

Advice to the Minister for the Environment and Heritage from the Threatened Species Scientific Committee (the Committee) on Amendments to the list of Threatened Species under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)

1. Scientific name (common name)

Toechima sp. East Alligator (J.Russell-Smith 8418) NT Herbarium (a tree)

While the taxonomy of this species has yet to be fully resolved, a relevant taxonomist considers it to be a distinct taxon.

2. Description

Toechima sp. East Alligator is a small multi-stemmed, slender-branched tree growing to 5 m high with almost smooth light grey-brown bark.

3. National Context

Toechima sp. East Alligator is endemic to the Northern Territory. It is known from one very small population in Arnhem Land near the Upper East Alligator River east of Kakadu National Park. The species is located in a deep sandstone gorge in an *Allosyncarpia* rainforest patch, with *Podocarpus*. The site is Aboriginal freehold land within the Northern Land Council region.

The species is listed as Endangered under the Northern Territory's *Territory Parks and Wildlife Conservation Act 2000*.

4. How judged by the Committee in relation to the EPBC Act criteria.

The Committee judges the species to be **eligible** for listing as **endangered** under the EPBC Act. The justification against the criteria is as follows:

Criterion 1 – It has undergone, is suspected to have undergone or is likely to undergo in the immediate future a very severe, severe or substantial reduction in numbers.

The total population size of *Toechima sp. East Alligator* is speculative, as no formal studies of the species have been undertaken. Population studies of Northern Territory rainforest patches derived that in patches less than 2.5 ha most species are represented by less than 50 adults in 81% of such patches (Russell-Smith 1992). As a concession to the possibility of a larger size of the rainforest patch from which *Toechima sp. East Alligator* is known, it is estimated that there may be 250 mature individuals in the population, though it is likely that there are fewer than 50 individuals present (NT NRETA 2005).

Due to a lack of historical survey information, there are no quantitative data available to indicate past trends in the population size of *Toechima sp. East Alligator*.

There is little evidence available to determine if there are any threatening processes impacting on the species. Whilst there is evidence to indicate that monsoon forests are generally vulnerable to disturbance from cattle, buffalo, pigs and dry-season wildfires (Russell-Smith & Bowman 1992), *Toechima sp. East Alligator* is known from one population within a very deep and relatively well-protected gorge that prevents these threats from operating in the normal way.

The long-term genetic viability of *Toechima sp. East Alligator* could be under threat. The species is only known from sterile material and is noted as being able to regenerate as coppice from a rhizome. Although fruiting has not been observed, species within this genus have arillate seeds (Hyland *et al.* 2002), suggesting animal dispersal vectors.

There are insufficient data to determine whether there has been a past decline in the number of individuals of *Toechima sp. East Alligator*, and it is not clear whether current and potential threats will cause a future decline in numbers.

Therefore, the species is **not eligible** for listing against this criterion.

Criterion 2 –Its geographic distribution is precarious for the survival of the species and is very restricted, restricted or limited.

Toechima sp. East Alligator is known from one very small population in Arnhem Land near the Upper East Alligator River east of Kakadu National Park. The species is located in a very protected, deep sandstone gorge in an *Allosyncarpia* rainforest patch, with *Podocarpus*.

There are no direct quantitative data regarding extent of occurrence and total area of occupancy of this species. However, a comprehensive regional survey of Northern Territory rainforest patches indicated that 72% of patches are of less than 10 hectares in area (Russell-Smith 1992) and *Allosyncarpia* patches are characteristically of this very small size.

Therefore, the maximum extent of occurrence for *Toechima sp. East Alligator* would be 0.01km². The maximum area of occupancy is also estimated to be 0.01km², as it is only known from one location.

There are no data available from which to infer the past extent of occurrence. There are also no quantitative data from which to infer future changes in the species' extent of occurrence.

Historically, fire is a key threat to monsoon rainforest. The gorge in which *Toechima sp. East Alligator* occurs is surrounded by monsoon rainforest, and therefore is potentially threatened by inappropriate fire regimes.

The geographic distribution of *Toechima sp. East Alligator* is restricted, and the single population is potentially threatened by fire.

Therefore, the species is **eligible** for listing as **endangered** under this criterion.

Criterion 3 – The estimated total number of mature individuals is limited to a particular degree and: (a) evidence suggests that the number will continue to decline at a particular rate; or (b) the number is likely to continue to decline and its geographic distribution is precarious for its survival.

The total population size of *Toechima sp. East Alligator* is speculative, as no formal studies of the species have been undertaken. Using a population study of Northern Territory rainforest patches less than 2.5ha in size (Russell-Smith 1992), it is estimated that the single recorded population of *Toechima sp. East Alligator* is approximately 250 mature individuals, though it is likely there are fewer than 50 individuals present.

As *Toechima sp. East Alligator* has not been adequately surveyed, it is not possible to accurately determine whether the total number of mature individuals is limited to a particular degree. Regardless of whether the number of mature individuals is limited, there is insufficient evidence available to determine whether the number will continue to decline or that the species' geographic distribution is precarious for its survival.

There are insufficient data available to assess the species' against this criterion.

Criterion 4 – The estimated total number of mature individuals is extremely low, very low or low.

The population of *Toechima sp. East Alligator* is estimated to consist of fewer than 250 mature individuals. This estimate is derived using population studies of Northern Territory rainforest patches less than 2.5 ha in size. Russell-Smith (1992) found that most species are represented by less than 50 adults in 81% of such patches. As a concession to the possibility of a larger size of the rainforest patch from which *Toechima sp. East Alligator* is known, it is estimated there may be approximately 250 mature individuals in the population, though it is likely that there are fewer than 50 individuals present.

Therefore, the species is **eligible** for listing as **endangered** under this criterion.

Criterion 5 - Probability of extinction in the wild

There are no quantitative data available to assess the species against this criterion.

5. CONCLUSION

Toechima sp. East Alligator is known from one population in Arnhem Land near the Upper East Alligator River east of Kakadu National Park. The species is located in a very protected deep sandstone gorge in an *Allosyncarpia* rainforest patch, with *Podocarpus*. The total population of this species is estimated to consist of fewer than 250 mature individuals. The species is **eligible** for listing as **endangered** under criteria 2 and 4.

6. Recommendation

TSSC recommends that the list referred to in section 178 of the EPBC Act be amended by **including** in the list in the **endangered** category:

Toechima sp. East Alligator (J.Russell-Smith 8418) NT Herbarium (a shrub)

Associate Professor Robert J.S. Beeton

Chair

Threatened Species Scientific Committee

Publications used to assess the nomination

Hyland, B. P. M., T. Whiffin, D.C. Christophel, B. Gray. & R.W. Elick (2002) Australian Tropical Rain Forest Plants: Trees, Shrubs and Vines. Collingwood, Australia, CSIRO Publishing.

NT NRETA (Northern Territory Department of Natural Resources, Environment and The Arts) (2005) Data Sheet for *Toechima sp. East Alligator (J. Russell-Smith 8418)*.

Russell-Smith, J. (1992) Plant populations and Monsoon Rain Forest in the Northern Territory, Australia. *Biotropica* 24(4): 471-487.

Russell-Smith, J. & D.M.J.S. Bowman (1992) Conservation of monsoon rainforest isolates in the Northern Territory. *Biological Conservation* 59: 51-63.