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**Knowledge of Birds and Willingness
To Pay for their Conservation:
An Australian Case Study**

by

Clevo Wilson and Clem Tisdell

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² School of Economics, The University of Queensland, Brisbane QLD 4072, Australia
Email: clevo.wilson@uq.edu.au

³ School of Economics, The University of Queensland, Brisbane QLD 4072, Australia
Email: c.tisdell@economics.uq.edu.au

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For more information write to Professor Clem Tisdell, School of Economics, University of Queensland, Brisbane 4072, Australia. Email c.tisdell@economics.uq.edu.au

Knowledge of Birds and Willingness to Pay for their Conservation: An Australian Case Study

Abstract

This case study concentrates on the extent of knowledge of members of the Australian public of Australia's tropical bird species and their willingness to pay for their conservation. In order to place this issue in context, it first provides background information on the status of Australian bird species, focusing attention on species that occur in tropical Australia. Then, using survey results, this study considers the hypothesis that the public's relative support for the conservation of different bird species depends on its comparative knowledge of their existence and status. Based on experimental results from a sample of residents of Brisbane, Queensland (Australia), it is found that their knowledge of bird species that occur exclusively in the Australian tropics (including tropical Queensland) is very poor compared to those that also occur in the Brisbane area and are relatively common. Experimental results indicate that when respondents in the sample had an option to allocate \$1,000 between ten bird species listed in the survey, it resulted in a greater allocation of funds to the better known and more common species than when they were provided with balanced information about all the selected species. With balanced information the average allocation to bird species confined mostly to the Australian tropics, particularly those threatened or endangered, increased. The general consequences of this for policies for the conservation of birds are discussed.

Knowledge of Birds and Willingness to Pay for their Conservation: An Australian Case Study

1. Introduction

Knowledge about the existence of a country's wildlife by the public is important because of its implications for nature conservation and the satisfaction the public derives from its existence. Knowledge of species of wildlife not only enables the public to appreciate and enjoy its wildlife but may also encourage the public to protect and conserve wildlife, especially species that are rare and endangered. In the absence of such knowledge, the satisfaction public could derive from wildlife may be low, or even zero in the case of species unknown to the public. As a result, the economic and other values the public places on wildlife species that are poorly known are likely to be lower than otherwise. On the other hand, increased appreciation of wildlife, especially endangered species, leads to greater support for their conservation and also increases the memberships of those organisations that are involved with the protection and conservation of wildlife.

Australia, being a large continent, has many species of unusual wildlife, and its birdlife is no exception. A large percentage of Australia's birds are endemic¹ and are brightly hued. Furthermore, a significant number of species are confined to tropical² Australia. Many of these species are not only endemic but are confined to small areas of Australia's tropical north. Some with specialised habitats are highly endangered and are threatened with extinction. Furthermore, threats to these Australian birds occupying specialised habitats and Australian birds in general are increasing (Garnett and Crowley, 2000).

The aim of this paper is to examine the Brisbane public's knowledge of bird species occurring in Australia's tropical north and their willingness to pay for their conservation based on a sample and taking into account the knowledge of those in the sample before and after the provision of information about relevant species. This issue is worthy of study because the majority of Australia's 20 million population live below the Tropic of Capricorn along the eastern coast and hence may be unaware of the existence of some bird species that are confined to the tropical north, occupying specialised habitats. The public's knowledge about the existence of these birds is

crucial because the public could potentially contribute financially and otherwise for their protection and conservation. Lack of, or absence of, knowledge about bird species could lead to little or no support for their protection and conservation. This is of particular concern in relation to those species that are endangered and threatened with extinction. The public's knowledge and interest in birds can also be expected to influence government and some non-governmental organisation (NGOs) decisions about the conservation of birds.

In this paper, the experimental survey results obtained from a sample of 204 residents of Brisbane, Queensland, Australia are used to examine the public's knowledge of birds, especially of birds that have a restricted distribution and those that are rare and endangered. The results are also used to show how lack of balanced knowledge about the status of bird species by the public could lead them to give more support for bird species that are common and well known than to those species that are less well known. We show the importance of information provision about bird species and its conservation implications and draw out its consequences for their conservation. This is relevant to bird conservation organisations raising money for the protection and conservation of birds. Education of the public can play a crucial role in attempts to conserve those bird species that are poorly known and endangered.

2. Status of Australian birds with special reference to its tropical avifauna

Australia is home to 780 species of birds (based on Christidis and Boles, 1994 by Simpson et al. 2003), a large number of subspecies (Simpson et al. 2003) and many more vagrant species are recorded every year as new additions to the Australian avifauna (cf. Birds Australia Rarities Committee, 2003; Simpson et al. 2003). The number of bird species is even higher if Australia's island territories and major offshore islands³ are included in the checklist of Australian birds. Of the numerous bird species recorded in Australia approximately 42% are endemic to Australia⁴ (Simpson et al. 2003). Many more subspecies are also endemic (Simpson et al. 2003). The endemicity of Australian birds is even larger if Australian island territories' species are taken into account. Furthermore, more than a quarter of the species (including sea birds) in the Australian mainland and Tasmania are uncommon or rare (Simpson et al. 2003). The number of uncommon or rare endemic species is around 38% (Simpson et al. 2003).

Furthermore a significant number of Australian birds are confined to the tropics. For example, approximately 18% of the Australian birdlife is confined to the tropics and of these 43% are endemic⁵. By comparison, 27% of the birdlife is confined to subtropical and temperate areas (which occupies more than 60% of Australia) and 64% of these species is endemic. Furthermore, 32% of the species confined to Australia's tropical north are uncommon or rare and a significant number of these birds are endemic to Australia such as the Gouldian finch *Erythrura gouldiae* and the golden-shouldered parrot *Psephotus chrysopterygius*, two species selected for the experimental survey.

A significant number of those species confined to the tropics are further restricted to a particular bioregion (e.g. a rainforest in the wet tropics or savannah) and live almost nowhere else. Examples include the golden bowerbird *Prionodura newtoniana* (restricted to two patches of the wet tropics of north Queensland) and the palm cockatoo *Proboscigera aterrimus* (restricted to tropical forests/adjacent savannah of one area of north Queensland). In other words the removal of rainforests or savannahs would also mean the removal of a large number of species that depend on these specialised habitats. The golden bowerbird and the palm cockatoo were also selected for the experimental study as discussed in Section 3.

Despite Australia's large size, many species of birds are under constant threat due to such factors as cattle and sheep grazing, large scale clearing of land for agriculture, irrigation of wetlands and marshes, spreading land degradation due to soil salinity and rapid urbanization, especially the coastal areas and the introduction of mammals such as the cat, fox, pig, house rat, buffalo and horses have had a devastating effect on Australia's avifauna. Illegal trapping of colourful species for aviaries is also of concern (Shephard, 1994). Introduced birds to Australia are in addition impacting on some native species. Canines (both domestic and wild) and feral pigs are also a threat to ground dwelling birds such as the southern cassowary *Casuarius casuarius*, a tropical rainforest species of north Queensland chosen for the study. Road kills are also reducing the numbers of birds such as the cassowary. Cassowaries are also hunted for food by aboriginal Australians and illegally killed to protect farmers' crops (Garnett and Crowley, 2000). Some tropical species suffer from specific threats in

addition to some of those mentioned above. For instance, the gouldian finch and the golden-shouldered parrot chosen for this study suffer from extra threats. For instance, the gouldian finch is thought to be affected by altered fire regimes in addition to cattle grazing, trapping and due to unavailability of suitable nesting habitat (Garnett and Crowley, 2000). The threats facing the golden-shouldered parrot is in many respects identical to that of the gouldian finch. Furthermore, this species is thought to be affected by the declining numbers of nesting black-faced woodswallows *Artamus cinereus normani*, which are known to act as sentinels for feeding golden-shouldered parrots (Garnett and Crowley, 2000).

As a result of the above mentioned threats, many species and subspecies of Australian birds have become rare or endangered. Of those bird species restricted to the Australian tropics, 2% are listed as endangered and 1% as vulnerable. The number of extinctions of bird species is also high in Australia. In fact, 25 bird species and subspecies have become extinct since European settlement (Garnett and Crowley, 2000). A few more species and subspecies, such as the night parrot *Pezoporus occidentalis* and Coxens fig-parrot *Cyclopsitta diophthalma coxeni*, also face extinction (Garnett and Crowley, 2000). Australia's tropical species facing extinction include the southern cassowary, gouldian finch and the golden-shouldered parrot⁶.

Without greater public support for bird conservation in Australia many of its unique bird species will continue to disappear. It is, therefore, important and necessary for government departments and NGOs involved with the protection and conservation of birds to obtain the public's support (financial and otherwise). In this respect it is useful to know the extent of the public's knowledge of birds and which species they are likely to support given their current knowledge. Furthermore, it is important to determine what role provision of additional information to the public could play in shifting support (monetary or otherwise) between species. Such information is not only useful in highlighting the need to educate the public about the diversity of species, their status and the threats facing them but such information is a useful pointer for conservation organisations in their fund raising campaigns. This paper sheds light on the public's knowledge of selected Australian species and highlight some of their implications for the conservation of birds.

3. Methodology - experimental survey

An experimental survey of Brisbane residents was conducted during the period July-September, 2002 to gauge the Brisbane public's knowledge of Australian wildlife, especially Australia's tropical wildlife and the public's willingness to conserve wildlife, including birds and the economic and other values they place on each species. This was then related to the participants' perceived knowledge of bird species in the survey and changes in their knowledge.

Publicity about the survey was given through letter dropouts and local newspapers and respondents were drawn from high and low income suburbs. The real nature of the experimental survey was not revealed in order to avoid bias. The wording of the advertising material concealed the objectives of the survey while also trying to make the survey attractive to potential participants. The wording used was as follows:

“Purpose of study: To provide your opinions about the use of natural resources in tropical Australia by filling out a survey form”

It was mentioned that the whole study would take approximately two hours to be completed with a tea break of 15 minutes after the completion of the first section of the study (Survey I) in the first hour and a lecture. It was also stated that several sessions were to be held and interested participants were expected to contact a telephone number to register their participation and specify the time of intended participation. Two of the sessions were scheduled for a week day and two on a Saturday at the University of Queensland and a fifth session in a church hall on a Sunday. This arrangement was made to make the survey more appealing to a wide group of participants. In the distributed material the participants were promised Aus \$20 for their participation plus free parking or re-imburement of any public transport costs. Participants were promised that they would be eligible to enter a draw to win a prize of Aus \$200 if they returned the second survey form.

The intended target sample size of the experimental group was 200 and the responding participants were selected on a first come first served basis according to the age distribution of the city of Brisbane so that the participants would be representative of Brisbane residents. In order to avoid the problem of last minute

cancellations and dropouts, the number of selected participants for each age group was set around 10% more than the required number of participants. In all, 204 Brisbane residents took part in the survey and they were divided into groups of about 40 persons for each session.

The experimental study was conducted in two stages. The first hour was devoted to filling out a structured questionnaire to gather background information and the current knowledge about Australian wildlife including birds and the monetary values they placed on conservation of species from a hypothetical allocation of money. Before the first survey commenced the respondents were given clear instructions about filling out the survey form and the areas of tropical Australia were shown. Prior to this exercise the questionnaire was pre-tested among 20 undergraduates and their comments were sought. Adjustments were made and some additional questions were included. Most respondents took approximately 45 minutes to one hour to complete the *First Evaluation Survey* while a few took a little longer. Before the commencement of the second stage of the study, tea or coffee were served to the participants during the 15 minute break outside the room. Once the second stage of the survey commenced, the respondents were provided with a *Second Evaluation Survey* which consisted of similar questions to the first survey, together with a few additional questions. A colourful brochure prepared by the authors dealing with their current status, geographical range, a photo and other relevant information for each species were provided. Approximately the same amount of factual background information was provided on each species and effort was made to avoid normative statements. The selected Australian wildlife consisted of mammals, birds and reptiles and was in separate sections of the questionnaire. Ten species of birds of Australia were selected and they are listed in Table 1.

Species' selection for the study was difficult because of the rich diversity of tropical birdlife in Australia. Furthermore, since the study concentrated on studying the valuation of Australia's tropical wildlife, it was necessary to select a significant proportion of species found only in northern tropical Australia. In order to make comparisons between common and threatened species a couple of common birds (Australian magpie and laughing kookaburra) in Brisbane suburbs were included. A few rare and threatened species were also included. The distribution of the ten

selected species, their current status and whether they are endemic or not are shown in Table 1.

Table 1
Species status, endemicy and their distribution in Australia

Species	Distribution in Australia	Endemicy	Status
Southern Cassowary (<i>Casuarius casuarius</i>)	North QLD	No One subspecies (E)	Uncommon and endangered
Brolga (<i>Grus rubicundus</i>)	QLD, NT, WA, NSW, VIC, SA	No No subspecies	Uncommon or rare except in northern Australia
Laughing Kookaburra (<i>Dacelo novaeguineae</i>)	Qld, NSW, ACT, VIC, Tas, WA	Yes Two subspecies (E)	Common
Australian Magpie (<i>Gymnorhina tibicen</i>)	All States and Territories	No Seven subspecies (E) One subspecies (PNG)	Common
Red-tailed Black Cockatoo (<i>Calyptorhynchus banksii</i>)	Qld, NSW (similar subspecies in other States)	Yes Five subspecies (E)	Common
Palm Cockatoo (<i>Proboscigera aterrimus</i>)	North Qld	No One subspecies (Not E)	Common in its restricted range
Eclectus Parrot (<i>Eclectus roratus</i>)	North Qld	No Two subspecies (Not E)	Locally common in its restricted range
Golden Bowerbird (<i>Prionodura newtoniana</i>)	North Qld	Yes No subspecies	Locally common
Golden-shouldered Parrot (<i>Psephotus chrysopterygius</i>)	North Qld	Yes No subspecies	Highly endangered
Gouldian Finch (<i>Erythrura gouldiae</i>)	North Qld, NT, WA	Yes No subspecies	Population seriously depleted and endangered

Source: Based on Morcombe (2000); Pizzey and Knight (1998) and Reader's Digest (1997).

Note: *Simpson et al. 2003 record the Brolga as endemic to Australia while the Reader's Digest Complete Book of Australian Birds (1997) and other field guides (e.g. Pizzey and Knight, 1998) list the Brolga as occurring in southern New Guinea and a vagrant to New Zealand. To prepare the brochure for the survey we used the following sources: Reader's Digest (1997); Pizzey and Knight (1998) and Morcombe (2000).

E= Endemic – species recorded only in Australia.

Relevant information in summary form (including a photo) of each species was provided to the participants after they completed the first survey except for two common birds found in most Brisbane gardens/suburbs (Australian magpie and laughing kookaburra). The material used in the brochure to provide the necessary information about each species was sourced from Morcombe (2000); Pizzey and Knight (1998) and Reader's Digest (1997). The participants were asked to fill out the second questionnaire once they got back home and return the completed survey forms to the authors in the self-addressed stamped envelope in two weeks time. Following the tea break we invited Dr Steven Van Dyck, Curator of Mammals and Birds of the

Queensland Museum to give a presentation on Australian tropical wildlife. He made a 45 minute presentation illustrating his talk with slides, video clips and skins brought from the Queensland museum. In his presentation he placed particular emphasis on the mahogany glider *Petaurus gracilis* which he helped to re-discover in the late 1980s after almost a century of its disappearance. However, Dr Van Dyck also gave a brief introduction to Australian birds and demonstrated the colourful birdlife in Australia by showing skins of the eclectus parrot, where the female is more brightly hued than the male. In short, in the second stage of the survey, respondents were provided with adequate information (mostly in print) about the status, distribution, current threats and all other relevant information.

4. Results of survey

Of the 204 participants, 66% (n =136) were born in Australia and the rest were born outside Australia. Of those who were born outside Australia, 3.4% had lived in Australia for more than 50 years and 8% had lived in Australia for less than 10 years. The rest had lived in Australia ranging from a period of 11 years to 50 years. Six percent did not answer this question. Of the participants 55% were female and 45% were male. The level of membership of participants of conservation organisations in Australia or overseas was very low. Only 18% said that they were members of a nature conservation organisation. A small percentage (2.5%) of the respondents did not answer this question. Interestingly, none of the participants were members of a conservation organisation dedicated to the protection and conservation of birds in Australia or outside Australia. Furthermore, only two of the respondents (1%) had read *Wingspan*, the official journal of Birds Australia during the past year. However, these statistics are not surprising given the low membership figures of Australian NGOs devoted to birds. For example, Birds Australia, the organisation that represents the entire country has less than 10,000 members (Birds Australia, 2002) out of a population of around 20 million Australians whereas in Britain the Royal Society for the Protection of Birds (RSPB) has more than a million members (RSPB, 2003) out of a population of around 59 million Britons.

The survey found that 45% of the respondents provided food or water for the birds while 42% said that they did not provide any food or water. For 12% of the respondents, this question was not applicable and 1% did not answer this question. It

was found that the general knowledge of birds among respondents was poor especially of those birds that were restricted to isolated pockets in tropical Australia, despite almost all these birds chosen being colourful and some of them being endangered.

On the other hand, birds, such as the Australian magpie and the laughing kookaburra, were well known by the respondents. This is probably because they are common birds in Brisbane gardens and suburbs. Table 2 shows the number and percentage of respondents saying whether the species is known to them or not.

Table 2
Responses to the question whether the species was known to the participants prior to Survey I

Species	Species known							
	Yes	%	No	%	No Response	%	Total	%
Southern Cassowary	177	87	24	12	03	01	204	100
Brolga	164	80	38	19	02	01	204	100
Laughing Kookaburra	195	96	07	03	02	01	204	100
Australian Magpie	196	96	06	03	02	01	204	100
Red-tailed Black Cockatoo	164	80.5	39	19	01	0.5	204	100
Palm Cockatoo	62	30.5	139	68	03	1.5	204	100
Eclectus Parrot	46	22.5	153	75	05	2.5	204	100
Golden Bowerbird	96	47.1	104	51	04	2.0	204	100
Golden-shouldered Parrot	54	27	146	71	04	2.0	204	100
Gouldian Finch	90	44	112	55	02	01	204	100

Note: The percentages have been rounded to the nearest decimal point.

As can be seen from Table 2, locally common birds in Brisbane are well known by the participants. For example, Australian magpies and laughing kookaburras are common birds in Brisbane and approximately 96% of the participants knew about the existence of these birds. Interestingly, a small number (6), approximately 3%, did not know of their existence. They were all born overseas and three of them had lived in Australia for less than three years while two had lived in Australia for more than 21 years. One respondent did not indicate the number of years of residency. Other well known birds were southern cassowaries, brolgas and red-tailed black cockatoos. These were known by more than 80% of the participants. This may partly be because they are common exhibits in many zoos and theme parks in Queensland and some other States and partly because the former two are large birds and are the subject of several Australian children stories. The red-tailed black cockatoos are sometimes

regarded as agricultural pests and can be seen in some national parks and nature reserves close to Brisbane. On the other hand, birds restricted to the top end of Australia (e.g. gouldian finch and golden-shouldered parrot) and those restricted to some areas of north Queensland (e.g. golden bowerbird, palm cockatoo and eclectic parrot) were less known by participants. The gouldian finch although a colourful aviary bird displayed in zoos and theme parks was also poorly known to the participants. Perhaps the small size of these birds was a factor and their numbers in captivity have also declined. The eclectic parrot is one of the most brightly hued birds in Australia and is also rather common in some zoos and theme parks but was the most poorly known of the bird species by the participants. The eclectic parrot is also interesting because the female is more brightly hued (red) than the male (green). Perhaps this unusual colour scheme results in people believing that they do not belong to the same species. In fact when skins of these birds were shown to the participants in the second part of the survey they were surprised that they belonged to the same species. In another question, participants were asked whether they had seen the birds listed in Table 1.

Table 3
Responses to the question “have you seen these birds”

Species	Have you seen these birds					
	Yes	%	No	%	No response	%
Southern Cassowary	159	78	42	20.5	03	1.5
Brolga	68	33.5	135	66	01	0.5
Laughing Kookaburra	193	94.5	10	05	01	0.5
Australian Magpie	192	94	11	5.5	01	0.5
Red-tailed Black Cockatoo	142	70	59	29	03	01
Palm Cockatoo	49	24	143	70	12	06
Eclectus Parrot	36	18	156	76	12	06
Golden Bowerbird	66	32.5	131	64	07	3.5
Golden-shouldered Parrot	36	17.5	157	77	11	5.5
Gouldian Finch	74	36	122	60	08	04

Note: The percentages have been rounded to the nearest decimal point.

When Table 3 is compared with Table 2, it is seen that some of the participants who said that the species were known to them, had never seen them. The percentage who had not seen them but said that the species was known ranged from 1% to 47%, being least for kookaburras (1%) and magpies (2%) and highest for the brolgas (47%). The difference for endangered species ranged from 8% (gouldian finch) to 29% (golden-shouldered parrot).

Furthermore, when the participants said that a species were known their knowledge of the species was often not very good, especially of rare and endangered species. In order to determine the extent of the participants' knowledge of birds, participants were asked to rank their knowledge of individual species as *very good*, *good* or *poor*. It was found that although most participants knew about the existence of certain species, especially the more common species, their knowledge was not 'very good', including for common species. Most participants said that their knowledge was poor. This is shown in Table 4.

Table 4
Initial knowledge of bird species in the survey

Species	Knowledge of species							
	Very Good	%	Good	%	Poor	%	No Response	%
Southern Cassowary	15	07	72	35	103	51	14	07
Brolga	10	05	58	28	115	56	21	10
Laughing Kookaburra	43	21	100	49	54	26.5	07	3.5
Australian Magpie	42	21	96	47	60	29	06	03
Red-tailed Black Cockatoo	07	3.5	48	23.5	129	63	20	10
Palm Cockatoo	01	0.5	11	5.5	110	54	82	40
Eclectus Parrot	03	1.5	10	05	98	48	93	45.5
Golden Bowerbird	07	3.5	27	13.5	105	51	65	32
Golden-shouldered Parrot	03	1.5	10	05	97	47.5	94	46
Gouldian Finch	04	02	20	10	115	56	65	32

Note: The percentages have been rounded to the nearest decimal point.

As shown in Table 4, the number of those participants stating that their knowledge was *very good* was low for all species and this included the two common species of Australian birds, namely the Australian magpie and the laughing kookaburra. The proportion of the participants who said that their knowledge was good was highest for the two common species, namely 49% and 47% respectively for laughing kookaburras and Australian magpies. The percentage of those who said their knowledge of brolgas and red-tailed black cockatoos was good was 28% and 23.5% respectively. The percentage was very low for those who said that their knowledge was good for species that had a restricted range in northern Australia and some of which were rare. On the other hand, the relative frequency of participants who said that their knowledge was poor was highest for those threatened species restricted to northern Australia. Furthermore, the number of non- responses was highest for threatened species restricted in their range. Knowledge of common birds was most widespread but least for threatened and highly endangered species needing urgent consideration for

conservation purposes. Table 4 illustrates the dearth of knowledge of this sample of the public about Australian tropical bird species.

In order to further determine the extent of the knowledge of respondents, we asked whether the bird species in our survey are present in northern Australia (Tropical Australia). Results are reported in Table 5.

Table 5
Responses to the question
“are they present in Northern Australia (Tropical Australia)”

Species	Are they present in Northern Australia (Tropical Australia)							
	Yes	%	No	%	Unsure	%	No response	%
Southern Cassowary	116	57	13	06	57	28	18	09
Brolga	113	55	06	03	67	33	18	09
Laughing Kookaburra	138	68	11	05	47	23	08	04
Australian Magpie	139	68	10	05	46	23	09	04
Red-tailed Black Cockatoo	98	48	09	05	78	38	19	09
Palm Cockatoo	60	29	02	01	91	45	51	25
Eclectus Parrot	42	21	02	01	105	56	55	27
Golden Bowerbird	53	26	03	01	106	52	42	21
Golden-shouldered Parrot	39	19	00	00	113	55	52	26
Gouldian Finch	44	22	04	02	115	56	41	20

Note: The percentages have been rounded to the nearest decimal point.

Once again, for the common species more than 50% said ‘yes’ and this was highest for kookaburras and magpies (68%). Interestingly, approximately 5% of the respondents thought that two of the common species did not occur in tropical Australia. More than a quarter of the participants were unsure whether the species listed in Table 1 were present in northern Australia. For some species this was more than 50%. The number who did not respond to this question for some species was more than 20%.

In order to find out more about their knowledge of the birds, the participants were asked “Do they occur outside Australia?”. The results are shown in Table 6.

Table 6
Responses to the question
“do they occur outside Australia”

Species	Do they occur outside Australia							
	Yes	%	No	%	Unsure	%	No response	%
Southern Cassowary	48	24	59	29	80	39	17	08
Brolga	17	08	79	39	91	45	17	08
Laughing Kookaburra	06	03	150	73.5	41	20	07	3.5
Australian Magpie	20	10	111	54	08	04	65	32
Red-tailed Black Cockatoo	09	4.5	92	45	86	42	17	8.5
Palm Cockatoo	13	6.5	31	15	112	55	48	23.5
Eclectus Parrot	10	05	26	13	115	56	53	26
Golden Bowerbird	14	07	50	24.5	99	48.5	41	20
Golden-shouldered Parrot	08	04	38	19	108	53	50	24
Gouldian Finch	14	07	37	18	115	56	38	19

Note: The percentages have been rounded to the nearest decimal point.

As shown in Table 1, birds such as the laughing kookaburra, red-tailed black cockatoo, golden bowerbird, golden-shouldered parrot and the gouldian finch are endemic to Australia. Nevertheless, Table 6 indicates that, a percentage of the respondents (between 3-10%) said they occur outside Australia. Similarly, some of the participants thought that cassowaries, brolgas, palm cockatoos and the eclectus parrot did not occur outside Australia. These birds occur in neighbouring countries such as Papua New Guinea. The percentage of those who said that some of these birds (such as cassowaries and brolgas) did not occur outside Australia for birds was large. The number who said they were unsure was highest for the less common birds and so was the ‘no response’ rate.

The overall picture that emerges from Tables 2-6 is that the participants’ knowledge of the existence of many Australian tropical bird species is poor. Furthermore, the depth of knowledge of respondents about many of these species is poor, even when their existence is known by the participants.

In addition, we wanted to determine whether the participants were in favour of the survival of the selected species shown in Table 1. The responses to this question are summarised in Table 7.

Table 7
Responses to the question
“are you in favour of their survival as species?”

Species	Are you in favour of their survival as species?							
	Yes	%	No	%	Indifferent	%	No response	%
Southern Cassowary	197	96.5	01	0.5	03	1.5	03	1.5
Brolga	197	96.5	00	00	05	2.5	02	01
Laughing Kookaburra	197	96.5	01	0.5	03	1.5	03	1.5
Australian Magpie	191	93	06	03	07	3.5	01	0.5
Red-tailed Black Cockatoo	199	97.5	00	00	01	0.5	04	02
Palm Cockatoo	194	95	00	00	02	01	08	04
Eclectus Parrot	192	94	01	0.5	04	02	07	3.5
Golden Bowerbird	196	96	00	00	02	01	06	03
Golden-shouldered Parrot	191	93.5	00	00	05	2.5	08	04
Gouldian Finch	191	93.5	01	0.5	05	2.5	07	3.5

Note: The percentages have been rounded to the nearest decimal point.

As can be seen from Table 7, more than 93% of the participants were in favour of the continuing existence of all the species. For most species, more than 96% of the participants said they favoured their survival. The percentage of participants who said that they did not favour the survival of species was less than one percent, except for the Australian magpie, where 3% of the participants said that they did not favour their survival. Perhaps this is because some magpies attack humans during the breeding season (Jones and Neelson, 2003). A few participants said that they were indifferent to the survival of each of the species. Most individuals favoured the continued survival of the listed bird species even when they did not have any knowledge of them. This suggests that existence values are quite strong in this sample of the public.

5. Conservation results and their implications

Several conservation implications arise from the public’s lack of knowledge of the existence of threatened or rare bird species. One result is that people may not be aware that some bird species are rare or threatened because of their poor knowledge about their existence and status. In the absence of knowledge of a balanced nature, people are more likely to give greater economic and other support for species that are known to them. In other words, when knowledge of the public is poor, common species are likely to benefit more. There is a free-rider effect for common species. The support for conservation of common species is likely to decrease with the increase in knowledge of the public of other species, especially knowledge of species that are threatened and endangered. On the other hand, those species that are less

known or unknown to the public (although rare and endangered) are likely to get less support than when the public is better informed. The experimental survey conducted provides evidence that in the absence of balanced knowledge, people are likely to give greater support to species that are better known to them than they would otherwise. However, once adequate information is provided on all species and their current status, people are willing to provide more support for rare and threatened species. This is supported by Table 8.

Table 8
Average percentage allocation of Aus \$1,000 by the respondents

Species	Survey I	Survey II	Average Change	Statistical Significance
Southern Cassowary	12.59	15.50	+ 3.20	2.5%*
Brolga	9.73	10.62	+ 1.24	11%**
Laughing Kookaburra	8.99	5.51	- 3.08	2.5%*
Australian Magpie	6.33	3.92	- 1.97	2.5%*
Red-tailed Black Cockatoo	11.30	6.79	- 4.29	2.5%*
Palm Cockatoo	10.38	7.53	- 2.59	2.5%*
Eclectus Parrot	11.15	8.86	- 2.07	2.5%*
Golden Bowerbird	10.77	8.43	- 2.21	2.5%*
Golden-shouldered Parrot	11.21	15.57	+ 4.56	2.5%*
Gouldian Finch	10.24	17.23	+ 7.25	2.5%*

Note: Theoretically the percentage allocations in Survey I and Survey II should each add up to 100 but due to rounding errors and shortcomings in some of these responses this does not occur exactly.

*, **: Difference in mean values significant at 2.5% and 11% levels for a one-tailed test. Note that an equal percentage allocation for all species is 10%.

In Survey I (prior to provision of extra information about all species) the participants were told that suppose they are given Aus \$1,000 (and that they could only donate it to organisations in Australia to help conserve bird species listed in Table 8), and asked what percentage of this money they would allocate to each species for its conservation. The participants were told that the money allocated should add up to 100%. After extra (more balanced) information was provided about bird species listed in Table 8, a similar question was asked in Survey II.

As can be seen from Table 8, for the better known and most common species, such as the Australian magpie and laughing kookaburra, participants on average allocated the least for their conservation in Survey I which is significantly less than 10%. However, this is more than the amount the participants would have allocated if they were provided with adequate information about all species. For all other species

(except the cassowary), the allocation in Survey I is between 10% and 11% or close to it. This is because when the knowledge of those other species (e.g. golden-shouldered parrot, golden bowerbird) is poor the respondents have difficulty in making allocations and hence tend to treat all species equally. This would accord with Laplace's principle of 'insufficient reason' (Laplace, 1951).

However in survey II, with increased and more balanced information about all species respondents' become more discriminating in their willingness to support the conservation of different species. The variance of their allocations to the conservation of different species rises. In particular, allocations to those species reported to be endangered or threatened grows at the expense of common species and those not in imminent danger. A similar behaviour was observed for conservation support of Australian mammals (Tisdell and Wilson, forthcoming).

Table 8 shows how the respondents' allocations of funds were altered once balanced additional information on bird species in Table 1 was provided to the participants. Once additional information was provided the participants moved their percentage allocations in favour of species needing more attention from the point of view of conservation. This result supports the view that participants place high existence value on species. This is because on average participants escalate their support for species that are rare and threatened by increasing their allocations for these and reducing their allocations to less threatened species. This suggests that it is important in raising funds for bird conservation to highlight the plight of targeted species in order to achieve maximum results. In the event that more than one endangered species is involved, the public are likely to provide greater financial support for species in most immediate danger of extinction. Financial support of the public for the conservation of endangered species is likely to be higher than for common species although the public favours the survival of all species.

The results show that the public's lack of knowledge about species leads them to give greater support to the conservation of known species than would be the case if they were better informed about all species. After the provision of more information on all species, people are willing to allocate more money to species that need more assistance for their survival. As Table 8 shows, the average change in financial

support is positive for those species which were earlier unknown to participants but were later found by them to be endangered. Note that cassowaries, golden-shouldered parrots and gouldian finches (see Table 1) are endangered bird species in Australia (Garnett and Crowley, 2000) and these recorded the greatest percentage increase in the allocation of conservation funds. Table 8 indicates that in the second survey, allocations to threatened and rare bird species increased while support for common species decreased and for those that are not in any immediate danger of extinction. Interestingly, for threatened species, such as cassowaries and the golden-shouldered parrot, the allocations are more than the average amount of 10% in the first survey and this increases even further once it was revealed that they are endangered. The money allocated for brolgas are lower than the average amount of 10% in the first survey but once it was revealed that the brolgas are listed as rare or uncommon (except in tropical Australia) the respondents were willing to allocate more money to this species. All endangered species listed in Table 1 received increased allocations in Survey II. The allocations for brolgas increased in the second survey, to exceed the average amount of 10% but the rise was the least (1.24%) of the positive changes for the listed species. Perhaps this was because the booklet provided to the participants stated that brolgas are “uncommon or rare except in northern Australia”. These results suggest that campaigns conducted to raise money for threatened species are likely to yield a higher level of donations than those conducted for less threatened species, assuming all other significant factors to be the same.

6. Conclusions

The main rationale for this particular study was to determine whether poor public knowledge of Australia's endangered or threatened tropical bird species was likely to result in less economic and other support for their conservation compared to more common and better known bird species, not threatened or endangered. The results support this hypothesis. Furthermore, the experimental survey revealed other interesting facts about the knowledge of Australian birds. Despite the large number and diversity of Australian bird species and subspecies (where many species and subspecies are endemic to Australia and are brightly hued) the average knowledge of birds of the participants was poor.

The survey was conducted in Brisbane, the capital of Queensland. Brisbane is located in the subtropics below the Tropic of Capricorn. All the bird species in the survey occur in northern tropical Queensland but most do not occur in the Brisbane area. Only laughing kookaburras and Australian magpies are commonly seen in this area, as well as the red-tailed black cockatoos nearby. Despite the occurrence of all these bird species in Queensland, the public's knowledge of most of those bird species confined to Queensland's tropical north was found to be very poor.

Clearly the participants knew more about common species present in or near Brisbane than those species that are restricted to tropical Australia or virtually so. Some of the species that were unknown to the participants are highly endangered and are threatened with extinction. This highlights the need for public education. Otherwise, some of these species could disappear without most of the public being aware of their extinction. On the other hand campaigns to highlight the status of rare and endangered birds can win increased public support (financial and otherwise) for conservation of these species. Conservation organisations should target such species in their fund-raising campaigns to raise money for the protection and conservation of birds.

Nearly all participants favoured the existence of all the selected bird species despite their lack of poor knowledge of many individual species. This is an encouraging sign. It indicates that the education of the public about the status of birds, and the need to protect them, can facilitate the task of conserving birds. The survey results indicate that programmes to educate the general public about the status of bird species should be an important component in conservation action plans for birds. It was shown that when the public has little knowledge of birds then common species are likely to get more support than when the public has more knowledge about all species. Hence, poor knowledge of the public about bird species takes away some support from species that are endangered or rare but little known and need urgent conservation action. In a sense, poor public knowledge leads to a misallocation of limited resources for the conservation of birds. However, this is counteracted when balanced information about all species is made available. Finally, although this study relates to a specific set of Australian bird species, some well known and other poorly known to

members of the public in our sample, the general results are likely to be of international relevance, that is, relevant to other countries, as well as Australia.

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Notes:

- ¹ Refers to species recorded only in Australia.
- ² The Tropic of Capricorn runs across the Australian continent from Rockhampton in Queensland through Papunya (just above Alice Springs) across to the Ningaloo Reef in Western Australia.
- ³ Some of them include Lord Howe Island, Cocos (Keeling) Island, Christmas Island, Boigu Island, Norfolk Island, Nepean Phillip Islands, Torres Straits and sub-Antarctic (Heard, Macdonald and Macquarie) Islands and Australian Antarctic Territory.
- ⁴ This figure includes breeding endemics such as the short-tailed shearwater *Puffinus tenuirostris*, Australian pelican *Pelecanus conspicillatus* and white-necked (Pacific) heron *Ardea pacifica*.
- ⁵ These estimates have been obtained by examining the distributional maps of 705 species of Australian birds listed in Simpson et al. (2003). Introduced species and vagrants listed in the *vagrant bird bulletin* by Simpson et al. (2003) have been excluded. Furthermore, those species that did not have a distributional map in Simpson et al. (2003) have also been excluded from the analysis.
- ⁶ It must be mentioned here that the extinction and near extinction of Australian species and subspecies mainly include those from the Australian island territories where most of the extinctions have occurred (e.g. Lord Howe Island and Norfolk Island).

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