

## **Pet Ownership, Attitude Toward Pets, and Support for Wildlife Management Strategies**

Shuttlewood, Cameron Z.; Greenwell, Phillip J.; Montrose, V. Tamara

*Published in:*

Human Dimensions of Wildlife

*Publication date:*

2016

*The re-use license for this item is:*

CC BY-NC-ND

*This document version is the:*

Peer reviewed version

*The final published version is available direct from the publisher website at:*

[10.1080/10871209.2016.1116029](https://doi.org/10.1080/10871209.2016.1116029)

**[Find this output at Hartpury Pure](#)**

*Citation for published version (APA):*

Shuttlewood, C. Z., Greenwell, P. J., & Montrose, V. T. (2016). Pet Ownership, Attitude Toward Pets, and Support for Wildlife Management Strategies. *Human Dimensions of Wildlife*, 21(2), 180-188.

<https://doi.org/10.1080/10871209.2016.1116029>

**Pet Ownership, Attitude toward Pets, and Support for Wildlife Management Strategies**

Cameron Z. Shuttlewood, Phillip J. Greenwell, and V. Tamara Montrose

Department of Animal and Land Sciences, Hartpury College, Gloucester, Gloucestershire,

United Kingdom GL19 3BE

Corresponding author: Dr V. Tamara Montrose:

Email: [Tamara.Montrose@hartpury.ac.uk](mailto:Tamara.Montrose@hartpury.ac.uk)

**This is an Accepted Manuscript of an article published by Taylor & Francis in Human Dimensions in Wildlife, available online:**

**<http://www.tandfonline.com/10.1080/10871209.2016.1116029>.**

### **Abstract**

Pet ownership affects engagement with animal-related activities and may be related to support of wildlife management. British participants ( $n = 220$ ) completed an online survey providing information on pet ownership, attitudes toward pets, and support for wildlife management strategies. Within this sample, pet owners and individuals with positive attitudes toward pets were less supportive of strategies that put human needs before the needs of wildlife, more supportive of strategies attempting to avoid species extinctions, and opposed to strategies requiring compromises of individual species. Pet owners' affectionate attitudes toward animals and opposition to their exploitation may be important in dictating attitudes toward wildlife. Conservation planners could apply these findings when seeking support for management strategies that constrain freedoms of pets and wildlife. Utilizing the sympathetic attitudes of pet owners toward animals by focusing on welfare and survival benefits of wildlife species may help foster support for management strategies.

**Keywords:** wildlife management, attitudes, pet ownership, attitudes toward pets

## Introduction

The support of local communities is vital for ensuring the success of localized wildlife management projects. Planning is an important stage of any wildlife management project, as failures can be costly in terms of financial loss and may, in the worst cases, actually do more harm than good to the animals involved (Fischer & Lindenmayer, 2000; Naidoo et al., 2006). Historically, one consideration that was often overlooked in the planning phases of wildlife management was the support or opposition of local communities (Zinn, Manfredo, Vaske, & Wittmann, 1998). However, it is now recognized that the attitudes and actions of citizens are important to consider in wildlife management (Manfredo & Dayer, 2004), and the success of localized management strategies can be dependent on the support of local communities. As a result, knowledge of public attitudes toward wildlife management strategies is valuable in planning efficient and successful management (e.g., Loker, Decker, & Schwager, 1999; Manfredo, Zinn, Sikorowski, & Jones, 1998). Knowledge of the opinions of the local population regarding wildlife management could save time and money by determining the best approach to management in any given location and helping to avoid costly failures due to rejection of in situ management by local communities.

Pet ownership and attitudes toward pets can affect public opinion and willingness to support and engage in animal-related activities. Pets are widely kept in many countries with 46% of UK and 62% of US households estimated to have pets (HSUS, 2014; PFMA, 2014). Pet owners not only display more positive attitudes toward animals (e.g., Daly & Morton, 2009; Taylor & Signal, 2005), but also engage in more animal-related activities such as bird watching and viewing nature documentaries (Bjerke, Østdahl, & Kleiven, 2003). Pet owners are also more inclined to join and support animal welfare and environmental organizations (Bennett, 2003; Paul & Serpell, 1993). In addition, positive attitudes toward animals correlate positively with empathy (Taylor & Signal, 2005), sensitivity, and imaginativeness (Mathews & Herzog, 1997). Pet ownership can, however, lead to conflicting ideologies about wildlife

management strategies if pet owners are directly implicated in the success of the outcome.

Management strategies that curtail pet ownership or have a perceived impact on pet welfare may be poorly received (e.g., Grayson, Calver, & Styles, 2002; McDonald, MacLean, Evans, & Hodgson, 2015; Williams, Weston, Henry, & Maguire, 2009).

Both pet ownership and attitude toward pets are, therefore, of potential relevance when considering how best to maximize public support of wildlife management strategies. The objectives of this research note are first to determine if there is a relationship between pet ownership and support of wildlife management strategies relating to conserving biodiversity. Second, this research note aims to determine if there is an association between having a positive attitude toward pets and support of these strategies. Given their positive approach toward animals and interest in environmental organizations, it is hypothesized that pet owners and individuals with more positive attitudes toward pets would show: (a) greater support for wildlife management strategies that prioritize animal interests in terms of survival or welfare, and (b) less support for strategies that put human needs ahead of the needs of wildlife. Strategies within four main categories are considered: land and water protection and management, direct species management, monitoring and planning, and law and policy.

## **Methods**

An online open-access questionnaire was advertised via the social media website, Facebook™, and respondents were selected via convenience sampling. The questionnaire was posted publicly on the researcher's own Facebook™ page to initially target their followers. These participants were encouraged to share the questionnaire with their own friends. The questionnaire was also shared on a Facebook group for university students. The questionnaire was available between January 23 and February 20, 2015. Convenience sampling utilizes participants who are available and easily accessible to the researcher, meaning that the sample can be biased (Dillman, Smyth, & Christian, 2014). These issues are

exacerbated by self-selection bias such that some individuals, including those with an interest in the topic, are more likely to participate. Convenience sampling, therefore, results in issues with generalizing findings and should not be viewed as representative of the population (Wright, 2005). Participants were required to be over the age of 18, no identifying personal data were collected, and participants were reassured that all responses were voluntary, data remained anonymous, and all information collected was held securely. Participants provided informed consent.

Weighting data by population parameters to more accurately approximate the population is frequently used to address sampling issues (e.g., Needham & Vaske, 2008). Weighting via Census data was not considered appropriate in this study due to the goal of understanding relationships among pet ownership, attitude toward pets, and support for management strategies rather than to make inferences to a broader population.

The questionnaire consisted of sections on pet ownership, attitude toward pets, and support of wildlife management strategies. Respondents were asked whether they owned a pet and what animals they kept as pets. The Pet Attitude Scale-Modified (Munsell, Canfield, Templer, Tangan, & Arikawa, 2004) was used to determine the attitude of participants toward pet animals (Cronbach alpha reliability coefficient = .76). This 18-item scale uses a seven-point response scale from strongly disagree to strongly agree. To determine support for wildlife management strategies, a seven-point scale measured participant agreement with 17 statements (Table 1). These statements were developed based on strategies for conserving biological diversity (Mawdsley, O'Malley, & Ojima, 2009) and were within four broad categories: land and water protection and management (statements 1, 2, 3, 4, 5, 6), direct species management (statements 7, 8, 9, 10, 11, 12), monitoring and planning (statements 13, 15, 16, 17), and law and policy (statement 14).

Table 1 about here

The effect of pet ownership on support of wildlife management strategies was analyzed using the Mann Whitney *U* test. To determine the relationship between attitude toward pets and attitude toward wildlife management strategies, a Spearman rank-order correlation test was conducted between the scale measuring attitude toward pets and support of each wildlife management strategy. Where participants did not answer all items on the scale measuring attitude toward pets, such that their total scores would not be equivalent to that of other respondents, they were not included in the analysis. Where significant relationships were found between pet ownership or attitude toward pets and responses to the wildlife management statements, multiple regression analysis was conducted to determine the contribution of pet ownership, attitude toward pets, gender, and age to control for the potential confounding effects of gender and age.

## Results

### Respondent Profile

Two hundred and twenty British participants took part in this study. Of these, 166 (76%) owned pets and 53 (24%) did not. One respondent did not answer this question. Among pet owners, 99 (45%) owned dogs, 86 (39%) owned cats, and 28 (13%) owned rodents. Other reported pets included fish, horses, birds, rabbits, and reptiles, each of which were owned by fewer than 10% of participants. Of the respondents, 158 (72%) were female, 58 (26%) were male, and four participants did not respond. Respondents represented every age category, but not equally, with 110 (50%) respondents between 18 and 25, whereas 24 (11%) were between 50 and 55, the next most represented age range. In total, 97 (44%) of respondents had completed A-level or equivalent education (qualifications taken at ages 17-18; US Grade equivalent: 11th - 12th), 78 (35%) had completed an undergraduate (higher education) degree, and other levels of education present in the sample were: 18 (8%) GCSE or equivalent (qualifications taken at ages 15-16: US Grade equivalent: 9th - 10th), 15 (7%),

postgraduate degrees (higher education), and 12 (5%) Secondary- Pre-GCSE (completion of Secondary / high school, but no qualifications gained). Taken together, the largest percentages of participants tended to be female between 18 and 25 years of age who owned pets and were educated to A-Level or undergraduate degree levels. This sample does not match the characteristics of the UK population (Gender: 49% male; 51% female; Age: 19-24: 7%; Education: Degree or above: 27%; A levels or equivalent: 12%; ONS, 2012, 2014).

### **Pet Ownership and Support of Wildlife Management**

There was a statistically significant difference in responses to only two of the statements measuring support for wildlife management strategies depending on pet ownership: “Preserving species which can no longer survive in the wild is a waste of resources; these would be better spent improving the environment in general” ( $U = 3043.5$ ,  $Z = 3.33$ ,  $p = .001$ ,  $r_p = .23$ ) and “When considering climate change: Human health and infrastructure needs are more important than the need for wildlife and biodiversity management” ( $U = 3341.0$ ,  $Z = 2.64$ ,  $p = .008$ ,  $r_p = .18$ ). There was a medium effect size<sup>1</sup> for the first statement and a small to medium effect size for the second statement (Cohen, 1988). Pet owners showed less agreement ( $M = 3.14$  and  $3.05$ ) than non-pet owners ( $M = 3.98$  and  $3.66$ ) with both statements. No significant effects of pet ownership were found for the other statements.

### **Attitude toward Pets and Support of Wildlife Management**

Significant weak positive relationships were found between the scale measuring attitude toward pets and agreement with four of the statements relating to support of wildlife

---

<sup>1</sup> Point-biserial correlation ( $r_p$ ) effect sizes were interpreted as per Cohen (1988): .10 = small, .24 = medium, and .37 = large. These effect sizes can also be referred to using the terminology: minimal, typical, and substantial (Vaske, Gliner, & Morgan, 2002).



management strategies: “Species at a higher risk of extinction are more important to conserve than those that are widespread” ( $r_s = .153, p = .029$ ), “Species should be moved to more suitable habitats if they face a risk of extinction” ( $r_s = .147, p = .035$ ), “It is unacceptable to breed animals in captivity with no plan to reintroduce them to the wild” ( $r_s = .144, p = .039$ ), and “It is important to continue developing methods of monitoring wildlife and ecosystems” ( $r_s = .149, p = .032$ ). Significant weak negative relationships were found between the scale measuring attitude toward pets and agreement with: “It is acceptable to restrict the freedom of animals to roam in order to better protect biodiversity” ( $r_s = -.210, p = .003$ ), “Preserving species which can no longer survive in the wild is a waste of resources; these would be better spent improving the environment in general” ( $r_s = -.305, p < .001$ ), and “When considering climate change: Human health and infrastructure needs are more important than the need for wildlife and biodiversity management” ( $r_s = -.259, p < .001$ ). No significant relationships were found between attitudes toward pets and the other management statements.

### **Impact of Pet Ownership, Attitude toward Pets, Gender, and Age on Support of Wildlife Management**

When considering the impact of pet ownership, gender, and age on support of wildlife management strategies, these variables significantly predicted agreement with the statement “Preserving species which can no longer survive in the wild is a waste of resources; these would be better spent improving the environment in general” ( $F(3, 203) = 4.02, p = .008, R^2 = .06$ ), but only pet ownership made a significant contribution to predicting this statement (Pet ownership:  $\beta = .87, t = 3.17, p = .002$ ; Gender:  $\beta = -.08, t = -.30, p = .766$ ; Age:  $\beta = -.06, t = -1.55, p = .122$ ). These variables did not significantly predict agreement with the statement “When considering climate change: Human health and infrastructure needs are more important than the need for wildlife and biodiversity management” ( $F(3, 203) = 2.63, p = .051, R^2 = .04$ ). In addition, only pet ownership significantly contributed to predicting this

statement (Pet ownership:  $\beta = .58$ ,  $t = 2.46$ ,  $p = .015$ ; Gender:  $\beta = -.22$ ,  $t = -.95$ ,  $p = .343$ ;

Age:  $\beta = -.02$ ,  $t = -.67$ ,  $p = .502$ ).

When considering the impact of attitude toward pets, gender, and age on support of wildlife management strategies, these variables significantly predicted agreement with three statements. In all three cases, however, only attitude toward pets significantly contributed to predicting the statements: “It is acceptable to restrict the freedom of animals to roam in order to better protect biodiversity” ( $F(3, 189) = 4.09$ ,  $p = .008$ ,  $R^2 = .06$ ; Attitude:  $\beta = -.02$ ,  $t = -2.44$ ,  $p = .016$ ; Gender:  $\beta = -.26$ ,  $t = -1.10$ ,  $p = .273$ ; Age:  $\beta = .042$ ,  $t = 1.19$ ,  $p = .237$ ); “Preserving species which can no longer survive in the wild is a waste of resources; these would be better spent improving the environment in general” ( $F(3, 190) = 4.65$ ,  $p = .004$ ,  $R^2 = .07$ ; Attitude:  $\beta = -.03$ ,  $t = -3.40$ ,  $p = .001$ ; Gender:  $\beta = -.01$ ,  $t = -.02$ ,  $p = .982$ ; Age:  $\beta = -.07$ ,  $t = -1.75$ ,  $p = .081$ ); and “When considering climate change: Human health and infrastructure needs are more important than the need for wildlife and biodiversity management” ( $F(3, 190) = 6.86$ ,  $p < .001$ ,  $R^2 = .10$ ; Attitude:  $\beta = -.03$ ,  $t = -4.09$ ,  $p < .001$ ; Gender:  $\beta = -.20$ ,  $t = -.86$ ,  $p = .390$ ; Age:  $\beta = -.03$ ,  $t = -.99$ ,  $p = .324$ ). Only age was significantly related to agreement with the statement, “It is important to continue developing methods of monitoring wildlife and ecosystems” ( $F(3, 191) = 1.88$ ,  $p = .134$ ,  $R^2 = .03$ ; Attitude:  $\beta = .01$ ,  $t = 1.21$ ,  $p = .230$ ; Gender:  $\beta = .002$ ,  $t = .02$ ,  $p = .987$ ; Age:  $\beta = .05$ ,  $t = 2.16$ ,  $p = .032$ ). None of these variables significantly predicted agreement for the remaining wildlife management statements. Taken together, these results show minimal confounding effects of gender and age.

## Discussion

Overall, although support for many of the wildlife management strategies did not differ depending on pet ownership or attitude toward pets, there were some notable findings. Pet owners and those with positive attitudes toward pets less readily accepted compromises

of individual species to benefit biodiversity in general. This greater concern for the preservation of individual species may be due to pet owners assigning a higher intrinsic value to wildlife. Kellert and Berry (1987) described various attitudes toward animals including moralistic, ecologicistic, and utilitarian attitudes. Pet owners likely display a more moralistic attitude toward animals where the primary concern is for right and wrong treatment with strong opposition to exploitation. This seems to override utilitarian concerns regarding the practical and material value of the habitat and ecological concerns for the environment as a system.

This moralistic attitude may also explain the support by participants with positive attitudes toward pets for strategies that attempted to avoid species extinctions. Extinction may be viewed as being morally wrong. These individuals may also have concerns about species extinctions because of the greater empathy and imaginativeness associated with individuals with positive attitudes toward animals (e.g., Mathews & Herzog, 1997; Taylor & Signal, 2005) and their increased involvement in environmental organizations (Paul & Serpell, 1993). These factors may allow greater awareness and visualization of likely outcomes if conservation measures are not utilized.

Although pet owners and those with a positive attitude toward pets favored preservation of individual species over conserving biodiversity as a whole, they still prioritized biodiversity management over human needs. This management strategy was presented in the context of climate change, but it is suggested that the primary determinant was human versus animal needs. Attitudes toward animals can be characterized by two dimensions: affection and sympathy, and economic self-interest (Serpell, 1996). Given that those engaged in affectionate interactions with animals have high sympathy toward animals and low economic self-interest (Serpell, 2004), a lack of support by those owning or attached to animals for strategies requiring compromise from animals, and greater willingness to accept strategies requiring compromise from human society, are perhaps to be expected.

Individuals with positive attitudes toward pets were keen that the freedoms of wild animals to roam and live in the wild were not restricted. Opposition to restriction of pet movement has been shown in both cat and dog owners (e.g., McDonald et al., 2015; Williams et al., 2009). These strong beliefs in the context of pets may influence views on the importance of freedom for animals in wild contexts. Participants with positive attitudes toward pets also supported developing new methods of monitoring wildlife and ecosystems, which may be due to their enhanced imaginativeness (Mathews & Herzog, 1997) allowing them to conceptualize the need for ongoing developments in this field.

There are some limitations of the study, such as the sample size, sample profile, and mode of sampling, that make it difficult to generalize findings to pet owners and the general populace. In addition, the sample was heavily biased toward females. Gender can impact attitudes toward animals and animal use, with females being more sympathetic toward animals and having a more moralistic attitude than males (Herzog, 2007). Although the regression analyses indicated that gender and age were not confounding factors, the composition of the sample is still problematic. Nonetheless, this study serves to highlight that pet ownership and having positive attitudes toward pets can be related to support of some wildlife management strategies. Within the sample, the moralistic and affectionate attitude toward animals possessed by those who either own or have positive attitudes toward pets was associated with being less supportive of wildlife management strategies that put human needs before those of wildlife and required compromise from animals, and more supportive of management strategies that attempted to avoid species extinctions.

One practical application of this study would be for conservation planners to liaise with pet-based groups early in the planning stages of wildlife management to attempt to foster support within the broader community. This would be of particular importance when considering interventions that may be viewed by owners as impacting the wellbeing of their own pets (e.g., keeping dogs on leash, curtailing or restricting movement of cats to protect

wildlife). Given that pet owner concerns can affect support of such practices (e.g., Grayson et al., 2002; Williams et al., 2009) and because ecological information may not affect owner beliefs or support for control initiatives (McDonald et al., 2015), greater focus should be based on utilizing the sympathetic and moralistic attitudes of pet owners toward animals. Discussing benefits for particular wild species in terms of survival and enhanced welfare may help foster support for proposed control initiatives and wildlife management strategies.

### References

- Bennett, R. (2003). Factors underlying the inclination to donate to particular types of charity. *International Journal of Nonprofit and Voluntary Sector Marketing*, 8, 12-29.
- Bjerke, T., Østdahl, T., & Kleiven, J. (2003). Attitudes and activities related to urban wildlife: Pet owners and non-owners. *Anthrozoos: A Multidisciplinary Journal of the Interactions of People & Animals*, 16, 252-262.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.
- Daly, B., & Morton, L. L. (2009). Empathic differences in adults as a function of childhood and adult pet ownership and pet type. *Anthrozoos: A Multidisciplinary Journal of the Interactions of People & Animals*, 22, 371-382.
- Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). *Internet, phone, mail, and mixed-mode surveys: the tailored design method*. Hoboken, NJ: Wiley.
- Fischer, J., & Lindenmayer, D. B. (2000). An assessment of the published results of animal relocations. *Biological Conservation*, 96, 1-11.
- Grayson, J., Calver, M., & Styles, I. (2002). Attitudes of suburban Western Australians to proposed cat control legislation. *Australian Veterinary Journal*, 80, 536-543.
- Herzog, H. A. (2007). Gender differences in human–animal interactions: A review. *Anthrozoös: A Multidisciplinary Journal of the Interactions of People & Animals*, 20, 7-21.

Humane Society of the United States (HSUS) (2014). *Pets by the numbers*. Retrieved from:

[http://www.humanesociety.org/issues/pet\\_overpopulation/facts/pet\\_ownership\\_statistics.html](http://www.humanesociety.org/issues/pet_overpopulation/facts/pet_ownership_statistics.html)

Kellert, S. R., & Berry, J. K. (1987). Attitudes, knowledge, and behaviors toward wildlife as affected by gender. *Wildlife Society Bulletin*, *15*, 363-371.

Loker, C. A., Decker, D. J., & Schwager, S. J. (1999). Social acceptability of wildlife management actions in suburban areas: Three cases from New York. *Wildlife Society Bulletin*, *27*, 152-159.

Manfredo, M., & Dayer, A. (2004). Concepts for exploring the social aspects of human-wildlife conflict in a global context. *Human Dimensions of Wildlife*, *9*, 317-328.

Manfredo, M. J., Zinn, H. C., Sikorowski, L., & Jones, J. (1998). Public acceptance of mountain lion management: A case study of Denver, Colorado, and nearby foothills areas. *Wildlife Society Bulletin*, *26*, 964-970.

Mathews, S., & Herzog, H. A. (1997). Personality and attitudes toward the treatment of animals. *Society & Animals*, *5*, 169-175.

Mawdsley, J. R., O'Malley, R., & Ojima, D. S. (2009). A review of climate-change adaptation strategies for wildlife management and biodiversity conservation. *Conservation Biology*, *23*, 1080-1089.

McDonald, J. L., MacLean, M., Evans, M. R., & Hodgson, D. J. (2015). Reconciling actual and perceived rates of predation by domestic cats. *Ecology and Evolution*, *5*, 2745-2753.

Munsell, K. L., Canfield, M., Templer, D. I., Tangan, K., & Arikawa, H. (2004).

Modification of the pet attitude scale. *Society & Animals*, *12*, 137-142.

Naidoo, R., Balmform, A., Ferraro, P. J., Polasky, S., Ricketts, T. H., & Rouget, M. (2006).

Integrating economic costs into conservation planning. *Trends in Ecology & Evolution*, *21*, 681-687.

- Needham, M. D., & Vaske, J. J. (2008). Survey implementation, sampling, and weighting data. In J. J. Vaske, *Survey research and analysis: Applications in parks, recreation and human dimensions* (pp. 173-222). State College, PA: Venture.
- Office for National Statistics (ONS) (2012). *2011 Census: Population estimates for the United Kingdom*. Retrieved from: [http://www.ons.gov.uk/ons/dcp171778\\_292378.pdf](http://www.ons.gov.uk/ons/dcp171778_292378.pdf)
- Office for National Statistics (ONS) (2014). *2011 Census analysis, local area analysis of qualifications across England and Wales*. Retrieved from: <http://www.ons.gov.uk/ons/rel/census/2011-census-analysis/local-area-analysis-of-qualifications-across-england-and-wales/info-highest-qualifications.html>
- Paul, E. S., & Serpell, J. A. (1993). Childhood pet keeping and humane attitudes in young adulthood. *Animal Welfare*, 2, 321-337.
- Pet Food Manufacturers Association (PFMA) (2014). *Pet population 2014*. Retrieved from <http://www.pfma.org.uk/pet-population-2014/>
- Serpell, J. A. (1996). *In the company of animals: A study of human-animal relationships*. Cambridge, UK: Cambridge University Press.
- Serpell, J. A. (2004). Factors influencing human attitudes to animals and their welfare. *Animal Welfare*, 13, 145-151.
- Taylor, N., & Signal, T. D. (2005). Empathy and attitudes to animals. *Anthrozoos: A Multidisciplinary Journal of the Interactions of People & Animals*, 18, 18-27.
- Vaske, J. J., Gliner, J.A. & Morgan, G. A. (2002). Communicating judgments about practical significance: Effect size, confidence intervals and odds ratios. *Human Dimensions of Wildlife*, 7, 287-300.
- Williams, K. J. H., Weston, M. A., Henry, S., & Maguire, G. S. (2009). Birds and beaches, dogs and leashes: Dog owners' sense of obligation to leash dogs on beaches in Victoria, Australia. *Human Dimensions of Wildlife*, 14, 89-101.

Wright, K. B. (2005). Researching internet-based populations: Advantages and disadvantages

of online survey research, online questionnaire authoring software packages, and web

survey services. *Journal of Computer-Mediated Communication*, *10*, article 11.

Zinn, H. C., Manfredo, M. J., Vaske, J. J., & Wittmann, K. (1998). Using normative beliefs to

determine the acceptability of wildlife management actions. *Society & Natural*

*Resources*, *11*, 649-662.



Table 1. Statements measuring support of wildlife management strategies <sup>a</sup>

- 
1. It is more important to directly manage existing natural areas than to introduce more protected areas.
  2. Conservation efforts should prioritise preserving animal populations within their natural habitat over preserving captive populations of animals.
  3. It is more important to preserve a diverse range of habitats than a large number of similar habitats.
  4. We should design conservation areas to be able to adapt to climate change.
  5. It is acceptable to restrict the freedom of animals to roam in order to better protect biodiversity.
  6. Conservationists should preserve ecosystems as a whole, rather than emphasising specific species preservation.
  7. Preserving species which can no longer survive in the wild is a waste of resources; these would be better spent improving the environment in general.
  8. Species at a higher risk of extinction are more important to conserve than those that are widespread.
  9. Species should be moved to more suitable habitats if they face a risk of extinction.
  10. It is unacceptable to breed animals in captivity with no plan to reintroduce them to the wild.
  11. Efforts should be made to reduce pressures on species from things other than climate change, so they can better cope with the changing world.
  12. Resources should be spent on tried and tested methods rather than planning new ways to manage the environment.
  13. It is important to continue developing methods of monitoring wildlife and ecosystems.
  14. Existing laws and policies for natural resource management, developed before climate change was a key concern, are no longer sufficient and should be changed.
  15. It is unreasonable to demand that human used land be relinquished to be returned to a natural state.
  16. When considering climate change: Human health and infrastructure needs are more important than the need for wildlife and biodiversity management.
  17. Environmental management plans need to consider climate change impacts to work.
- 

<sup>a</sup> Response scale: 1 = Strongly disagree, 2 = Moderately disagree, 3 = Slightly disagree, 4 = Neither agree nor disagree, 5 = Slightly agree, 6 = Moderately agree, 7 = Strongly agree.