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PUBLIC SUPPORT FOR SUSTAINABLE COMMERCIAL HARVESTING OF WILDLIFE: AN AUSTRALIAN CASE STUDY

Abstract

This paper surveys a sample of 204 members of the Australian public to determine their attitude to the sustainable commercial harvesting of wildlife generally, and considers their specific support for the sustainable commercial harvesting of each of 24 Australian native species. The general attitude of the sample to wildlife harvesting is related to their attitude to nature conservation. The relationship between respondents' support for the sustainable commercial harvesting of each of the species and their degree of endangerment based on IUCN Red List rankings is established and found to be an inverse one. Support for the commercial sustainable use of each of the species is compared with the willingness of respondents to pay for their conservation. Support for sustainable commercial harvesting of species is found to be inversely related to the willingness of respondents to pay is for a particular species' conservation. In turn, this willingness to pay is found to rise with the degree of endangerment of species. While the likeability of a species has some influence on whether there is support or not for its commercial harvesting, it does not seem to be the predominant influence— the degree of endangerment of a species appears to be the major influence here. Even so, this does not imply majority support for the harvest of all species that are not threatened; rather, majority support for harvest was observed only for some species known to be abundant. None of the species that appear in the Red List have majority support for harvesting. Implications are outlined of the results for the policy of promoting wildlife conservation by means of sustainable use.

Keywords: Australian wildlife species, conservation policy, commercial harvesting, economic incentives, endangerment, public attitudes, sustainable use, trade.

PUBLIC SUPPORT FOR SUSTAINABLE COMMERCIAL HARVESTING OF WILDLIFE: AN AUSTRALIAN CASE STUDY

1. Introduction

Caring for the Earth: A Strategy for Sustainable Living (IUCN-UNEP-WWF, 1991) stresses sustainable use of wildlife as a means to support sustainable development and wildlife conservation. It states that, "governments, development aid agencies, and conservation organizations should support projects that combine rural development and the conservation and use of wild species and ecosystems" (IUCN-UNEP-WWF 1991, p. 42) and states that, if such projects are to succeed, they must provide a sustainable economic return to the communities concerned. Elsewhere, it recommends that those communities that "conserve wildlife stocks should be enabled to export the sustainable surplus and to receive the revenues earned".

Whether or not a sustainable use policy can be expected to be effective in maintaining biodiversity has been subject to considerable debate. Campbell (2002) highlights disagreement among scientists about whether sustainable use of wildlife is likely to be an effective approach to wildlife conservation and the preservation of biodiversity. Allen and Edwards (1995) and Hutton and Dickson (2001) argue that, if carried out with appropriate efficiency and restraint, sustainable use of wildlife can promote conservation. Robinson (1993) on the other hand, states that a strategy emphasizing sustainable use of wildlife would inevitably result in a loss of biodiversity because it would favor more useful species at the expense of less useful ones. More recently, Tisdell (forthcoming a,b) has shown how emphasis on commercial sustainable utilisation of wildlife can alter the composition of the stock of biodiversity and its evolution. Ultimately, however, because much of humanity will continue to utilize wildlife, biologically sustainable use and incentive-driven conservation must become a central conservation activity (Hutton and Leader-Williams, 2003, pp. 223). The public's attitudes towards sustainable use of wildlife must therefore be evaluated (Witter and Sheriff, 1987, p. 262, Ballard 1994) to determine whether there is political support for sustainable use policies. Some North American studies, such as Butler et al. (2003) and Fulton et al. (1993), respectively, have assessed changes in the public's attitude over time towards "traditional conservation" of wildlife (which includes management for sustainable use) and have determined the proportion of a sample of the public belonging to the "high animal rights" set or the "high animal use" set. Yet, there has been little specific evaluation of

the general public's attitude to the strategy of sustainable commercial use of wildlife, their support for the harvesting of definite wildlife species and factors that might affect attitudes in general and support for the harvest of different species.

The purpose of this paper, hence, is to

(1) report and analyse the attitude of a sample of the Australian public to the sustainable commercial harvesting of wildlife in general;
(2) the sample's attitude to the sustainable commercial harvesting of each of 24 Australian tropical wildlife species comprised of sets of mammals, birds and reptiles; and
(3) to determine what factors, if any, make the public more receptive to the sustainable commercial harvesting of wildlife species, as well as less so.

As a result of this investigation, it should be possible to obtain a better appreciation of the extent to which the Australian public supports the strategy of nature conservation by sustainable use, as recommended in *Caring for the Earth*. We outline the methods used, present the results, discuss these and conclude.

2. Methodology

Three survey questionnaires were used serially to obtain data regarding the public's knowledge of Australian tropical wildlife species and their attitudes to their sustainable commercial use. The first two survey questionnaires (Survey I and Survey II) are the ones relevant to this particular study. The questionnaires were designed to gather the following information:

(i) survey participants' background (e.g., income and education levels);
(ii) how knowledgeable they are about each of the 24 Australian tropical wildlife species;
(iii) their general attitudes towards nature conservation, whether they are strong nature conservation advocates or otherwise;
(iv) whether they think that commercial harvesting of wildlife in general should be allowed, or not, or only if it is sustainable or regulated;

(v) whether they think that sustainable commercial harvesting should be allowed for each of the 24 selected wildlife species; and

(vi) what percentages of a hypothetical fund of $1,000 they would allocate to help conserve each species in each animal class.

The survey questions were pre-tested on a sample of students at The University of Queensland and then revised. Purposive sampling of the general public was then undertaken principally by letterbox drops, in various suburbs of Brisbane, Queensland with differing socio-economic profiles. The letterbox drops contained circulars inviting potential respondents to participate in a survey of wildlife valuation and stated that those selected to participate would be offered $20 for attendance, a public lecture, refreshments and a chance to win $200 (note that all dollar values mentioned in this article refer to the Australian dollar). From respondents expressing an interest to participate in the survey, a sample was selected with a similar age and gender distribution to that of Brisbane's population. An analysis of participants' income distribution and their education level indicates that the selected sample is varied. Observe that the sample is an urban sample and it may not therefore be representative of the rural population. However, Australia is a highly urbanised country; over 86% of its population lives in urban areas (Australian Bureau of Statistics, 2001).

A total of 204 participants were selected for the survey and divided into five groups of about 40 people. Four groups were asked to attend survey sessions held at The University of Queensland at different times of the week— two groups during the working week and two during the weekend. The fifth group was asked to attend survey sessions on a Sunday in a church hall. This arrangement was designed to allow participants flexibility so that attendance can be maximised.

Initially, participants filled out structured questionnaire Survey I, which gathered the information described earlier. After a tea break, participants were asked to attend an illustrated wildlife presentation by Dr. Steve Van Dyck, the senior Curator of Vertebrates at the Queensland Museum. Afterwards, each participant was given a colored photo booklet containing brief information about each of the 24 species in the survey such as their descriptions, geographic distributions, life histories and conservation statuses. Participants were asked to take their booklet home with the second questionnaire, Survey II. They were

asked to read the booklet before filling out Survey II and returning it in the postage pre-paid envelope provided. Survey II contained overlapping questions with Survey I. Comparing Survey II results with that of Survey I, changes in participants' attitude towards sustainable commercial harvesting and changes in their allocation of funds to conserve the various species that might occur with information provision (i.e., greater knowledge of the species) could be observed. Factors that affect participants' attitude towards sustainable commercial harvesting could then be identified. This is investigated using the IUCN Red List (2003) data on the conservation status of the various species. The chi-square test, Spearman's rank correlation test and ordinary least square regression are used to analyse the relationship between the variables in this study (Zar, 1999; Gujarati, 2003).

3. Results

3.1 Attitudes towards sustainable commercial harvesting of wildlife in general

Table 1 presents a picture of the stated general attitude of the sample of the Brisbane public towards sustainable harvesting of wildlife in Survey I and Survey II. Chi-square test coefficients indicate no statistically significant differences between the results from both surveys. About half the sample of survey participants agreed to the statement that commercial harvesting of wildlife should be allowed, but only if harvesting is sustainable; just under a half of all participants also agreed that the government should allow the harvesting of some wildlife, but that it should be regulated; and approximately a quarter of participants expressed their opposition to all commercial harvesting. Only one participant in Survey I agreed to the statement that harvesting should be allowed without any restrictions by the government but in Survey II none agreed with this statement. It is clear that the general position of survey participants on commercial harvesting of wildlife is stable and most only support commercial harvesting if it is sustainable.

Table 1:

Agreement of survey participants with various statements regarding commercial harvesting of wildlife. Significances of difference in values in Survey I and Survey II tested using the chi-square test

Attitude towards commercial harvesting*	Number of participants (and as a percentage of total participants)†		Significance of difference between Survey I and II, χ^2, p
	Survey I	Survey II	
Commercial harvesting of wildlife should be allowed, but only if it is sustainable	101 (50)	104 (51)	0.005, 0.94
The government should allow the harvesting of some wildlife, but regulate it	94 (46)	100 (49)	0.12, 0.72
Commercial harvesting of wildlife should not be allowed	57 (28)	51 (25)	0.37, 0.54
Commercial harvesting and use of wildlife should be allowed and should not be restricted by the government	1 (0.5)	0 (0)	0.0002, 0.99

**Note that participants could agree consistently to both of the first possibilities in this column*

†Non-responses in Survey I = 3, Survey II = 4

3.2 Variation in attitudes towards commercial harvesting of participants related to their attitude to nature conservation

In both surveys, almost all survey participants (≈ 93%) described themselves as extremely strong, or strong, or moderate advocates of nature conservation while the remainder considered themselves as either neutral to it, or more oriented towards development, or gave no response to the question. Participants were categorized according to whether they were extremely strong or strong advocates of nature conservation or just moderate advocates of nature conservation. The attitudes of these two groups towards sustainable commercial harvesting were analysed. In both surveys, a significantly greater proportion of participants who are extremely strong or strong advocates of nature conservation said commercial harvesting of wildlife should not be allowed compared to the proportion of participants who are moderate advocates of nature conservation (2nd and 3rd column, Table 2). Conversely, a slightly greater proportion of participants who are moderate advocates are supportive of sustainable commercial harvesting in Survey II than the proportion of participants who are extremely strong or strong advocates of nature conservation (5th column, Table 2), but this difference is not statistically significant. It is therefore likely that proportionally more people

who are extremely strong or strong advocates of nature conservation are averse to commercial harvesting of wildlife compared to those who are only moderate advocates of nature conservation.

Table 2:

A comparison of the number of respondents supporting and not supporting commercial harvesting of wildlife species for survey participants who said that they extremely strong or strong advocates of nature conservation and for those who said they are only moderate advocates of nature conservation. The percentages (in brackets) are expressions of these numbers as proportions of the total number of participants in the survey with the same attitudes towards nature conservation. The significances of the difference in values between extremely strong or strong advocates and moderate advocates were tested using the chi-square test

Attitude towards nature conservation	Commercial harvesting of wildlife should not be allowed, no. (%)		Commercial harvesting of wildlife should be allowed, but only if it is sustainable, no. (%)	
	Survey I	Survey II	Survey I	Survey II
Extremely strong or strong advocates	32 (30)	32 (28)	53 (50)	57 (50)
Moderate advocates	15 (18)	9 (12)	40 (48)	43 (57)
Significance of difference between extremely strong or strong advocates and moderate advocates, χ^2, p	3.04, 0.08*	6.02, 0.01**	0.01, 0.92	0.64, 0.42

***Significant at the 95% confidence level, *significant at the 90% confidence level*

3.3 Attitudes of participants towards the sustainable commercial harvesting of each of the 24 Australian tropical wildlife species

Table 3 summarises the extent of support of survey participants for the sustainable commercial harvesting of the 24 focal Australian species in this study. There are only two species (red kangaroos and saltwater crocodiles) which the majority of respondents favor harvesting. The balance of support compared to opposition to the harvest of these species is 1.90 and 1.98 respectively. There is one other species (the freshwater crocodile) for which there is balance in favor of its sustainable commercial harvesting but not quite by majority

support. The ratios of those in favor of harvesting compared to those opposed remained relatively stable between surveys, except in the case of the red-tailed black cockatoo, the taipan snake and the northern long-necked turtle where considerable rises were recorded. The reasons are considered in the discussion section.

Table 3:

Attitude of survey participants to whether sustainable commercial harvesting of each of 24 Australian tropical wildlife species should be allowed and the IUCN Red List conservation status of each. Entries arranged in decreasing level of support for such harvesting within each animal class

Species (Abbreviations)	Scientific name	IUCN Red List Listing*	Allow sustainable commercial harvesting? % 'yes' and 'no' responses† and 'yes'/'no' ratio	
			Survey I	Survey II
MAMMALS				
Red kangaroo (Rk)	Macropus rufus	-	53.9/29.9 (1.80)	56.9/29.9 (1.90)
Koala (K)	Phascolarctos cinereus	LR/nt	20.6/71.1 (0.29)	17.2/71.6 (0.24)
Dugong (D)	Dugong dugon	VU	14.2/71.1 (0.20)	14.2/72.5 (0.20)
Tree kangaroo (Tk)	Dendrolagus lumholtzi	LR/nt	19.1/58.8 (0.33)	13.2/70.6 (0.19)
Northern bettong (Nb)	Bettongia tropica	EN	14.2/61.3 (0.23)	12.7/72.1 (0.18)
Northern quoll (Nq)	Dasyurus hallucatus	LR/nt	14.7/55.9 (0.26)	12.3/71.1 (0.17)
Mahogany glider (Mg)	Petaurus gracilis	EN	13.7/66.2 (0.21)	12.3/76.0 (0.16)
Eastern pebble-mound mouse (Em)	Pseudomys patrius	VU	13.7/56.9 (0.24)	10.8/72.1 (0.15)
Northern hairy-nosed wombat (Nw)	Lasiorhinus krefftii	CR	13.2/72.5 (0.18)	10.8/78.9 (0.14)
BIRDS				
Australian magpie (Am)	Gymnorhina tibicen	-	27.0/53.4 (0.50)	28.9/50.0 (0.58)
Red-tailed black cockatoo (Bc)	Calyptorhynchus banksii	-	16.7/63.7 (0.26)	27.0/54.9 (0.49)
Eclectus parrot (Ep)	Eclectus roratus	-	17.2/56.9 (0.30)	20.1/59.8 (0.34)
Palm cockatoo (Pc)	Probosciger aterrimus	-	16.7/56.9 (0.29)	19.1/60.8 (0.31)
Golden bowerbird (Gb)	Prionodura newtoniana	-	14.7/64.7 (0.23)	18.6/66.2 (0.28)
Laughing kookaburra (Kb)	Dacelo novaeguineae	-	19.6/66.7 (0.29)	18.1/65.7 (0.28)
Gouldian finch (Gf)	Erythrura gouldiae	EN	17.2/58.3 (0.29)	15.7/68.6 (0.23)
Golden-shouldered parrot (Gp)	Psephotus chrysopterygius	EN	15.7/59.8 (0.26)	14.2/70.6 (0.20)
Southern cassowary (Scw)	Casuarius casuarius	VU	17.6/62.3 (0.28)	13.2/73.0 (0.18)
Brolga (B)	Grus rubicundas	-	16.7/65.7 (0.25)	12.3/72.1 (0.17)
REPTILES				
Saltwater crocodile (Sc)	Crocodylus porosus	-	55.9/27.0 (2.07)	56.4/28.4 (1.98)
Freshwater crocodile (Fc)	Crocodylus johstoni	-	45.6/33.3 (1.37)	49.0/34.3 (1.43)
Taipan snake (Ts)	Oxyuranus scutellatus	-	29.9/38.7 (0.77)	41.7/35.8 (1.16)
Northern long-necked turtle (Nt)	Chelodina rugosa	-	16.7/59.8 (0.28)	39.7/43.6 (0.91)
Hawksbill turtle (Ht)	Eretmochelys imbricata	CR	19.1/62.3 (0.31)	18.6/66.7 (0.28)

*Threatened species categories from the IUCN Redlist (IUCN, 2003). LR/nt – lower risk/ near threatened; VU – vulnerable; EN – endangered; CR – critically endangered

†The percent of 'yes' and 'no' responses to the proposition of allowing sustainable commercial harvesting of these species do not add up to 100% as there were also participants who indicated that they were unsure of their position or are indifferent to the matter

3.4 Relationship between endangerment status of species and support for commercial harvesting of species

We now consider if there is an association between the conservation status of these species as listed in the IUCN Red List (2003) and participants' stated degree of relative support for their sustainable commercial harvest. Does a greater degree of endangerment of a species mean lesser support for commercial harvesting? To test this, the rankings of relative support of participants for harvesting are compared with rankings of the conservation status of each of the species based on the IUCN Red List classification. This enables Spearman's rank correlation coefficients, $r_{s,}$ and their corresponding *p*-values to be computed for the species in each class and for both surveys, as well as for the whole set of 24 species. The results are shown in Table 4 with indicators of their statistical significance.

Table 4:

Results from Spearman's rank correlation test for survey participants' relative support for harvesting (ratio of 'yes'/'no' responses) the various species and the species' IUCN Red List (2003) threatened species category rankings. The results signify the strength of the relationship between increasing species endangerment and decreasing support for the species' commercial harvesting

	Survey I (r_s, p)	Survey II (r_s, p)
Mammals (n = 9)	0.94, < 0.01***	0.75, 0.03**
Birds (n = 10)	0.25, 0.50	0.61, 0.07*
Reptiles (n = 5)	0.50, 0.50	0.75, 0.25
Set of 24 species	0.52, < 0.01***	0.72, < 0.01***

***Significant at the 99% confidence level, **significant at the 95% confidence level, * significant at the 90% confidence level

The following can be noted:

(1) Higher endangerment is associated with, in most cases, a reduction in the relative degree of support for the sustainable commercial use of a species

(2) The above correlation (reduced relative support for commercial use with greater species endangerment) generally rose (all r_s values are above 0.50) in Survey II, after participants gained information about all the species from the survey presentation and colored photo booklets

(3) When all 24 species are considered, the relationship between reduced support for commercial harvesting with increased endangerment is highly significant

Further insights into participants' support/opposition to sustainable commercial harvesting of wildlife species can be obtained by considering the relationship between this and participants' stated willingness to pay for conservation of each of the focal species.

3.5 Relationship between willingness to pay to conserve species and attitude towards sustainable commercial harvesting

Survey participants' willingness to contribute to help conserve the various tropical wildlife species was gauged through the survey questions that asked participants to allocate a certain percentage of a hypothetical sum of $1,000 for conservation between the species in each animal class. The following question (asked for the reptile case) was also asked for mammals and birds:

> *'Suppose that you are given Aus $1,000, but you can only use it to donate funds to support the conservation of the reptiles in Australia listed below. Suppose that a reliable organization were to carry out the conservation work and your money would supplement other funds for this purpose. What percentage of your $1,000 would you contribute for the conservation of each of the reptiles listed below? Your total should add up to 100%.'*

Reptiles	**(%)**
Saltwater crocodiles	
Freshwater crocodiles	
Hawksbill sea turtles (a marine species with a beautiful shell)	
Northern long-necked (freshwater) turtles	
Taipan snakes (also known as Fierce Snakes)	
	100

We compared the respondents' mean percentage allocation of this hypothetical conservation fund to each species to the 'yes'/'no' ratio of support for allowing sustainable commercial harvesting of that species, by animal class. Figures 1, 2 and 3 present observations for mammal, bird and reptile species, respectively, based on Survey II data.

In all three cases, there is a statistically significant inverse log-linear relationship (note *t*-test results for significance of slope factor in figure captions) between support for sustainable commercial harvesting of the species and the mean percentage allocation of conservation funds for the species. The larger the mean allocation from the hypothetical fund for conservation a species is allotted, the less receptive are the survey participants to the proposition of harvesting the species. The coefficient of determination is markedly higher in the reptile case ($R^2 = 0.91$) than in the case of mammals and birds (both $R^2 = 0.64$).

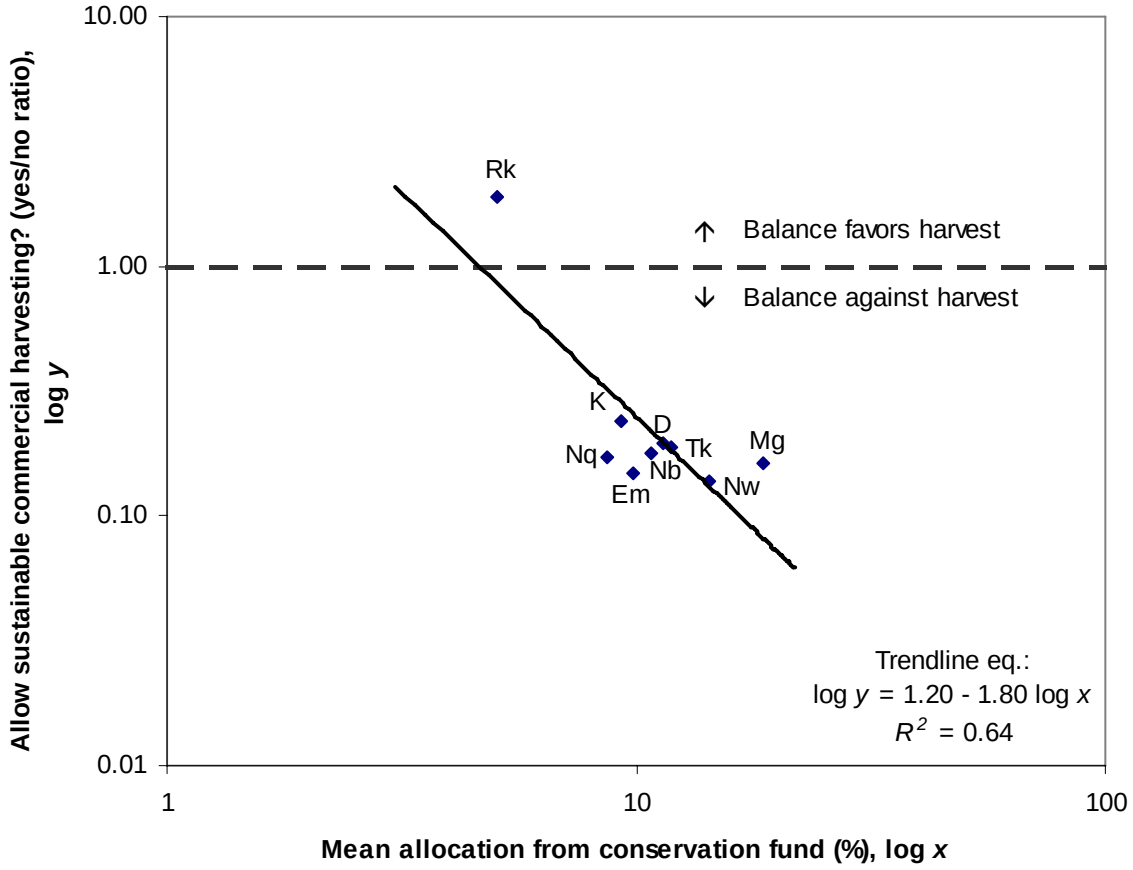

Figure 1: **Support for sustainable commercial harvesting of the various mammal species versus allocation from hypothetical fund of $1,000 to help the conservation of the mammal species. Dependent and independent variable data are logged to the base 10. The slope factor is significantly different from zero at the 99% confidence level ($t = -3.53$, $p = 0.0096$)**

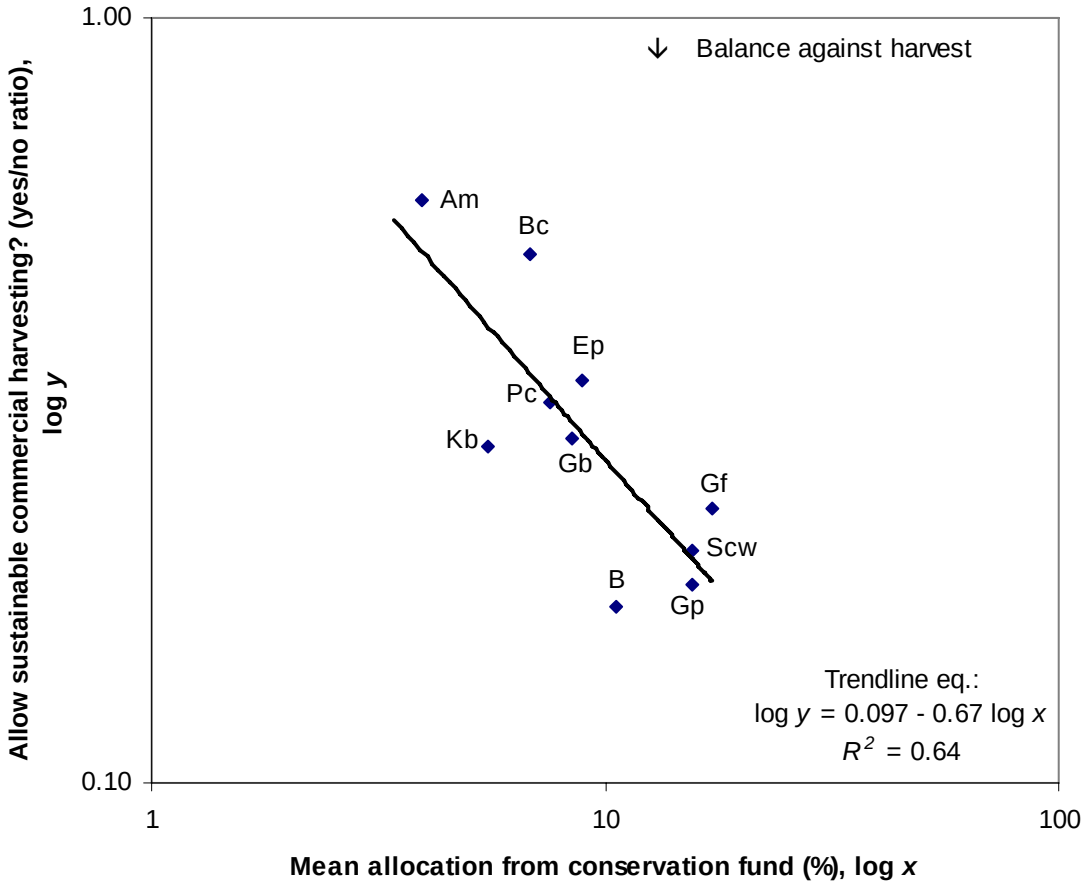

Figure 2: **Support for sustainable commercial harvesting of the various bird species versus allocation from hypothetical fund of $1,000 to help the conservation of the bird species. Dependent and independent variable data are logged to the base 10. The slope factor is significantly different from zero at the 95% confidence level ($t = -3.80$, $p = 0.005$)**

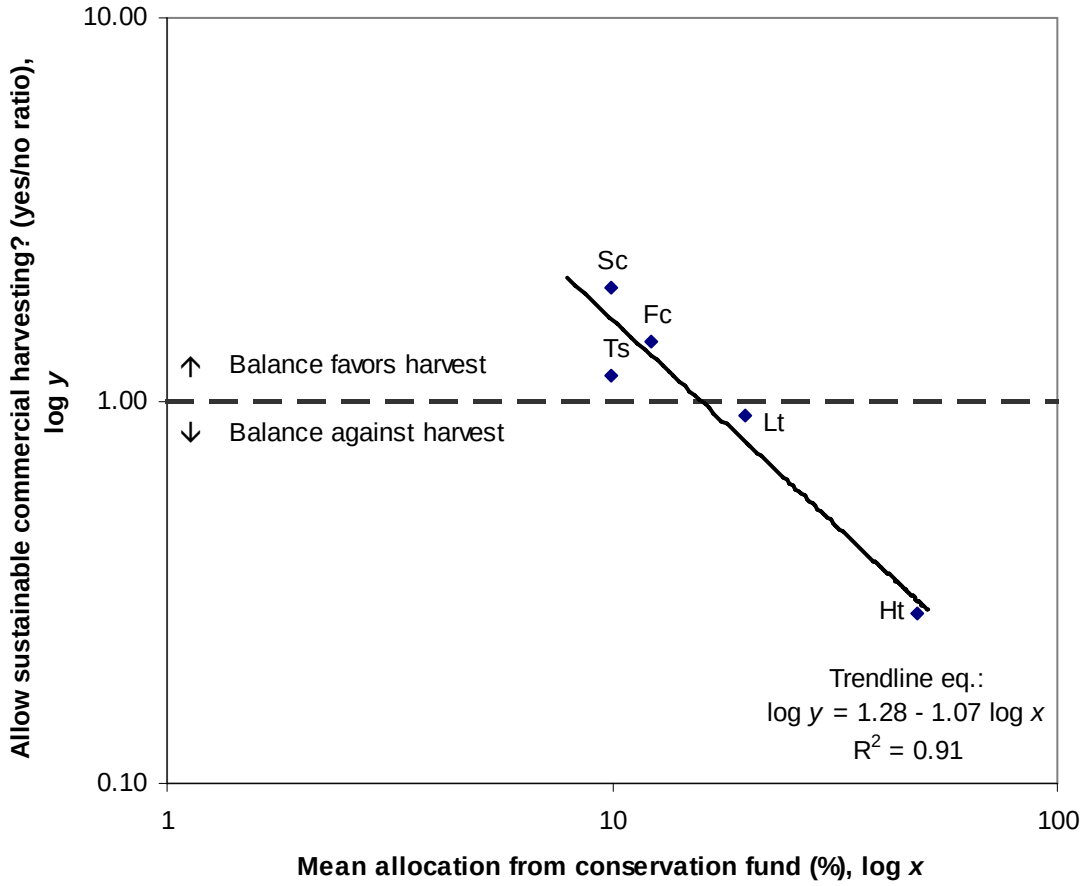

Figure 3: **Support for sustainable commercial harvesting of the various reptile species versus allocation from hypothetical fund of $1,000 to help the conservation of the reptile species. Dependent and independent variable data are logged to the base 10. The slope factor is significantly different from zero at the 95% confidence level (t = -5.68, p = 0.011)**

What factors determine the allocation of conservation funds for the various species? Knowledge of the species is one factor (see Tisdell and Wilson, 2004). But let us concentrate on just the situation in Survey II where participants were better informed about the species than in Survey I. Comparing the ranking of allocations of conservation funds to the individual species with IUCN Red List inferred rankings of their conservation status, the Spearman's correlation coefficients shown in Table 5 are obtained.

Table 5:

Spearman's rank correlation coefficients for fund allocated for conservation of species compared with their inferred IUCN Red List threatened species category rankings. The results signify the strength of the relationship between increasing species endangerment and increasing allocation of funds by participants for the conservation of the species

Class	Survey I (r_s, p)	Survey II (r_s, p)
Mammals (n = 9)	0.39, 0.33	0.76, 0.03*
Birds (n = 10)	0.46, 0.20	0.83, < 0.01**
Reptiles (n = 5)	0.75, 0.25	0.75, 0.25

***Significant at the 99% confidence level, *significant at the 95% confidence level*

Table 5 indicates that the relative amount that respondents are willing to pay for conservation of the focal species is positively correlated with the ranked endangerment of each species as inferred from the IUCN Red List. Furthermore, the rank correlation coefficients for most classes of species are much higher in Survey II than in Survey I and more significant statistically. This can be ascribed to participants being better informed about each of the species in Survey II than in Survey I.

4. Discussion

Although Caring for the Earth (IUCN-UNEP-WWF, 1991) favored a policy of greater commercial use of species as an economic incentive for their conservation, politically such a policy will be difficult or impossible to implement without public support. More recently also, economists such as Swanson (1997, 1999) have argued strongly in favor of a policy of wildlife conservation through sustainable use. This approach has provided a basis for criticizing CITES, the Convention on International Trade in Endangered Species, which restricts trade in endangered species as a conservation measure. The above results indicate that the majority of a sample of the Australian public is not convinced that commercial sustainable use of wildlife species is desirable and likely to be effective in conserving species that are endangered.

About a quarter of the sample opposed any commercial harvesting of wildlife and around a half agreed that it should only be allowed if it is sustainable. Those who opposed any harvesting of wildlife were more likely to be extremely strong or strong advocates of nature conservation than moderate advocates. When it came to harvesting of the 24 Australian focal species (all natives), there was little support for the commercial harvesting of most. The majority of respondents favored it for only two species, both of which have relatively abundant populations in Australia, and the proportion in favor of such harvest compared to those against exceeded unity for only three species. In each case, the percentage opposing harvest was a little higher than in the general case. Considerable rises in support for harvesting the northern long-necked turtle, the taipan snake and the red-tailed black cockatoo were observed. This may be a result of participants having learnt in Survey II about the uses or potential uses of these species, such as how the long-necked turtle has been traditionally harvested by Australian Aborigines (Kennett, 2004) and about a new enterprise to sustainably harvest it for the pet trade (Fordham, undated), and about how the taipan snake venom may have medical applications (ABC Radio National, 1995; Moore et al. 2003). Participants may have also learned that the red-tailed black cockatoo can be an agricultural pest.

From Table 3, it is apparent that there is no majority support or a positive balance of support for sustainable commercial harvesting of any species listed in the IUCN Red List. For those not listed, only the harvest of very few species is supported. These are species currently harvested in Australia.

Using inferred IUCN Red List rankings, we found that relative support for the sustainable commercial harvesting of the focal species declines with their degree of endangerment. At the same time, the relative willingness of respondents to pay to conserve species rises with the degree of endangerment of the species, and the relationship tends to become closer once respondents are better informed about the status of wildlife species. While perceived levels of endangerment are not the only influence on the public's willingness to pay for the conservation of a species, these results indicate that it is a very important influence. This is at variance with the findings of Metrick and Weitzman (1996, 1998) that visceral characteristics of species are the major factors influencing public support for their conservation.

While this 'likeability' factor undoubtedly does influence public support for the conservation of species, it does not appear to be an overriding influence. Also, in some cases, the likeability of species and their degree of endangerment are highly correlated. This occurs in the case of our reptile class and the resulting multicollinearity makes it difficult to disentangle empirically the separate influence of likeability and endangerment on the willingness to pay of the public for species' conservation. However, even in the reptile case, evidence of the importance of endangerment for conservation funding has been found (Tisdell et al., 2004).

5. CONCLUSION

We observed little public support for encouraging sustainable commercial wildlife use to conserve species in the IUCN Red List. Furthermore, the sampled public supports sustainable commercial harvesting of very few species not in the Red List. The two species for which there is majority support for harvest are currently commercially harvested and abundant. Their abundance, rather than their likeability, seems to be a deciding factor. Of those species obtaining majority support for harvesting, the red kangaroo was found (in our surveys) to be highly liked but not the saltwater crocodile. More than a decade after the publication of Caring for the Earth (IUCN-UNEP-WWF, 1991), it seems that relatively few members of the Australian public are convinced of the virtues of commercial harvesting as a mechanism for conserving threatened species. Whether or not this is so in other countries requires investigation. Without public support, it will be difficult to implement strategies for conservation of wildlife by commercial sustainable use, either nationally or globally, and to alter the Convention on Trade in Endangered Species so that it is more permissive of commercial use of endangered species. Overall, we found that non-market rather than market means are favored for conserving threatened species and willingness to pay for the conservation of species tends to rise with the level of their endangerment (see also DeKay and McClelland 1996, pp. 69-70; Bandara and Tisdell 2004).

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