



Abstract

Effects of Environmental Enrichment on the Welfare of Gilthead Seabream Broodstock [†]

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Abstract: The intensification of aquaculture practices in the last decade has led to the reduction in welfare of farmed fish. Recently, one of the tools that has been considered important to guarantee or improve the welfare of captive fish is the application of environmental enrichment (EE). The physiological state and behaviour of fish can be used as indicators of the welfare of the animal, as well as of the positive impact of the EE in their well-being. In this study, behavioural and physiological indicators were measured to assess the effects of structural environmental enrichment on the welfare of gilthead seabream broodstock. Over the course of 5 months, 60 adult seabreams were distributed in six 3000 L cylindrical tanks. Three of the tanks were enriched with nine hanging organic ropes on 1 m² floating structures, while the other three tanks had no enrichment. Fish were filmed regularly before, during, and after feeding, cleaning, and sampling procedures. Operational welfare indicators (OWIs) recently developed for farmed seabream were used and adapted to build an ethogram for the broodstock behaviour analysis. According to our results, fish reared in enriched tanks hardly schooled and presented a more independent swimming activity compared to fish from non-enriched tanks. Moreover, structural enrichment seemed to increase the spatial use of the bottom of the tank, and promoted seabream natural behaviour (hierarchical competitions, foraging, etc.). In addition, fish in enriched tanks presented a higher growth rate, and further studies will determine if such enrichment structures also affect reproductive potential of seabream broodstocks as well as epigenetic effects on offspring.

Keywords: welfare; environmental enrichment; gilthead seabream; broodstock; behaviour; operational welfare indicators



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