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## GROWTH OF OCTOPUS (*OCTOPUS VULGARIS*) MALES AND FEMALES UNDER CULTURE CONDITIONS

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### Introduction

The common octopus (*Octopus vulgaris*) is considered to be a promising species for cultivation in Galicia (NW Spain): its great demand in local and international markets, the increasing market prices together with the high growth rates of these animals support this affirmation. In recent experiences of ongrowing in tanks (Iglesias et al. 1997) and in floating cages (Rama-Villar et al. 1997), rates of growth as high as 0.5 to 1.0kg per month were registered. The goal of this study was: 1) to register the rate of growth of males and females separately and 2) to improve the yield of ongrowing avoiding the process of spawning, loss of weight and death that occurs in fecundated females from 1kg onwards.

### Materials and Methods

Fifty seven wild octopus were separated by sex and transferred into two rectangular tanks of 8 m<sup>3</sup> provided with an open circuit (1.2 m<sup>3</sup>h<sup>-1</sup>) where they were grown for five months. Temperature ranged between 12°C-19°C and salinity between 32‰ and 35‰. Animals were weighed monthly, and the specific growth rate ( $G = \frac{\ln w_f - \ln w_i}{t} \times 100$ ) was registered. Separation according to sex was made by observing the tip of the 3rd right arm in the animals, which is rounded in the case of males and pointed in females. Food consisted of frozen decapod crustaceans. Daily ration was calculated as a percentage of the tank biomass. Growth curves for both sexes were statistically compared by a slope t-test comparison method.

## Results

Initial mean weights for males and females were 637.0g and 657.9g respectively, reaching final mean weights of 3624.0g and 2780.0g respectively after five months. Daily ration was higher at the beginning of the experimental period (7%), decreasing at the end (3.5%). The food conversion index was 2.1 for males and 4.2 for females. Growth in weight adjusted to the following exponential equations:

$$\begin{aligned} \text{Males:} & \quad y = 544.11 e^{0.3327 x} & (r^2 = 0.75) \\ \text{Females:} & \quad y = 632.47 e^{0.2704 x} & (r^2 = 0.69) \end{aligned}$$

Slopes of both curves were significantly different ( $p < 0.05$ ), males showing a higher growth rate than females (Fig 1).

Method of sex separation showed an effectiveness of 100%. The monthly mortality rate during the first four months ranged between 0% - 4.0% (males) and 0% - 6.7% (females). In the fifth month, rate of mortality increased in both groups (see Table I). At this time, most of the females had developed big ovarian masses.

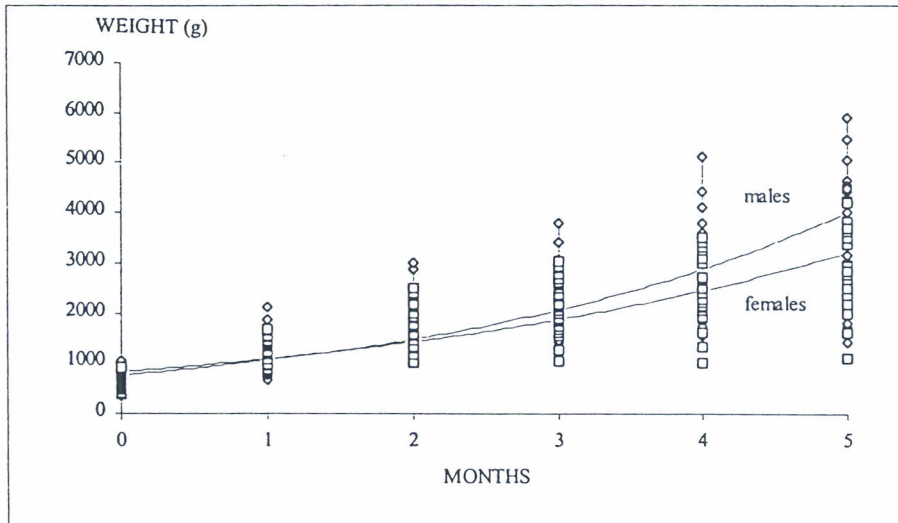


Figure 1.- Growth of males (diamonds) and females (squares) of *Octopus vulgaris* in separate tanks.

TABLE I: mean weight (MW), specific growth rate (G), and monthly mortality rate (MM) of males and females of octopus in separate sex cultures.

Month	0		1		2		3		4		5	
	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀
MW(g)	637.0	657.9	1250.8	1248.8	1806.0	1812.4	2341.4	2148.3	2955.0	2483.0	3624.0	2780.0
G (%)	-	-	2.11	2.00	1.08	1.10	0.93	0.61	0.83	0.52	0.66	0.36
MM (%)	-	-	3.7	0	3.8	6.7	4.0	0	0	0	13.0	10.7

### Conclusions

- In separate-sex cultures, Octopus males grow faster than females.
- Separation of males and females improves the process of ongrowing since non fecundated females continue to grow until commercial size.
- Recommended attainable weight in separate sex cultures is 3kg (males) and 2.5kg (females). Beyond this point, the increasing rate of mortality decreases the yield of the ongrowing process.

### Literature

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