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# **ECONOMICS, ECOLOGY AND THE ENVIRONMENT**

**Working Paper No. 191**

**Three Questionnaires Used in Evaluating the  
Economics of Conserving Australia's Tropical  
Wildlife Species and the Procedures Adopted**

by

**Clem Tisdell**

And

**Clevo Wilson**

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Adopted<sup>1</sup>**

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**Clem Tisdell<sup>2</sup> and Clevo Wilson<sup>3</sup>**

**January 2014**

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<sup>2</sup> School of Economics, The University of Queensland, St. Lucia Campus, Brisbane QLD 4072, Australia  
Email: [c.tisdell@economics.uq.edu.au](mailto:c.tisdell@economics.uq.edu.au)

<sup>3</sup> School of Business and Finance, Queensland University of Technology, Brisbane QLD 4001, Australia  
Email: [clevo.wilson@qut.edu.au](mailto:clevo.wilson@qut.edu.au)

The *Economics, Environment and Ecology* set of working papers addresses issues involving environmental and ecological economics. It was preceded by a similar set of papers on *Biodiversity Conservation* and for a time, there was also a parallel series on *Animal Health Economics*, both of which were related to projects funded by ACIAR, the Australian Centre for International Agricultural Research. Working papers in *Economics, Environment and Ecology* are produced in the School of Economics at The University of Queensland and since 2011, have become associated with the Risk and Sustainable Management Group in this school.

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For further information about the above, contact Clem Tisdell, Email: [c.tisdell@economics.uq.edu.au](mailto:c.tisdell@economics.uq.edu.au)

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For further information about these papers, contact Professor John Quiggin, Email: [j.quiggin@uq.edu.au](mailto:j.quiggin@uq.edu.au)

# **Three Questionnaires Used in Evaluating the Economics of Conserving Australia's Tropical Wildlife Species and the Procedures Adopted**

## **ABSTRACT**

Appendix II of this paper contains the three questionnaires which were used experimentally as a part of three surveys to assess the economics of conserving Australia's tropical wildlife species. The body of this paper outlines the procedures used for the surveys, discusses response rates and the representativeness of the samples, and outlines the general coverage of the surveys/questionnaires. The surveys provided data about participants' knowledge of each of the focal species, their support for the survival of each, their willingness to pay for the conservation of each and their attitudes to the commercial harvesting of each. The survey procedures enabled particular attention to be given to the influence on these variables of variations in the knowledge of survey participants about the species being evaluated. In addition, information was gathered about the attitudes of survey participants towards the use of wildlife species by Indigenous Australians (Australian Aborigines and Torres Strait Islanders).

**Keywords:** Australian Aborigines; economic valuation; experimental economics; knowledge and wildlife valuation; nature conservation in Australia; sustainable use of wildlife; wildlife conservation; wildlife harvesting.

**JEL Classifications:** Q2, Q5.

# **Three Questionnaires Used in Evaluating the Economics of Conserving Australia's Tropical Wildlife Species and the Procedures Adopted**

## **1. Introduction**

There have been several requests for copies of questionnaires which we used by us for evaluating the economics of conserving Australia's tropical wildlife species. It was, therefore, decided that it would be useful to make these available generally as part of a working paper. Therefore, the three questionnaires which were used by us for evaluating the economics of the conservation of Australia's tropical wildlife species are set out in Appendix II of this paper. Appendix I provides a list of our published articles that have drawn (at least to some extent) on the data generated by the surveys based on these questionnaires. As explained below, the questionnaires were administered serially to a sample of Brisbane respondents and the procedures for each are described for brevity as Survey I, II and III.

Given the large number of wildlife species present in tropical Australia, only a selection of species could be evaluated. They were selected from three classes of animals, namely mammals, birds and reptiles. This is a relatively small set of classes in the animal kingdom (Piper, 2013) and does not include any species from the plant kingdom (Benson, 2012) or other biological kingdoms. To cast the net wider than was done in these surveys would have seriously overloaded participants. Nevertheless, the studies based on our three surveys do take account of multiple species.

The procedures used for the surveys will now be outlined, the representative of the samples are considered, and the general coverage of the surveys is outlined before providing some concluding comments. The results are not reported here but can be found by accessing the publications listed in Appendix I. There is also further consideration of these results in some chapters of Tisdell (2014, in press).

## **2. Survey Procedures**

The first two questionnaires were pre-tested on a group of university students and were adjusted for greater clarity where this was needed.

### *Generation of the samples for the surveys*

In 2002, 1500 copies of a circular were distributed by letter-box drops in a variety of Brisbane

suburbs with differing socio-economic attributes. The distributed circular invited recipients to participate in a survey about the conservation and use of Australia's tropical natural resources. As an inducement, recipients were told that they would be given \$20 Australian for their participation, light refreshments, a lecture presentation at The University of Queensland and the chance to win \$200 in a lucky draw. In order to ensure that no potential participants would be excluded because of work or similar commitments, they were told that survey sessions would be available on weekdays as well as on weekends. Those who were interested were requested to telephone a professional facilitator, who then selected a sample of 204 persons from the responding pool of persons to match the age and gender distribution of Brisbane of persons of 18 years of age and older.

#### *Procedures for Survey I*

Survey participants were divided into five groups of approximately 40 each for survey sessions held mostly at The University of Queensland. At the beginning of each session, participants completed the first questionnaire displayed in Appendix II. This took around one hour. The completed questionnaires were then collected and participants had refreshments followed by a lecture given by Dr. Steven Van Dyck, Curator of Mammals and Birds at the Queensland Museum. His presentation focused mainly on the mahogany glider (*Petaurus gracilis*) which was believed to be extinct until it was rediscovered in the 1980s near Ingham in northern Queensland. He also commented on the Lumholtz tree-kangaroo (*Dendrolagus lumholtzi*) and brought a preserved specimen for inspection along with that of the mahogany glider. A specimen of one of the bird species, the golden shouldered parrot (*Psephotus chrysopterygius*) was also included in his presentation. Furthermore, he included some comments on the eastern pebble-mound mouse.

#### *Procedures for Survey II*

At the end of each of these sessions for Survey I, participants were given a booklet containing information about the 24 species evaluated in Survey I. This booklet is reproduced in Appendix III and includes coloured photographs of all the species to be evaluated as well as a brief description of each. Participants were also given the second evaluation questionnaire (see Appendix II) to take home and requested to read the information booklet before completing this questionnaire. After completing this questionnaire, they were asked to return it in the self-addressed, postage-paid envelope by a specified time.

As discussed below, there was overlap between questions in the first and second evaluation questionnaires. These were intended to provide insights into how the provision of information (knowledge) changed participants' stated evaluations of the focal species.

### *Procedures for Survey III*

Respondents were informed that on completing the second evaluation questionnaire and returning it, they would be eligible for free tickets to David Fleay Wildlife Park and would be included in the draw for \$200 Australian. This park is located in the Gold Coast of Queensland and is managed as an environmental educational facility by the Queensland Government. Its display includes rare and threatened wildlife species which occur in Queensland. A visit to this park provided participants with an opportunity to see some of the tropical species included in the evaluations in Surveys I and II.

The main purpose of the third evaluation questionnaire (see Appendix II) was to gauge how participants' evaluations of the focal species may have changed with the passage of time, as a result of seeing some of these species and by gaining more information about them.

### **3. Response Rates and the Representativeness of the Samples**

After adjusting the set of persons who indicated they were willing to take part in the survey in order to ensure compliance with the age and gender distribution for Brisbane, 204 persons were selected to participate in Survey I. These 204 persons also completed the second evaluation questionnaire (Survey II). However, only 119 persons visited David Fleay Wildlife Park and completed Survey III (the third evaluation questionnaire). One of the reasons was that this park is situated some distance from Brisbane and some participants in the previous surveys said that it was difficult for them to travel there. The main information used from this survey was about the willingness to pay for the conservation of the mahogany glider. This could be compared with the values in the previous two surveys. Lack of research funds limited further analysis of the data collected from Survey III, and there were some doubts about how representative the sample of those visiting David Fleay Wildlife Park would be.

There is evidence that the original sample of 204 persons was reasonably representative of the socioeconomic nature of the Brisbane population in terms of educational levels, the distribution of income, age distribution and gender (Tisdell et al., 2007). In an effort to ensure that the sample would not be dominated by those with strong pro-conservation views, the original circular did not mention that the survey would primarily be about the consideration of Australia's tropical wildlife species. It merely indicated that it would be about the use of Australia's tropical natural resources.

The sample was drawn from Brisbane (the location of Tisdell and Wilson) partly because of cost considerations and the practicality of conducting the intended type of surveys. As a result, the survey was urban based and did not therefore include a rural sample. While the overwhelming majority of Queenslanders and Australians live in urban areas, rural residents often have a different attitude to the



conservation of nature (Tisdell, 2014, Chs. 4 and 10). From that point of view, the sample has limitations for extrapolation of willingness-to-pay estimates. Despite this, the surveys provide valuable insights into conservation issues, particularly in relation to the role of information provisions in altering stated preferences. The wildlife species chosen for evaluation were selected on the assumption that some species would be relatively well known to Brisbane residents and others would be poorly known.

#### **4. The General Coverage of the Surveys or Questionnaires**

Some overlap occurs in questions in the different questionnaires, particularly between those used for Surveys I and II. The overlap was planned in order to monitor changes in the evaluations of respondents as a result of changes in the information available to them and as a consequence of the alterations in their experiences in relation to the species being assessed. Consider the broad coverage of each of the questionnaires.

##### *Coverage of the questionnaire for Survey I*

The first portion of this questionnaire consisted of some ‘warm up’ questions and questions to provide information about the socio-economic attributes of those in the sample. The socio-economic data collected included the gender, age, level of education and of income of respondents. Questions were then asked to determine the general attitudes of participants towards nature conservation and towards the commercial harvesting of wildlife species.

These questionnaires were followed by two tables listing 24 species of wildlife. This set of wildlife species consisted of nine species of mammals, ten species of birds and five species of reptiles. These are listed in Table 1 which gives their common and scientific names. The first table in the questionnaire was designed to measure how much knowledge participants had of each of the wildlife species listed. Answers to questions in the second table provided information about the extent to which participants said they liked each of the species to be evaluated, whether or not they supported the survival of each, and whether or not they favoured the commercial harvesting of each.

**Table 1 List of tropical Australian wildlife species evaluated in tabular form in Surveys I and II**

<b>Common name,</b>	<b>Scientific name</b>
<b>MAMMALS</b>	
Dugong	<i>Dugong dugon</i>
Eastern pebble-mound mouse	<i>Pseudomys patrius</i>
Koala	<i>Phascolarctos cinereus</i>
Mahogany glider	<i>Petaurus gracilis</i>
Northern bettong	<i>Bettongia tropica</i>
Northern hairy-nosed wombat	<i>Lasiorhinus krefftii</i>
Northern quoll	<i>Dasyurus hallucatus</i>
Red kangaroo	<i>Macropus rufus</i>
Tree kangaroo (e.g., Lumholtz)	<i>Dendrolagus lumholtzi,</i>
<b>BIRDS</b>	
Australian magpie	<i>Gracitus tibicen</i>
Brolga	<i>Grus rubicunda</i>
Eclectus parrot	<i>Eclectus roratus</i>
Golden bowerbird	<i>Prionodura newtoniana</i>
Golden-shouldered parrot	<i>Psephotus chrysopterygius</i>
Gouldian finch	<i>Erythrura gouldiae</i>
Laughing kookaburra	<i>Dacelo novaeguineae</i>
Palm cockatoo	<i>Probosciger aterrimus</i>
Red-tailed black cockatoo	<i>Calyptorhynchus banksii</i>
Southern cassowary	<i>Casuarius casuarius</i>
<b>REPTILES</b>	
Freshwater crocodile	<i>Crocodylus johstoni</i>
Hawksbill turtle	<i>Eretmochelys imbricata</i>
Northern long-necked turtle	<i>Chelodina rugosa</i>
Saltwater crocodile	<i>Crocodylus porosus</i>
Taipan snake	<i>Oxyuranus scutellatus</i>

Following this tabular material, specific questions relating to the participants' knowledge of and attitudes towards the conservation of tree kangaroos were introduced. Then a question was posed about how respondents would allocate (percentagewise) a windfall fixed amount (e.g. \$1000 Australian) between the various reptile species to be evaluated if the funds could only be used for conserving these reptile species. The same type of query was subsequently posed for the focal set of mammalian species and the relevant set of avian species. Furthermore, participants were asked if they had the option of donating the windfall funds (\$1,000) to a charity to help people or donating part of it to conserve the focal set of reptiles species, what percentage would they allocate to each. The same type of question was asked for the focal set of mammalian species and for the set of avian species.

These 'fixed-pie' questions were followed by a series of questions about the stated willingness of

individuals to pay (from their own pockets) for conservation of particular wildlife species, namely tree kangaroos, the golden-shouldered parrots, the hawksbill turtle, the northern hairy-nosed wombat and the koala as well as the mahogany glider and the eastern pebble-mound mouse.

#### *Coverage of the questionnaire for Survey II*

Several questions in the second questionnaire were the same as in the first one. This was done to detect the occurrence of changes in the evaluations of respondents with the passage of time, particularly as a result of the provision of information to participants about the species to be assessed. The first set of questions were designed to elicit the current attitudes of respondents towards nature conservation and to reveal their attitudes towards the commercial harvesting of wildlife.

Questions were included in the second questionnaire about whether governments (state and federal), voluntary organisations, the general public, or Aborigines and Torres Strait Islanders (Indigenous Australians) should do more to conserve Australia's tropical wildlife. Furthermore, several questions were included in this questionnaire to determine the attitudes of participants to the use of wildlife species by Indigenous Australians.

Using a similar type of tabular presentation, the same set of wildlife species were evaluated in Survey II as in Survey I (see Table 1). This enabled us to detect any changes in the participants' knowledge of each of the species, in their stated likeability of each of the species, in their support for the survival of each of the species, and in their attitudes to the commercial harvesting of each.

The fixed-pie allocation questions asked in Survey I were repeated in Survey II. This was done to detect alterations (between surveys) in the allocation of conservation funds between each of the focal species within each biological class (mammals, birds and reptiles), and between each animal class and donations to charities to help people. As in Survey I, a series of similar questions about willingness to pay for the conservation of particular wildlife species followed. In these instances (unlike in the fixed-pie allocations), respondents were told that they would have to pay from their own pocket to support the conservation of the species being evaluated. Once again, this enabled comparison to be made between the results from Survey I and those from Survey II.

#### *The coverage of the questionnaire for Survey III*

There were a few questions in the third questionnaire which overlapped with the previous questionnaires. Overlapping questions included stated willingness to pay for the conservation of the mahogany glider and the eastern pebble-mound mouse. Questions were also asked to detect how visits to the David Fleay Wildlife Park influenced the willingness of those participants visiting it to support the conservation of each of the species being evaluated and to determine how the whole survey program had influenced the stated support of participants for the conservation of Australian tropical

wildlife, as well as their support for the continued existence of the individual wildlife species being assessed.

Because of a shortage of research funds, much of the data from Survey III could not be analysed by us. A further problem was that compared to the sample sizes in Surveys I and II, the sample size on Survey III was much reduced. Whereas 204 persons completed Surveys I and II, only 119 finished Survey III, that is 58 per cent of the original participants. Reasons for the low participation rate in Survey III were explained above. In view of the low response rate in Survey III, doubts were raised about drawing inferences from it and about comparing its results with those for Surveys I and II.

## **5. Concluding Comments**

As can be seen, the method adopted to evaluate Australia's tropical species was experimental in nature. One of the aspects studied was that of increasing the amount of information available to participants in the study about each of the focal species. Therefore, it was possible to assess how the increased knowledge of species obtained by survey participants changed their support for the survival of each of these species, varied their willingness to pay for the conservation of each, and altered their attitudes towards the commercial harvesting of each. A controlled experiment was aimed for, even though complete control was not possible. While similar studies have been done before (see, for example, Samples et al., 1986) they have mostly relied on students as participants. This study was different because the sample for it was drawn from members of the general public. An innovatory aspect of the study was the use of a constructed index of the stated knowledge possessed by participants about each of the species. Although based on qualitative data, this index provided a useful indicator of changes in the stated knowledge of participants between Surveys I and II (see, for example, Tisdell and Wilson, 2006) and facilitated the analysis.

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## APPENDIX I

### A List of Articles in Chronological Order Which Have Made Some Use of the Data Generated by the Questionnaires in Appendix II

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## **APPENDIX II**

**The Three Questionnaires Used Serially in Surveys I, II and III for  
Evaluating Australia's Tropical Wildlife From an Economic Perspective**

# AUSTRALIA'S TROPICAL WILDLIFE: FIRST EVALUATION SURVEY



CONFIDENTIAL: STRICTLY FOR ACADEMIC RESEARCH PURPOSES ONLY

## BACKGROUND INFORMATION

1. Survey Number: .....
2. Suburb or Town: .....
3. Post Code .....
4. Male  Female  In what country were you born? .....
5. If born outside Australia, and live in Australia, how many years have you lived here?  
..... Years
6. Do you have a positive interest in nature or wildlife? Yes  No
7. Do you at present feed or provide water for birds or other wildlife in your garden?  
Yes  No
8. Have you planted native trees in your garden with the intention of attracting native wildlife (e.g. birds, butterflies)?  
Yes  No  Not applicable
9. Are you a member of any nature conservation organizations? Yes  No   
If yes, please state names of organizations  
(1) ..... (2) .....
10. Have you made any donations in cash/kind to wildlife or nature conservation in the past year? Yes  No
11. Have you been aware of campaigns to raise money for native wildlife such as the Northern Hairy-nosed Wombat and the Bilby during the past year? Yes  No
12. Have you or will you be influenced to purchase a good if the company donates a portion of its sales proceeds to nature conservation? Yes  No



5. Should governments limit the rights of Aborigines & Torres Strait Islanders to take common species for food?  
Yes  No  Unsure
6. Why? .....
7. Do you think Aborigines & Torres Strait Islanders should be permitted to take endangered species for food as well?  
Yes  No  Unsure
8. Do you think that there should be more involvement of voluntary organizations in conserving wildlife in tropical Australia and less government involvement?  
Yes  No  Unsure
9. Any comments about this? .....
10. Do you think it is important to conserve wildlife in tropical Australia? Yes  No
11. Please indicate why you think this and comment:  
.....
12. Is your knowledge of wildlife conservation in Australia **below** the Tropic of Capricorn (compared to your knowledge of that above it) to be:  
Much greater  Greater  About the same  Less  Much less
13. Do you consider your general knowledge of Australian tropical wildlife **above** the Tropic of Capricorn to be:  
Very good  Good  Average  Poor  Very poor
14. Do you consider your general knowledge of Australian wildlife **below** the Tropic of Capricorn to be:  
Very good  Good  Average  Poor  Very poor
15. Do you think that the **Red-tailed black cockatoos** should be harvested for the pet trade?  
Yes  No

**GENERAL KNOWLEDGE OF VARIOUS SPECIES OF WILDLIFE**

Species	Species Known (1) Yes (2) No	If 'Yes' do you rate your knowledge of these species as: (1) Very Good (2) Good (3) Poor	Are they present in Northern Australia (Tropical Australia?) (1) Yes (2) No (3) Unsure	Does it occur outside Australia? (1) Yes (2) No (3) Unsure
<b>REPTILES</b>				
Saltwater Crocodiles				
Fresh Water Crocodiles				
Hawksbill Sea Turtles (a marine species with a beautiful shell)				
Taipan Snakes (also known as fierce snakes)				
Northern Long-necked (Freshwater) Turtles				
<b>MAMMALS</b>				
Tree Kangaroos				
Red Kangaroos				
Koalas				
Mahogany Gliders (similar to the squirrel glider)				
Northern Bettongs (a small kangaroo-like marsupial)				
Northern Quolls (a native marsupial cat)				
Dugongs (a sea cow, not related to seals or whales)				
Northern Hairy-nosed Wombats (two related species are found in Australia)				
Eastern Pebble-mound Mouse (four related species are found in Australia)				
<b>BIRDS</b>				
Southern Cassowaries (a very large flightless bird)				
Brolgas (they are also known as the Australian cranes)				
Golden-shouldered Parrots (a parrot about the size of a budgerigar)				
Palm Cockatoos (also known as the Goliath Cockatoos)				
Eclectus Parrots (a very colourful bird belonging to the parrot family)				
Gouldian Finches (they are very colourful birds)				
Red-tailed Black Cockatoos (also known as the Red-tailed cockatoos)				
Golden Bowerbirds (a yellow bird belonging to the bowerbird family)				
Australian Magpies				
Laughing Kookaburras				

SUPPORT FOR CONSERVATION OR OTHERWISE OF THESE SPECIES IN AUSTRALIA				
Species	Do you: (1) Like strongly (2) Like (3) Dislike (4) Strongly dislike (5) Uncertain of feelings towards these species	Have you seen these animals? (1) Yes (2) No	Are you in favour of their survival as species (1) Yes (2) No (3) Indifferent	Sustainable Commercial Harvesting of these animals from the wild should be allowed (1) Yes (2) No (3) Indifferent (4) Unsure
<b>REPTILES</b>				
Saltwater Crocodiles				
Fresh Water Crocodiles				
Hawksbill Sea Turtles (a marine species with a beautiful shell)				
Taipan Snakes (also known as the fierce snake)				
Northern Long-necked (Freshwater) Turtles				
<b>MAMMALS</b>				
Tree Kangaroos				
Red Kangaroos				
Koalas				
Mahogany Gliders (similar to the squirrel glider)				
Northern Bettongs (a small kangaroo-like marsupial)				
Northern Quolls (a native marsupial cat)				
Dugongs (a sea cow, not related to seals or whales)				
Northern Hairy-nosed Wombats (two related species are found in Australia)				
Eastern Pebble-mound Mouse (four related species are found in Australia)				
<b>BIRDS</b>				
Southern Cassowaries (a very large flightless bird)				
Brolgas (they are also known as the Australian cranes)				
Golden-shouldered Parrots (a parrot about the size of a budgerigar)				
Palm Cockatoos (also known as the Goliath Cockatoos)				
Eclectus Parrots (a very colourful bird belonging to the parrot family)				
Gouldian Finches (they are very colourful birds)				
Red-tailed Black Cockatoos (also known as the Red-tailed cockatoos)				
Golden Bowerbirds (a yellow bird belonging to the bowerbird family)				
Australian Magpies				
Laughing Kookaburras				



**Questions on Reptiles**

1. 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. If 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 to 100%.

<b>Reptiles</b>	(%)
Saltwater Crocodiles	
Fresh Water Crocodiles	
Hawksbill Sea Turtles (a marine species with a beautiful shell)	
Northern Long-necked (Freshwater) Turtles	
Taipan Snakes (also known as Fierce Snake)	
	100

2. Briefly indicate your reason(s) for:

(a) Choosing the reptile for the **largest** allocation

1..... 2..... 3.....

(b) Choosing the reptile for the **smallest** allocation

1 ..... 2..... 3 .....

3. Suppose you have a choice of donating your Aus \$1,000 to support conservation of the above reptiles 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 species ..... %

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

4. Briefly indicate your reason(s) for this allocation

(a) .....

(b).....

(c).....



**Questions on Mammals**

1. Again, suppose that you are given Aus \$1,000. This time you can only donate it to organizations in Australia to help conserve mammals in Australia, including marsupials, in the list below. What percentage of it would you allocate for the conservation of each of the mammals listed below? Your total should add to 100%.

Animals (Mammals)	(%)
Tree Kangaroos	
Red Kangaroos	
Koalas	
Mahogany Gliders (similar to the squirrel glider)	
Dugongs (a sea cow, not related to seals or whales)	
Northern Quolls (a native marsupial cat)	
Northern Bettongs (a small kangaroo-like marsupial)	
Northern Hairy-nosed Wombats (two related species are found in southern Australia)	
Eastern Pebble-mound Mouse (four related species are found in Australia)	
	100

2. Briefly indicate your reason(s) for:

(a) Choosing the mammal for the **largest** allocation

1..... 2.....

(b) Choosing the mammal for the **smallest** allocation

1..... 2.....

(c) On the other hand, if you gave an equal allocation to each species, why?

1..... 2.....

3. Suppose you are able to donate a part or all of this Aus \$1,000 to a charity of your choice to help people in need or to organizations to conserve the above animals, what percentage of it would you allocate to each?

Support for conservation of the above animals ..... %

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

4. Briefly indicate your reason(s) for this allocation

(a) .....

(b) .....

(c) .....

**Questions on Birds**

1. Once again suppose that you are given Aus \$1,000, but this time to help conserve birds in Australia. You can only use it for the purpose of donating to organizations committed to conserving the bird species listed below. What percentage of it would you allocate for the conservation of each of the birds listed? Your total should add to 100%.

<b>Birds</b>	<b>%</b>
Southern Cassowaries (a very large flightless bird)	
Brolgas (they are also known as the Australian cranes)	
Kookaburras	
Australian Magpies (a black and white bird)	
Red Tailed Black Cockatoos (also known as the Red-tailed cockatoo)	
Palm Cockatoos (a very large cockatoo. Also known as the Goliath cockatoo)	
Eclectus Parrots (a very colourful bird belonging to the parrot family)	
Golden Bowerbirds (a yellow bird belonging to the bowerbird family)	
Golden-shouldered Parrots (a parrot about the size of a budgerigar)	
Gouldian Finches (they are very colourful birds)	
	100

2. Briefly indicate your reason(s) for:

(a) Choosing the bird for the **largest** allocation

1 ..... 2 .....

(b) Choosing the bird for the **smallest** allocation

1 ..... 2 .....

(c) On the other hand, if you gave an **equal** allocation to each species, why?

1 ..... 2 .....

3. Suppose you are able to donate a part or all of this Aus \$1,000 to a charity of your choice to help people in need or to organizations to conserve the above mentioned birds, what percentage of it would you allocate to each?

Support for conservation of the above mentioned birds ..... %

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

4. Briefly indicate your reason(s) for this allocation

(a) .....

(b) .....

(c) .....

5. Suppose you were given funds to support the conservation of up to six (6) species of Australian wildlife of your choice (including those that are not listed in this study) List those that you would like to support (six or fewer).

1..... 2..... 3..... .  
4..... 5 ..... 6.....

6. If you were given Aus \$1,000 to donate to organizations conserving Australian wildlife or to charitable organizations helping people in need, what percentage would you allocate to each?

Organisations conserving Australian wildlife ..... %  
Charities to assist people in need ..... %

7. Do you believe that more funding and support should be given to wildlife conservation in tropical Australia (the area north of Tropic of Capricorn) than is given at present?

Yes  No  Do not know

8. Why? .....

**Questions On Willingness to Pay for Wildlife Conservation**

(Data to be used strictly for academic research purposes only)

The following questions are designed to determine whether you wish to pay (or not) for wildlife conservation in Australia. These questions are only hypothetical, but please assume that they are real (Although these questions are hypothetical, please bear in mind that this is only one of many issues which may cost you money and that this may have to come from your/family budget).

1. Would you be willing to pay (even a small amount and even subject to conditions) for wildlife conservation in Australia?

Yes  No

2. If **No**, what are the reasons?

(1) ..... (2) .....

3. If you answered **No** to the above question, would you be willing to donate some of your time to help with wildlife conservation in Australia?

Yes  No

4. If **No**, what are the reasons?

(1) ..... (2) .....

Please consider the following questions about the conservation of tree kangaroos that occur in Australia (please do not change any of your previous answers in view of this knowledge).

**Tree Kangaroos**

Conducting research on tree kangaroos to conserve and to protect them in Australia costs money. In order to meet the costs of research, protection and conservation (such as buying land), money will have to be raised by the Government or a non-governmental organisation. *These questions are being asked to determine how much individuals are willing to pay or tree kangaroo research, protection and conservation (Please bear in mind that this is only one of many issues which may cost you money and that this may have to come from your/family budget). However, assume this to be your only extra commitment beyond your present plans to support nature conservation.*

1. Would you be willing to have your take-home income reduced by \$2 dollars a week, that is \$100 per year, for the next ten years to conduct research, protect and conserve tree kangaroos that occur in some areas of Australia's tropical rainforests?

Yes       Would like to pay more       Would like to pay less

2. If you are willing to pay more or less than \$2.00 per week, then what is the weekly amount you would be willing to pay to support research, protect and conserve tree kangaroos (such as buying land) that occur in Australia's tropical rainforests for the next ten years?

Aus \$ ..... a week

3. What percentage of this payment (roughly) depends on your personal chances of being able to see tree kangaroos in the wild (not in zoos or similar environments), or you benefiting personally and directly from their presence in the wild? [The remaining percentage will be assumed to represent the indirect value to you of the existence of tree kangaroos in the wild in Australia]

1 – 20       21-40       41-60       61-80       81-100

4. Briefly indicate your reason for your percentage allocation

.....

**Golden-shouldered Parrots**

1. Now assume that there is a campaign to raise money to protect the Golden-shouldered parrots in Australia instead of the tree kangaroos. In which case would you be willing to have your take-home income reduced by \$2 dollars a week, that is \$100 per year, for the next ten years to support research, protect and conserve the Golden-shouldered parrots that occur in small parts of Cape York Peninsula in Australia?

Yes       Would like to pay more       Would like to pay less

2. If you are willing to **pay more or less**, then what is the amount you would be willing to pay to conduct, protect and conserve the Golden-shouldered parrots that occur in small parts of Cape York Peninsula in Australia?

Aus \$ ..... a week

3. What percentage of this payment (roughly) depends on your personal chances of being able to see the Golden-shouldered parrots in the wild (not in zoos or similar environments), or of you benefiting **personally** and **directly** from their presence in the wild in Australia?

1 – 20       21-40       41-60       61-80       81-100

4. Briefly indicate your reason for your percentage allocation

.....

### **Hawksbill Sea Turtles**

1. Now assume that there is a campaign to raise funds to protect Hawksbill sea turtles that nest on the beaches of northern Australia, instead of the Golden-shouldered parrots. In which case would you be willing to have your take-home income reduced by \$2 dollars a week, that is \$100 per year, for the next ten years to conduct research, protect and conserve Hawksbill sea turtles that nest on the beaches of northern Australia?

Yes       Would like to pay more       Would like to pay less

2. If you are willing to pay more or less, then what is this amount you would be willing to pay per week to conduct research, protect and conserve Hawksbill sea turtles that nest on the beaches of northern Australia?

Aus \$ ..... a week

3. What percentage of this payment (roughly) depends on your personal chances of being able to see Hawksbill sea turtles in the wild (not in an aquarium), or you benefiting **personally** and **directly** from their presence in the sea?

1 – 20       21 – 40       41 – 60       61 – 80       81 – 100

4. Briefly indicate your reason for your percentage allocation

.....

5. Do you agree that use of shells of Hawksbill turtles for making jewellery and other products for commercial use should be banned?

Yes       No        Unsure

Why? .....

6. The above questions were asked to determine how much you or your family would be willing to pay for the conservation of **only one species** of wildlife that occurs in **northern Australia**. Now assume that there is a campaign to raise money for **all three species** mentioned above (Tree kangaroos, Golden-shouldered parrots and Hawksbill sea turtles) at the same time. In this case what is the **maximum** amount would you be willing to pay for each of the species? (**Please bear in mind that this is only one of many issues which may cost you money and that this may have to come from your/family budget**).

Maximum amount for **Tree kangaroo** conservation in Australia for the next 10 years

Aus \$ .....

Maximum amount for **Golden-shouldered parrot** conservation in Australia for the next 10 years

Aus \$ .....

Maximum amount for **Hawksbill sea turtle** conservation in Australia for the next 10 years

Aus \$ .....

Total payment for all three species **for a week** Aus \$ .....

7. Assume that the government or a conservation body is raising money to save the **Northern Hairy-nosed wombat**. What is the **maximum** amount you would be willing to pay per week to conduct research, protect and conserve (such as buying land) this species for the next ten years?

Aus \$ ..... a week

8. Now assume that instead of the **Northern Hairy-nosed wombat**, funds are being raised to conduct research, protect and conserve the koalas. What is the **maximum** amount you would be willing to pay per week for the conservation of koalas for the next ten years?

Aus \$ ..... a week

9. If your willingness to pay amounts are not the same for the two species described above, could you please indicate why you allocated the specified amounts to:

**Northern Hairy-nosed wombat** (1) .....

**Koalas** (1) .....

10. You are given Aus \$1,000 that you can allocate to conserve the Northern hairy-nosed wombat or the southern wombat (this species is common). What percentage would you allocate to each?

**Northern hairy-nosed wombat** ..... %

**Southern wombat** ..... %

11. Why did you decide this allocation?

.....

**Mahogany Gliders**

- 1. Is this species endangered?      Yes       No       Unsure
  
- 2. What is the main threat to its survival?
  - Clearing of land for sugar cane
  - Eaten by tree snakes and owls
  - Other .....
  
- 3. Do you think the Queensland Government should do any of the following to assist the survival of the Mahogany glider? (Please tick if you agree)
  - Put more of its habitat into protected areas (e.g. National Parks)
  - Ban the further clearing of their habitat on private land (e.g. Farm Land)
  
- 4. Do you think the Queensland Government should do much more than now to ensure the survival of this species?  
Yes       No       Unsure
  
- 5. Would you favour a public campaign to gather financial and other support for the conservation of the habitat of the Mahogany glider?  
Yes       No       Unsure
  
- 6. If you were asked for a one off donation for a campaign to save the Mahogany glider designed to increase public awareness and secure land against clearing, how much would you contribute?  
Aus\$ .....

**Eastern Pebble-mound Mouse**

- 1. Little is known about this mouse and it occurs only in a small part of Queensland. If there was a campaign to set aside land to conserve it and you were asked for a one off donation, would you contribute?  
Yes       No
  
- 2. If **Yes**, how much would you contribute? .....Aus\$ .....
  
- 3. If **No**, what are the reasons?
  - 1 .....
  - 2 .....

**Thank you**

Professor Clem Tisdell      Tel: 3365 6306      Email: [c.tisdell@economics.uq.edu.au](mailto:c.tisdell@economics.uq.edu.au)  
Dr Clevo Wilson      Tel: 3365 6645      Email: [clevo.wilson@mailbox.uq.edu.au](mailto:clevo.wilson@mailbox.uq.edu.au)  
School of Economics, The University of Queensland, QLD, 4072, Australia

# AUSTRALIA'S TROPICAL WILDLIFE: SECOND EVALUATION SURVEY



CONFIDENTIAL: STRICTLY FOR ACADEMIC RESEARCH PURPOSES ONLY

## FOLLOW UP QUESTIONS

1. Survey Number: .....
2. Suburb or Town ..... Postcode: .....

This set of questions is intended to find out if any of your previous assessments of wildlife have altered as a result of extra knowledge obtained since the last survey. **Please post the completed questionnaire without delay (before end of July) in the self-addressed envelope provided (postage prepaid).** We thank you for taking part in this survey.

When you complete and return this survey form we shall respond to your request for tickets to David Fleays Wildlife Park and you will be entered in a draw:

Prize – Voucher for Aus \$200.

1. Since completing the first survey have you obtained any further information about Australian tropical wildlife?  
Yes  No
2. Did you read the information pack that was handed out to you at the University?  
Completely  Partly  Not at all
3. After the first survey, have you become more interested in learning about Australian tropical wildlife?  
Yes  No



**GENERAL ATTITUDINAL AND OTHER QUESTIONS**

1. How would you rate your **current** attitudes towards nature conservation?

- Extremely strong advocate       Strong advocate       Moderate advocate  
 Neutral towards this subject       More oriented towards development than conservation

2. Please put a tick in the box corresponding to the following statements that you agree with:

- Commercial harvesting of wildlife should not be allowed  
 Commercial harvesting and use of wildlife should be allowed and **should not** be restricted by the government  
 Commercial harvesting of wildlife should be allowed, **but only if it is sustainable**  
 The government should allow the harvesting of some wildlife, **but regulate it**

3. Have you lived or worked in tropical Australia?      Yes  No

4. If Yes, for how many years (approximately)?      Number of years .....

5. Have you travelled in tropical Australia?      Yes  No

6. Should more effort be made to conserve wildlife in tropical Australia?      Yes  No

7. Should more effort be made by any one of the following parties to conserve Australian tropical wildlife?

- |                                      |                              |                             |                                 |
|--------------------------------------|------------------------------|-----------------------------|---------------------------------|
| Governments (State & Federal)        | Yes <input type="checkbox"/> | No <input type="checkbox"/> | Unsure <input type="checkbox"/> |
| Voluntary Organizations              | Yes <input type="checkbox"/> | No <input type="checkbox"/> | Unsure <input type="checkbox"/> |
| General Public                       | Yes <input type="checkbox"/> | No <input type="checkbox"/> | Unsure <input type="checkbox"/> |
| Aborigines & Torres Strait Islanders | Yes <input type="checkbox"/> | No <input type="checkbox"/> | Unsure <input type="checkbox"/> |

8. Should governments limit the rights of Aborigines & Torres Strait Islanders to take common species for food?

- Yes  No  Unsure

Why? 1 ..... 2.....

9. Do you think Aborigines & Torres Strait Islanders should be permitted to take endangered species as well?

- Yes  No  Unsure

10. Do you think that there should be more involvement of voluntary organizations in conserving wildlife in tropical Australia and less government involvement?

- Yes  No  Unsure

11. Any comments about this? .....

12. Do you think it is important to conserve wildlife in tropical Australia?

Yes  No

13. Please indicate why you think this and comment

.....

14. Is your knowledge of wildlife conservation in Australia **below** the Tropic of Capricorn (compared to your knowledge of that above it):

Much greater  Greater  About the same  Less  Much less

15. Do you consider your general knowledge of Australian tropical wildlife **above** the Tropic of Capricorn to be:

Very good  Good  Average  Poor  Very poor

16. Do you consider your general knowledge of Australian wildlife **below** the Tropic of Capricorn to be:

Very good  Good  Average  Poor  Very poor

17. Do you think that the **Red-tailed black cockatoos** should be harvested for the pet trade?

Yes  No

18. Why? 1. ....

2. ....

19. Should Aborigines and Torres Strait Islanders be allowed to earn money from limited hunting of common wildlife for trophies?

Yes  No  Unsure

20. Why? 1. ....

2. ....

21. Do you think Aborigines should be able to utilize **Northern long-necked turtles** for the pet trade?

Yes  No  Unsure

22. Why? .....

SUPPORT FOR CONSERVATION OR OTHERWISE OF THESE SPECIES IN AUSTRALIA				
Species	Do you rate your knowledge of these species now as:	Do you:	Are you in favour of their survival as species?	Sustainable commercial harvesting of these animals from the wild should be allowed
<b>Please put the appropriate number in the columns</b>	(1) <b>Very Good</b> (2) <b>Good</b> (3) <b>Poor</b> (4) <b>Non-existent</b>	(1) <b>Like strongly</b> (2) <b>Like</b> (3) <b>Dislike</b> (4) <b>Strongly dislike</b> (5) <b>Uncertain of feelings towards these species</b>	(1) <b>Yes</b> (2) <b>No</b> (3) <b>Indifferent</b>	(1) <b>Yes</b> (2) <b>No</b> (3) <b>Indifferent</b> (4) <b>Unsure</b>
<b>REPTILES</b>				
Saltwater Crocodiles				
Fresh Water Crocodiles				
Hawksbill Sea Turtles (a marine species with a beautiful shell)				
Taipan Snakes (also known as the fierce snake)				
Northern Long-necked (Freshwater) Turtles				
<b>MAMMALS</b>				
Tree Kangaroos				
Red Kangaroos				
Koalas				
Mahogany Gliders (similar to the squirrel glider)				
Northern Bettongs (a small kangaroo-like marsupial)				
Northern Qualls (a native marsupial cat)				
Dugongs (a sea cow, not related to seals or whales)				
Northern Hairy-nosed Wombats (two related species are found in Australia)				
Eastern Pebble-mound Mouse (four related species are found in Australia)				
<b>BIRDS</b>				
Southern Cassowaries (a very large flightless bird)				
Brolgas (they are also known as the Australian cranes)				
Golden-shouldered Parrots (a parrot about the size of a budgerigar)				
Palm Cockatoos (also known as the Goliath Cockatoos)				
Eclectus Parrots (a very colourful bird belonging to the parrot family)				
Gouldian Finches (they are very colourful birds)				
Red-tailed Black Cockatoos (also known as the Red-tailed cockatoos)				
Golden Bower birds (a yellow bird belonging to the bowerbird family)				
Australian Magpies				
Laughing Kookaburras				

**QUESTIONS ABOUT SPECIFIC SPECIES**

1. Do you now think that tree kangaroos should be protected? Yes  No  Unsure
  2. If **No/Unsure**, what are the reasons? (1) .....
  3. If **Yes**, why do you think they should be protected? (You may tick more than one box)
    - They are unique
    - I would like an opportunity to see them in the wild
    - I would like my children or others to have a chance to see them in the wild
    - I would just be happy to know that they continue to exist in the wild
    - We have a responsibility to protect all species
    - They are an interesting evolutionary phenomenon
    - They perform certain ecological functions
    - Provide food and skins for native peoples
    - Any other (please specify)
- (1)..... (2) .....

**Questions on Reptiles**

1. 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 to 100%.

<b>Reptiles</b>	<b>(%)</b>
Saltwater Crocodiles	
Fresh Water Crocodiles	
Hawksbill Sea Turtles (a marine species with a beautiful shell)	
Northern Long-necked (Freshwater) Turtles	
Taipan Snakes (also known as Fierce Snakes)	
	<b>100</b>

2. Briefly indicate your reason(s) for:
  - (a) Choosing the reptile(s) for the **largest** allocation
    - 1 .....
    - 2 .....
  - (b) Choosing the reptile(s) for the **smallest** allocation
    - 1 .....
    - 2 .....
  - (c) On the other hand if you gave an **equal** allocation to each species, why?
    - 1 .....
    - 2 .....

3. Suppose you have a choice of donating your Aus \$1,000 to support conservation of the above reptiles 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 individual species?

Support for conservation of the above reptile species ..... %  
 Support for charity to help people in need ..... %

4. Briefly indicate your reason(s) for this allocation

(a) .....  
 (b) .....

**Questions on Mammals**

1. Again suppose that you are given Aus \$1,000. This time, you can only donate it to organizations in Australia to help conserve mammals in Australia, including marsupials, in the list below. What percentage of it would you allocate for the conservation of each of the mammals listed below after the provision of information? Your total should add up to 100%.

Animals (Mammals)	(%)
Tree Kangaroos	
Red Kangaroos	
Koalas	
Mahogany Gliders (similar to the squirrel glider)	
Dugongs (a sea cow, not related to seals or whales)	
Northern Quolls (a native marsupial cat)	
Northern Bettongs (a small kangaroo-like marsupial)	
Northern Hairy-nosed Wombats (two related species are found in southern Australia)	
Eastern Pebble-mound Mouse (four related species are found in Australia)	
	<b>100</b>

2. Briefly indicate your reason(s) for:

(a) Choosing the mammal(s) for the **largest** allocation  
 1..... 2.....  
 (b) Choosing the mammal(s) for the **smallest** allocation  
 1..... 2.....  
 (c) On the other hand if-you gave an **equal** allocation to each species, why?  
 1..... 2.....

3. Suppose you are able to donate a part or all of this Aus \$1,000 to a charity of your choice to help people in need or to organizations to conserve the above animals, what percentage of it would you allocate to each?

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

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

4. Briefly indicate your reason(s) for this allocation

(a) ..... (b) .....

**Questions on Birds**

1. Once again suppose you are given Aus \$1,000, but this time to help conserve birds in Australia. You can only use it for the purpose of donating to organizations committed to conserving the bird species listed below. What percentage of it would you allocate for the conservation of each of the birds listed? Your total should add up to 100%.

<b>Birds</b>	%
Southern Cassowaries (a very large flightless bird)	
Brolgas (they are also known as the Australian cranes)	
Kookaburras	
Australian Magpies (a black and white bird)	
Red Tailed Black Cockatoos (also known as the Red-tailed cockatoo)	
Palm Cockatoos (a very large cockatoo. Also known as the Goliath cockatoo)	
Eclectus Parrots (a very colourful bird belonging to the parrot family)	
Golden Bowerbirds (a yellow bird belonging to the bowerbird family)	
Golden-shouldered Parrots (a parrot about the size of a budgerigar)	
Gouldian Finches (they are very colourful birds)	
	100

2. Briefly indicate your reason(s) for:

(a) Choosing the bird(s) for the **largest** allocation

1.....

(b) Choosing the bird(s) for the **smallest** allocation

1.....

(c) On the other hand if you gave an **equal** allocation to each species, why?

1.....

3. Suppose you are able to donate a part or all of this Aus \$1,000 to a charity of your choice to help people in need or to organizations to conserve the above mentioned birds, what percentage of it would you allocate to each?

Support for conservation of the above mentioned birds ..... %

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

4. Briefly indicate your reason(s) for this allocation

(a) ..... (b).....

5. Suppose you were given funds to support the conservation of up to six (6) species of Australian wildlife of your choice (including those that are not listed in this study). Please list those that you would most like to support (six or fewer).

1..... 2..... 3.....  
4..... 5..... 6.....

6. If you were given Aus \$1,000 to donate to organisations conserving Australian wildlife or to charitable organisations helping people in need, what percentage would you allocate to each?

Organisations conserving Australian wildlife ..... %  
Charities to assist people in need ..... %

7. Do you believe that more funding and support should be given to wildlife conservation in tropical Australia (the area north of Tropic of Capricorn) than is given at present?

Yes  No  Do not know

Why? .....

**Questions On Willingness to Pay for Wildlife Conservation**  
(Data to be used strictly for academic research purposes only)

The following questions were designed in the previous questionnaire to determine whether you wish to pay (or not) for wildlife conservation in Australia. We would like to know whether your willingness to pay has changed or not after the provision of information. **Please bear in mind that these questions are still hypothetical, but please assume that they are real.**

1. Would you be willing to pay (even a small amount and subject to conditions) or do you already voluntarily pay for wild life conservation in Australia?

Yes  No

2. If **No**, what are the reasons?

(1) ..... (2) .....

3. If you answered **No** to the above question would you be willing to or do you already donate some of your time to help with wildlife conservation in Australia?

Yes  No

4. If **No**, what are the reasons?

(1) ..... (2) .....

Please consider the following questions about the conservation of **tree** kangaroos that occur in Australia

**Tree Kangaroos**

Conducting research on tree kangaroos to conserve and to protect them in Australia costs money. In order to meet the costs of research, protection and conservation (such as buying land), money will have to be raised by the Government or a non-governmental organisation. Although the questions are hypothetical please consider them as real in answering them.

1. Would you be willing to have your take-home income or income from elsewhere reduced by \$2 dollars a week, that is \$100 per year, for the next ten years to conduct research, protect and conserve tree kangaroos that occur in some areas of Australia's tropical rainforests?

Yes  Would like to pay more  Would like to pay less

2. If you are willing to **pay more** (or **less**) than \$2.00 per week, then what is the weekly amount you would be willing to pay to support research, protect and conserve tree kangaroos (such as buying land) that occur in Australia's tropical rainforests for the next ten years?

Aus \$ ..... a week

3. What percentage of this payment (roughly) depends on your personal chances of being able to see tree kangaroos in the wild (not in zoos or similar environments), or of you benefiting personally and directly from their presence in the wild? [The remaining percentage will be assumed to represent the indirect value to you of the existence of tree kangaroos in the wild in Australia.]

1 -20     21-40     41-60     61-80     81-1 00

4. Briefly indicate your reason for your chosen percentage.

.....

**Golden-shouldered Parrots**

1. Now assume that there is a campaign to raise money to protect the Golden-shouldered parrots in Australia instead of the tree kangaroos. In this case would you be willing to have your take-home income or income from elsewhere reduced by \$2 dollars a week, that is \$100 per year, for the next ten years to support research, protect and conserve the Golden-shouldered parrots that occur in parts of Cape York Peninsula in Australia?

Yes  Would like to pay more  Would like to pay less

2. If you are willing to pay more (or less), then what is the amount you would be willing to pay a week to conduct, protect and conserve the Golden-shouldered parrots that occur in small parts of the rainforests of Cape York Peninsula in Australia?

Aus \$ ..... a week



3. What percentage of this payment (roughly) depends on your personal chances of being able to see the Golden-shouldered parrots in the wild (not in zoos or similar environments), or of you benefiting personally and directly from their presence in the wild in Australia?

- 1 -20     21-40     41-60     61-80     81-1 00

4. Briefly indicate your reason for your chosen percentage.

.....

**Hawksbill Sea Turtles**

1. Now assume that there is a campaign to raise funds to protect the Hawksbill sea turtles that nest on the beaches of northern Australia instead of the Golden-shouldered parrots. In this case would you be willing to have your take-home income or income from elsewhere reduced by \$2 dollars a week, that is \$100 per year, for the next ten years to conduct research, protect and conserve the Hawksbill sea turtles that nest on the beaches of northern Australia?

- Yes     Would like to pay more     Would like to pay less

2. If you are willing to pay **more** (or **less**), then what is the amount you would be willing to pay a week to conduct, protect and conserve the Hawksbill sea turtles that nest on the beaches of northern Australia?

Aus \$ ..... a week

3. What percentage of this payment (roughly) depends on your personal chances of being able to see Hawksbill sea turtles in the wild (not in an aquarium), or of you benefiting personally and directly from their presence in the sea?

- 1 -20     21-40     41-60     61-80     81-1 00

4. Briefly indicate your reason for your chosen percentage.

.....

5. Do you agree that use of shells of Hawksbill sea turtles for making jewellery and other products for commercial use should be banned?

- Yes     No     Unsure

6. Why? .....

7. The above questions were asked to determine how much you or your family would be willing to pay for the conservation of **only one species** of wildlife that occurs in **northern Australia**. Now assume that there is a **new** campaign to raise money for all three species mentioned above (Tree kangaroos, Golden-shouldered parrots and Hawksbill sea turtles) at the same time. In this case, what is the maximum amount you would be willing to pay for each of the species? (**Once again, please bear in mind that this is only one of many issues which may cost you money and that this may have to come from your/family budget**).

Maximum amount for **Tree kangaroo** conservation in Australia for a **week** for the next 10 years

Aus \$ .....a week

Maximum amount for **Golden-shouldered Parrot** conservation in Australia for **a week** for the next 10 years

Aus \$ .....a week

Maximum amount for **Hawksbill sea turtle** conservation in Australia for **a week** for the next 10 years

Aus \$ .....a week

Total payment for all three species for a week

Aus \$ ..... a week

8. Assume that the government or a conservation body is raising money to save the **Northern hairy-nosed wombat**. What is the **maximum** amount you would be willing to pay per week to conduct research, protect and conserve (such as buying land) this species for the next ten years?

Aus \$ ..... a week

9. Now assume that instead of **Northern hairy-nosed wombats**, funds are being raised to conduct research, protect and conserve the **koalas**. What is the **maximum** amount you would be willing to pay per week for the conservation of koalas for the next ten years?

Aus \$ .....a week

10. If your willingness to pay amounts are not the same for the two species described above, could you please indicate why you allocated the specific amounts to:

**Northern hairy-nosed wombat** (1).....

**Koalas** (2).....

11. You are given Aus \$1,000 that you can allocate to conserve the **Northern hairy-nosed wombat** or the **Southern wombat** (this species is common). What percentage would you allocate to each?

**Northern hairy-nosed wombat** ..... %

**Southern wombat** ..... %

12. Why did you decide on this allocation? .....

**Mahogany Gliders**

1. Is this species endangered Yes  No  Unsure

2. What is the main threat to its survival?

- Clearing of land for sugar cane
- Eaten by tree snakes and owls
- Other .....

3. Do you think the Queensland Government should do any of the following to assist the survival of the Mahogany glider? (Please tick if you agree)

Put more of its habitat into protected areas (e.g. National Parks)

Ban the further clearing of their habitat on private land (e.g. Farm Land)

4. Do you think the Queensland Government should do much more than now to ensure the survival of this species?

Yes  No  Unsure

5. Would you favour a public campaign to gather financial and other support for the conservation of the habitat of the Mahogany glider?

Yes  No  Unsure

6. If you were asked for a one off donation for a campaign to save the Mahogany glider designed to increase public awareness and secure land against clearing, how much would you contribute?

Aus \$ .....

**Eastern Pebble-mound Mouse**

1. Little is known about this mouse and it occurs only in a small part of Queensland. If there was a campaign to set aside land to conserve it and you were asked for a one off donation, would you contribute?

Yes  No

2. If **Yes**, how much would you contribute?

Aus \$ .....

3. If **No**, what are the reasons?

(1) .....

(2) .....

(3) .....

Once again thank you for your participation in this study. We appreciate your cooperation very much. **For more information about the study please contact:**

Professor Clem Tisdell  
Dr Clevo Wilson

Tel: 33656306  
Tel: 33656645

E-mail: [c.tisdell@economics.uq.edu.au](mailto:c.tisdell@economics.uq.edu.au)  
E-mail: [clevo.wilson@mailbox.uq.edu.au](mailto:clevo.wilson@mailbox.uq.edu.au)

School of Economics, The University of Queensland, Qld, 4072, Australia

# INTRODUCTION TO TROPICAL AUSTRALIA AND ITS BIODIVERSITY

## Background

This study focuses on Australia's tropical wildlife. Tropical Australia is taken to be the area above the tropic of Capricorn which runs across the continent from Rockhampton through Papunya (just above Alice Springs) across Ningaloo Reef in Western Australia. Tropical Australia also includes the Torres Strait Islands. The tropics account for about 40% of mainland Australia. The Australian tropics lie in three states, namely, Queensland, Northern Territory and Western Australia. Australia's tropical north covers many bioregions including vast deserts (e.g. Great Sandy desert), grasslands, eucalypt forests and rainforests. As would be expected, species vary by bioregions. Some are confined to the rainforests while some live only in the grasslands and deserts. Many of the species found in Australia's north occur nowhere else in the world.



Much of Australia's unique wildlife is confined to its tropics. The following wild animals occur only in the Australian tropics: approximately 95 species of mammals, 121 species of birds, 33 species of reptiles and 15 amphibian species. At the same time, approximately 104 species of mammals, 423 species of birds, 74 species of reptiles and 16 species of amphibians are found both in the tropics as well as below the tropics. The number of species that live

exclusively below the tropics is: 79 species of mammals, 175 species of birds, 20 species of reptiles and 29 species of amphibians. These figures show the importance of the tropics for Australia's wildlife. For instance, more species of Australian unique mammals occur in its tropics than below the tropics.

Since European settlement and the spread of agriculture and cattle grazing, the environment has been severely affected, both in the tropics and the rest of Australia. The introduction of feral species has also had a devastating effect on Australia's biodiversity, including the tropics. There are at least 20 well known introduced species that have and continue to have a devastating effect on Australia's unique biodiversity and natural vegetation. They include: the fox, cat, pig, house rat, rabbit, goat and camel. Several of Australia's fauna and flora became extinct after the arrival of European settlers more than 200 years ago. Some of the species that used to live mainly in the tropics that are now believed to be extinct include: the Lesser bilby and the Percy Island flying fox.

However, Australia's tropical north still has abundant wildlife and other natural and cultural assets. For example, three of Australia's World Heritage sites (Kakadu, Wet Tropics and Riversleigh) are located in the tropics while one (the Great Barrier Reef) straddles, both the tropics and non-tropical areas with approximately 95% of the property lying within the tropics. A quick look at a map of Australia shows that the amount of land devoted to National Parks, other parks and reserves, aboriginal land and restricted areas is smaller in the tropical north than in the non-tropical areas. In the Northern Territory (NT), for example, only 4.7% of land is under any form of conservation by the state. The remaining 95.3% is either leasehold, freehold or customary land under the control of people mainly with commercial or subsistence interests. Even the money allocated for environmental conservation in the tropics seems to be proportionately lower than money devoted to conservation below the tropics. Because of the serious threats to biodiversity and the urgent need to protect the remaining (often rare) biodiversity in the Australian tropics, non-governmental organizations such as *Birds Australia* and *Australian Nature Conservancy* have purchased large tracks of properties to convert them into private nature reserves. Some of these properties include: New Haven (NT), Mt Zero (Qld) and Mornington (WA). These properties support some of the most threatened species in Australia. For example, New Haven is the only place in the whole of Australia where the Night parrot (unique to Australia) has been sighted in recent times. Yet, when it comes to protected properties funded by non-governmental organisations devoted to the preservation of wildlife, there are a larger number of properties below the tropics than in the tropics.

Farming and ranching of wildlife species peculiar to the tropics take place in all the three states on a commercial basis. For example, crocodile farming takes place in Queensland and ranching and farming of crocodiles take place in the Northern Territory and Western Australia. Ranching of Northern Long-necked (freshwater) turtles and hawksbill sea turtles also takes place in the Northern Territory. Many of these wildlife farms also engage in some form of tourism with an emphasis on education and conservation. Furthermore, commercial harvesting of kangaroos also occurs in the tropics together with other species such as pigs, brumbies, goats and buffalo.

Tourism, especially nature-based ecotourism, is a large-scale activity in the tropics with well known national parks such as Kakadu, The Wet Tropics and the Great Barrier Reef attracting a large portion of visitors to Australia to the tropics. These natural attractions also create complementary demand to nearby lesser known national parks and natural attractions and provide much needed employment and income to the local communities, including aborigines. In fact, a recent report published by CRC for Sustainable Tourism shows that Australia's tropical north attracted a higher than average *proportion* of wildlife tourists visiting Australia. On average, a higher proportion of overseas visitors who travel to Australia's north express an interest in wildlife tourism compared to those visiting Australia's south.

Some information is given below on selected species of Australian wildlife. Please read this before answering the follow up-questionnaire (second evaluation survey).

## CROCODILES

Crocodiles have been in existence from the time of the dinosaurs. Of the twenty two crocodile species found in equatorial countries, there are two species in Australia. One, known as the saltwater/estuarine (saltie) crocodile, and the other, is the freshwater (freshie) crocodile. Both are found in northern Australia where they live in billabongs, creeks, swamps, and in the case of the saltwater crocodile, in the sea.

**Saltwater/Estuarine Crocodile** (*Crocodylus porosus*) Other names: Estuarine crocodile, Saltwater crocodile, 'saltie', Man-eating crocodile, Subwater crocodile.

*Status: IUCN Red List: Low risk, least concern. Estimated wild population in Australia: 200,000–300,000. CITES: Appendix I. Annual quota for ranching. Summary: Widely distributed and numerous in Australia and PNG, but depleted elsewhere.*



Salties are the largest living reptiles. Relative to its body the Australian saltwater crocodile has a shorter and broader snout than the freshwater crocodile. They have heavy armour plating and powerful jaws. Their jaws are so powerful that they are strong enough to crush the skull of a pig. Saltwater crocodiles are dangerous to humans and although their main food consists of crabs, fish, snakes, lizards, turtles and larger mammals, they also occasionally eat humans. Despite their name, saltwater crocodiles are commonly found in freshwater habitats throughout northern Australia, but are found in the oceans as well. Saltwater crocodiles, like the freshwater crocodiles, were hunted commercially, but were given protection in the 1960s and 1970s because their numbers fell to low levels. Although the numbers of saltwater crocodiles have increased in recent years, their numbers are nowhere near those before commercial hunting took place. Today, saltwater crocodiles are farmed in three States, viz., Queensland, Northern Territory and Western Australia. Salties are protected in Australia, but ranching is permitted in the Northern Territory. They are also used in tourism-based activities.



**Freshwater Crocodile** (*Crocodylus johnstoni*). Other names: Johnston's river crocodile, Australian freshwater crocodile, 'Freshie', Fish crocodile. *Status: IUCN Red List: Low risk, least concern. Estimated wild Population in Australia: 50,000–100,000. CITES: Appendix II. Summary: Populations are healthy. Have recovered from historical population declines. Found only in Australia.*

Freshwater crocodiles, as the name suggests, live in freshwater in rivers, swamps and billabongs of northern Australia. Generally, this species is not found near the coast where salinity and competition from salties keep them away. This species is found nowhere else in the world. It is much smaller and lighter than the salties, growing to a maximum length of around three meters, and its snout is relative to its body longer and narrower than its cousin, the saltwater crocodile. Freshwater crocodiles are considered harmless to humans, unlike saltwater crocodiles, although it is not advisable to swim with freshwater crocodiles. Since bans on commercial shooting of crocodiles, freshwater crocodiles have recovered to their former levels. However, they are also protected by law and are used by commercial farms for their leather and tourism-based activities. Freshwater crocodiles, feed on insects, fish, frogs, lizards and birds.

**Hawksbill Sea Turtle** (*Eretmochelys imbricata*). Other Names: None.

*Status: IUCN Red List: Endangered. CITES: Appendix II. Summary: Populations are low. Found feeding in Australia from Shark Bay in Western Australia, the entire northern coast down to Moreton Bay in Queensland. This species is also found in the seas of many countries.*



Source: <http://www.turtles.org/hawksd.htm>

Hawksbill sea turtles are one of seven marine species classified as endangered according to the listings of CITES. The beak-like upper jaw of the hawksbill turtle gives its common name. It has a beautiful shell used in the ornamental (*bekko*) trade. Although in Australia the hunting and harvesting of the hawksbill turtle is prohibited (except for aboriginal hunting), hunting of these turtles still takes place in many developing countries, including the Solomon Islands, and some Torres Strait islands. They are sometimes eaten, but it appears that most of the hunting takes place for their beautiful shell. In Australia, hawksbill turtles are ranched on a limited basis in Northern Australia where eggs are collected from the wild, hatched and reared and then released into the wild. There is tourism involved as well. Hawksbill turtles nest mainly on the islands in the northern Great Barrier Reef and Torres Strait islands, although some nest in the Northern Territory and Western Australia as well. The hunting of this species for its shell has led to a worldwide decline in its population.

**Taipan Snake** (*Oxyuranus scutellatus*, *Oxyuranus microlepidotus*). Other names: Coastal taipans, Inland taipans.

*Status: Common within their range. Summary: Found in Australia, Irian Jaya and Papua New Guinea. Considered the most dangerous snake in the world, but will attack only if cornered. Taipan venom has many medicinal values.*

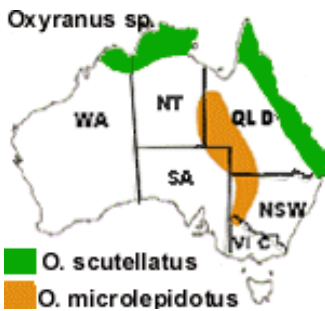


Australia has two species of taipan snakes and they are among the largest and most deadly venomous snakes in the world. Taipan snakes have caused a number of human deaths. They are even more dangerous than brown snakes. One species known as the fierce snake (*Oxyuranus scutellatus*) reaches the length of around four meters



Source: <http://www.kingsnake.com/oz/>

making it Australia's longest venomous snake. It occurs in moist, open coastal plains from the Kimberley in Western Australia to Fraser Island in Queensland and in northern NSW. Land clearings, sugarcane cultivation and rodent rich rubbish dumps are some of the favoured places of this species. Although the numbers of other species have declined in recent years due to the spread of the cane toad, this species has in fact increased in recent decades, especially in areas under sugarcane cultivation. Cane provides a perfect habitat for rats, which has in turn benefited the taipans because they feed on rats. The other species of taipan, the inland taipan (*Oxyuranus microlepidotus*) often stands its ground when approached, in an upright S-stance like that of some brown snakes. This species is also known as the small-scaled or fierce snake. The inland taipan grows to a length of 2.5 meters. It is seldom seen as it lives on flood plains and dunes of the channel country of south-western Queensland and north-east of South Australia. Taipans are good predators of rodents and insects. They keep their numbers in check. Taipan venom is also being studied to help heal wounds and treat burns.



**Northern Long-necked (freshwater) Turtle (*Chelodina rugosa*).** Other Names: None.



*Status: Common. Summary: Found in lowland areas of northern Australia only. Harvested by Aborigines. Ranching is permitted in the Northern Territory.*

There are 10 species of freshwater turtles in Australia. The northern long-necked turtle inhabits the rivers and billabongs of lowland areas in northern Australia. It is a unique species because of its ability to nest and lay eggs under water. It is a common species in the Northern Territory. For generations the long-necked turtle has been a favorite bush food for



aboriginal people of northern Australia. The meat is considered highly nutritious. They are harvested during the dry season by digging them from the ground or by scooping them from the water after the wet season. They are also harvested for the pet trade. As a result, a project has now been started with the University of Northern Territory to exploit these turtles on a sustainable commercial basis. Under this scheme pregnant turtles are collected from the wild, their eggs are incubated and the hatchlings are sold to pet shops in Darwin. Plans are also underway to export them. The females are returned to the wild, as are a percentage of the hatchlings. They fetch between \$30 and \$50 each in pet shops and the community receives \$5 per hatchling, while the remainder of the profits go back into the project. The reptiles are important totems and figure prominently in the rock art of Arnhem Land. These turtles are extremely hardy and can live for thirty to forty years.

## Mammals

### Tree Kangaroos (Two Species)

Lumholtz's (*dendrolagus lumholtzi*). Other names: Tree-climber, Lumholtz's tree-hare  
Bennett's (*dendrolagus bennettianus*). Other names: Tree-climber, Grey tree-kangaroo, Tree wallaby.

*Status: Lumholtz's tree-kangaroo is common in its limited range while Bennett's tree-kangaroo is sparsely distributed: Both species are endangered. Summary: Restricted to patches of rainforests of north-eastern Queensland only.*



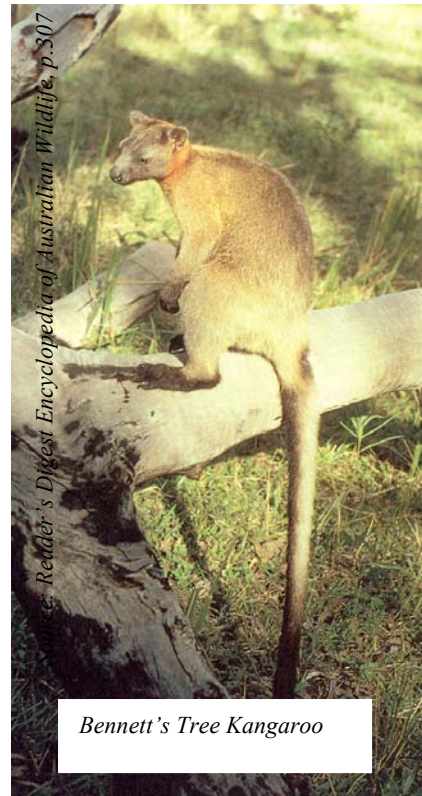
Two tree dwelling species of kangaroo are found in the rainforests of north-eastern Australia and there are at least eight more species living in Papua New Guinea. Fossil records show that tree kangaroos were more widely distributed on the Australian continent millions of years ago. All tree kangaroos feed on leaves, and some consume fruits when they are available. Compared with ground-living kangaroos, tree kangaroos are thickly furred with sturdy muscular fore legs. They use all four limbs to move along branches. They can also leap from branch to branch and are able to jump to the ground from heights of more than thirty meters. Lumholtz's tree Kangaroo, which is one of the species found in Australia, is among the smallest of tree kangaroos. It weighs around 5–8 kg and has a length of around 1.3 meters. It has a cream belly and ash brown back and black hands, feet and face, and its tail darkens near the tip. It is found in rainforests and rainforest

fringes in Atherton Tableland at altitudes of more than 800 meters. Sometimes it leaves the forest cover to raid crops.

Although it is distributed in a geographically limited area, it may occur at high densities even in small patches of rainforest. Around 25% of its distribution is located inside national parks. The Bennett's tree kangaroo, the other species found in Australia, has a dark brown back. Its belly and underside of its tail are blackish. Its neck and shoulders are a bright rusty orange. Its main habitat is the Daintree-Cooktown area in far north-eastern Queensland. Because of its secretive nature it is rarely seen, although it is rather common. It forages on the leaves of vines and rainforest trees and occasionally on fruits. Like other kangaroos, tree kangaroos, too, rear their young in their pouches and juveniles stay close to their mother for another two years. They, too, have predators such as pythons and dingos. It is believed that their ancestors were ground dwelling kangaroo-like animals.

**Red Kangaroo** (*macropus rufus*). Other names: Marloo.

*Status: Abundant: Estimated wild Population: Millions. Summary: Restricted to the arid and semi-arid zones of Australia only. Commercial harvesting of this species is permitted. Agricultural pest in some areas.*



Red kangaroos are sometimes also known as Marloos. They are restricted to the arid and semi-arid zones of Australia. They live in most vegetated habitats, specially grasslands



and shrub-lands mixed with Mulga woodlands where creeks provide waterholes. Red kangaroos are the largest macropods and can reach a height of about 1.8 meters when sitting up on their haunches. Red kangaroos are prolific breeders. In good conditions, a female may carry an embryo in delayed development and also have a pouch young and a young at

foot that is still suckling. These kangaroos prefer short green grass, but also thrive on herbs and, like others of its kind, forage in early mornings and evenings and during the night. In the 19<sup>th</sup> century numbers of red kangaroo declined rapidly and by 1860 naturalists feared that the species would not survive without protection measures. Then as rangeland development for stock began, kangaroo numbers recovered, especially

where dingoes have been eradicated to protect sheep. Each year in Australia one to two million red kangaroos are shot under strict government control.

**Koala** (*Phascolarctos cinereus*). Other names: Koala bear, Native bear, Monkey bear.

*Status: Common within its limited range. Estimated wild population: Thousands. Summary: Restricted to eastern coasts (up to Cairns) and inland areas of Queensland, New South Wales, Victoria and Kangaroo Island in South Australia only.*

The koala is a unique animal in that it has not only its own genus, but its own family. The koala is confined only to Australia and is one of Australia's best known marsupials. Wombats are its closest relatives. Koalas are found only in the eastern and south-eastern parts of Australia and are absent from the Cape York peninsula. koalas' entire diet comprises of eucalypt leaves and only about 35 of Australia's 600 eucalypt species produce first choice koala foliage. Koalas do not use nests or tree hollows for shelter, but have an extremely well insulated coat. Because of the absence of a den, young animals are carried on the females back until



it grows to about 2 kg in weight. The clearing and fragmentation of koalas' habitats have reduced the species distribution to a fraction of what it was 200 years ago. Much of the koala habitat is found in river valleys and river-fed coastal plains where quality soils yield nutrient rich foliage. Koalas are agile climbers, but they have to descend onto the ground to move from one tree to another. While on the ground they are vulnerable to attacks by dogs, dingoes and foxes.

**Mahogany Glider** (*Petaurus gracilis*).

Other names: None.

*Status: Rare and Endangered. Estimated wild population: Unknown, but believed to be around 2000-3000. Summary: Restricted to a narrow strip of woodland between sea-level and an elevation of 120 meters in north-east Queensland. Occurs only in Australia.*



This species is found only in Australia and is endangered and restricted to a small coastal area between the Hull River near Tully and Crystal Creek some 40 km south of Ingham, a distance of approximately 130 km. This species was first described in 1883 and more than hundred years later, during the movement of the Queensland Museum to a new location three large glider skins and their skulls were found in their collection. A further skin was found in the museum in 1989. During the same year a live specimen was collected in the Barrett's Lagoon close to Tully. Till then it was presumed extinct. In the wild, it is believed that there are approximately 2000-3000. A few animals are also being bred in captivity at David Fleay's Sanctuary on the Gold Coast. The mahogany glider derives its name from the colour of its fur and the mahogany trees on which it lives. It has large brown eyes, a pointed snout and hairless ears. It also has large hands and feet which it uses to grab onto trees. It uses its tail as a rudder to change direction while in flight. This glider is often mistaken for the sugar glider. However, the mahogany glider is four times the weight of the sugar glider and half the size. They have natural predators such as owls and pythons, but its main threat comes from the clearing of its already restricted habitat for farming, mainly sugar. Their habitat is also affected by bush fires caused naturally or by man. Traps laid by humans also take a toll. Since its rediscovery it has been declared an endangered species and an action plan to conserve it is under way.

**Northern Bettong** (*Bettongia tropica*). Other names: Brush-tailed bettong.

*Status: Restricted and Endangered.*  
*Summary: Has a very limited geographical range and is restricted to a few rainforests in north-eastern Queensland. They occur only in Australia.*



There are five species of bettongs in Australia. The northern bettong lives in the Cape York peninsula only and the burrowing bettong is now extinct on mainland Australia. The burrowing bettong now exists only on four islands off the coast of Western Australia. The other two species are the brush-tailed bettong of south-western Australia and the Tasmanian bettong found only in Tasmania. The other is the rufous bettong which has the largest distribution in Australia and spreads from northern Queensland to northern NSW. It lives in a range of forest types. They are rat-kangaroos. The northern bettong like other rat-kangaroo species play a critical role in maintaining the health of the forest because they feed mainly on fungi. Most of the fungi that they eat are truffles which are widespread in Australia's eucalypt forests. Truffles help such plants as eucalypts and acacias to take up nutrients and water and may sometimes be essential for their survival. Bettongs move spores of truffles from one root system to another and are carried to seedlings, helping them to become established. Some rainforest trees depend on species such as the northern bettong to disperse their seeds.

**Northern Quoll** (*Dasyurus hallucatus*). Other names: Little northern native cat, Northern Australian native cat, Mayali.

*Status: Locally common, but has disappeared from much of its former range. Summary: Formerly occurred across northern Australia from Pilbara region of Western Australia to south-eastern Queensland. It is now restricted to only six areas of its former habitat. Found only in Australia.*



There are four species of quolls in Australia and two in New Guinea. The term quoll is an east coast aboriginal name for a medium sized carnivorous marsupial that can be easily recognized by its white spots. The northern quoll is the smallest of the four species found in Australia. Males weigh only 900 grams and their head and body are a maximum of 31 cm long. Females are even smaller and weigh 500 grams and are 30 cm long. Its tail is about as long as its head and body combined. They eat rats, antechinuses, reptiles, worms, beetles and grasshoppers as well as feed on honey and soft fruits such as figs. They climb trees and rocks in their wooded habitats across tropical northern Australia. The male dies after mating.

**Dugong** (*Dugong dugon*). Other names: Sea cow.

*Status: Common but vulnerable in Australia. Summary: This species is found from Shark Bay in Western Australia, across the northern coast and down to Moreton Bay in Queensland. It is also found in other parts of the world where in most places it is endangered.*

Dugongs are mammals but are not related to whales or dolphins. They are found in the Indian Ocean and southwestern Pacific Ocean. They are herbivores that occur in warm shallow coastal waters around the northern half of Australia from Shark Bay in the west to the Queensland/NSW



Source: Reader's Digest Encyclopedia of Australian Wildlife, p.102



border in the east. Dugongs are large mammals weighing more than 500 kg and grow up to three meters long. Dugongs are endangered, both in Australia and in other parts of the world, where they occur. They are eaten by humans and have many predators such as sharks, saltwater crocodiles and killer whales. They have a similar lifespan to humans and produce only one young at a time with up to seven years in-between births. With the exception of aboriginal and Torres Strait Islander hunters, it is illegal to hunt dugongs in Australian waters. Some believe that the species is under threat, mainly because of habitat loss either through coastal development or boat traffic, and because of hunting and incidental capture in fishing nets.

**Northern Hairy-nosed Wombat** (*Lasiorhinus Krefftii*). Other names: Queensland wombat, Queensland hairy-nosed wombat, Moonie river wombat, Yaminon.



Source: <http://www.env.qld.gov.au/cgi-bin/w3-mysql/environment/plant/animals/resultframe.html?id=2>

*Status: Rare and endangered.  
Summary: Estimated wild population: Approximately 130 animals. Restricted only to the Epping Forest National Park, Central Queensland.*

Three related species of wombats are found only in Australia, and nowhere else in the world. They are closely related to koalas, but they are grazing animals rather than leaf-eaters. They burrow tunnels and live in them during daytime. In fact, wombats are

among the world's major burrowers. Their compact bodies and considerable strength are suited to a life of digging and burrow dwelling. While the common wombat and the southern hairy-nosed wombat are found in reasonable numbers, the northern hairy-nosed wombat is one of the most threatened animals in Australia or in the whole world. There are fewer than 130 adults in the wild, and they are all found only in the Epping Forest National Park, an area of only 300 ha in central Queensland. These creatures are even today subject to dingo predation. As a result, a fence is now being erected around their forest to protect them from predators. The wire fencing is expected to be completed by the end of 2002.

**Eastern Pebble-mound Mouse** (*Pseudomys patrius*). Other names: None



Source: Queensland Museum

*Status: Vulnerable. Summary: Confined mainly to some areas of central Queensland. Found only in Australia.*

This species has been recently described to science along with other pebble-mound mice from the Northern Territory and Western Australia. There are five distinct species. They are, Kimberley pebble-mound mouse, Calaby's pebble-mound mouse, central pebble-mound mouse, Pilbara pebble-mound mouse and the eastern pebble-mound mouse. All five species have a very limited geographical range. They derive their mound name because they build large mounds out of small pebbles surrounding their main entrance holes above their burrows. They are small in size with a body length of 70 mm and a tail length of 76 mm. They weigh only 14 grams. The eastern pebble-mound mouse is considered rare and is nocturnal. The eastern pebble-mound mouse is restricted to low woodlands and grasslands from the slopes of the Great Dividing Range up to Gympie in Queensland. They feed on seeds, insects and vegetable matter. The main predators of this species are cats, foxes, dingos, snakes, owls and some birds of prey.

## Birds

**Southern Cassowary** (*Casuarius casuarius*).

Other names: Double-wattled cassowary, Australian cassowary.

*Status: Uncommon and endangered. Estimated wild population: 1,500–3,000 birds. Summary: Found in small fragmented rainforests of north-east Queensland. Occurs in New Guinea and nearby islands as well.*



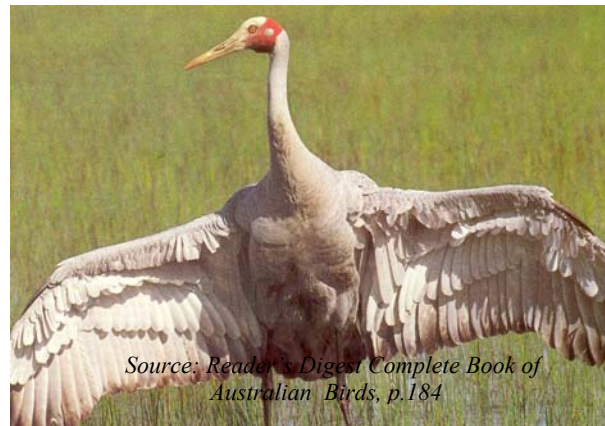
Source: Reader's Digest Complete Book of Australian Birds, p.46

The Southern cassowary is the heaviest non-introduced species of bird in the entire Australasian region. The southern cassowary is a very colourful large bird. It is a resident of the north-eastern rainforest and is easily recognized by its colours, height and bony helmet. This species is also found in Papua New Guinea and nearby islands. Cassowaries are mainly solitary

birds and are territorial. Their diet includes rainforest fruits such as quondongs, lilly pillies and laurels, as well as fungi, insects, flowers and snails taken from the ground litter and low vegetation. These birds are ideal seed dispersers without whom some rainforest species may not regenerate. The future of this species is uncertain because of interference with its habitat. It is the only large native ground living, fruit eating bird in the Queensland rainforests. The loss of the species could mean the loss of the only method of seed dispersal for many rainforest plants. In PNG this species is farmed by the local people for food. Cassowaries are threatened by land clearing and introduced feral species such as pigs which prey on their eggs. They are also attacked by dogs.

**Brolga** (*Grus rubicunda*). Other names: Australian crane, Native companion.

*Status: Uncommon or rare, except in northern Australia where it is still abundant. Summary: Found in northern and eastern Australia. Vagrant to New Zealand. Found also in Papua New Guinea.*



*Source: Reader's Digest Complete Book of Australian Birds, p.184*

Brolgas are large cranes and are found across the north and in smaller numbers down the eastern half of the Australian continent up to the Bass Strait. The brolgas are sometimes called the Australian crane. It is grey all over except for a bare scarlet patch across its face, the back of its head and the nape of its neck. Brolgas are well known for their mating ritual. One bird flies down to a group of standing brolgas, bounces lightly as it lands and then bows, wings outstretched, to its mate, who bounces and bows in return. Soon all the birds in the flock are lifting their feet, bowing their necks and spreading their wings in celebrated brolga ceremonial dance. Brolgas are good parents in that, both the female and the male incubate the eggs and look after the young for up to eleven months. Brolgas are found in other parts of the world, too, but they are endangered.

**Golden-shouldered Parrot** (*Psephotus chrysopterygius*). Other names: Antbed parrot, Anthill parrot, Golden-winged parakeet.

*Status: Highly endangered. Estimated wild population: Approximately 1,600 breeding pairs. Summary: Found only in Australia and is restricted to some areas in the Cape York Peninsula. Was once widespread in the region.*

This bird is a rare bird and it is believed that only around 1,600 breeding pairs are left in the wild in Australia. This species is found nowhere else in the world but is restricted to a few areas in the Cape York Peninsula. Its beauty has contributed to its rarity since it fetches high prices in the pet trade. Illegal trapping of this species has taken a heavy toll. Other threats to this species include the clearing of its grassy woodlands for cattle grazing in the mid 20<sup>th</sup> century and the farming practice of burning to produce green shoots for livestock have reduced the availability of food for these parrots. These birds nest in



termite mounds where a breeding pair dig burrows up to half a meter long and then hollow out a large nesting chamber. They reuse these nests. A female lays approximately five eggs during the dry season and incubates and rears the young alone. When food is plentiful they may breed twice during the season. These birds are subject to predation by other birds such as pied butcher birds. This bird was once widespread in the Cape York Peninsula. A recovery plan is now underway and is supported by local land-holders, WWF, QNPWS and other environmental organizations.



**Palm Cockatoo** (*Proboscigera aterrimus*). Other names: Goliath cockatoo, Great black cockatoo.

*Status: Common in its restricted range.*

*Summary: Found in the rainforests and woodlands at the tip of Cape York Peninsula in north Queensland and is also found throughout the lowland forests of New Guinea.*



There are many species of cockatoo found in Australia and some of them are found only in Australia. The palm cockatoo is not restricted to Australia. It is Australia's largest parrot and is sometimes known as the great black cockatoo or the goliath cockatoo. In Australia, palm cockatoos are resident in the Cape York peninsula. It is quite common inside this very limited range. It is also found throughout the lowland forests of Papua New Guinea. As the name implies the palm cockatoo feeds on palm and pandanus fruits. The large pandanus fruits are made up of many hard orange wedges that contain seeds. They are tough and contain fibrous outer pods which are no match for the palm cockatoo. Despite their size, these cockatoos are surprisingly agile as they move about on the branches and among foliage collecting food. Unlike other slow flying forest birds, palm cockatoos venture boldly on to the ground to feed on fallen fruits and other foods.

They are quite capable of defending themselves from goannas and similar predators. Like most parrots, they are sociable birds and are found in small groups.

**Eclectus Parrot (*Eclectus roratus*).** Other names: Red-sided parrot, Rocky river parrot.



*Status: Locally common in its restricted range. Summary: Restricted to Cape York Peninsula of north Queensland. It is also found in the Solomon Islands, Papua New Guinea and Indonesia.*

The eclectus parrot has very unusual colourings, in the sense that the female is more brilliantly coloured than the male. The females' plumage is a brilliant red and blue. Researchers now believe that this colour scheme facilitates the male in finding the female in the rainforest, especially when she is in her nest. The eclectus parrot is not confined to Australia alone. It is found in some of Australia's neighbouring countries such as Papua New Guinea. These parrot's breeding behaviour is also unusual. They

nest in small groups rather than in pairs with up to eight birds attending the nest and taking care of the young. Incidentally, this species became known to the scientific world only in 1913. The rainforest canopy provides them with a variety of nuts and seeds and the fruits of the pandanus are particular favorites. Eclectus parrots roost in noisy flocks.

**Gouldian Finch (*Erythrura gouldiae*).** Other names: Painted finches, purple-breasted finch, Rainbow finch.

*Status: Population seriously depleted and endangered. Estimated wild population: Less than 250 pairs. Summary: Found only in Australia, from Broome in Western Australia, through Kimberley to Top-End into parts of Cape York Peninsula.*





Source: Reader's Digest Encyclopedia of Australian Wildlife, p.280

This finch which lives in the grassy woodlands and mangrove fringes of northern Australia is the most brightly coloured of all finches. During the non-breeding season they are partially migratory moving in quite large flocks closer to the coast, but return during the breeding season which is usually the rainy season. These finches feed on ripe or half ripe grass seeds during the non-breeding season, but their diet

changes to insects during the breeding season. These finches are usually silent, but sometimes utter a high pitched whistling noise. These birds need to drink water several times a day. This finch breeds in small, loosely knit social colonies from January to April, and several pairs of birds. This is the only species of grass finch to nest exclusively in tree hollows or holes in termite mounds. Its main threats come from land clearance, fire and flooding of certain areas for dams which have resulted in a loss of nesting sites. Both sexes share incubation duties and look after the young. This bird has been named after John Gould, who first named this bird after his wife Elisabeth. This beautiful bird is still traded in the illegal bird trade. Other threats such as loss of habitat, predators, fire, and the susceptibility of the species to parasitic mites have put these birds an endangered species. Fifty years ago there were flocks of thousands, but now their numbers have dwindled to tens and hundreds. These birds are also known as painted finches. They are poor nest builders.

**Red-tailed Black Cockatoo (*Calyptorhynchus banksii*).** Other names: Banksian cockatoo, Red-tailed cockatoo.

*Status: Widely distributed and abundant in Tropical Australia. (e.g. northern forests of Arnhem Land). Summary: Several populations found in Tropical northern Australia, NSW, central Australia, Western Australia, and a small population in South Australia. Found only in Australia.*

Red-tailed black cockatoos are found only in Australia, living in wooded areas scattered across the west and north of the continent. They are widely distributed, but are mostly abundant in tropical Australia, for example, in northern forests such as in Arnhem Land. Birds from different areas have subtle variations in colour and size, with the



Source: Reader's Digest Complete Book of Australian Birds, p.274

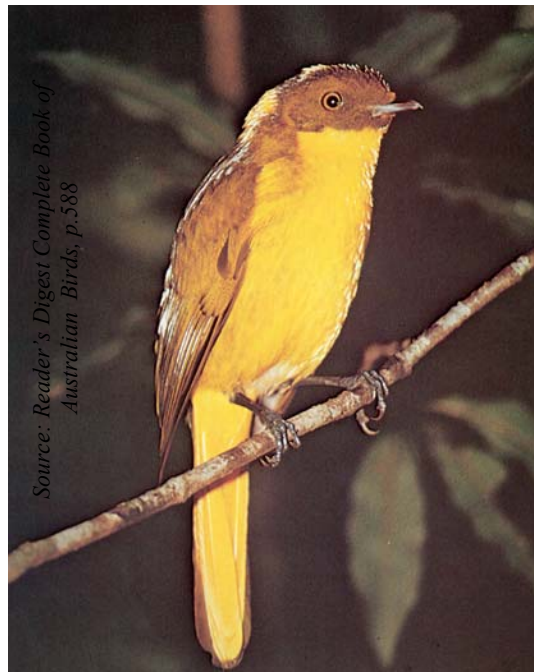


larger ones growing to about 60 cm long. Typically, the male is black with a blood red band in its tail and a large black crest that fans out in front of its face during courtship. The noisy calls which are conspicuous during flight, gives these birds a powerful presence. They are usually nomadic birds that closely follow the flowering of bloodwood eucalypts and she-oaks. The tiny seeds of these native trees constitute their main diet. They find these seeds either on the trees or on the ground. They nest in hollow branches usually very high in eucalypt trees. The male does not hatch the eggs, but feeds the female during nesting. The female rarely lays more than one egg. These cockatoos cause a great deal of damage to crops of peanuts and corn in particular. They are also bred in captivity.

**Golden Bowerbird** (*Prionodura newtoniana*). Other names: Golden gardener, Newton's bowerbird.

*Status: Locally common. Summary: Restricted to the highland rainforests of north-east Queensland from Mt Cook to Mt Elliot National Park near Townsville above 900 meters. This species is found only in Australia.*

There are nineteen species of bowerbirds in the world out of which eight are endemic to Australia and nine to Papua New Guinea. The golden bowerbird is the smallest of the eight Australian bowerbirds, yet builds the largest bower – a massive maypole construction. This species is found only in Australia in the rainforests of Northern Queensland, always in high altitudes of 700 meters or more above sea level. The males, as the name implies, have golden yellow underparts and olive brown back and wings. The females on the other hand are olive brown above and dusky grey beneath, with indistinct markings on their throat and breast. Both the males and the females have yellow irises. Both birds are accomplished mimics, imitating the calls of shrikes, thrushes and currawongs, and even the screech of the sulphur-crested cockatoos.



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