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Antoni Quetglas, Francesc Ordines and Maria Valls, (2011). [What drives seasonal fluctuations of body condition in a semelparous income breeder octopus?](#)

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Abstract: The vast majority of modern cephalopods is single-season breeders, or semelparous in the strict sense, that die soon after the reproduction takes place. Individual body condition in these marine invertebrates is expected to be highly affected by reproduction because: 1) the gonad weight of females, which represents less than 1% of body weight when immature, increases up to 20–50% during maturation; and 2) octopus females reduce or even cease their food intake during breeding. Based on this expectation, we analysed the interrelationship between condition and reproduction in the temperate octopus *Eledone cirrhosa*. Results from a previous work using biochemical analyses showed that reproduction in this species is not fuelled by stored reserves (capital breeder), but by food intakes (income breeder). Since income breeders depend strongly on food resources, the effect of several environmental variables related to food availability such as primary production, sea temperature (ST) and river discharges were also analysed. Condition showed a marked intrannual cycle independently of the sex and, noteworthy, the maturity stage. Given that immature individuals are not expected to display seasonal fluctuations in body condition related to maturation, these results preclude reproduction as a driving factor for the observed circannual cycle. Condition was significantly correlated with all the environmental variables analysed, except with ST at the depths where the species lives. Although this last result also precludes concurrent ST as a driving factor of body condition, those correlations suggest that condition might display an intrinsic seasonal cycle, as many other life-history traits in most species such as reproduction, migration or moulting. Finally, there also remains the possibility that condition in this octopus species is determined genetically, as has been reported in recent studies across different taxonomical groups.

Keywords: life-history trade-off; body mass residuals; circannual rhythm; cephalopod