

Session 4

The economic impacts of Marine Protected Area on Senegalese small pelagic fisheries

Aliou BA ^{1,5,*}, Christian CHABOUD ², Jörn SCHMIDT ³, Malick DIOUF ⁴, Massal FALL ⁵, Moustapha DÈME ⁵, and Patrice BREHMER ^{1,5}

¹Institut de Recherche pour le Développement - France (IRD), UMR 195 Lemar (UBO, CNRS, IRD, Ifremer), BP 1386, Dakar, Sénégal

²Institut de Recherche pour le Développement - France (IRD), UMR Marbec, Sète, France

³University of Kiel (CAU), Department of Economics, Wilhelm-Seelig-Platz 1, 24118, Kiel, Germany

⁴Université Cheikh Anta Diop (UCAD), Institut Universitaire de Pêche et d'Aquaculture, UCAD II, BP 45784, Dakar, Sénégal

⁵Institut Sénégalais de Recherche Agricole (ISRA), Centre de Recherche Océanographique de Dakar-Thiaroye (CRODT), BP 2241, Centre PRH, Dakar, Sénégal

*Correspondance: Tél: (+221) 70 591 05 85; Courriel: aliou.ba@ird.fr (A. BA)

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Abstract

In the early 2000s, Senegal set up several Marine Protected Areas (MPAs) along its coastal zone for the purpose of biodiversity conservation and the sustainability of fisheries. However, the impact of MPAs may vary depending on the types of fishing. In Senegal, the sardinella fishing accounts for 70% of total catches. This fishery is of crucial for food security and employment. Given this importance, it is necessary to evaluate the impact of the MPAs often considered as a tool for fisheries management. An analytical, dynamic and spatial bio-economic model of sardinella fishery has been developed and simulations over 40 years were carried out. The model takes into account the migration of the resource and that of fishermen. The main results show that the fishery is economically overexploited and that the society loses about 15 billion CFA over 40 years of exploitation, i.e. 375 million CFA per year. To reach an optimal level of exploitation, it would be necessary to halve the current fishing capacity. The closure rates of 10, 20 and 30% lead to increases in biomass (8 to 28%) and rent (5 to 11%). Spatio-temporal closure measures lead inevitably to overcapacity in unclosed areas. The objective 11 of the Aichi Convention will have a reserve effect on the resource but also weak improvements in economic indicators for this fishery. Lastly we show that if we expect that the MPAs provide a significant impact on sardinella fishery in Senegal, they should be accompanied by a limitation of fishing capacity.

Keywords: Marine Protected Area, MPA, Senegal, sardinella, bio-economic model, migration, optimal level of exploitation, overcapacity, Aichi.



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