

# EFFECTS OF ENVIRONMENTAL ENRICHMENT ON BEHAVIOUR OF SEA TURTLES IN REHABILITATION



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## Introduction

Environmental enrichment (EE) is a dynamic process that aims to enhance animal welfare<sup>1</sup>. Keeping wild animals in captivity is bound to compromise their welfare, so zoos and aquariums have been using EE in numerous species. The present study aimed at investigating the applicability of EE to sea turtles in a rehabilitation facility. The main objectives were to determine any behavioural effects of the enrichment devices and the possible decline of these effects, as well as to examine the use of EE in enhancing the rehabilitation process.



Fig.1: "Wooden platform"



Fig.2: "Ball tied to a rock"



Fig.3: "Pipe with fish"

## Results

- All turtles made contact with the enrichment "ball" (m=533,5 sec, s=372,5) and "pipe" (m=454,1 sec, s=164,2). Only one turtle did not touch or oriented towards the platform.
- There was no difference in the amount of repetitive behaviour between EE types (p=0.473). (Fig.4)
- The amount of repetitive behaviour shows a highly significant difference between the EE-group and the control (p>0.001). (Fig.4)
- There was no significant difference in interaction time across days and EE types (Days: p=0.6715; EE type: p=0.2275) (Fig.5).

## Materials & Methods

Six adult loggerhead sea turtles (*Caretta caretta*) were video-taped at ARCHELON's Sea Turtle Rescue Centre with three different enrichment devices (Fig.1-3) for five repetitions of 20-minute recording periods per item. An equal amount of time without EE was recorded before each enrichment session<sup>1,3</sup>. Each item remained at a different layer of the water column. Behavioural data were collected through recordings with Go Pro<sup>®</sup> cameras and analysed through the use of the INTERACT<sup>®</sup> programme<sup>2</sup>. Defined behavioural categories<sup>3</sup> were: Repetitive behaviour (Pattern Swimming or other repetitive movements), Random Swimming, Resting and Interaction (Contact & Orientation). To analyse the data, a linear mixed model was used. Repetitive behavior: EE type was set as a fixed effect, controlling for individual variation by using animal ID as a random effect. Interaction time: Session number and EE type were set as fixed effects, controlling for individual variation by using animal ID as a random effect.

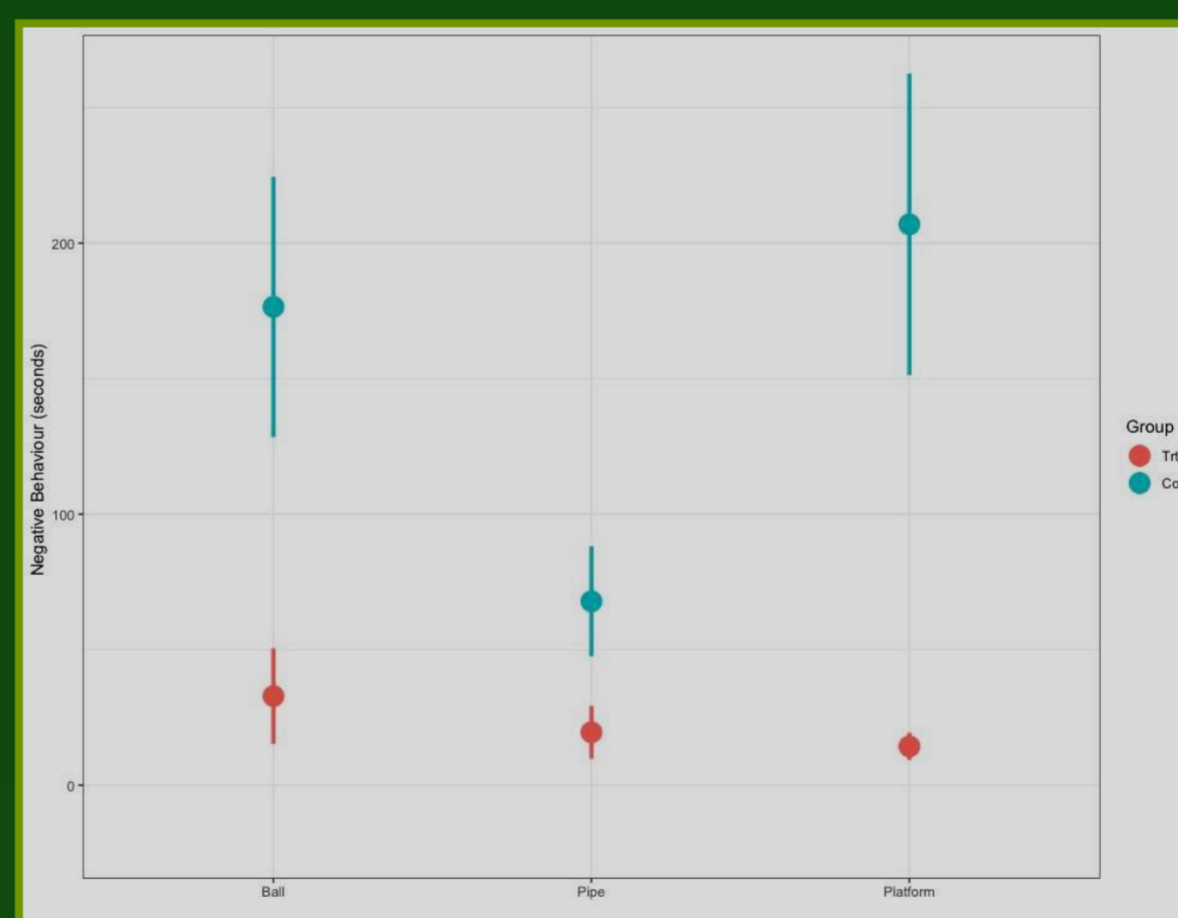


Fig.4: Repetitive behaviour across enrichment types (red) and compared to no enrichment (blue)

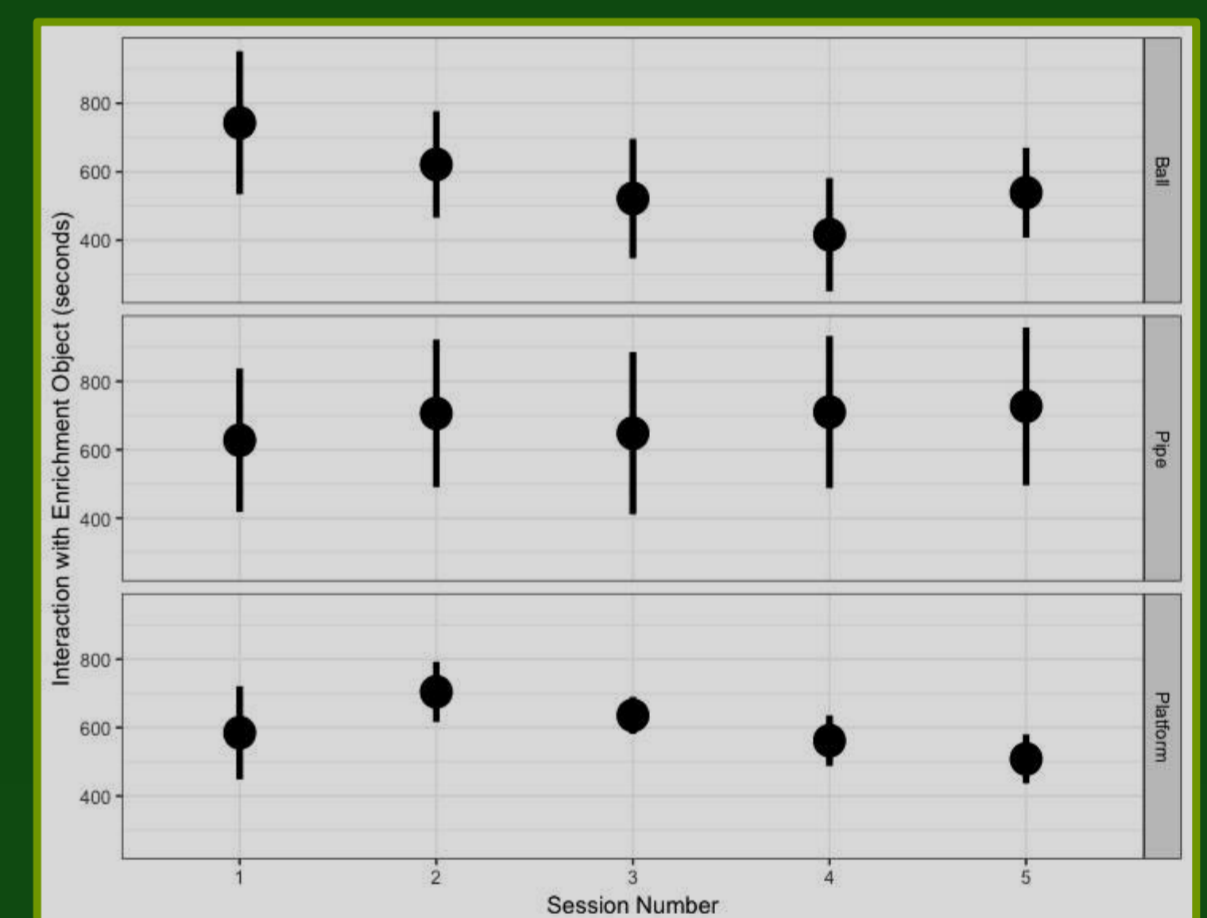


Fig.5: Interaction time over the course of repeated sessions (mean +/- standard error).

## Conclusions and Suggestions

- ❖ EE seems to positively affect sea turtles in rehabilitation by encouraging a variety of behaviours connected with the EE.
- ❖ The devices used in this study don't seem to lose attractiveness over time.
- ❖ Observations not included in this study suggest that EE can be used as a potential motive for buoyant turtles to dive.
- ❖ The information obtained about the individuals' activity and diving condition was incorporated into management decisions.
- ❖ The visibility of EE in the rehabilitation tanks evoked positive engagement with the topic in volunteers and visitors.
- ❖ Implementing EE programmes and conducting further research is vital since animal welfare is a pressing topic not only for domestic animals and wild animals in captivity but also for animals in conservation efforts worldwide<sup>4</sup>

## References

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## Acknowledgements

We would like to thank ARCHELON volunteers Maja Zamencka, Andréa Briançon and Aksel Berglund for the invaluable help in data collection. KE would like to thank the organizers and sponsors of the 6th Mediterranean Conference on Marine Turtles for the travel support.