

**CASE STUDY OF FISHERY INTERACTION IN A PACIFIC
ISLAND COUNTRY: KIRIBATI¹**

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Abstract

The Gilbert Islands of the Republic of Kiribati straddle the equator at 173-177° E, and are located towards the eastern extreme of the tropical tuna fishery in the western and central Pacific Ocean. Industrial purse seine vessels are licensed to fish in this area, and catches have increased substantially over the past three years. Domestic pole-and-line vessels and artisanal fishermen also target tuna in the vicinity of the Gilbert Islands. The recent increase in purse seine catches and reported declines in pole-and-line and artisanal catches have led to concerns that purse seining is reducing the supply of tuna available for capture by local fishermen.

Correlation analyses of yellowfin catch rates by artisanal troll fishermen, as determined from landing surveys, and industrial purse seine catches at various distances from and times prior to the surveys suggest that the correlations are generally weak. Over large areas, e.g. within radii of 300-600 nmi of the islands, artisanal catch rates and purse seine catches are generally positively correlated, suggesting that, on this scale, variations in the abundance or catchability of yellowfin affect both purse seiners and artisanal catches in the same way. However, some negative correlations were found for smaller area (<60 nmi) and time scales, indicating that localised effects may occur. Such negative correlations were detected during 1991-1993 but not during 1985-1990. The possible influence of *El Niño* conditions on these observations is discussed.

Analyses of tagging data were carried out to estimate the average impact of purse seine fishing on Kiribati pole-and-line and artisanal catch rates. A spatially aggregated model for the Gilbert Islands area indicated only a modest overall impact of local purse seine catches on pole-and-line and artisanal catch rates. A regional model with 1° square spatial structure indicated a slightly higher overall impact of the regional purse seine fishery on skipjack catches by the Kiribati pole-and-line fishery. The results of the correlation and tagging data analyses suggest that adverse impacts of purse seine fishing on artisanal and pole-and-line catches in the Gilbert Islands are more likely to occur at a small scale (1° square or less) due to local concentrations of purse seine effort, rather than at a regional scale or on a scale of tens of degrees.

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