

PROGRESS IN THE WRECKFISH INTENSIVE CULTURE. NEW CANDIDATE SPECIES FOR AQUACULTURE

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Introduction

Great advances were made in the study of the wreckfish reproductive cycle, both in the Mediterranean stock, located in the Hellenic Center for Marine Research (HCMR - Crete) and in the NW of Atlantic, with three stocks in different facilities, Instituto Español de Oceanografía-Centro Oceanográfico de Vigo (IEO-NW Spain), Consellería do Mar-Xunta de Galicia (CMRM-NW Spain) and Aquarium Finisterrae-Museos Científicos Coruñeses (MC2-NW Spain).

Material and methods

Monthly biopsies and blood samples were performed and gametogenesis stage was characterized by histology and level steroids, testosterone (T), 11-ketotestosterone (11-kT) in males and T and estradio (E2) were measured in males. Sperm quality parameters were evaluated: concentration, motility, mobility and duration of active sperm. To develop spawning induction procedures for in vitro fertilization, as well as spontaneous tank spawning, females with different doses of de GnRH α in three of the four stocks were implanted. A CASA system was evaluated for wreckfish sperm. A protocol for use in vitro fertilization was established, besides the use of the cryopreserved sperm and its quality (Fauvel et al, 2009).

In order to know optimal environmental parameters for larval husbandry, experiment with different temperatures was made.

The research on nutrition wreckfish have focused on two main important aspects, firstly broodstock nutrition to determine the influence of feed on fecundity and spawning quality, and secondly larval nutrition to test the effectiveness of live prey and influence of enrichment on wreckfish.

Results and discussion

Females do undergo vitellogenesis and oocyte maturation spontaneously in captivity, reaching spontaneous spawns, also by stripping or GnRH hormonal induction, in all of the four stocks. The treatment of females with GnRH α implants can induce oocyte maturation and ovulation. The exact timing of the ovulation after the hormonal treatment and the post-ovulation survival of the eggs is currently tested. On the other hand, spontaneous spawns were

achieved in three of the four stocks and by stripping in the four stocks, with a fecundation rate between 49 and 100 %. Wreckfish males produced a high volume of easily expressible milt with a concentration considered as medium range for marine fish and of course much higher than that of flatfish. This high speed is associated with a long swimming duration compared to other marine fish. CASA evaluation showed the feasibility of wreckfish sperm criopreservation while chilled storage not seem to be a good solution for the management of sperm for artificial fertilization. The losses of sperm quality due to freezing may be compensated by increasing the number of spermatozoa per egg as is usually practiced in other species (Fauvel

Last year, spawns were increased, and this allowed to perform experiments with different incubation temperatures and larval culture, showing that the optimal temperature of incubation with the best results in embryonic development and hatching of eggs is 16 ± 0.8 °C, with a hatching rates until 65%. The same temperature for larvae culture was applied, reaching larvae alive feeding rotifers and Artemia enriched with T-Iso until 27 days post hatching (27dph) of life (Álvarez-Blázquez et al. 2016). Growth performance of the larvae until 24 dph was obtained, with similar results for the Mediterranean and Atlantic stock. Larvae length was 4.70 ± 0.27 at 1 day post hatching (dph). Yolk sac consumption was at 11dph at 14-17°C sea water temperature and 8 dph at 17-20°C. The moment of mouth opening was at 7 dph at 14-17°C and 4 dph at 17-20°C.

Fatty acids profile of oocytes from wreckfish females was obtained. A relationship between the fatty acid profile of the broodstock feeding semimoist diet and dry food with fatty acid composition of oocytes was found (Linares et al, 2016).

Related to larval nutrition new enrichments for larval wreckfish were designed on the basis of gonads and eggs biochemical analyses and nowadays is going to tested. In addition, the larvae fatty acid profile in the first days of life was obtained. The main fatty acids values (PUFA, SAFA and MUFA) of larvae have a little variation in the first days of life.

References

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