

Gender differences in perceptions of coral reef management and conservation outcomes in Fiji, Indonesia, Kenya, Madagascar, Papua New Guinea and Solomon Islands

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Sociocultural norms shape people's roles, responsibilities and knowledge related to the use, conservation and management of natural resources. This results in variation, both across and within the contexts of different people's needs, priorities and concerns, and how they respond to, and are affected by, conservation and resource management (Gurney et al. 2015). Such heterogeneity exists, to varying degrees, everywhere and is experienced across many societal divisions, including gender. Women, men and gender minorities have differentiated experiences in terms of access to, benefits from, and control over natural resources and spaces, with substantial inequalities existing in many contexts (Baker-Médard 2017; Lawless et al. 2019). While many factors drive inequalities, gender inequalities are pervasive and widespread across geographies and other demographic gradients, with women often being marginalised across all sectors of society, especially within

natural resource sectors. Closing the gender gap and reducing inequalities has been widely articulated as fundamental to sustainable development and to many other goals at the human–environment nexus. Meanwhile, global conservation policy has emphasised the importance of balancing the needs of people and nature in order to achieve effective and equitable conservation efforts in order to protect increasingly threatened species and spaces around the world. Yet, many challenges remain in understanding and mitigating the trade-offs that exist in realising conservation goals in a socially equitable way (Bennett et al. 2021).

The Wildlife Conservation Society (WCS), with funding from the John D. and Catherine T. MacArthur Foundation, has undertaken a multi-year, multi-country initiative to assess the critical social and ecological outcomes of conservation

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Fishers from Madagascar hauling in a fishing net. © Julie Larsen Maher



Top: Women mending nets on Koro Island, Fiji - Bottom: A fisher passes a couple on a scooter along the Kenyan coast. © Emily Darling





Women involved in the marketing and transport of fish near a landing site in Solomon Islands. © Emily Darling

investments in order to improve coral reef ecosystem health and the wellbeing of associated coastal fisheries communities (Gurney et al. 2019). The first step of this initiative was the transdisciplinary development of the Marine and Coastal Monitoring (MACMON) Framework, a social-ecological systems monitoring framework for coral reef fisheries management and conservation (Gurney and Darling 2017; Gurney et al. 2019). The framework is based on Nobel-prize winner Elinor Ostrom's social-ecological systems framework (2009) and is intended to form the basis of ongoing monitoring undertaken by the WCS Coral Reef Program in the future. The MACMON Framework was first implemented in 2016, and now covers more than 150 coral reef sites in six countries.

The WCS will explore gender-differentiated impacts of coral reef management using data from the MACMON Framework. Coral reefs are among the most diverse marine ecosystems on the planet, and are a critical source of livelihoods, cultural identity and food security for millions of people who depend on the fisheries connected to these environments (Teh et al. 2013; Darling and D'Agata 2017). As linked social-ecological systems, coral reefs are a critical case study for investigating environmental governance through an equity lens, whereby social and ecological objectives and outcomes are evaluated. Here, we focus on gender equity as a starting place, with the aim of broadening this in future iterations of this work for a more comprehensive look at the various intersecting and potentially compounding identity characteristics that influence how coral reef management outcomes are experienced.

Understanding gender-differentiated outcomes of fisheries management around the world is chronically hampered by a lack of gender-disaggregated data. The dataset collected by WCS coral reef programmes in Fiji, Indonesia, Kenya, Madagascar, Papua New Guinea and Solomon Islands, provides a unique opportunity to explore natural resource management initiatives and their impacts by gender. Although the MACMON Framework was not designed specifically to shed light on gender inequities, sociodemographic data collected included key identities, such as gender, to enable socially disaggregated analyses. From this rich dataset we are exploring how gender and other aspects of equity are related to the social outcomes of coral reef fisheries management and conservation initiatives. Specifically, we are focusing on: 1) gender differences in perceived impacts (costs and benefits) of management, both at a personal and community-level; 2) perceptions of who benefits most from management; and 3) whether the distribution of benefits is perceived as fair. The responses were captured through ordinal Likert scale questions as well as open-ended survey questions, allowing for a deeper dive into how responses might differ based on gender. Open-ended responses will be grouped into various domains of human wellbeing, as outlined in Ban et al. (2019), to highlight the aspects of human wellbeing that are either supported or challenged by coral reef management efforts, and whether these differ by gender. For example, we will be contrasting men's versus women's perceptions about the positive and negative impacts of management on various domains of their wellbeing. In addition to the gender analysis of survey data, this study will include conversations with, and reflections by, WCS country teams on the process of data

collection and how best to collect data in the future to evaluate gender equity of management in the various country contexts where WCS has its programmes.

Gender equality goals and targets have been clearly articulated at the international level through norm-building instruments such as the United Nations Convention on Biological Diversity, Sustainable Development Goals and more recently within the United Nations Framework Convention on Climate Change. Emphasising and aligning the aims of conservation programmes with these broader goals at the social-environment nexus is key to their realisation at the local level, and to ensuring that conservation programmes are delivering on both ecological and social objectives. This research aims to help conservation organisations better understand and integrate gender into management and help advocate for evidence-based policies in new policy spaces, such as those supporting the realisation of the Sustainable Development Goals (Wabnitz et al. 2021) and the implementation of the *Voluntary Guidelines for Sustainable Small-scale Fisheries* (FAO 2015) – both of which include gender equality as key themes. Increasingly, donors and funders are requiring inclusion of gender analysis across environment and development projects and programmes, and the insights of this study will contribute to both scholarship and practice on how best to do this to support gender equity in coral reef conservation. Additionally, the insights that emerge from this project will contribute to broader conversations in conservation spaces on how to reconcile environmental and development objectives and outcomes within environmental governance and, in this case, specifically in coral reef management. Stay tuned for the findings of this work as they emerge over the coming year!

References

- Baker-Médard M. 2017. Gendering marine conservation: The politics of marine protected areas and fisheries access. *Society and Natural Resources* 30(6):723–737. <https://doi.org/10.1080/08941920.2016.1257078>
- Ban N.C., Gurney G.G., Marshall N.A., Whitney C.K., Mills M., Gelcich S., Bennett N.J., Meehan M.C., Butler C., Ban S., Tran T.C., Cox M.E. and Breslow S.J. 2019. Well-being outcomes of marine protected areas. *Nature Sustainability* 2(6):524–532. <https://doi.org/10.1038/s41893-019-0306-2>
- Bennett N.J., Katz L., Yadao-Evans W., Ahmadi G.N., Atkinson S., Ban N.C., Dawson N.M., de Vos A., Fitzpatrick J., Gill D., Imirizaldu M., Lewis N., Mangubhai S., Meth L., Muhl E.K., Obura D., Spalding A.K., Villagomez A., Wagner D., White A. and Wilhelm, A. 2021. Advancing social equity in and through marine conservation. *Frontiers in Marine Science* 8:1–13. <https://doi.org/10.3389/fmars.2021.711538>
- Darling E.S. and D'Agata S. 2017. Coral reefs: fishing for sustainability. *Current Biology* 27(2):R65–R68. <https://doi.org/10.1016/j.cub.2016.12.005>
- FAO (Food and Agriculture Organization of the United Nations). 2015. *Voluntary guidelines for securing sustainable small-scale fisheries in the context of food security and poverty eradication*. Rome: FAO. 34 p.
- Gurney G.G. and Darling E.S. 2017. *A global social-ecological systems monitoring framework for coastal fisheries management: A practical monitoring handbook*. Bronx, New York: Wildlife Conservation Society. 64 p.
- Gurney G., Pressey R., Cinner J., Pollnac R. and Campbell S. 2015. Integrated conservation and development: Evaluating a community-based marine protected area project for equality of socioeconomic impacts. *Philosophical Transactions of the Royal Society B: Biological Sciences* 370(1681): 20140277.
- Gurney G.G., Darling E.S., Jupiter S.D., Mangubhai S., McClanahan T.R., Lestari P., Pardede S., Campbell S.J., Fox M., Naisilisili W., Muthiga N.A., D'Agata S., Holmes K.E. and Rossi N.A. 2019. Implementing a social-ecological systems framework for conservation monitoring: Lessons from a multi-country coral reef program. *Biological Conservation* 240:108298. <https://doi.org/10.1016/j.biocon.2019.108298>
- Lawless S., Lau J., Ruano-Chamorro C., Cohen P. and McDougall C. 2019. Advancing gender equality for equitable livelihoods in coral reef social-ecological systems. Policy brief. Geneva: CARE International. 7 p. <https://digitalarchive.worldfishcenter.org/handle/20.500.12348/4919>
- Teh L.S.L., Teh L.C.L. and Sumaila U.R. 2013. A global estimate of the number of coral reef fishers. *PLoS ONE* 8(6):e65397. <https://doi.org/10.1371/journal.pone.0065397>
- Wabnitz C.C.C., Blasiak R., Harper S., Jouffray J.-B., Tokunaga K., and Norström A.V. 2021. Gender dimensions of ocean risk and resilience in SIDS and coastal LDCs. *Ocean Risk and Resilience Action Alliance (ORRAA)*. 44 p. <https://oceanrisk.earth/documents/ORRAA-Gender-and%20ocean-risk.pdf>