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Dependence of public support for survival of wildlife species on their likeability

Abstract

We surveyed a sample of 204 individuals selected from the public in Brisbane, Australia, to ascertain the extent to which they like or dislike 24 species of wildlife present in tropical Australia. The species belong to three classes: mammals, birds and reptiles. We calculated likeability indices for each of these species. We also asked respondents if they favoured the survival of each of these species and so the

percentage of respondents favouring survival of each of these species could be calculated. Thus, using linear regression analysis, the percentage of respondents favouring survival of each of the species was related to their indices of likeability. In addition, the data enables the average likeability of species in the three classes (mammals, birds and reptiles) to be compared with the average support for survival of species in each of these three classes. As a result, we are able to assess how important stated likeability seems to be for preferences for survival of species, and to reconsider the hypothesis in the literature that there is likely to be more public support for the survival of mammals than for birds than for reptiles.

Dependence of public support for survival of wildlife species on their likeability

1. Introduction

Research indicates that human empathy with other species is greater the closer are their attributes to those of humans. S. Plous (1993) called this the Similarity Principle. Consequently, it is believed that this usually leads to greater support for the conservation of more human-like wildlife species. DeKay and McClelland (1996) concluded in their study that humans would favour the conservation of species judged to be phylogenetically more similar to humans. They point out that this result is consistent with the findings of Samples et al. (1986) and Metrick and Weitzman (1996, 1998). Gunnthorsdottir (2001) also finds that conservation support is positively related to the attractiveness of wild animal species to humans, and attractiveness is influenced by their similarity to humans.

From their study, DeKay and McClelland (1996, p. 65) report that, on average, humans prefer mammals to birds to reptiles. Their ordering of human preferences for taxa from highest to lowest is as follows: mammals, birds, reptiles, amphibians, fish, invertebrates, trees and other plants. Eddy et al. (1993) report a similar preference ordering.

Here we report our finding about expressed preferences (likeability) of a sample of the Australian general public about 24 Australian tropical mammals, birds and reptiles to see if the results accord with previous findings and to determine whether or not differences in these preferences do impact significantly on support for survival of different types of fauna. The findings indicate the need to re-consider the thesis that likeability of species as a group significantly affects support for their survival and conservation.

We describe the way in which data was obtained, and then specify indicators of likeability of species. The degree of support for survival of each of the species is reported and related to their stated likeability. The results are then discussed.

2. Methods

Data was collected in 2002 using two questionnaire-based surveys, referred to as Survey I and Survey II. The participants of these surveys are from a sample of 204 people from the general public. This sample was drawn from various suburbs of the Brisbane, Australia with

different demographic and socio-economic characteristics. This was achieved by means of letterbox-dropped circulars distributed in the Brisbane area. The circular was an invitation to participate in surveys on attitudes towards conservation of Australian tropical fauna to be conducted by the University of Queensland. Further details and the objectives of the surveys were withheld to avoid bias. The surveys were designed to elicit information about: (i) the Brisbane public's knowledge and likeability of a group of tropical animal species, (ii) their support for the survival of these species, and (iii) patterns in willingness to pay for the conservation of different taxonomic groups of species.

Participants were selected on a first-come-first-served basis and to mirror the representative age distribution of Brisbane. They were divided into five groups of about 40 people to attend survey sessions. In the survey sessions, participants filled out a structured questionnaire (Survey I) to gather information on participants' background, how they rated their knowledge of the animal species, how much they like the species and whether they supported the survival of the species or not. They were also asked to allocate a hypothetical fund of $1,000 between the conservation of these different animal classes and charity for humans in need. Note that all dollar figures mentioned in this paper refer to the Australian dollar.

Participants were then given a tea break, followed by a public lecture by the then-Curator of Mammals and Birds at the Queensland Museum, Dr. Steven Van Dyck. The lecture was about the group of animal species the participants were asked about. The participants were then given a coloured photo booklet containing descriptions of all 24 species concerned including their geographic range, ecological status and other relevant information. Approximately the same amount of information was provided on each species and normative statements were avoided. Participants were asked to take the booklet home and read it before completing and returning a second questionnaire (Survey II) in postage pre-paid envelopes. Survey II contains several overlapping questions with Survey I and this was planned to provide us information on changes in knowledge, likeability, support for survival and conservation, and willingness to pay.

The common and scientific names of the 24 species in our study and their abbreviations are listed in Table 1.

Table 1:

Common names, scientific names and abbreviations of the 24 wildlife species in this study

Common name	Scientific name	Abbreviation
Reptiles		
Saltwater crocodile	*Crocodylus porosus*	*Sc*
Freshwater crocodile	*Crocodylus johnstoni*	*Fc*
Hawksbill turtle	*Eretmochelys imbricata*	*Ht*
Taipan snake	*Oxyuranus scutellatus*	*Ts*
Northern long-necked turtle	*Chelodina rugosa*	*Lt*
Mammals		
Lumholtz's tree kangaroo	*Dendrolagus lumholtzi*	*Tk*
Red kangaroo	*Macropus rufus*	*Rk*
Koala	*Phascolarctos cinereus*	*K*
Mahogany glider	*Petaurus gracilis*	*Mg*
Northern bettong	*Bettongia tropica*	*Nb*
Northern quoll	*Dasyurus hallucatus*	*Nq*
Dugong	*Dugong dugon*	*D*
Northern hairy-nosed wombat	*Lasiorhinus krefftii*	*Nw*
Eastern pebble-mound mouse	*Pseudomys patrius*	*Em*
Birds		
Southern cassowary	*Casuarius casuarius*	*Scw*
Brolga	*Grus rubicundas*	*B*
Golden-shouldered parrot	*Psephotus chrysopterygius*	*Gp*
Palm cockatoo	*Probosciger aterrimus*	*Pc*
Eclectus parrot	*Eclectus roratus*	*Ep*
Gouldian finch	*Erythura gouldiae*	*Gf*
Red-tailed black cockatoo	*Calyptorhynchus banksii*	*Bc*
Golden bowerbird	*Prionodura newtoniana*	*Gb*
Australian magpie	*Gymnorhina tibicen*	*Am*
Kookaburra	*Dacelo novaeguineae*	*Kb*

3. Results

Likeability indicators

Participants were asked the following for every species in both surveys:

"Do you (1) like strongly, (2) like, (3) dislike, (4) strongly dislike, [or are you] (5) uncertain of feelings towards these species [?]"

We assigned weights to these rating possibilities as shown in Table 2.

Table 2:

Likeability rating and associated weights

Rating	Strongly like	Like	Ambivalent	Dislike	Strongly dislike
Likeability weights	2	1	0	-1	-2

These likeability weights were used to calculate the average likeability rating of participants for each species in both surveys. Likeability indices were constructed to enable comparison of average likeability for each species and for each animal class. Likeability indices based on Survey II data is presented in Figure 1. Survey II is used because in Survey II participants had more balanced knowledge of all the species (Tisdell 2004; Tisdell and Wilson 2004). This should give a more accurate reflection of respondents' 'true' likeability of the individual species than in Survey I. Note that to some extent the assignment of weights used to calculate the likeability indices is arbitrary. There may be argument, for example, about whether the scale should be linear. Furthermore, the ratings are stated ratings of respondents and different respondents could have different yardsticks, for instance for differentiating between 'strongly like' and 'like'. These are limitations but it seems that the indices are useful indicators.

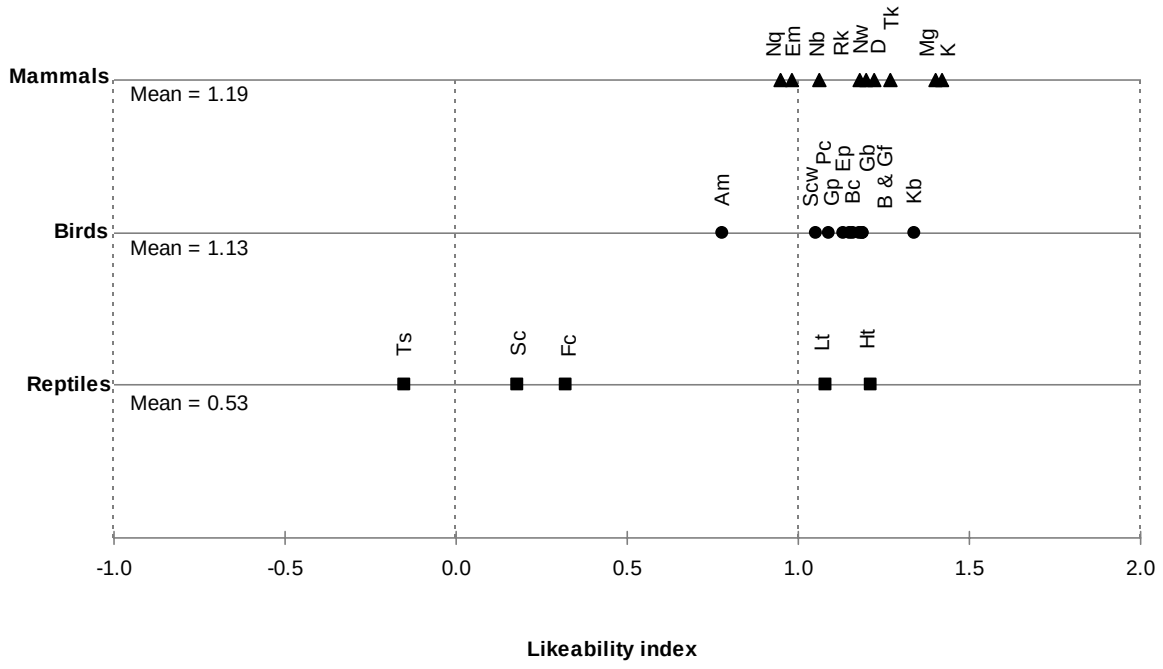

Figure 1: Likeability indices for all species in Survey II

From Figure 1, likeability on average is highest for mammals, then followed by birds and finally reptiles. This ordering of likeability for the different phylogenetic categories of fauna is consistent with the views of Kellert (1980), Plous (1993) and DeKay and McClelland (1996). While there is some difference in average likeability between mammals and birds, it is not significant at the 95% confidence level (two tail ANOVA: $F_{mammals\text{-}birds} = 0.73$, $p = 0.41$). The differences in likeability between mammals and reptiles, and birds and reptiles are large and are significant at the 99% confidence level (two tail ANOVA: $F_{mammals\text{-}reptiles} = 10.35$, $p = 0.007$; $F_{birds\text{-}reptiles} = 9.81$, $p = 0.008$).

In each animal class, there are species that are least liked and most liked. For mammals, the koala and the mahogany glider are the most liked species whereas the northern quoll and the eastern pebble-mound mouse are the least liked. The high rating of the mahogany glider in Survey II can partly be attributed to a very interesting illustrated presentation given to participants by Dr. Steve Van Dyck following Survey I. It illustrates the possibly non-neutrality of information provision, a factor discussed by Spash (2002) and Ajzen et al. (1996).

People highly dislike, on average, reptile species like the taipan snake (which obtained a negative likeability value). The crocodiles also obtained a very low likeability value. Amongst the reptiles, turtles obtained the highest average likeability ratings.

Among birds, the kookaburra scored highest on likeability score and the Australian magpie was the least liked, presumably because it is known to attack humans during its nesting season.

From Figure 1, it can be seen that the range of likeability indices of the classes of species moves to the left as one moves from considering mammals to birds to reptiles. The most liked mammal is liked more than the most liked bird, which in turn is liked more than the most liked reptile. Similarly, the least liked mammal is liked more than the least liked bird, which in turn is more liked than the least liked reptile. This further supports the view in the literature that on the whole, mammals are preferred to birds and in turn, birds are preferred to reptiles.

Furthermore, in the case illustrated in Figure 1, the dispersion of the likeability values is greater for reptiles than for birds and mammals. For instance, the variance of these indices for

reptiles is 0.35 and the coefficient of variation is 1.12 whereas for birds these are 0.02 and 0.13 respectively and for mammals 0.03 and 0.14 respectively.

Support for survival of species related to their likeability

For each species in our survey, participants were asked whether they favoured its survival or not. The percentage of participants who answered 'yes' was calculated and is taken as an indicator of the degree of support for the species' survival. It was thought possible that a positive association would exist between the average likeability of species and the percentage of respondents supporting their survival. This was compared to species likeability. Based on Survey II data, species likeability versus percentage of participants in favour of species' survival is plotted and is shown in Figure 2.

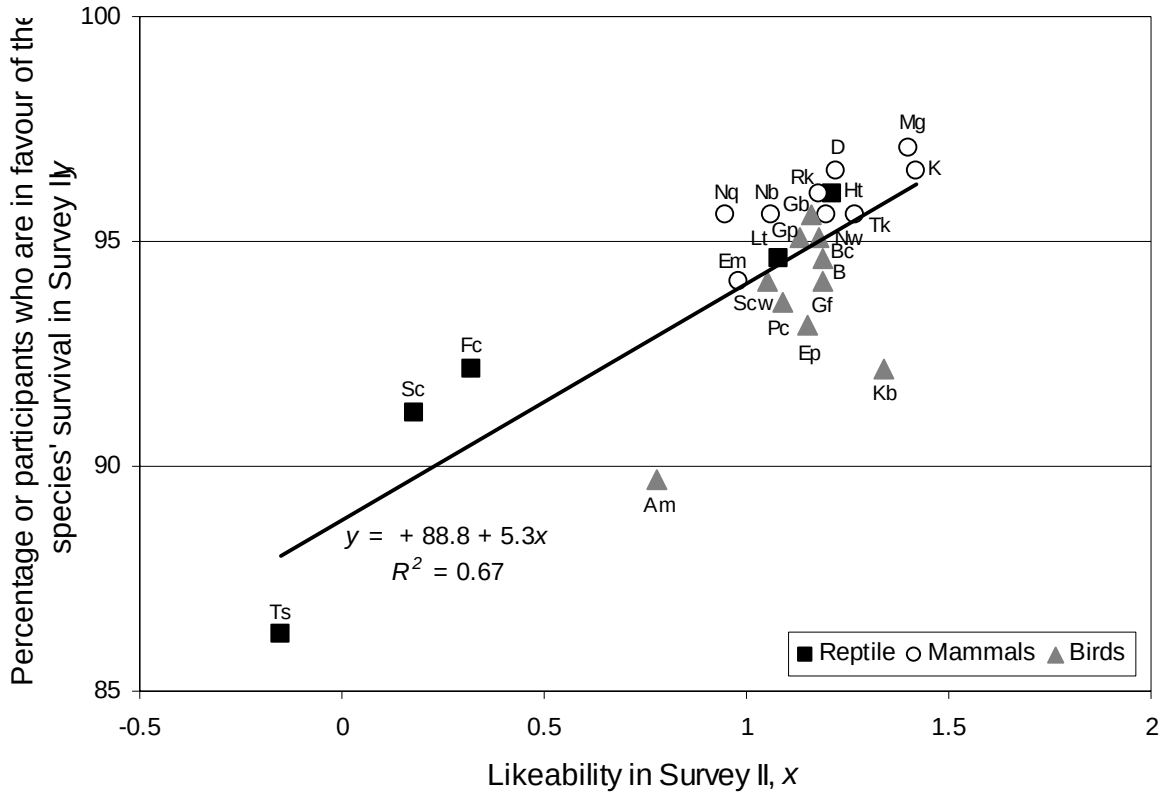

Figure 2: Likeability of species versus percentage of participants in favour of their survival in Survey II

The linear regression applied to all species yields the following equation and statistics:

$$y = 88.8 + 5.3x \quad (1)$$

($R^2 = 0.67$; $t_{slope} = 6.61$, $p =$ 1.2e-0.6)

The relationship is statistically significant at the 99% confidence level (observe values for *t*-test for slope). R^2 of 0.67 is not very large. Overall, however, it indicates that likeability 'explains' 67% of the variation in support for species survival. Other factors also determine the percentage of respondents supporting survival of the species. These factors include survival status (endangerment) and ethical or moral values (e.g., a species' right to exist) (Kahneman and Knetsch 1992; Kopp 1992; Kotchen and Reiling 2000; Tisdell and Wilson 2004).

From Figure 2, it can be seen that a large majority of respondents support the survival of all species considered, even those such as the taipan snake, which is disliked on average, and those that are liked by few people. This suggests that likeability is not an overriding influence on the support of humans for the survival of wildlife species.

This is given further support when we pool data by class. Table 3 shows the average likeability indices of mammals, birds and reptiles in Survey II and compares these with the averages of the percentage of participants favouring survival of each of the species in the classes.

Table 3:

Average likeability indices and stated average support for survival of mammals, birds and reptiles

Classes	Average likeability indices	Percentage of participants in favor of the survival of species in classes averaged
Mammals	1.19	95.9
Birds	1.13	93.7
Reptiles	0.53	92.1

For mammals, the most liked class in aggregate, an average of 95.9% of participants are in favour of the survival of the species that fall in this group. This is higher than for birds (93.7%) and for reptiles (92.1%), and the differences are significant at the 99% and 95% confidence levels respectively (two tail ANOVA: $F_{mammals\text{-}birds} = 11.08$, $p = 0.004$; $F_{mammals\text{-}reptiles} = 8.89$, $p = 0.011$). Although support for birds is on average slightly higher than for

reptiles, the difference is not significant at the 95% confidence level (two tail ANOVA: $F_{birds\text{-}reptiles} = 1.43$, $p = 0.25$). Support for the survival of reptiles as a group is still quite high because turtles, which are highly liked (and for which there is great concern, particularly for the hawksbill turtle which is reported by the IUCN (2003) to be critically endangered globally) counterbalance the lower levels of support that disliked species like the crocodiles and the taipan snake have. Nevertheless, a large majority of participants (approximately 86%) favoured the survival of even the least liked species, namely the taipan snake, although it is not endangered. Some respondents stated that they supported this species' survival because 'it has a right to exist' or mentioned that it has a role to play in the ecosystem.

The results do not support the view of DeKay and McClelland (1996) that because reptiles are less liked by humans than birds, humans can be expected to be less supportive of the survival of reptiles than birds. While from Table 3 the ordering of the percentages in the second column is similar to what one might expect on the basis of DeKay and McClelland's hypothesis, the differences are not marked. Furthermore, the differences between the percentages for birds and reptiles are not statistically significant.

Clearly, the variables in Table 3 are sensitive to the composition of species in the classes. For instance, the deletion of turtles in the reptile set would reduce values in Table 3 for reptiles whereas deletion of the taipan snake and crocodiles would increase these. We did not preselect to introduce biases. However, it is relevant to note that DeKay and McClelland (1996) included snakes, crocodiles and turtles in their set of reptiles. Therefore, ours is comparable.

Willingness to pay for conserving mammals, birds and reptiles

Another indicator of individuals' concern for wildlife species is their willingness to pay (WTP) for their conservation. One may be strongly in favour of the survival of a species but this may not be equally matched by willingness to pay for its conservation. Factors that influence the WTP for the conservation of wildlife species are complex but likeability appears to be a significant influence but not an overpowering one (Tisdell et al. 2004). In fact, when WTP is examined in a manner that we have previously reported (Tisdell et al. 2004), WTP for the conservation of mammals and birds does not significantly exceed WTP for the conservation of reptiles. This also indicates that human support for conserving wildlife species is not as dependent on empathy as some existing views indicate.

4. Likeability and allocation of funds for conserving animal class

Although there was significant difference in average likeability between reptiles as a group and mammals and birds, we found that this does not translate into significant differences in financial support for conservation of species as a whole between these different classes (Tisdell et al. 2004). This is at odds with other studies that find that human financial support is likely to be highest for species and classes that are phylogenetically similar to humans, or are attractive to or highly liked by humans (DeKay and McClelland 1996, p. 64-65; Metrick and Weitzman 1996, 1998; Gunnthorsdottir 2001). It is, therefore, believed that financial support for conservation of mammals is likely to be greater than for reptiles.

This proposition was tested in our survey by putting the following to participants:

"Suppose you have a choice of donating your Aus$ 1,000 to support conservation of the above mammals or donating it or a part of it to support a charity of your choice to help people in need (e.g, Lifeline, Smith Family, The Salvation Army, St Vincent de Paul). What percentage would you allocate to each of the following?"

Support for conservation of the above mammals ……..%

Support for charity to help people in need ……..%

This was also asked for the focal groups of birds and reptiles. The results obtained for Survey II are summarised in Table 4.

Table 4:

Average likeability and average allocation of funds for the conservation of the animal classes rather than to a charity to help needy humans

Classes	Average likeability indices	Average allocation of funds for the conservation of classes (%)
Mammals	1.19	51.7
Birds	1.13	51.2
Reptiles	0.53	49.9

Although the average likeability of reptiles is significantly less than for mammals and birds, Tisdell et al. (2004) found that there is no significant difference in the average percentage of funds allocated for conservation (as compared to charity) between the animal groups (two tail ANOVA: $F = 0.23$, $p = 0.79$). Although slightly greater allocations were given to mammals

and birds compared to reptiles, the differences are minute and insignificant statistically. These approximately equal amounts of financial support for the conservation of these animal classes underscores the point that likeability in itself may be an overrated factor in determining the relative degree of conservation support for different classes. Other factors such as intrinsic value, ecological value, moral or ethical values play a strong role too (cf. Tisdell et al. 2004; Tisdell and Wilson 2004).

5. Discussion

The order of likeability in the three animal classes examined by us accords with the findings of DeKay and McClelland (1996) that generally, mammals are preferred to birds, and birds are preferred to reptiles. Our findings and that of DeKay and McClelland (1996) are consistent with the body of work that finds phylogenetically similar species to humans receive the most empathy from humans (*cf.* Kellert 1980; Samples et al. 1986; Eddy et al. 1993; Plous 1993).

DeKay and McClelland (1996) go on to suggest that species that obtain more empathy obtain higher WTP for their conservation. Their view is similar to that of Metrick and Weitzman (1996, 1998) who studied the U.S. government's allocation of funds for species' conservation. A conclusion reached by Gunnthorsdottir (2001, p. 211) is that the greater perceived attractiveness of an animal (usually the extent of its human similarity), the more funds can be raised for its cause. Gunnthorsdottir (2001) suggests that ultimately, "selective preference for certain animals are therefore likely to shape the future fauna of the planet", with probably the least attractive or least liked species going extinct sooner than others.

While it is true that other factors play a role, such as degree of endangerment, ecological importance of the species and ethical or moral values (DeKay and McClelland 1996; Tisdell et al. 2004), their importance in shaping people's preferences seems to be underrated against likeability or the Similarity Principle. Consequently, likeability/human-like characteristics, which in previous studies are claimed to be very powerful forces in determining which species are conserved and which are not, appear to have been overrated. This is revealed in our study based on mammals, birds and reptiles. First of all, analysis of the support of respondents for survival of focal species does not accord with this claim, or only does so to a limited extent. There is even less support for this point of view when participants in the

survey were given the option of paying for species in the three animal classes and donating to charity for humans in need. Our finding indicates that species or classes that are less liked are still often considered by the public to have values that merit their support for conservation, e.g. intrinsic value, ecological value, moral worth etc.

It is not claimed that no human prejudices or biases exist in relation to human support for the conservation of particular species or classes of species. Rather, our findings indicate that human likeability of species or classes of species is not as powerful an influence on the pattern of human social support for wildlife conservation as claimed by previous studies. Our study, however, has been confined to consideration of vertebrates in higher order classes – reptiles, birds and mammals. It is possible if one considers lower classes of fauna that evolved earlier in the evolutionary process, then there will be less support for their conservation. This, however, cannot be assumed. Again, if there is a decline in support (as may be probable) for conservation of lower order species, the decline may not be a gradual or smooth one. For example, support for conserving amphibians may be almost as strong as for birds and mammals, even if on average amphibians may be less liked. Nevertheless, support for conserving fish species may be significantly less than for amphibians. Strong support exists for the conservation of some species of butterflies (belonging to the class Insecta) even though they show little similarity to humans, and Stanley (forthcoming) found considerable support for the conservation of the Riverside fairy shrimp *Streptocephalus woottoni* in California even though it belongs to a non-vertebrate class, and has little similarity to humans. Hence, we should be more guarded in suggesting that human support for the survival and conservation of wildlife species is dominated by their similarity to humans, or by their visceral characteristics, or by their likeability to humans. Other factors play a role such as moral or ethical values, and knowledge of the intrinsic value of species in ecological systems. The importance of these factors has probably increased with increasing awareness of and literacy in environmental and ecological issues amongst the general public. Furthermore, social values and attitudes towards nature are not stationary (Passmore 1974) and social values influence the expressed values about nature of individuals in human societies (Etzioni 1988; Sagoff 1996; Tisdell 1997).

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