

Evaluating the effect of the 1980 trawl ban in the Java Sea, Indonesia: an ecosystem-based approach.

Trawl fishing was banned in Indonesia in 1980 (except in the Arafura Sea) due to resource access conflicts between trawl operators and small-scale artisanal fishers. Recently, however, the new Indonesian government opened a debate on trawl ban revocation.

This research evaluates the effect of the 1980 trawl ban on the sustainability of Java Sea fisheries, using an ecosystem approach. Three approaches were used. The first was to construct an Ecopath model for the Java Sea prior to the ban, to get a snap-shot picture of the ecosystem before fishery development escalated. The second used Ecosim, a dynamic multispecies model, to project the pre-ban model forward for 50 years. Ecosystem dynamics were examined in light of four hypothetical scenarios. The third approach employed an economic impact analysis to evaluate the economic implications of a trawl ban revocation.

Results showed that the Java Sea in mid-1970s was a moderately mature and stable ecosystem, thus relatively resilient to perturbations. Various scenarios that were simulated suggested that the Java Sea was resilient enough to absorb perturbations, mainly by creating alternative stable states. However, these alternative stable states involved the loss of at least some parts of the initial food web structure. In all cases, this involved the increase of economically low-value species at the cost of the loss of economically high-value species.

Economic impact analysis predicted some short-term gains by opting for the trawl ban revocation. In the long term, however, this revocation would create a greater impact on ecosystem integrity, and further reduce the economic viability of the already highly-exploited fishery. The major conclusion is that the trawl ban has not so far been able to provide enough opportunity for most of the heavily impacted fished groups to recover. The failure to recover is partly due to the concurrent and continual increase of fishing pressure from purse seiners and small scale gears. Therefore, a revocation of the trawl ban is not recommended.