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Natural mortality rated during life history stages on the Red Gruper on Campeche Bank, Mexico

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The objective of this study was to arrive at biologically convincing estimates of the natural mortality rate (*M*) for different life history stages of the red grouper *Epinephelus morio* on Campeche Bank, Mexico. Estimates of *M* must be compatible with our knowledge of life histories and are essential as input to analytical assessment models for any exploited stock. Because of difficulties in estimating *M* directly, *M* has often been incorrectly assumed to be constant with age for a fishery harvesting different age-groups. The gnomonic interval method (GIM) was applied to this long-lived species to estimate a vector of *M*-values for successive life history stages. The GIM estimates the vector of *M* at age from the duration of successive development stages and the mean annual fecundity. Estimates were calibrated using available independent data. We computed the relationship between *M* and age (*t*) over a 13-year period as $M_t = 0.8976t$