



## Research Paper

## A mismatch of community attitudes and actions: A study of koalas

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## HIGHLIGHTS

- Three areas (suburban, peri-urban, eco-village) of one community were surveyed.
- Attitudes toward koalas were correlated to area of residence within the community.
- Peri-urban residents likely to have positive attitudes toward koala conservation.
- Suburban residents unlikely to participate in koala conservation measures.
- Area of residence is important in involving local community in wildlife management.

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## ABSTRACT

Many wildlife populations, particularly in urban areas, are in decline. This is in part due to a disconnection between the lives of urban residents and native wildlife. The reconnection of social and ecological systems by understanding the linkages between people's attitudes and conservation behavior will help improve conservation outcomes. This study investigated the attitudes of local communities toward koala populations and sustainable wildlife conservation in southeast Queensland, Australia. Data was collected using a questionnaire in face-to-face surveys ( $n = 102$ ). Principal Component Analysis was used to quantify attitude and action statements into key components. Further analysis of demographics and knowledge of koalas was performed using analysis of variance and regression analysis. Results suggested that residents' attitude toward koala conservation was strongly correlated with their home's proximity to relatively intact habitat. Residents living in peri-urban areas were significantly more likely than suburban residents to have a positive attitude toward koala conservation, and be willing to participate in actions to conserve koalas, such as traffic calming measures, community conservation schemes and support for council-led conservation actions. These results highlight the importance of understanding variations in community behavior toward biodiversity conservation in urban and peri-urban neighborhoods and suggest that local governments and conservation groups use area of residence to target urban planning and conservation initiatives more effectively.

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## 1. Introduction

Human induced land use change threatens the viability of many wildlife species around the world, not only from habitat loss but also through exposure to a range of threatening processes (Brook, Sodhi, & Bradshaw, 2008). This is particularly true for fauna populations in urban areas, which may become

isolated in habitat fragments surrounded by a relatively impermeable matrix (Fischer & Lindenmayer, 2007; Garden, McAlpine, Peterson, Jones, & Possingham, 2006; McKinney, 2002; Miller & Hobbs, 2002). However, maintaining native ecosystems in urban areas is important to protect local biodiversity, facilitate the movement of fauna to non-urban habitat, improve human well-being and to conduct environmental education (Dearborn & Kark, 2010). There is a growing recognition that the disconnection of urban populations from the natural world is a result of their declining daily exposure to wildlife (Deruiter & Donnelly, 2002). This disconnection means that there is less understanding of the needs and value of local species, and their basic requirements may go unrecognized, compromising

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species survival (Deruiter & Donnelly, 2002). Increasing the connection between humans and wildlife, especially in urban areas, is a key component for the continued survival of many species.

Understanding which factors influence an individual's appreciation and concern for wildlife conservation is essential. Wildlife managers are increasingly confronted with the task of successfully representing a diverse number of public interests and, often, conservation of species hinges on the effectiveness of this task (Teel & Manfredi, 2009). Personal wildlife perspectives are unavoidably tied to many components including world views, culture and understanding (Aslin & Bennett, 2000); past experience and demographics (Miller, 2009); and values, attitudes and beliefs shaped by ideology that give meaning to values in regard to nature (Teel & Manfredi, 2009). Furthermore, behavior is not always reflective of public attitudes, especially where wildlife conservation is concerned. Human dimensions research seeks to form a baseline to identify the relationship between values, beliefs and attitudes regarding nature and its conservation and therefore offer a 'social science' approach to wildlife management (Teel & Manfredi, 2009).

Human behavior is complex both in its number of influences and diversity, and is driven by multiple factors that are often difficult to quantify and define (Stern, 2002). Predicting behavior in a specific instance from attitudes, values and beliefs can be problematic, but Ajzen (1991) found that general attitudes and personality traits can be linked to behavior. More specifically, the Theory of Planned Behavior states that some function of perceived control over behavior and behavioral intention can be used to predict actual behavior (Ajzen, 1991). Behavioral intention is made up of three components: the attitude or favorability toward the behavior; the perceived social pressure to perform the behavior; and the perceived difficulty or ease of performing the behavior (e.g. opportunity and resources) (Ajzen, 1991). This is supported by research by Boyes and Stanisstreet (2012) who found that in general the degree of willingness to act is influenced by the perceived effectiveness of the action; though in some circumstances there can be a natural reluctance to act due to disincentives such as inconvenience and lifestyle. Vaske and Donnelly (1999) developed a cognitive hierarchy based on social-psychological theory, showing that attitudes, beliefs and norms mediate the relationship between values and behavior (Vaske & Donnelly, 2007). Attitudes directly affect behavior and value orientations reveal the impact of ideology and provide significance to those values relative to a specific topic (Teel & Manfredi, 2009; Vaske & Donnelly, 2007). For the purposes of this study, attitude is defined as the psychological tendency to appraise an entity with favor or disfavor (Eagly & Chaiken, 1993), while values are defined as guiding principles that inform attitudes (Fischer & van der Wal, 2007).

Understanding the attitudes and behavior of residents toward wildlife populations is vital to improving urban wildlife management. We examine these in relation to the wild koala populations of Southeast Queensland. The koala, *Phascolarctos cinereus*, is an Australian arboreal marsupial that is a highly specialized eucalypt folivore (Moore & Foley, 2005). The koala provides a good example of a human-wildlife conflict arising from urban encroachment into native ecosystems, where commercial and private development in koala habitat areas leads to habitat loss (Garden et al., 2006; McAlpine et al., 2006b). While koalas can live in peri-urban areas there is an associated increase in exposure to risks such as collisions with vehicles and attacks from domestic dogs as they move between small patches of remaining bushland (McAlpine et al., 2006a). Koalas are specialists that depend completely on the presence of a limited number of eucalypt species to survive (Hume, 1990; Rhodes et al., 2006). This puts koala populations particularly at risk when those trees are cleared for urban development, leading to genetic isolation (Lee et al., 2010) and elevated mortality as koalas attempt to disperse across a highly modified urban mosaic

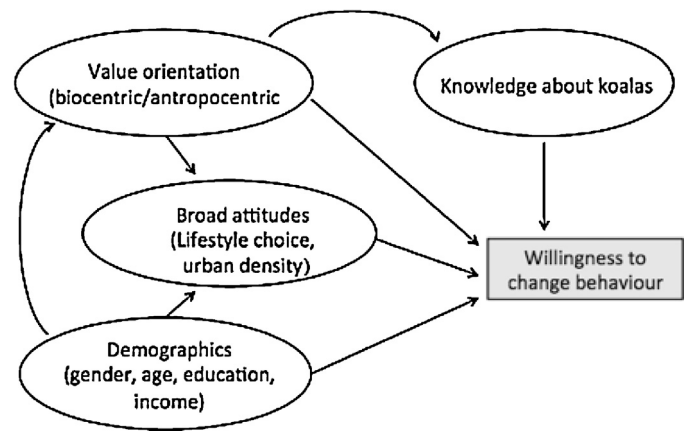


Fig. 1. Conceptual framework of influences of attitudes toward koala conservation.

(McAlpine et al., 2006b). Most koala deaths are attributed to habitat loss and fragmentation, car collisions and dog attacks, all factors which increase with human development (McAlpine et al., 2006a; Rhodes et al., 2006), and as a result, koala populations over most of their range have experienced local declines and extinctions (SECRC, 2011).

In 2012 the koala was listed as a vulnerable species under the Environment Protection and Biodiversity Conservation Act (1992) in areas where the species has dramatically declined in recent years (Queensland, New South Wales and the Australian Capital Territory) (Department of Environment, 2012). In South East Queensland, despite specific legislation protecting their habitat, koala populations in the Koala Coast area showed a 51% decline in koala population abundance between 2006 and 2008 and a 64% decline over the last ten years (Department of Environment, 2012).

In high-density urban areas where koalas no longer exist, it is less necessary to attempt to modify behavior since residents do not have enough regular exposure to wildlife. However, more research is needed to determine public interest and participation in conservation efforts in suburban and bushland areas where koalas continue to persist. Assessing residents' knowledge and attitudes toward koalas in general, as well as their values and attitudes toward local koalas, can provide important insight into how to minimize the impact of resident's activities on koala populations. The positive influence of increasing knowledge through wildlife education programs is demonstrated by the effectiveness of conservation education by Bat Conservation International in Austin, Texas (USA) where 100,000 people now congregate annually to see the evening emergence of 1.5 million Mexican free-tailed bats *Tadarida brasiliensis*, that were once unknown to most visitors (Dearborn & Kark, 2010).

This study aimed to answer the questions: (1) can attitude toward koalas be measured; (2) what factors influence community attitudes toward koalas; (3) how do different urban densities (suburban, peri-urban and an eco-village) affect conservation knowledge and behavior; and (4) what conservation actions would residents be willing to take to mitigate local threats? This information will serve as an exploratory study to establish a baseline of community knowledge and help determine residents' willingness to work toward sustainable conservation goals in suburban areas.

### 1.1. Conceptual framework

We examined the influence of values and demographic characteristics, on people's perceptions and attitudes toward koalas and koala conservation in the urban and peri-urban environment (Fig. 1). One area of focus was on the value orientation

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