

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

1. Scientific name (common name)

Diplodactylus occultus (Yellow-snouted Ground Gecko)

2. Description

The Yellow-snouted Ground Gecko is a small, dark brown, ground-dwelling gecko with white spots on the flanks and limbs. Though little is known of the ecology of the species, it appears to be restricted to lowland open forests in the Mary, Wildman and West Alligator catchments in the Northern Territory. All individuals captured to date have been found in well-developed leaf litters and grasses in open forests dominated by *Eucalyptus miniata* and *E. tetradonta* (King *et al.* 1982).

3. National Context

The Yellow-snouted Ground Gecko is endemic to the Northern Territory and is known only from north-west Kakadu National Park and Wildman Reserve.

The Yellow-snouted Ground Gecko is listed as vulnerable under the Northern Territory *Territory Parks and Wildlife Conservation Act 2000*.

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

TSSC 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.

Only 10 individuals of the Yellow-snouted Ground Gecko have been reported despite extensive survey effort both within the known range of the species and in the surrounding area. Given that for all terrestrial *Diplodactylus* geckoes, pitfall trapping is the most appropriate sampling technique, the species should be easily trappable. Therefore, this limited number of captures suggests that the species' population numbers are low. However, none of these studies have involved the marking of individual animals and consequently it was not possible to tell whether the same animals were captured more than once. Therefore no definitive population estimate is currently available for the Yellow-snouted Ground Gecko.

As there are no historic population estimates for the species, there is insufficient data to assess whether there has been a reduction in the species' numbers, and therefore, the species is **not eligible** for listing under this criterion.

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

The Yellow-snouted Ground Gecko is known only from north-west Kakadu National Park and Wildman Reserve, despite extensive pitfall trapping in areas surrounding the known range of the species. It would therefore appear that the geographic distribution of the Yellow-snouted Ground Gecko is restricted. Based on the known locations of the species it is estimated that the species has an extent of occurrence of 1283 km².

The habitat of the Yellow-snouted Ground Gecko is prone to wildfire. However, the historic fire regime of the region in which the species occurs has been altered due to changes in land management practices. The current regime is characterised by more frequent fires in the late dry season, which tend to be extensive and intensive fires. These types of fires are likely to result in an increase in the mortality of terrestrial geckoes and their eggs. This altered fire regime also reduces the amount of leaf litter in which the species shelters, and thus increases predation risks. Therefore a decline in the quality of habitat of the Yellow-snouted Ground Gecko is inferred from the altered fire regime across its known range.

Compounding these changed fire regimes is the invasion of exotic pasture grasses in the Wildman and Mary River catchments, particularly gamba grass (*Andropogon gayanus*) and mission grass (*Pennisetum polystachyon*). These grasses are also continuing to spread within Kakadu National Park. Studies of these exotic grasses in open forests in Wildman River Reserve suggest that fuel loads are increased relative to comparable open forests with native grasses, resulting in increased fire intensities (Rossiter *et al.* 2003).

The decline in quality of the Yellow-snouted Ground Gecko habitat caused by altered fire regimes, combined with the species' restricted extent of occurrence, makes its geographic distribution precarious for its survival. 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.

Only 10 individuals of the Yellow-snouted Ground Gecko have been reported despite extensive survey effort both within the known distribution of the species and in the surrounding area. None of these studies have involved marking individual animals, and therefore no definitive population estimate is available at this time. However, given the very low frequency of captures for a species that should be easily trappable, it is probable that the species' population numbers are limited to a particular degree, although the number of mature individuals is unknown.

The decline in quality of the Yellow-snouted Ground Gecko habitat caused by altered fire regimes, combined with the species' restricted extent of occurrence, makes its geographic distribution precarious for its survival. However, as there is no population estimate available for the species, it is **not eligible** for listing under this criterion.

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

As there is no population estimate available for the species, the number of mature individuals is unknown. Therefore the species is **not eligible** for listing 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

The Yellow-snouted Ground Gecko is known from north-west Kakadu National Park and Wildman Reserve and only 10 individuals of the Yellow-snouted Ground Gecko have been reported despite extensive survey effort both within the known distribution of the species and in the surrounding area. The geographic distribution of the species is restricted and given the very low frequency of captures for a species that should be easily trappable, it is also probable that the species' population numbers are low.

The quality of the habitat of the Yellow-snouted Ground Gecko is likely to be declining due to altered fire regimes across the region, combined with the invasion of exotic pasture grasses. The current regime of more frequent late season fires is likely to increase the mortality of terrestrial geckoes and their eggs, as well as reduce the amount of leaf litter in which the species shelters, and thus increase predation risks.

The decline in quality of the Yellow-snouted Ground Gecko habitat caused by altered fire regimes, combined with the species' restricted extent of occurrence, makes its geographic distribution precarious for its survival. Therefore, the species is **eligible** for listing as **endangered** under Criterion 2.

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:

Diplodactylus occultus (Yellow-snouted Ground Gecko)

Associate Professor Robert J.S. Beeton

Chair

Threatened Species Scientific Committee

Publications used to assess the nomination

King, M., Braithwaite, R. W., Wombey, J. C. (1982). A new species of *Diplodactylus* (Reptilia:Gekkonidae) from the Alligator Rivers region, Northern Territory. *Transactions of the Royal Society of South Australia* 106, 15-18.

Rossiter, N.A., Setterfield, S.A., Douglas, M.M., and Hutley, L.B. (2003). Testing the grass-fire cycle: alien grass invasion in the tropical savannas of northern Australia. *Diversity and Distributions* 9, 169-176.