



Consultation Document on Listing Eligibility and Conservation Actions

***Crinia sloanei* (Sloane's froglet)**

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

- 1) the eligibility of *Crinia sloanei* (Sloane's froglet) for inclusion on the EPBC Act threatened species list in the 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>

Crinia sloanei

(Sloane's froglet)

Taxonomy

Conventionally accepted as *Crinia sloanei* (Littlejohn 1958)

Species Information

Description

Sloane's froglet (*Crinia sloanei*) is a small ground-dwelling frog of between 15mm – 20mm snout-to-vent length (SVL), belonging to the family Myobatrachidae. Males average about 15.6 mm SVL in size, with females being slightly bigger at 17.6 mm SVL (Littlejohn 1958). It has a brown or brownish-grey back often with darker brown or olive markings and males may also have orange or ochre coloured spots. The belly is white and peppered with small black spots. The throat of females is white, while breeding males have a greyish-green lower jaw and a pale grey throat. There is no webbing on the feet and toe-pads are absent. Eggs are pigmented and laid individually attached to blades of grass or other submerged vegetation. Tadpoles grow to 25 mm and are light grey or brown all over with scattered dark flecks (Anstis 2013; Knight 2013a).

Sloane's froglet tadpoles are difficult to distinguish from those of *C. signifera* and *C. parinsignifera* (Anstis 2013). Adult froglets are hard to see so they are best identified by their call. The male call is a distinctive sharp 'eahh', and the males usually call from shallow areas of wetland with thin stemmed vegetation (Knight 2013a). The call of Sloane's froglet is similar to the calls of two other *Crinia* species (*C. parinsignifera* and *C. distericola*), and it is likely that there have been considerable misidentifications and incorrect records for Sloane's froglet in NSW (Spark 2015).

Distribution

Sloane's froglet is endemic to the Murray-Darling Basin from where it has been recorded at widely scattered locations in north central Victoria and central western NSW from the Victorian to the Queensland border. Nearly three quarters of the records are from the Riverina Bioregion which straddles southern NSW and Central Victoria, with a further 18% of records within the NSW South Western Slopes. Records for Sloane's froglet north of Dubbo in NSW are likely to be misidentification of other *Crinia* species (Spark 2015).

Sloane's froglet has disappeared from much of its former range and now appears to be restricted to a very small area of NSW near Albury and Corowa, and a series of disjunct populations at Wangarratta, Chiltern, Little Lake Charm and Moodies Swamp near Cobram (Knight 2013a; Spark 2015, D. Hunter personal communication).

Recent extensive surveys have only located the froglet at a few general locations and relatively large populations were only recorded in ponds and depressions found within rural residential or peri-urban areas in the Albury – Thurgoona, Howlong and Corowa - Wahgunyah and Rutherglen areas (Knight 2013b). Ninety five percent of all Sloane's froglets recorded since 2000 have been in these three stronghold areas. It is unclear why rural residential areas are the remaining stronghold of the species, but it may be related to the provision of dams and ponds in these areas, generally less intensive agricultural practises, and greater proportion of remnant wetland habitat areas.

Relevant Biology/Ecology

Sloane's froglet lives and breeds in temporary and permanent waterbodies including oxbows off creeks and rivers, farm dams, large and small natural wetlands, constructed frog ponds and temporary puddles. It prefers wetlands that contain riparian and aquatic vegetation. Most often

it has been found in waterbodies that contain grasses and reeds that are of medium height and have small stem diameters, such as couch, watercouch or the common spikerush (*Eleocharis acuta*). Waterbodies containing this type of vegetation are essential for Sloane's froglet as it lays its eggs attached to vegetation rather than as a frothy mass on the surface of the water like some other frogs (Knight 2013b). Gilgai and other depressions are favoured habitat on clay plains, while elsewhere they are generally restricted to temporary ponds in the river valley and up to 8 km on either side of large rivers (Littlejohn 1958).

As well as requiring particular breeding habitat, like most amphibian species, Sloane's froglet needs connections between breeding and refuge sites. The extremely variable climate of inland Australia means that for Sloane's froglet to survive it has to move across the landscape when it is wet. Sloane's froglet uses roadside drains, table drains, irrigation channels and inundated grasslands to move from one area to another (Knight 2013b).

The majority of the ecological communities providing Sloane's froglet habitat are listed nationally as Critically Endangered. These are either Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains or White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland or the Endangered Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia.

The peak calling time for males is from June to August, though they will also call throughout spring and after summer rains. Males usually call while floating in water of temporary ponds or shallow inundated areas connected to larger wetlands. Females lay small eggs (around 3-3.5mm) individually and may lay fewer than 30 eggs in total. Hatching occurs 10 days after laying and metamorphosis may occur in late spring to autumn if breeding takes place in winter or spring (Anstis 2013). It is unknown whether a female may lay multiple clutches in a year. Preferred breeding sites are shallow natural or constructed pools to 20 cm depth containing emergent vegetation.

The generation length of Sloane's froglet is unknown, but is likely to be between 18 months and 3 years. A related species, *Crinia signifera* is known to live for four years reaching sexual maturity in 18 months to 2 years (Bull and Williamson 1996).

Threats

Threats to Sloane's froglet are principally related to habitat disturbance and loss. 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
Habitat loss and degradation (e.g. clearing, trampling, fragmentation, altered hydrology, salinity)	Severe	Whole of range	The entire known range of Sloane's froglet occurs across highly cleared landscapes with clearing rates amongst the highest for either NSW or Victoria. It is likely that the natural habitat of this species has been substantially impacted by land clearing (Knight 2013a). The distribution of Sloane's froglet corresponds with one of the heaviest stock grazed environments in Australia. Trampling or destruction of habitat by grazing and the deterioration of water quality in wetlands by stock, may also threaten this species.

			<p>Extant populations of Sloane's froglet in NSW are currently in an ongoing state of decline due to habitat degradation. In particular, an Albury population is subject to significant habitat loss associated with urban and industrial development (Knight 2013a, D. Hunter personal communication).</p> <p>Sloane's froglets may be negatively impacted by the alteration to the natural flow regimes of rivers, streams, floodplains & wetlands. The species' natural range occurs in the Murray Darling Basin the location of the most highly regulated and altered river system in Australia. Major dams occur in all catchments where Sloane's froglet occurs or has occurred. Specific factors likely to impact the frogs include loss of wetlands associated with removal of water for irrigation and lowered water tables.</p>
Climate change (temperature increase, extreme weather events e.g. cyclones, droughts)	Severe	Most of range	It is likely that the recent millennium drought contributed to the broad scale decline of Sloane's froglet. The susceptibility of Sloane's froglet to extreme drought would be exacerbated by ongoing habitat degradation and fragmentation where this species historically occurred.
Disease - Chytrid fungus	Unknown	Whole of range	Chytridiomycosis is an infectious disease caused by the amphibian chytrid fungus (<i>Batrachochytrium dendrobatidis</i>) that affects amphibians worldwide, causing mass die-offs and some species extinctions (Department of the Environment and Energy 2016). It has been detected in Sloane's froglet. Tests of 14 individual Sloane's froglets from Thurgoona and Corowa undertaken in 2011 showed that 10 tested positive, which is a high rate of infection. However, it is difficult to know what influence the pathogen is having without recorded mortalities, and noting that some species of frog have been shown to persist despite high rates of chytrid infection (Retallick et al. 2004; Riley et al. 2013).
Chemicals	Moderate	Part of range	The range of Sloane's froglet is within the Murray-Darling Basin, where application of agricultural chemicals to farming land is a regular occurrence. The application of fungicides, fertilisers, herbicides and pesticides to land

			adjoining known frog populations poses the risk of these entering and contaminating habitat areas or causing direct harm to the individual animals. The level of knowledge on the response of this species of frog to the range of agricultural chemicals is poor. However there is literature that highlights the sensitivity of frog species to commonly used agricultural chemicals (Mann et al. 2009).
Invasive species	Potential	Most of range	There are no data with which to assess this threat.
Population fragmentation	Potential	Most 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	<p style="text-align: center;"><i>based on any of the following</i></p> <ul style="list-style-type: none"> (a) direct observation [<i>except A3</i>] (b) an index of abundance appropriate to the taxon (c) a decline in area of occupancy, extent of occurrence and/or quality of habitat (d) actual or potential levels of exploitation (e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites 		
A2			
A3			
A4			

Evidence:

Given the generation length of Sloane's froglet is unknown, but inferred to be up to approximately three years, the appropriate time scale for this criterion is 10 years.

Despite the species' expansive historical distribution, recent extensive surveys have only located the froglet at a few general locations and relatively large populations were only recorded in ponds and depressions found within rural residential or peri-urban areas in the Albury – Thurgoona, Howlong and Corowa - Wahgunyah and Rutherglen areas (Knight 2013a). Ninety five percent of all Sloane's froglets recorded since 2000 have been in these three stronghold areas. These data suggest a substantial range reduction for the species.

The available data on Sloane's froglet do not allow a direct estimate of decline across the species' former range. However, an index can be calculated to infer decline using records of the related plains froglet (*C. parinsignifera*). The plains froglet shares a number of similar features with Sloane's froglet that are likely to affect their detectability equally:

- both are small cryptic froglets primarily identified on the basis of male advertisement calls;
- both breed from late winter to spring, and call at other times of the year following heavy rains;
- both species occupy the same range, inhabiting the tributaries and plains of the Murray Darling Basin, although the plains froglet is more widespread; and
- both species occupy habitats of woodlands, grasslands and disturbed areas and mate in vegetation floating in the water after inundation.

The number of records for both species has increased in the last two decades due to increases in survey efforts. However, the increase in plains froglet records (within the distributional range of Sloane's froglet) is much greater than for Sloane's froglet. From the databases Atlas of NSW Wildlife and the Australian Museum and CSIRO National Wildlife Collection in the decades 1977-86, 1987-96 and 1997-2006 the ratio of Sloane's froglets:plains froglets has decreased from 4/12 (33%), to 15/74 (20%) and 17/339 (5%) respectively, an overall decline of approximately 85% over 40 years or 75% over the decade to 2006. A similar comparison of records of the two species from the Atlas of Living Australia database suggests a decline of approximately 87% between the decades 1994-2003 and 2004-2013.

In addition to the broader scale declines, more detailed monitoring for the Albury – Thurgoona population has demonstrated that Sloane's froglet is in an ongoing state of decline. Over the past five years, Sloane's froglet has become locally extinct from six areas where it would not be expected to recolonise due to ongoing habitat loss, degradation and isolation (D. Hunter personal communication).

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 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 distribution of Sloane's froglet has contracted from extending throughout much of inland NSW and northern Victoria (historically the species had an extent of occurrence of approximately 156,000 km²) to now being concentrated along a subsection of the Murray River (Knight 2013a), an extent of occurrence of approximately 700 km². The distribution is primarily concentrated in two locations, Corowa/Wahgunyah and Albury. It is not known if the populations of these two locations are connected and the distribution appears to be becoming increasingly fragmented. The area of occupancy for the species was historically estimated at 200 km² but is now thought to be less than 90 km² (DoEE 2017). These figures are based on post-1997 observations (20 year timeframe), 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. As noted above under Criterion 1 there appears to be an ongoing decline of the species.

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

Evidence:

There are no data available to assess population size.

The data presented above appear to be insufficient to assess whether 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 4. Number of mature individuals

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

Evidence:

There are no data available to assess population size.

The data presented above appear to be insufficient to assess whether 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 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.

Primary Conservation Actions

- The primary conservation action for Sloane's froglet is to identify important extant populations and ensure suitable habitat for this species is being maintained and restored.

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 loss and disturbance

- Implement a program ensuring suitable habitat is maintained in areas supporting extant Sloane's froglet populations.
- Investigate opportunities to restore and enhance areas of degraded habitat.

Survey and Monitoring priorities

- More precisely assess the distribution and ecological requirements of Sloane's froglet.
- Design and implement a monitoring program for Sloane's froglet.

Information and Research priorities

- Determine the extent, type and quality of habitat required to maintain long-term viable populations of Sloane's froglet.
- Develop and implement translocation strategies for Sloane's froglet to create additional populations whilst preventing the accidental spread of the chytrid fungus (Department of the Environment and Energy 2016).

References cited in the advice

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Other sources cited in the advice

Atlas of Living Australia (2016)

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Department of the Environment and Energy (2017). Area of Occupancy and Extent of Occurrence for *Crinia sloanei*. Unpublished report, Australian Government Department of the Environment, Canberra.

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?