



Consultation Document on Listing Eligibility and Conservation Actions

Litoria myola (Kuranda tree frog)

You are invited to provide your views and supporting reasons related to:

- 1) the eligibility of *Litoria myola* (Kuranda tree frog) for inclusion on the EPBC Act threatened species list in the Critically Endangered category; and
- 2) the necessary conservation actions for the above species.

Evidence provided by experts, stakeholders and the general public are welcome. Responses can be provided by any interested person.

Anyone may nominate a native species, ecological community or threatening process for listing under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) or for a transfer of an item already on the list to a new listing category. The Threatened Species Scientific Committee (the Committee) undertakes the assessment of species to determine eligibility for inclusion in the list of threatened species and provides its recommendation to the Australian Government Minister for the Environment.

Responses are to be provided in writing either by email to:
species.consultation@environment.gov.au

or by mail to:

The Director
Marine and Freshwater Species Conservation Section
Wildlife, Heritage and Marine Division
Department of the Environment
PO Box 787
Canberra ACT 2601

Responses are required to be submitted by 2 March 2018.

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General background information about listing threatened species

The Australian Government helps protect species at risk of extinction by listing them as threatened under Part 13 of the EPBC Act. Once listed under the EPBC Act, the species becomes a Matter of National Environmental Significance (MNES) and must be protected from significant impacts through the assessment and approval provisions of the EPBC Act. More information about threatened species is available on the department's website at:

<http://www.environment.gov.au/biodiversity/threatened/index.html>.

Public nominations to list threatened species under the EPBC Act are received annually by the department. In order to determine if a species is eligible for listing as threatened under the EPBC Act, the Threatened Species Scientific Committee (the Committee) undertakes a rigorous scientific assessment of its status to determine if the species is eligible for listing against a set of criteria. These criteria are available on the Department's website at:

<http://www.environment.gov.au/biodiversity/threatened/pubs/guidelines-species.pdf>.

As part of the assessment process, the Committee consults with the public and stakeholders to obtain specific details about the species, as well as advice on what conservation actions might be appropriate. Information provided through the consultation process is considered by the Committee in its assessment. The Committee provides its advice on the assessment (together with comments received) to the Minister regarding the eligibility of the species for listing under a particular category and what conservation actions might be appropriate. The Minister decides to add, or not to add, the species to the list of threatened species under the EPBC Act. More detailed information about the listing process is at:

<http://www.environment.gov.au/biodiversity/threatened/nominations.html>.

To promote the recovery of listed threatened species and ecological communities, conservation advices and where required, recovery plans are made or adopted in accordance with Part 13 of the EPBC Act. Conservation advices provide guidance at the time of listing on known threats and priority recovery actions that can be undertaken at a local and regional level. Recovery plans describe key threats and identify specific recovery actions that can be undertaken to enable recovery activities to occur within a planned and logical national framework. Information about recovery plans is available on the department's website at:

<http://www.environment.gov.au/biodiversity/threatened/recovery.html>.

Information about this consultation process

Responses to this consultation can be provided electronically or in hard copy to the contact addresses provided on Page 1. All responses received will be provided in full to the Committee and then to the Australian Government Minister for the Environment.

In providing comments, please provide references to published data where possible. Should the Committee use the information you provide in formulating its advice, the information will be attributed to you and referenced as a 'personal communication' unless you provide references or otherwise attribute this information (please specify if your organisation requires that this information is attributed to your organisation instead of yourself). The final advice by the Committee will be published on the department's website following the listing decision by the Minister.

Information provided through consultation may be subject to freedom of information legislation and court processes. It is also important to note that under the EPBC Act, the deliberations and recommendations of the Committee are confidential until the Minister has made a final decision on the nomination, unless otherwise determined by the Minister.

Privacy notice

The Department will collect, use, store and disclose the personal information you provide in a manner consistent with the Department's obligations under the Privacy Act 1988 (Cth) and the Department's Privacy Policy.

Any personal information that you provide within, or in addition to, your comments in the threatened species assessment process may be used by the Department for the purposes of its functions relating to threatened species assessments, including contacting you if we have any questions about your comments in the future.

Further, the Commonwealth, State and Territory governments have agreed to share threatened species assessment documentation (including comments) to ensure that all States and Territories have access to the same documentation when making a decision on the status of a potentially threatened species. This is also known as the '[common assessment method](#)'. As a result, any personal information that you have provided in connection with your comments may be shared between Commonwealth, State or Territory government entities to assist with their assessment processes.

The Department's Privacy Policy contains details about how respondents may access and make corrections to personal information that the Department holds about the respondent, how respondents may make a complaint about a breach of an Australian Privacy Principle, and how the Department will deal with that complaint. A copy of the Department's Privacy Policy is available at: <http://environment.gov.au/privacy-policy>

Litoria myola

(Kuranda tree frog)

Taxonomy

Conventionally accepted as *Litoria myola* (Kuranda tree frog) (Hoskin, 2007).

Species Information

Description

The Kuranda tree frog is a medium-sized stream and forest dwelling frog with a broad, flattened head and slender body. Males and females are generally a mottled pattern of tan and brown on the upper surface and pale underneath. A green crescent is present in the upper iris and the back edge of the forearms and legs is fringed with small skin extensions (Hoskin 2007). The skin on the back is smooth with scattered small tubercles and the skin on the belly is granular. There is considerable sexual dimorphism in size: males are 35–45 mm snout-to-vent length (SVL) and weigh 2–5 g and females are 57–69 mm SVL and weigh 9–19 g (Hoskin 2007). The male call is a short, fast series of relatively soft 'tocs'.

Eggs are laid in streams in a clutch of approximately 500 as cohesive clump. The tadpoles have not been formally described, but are similar to those of *L. genimaculata* (Hoskin 2007; Hoskin & Hero 2008).

Distribution

The Kuranda tree frog is endemic to a small area west of Cairns in north-east Queensland. The species is known from 12 discrete breeding aggregations in the lower sections of streams entering the Barron River between the localities of Kuranda, Myola, Mantaka, Kowrowa and Oak Forest. This species occurs within the Wet Tropics IBRA Bioregion and the Wet Tropics Natural Resource Management Region. The largest breeding aggregation of Kuranda tree frog is located partly in a reserve, Jumrum Creek Conservation Park. Other breeding aggregations exist on private land and Mareeba Shire Council Land (Hoskin 2007).

Relevant Biology/Ecology

The Kuranda tree frog is a nocturnal, arboreal species found in rainforest near slow-moving permanent and ephemeral streams (Hoskin 2007; Hoskin & Hero 2008). All sites from which the species is known are close to the Barron River and between 300 and 400 m altitude. The sites are generally sheltered and experience little wind. At these mid altitudes the climate is warm and humid. There are pronounced wet and dry seasons, with most rain falling in the warmer 'wet season' between November and April. Streams inhabited by the Kuranda tree frog are meandering and consist of long, slow pools separated by short, shallow sections of riffles or cascades. The streams are small to moderate-sized, with low levels of flow (except following heavy rain) (Hoskin 2007).

Male Kuranda tree frogs are encountered calling along streams through the spring and summer months, primarily near riffle areas and small cascades (Hoskin 2007). Males are rarely encountered away from streams. Calling males clump around the shallower, flowing sections of streams (Hoskin 2007).

Males and females lead noticeably different lifestyles. A few females have been observed in the mid and upper strata of rainforest trees (both near and some distance from streams) and Hoskin (2007) suggests that this is where they live when not visiting streams to breed. The Kuranda tree frog breeds primarily in spring and summer. Tadpoles live in streams for about 2 months. Metamorphs have been observed on stream-side vegetation but sub-adults have rarely been observed in streams, suggesting that they move into the forest to mature. The fact that the

species breeds only in the lower sections of streams means that it is vulnerable to impacts not just at occupied sites but also in upstream areas of the catchments (Hoskin 2007).

The species has been observed in relatively mature rainforest as well as in areas of regenerating rainforest. The species appears to require reasonably thick riparian forest and is generally absent from sites where only narrow strips of riparian forest have been retained (Hoskin 2007).

Threats

Threats to the Kuranda tree frog include amphibian chytrid fungus (*Batrachochytrium dendrobatidis*), hybridisation, habitat degradation and introduced species. The table below lists the threats impacting the species in approximate order of severity of risk, based on available evidence.

Threat factor	Consequence rating	Extent over which threat may operate	Evidence base
Disease - Chytrid fungus	Severe	Whole of range	Chytridiomycosis is an infectious disease caused by the amphibian chytrid fungus that affects amphibians worldwide, causing mass die-offs and some species extinctions (Department of the Environment and Energy 2016). Chytrid fungus, has been found on the sympatric, and closely related, green-eyed tree frog (Hoskin 2007). Female Kuranda tree frogs are believed to be at a higher risk of mortality during their seasonal breeding movements between forest and stream habitats.
Habitat loss and degradation (e.g. clearing, trampling, fragmentation, altered hydrology, salinity)	Severe	Whole of range	Changes in water flow, water quality and sedimentation, may occur due to current and proposed residential development (Hoskin 2007). These changes can occur as a result of impacts both at the sites where the species occurs as well as upstream in the catchments. The species has a very limited range which is close to the township of Kuranda, around which there is significant, and increasing, urban and semi-urban development (Hoskin 2007).
Invasive species	Severe	Whole of range	Yellow crazy ants spray formic acid to subdue prey, which causes burns and irritates the skin and eyes of animals. They can have severe impacts on a range of ecological processes and lead to significant loss of

			biodiversity. Yellow crazy ants were detected within the Wet Tropics World Heritage Area and Little Mulgrave National Park in 2012 and now cover up to 61 ha within these protected areas (Wet Tropics Management Authority 2016). In December 2013 yellow crazy ants were also detected in the Kuranda area (Wet Tropics Management Authority 2016) and have become established at one of the few breeding sites of the Kuranda tree frog (Lach & Hoskin 2015).
Hybridisation	Moderate	Whole of range	The species is potentially threatened by hybridisation with the closely related <i>Litoria genimaculata</i> (green-eyed tree frog). Currently the two species co-exist in this region but levels of hybridisation are very low. However, disruption to the natural levels of interaction due to captive breeding and release or movement of individuals in and out of the region or between sites may increase levels of hybridisation.
Climate change (temperature increase, extreme weather events e.g. cyclones, droughts)	Potential	Most of range	There are no data with which to assess this threat.
Inappropriate fire regimes	Potential	Most of range	There are no data with which to assess this threat.
Population fragmentation	Potential	Whole of range	There are no data with which to assess this threat.

Assessment of available information in relation to the EPBC Act Criteria and Regulations

Criterion 1. Population size reduction (reduction in total numbers)			
Population reduction (measured over the longer of 10 years or 3 generations) based on any of A1 to A4			
	Critically Endangered Very severe reduction	Endangered Severe reduction	Vulnerable Substantial reduction
A1	≥ 90%	≥ 70%	≥ 50%
A2, A3, A4	≥ 80%	≥ 50%	≥ 30%

A1	Population reduction observed, estimated, inferred or suspected in the past and the causes of the reduction are clearly reversible AND understood AND ceased.	(a)	direct observation [except A3]
A2	Population reduction observed, estimated, inferred or suspected in the past where the causes of the reduction may not have ceased OR may not be understood OR may not be reversible.	(b)	an index of abundance appropriate to the taxon
A3	Population reduction, projected or suspected to be met in the future (up to a maximum of 100 years) [(a) cannot be used for A3]	(c)	a decline in area of occupancy, extent of occurrence and/or quality of habitat
A4	An observed, estimated, inferred, projected or suspected population reduction where the time period must include both the past and the future (up to a max. of 100 years in future), and where the causes of reduction may not have ceased OR may not be understood OR may not be reversible.	(d)	actual or potential levels of exploitation
		(e)	the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites

based on any of the following

Evidence:

The generation length in the Kuranda tree frog is not known with certainty but is estimated to be 3.5 years based on two similar-sized *Litoria* species found in similar habitats: *L. chloris* (red-eyed tree frog and *L. lesueuri* (Lesueur's tree frog)(Morrison et al. 2004).

Between 2000 and 2006, stream surveys and density estimates revealed a Kuranda tree frog population of approximately 1000 mature individuals (Hoskin 2007). During that period the species was known from five streams. Additional surveys and monitoring performed over the summer wet season of 2006–07 showed a noticeable decline in abundance of the species at four of these five sites. In particular, numbers at the only site with a significant breeding aggregation, Jumrum Creek, declined from 500 adults to 200 in November 2008 (Hoskin, pers. comm., 2009). This represents a 30 per cent reduction in total population size (300 out of a population size of 1000 mature individuals) over two years. In addition, declines recorded at the other four sites in 2006–07 are continuing (Hoskin, pers. comm., 2009). The Committee considers this overall reduction in numbers to be substantial. However, the species may experience natural fluctuations in number due to seasonal and climatic variation. There is insufficient information to conclude whether or not the observed changes in population size are a result of natural fluctuations.

The data presented above appear to be **insufficient** to demonstrate if the species is eligible for listing under this criterion. However, the purpose of this consultation document is to elicit additional information to better understand the species' status. This conclusion should therefore be considered to be tentative at this stage, as it may be changed as a result of responses to this consultation process.

Criterion 2. Geographic distribution as indicators for either extent of occurrence AND/OR area of occupancy			
	Critically Endangered Very restricted	Endangered Restricted	Vulnerable Limited
B1. Extent of occurrence (EOO)	< 100 km ²	< 5,000 km ²	< 20,000 km ²
B2. Area of occupancy (AOO)	< 10 km ²	< 500 km ²	< 2,000 km ²
AND at least 2 of the following 3 conditions indicating distribution is precarious for survival:			
(a) Severely fragmented OR Number of locations	= 1	≤ 5	≤ 10
(b) Continuing decline observed, estimated, inferred or projected in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) area, extent and/or quality of habitat; (iv) number of locations or subpopulations; (v) number of mature individuals			

- (c) Extreme fluctuations in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) number of locations or subpopulations; (iv) number of mature individuals

Evidence:

The calculated current extent of occurrence for the Kuranda tree frog is 4 km² and the area of occupancy is also calculated to be 4 km² (Hoskin 2007; DoEE 2017) but may be larger given seasonal movements of females. These figures are based on the mapping of point records from 2007, compiled from state and Commonwealth agencies along with museums, herbaria, research institutions and non-government organisations. The EOO was calculated using a minimum convex hull, and the AOO calculated using a 2x2 km grid cell method, based on the IUCN Red List Guidelines 2014.

This distribution is somewhat fragmented, as the species occurs in 12 breeding aggregations. These aggregations are geographically discrete clusters of breeding individuals that are largely independent of each other, as individuals have not been found in areas between these breeding aggregations. Distances between some of the breeding aggregations are large compared to the likely dispersal ability of the species and rainforest habitat has been cleared for rural subdivision and urban development between some breeding aggregations, most likely limiting movement of the species (Hoskin 2007).

While the distribution is fragmented, the entire range of the species is within a few kilometres in any straight line distance. Given that significant threats such as chytrid and yellow crazy ants may spread over this distance quickly, the species can be considered to be contained at a single location (IUCN Standards and Petitions Subcommittee 2016).

Continuing decline may be inferred based on the likely reduction in number of individuals due to ongoing threats from chytrid fungus and habitat fragmentation and degradation and the relatively recent threat of yellow crazy ants.

The data presented above appear to demonstrate that the species is **eligible for listing as Critically Endangered** under this criterion. However, the purpose of this consultation document is to elicit additional information to better understand the species' status. This conclusion should therefore be considered to be tentative at this stage, as it may be changed as a result of responses to this consultation process.

Criterion 3. Population size and decline			
	Critically Endangered Very low	Endangered Low	Vulnerable Limited
Estimated number of mature individuals	< 250	< 2,500	< 10,000
AND either (C1) or (C2) is true			
C1 An observed, estimated or projected continuing decline of at least (up to a max. of 100 years in future)	Very high rate 25% in 3 years or 1 generation (whichever is longer)	High rate 20% in 5 years or 2 generation (whichever is longer)	Substantial rate 10% in 10 years or 3 generations (whichever is longer)
C2 An observed, estimated, projected or inferred continuing decline AND its geographic distribution is precarious for its survival based on at least 1 of the following 3 conditions:			
(a) (i) Number of mature individuals in each subpopulation	≤ 50	≤ 250	≤ 1,000

(ii) % of mature individuals in one subpopulation =	90 – 100%	95 – 100%	100%
(b) Extreme fluctuations in the number of mature individuals			

Evidence:

The total number of mature individuals of the Kuranda tree frog is estimated to be approximately 700 (Hoskin, pers. comm., 2009). The species' distribution is fragmented, occurring in 12 discrete breeding aggregations, increasing its risk of extinction. The species is subject to a number of ongoing threats including clearing of rainforest vegetation and alterations to stream characteristics due to residential development (Hoskin 2007). In addition, the species is subject to potential threats including chytrid fungus and hybridisation with the closely related green-eyed tree frog (Hoskin 2007). These threats are likely to cause the species to decline in the future.

The data presented above appear to demonstrate that the species is **eligible for listing as Endangered** under this criterion. However, the purpose of this consultation document is to elicit additional information to better understand the species' status. This conclusion should therefore be considered to be tentative at this stage, as it may be changed as a result of responses to this consultation process.

Criterion 4. Number of mature individuals			
	Critically Endangered Extremely low	Endangered Very Low	Vulnerable Low
Number of mature individuals	< 50	< 250	< 1,000

Evidence:

The total number of mature individuals of the Kuranda tree frog is estimated to be approximately 700 (Hoskin, pers. comm., 2009) which is low.

The data presented above appear to demonstrate that the species is **eligible for listing as Vulnerable** under this criterion. However, the purpose of this consultation document is to elicit additional information to better understand the species' status. This conclusion should therefore be considered to be tentative at this stage, as it may be changed as a result of responses to this consultation process.

Criterion 5. Quantitative Analysis			
	Critically Endangered Immediate future	Endangered Near future	Vulnerable Medium-term future
Indicating the probability of extinction in the wild to be:	≥ 50% in 10 years or 3 generations, whichever is longer (100 years max.)	≥ 20% in 20 years or 5 generations, whichever is longer (100 years max.)	≥ 10% in 100 years

Evidence:

Population viability analysis appears not to have been undertaken. Therefore, there are **insufficient data** to demonstrate if the species is eligible for listing under this criterion. However, the purpose of this consultation document is to elicit additional information to better

understand the species' status. This conclusion should therefore be considered to be tentative at this stage, as it may be changed as a result of responses to this consultation process.

Conservation Actions

Recovery Plan

A decision about whether there should be a recovery plan for this species has not yet been determined. The purpose of this consultation document is to elicit additional information to help inform this decision.

Conservation and Management priorities

Disease

- Minimise the spread of the chytrid fungus by implementing suitable hygiene protocols (Murray 2011) to protect priority populations as described in the Threat abatement plan for infection of amphibians with chytrid fungus resulting in chytridiomycosis (Department of the Environment and Energy 2016).
- Provide disease identification and prevention protocols (methods of handling, diagnostic keys, etc.) to researchers and land managers for use in the field.

Habitat degradation

- Extend the area of protected habitat to include the entire distribution of the largest breeding aggregation.
- Identify additional priority populations of high conservation value, such as key breeding aggregations and manage these priority sites to reduce the impacts of habitat destruction by residential development and invasive species. Relevant measures may include fencing, signage etc.

Invasive species

- Minimise the spread of yellow crazy ants and manage their impacts by implementing an eradication program based on baiting at critical stages of the ants life cycle, as outline on the Wet Tropics Management Authority website (Wet Tropics Management Authority 2016).

Stakeholder Engagement

- Encourage ongoing and effective coordination of state-wide action to support conservation of the Kuranda tree frog, including eradication programs for invasive species.
- Provide input to Wet Tropics Management Authority environmental codes of practice with land management agencies (fire, water infrastructure, transport and public utility, mining and quarrying, defence and grazing) to ensure conservation and management actions are compatible with amphibian requirements.
- Provide advice on Queensland Department of Natural Resources and Mines water management issues and programs including:
 - domestic extraction of water,
 - water extraction policy/usage through the Water Allocation Management Program,

- impact of ground water pumping,
- impact of water extraction on water flow, and;
- in-stream riparian impacts including small perennial streams and seasonal streams.
- Provide disease field protocols for researchers and land managers (handling, diagnostic keys, etc.) and advice to government and other relevant managers on disease management and control.
- Provide advice and information on the use of herbicides/biocides against pests and diseases in areas with threatened frogs.
- Interested nature conservation, land management and land holder groups could be engaged in conservation management activities, such as survey and monitoring, but should be made aware of the need to follow correct field practices and hygiene protocols to mitigate the risks of trampling and disease transmission. If necessary, use workshops to aid stakeholders in developing the skills and knowledge required to manage threats to this species while undertaking these activities.

Survey and Monitoring priorities

- Conduct targeted surveys throughout the range of the Kuranda tree frog to better define its current distribution and abundance.
- Establish and maintain a monitoring program based on these data to:
 - determine trends in population size and distribution, mortality and timing of life history stages;
 - monitor hybridisation levels; and
 - monitor progress, including the effectiveness of management actions and the need to adapt them if necessary.

Information and research priorities

- Investigate options for linking, enhancing or establishing additional populations.
- Improve understanding of the extent and impact of infection by chytrid fungus on the Kuranda tree frog to better inform how to apply existing or new management actions relevant to the recovery. This includes knowledge on:
 - the different strains of the fungus;
 - levels of virulence;
 - mechanisms for resistance to the disease;
 - treatment options; and
 - the potential of other species (e.g. freshwater crayfish) to act as reservoirs or vectors for transmission of the fungus (Department of the Environment and Energy 2016).
- Determine the extent of the threat and the likely impacts from yellow crazy ants.
- Improve understanding of how climate change will likely impact on the Kuranda tree frog due to altered temperatures, rainfall, environmental stressors and disease virulence.
- Improve understanding of husbandry methods for the species.

- Improve understanding of the impacts of environmental toxins.

References cited in the advice

- Hoskin CJ (2007). Description, biology and conservation of a new species of Australian tree frog (Amphibia: Anura: Hylidae: *Litoria*) and an assessment of the remaining populations of *Litoria genimaculata* Horst, 1883: systematic and conservation implications of an unusual speciation event. *Biological Journal of the Linnean Society* 91,549-563.
- Hoskin, C. & Hero, J.M. (2008). Rainforest Frogs of the Wet Tropics, North-east Australia. Griffith University, Gold Coast. 89p.
- IUCN Standards and Petitions Subcommittee (2016). for Using the IUCN Red List Categories and Criteria. Version 12. In. Standards and Petitions Subcommittee
- Lach L & Hoskin C (2015). Too much to lose: yellow crazy ants in the Wet Tropics. *Wildlife Australia* 52,37-41.
- Morrison C, Hero JM & Browning J (2004). Altitudinal variation in the age at maturity, longevity, and reproductive lifespan of anurans in subtropical Queensland. *Herpetologica* 60,34-44.

Other sources cited in the advice

- Department of the Environment and Energy (2016). Threat abatement plan for infection of amphibians with chytrid fungus resulting in chytridiomycosis, Commonwealth of Australia 2016. Available from: <http://www.environment.gov.au/biodiversity/threatened/publications/tap/infection-amphibians-chytrid-fungus-resulting-chytridiomycosis-2016>
- Department of the Environment and Energy (2017). Area of Occupancy and Extent of Occurrence for *Litoria myola*. Unpublished report, Australian Government Department of the Environment, Canberra.
- Hoskin CJ (2009). Personal communication by email, 24 March 2009. School of Botany and Zoology, Australian National University, Canberra.
- Wet Tropics Management Authority (2016) (website). Stamp Out Yellow Crazy Ants. Viewed 2 December 2016. Available from: <http://www.wettropics.gov.au/stamp-out-yellow-crazy-ants.html>

Consultation questions

1. Do you agree with the current taxonomic position of the Australian Faunal Directory for this taxon (as identified in the draft conservation advice)?
2. Can you provide any additional references, information or estimates on longevity, age of maturity, average life span and generation length?
3. Has the survey effort for this taxon been adequate to determine its national distribution and adult population size?
4. Do you accept the estimate provided in the nomination for the current population size of the taxon?
5. For any population with which you are familiar, do you agree with the population estimate provided? If not, are you able to provide a plausible estimate based on your own knowledge? If so, please provide in the form:
 - Lower bound (estimated minimum):
 - Upper bound (estimated maximum):
 - Best Estimate:
 - Estimated level of Confidence: %
6. Can you provide any additional data, not contained in the current nomination, on declines in population numbers over the past or next 10 years or 3 generations, whichever is the longer?
7. Is the distribution as described in the nomination valid? Can you provide an estimate of the current geographic distribution (extent of occurrence or area of occupancy in km²) of this taxon?
8. Has this geographic distribution declined and if so by how much and over what period of time?
9. Do you agree that the taxon is eligible for inclusion on the threatened species list, in the category listed in the nomination?
10. Do you agree that the threats listed are correct and that their effects on the taxon are significant?
11. To what degree are the identified threats likely to impact on the taxon in the future?
12. Can you provide additional or alternative information on threats, past, current or potential that may adversely affect this taxon at any stage of its life cycle?
13. In seeking to facilitate the recovery of this taxon, can you provide management advice for the following:
 - What individuals or organisations are currently, or need to be, involved in planning to abate threats and any other relevant planning issues?
 - What threats are impacting on different populations, how variable are the threats and what is the relative importance of the different populations?
 - Would the development and implementation of a translocation strategy be of benefit?
 - What recovery actions are currently in place, and can you suggest other actions that would help recover the taxon? Please provide evidence and background information.
14. Can you provide additional data or information relevant to this assessment?

15. Can you advise as to whether this species is of cultural significance to Indigenous Australians?