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AQUA 2018 - Meeting Abstract

STRESS COPING-STYLE IN EUROPEAN SEA BASS *Dicentrarchus labrax:* FROM GENES TO PHYSIOLOGY AND BEHAVIOUR

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Stress coping styles (SCS) are defined as a coherent set of individual physiological and behavioural differences in stress responses consistent across time and context. This work aims at understanding the mechanisms underpinning SCS in European sea bass, *Dicentrarchus labrax*, through the combined measures of physiological and behavioural responses.

Individually PIT tagged fish were challenged twice (four months apart) in a group risk taking test to assign an individual boldness score (n=1000). The risk taking test consists in grouping the fish into a sheltered area and measuring the latency to leave it towards an open area. Fish leaving the shelter during the two tests were classified as proactive, whereas fish staying were described as reactive. One year later, 30 proactive and 30 reactive fish were challenged using an Open Field Test (OFT). The OFT consists in placing a single fish in an observation arena (75x75 cm) with a shelter (Figure 1). After 5 min of habituation, fish are free to exit the shelter and explore the arena during 20 minutes. Behavioural variables (latency to exit shelter, time spent in shelter or distance travelled) were recorded. Directly after the OFT, blood and brain samples were taken to measure blood plasma cortisol concentration, brain neurotransmitter levels (serotonin, dopamine), expression of genes involved in stress regulation (*gr1, gr2, mr, crf*) and neurogenesis (*egr1, neurod1, pcna*).

Correlations between behavioural responses, stress regulation processes, neurotransmitters and neurogenesis were evaluated to bring a better understanding of SCS in European sea bass with the goal of contributing to fish welfare improvement in aquaculture. ERANET ANIHWA and French National Research Agency funded the project WIN-FISH, ANR-14-ANWA-0008.

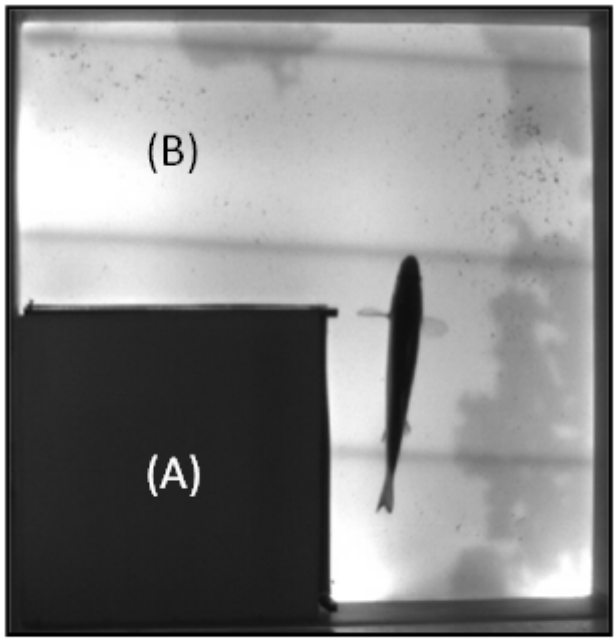

Fig 1. Open Field Test (OFT) experimental set-up. **(A)** Sheltered area; **(B)** Exploration area

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