'Love Your Locals': Conservation impacts of zoo campaign for local non-traditional flagships

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What are flagships and what are they supposed to do

- Flagship species are a public campaign tool to improve conservation
- Not synonymous with keystone or indicator species
- Any species is a potential flagship
- Success defined by increasing public awareness of conservation threats and/or stimulating pro-conservation behaviours (Caro, 2010)

Expected ‘Flagship Responses’

Flagship Model of Success

Species + Public awareness & action = FLAGSHIP SPECIES

(Simberloff, 1998)
Who are flagships and why?

- Species with broad public appeal, or charisma
- Very large, or megafauna
- “Cute” and “cuddly” - easy to sell in gift shops

- Used to highlight threats to biodiversity
  - Elephants – poaching
  - Polar bears – climate change
  - Orangutans – habitat loss
Challenges to flagship use and outcomes

- Popularity mistaken for flagship responses
- Species most in need of conservation are often not charismatic and/or megafauna
- Alternative charismatic characteristics underdeveloped
- Zoos are rich lab to explore alternative characteristics and flagship responses
Study Objectives

1. Investigate the influence of visitors’ attitudes towards endemism on flagship responses

2. Explore role of non-traditional charismatic features in flagship responses

3. Test the ability of non-traditional species to deliver flagship responses
Study Framework

Zoos Victoria Model

**Independent Variables:**
- Endemism
- Species Characteristics:
  - Conservation Status
  - Familiarity
- Trip Characteristics:
  - Interpretation
  - Exhibit Design

**Dependent Variables:**
- Conservation Caring
  - Emotional connection to species
- Species Oriented Behaviors
  - Benefit a single species performed on-site
- Biodiversity Oriented Behaviors
  - Benefit wildlife in general performed off-site

Study Model

Connect → Understand → Act
Study Site

Melbourne Zoo (Melbourne, Victoria, Australia)
- Founded in 1862
- Approx. 1.3 million visitors/year
- Avg. 3.5 hours/visit
- 305 species housed, 2200 specimens
Methods

- Pilot test (N = 130) July 2012
- Final survey (N = 250) September – October 2012
- All items rated on 9-point Likert scale

Independent Variables
- **Endemism**: attitudes towards Australian wildlife (4 items)
- **Species Conservation Status**: status in wild, threats, strategies (3 items)
- **Species Familiarity**: ability to relate to animal (3 items)
- **Trip Characteristics**: interpretation & exhibit design (6 items)

Dependent Variables
- **Conservation Caring**: emotional connection to species (5 items)
- **Species Oriented Behaviours**: benefit a single species, performed on-site (6 items)
- **Biodiversity Oriented Behaviours**: benefit wildlife in general, performed off-site (4 items)

Analyses
- Outlier screening
- Factor Development of IV’s
- Model development & fit for influence of IV’s on flagship responses
## Fit Indices

<table>
<thead>
<tr>
<th>Fit Indices</th>
<th>$\text{SB} \chi^2 \ (df)$</th>
<th>CFI</th>
<th>NNFI</th>
<th>SRMR</th>
<th>RMSEA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Measurement Model – Initial</strong></td>
<td>880.83 (413) $p &lt; .05$</td>
<td>.86</td>
<td>.85</td>
<td>.073</td>
<td>.076</td>
</tr>
<tr>
<td><strong>Measurement Model – Final</strong></td>
<td>556.81 (355) $p &lt; .05$</td>
<td>.94</td>
<td>.93</td>
<td>.074</td>
<td>.054</td>
</tr>
<tr>
<td><strong>Structural Model – Final</strong></td>
<td>732.78 (423) $p &lt; .05$</td>
<td>.91</td>
<td>.90</td>
<td>.13</td>
<td>.061</td>
</tr>
</tbody>
</table>
Final Structural Model

Species Conservation Status → Conservation Caring
β = 0.37

Species Familiarity → Conservation Caring
β = 0.33

Trip Characteristics → Conservation Caring
β = 0.35

Endemism → Conservation Caring
β = -0.14

Species Oriented Behaviours

R² = 0.31

Conservation Caring → Species Oriented Behaviours
β = 0.53

R² = 0.37

Species Oriented Behaviours → Biodiversity Oriented Behaviours
β = 0.39

R² = 0.63

Note negative value
Affect of Attitudes Towards Endemism on Flagship Responses

- A valid factor was developed to assess zoo visitors’ attitudes towards endemism ($\alpha > .8; \rho > .8; \text{CFI} = .92$)

- No significant affect on Conservation Caring or species oriented behaviours.

- Produced weak negative affect ($\beta = -.18$) on willingness to perform biodiversity oriented behaviours.

- Overall, attitudes towards endemism may have a neutral to negative influence on flagship responses.
## Role of Non-traditional Charismatic Features on Flagship Responses

<table>
<thead>
<tr>
<th></th>
<th>Species Conservation Status</th>
<th>Species Familiarity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cronbach’s α</td>
<td>.76</td>
<td>.85</td>
</tr>
<tr>
<td>Rho (ρ)</td>
<td>.78</td>
<td>.87</td>
</tr>
<tr>
<td>CFI</td>
<td>.99</td>
<td>.99</td>
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</tbody>
</table>

### Flagship Responses

<table>
<thead>
<tr>
<th>Ability to stimulate concern</th>
<th>Strong (β = .37)</th>
<th>Strong (β = .33)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability to stimulate action for species</td>
<td>Indirect only</td>
<td>Indirect only</td>
</tr>
<tr>
<td>Ability to stimulate action for biodiversity</td>
<td>Indirect only</td>
<td>Indirect only</td>
</tr>
</tbody>
</table>
Can Non-traditional Species Deliver Flagship Responses?

- Zoo experience can facilitate a strong connection to a species ($R^2 = .37$) but is not a direct predictor of behaviour.

- Visitors’ connection to a species is strongly predictive of species ($\beta = .56; R^2 = .31$) & biodiversity oriented behaviours ($\beta = .53; R^2 = .63$).

- Interpretation & exhibit design can have a strong positive influence on conservation caring ($\beta = .35$), but are a weak negative influence on biodiversity oriented behaviours ($\beta = -.14$).
Conclusions

- Non-traditional species are capable of generating support for themselves and biodiversity in general.

- Zoos have an embarrassment of riches when it comes to potential flagship species.

- Make messages species specific – even when discussing biodiversity in general.

- Increase opportunities for on-site pro-conservation behaviours.
Acknowledgements

This study was made possible by the generous support of Zoos Victoria.