Combining resource status, fisheries and socioeconomic information to identify fishing pressure and exploitation trends of coral reef fisheries in Pacific Island Countries

Kronen M. 1), Pinca S. 1), Awira R. 2), Boblin P. 1), Magron F. 1) and Vunisea A. 3)

1) Secretariat of the Pacific Community (SPC), Reef Fisheries Observatory, PROCFish, Noumea, New Caledonia;  
2) Permanent Secretary, Ministry of Fisheries & Marine Resources Development, Kiribati;  
3) SPC, Pohnpei regional office
to assess current risk of finfishing pressure across 55 study sites in 15 Pacific Island Countries (PICs)

to evaluate major socioeconomic, biological and habitat
drivers for explaining current catch rates (sustainable or
unsustainable use)

4 Finfishing pressure risk groups were defined using finfish catch data (catch mt reef km\(^{-2}\) yr\(^{-1}\)) as a proxy for reef productivity scenarios (Newton et al. 2007):

Groups A, B, C and D: <1 mt, >1-5, >5-10 and >10 mt reef km\(^{-2}\) yr\(^{-1}\)
The higher current exploitation levels, the higher likelihood of unsustainable reef finfisheries.

50% are likely to be exposed to unsustainable use
Average finfish family and trophic composition for each finfishing pressure risk group shows:

Healthier average fish community biomass composition in low finfishing risk groups: high proportion of piscivores and carnivores compared to herbivores.
Canonical analysis of principal coordinates (CAP) explaining finfishing pressure risk groups

Permutation tests: canonical relationship 1\textsuperscript{st} canonical eigenvalues ($p=0.001$)

Finfishing pressure risk groups (factor) are distinct (PERMANOVA $p=0.001$)

Partial regression:

- Unexplained: 26.3%
- Shared: 34.3%
- Biology: 10.5%
- Socioeconomic: 28.9%

Transform: Log ($X+1$)
Resemblance: D1 Euclidean

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Conclusion

The combined socioeconomic and biological datasets explain:

• Low or high current finfish exploitation and finfishing pressure risk groups
• Easy-to-measure indicators for assessing and monitoring reef finfish resource and use status, and
• Risk assessment analysis on finfishing pressure
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Thank you
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