

Human impacts on the green iguana, *Iguana iguana*, on St Thomas, US Virgin Islands

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Introduction

St. Thomas is very reliant on tourism for economy. However, the effects of tourism and development are harmful toward the environment; such detrimental effects are often enhanced on islands. The green iguana, *Iguana iguana*, on St Thomas has become a flagship species amongst tourist amenities such as hotels and restaurants, some of which carry out public feedings to encourage iguanas onto their property. Food provisioning may increase the survivorship of the iguanas through improved feeding frequency. Conversely, it may also severely disrupt the natural behaviour, physiology and nutrition of the iguanas. In addition, close contact between animals and humans may cause injury. This study aimed to measure the impacts that tourism and development are having on the iguanas on St Thomas. We carried out comparisons of flight behaviour, average size, and injury number between rural and populated areas. We also conducted surveys on residents and tourists, to compare their knowledge and opinions of the green iguana.

Hypothesis 1: Iguanas in rural areas show greater wariness

Hypothesis 2: Iguanas in developed areas have poorer body condition

Hypothesis 3: Tourists show greater interest in iguanas than locals

Methods

- We selected our study sites and categorized them into 3 types of area:

Resort areas **Tourist areas** **Rural areas**



- Observed number of injuries, size and gender of iguanas
- Approached the iguanas and recorded flight initiation distance (Berger *et al.* 2007; Hines 2011)
- Distributed surveys amongst residents and tourists (N=30 in each area type)
- Collected and examined faecal samples
- Data analysis



Results

- Iguanas in rural areas showed greater wariness to humans than those in resort and tourist areas. Males in resort areas exhibited the smallest flight initiation (Figure 1).
- Iguanas in tourist areas were in worse body condition than iguanas found in resorts and rural areas. Iguanas in rural areas appeared larger in general (Figure 2).

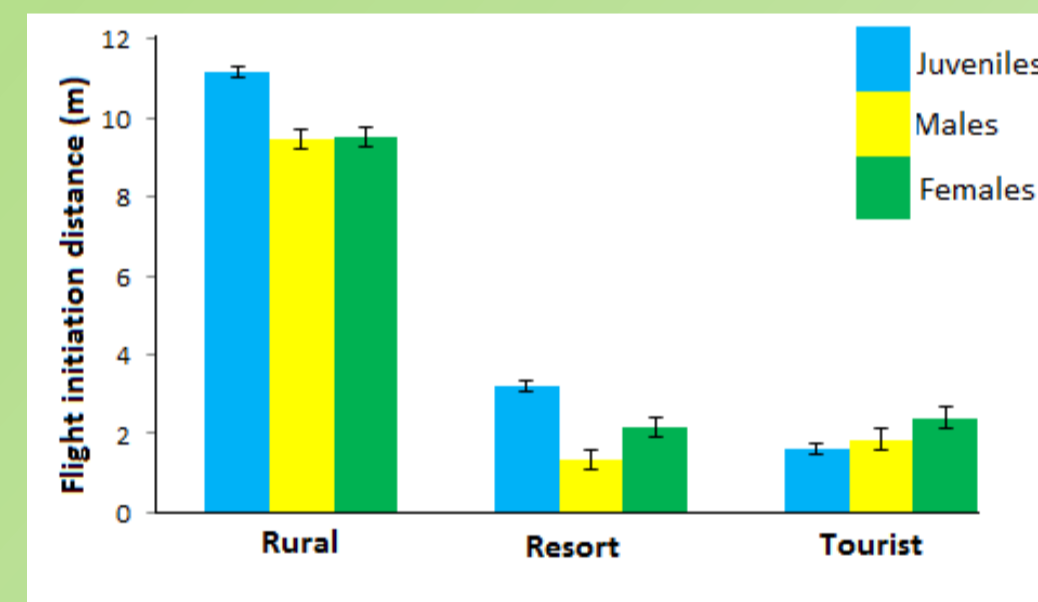


Figure 1 Flight initiation distance in the three areas, amongst juveniles, females and males. All iguanas were significantly more wary in rural areas ($p < 0.05$)

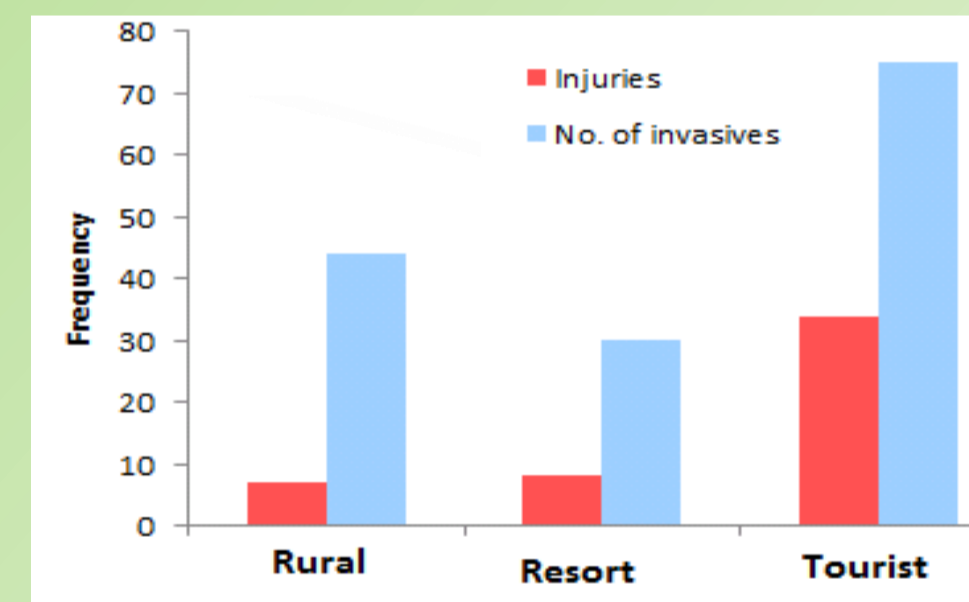


Figure 2 The number of invasive species and injuries in the three area types. Significant correlation found in tourist areas ($P < 0.05$).

- Residents appeared hostile and disliked the iguanas in contrast to the tourists who showed appreciation and positive interest (Figures 3 and 4).

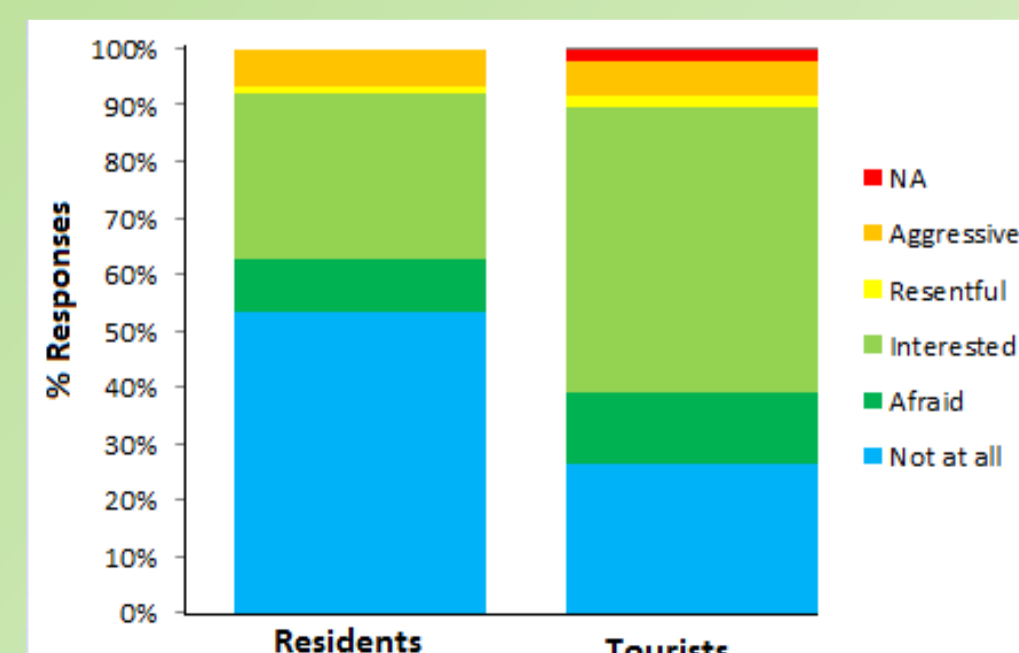


Figure 3 Opinions of visitors and residents as to how they react towards iguanas. Mann-Whitney test showed that there was significant difference in opinion ($p < 0.05$)

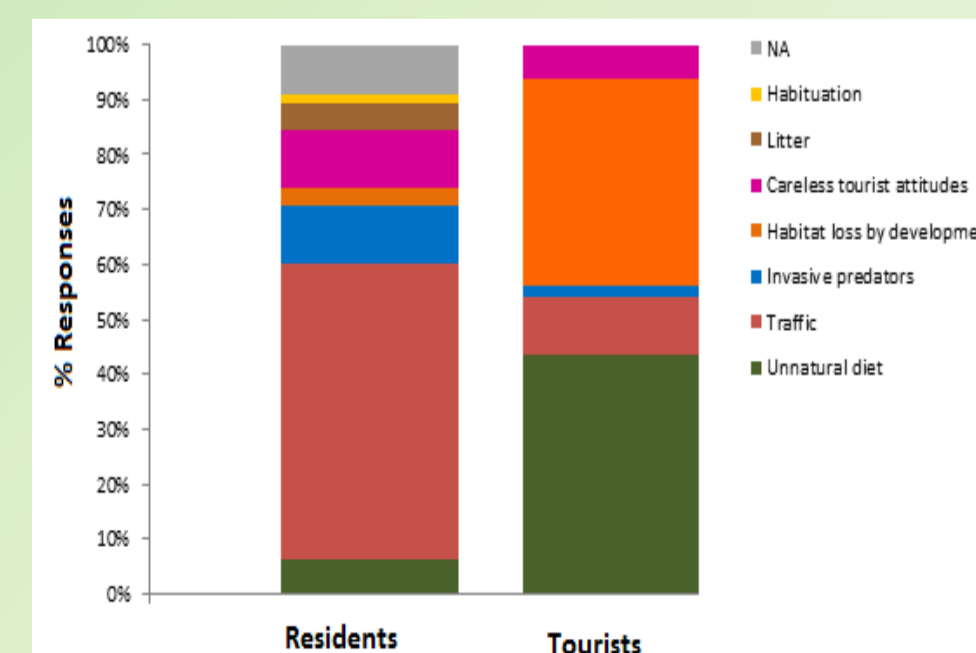


Figure 4 Opinions of visitors and residents in regards to what poses the greatest threats to the iguanas. Kruskal-Wallis test showed significance ($p < 0.05$)

Discussion

Hypothesis 1

- There was evidence of iguanas in tourists areas habituating to the presence of humans. Contrastingly, in rural areas iguanas had little contact with humans and so retained much of their natural wariness.

Hypothesis 2

- Overall iguanas found in resort areas were larger than those in touristic and rural.
- Iguana populations in tourist areas lacked natural resources, making them reliant on humans for food. This led to an increase in intra-specific competition when no humans were present, causing a significant increase in the amount of injuries in tourist areas. This was intensified by the number of invasives.
- We found that iguanas in tourist areas were feeding on unnatural food items unlike those in resort areas, where there were signs aimed at preventing feeding.

Hypothesis 3

- Tourists tended to show more interest in iguanas and saw them as a novelty. Whereas residents regarded them more as pests.



Conclusion

- The green iguana on St Thomas is both directly and indirectly affected by the impacts of tourism and urbanisation. It is subject to careless tourists, hostile residents and predation by invasive animals, such as pets.
- Iguanas in resort areas were protected from an unnatural diet and dangers such as vehicles, but the close proximity to humans caused abnormal changes to their behaviour (Berger *et al.* 2007).
- There is a law currently protecting the iguanas on St Thomas, however on Puerto Rico there is no such protection and iguanas are regularly killed and eaten. The hostile opinions of residents towards iguanas threaten this protective law.
- Little is known about the history of the iguana population on St. Thomas but genetic analyses are being done to find their origin.

References

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