

**COMBINING FISHING CLOSURE WITH MINIMUM SIZE OF CAPTURE TO IMPROVE  
OCTOPUS PRODUCTION IN SENEGALESE WATERS: AN EVALUATION USING  
ANALYTICAL MODELLING**

**Didier Jouffre and Alain Caverivière**

*Institut de recherche pour le développement (IRD)  
Centre de Recherche Halieutique Méditerranéenne et Tropicale, rue Jean Monnet, BP 171,  
34203 Sète Cedex, France E-mail: jouffre@ird.fr*

---

**ABSTRACT:** The dynamics of the *Octopus vulgaris* (Cuvier, 1797) population in Senegalese waters is modelled to evaluate the potential impact of combining temporal fishing closure and minimum size of capture on the production of this stock. The study is based on an analytical approach (cohort analysis and simulation of captures on a monthly basis) adapted to the biological characteristics of *O. vulgaris*, a short lifespan species. Several combinations of the two policies (minimum size and fishing closure) are tested to complement the results of previous studies that evaluated each of the two strategies separately, and in addition, to account for the fact that a positive synergistic effect can be expected. The model covers the exploitation period from 1996 to 1999. As in previous simulations (of separate effects), the present results focus on the instability of the responses (positive or negative, significant or not, depending on the situation that prevailed each year) of the octopus stock to such policies. As a consequence it is difficult to identify the ideal combination of closure and size limits that would ensure a substantial improvement in production every year. Nevertheless, a 350g or 500g minimum size policy seems to be profitable when combined with a two-month fishing closure in July–August. The final discussion focuses on the fact that, in addition to its regional range, the present study presents also a broader interest because the methodology proposed here aims to be applicable to other cephalopods and short lived species fisheries.

---