

# The Restorative Potential of Sub-Aquatic Biodiversity

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## Introduction

Despite anecdotal evidence that people find watching fish in aquariums relaxing and psychologically restorative there has been surprisingly little systematic research. The present study investigates this issue by monitoring people's psychological and physiological reactions to watching a large (650,000 litre) exhibit at the National Marine Aquarium. Crucially, the tank is currently undergoing a complete overhaul enabling us to monitor people's reactions to the growing biodiversity introduced to the tank over a six month period and to compare this to a control condition before any fish were introduced (i.e. just water and landscaping). The current poster presents data from the first two stages of this on-going project (i.e. no fish, vs. low biodiversity).

## Method

Participants were shown to a curtained booth in front of the exhibit and baseline measures of heart rate, blood pressure and mood were taken. The curtain was then drawn back revealing the tank either without (control,  $n = 29$ ) or with some fish (low biodiversity,  $n = 27$ ). Fish in the low biodiversity condition included 34 Thick-lipped grey mullet (*Chelon labrosus*), 14 dogfish (*Scyliorhinus* spp.) and 12 Scad (*Trachurus trachurus*). Participants then watched the tank for 10 minutes before the baseline measures were repeated along with some additional evaluation questions.

## Preliminary findings

Results suggested that participants who watched the tank populated by some fish found the experience more enjoyable (4.58 vs. 3.14,  $p < .001$ ), more interesting (5.38 vs. 4.14,  $p < .001$ ) and reported feeling in a significantly better mood afterwards (4.19 vs.

3.34,  $p < .05$ ). When asked how much longer they would like to watch the tank, those in the fish condition were also prepared to continue for significantly longer (11.35 vs. 7.41 mins,  $p < .01$ ). These post viewing evaluations reflected the physiological indicators. Heart rate slowed down significantly in both conditions (Fish = -6.23,  $p < .001$ ; No fish  $M = -3.07$ ,  $p < .01$ ) suggesting both experiences may be stress reducing. However, the drop was twice as large with fish ( $p < .05$ ). In terms of blood pressure, both systolic (-6.92 vs. .14) and diastolic (-3.76 vs. 1.24) blood pressure only went down among participants viewing the tank when it contained fish, although only the difference for systolic was significant ( $p < .05$ ). Intriguingly this pattern in the physiological data was not reflected in participants' self-reported feelings of arousal and calmness. Arousal showed similar drops in both conditions (-.92 vs -1.36), and calmness showed similar levels of increase (.77 vs. .68).

## Conclusions

As far as we are aware, these data are the first to systematically monitor the added benefit of populating an environment with at least some biodiversity. Results so far suggest that even watching an empty tank may be physiologically and emotionally restorative but that there may be additional benefits from low levels of biodiversity. Research over the coming months will monitor the dose-response effects of growing biodiversity on the same physiological and psychological indicators.

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