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Abstract

Husbandry Procedure Effects on Brood-Stock Gilthead Seabream's Heart Rate Housed under Enriched and Bare Environments †

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Abstract: Husbandry procedures, albeit essential for good welfare, can be stressful for captive individuals. Therefore, being aware of the physiological effects of these procedures and reducing stress during regular maintenance is of pivotal importance to ensure outstanding welfare. Environmental enrichment can be an asset to animal keepers since it has many benefits on captive animals, including reducing stress in many aquatic species. We studied whether structural enrichment had a positive effect on brood-stock gilthead seabream (*Sparus aurata)* during four husbandry procedures. We studied the stress levels of the subjects by measuring their heart rate with an internal bio-logger (DST milli HRT, Star-Oddi) surgically implanted in 18 fish. These fish were distributed in six 3000 L cylindrical tanks, and housed with seven more fish in the tanks, which made a total of 10 fish per tank. Three of the tanks had an environmental enrichment structure consisting of a 1 m^2 floating structure with 9 hanging organic ropes, while the other three tanks had no enrichment. Fish were exposed to their housing setting for five months. After this environmentally enriched/bare period, we carried out feeding, netting, and cleaning each day for three consecutive days, and a formaldehyde bath on the fourth day in logger-implanted fish, and continued recording their recovery for eight more days. We expect the husbandry procedures to evoke a stress response in all the subjects by increasing their heart rate, and the fish housed in enriched environments to have a reduced heart rate and to recover faster from the stressors compared to the fish housed in bare tanks.

Keywords: welfare; stress resilience; environmental enrichment; gilthead seabream; heart rate; bio-loggers; brood-stock; husbandry procedures; precision fish farming

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