Effects of interactive visitor encounters on the behaviour and welfare of animals commonly housed in Australian zoos

Lydia Acaralp-Rehnberg
PhD candidate
Supervisors: Dr Ian Bland, Prof Grahame Coleman, Dr Michael Magrath, Dr Vicky Melfi
Background

❖ The modern zoo – an interactive experience
- Live animal encounters now offered at many institutions
Background

- The modern zoo – an interactive experience
  - Live animal encounters now offered at many institutions
  - Live animal encounters may improve the learning experience, create an emotional connection between people and wildlife and contribute financially to wildlife conservation
Background

❖ The modern zoo – an interactive experience
- Live animal encounters now offered at many institutions
- Live animal encounters may improve the learning experience, create an emotional connection between people and wildlife and contribute financially to wildlife conservation

❖ Welfare of program animals – a new area of research
Research aim

To determine the overall impact on behaviour, physiology and short-term welfare of interactive encounters in certain species commonly involved in encounter programs.
3 species
3 independent studies
1 research question-approach
3 species
3 independent studies
1 research question

Serval - finished
Giraffe - finished
Reptiles – proposed
‘The effect of behind-the-scenes encounters and interactive presentations on the behaviour and welfare of captive servals’
Study animals

Serval

*Leptailurus serval*

**Morilli** ♀
Age: 8 years old

**Nanki** ♀
Age: 8 years old

Image credit: Suzanne Szabo
Serval presentations and behind-the-scenes

- **Presentation:** Takes place once daily at a designated presentation area. Serval performs a routine training session together with keeper. High visitor numbers – low visitor/animal proximity and interaction. 10 min duration.
Serval presentations and behind-the-scenes

❖ Presentation: Takes place once daily at a designated presentation area. Serval performs a routine training session together with keeper. High visitor numbers – low visitor/animal proximity and interaction. 10 min duration.

❖ Behind-the-scenes (BTS): Takes place 4 days/week inside serval enclosure. Low visitor numbers (max. 6 participants) – high visitor/animal proximity and interaction (patting and feeding). 30 min duration.
Each treatment was imposed for one week, and repeated three times in a randomised order over a period of 12 weeks. The cats alternated between treatments.

- **Treatment 1** – Presentations
- **Treatment 2** – Behind-the-scenes
- **Treatment 3** – Presentations & BTS
- **Treatment 4** – No visitor interaction
Behavioural observations

- Behaviour recorded with CCTV cameras for 8x15 or 30 min recording sessions per observation day (3 last treatment days of each week). Morning and afternoon, pre- and post presentation and BTS, during pres. and BTS (non-participating cat).

- Activity budget: Inactive and active behaviours, maintenance behaviours, pacing. Scan sampling every 60 s.
The Animal Welfare Science Centre

Activity budget - Nanki

Percentage scans where behaviour is observed

- Inactive behaviours
- Active behaviours
- Maintenance
- Pacing
Activity budget - Nanki

Percentage scans where behaviour is observed

Inactive behaviours
Active behaviours
Maintenance
Pacing

1 - Pres. only
2 - BTS only
3 - Pres & BTS
4 - No interaction
Activity budget - Nanki

Percentage scans where behaviour is observed

Inactive behaviours
Active behaviours
Maintenance
Pacing

1 - Pres. only
2 - BTS only
3 - Pres & BTS
4 - No interaction
% scans where pacing is observed (mean)
% scans where pacing is observed (mean)
% scans where pacing is observed (mean)
The Animal Welfare Science Centre

% scans where pacing is observed (mean)

**Nanki**

- Pacing reduced by 30%

**Morilli**

- Pacing reduced by 60%
Behavioural observations during presentations

- Recorded serval behaviour with camcorder during presentations
- Quantified vigilance (no. of head turns), percentage time spent hidden, proximity to visitors (scan every 60 s – proximity level 1, 2 or 3) and frequency of ignorant behaviour
The Animal Welfare Science Centre

**Vigilance**

- **Vigilance (no. of headturns)**
- **No of visitors**

<table>
<thead>
<tr>
<th>Time spent hidden</th>
<th>No of visitors</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.00%</td>
<td>20</td>
</tr>
<tr>
<td>20.00%</td>
<td>30</td>
</tr>
<tr>
<td>25.00%</td>
<td>40</td>
</tr>
<tr>
<td>30.00%</td>
<td>50</td>
</tr>
<tr>
<td>35.00%</td>
<td>60</td>
</tr>
<tr>
<td>40.00%</td>
<td>70</td>
</tr>
</tbody>
</table>

**Time spent hidden**

- **Time spent hidden**
- **No of visitors**

The graphs show the relationship between vigilance (number of headturns) and the number of visitors. The data points are color-coded to distinguish between two subjects, Morilli and Nanki.
1.5
2
2.5
3

Mean proximity
(1 = close, 2 = intermediate, 3 = distant)

No of visitors

Morilli
Nanki

Ignorance

No. of times showing ignorant behaviour

No of visitors
Other variables that may affect behaviour during presentations:

❖ Unexpected events (noise, sudden movements)
❖ Environmental stimuli (small prey items, scents, strong winds)
Summary – main findings

❖ Trend towards lower levels of pacing when cats are engaged in presentations or presentations and BTS, compared to when they undertake BTS only or no visitor interaction.

- May suggest that visitor interaction has an overall positive effect on the servals, if performed in a controlled setting according to a predictable regime.

❖ Levels of pacing were not consistent throughout the day – pacing appears to be clustered mainly around the activity the cat is not undertaking, i.e. cats appear to be frustrated and prone to pacing when missing out on presentations and BTS.

- High levels of pacing occurs for relatively short periods of time. To reduce pacing levels for the non-participating cat, some form of distraction may be useful – enrichment?
Summary – main findings

- A housing effect was detected – pacing levels generally lower when cats are housed in the yard compared to the dens.

- Implementation of a second serval yard to give cats access to a yard at all times would most likely be beneficial for reducing pacing levels overall.

- Servalx appears to be highly motivated to participate in both presentations and BTS, and in particular presentations – but why?? Do they find visitor interaction stimulating or are they motivated by food rewards, keeper interaction or a temporary change of environment?

- Further experimentation would be required to determine if visitor interaction has a positive or a neutral welfare effect.
Thank you for your attention!

My warmest thanks to:
Keepers and managers at Melbourne Zoo and Werribee Zoo 🌟
Volunteer helpers and back-up observers 🌟
Supervisors and other relevant people (Sally, Paul, Emily, Kym, Kerry) 🌟

My loyal and supportive family and friends 💖