Assessment of the stock status of small-scale and multi-gear fisheries resources in the tropical Eastern Pacific region - DTU Orbit (01/11/2018)

Small-scale multi-gear fisheries contribute half of global fisheries landings but are generally data-poor, hindering their assessment and management. Aiming to overcome various existing challenges, we used two complementary length-based approaches to assess the status of three main target species in the small-scale fisheries of Eastern Pacific countries: Spotted rose snapper Lutjanus guttatus, Pacific sierra Scomberomorus sierra, and Pacific bearded Brotula clarkiae, using length-frequency catch data (LFCD) from the Colombian Pacific coast. Two data sources – official governmental data and community-based monitoring from a non-government organization – were used to estimate two sets of stock indicators: one based on the derivation of growth and mortality parameters from modal progression, catch curve analysis and a yield-per-recruit model using TropFishR; and the second based on the relative contribution of fish sizes with regard to proposed reference values for healthy stocks. Growth estimates differed between data sources and exhibited large confidence intervals, indicating an overall high uncertainty underlying the LFCD revealed through a novel bootstrapped approach. Estimated values of stock indicators, exploitation rate, fishing mortality and size-proportions converged in suggesting a state of heavy to over-exploitation for the three assessed species, although differences were observed among data sources that we attribute mainly to fisheries selectivity and sampling design. In order to improve future assessments of stocks in multi-gear and data-poor contexts, estimations of fleet-specific selectivity should be used to reconstruct LFCD prior to analyses. Additionally, sampling design should be based on fishing effort distribution among gears and areas and, when feasible, fishery-independent data on stock conditions should be included.

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