The quokka, *Setonix brachyurus*, (Quoy and Gaimard, 1830)

Paul de Tores, Matthew Hayward, Peter Spencer, Karlene Bain, and Lesley Gibson

Western Australian Wildlife Research Centre, PO Box 51, Wanneroo, WA, 6946, paul.detores@dec.wa.gov.au

The quokka (*Setonix brachyurus*) the iconic marsupial, synonymous with Rottnest Island, is listed in Western Australia as "*fauna that is likely to become extinct or is rare*", is listed nationally as "*Threatened Fauna*", in accordance with the EPBC Act and is listed internationally as a "*Threatened*" species in the sub-category of "*Vulnerable*" in accordance with IUCN Red List Criteria.

Rottnest Island is the only place where quokkas occur at high density, however, the Rottnest Island population is anomalous. Rottnest supports a population which has temporarily high numbers but seasonally falls to a much lower, unquantified population size. The quokka also occurs on Bald Island, near Albany and widely in south-west WA. Despite this, population size on the mainland has been quantified for populations from the northern jarrah forest only. The research concluded the northern jarrah forest populations were the terminal remnants of a collapsing metapopulation and recent genetic work has supported this assertion.

Populations from the southern forest and south coast are less well known. However, interim results from a current PhD program have questioned the anecdotally held belief that quokkas are abundant in these areas. Predation by the introduced fox (*Vulpes vulpes*) and feral cat (*Felis catus*) have been implicated as contributing to the quokka's decline in the geographic range since European settlement of WA.

The Rottnest Island population is known to have less genetic variability than mainland populations and recent genetic analyses also identified unique differences in the northern and southern jarrah forest populations. The southern jarrah forest population(s) have a much higher level of diversity, and are significantly differentiated from their northern counterparts.

Climate modelling has identified a real and present threat to long-term persistence of the quokka with populations predicted to contract to the higher rainfall areas of south-west WA. Modelling predicted the extent of range contraction would increase with the severity of the climate-change scenario. The species was predicted to lose all range by the year 2070 under the most extreme climate-change scenario.

Threatened Species Research Forum

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