

SWIPE RIGHT TO MATCH THE STRIPES

WHICH FACTORS IMPACT PAIR COMPATIBILITY IN OKAPI?

A look at male aggressive behaviour during breeding introductions.

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INTRODUCTION

- Pair incompatibilities caused by limited free mate choice, can undermine the goals of a breeding programme (Martin-Wintle *et al.*, 2019).
- Within the Okapi (*Okapia johnstoni*) EEP (EAZA *Ex-situ* programme) episodes of male aggressive behaviour during breeding introductions have been observed and are associated with incompatibility of the pair.
- Understanding which husbandry and biological factors influence or predict this aggressiveness is an essential tool to manage and improve the programme.
- In this study we investigated the influence of age difference, calf socialisation and 2 different oestrus husbandries in the occurrence of male aggressive behaviour.

Martin-Wintle, M.S., Wintle, N.J., Díez-León, M., Swaisgood, R., & Asa, C. (2019). Improving the sustainability of ex situ populations with mate choice. *Zoo biology*, 38 1, 119-132

METHODS

- A survey was conducted among the okapi EEP holders questioning which pairs displayed **male aggressive behaviour**;
- Which type of **oestrus husbandry** (binomial) was used for each pair - introductions only during the female's oestrus (O) vs. frequent introductions also outside of the female's oestrus (I);
- **Socialisation** (binomial) opportunities experienced by each member of the pair before sexual maturity - introduction to other okapis beyond the dam.
- All data was computed into a **Binomial GLMM** using 73 breeding pairs.

RESULTS & DISCUSSION

HOW MANY PAIRS DISPLAY MALE AGGRESSION?

About one third of the pairs displayed male aggression during breeding introductions. Only 6 pairs were reported as having been always aggressive (5%). These pairs did not produce any offspring.

A total of 118 pairs in the EEP, from 22 zoos were accessed.

66%
Of pairs without aggression episodes

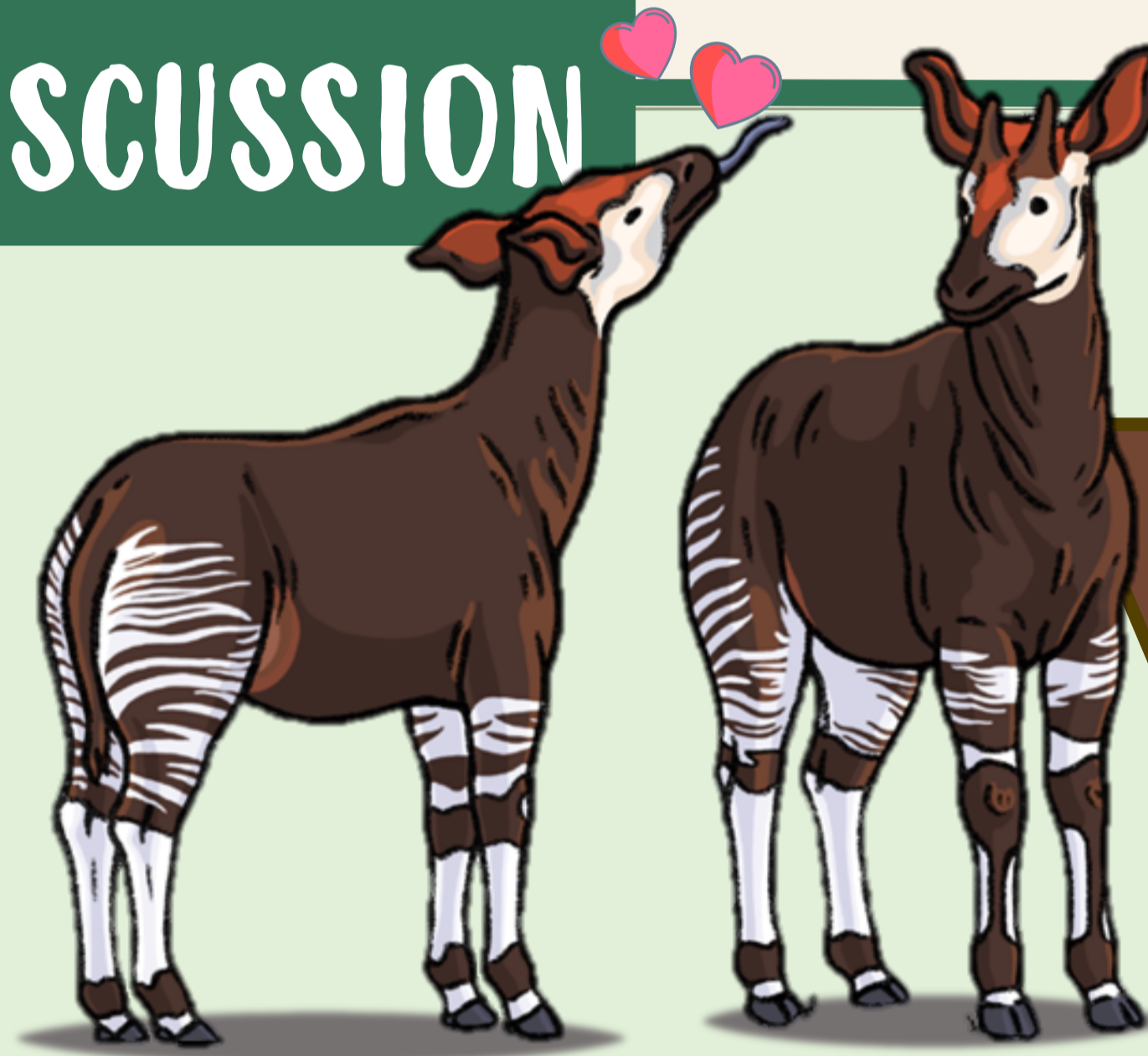
29% of pairs where some introductions with aggression occurred

5% of pairs where the male was always aggressive

The two oestrus husbandries were nearly equally common among the pairs.

54% of pairs together outside of the oestrus

46% of pairs together only during oestrus



WHICH FACTORS CONTRIBUTE TO THE OCCURRENCE OF MALE AGGRESSION?

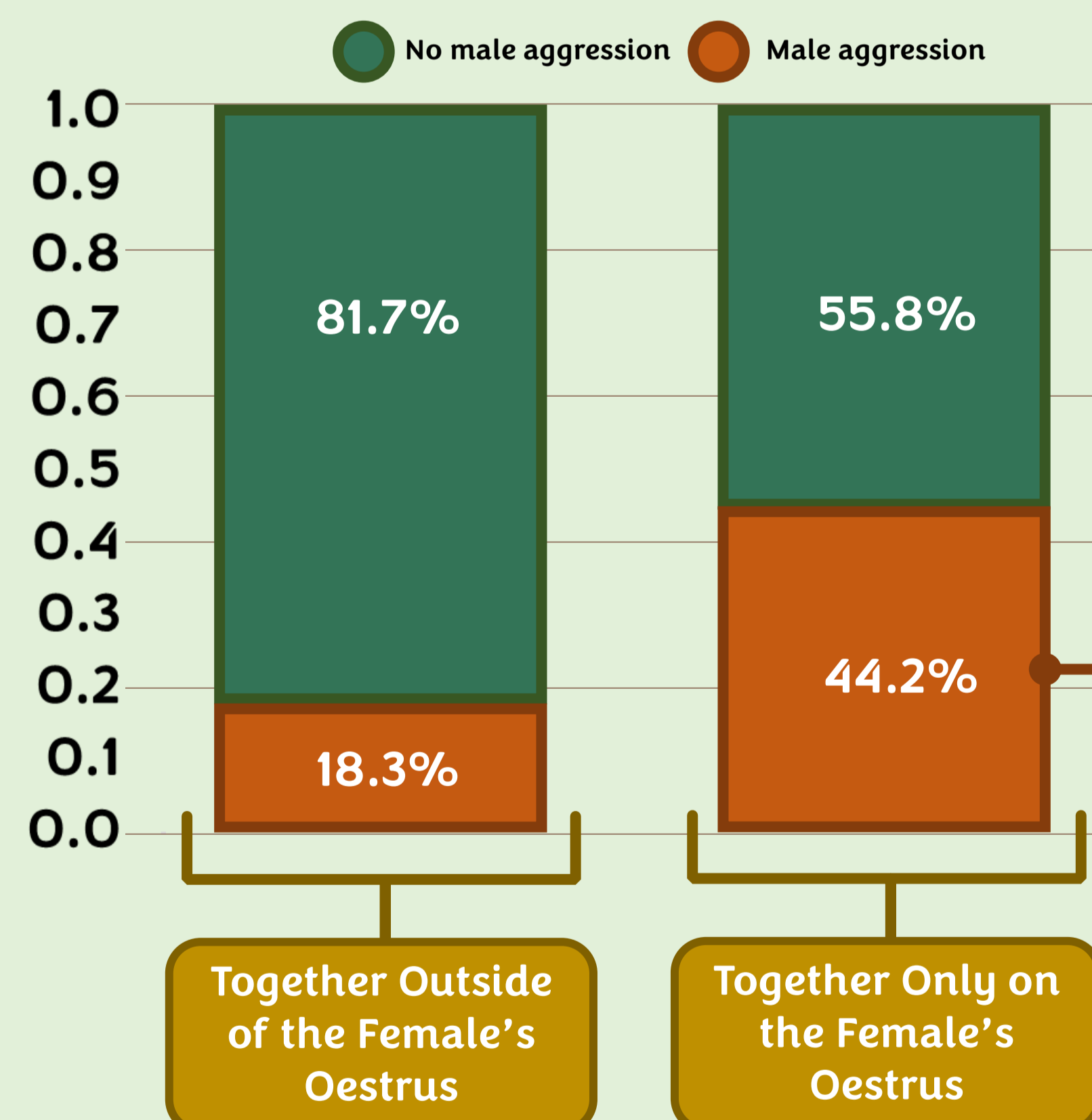
GLMM

Response variable: occurrence or no occurrence of aggression

Explanatory Variables	Estimate	Pr(> z)
Age Difference	0.03962	0.92586
Male Socialisation	5.08581	0.06533
Female Socialisation	-10.301	0.30877
Oestrus Husbandry	-19.2481	0.00158 **

HOW THE MALE AGGRESSION RELATES WITH THE OESTRUS HUSBANDRY?

The proportion of pairs that displayed aggression was higher when introductions were restricted to the oestrus period.



The **oestrus husbandry** chosen for each pair influences the likelihood of aggressive behaviour during breeding introductions. Pairs that were **introduced regularly**, either during the female's oestrus or not, seem to perform better during breeding introductions; without display of aggressive behaviour.

This regular contact possibly allows the pair to build up necessary **familiarity** with each other and exchange important individual and reproductive cues which lead to successful pairing and mating.

However, our study is not fully capable to tell if the husbandry chosen was influencing the occurrence of aggression or if the occurrence of aggression determined the husbandry chosen by the keepers for that particular pair.

Interviews with keepers during our study revealed that sometimes their perception of pair compatibility would influence if they would introduce the pair regularly (outside oestrus) or solely for breeding attempts (only during oestrus) to prevent potential aggression episodes. Hence revealing a possible **human bias** in the management of the animals and a possible **confounding factor** in our results.

CONCLUSIONS

- Despite the issues highlighted in this study, the okapi EEP is successful in breeding its animals. However, nearly one-third of pairs with reported cases of male aggression represent an issue for its management. These cases lower the breeding efficiency and increment the logistics of the programme.
- This study points out that some husbandry practices related to introductions and the oestrus can play a role in the occurrence of male aggression. More pairs that were allowed to be together more often regardless of the oestrus status of the female were reported as not having issues with male aggressiveness. Perhaps this practice promotes familiarity and the exchange of reproductive cues, which are linked to mating success.
- Nevertheless, we suggest that further research is still required to understand the mechanisms related to pair compatibility in okapi, including the role of the oestrus husbandry since we suspect that a human bias can be behind our results.



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