Use of length-frequency analysis for growth estimation of the California two-spotted octopus *Octopus bimaculatus* Verril 1883 of the Gulf of California

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Indirect methods such as length–frequency analysis have not been recommended for growth estimation in octopus (length is not a good measure of size for soft-bodied organisms; size is not a good indicator of age because of the high interindividual variability in growth rates and an asymptotic growth is often assumed). However, these methods are still applied in various places where octopus fisheries exist because they are low cost and easy to apply in most fisheries where there are no financial resources or scientific capacity to use direct methods. The purpose of this study was to investigate whether length–frequency analysis is an appropriate method for determining the growth pattern of *Octopus bimaculatus* from the Gulf of California. We tested the widely used methods ELEFAN I and NSLCA, and a modal progression analysis with a multimodel approach. The results showed that the growth pattern of *O. bimaculatus* was reasonably described using these analyses. First, the suitability of using mantle length as a measure of size was confirmed through a significant length–weight relationship. A length–age key was also generated in terms of probability to take into account the variability in growth rates, and with the multimodel approach it was not necessary to assume asymptotic growth. Population size structure is the most readily obtained and probably the most commonly used or only available information in a large number of fisheries. Therefore, the usefulness of length–frequency analyses should not be underestimated when direct methods are available.

Palabras clave: California two-spotted octopus, mantle length, modal progression, multimodel growth, nonlinear fit, cephalopod, Octopus bimaculatus

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