciences, The University of Sydney, Sydney, New South Wales, Australia

²School of Life and Environmental Sciences, Faculty of Science, The University of Sydney, Sydney, New South Wales, Australia

³Climate Change Cluster, University of Technology, Sydney, New South Wales, Australia

⁴Faculty of Science, The University of Sydney, Sydney, New South Wales, Australia

⁵Faculty of Arts and Social Sciences, The University of Sydney, Sydney, New South Wales, Australia

⁶Wiradjuri Nation, School of Biological, Earth and Environmental Sciences, The University of New South Wales, Sydney, New South Wales, Australia

Correspondence

Pauline Ross, School of Life and Environmental Sciences, Faculty of Science, The University of Sydney, Sydney, NSW 2006, Australia.
Email: pauline.ross@sydney.edu.au

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INTRODUCTION

Restoring lost ecosystems to return their ecological functions, economic, and social-cultural benefits to communities is a rapidly expanding conservation concern (Gillies et al., 2017; McAfee & Connell, 2020; McAfee et al., 2021, 2022a, b). Coastal and oyster reef restoration aims to return lost services and large beds of shellfish that were historically overharvested following colonization, particularly in Australia and the United States (Beck et al., 2011; McAfee et al., 2021). Although many restoration projects rightly praise the social benefits of oyster reef restoration (McAfee et al., 2022a, b), these social benefits are still viewed largely through a Western lens. Too often oyster reef restoration programs lack proper consideration of First Nations peoples who have lived on Sea Country (i.e., a term used to describe coastal and marine environments where Indigenous cultural rights, obligations, authority, and biocultural systems apply [Rist et al., 2019]) for thousands of generations and whose cultures, generational knowledge, and lifeways have been directly affected by the historic loss of oyster reefs.

For thousands of generations, First Nations peoples across the world have managed coastal resources and oyster reefs in a sustainable manner with traditional ecological knowledge (TEK) and culturally mediated stewardship (Reeder-Myers et al., 2022). Ultimately, colonization has prevented the generational transfer of TEK and affected First Nations people's stewardship of oyster reefs (Eckert et al., 2018; Fischer et al., 2022 United Nations, 2007), affecting the current and future state of oyster reefs. We argue that coastal and oyster reef restoration needs to extend beyond the ecological and bolster cultural revitalization outcomes for First Nations peoples (Eckert et al., 2018; Kittinger et al., 2016).

McAfee et al. (2022a) outline a blueprint to fast-track successful oyster reef restoration in Australia. They highlight the importance of gathering contemporary Indigenous perspectives for restoration. Although we welcome this acknowledgment, it is equally important to consider the enormous opportunity that oyster reef restoration research offers First Nations to revitalize the culture and improve health and well-being in Australia and around the globe (Eckert et al., 2018; Hill et al., 2020, 2022).

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FIRST NATIONS ENGAGEMENT

In contemporary oyster reef restoration projects, First Nations' engagement is often absent. Generally, the emphasis is ecological (Gillies et al., 2017; McAfee & Connell, 2020; McAfee et al., 2020; Reeves et al., 2020), there is brief mention (Howie & Bishop, 2021; McAfee et al., 2022b) of the value of TEK, and consultation with First Nations is well-intentioned but too brief (McAfee et al., 2022a). These brief consultations do not provide sufficient time to foster meaningful engagement or adequately provide the information necessary for First Nations peoples to give their free, prior, and informed consent to oyster reef restoration projects on their Sea Country (Yunupingu & Muller, 2009). Instead, oyster reef restoration projects should go beyond the ecological and create sustained and meaningful engagement with First Nations peoples. Various guidelines and principles on respectful engagement with First Nations peoples and their cultural and intellectual property rights and data sovereignty are readily available, such as the United Nations Declaration on the Rights of Indigenous peoples (United Nations, 2007), Centre for World Indigenous Studies (2023), and Our Knowledge, Our Way guidelines (specific to Australia) (Woodward et al., 2020), to ensure that partnerships with First Nations peoples are grounded in respect, relevance, reciprocity, and responsibility (Kirkness & Barnhardt, 1991).

There are several advantages to meaningful community engagement with First Nations peoples at all stages of coastal and oyster reef restoration projects (before, during, and after). First, meaningful engagement creates the space and time needed to embed First Nations people's cultural values and metrics of success from the beginning of the oyster reef restoration project rather than retrospectively (Clark et al., 2021; McAfee et al., 2022b). Second, by clearly defining the ecological and sociocultural outcomes of coastal and oyster reef restoration projects, the project is more likely to achieve acceptable and sustained outcomes. Third, the direct involvement of First Nations peoples in coastal and oyster reef restoration projects enables a greater understanding of the current and future threats to oyster reefs and empowers First Nations communities' environmental stewardship (Kittinger et al., 2016; Appendix S1).

Perhaps most importantly oyster reef and coastal restoration projects provide an opportunity for the cultural revitalization and retention of First Nations peoples knowledges, beliefs, and cultures and ensure self-determination, economic empowerment, and capacity building (Alkassab, 2020a; Eckert et al., 2018; United Nations, 2007). Despite their tremendous resilience in the face of a plethora of continued external pressures, many First Nations peoples report a cultural disconnect (Eckert et al., 2018). Concerns exist about the cultural disconnection of youth from TEK and cultural practices and the loss of Indigenous languages (Erkert et al., 2018). Coastal and oyster reef restoration research is uniquely positioned to revive TEK, bolster the cultural revitalization of First Nations peoples, and create sustained conservation outcomes.

However, problems remain concerning how to do this. First Nations people's rights to manage their Sea Country lag significantly behind traditional rights to Land Country (Alkassab, 2020b; Dale et al., 2018; Fischer et al., 2022; Rist et al., 2019). To negate the existence of *mare nullius* (the Sea Country equivalent of *terra nullius*), cogovernance and comanagement programs between traditional owners and conservation scientists are needed. The most effective programs must privilege First Nations peoples and TEK at all stages of the project (including in creation, implementation, decision-making, and monitoring) (Johannes, 2002; Thornton & Maciejewski Scheer, 2012). Importantly, this may also build on the already establishing creation of Indigenous protected areas (Rist et al., 2019), and Indigenous ranger programs (Appendix S1).

If future coastal and oyster restoration efforts are to maximize returns for First Nations people, comanagement of the programs must be established on Sea Country and incorporate a broader set of goals and values that include cultural revitalization and economic benefits in addition to ecological scientific objectives. Following the example set by successful comanagement programs (e.g., Giringun; Zurba et al., 2012), the result of relentless Indigenous leadership in the collaboration process, future reef restoration should embolden First Nations people to assert their cultural authority over Sea Country by leading the engagement and restoration (Rist et al., 2019; Zurba et al., 2012) to ensure economic benefits and cultural connections can remain with the First Nations peoples.

CONCLUSION

With First Nations peoples involved at all stages of coastal and oyster reef restoration projects, occurring on their Sea Country, restoration projects will be better informed by place-based values (Wickham et al., 2022), which will bolster First Nations cultural revitalization and well-being and ensure that the intellectual property rights of First Nations peoples are sustained over generations. Critically, without comanagement and cogovernance that weaves together western and Indigenous knowledge systems, conservation scientists and coastal and oyster reef restoration projects are foregoing the opportunity to connect with traditional Sea Country management and consequently invigorate their conservation efforts, even beyond their allocated restoration time frames (Clark et al., 2021). This approach to restoration should not be isolated to Sea Country alone; it can extend to Land and Sky Country.

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ORCID

Pauline Ross  <https://orcid.org/0000-0002-8714-5194>

REFERENCES

- Alkassab, L. (2020a). *Indigenous fisheries: Key messages from FRDC-IRG research*. Fisheries Research and Development Corporation.
- Alkassab, L. (2020b). *Improving access for Indigenous Australians to, and involvement in, the use and management of Australia's fisheries resources*. Fisheries Research and Development Corporation.
- Beck, M. W., Brumbaugh, R. D., Airoidi, L., Carranza, A., Coen, L. D., Crawford, C., Defeo, O., Edgar, G. J., Hancock, B., Kay, M. C., Lenihan, H. S., Luckenbach, M. W., Toropova, C. L., Zhang, G., & Guo, X. (2011). Oyster reefs at risk and recommendations for conservation, restoration, and management. *BioScience*, 61(2), 107–116.
- Centre for World Indigenous Studies. (2023). Research and public policy. <https://www.cwis.org/research-public-policy/>
- Clark, G., Fischer, M., & Hunter, C. (2021). *Australia state of the environment 2021: Coasts, independent report to the Australian Government Minister for the Environment, Commonwealth of Australia, Canberra*.
- Dale, A., Wren, L., Fraser, D., Talbot, L., Hill, R., Evans-Illidge, L., Forester, T., Winer, M., George, M., & Gooch, M. (2018). *Traditional owners of the Great Barrier Reef: The next generation of reef 2050 actions*. Australian Government of Agriculture Water and the Environment.
- Eckert, L. E., Ban, N. C., Tallio, S.-C., & Turner, N. (2018). Linking marine conservation and Indigenous cultural revitalization: First Nations free themselves from externally imposed social-ecological traps. *Ecology and Society*, 23(4), 23.
- Fischer, M., Maxwell, K., Nuunoq, Pedersen, H., Greeno, D., Jingwas, N., Graham Blair, J., Hugu, S., Mustonen, T., Murtomäki, E., & Mustonen, K. (2022). Empowering her guardians to nurture our Ocean's future. *Reviews in Fish Biology and Fisheries*, 32(1), 271–296.
- Gillies, C. L., Crawford, C., & Hancock, B. (2017). Restoring Angasi oyster reefs: What is the endpoint ecosystem we are aiming for and how do we get there? *Ecological Restoration and Management*, 18(3), 214–222.
- Hill, R., Walsh, F. J., Davies, J., Sparrow, A., Mooney, M., Wise, R. M., & Tengö, M. (2020). Knowledge co-production for Indigenous adaptation pathways: Transform post-colonial articulation complexes to empower local decision-making. *Global Environmental Change*, 65, 102161.
- Hill, R., Harkness, P., Raisbeck-Brown, N., Lyons, I., Álvarez-Romero, J. G., Kim, M. K., Chungalla, D., Wungundin, H., Aiken, M., Malay, J., Williams, B., Buissereth, R., Cranbell, T., Forrest, J., Hand, M., James, R., Jingle, E., Knight, O., Lennard, N., ..., Collard, Y. (2022). Learning together for and with the Martuwarra Fitzroy River. *Sustainability Science*, 17(2), 351–375.
- Howie, A. H., & Bishop, M. J. (2021). Contemporary oyster reef restoration: Responding to a changing world. *Frontiers in Ecology and Evolution*, 9, 689915.
- Johannes, R. E. (2002). The renaissance of community-based marine resource management in Oceania. *Annual Review of Ecology and Systematics*, 33(1), 317–340.
- Kirkness, V. J., & Barnhardt, R. (1991). First nations and higher education: The four R's—Respect, Relevance, Reciprocity, Responsibility. *Journal of American Education*, 30(3), 1–15.
- Kittinger, J. N., Bambico, T. M., Minton, D., Miller, A., Mejia, M., Kalei, N., Wong, B., & Glazier, E. W. (2016). Restoring ecosystems, restoring community: Socioeconomic and cultural dimensions of a community-based coral reef restoration project. *Regional Environmental Change*, 16(2), 301–313.
- Mcafee, D., & Connell, S. D. (2020). Cuing oyster recruitment with shell and rock: Implications for timing reef restoration. *Restoration Ecology*, 28(3), 506–511.
- Mcafee, D., Reinhold, S.-L., Alleway, H. K., & Connell, S. D. (2021). Environmental solutions fast-tracked: Reversing public scepticism to public engagement. *Biological Conservation*, 253, 108899.
- Mcafee, D., Mcleod, I. M., Alleway, H. K., Bishop, M. J., Branigan, S., Connell, S. D., Copeland, C., Crawford, C. M., Diggles, B. K., Fitzsimons, J. A., Gilby, B. L., Hamer, P., Hancock, B., Pearce, R., Russell, K., & Gillies, C. L. (2022a). Turning a lost reef ecosystem into a national restoration program. *Conservation Biology*, 36, e13958.
- Mcafee, D., Drew, G., & Connell, S. D. (2022b). Recentring the role of marine restoration science to bolster community stewardship. *Earth System Governance*, 13, 100149.
- Norwood, C. (2021). Narungga aspirations to bring benefits home. *FISH*, 29(2), 26–27.
- Reeder-Myers, L., Braje, T. J., Hofman, C. A., Elliott Smith, E. A., Garland, C. J., Grone, M., Hadden, C. S., Hatch, M., Hunt, T., Kelley, A., Lefebvre, M. J., Lockman, M., Mckechnie, I., Mcniven, I. J., Newsom, B., Pluckhahn, T., Sanchez, G., Schwadron, M., Smith, K. Y., ... Rick, T. C. (2022). Indigenous oyster fisheries persisted for millennia and should inform future management. *Nature Communications*, 13, 2383.
- Reeves, S. E., Renzi, J. J., Fobert, E. K., Silliman, B. R., Hancock, B., & Gillies, C. L. (2020). Facilitating better outcomes: How positive species interactions can improve oyster reef restoration. *Frontiers in Marine Science*, 7, 656.
- Rist, P., Rassip, W., Yunupingu, D., Wearne, J., Gould, J., Dulfier-Hyams, M., Bock, E., & Smyth, D. (2019). Indigenous protected areas in Sea Country: Indigenous-driven collaborative marine protected areas in Australia. *Aquatic Conservation: Marine and Freshwater Ecosystems*, 29, 138–151.
- Rose, D., Bell, D., & Crook, D. A. (2016). Restoring habitat and cultural practice in Australia's oldest and largest traditional aquaculture system. *Reviews in Fish Biology and Fisheries*, 26(3), 589–600.
- Smyth, D., & Isherwood, I. (2016). Protecting Sea Country: Indigenous Australian Peoples and marine protected areas in Australia. In J. Fitzsimons & G. Wescott (Eds.), *Big, bold and blue—Lessons from Australia's marine protected areas* (pp. 307–326). CSIRO Publishing.
- Thornton, T. F., & Scheer, A. M. (2012). Collaborative engagement of local and traditional knowledge and science in marine environments: A review. *Ecology and Society*, 17(3), 8.
- United Nations. (2007). Declaration on the Rights of Indigenous Peoples. https://www.un.org/development/desa/indigenouspeoples/wp-content/uploads/sites/19/2019/01/UNDRIP_E_web.pdf
- Wickham, S., Augustine, S., Forney, A., Mathews, D., Shackelford, N., Walkus, J., & Trant, A. (2022). Incorporating place-based values into ecological restoration. *Ecology and Society*, 27(3), 32. <https://doi.org/10.5751/ES-13370-270332>
- Woodward, E., Hill, R., Harkness, P., & Archer, R. (2020). Our Knowledge Our Way in caring for Country: Indigenous-led approaches to strengthening and sharing our knowledge for land and sea management. Best Practice Guidelines from Australian experiences. NAILSMA and CSIRO.
- Yunupingu, D., & Muller, S. (2009). Cross-cultural challenges for Indigenous-sea country management in Australia. *Australasian Journal of Environmental Management*, 16(3), 158–167.
- Zurba, M., Ross, H., Izurieta, A., Rist, P., Bock, E., & Berkes, F. (2012). Building co-management as a process: Problem solving through partnerships in Aboriginal country, Australia. *Environmental Management*, 49, 1130–1142.

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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