Population dynamics and stock assessment for Octopus maya (*Cephalopoda: Octopodidae*) fishery of the Campeche Bank, Gulf of Mexico

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The octopus (*Octopus maya*) is one of the most important fish resources in the Mexican Gulf of Mexico with a mean annual yield of 9000 ton, and a reasonable number of jobs created; *O. maya* represents 80% of the total octopus catch, followed by *Octopus vulgaris*. There are two artisanal fleets based on *Octopus maya* and a middle-size fleet that covers both species. Catch-at-length structured data from the artisanal fleets, for the 1994 season (August 1st to December 15th) were used to analyze the *O. maya* population dynamics and stock and to estimate the current level of exploitation. Von Bertalanffy growth parameters were: L = 252 mm, mantle length; K=1.4 year $^{-1}$; oscillation parameters C=1.0, WP=0.6; and tz=0.842 years. A rough estimate of natural mortality was M=2.2, total mortality from catch curve Z=8.77, and exploitation rate F/Z=0.75. This last value suggests an intensive exploitation, even when yield per recruit analysis indicates both fleets may increase the minimum legal size on about 10% to increase yields. The length-based VPA also shows that the stock is being exploited under its maximum acceptable biological limit. These apparently contradictory results are explained by biological and behavioral characteristics of this species. Because most females die after reproduction, a new gross estimation of natural mortality was computed as M=3.3. The new estimate of exploitation rate was F/Z=0.57. This new value coincides with results from the length-VPA and the Thompson and Bell methods, the former suggesting that a reduction of 20% in fishing mortality may provide larger yields. This fishery resource is fully exploited and current management measures must be revised to sustain and probably optimize yields.

Palabras clave: Gulf of Mexico, Stock assessment, Octopus, Octopus maya, length frequency data analysis

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