



Check out some videos of the otters in action! Scan the QR code above

(PNGWING, Not dated)



Asian Short-Clawed Otters are semi-aquatic mammals (Basnet *et al.*, 2020), listed as vulnerable on the IUCN Red List, with a 30% population decline over the past 30 years (Wright *et al.*, 2021).

INTRODUCTION

Research at Askham Bryan Wildlife and Conservation Park investigated the effect of 3 food-based enrichment devices on 2 Asian Short-Clawed Otters. The aim was to improve husbandry procedures and create opportunities for enrichment, contributing to zoo welfare management.

METHODS

- Research period: 31 January 2024 - 29 February 2024
- Enrichment was provided via difficulty level: hay-stuffed cardboard box, hay-stuffed watermelon and dig box containing leaf litter (Figures 1,2 and 3). All enrichment contained food from an existing diet plan.
- Three hours of data was collected per enrichment across two 1.5-hour intervals
- Behaviour was assessed before, during and after enrichment in 30-minute intervals using a behavioural ethogram using Instantaneous scan recording every 30 seconds

OBJECTIVES

- To use a behavioural ethogram to detect behaviours being portrayed using instantaneous scan recording every 30 seconds during 1.5-hour data collection periods.
- To analyse the Asian Short Clawed Otter's behaviour before, during and after data collection periods in 30-minute intervals to determine if the enrichment device has affected behaviour during the periods and if so, why?
- To study each enrichment device over two observation sessions at the same time of day to discover any changes.
- To assess the different difficulty levels towards each enrichment device and determine if this affects behaviour and interactions.

The Effectiveness of Enrichment Devices on Asian Short-clawed Otter (*Aonyx cinereus*) Behaviour

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DISCUSSION

- The otters obtained food more quickly during the second enrichment session and learned to interact with devices socially but extracted meat independently. This agreed with Saliveros *et al.* (2020) and Saliveros *et al.* (2022).
- Enrichment was proven to decrease excessive vocalisation behaviours and increase activity levels, contributing towards good welfare management.
- The study confirms that enrichment encourages natural behaviours, such as nest-building in females.
- The cardboard box was the most effective regarding behaviour, suggesting an incorrect ranking of devices.
- The null and alternate hypotheses were rejected because there was a significant difference in cardboard box enrichment based on the number of behaviours exhibited.
- The time spent by the otters interacting with each device was not significantly different, and thus the null hypothesis could not be rejected, as all sessions during and after enrichment equally impacted behaviour.
- Overall, all devices promoted natural behaviours and increased activity, contributing to positive welfare. However, the recording method had limitations on the data collected, so further research is necessary.

NEXT STEPS

More research is needed that records behaviours at different times of day and across seasons to assess effectiveness in more detail.

- ❖ Study how otters respond to food-based enrichment devices that mimic foraging challenges in their natural habitat for reintroduction purposes.
- ❖ Water-based enrichment studies
- ❖ Compare the effects of non-food-based and food-based enrichment to determine their impact on behaviour.



Figure 1: Cardboard box (Source: Author's Own, 2024)



Figure 2: Watermelon (Source: Author's Own, 2024)



Figure 3: Dig Box (Source: Author's Own, 2024)

HYPOTHESIS

H⁰ There will be no statistically significant difference in the number of behaviours exhibited with each enrichment device offered

H¹ There will be a statistically significant difference in the number of behaviours exhibited with each enrichment device offered.

H⁰ There will be no statistically significant difference in the time spent by the otters interacting with each enrichment device offered based on difficulty level.

H¹ There will be a statistically significant difference in the time spent by the otters interacting with each enrichment device offered based on difficulty level.

RESULTS

- Wilcoxon Signed-Ranks tests revealed a statistically significant difference in pre- and post-enrichment for cardboard box ($p < 0.05$), but no statistically significant difference was found for the other devices ($p > 0.05$).
- The Kruskal-Wallis Test showed that watermelon enrichment yielded the highest number of observed behaviours, followed by the cardboard box and then the dig box (Figure 13), but there was no statistically significant difference between each device ($p > 0.05$).
- Figure 14 displays the count of observed behaviours in each session for every enrichment device during enrichment. Figure 15 shows the behaviours before enrichment.
- Figure 16 shows the time taken to obtain the first piece of food per session.

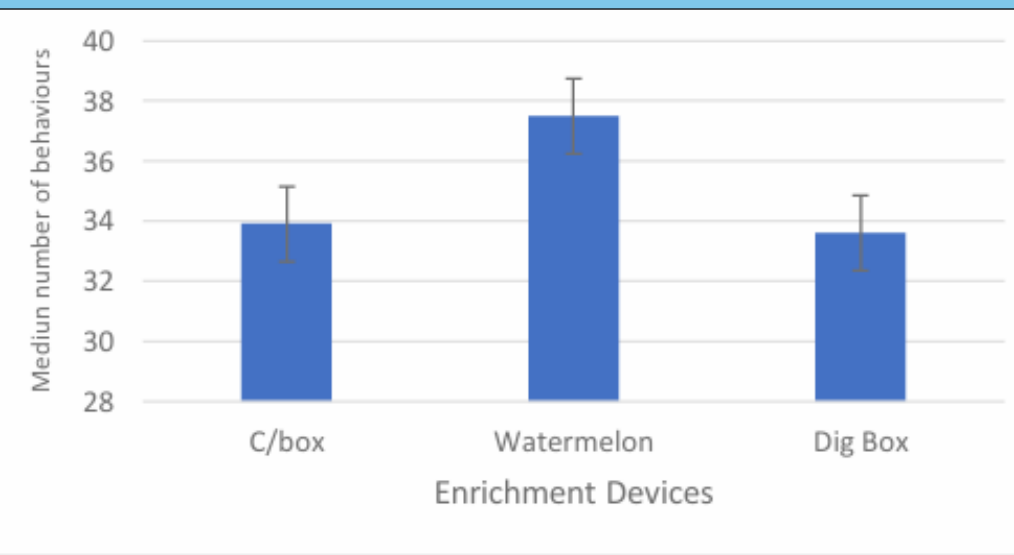


Figure 4: Bar chart representing the median of behaviours observed during enrichment.

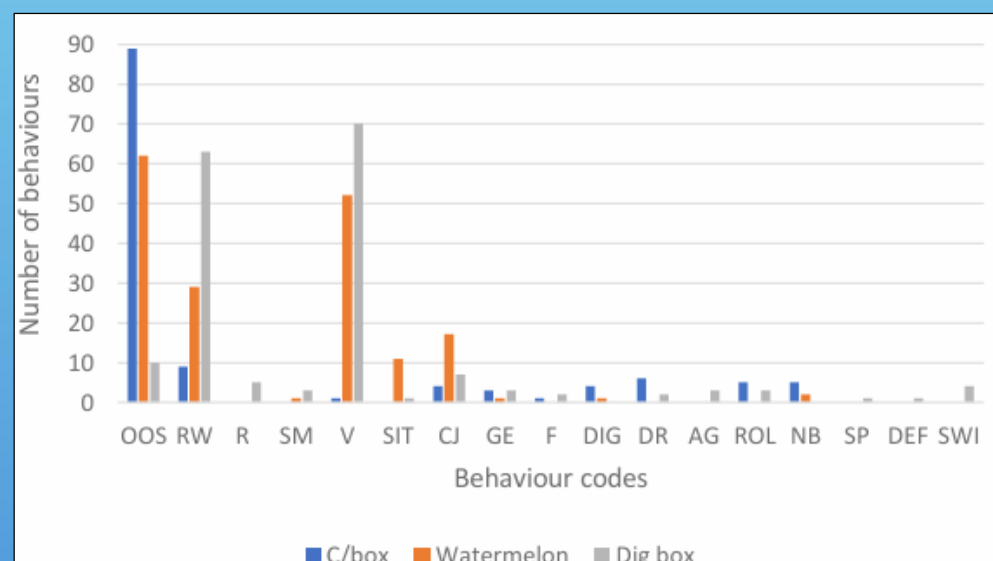


Figure 6: Same as Figure 5 but shows the behaviours exhibited before enrichment

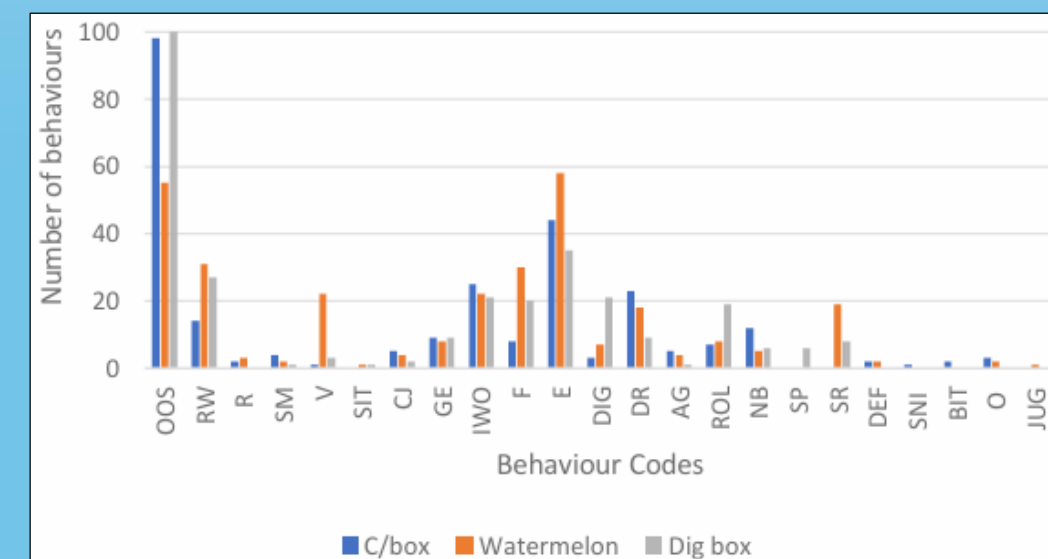


Figure 5: During the enrichment sessions, the bar chart presents the observed behaviour codes and the frequency of their occurrence.

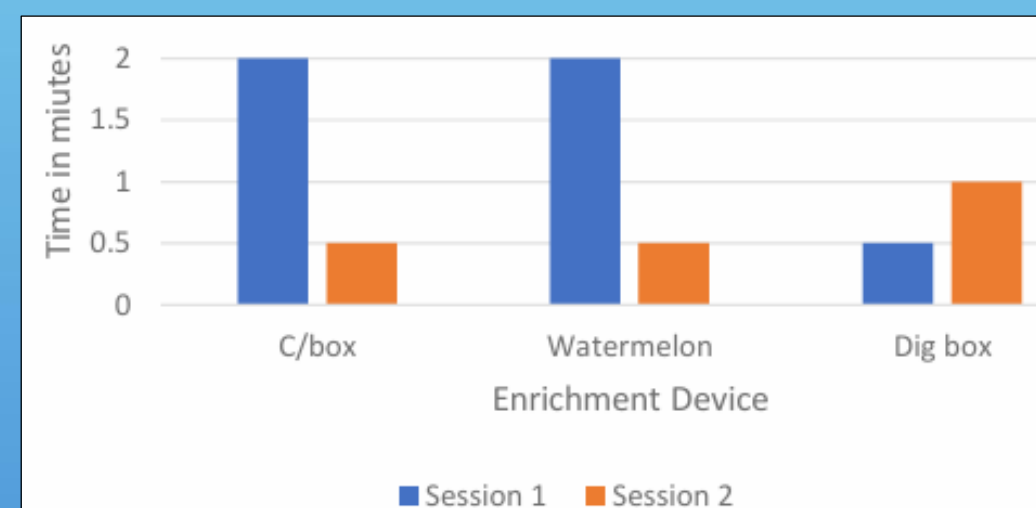


Figure 7: The time taken in minutes for the otters to forage for the first piece of food during sessions 1 and 2 per enrichment device.

Askham Bryan Wildlife and Conservation Park. 2024. ABWP Logo [Online photograph]. ABWP. Available from: [Askham Bryan - Wildlife and Conservation Park \(abwplifeandpark.co.uk\)](https://www.askham-bryan.ac.uk/wildlife-and-conservation-park/).

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