First steps to rear *Crangon crangon* larvae successfully in captivity

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In Europe, *Crangon crangon* or the European brown shrimp is economically a very important species because of its high commercial value. The past few years, the demand for big live shrimp (> 7 cm) has increased and has a higher sales value than its cooked counterpart. Unfortunately, fisherman cannot meet this demand. But due to this rising demand and decreasing availability from wild shrimp stocks, this species could be a suitable candidate for aquaculture.

Despite its high commercial value, little attention has been paid to improve the rearing techniques for this species and people have not yet succeeded to rear *C. crangon* in captivity. Attempts to "catch and hold" wild adults in land-based rearing systems have been proven to be very difficult, due to high mortality and slow growth.

In order to establish a commercially viable culture of the European brown shrimp, this research focused on the development of a rearing system for larvae. Larviculture forms a crucial step for the establishment of a viable aquaculture for crustaceans. One of the major constraints is the availability of qualitative seed and larvae, but also mechanical damage, cannibalism, adequate food intake and efficient metamorphosis during the hatchery phase are important bottlenecks that have to be overcome by good aquaculture practices.

During the first trials one-day old larvae were reared in Erlenmeyer flasks with 500 mL of sterile seawater (300 larvae.L^{-1}). Three different diets were tested in triplicate namely *Artemia* nauplii, *Artemia* nauplii in combination with micro-algae and one-day old enriched *Artemia* nauplii. Survival of each treatment was determined weekly. After 21 days the survival rate for each of the treatments was 67.61 % (*Artemia*), 75.65 % (combination) and 61.30 % (enriched *Artemia*). Although the combination of *Artemia* and micro-algae resulted in a higher survival rate in comparison to the other two treatments, the difference was not significant ($P>0.05$). In case a high survival is needed to get a large batch of juveniles for further grow-out settings, we advise to feed the larvae with a combination of *Artemia* nauplii and micro-algae. Also the feeding rate of the larvae was determined with individual trials. Three feeding regimes were tested namely, 10, 30 or 50 *Artemia* nauplii per day per larvae. Survival and feeding rate were determined daily. At the end of this experiment a feeding regime was suggested based on the major moulting periods during the larval development. This means that the amount of nauplii per larvae (per day) is increased with 5 to 10 nauplii per larvae after each major moulting event (± each 7 days). This way the larvae have enough feed to develop and reach the next zoeal stage.

Based on these results we took the first steps to rear *C. crangon* larvae successfully in captivity. This research will enable us to provide an effective larval rearing system to maximize production of healthy post-larvae for further potential grow-out settings.

Keywords: *Crangon crangon*; European brown shrimp; larviculture; larval rearing