

# Vigilance and flight behaviour of four macropodid marsupials in response to human approach



Manuela Barry\*, David B. Croft  
 UNSW Arid Zone Research Station, Fowlers Gap, via Broken Hill, NSW 2880  
 \*contact: manuelabarry@gmx.de



## Introduction

Wildlife tourists may not only enjoy the challenge of spotting kangaroos in their natural environment but they are also likely to try to approach such wildlife in order to improve their viewing experience. Satisfaction with the wildlife interaction may therefore depend on the degree to which wildlife subjects habituate to repeated human contact.

Our work examines the flight responses shown by four kangaroo species (Fig.1-4) to ambulatory human approach. This simulates the behaviour of a tourist who may follow a walking trail in order to observe kangaroos close at hand and thereby seek a satisfying wildlife tourism experience.



Figure 2: Eastern Grey Kangaroo (*Macropus giganteus*)



Figure 1: Western Grey Kangaroo (*Macropus fuliginosus*)

## Objectives

This study was conducted to gather information about

- variation in flight patterns between species and age/sex classes within species
- environmental and habitat factors which may affect the flight responses
- development of habituation to repeated human contact.

Further it gives predictions on the degree of disturbance that ambulatory tourists may have on these free-living kangaroos.



Figure 3: Euro (*Macropus robustus erubescens*)



Figure 4: Red Kangaroo (*Macropus rufus*)

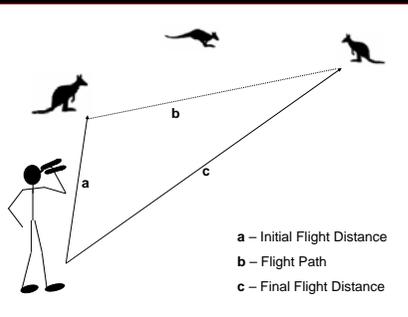


Figure 5: Flight distances recorded after the approach

## Methods

- two 5-km trails through representative habitat of each species were alternately walked two times daily for a 9-week period
- flight response (Fig. 5) to the human approach was recorded
- three different types of tourist approach were tested
  - **single approach** (1 person; uniform appearance)
  - **group approach** (3 persons)
  - **approach with a novel observer appearance** (carrying open umbrella)

## Results

- Red Kangaroos are the most flighty species (Fig. 6)
- initial flight distance is weakly positively correlated to flight path (Fig. 7)
- during approach kangaroos showed mainly medium alert behavior (Fig. 8)
- no reduction in flight response (habituation) was found over the 9-week study period
- group approach led to significant longer initial flight distances (Fig. 9)
- different approach styles had no influence on the vigilance behaviour
- factors which significantly affected the flight response are:

Factors	Initial Flight Distance	Flight Path	Final Flight Distance
approach style	✓	✓	✓
species	✓	✓	✓
distance to next conspecific	✓	✓	✓
group/age-sex class	✓	✓	✓
start cover	✓	✓	✓
time of day	✓	✓	✓
start cover*distance to next conspecific	✓	✓	✓

✓ p<0.05

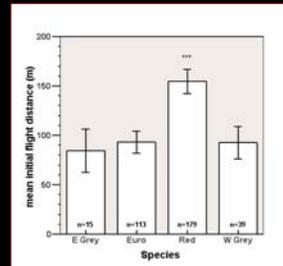


Figure 6: Mean ( $\pm$  SE) species flight distance after ambulatory approach (\*\*\*)  
 (\*\*\*)  $P < 0.001$  represents significant differences in initial flight distance

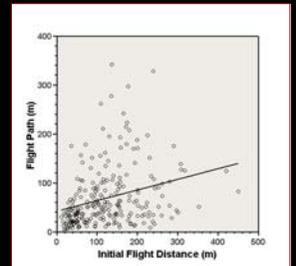


Figure 7: Relationship between Initial Flight Distance and Flight Path ( $R^2 = 0.08$ ;  $y = 42.05 + 0.22x$ ;  $F = 20.75$ ;  $p < 0.000$ )

## Conclusion

The results of this study show that the kangaroo community on Fowlers Gap is reactive to human disturbance in spite of likely encounters with people during research and pastoral management actions. The kangaroos treat the human as a potential predator and respond to ambulatory approach with flight that increases distance to the person(s). Thus close observation by an ambulatory tourist may be challenging, especially with red kangaroos. The lack of any development of habituation may be attributed to generally low visitor numbers, high vehicle use and therefore few encounters between humans on foot and kangaroos throughout the year. Our attempt to increase the frequency of such encounters did not lead to significant habituation across the 9-week study but reactivity did vary with the type of encounter (single person or group). A better strategy to improve the wildlife tourism experience may be to attract the kangaroos to persons stationary in a viewing platform. We are currently investigating this.

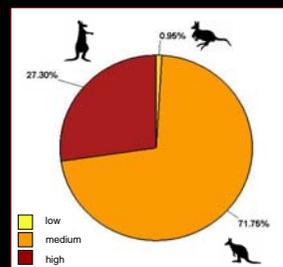


Figure 8: Alert behaviour shown during ambulatory approach

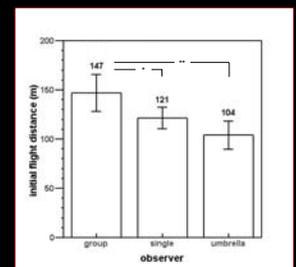


Figure 9: Flight distance towards different 'tourist' styles (\*\*  $P < 0.01$ , \*  $P < 0.1$  represent significant differences in initial flight distance)

## Acknowledgements

We would like to thank all people who dedicated their mornings and evenings to the approach of kangaroos as 'model tourists', thanks to: Jimmy, Andy, Holly, Debby, Conny, Enhua, Dean and Kathleen. Thanks also to Ian Barr for that beautiful Red Kangaroo picture.