

## Understanding patterns of gleaning and the contribution of women to small-scale fisheries in Tonga

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*In many parts of the world, women's involvement in fisheries is largely overlooked and can lead to inaccurate estimates of catch effort and methods, and furthering women's marginalisation. As a result, women-dominated activities such as gleaning, which refers to the collection of marine organisms from nearshore environments with minimal to no gear, may often be excluded from national fisheries assessments. In Tonga, little to no information exists on gleaning, although it may comprise a significant portion of the national catch. Thus, a collaborative project comprising researchers from James Cook University in Australia, and representatives from Tonga's Ministry of Fisheries, has been set up to better understand gleaning and the contributions of women to Tonga's small-scale fisheries.*

Small-scale fisheries are local, community-based fisheries that contribute to the livelihoods, culture and food security of coastal communities. These fisheries are built around common resources and generally follow more traditional and sustainable fishing practices to provide sustenance and livelihoods to those involved (Smallhorn-West et al. 2023; García-Lorenzo et al. 2024). Approximately 492 million people depend on small-scale fisheries for food and livelihood security, which contribute 40% to the global catch (FAO 2022; Stiepani et al. 2023). For Pacific Island communities, small-scale fisheries are a mainstay for food, livelihood and ecological security. Finfish and invertebrates account for 50–90% of the animal protein consumed by communities, thus providing essential micronutrients (Malm 2009; Harding et al. 2022).

Gleaning – defined as the collection of marine organisms from the littoral zone (Furkon et al. 2019) – is an important harvesting method in the Pacific for food and income for coastal communities (Furkon et al. 2019; Grantham et al. 2020; Stiepani et al. 2023). The practice of gleaning is strongly embedded in Pacific Island cultures and communities, with gleaning knowledge usually passed down from generation to generation (Grantham et al. 2020; Stiepani et al. 2023). While men tend to engage in diverse forms of fishing, women are often exclusively engaged in gleaning due to various social and cultural beliefs about gender roles and responsibilities (Williams 2015; Malm 2009; Lau et al. 2023). Gleaning techniques are often characterised as “walking gleaning”, where collection occurs on foot along rocky shorelines (Furkon et al. 2019), or “general gleaning”, swimming and/or diving for invertebrates in shallow waters (Stiepani et al. 2023). Both forms of gleaning may include the collection of a diversity of invertebrates, algae or seaweed, and seagrasses from these habitats (Stiepani et al. 2023). Despite being an invaluable fishery and cultural resource to Pacific Island

counties and territories, there is a lack of information on the economic and non-economic value of gleaning activities and harvesting in Pacific communities, and women's contribution to gleaning in particular (Harding et al. 2022).

Tonga is a nation with a high dependency on small-scale coastal fisheries and gleaning activities. Coastal fisheries in Tonga are primarily subsistence fisheries or small-scale commercial fisheries, with gleaning being one of the primary fishing techniques (D'Andrea et al. 2024). Preliminary studies conducted by a local non-governmental organisation, the Vava'u Environmental Protection Association, have identified some of the key species that are targeted by gleaners, including sea cucumbers, ark clams, conch, and jellyfish. To develop further evidence of the patterns of gleaning in Tonga, the Vava'u Environmental Protection Association has also identified a need to collect information on species and sustainable practices for gleaning activities. A lack of sex-disaggregated fisheries data means there is also limited understanding of women's and men's



A woman cleans her catch after gleaning in Vava'u, Tonga.  
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fisheries catch effort and methods, including women's likely significant contribution to gleaning activities. This understanding is further obscured by a scarcity of published information on gleaning. These knowledge gaps may result in underestimating the contribution of women to small-scale fisheries, and risking their marginalisation in both formal and informal sector activities (Lawless et al. 2021). Building a better understanding of women's contribution to small-scale fisheries in Tonga could also have important implications for community-based management programmes (Smallhorn-West et al. 2020) and may improve the recognition and inclusion of gleaning grounds within local management.

The lead author, Rhea George, a Master's student of Marine Biology at James Cook University in Australia, is leading a new research project designed to directly support the Ministry of Fisheries in Tonga by:

- 1 establishing an estimate of the contributions of gleaning to national fisheries catch; and
- 2 highlighting the extent to which women contribute to national small-scale fisheries in Tonga.

This project is supported by the Australian Centre for International Agricultural Research, in collaboration with the Ministry of Fisheries in Tonga, and is part of a larger effort to economically evaluate Tonga's inshore fisheries. A team of researchers from James Cook University, the Ministry of Fisheries in Tonga, and fisheries' representatives have been closely involved in research planning and data collection. Data collection was undertaken between September and November 2024 in the island groups of Vava'u in the north and Tongatapu in the south. A combination of methods, including catch surveys, recall surveys and key informant interviews, were used to obtain socioecological data on the type and number of species caught, total hours spent gleaning, and the importance of gleaning to communities. This research aims to highlight the contribution of overlooked fishers and fisheries in regions of Tonga, and will have implications for how equitably fisheries are managed, monitored, and evaluated at local, regional and national levels. The study's findings will be used by the Ministry of Fisheries to better evaluate their coastal fisheries as well as inform future management considerations, particularly for their community-based Special Management Area programmes.

For more information about this project please contact  
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