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Disease risk analysis for the western barred bandicoot (*Perameles bougainville*)

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The western barred bandicoot (WBB) is a small marsupial which became extinct on the Australian mainland in the 1940s. It survives on Bernier and Dorre Islands in Shark Bay, off the coast of Western Australia. Key identified threatening processes include predation by introduced cats and foxes, alterations in fire regimes and habitat destruction. The WBB is now listed nationally as Endangered with fewer than 3000 individuals remaining. Prior translocations to captive and wild destinations have occurred with mixed success, and proposals for future translocation of WBBs to various island and mainland (fenced) sites are currently being considered. Prior research has identified a number of disease hazards including, but not limited to, the WBB papillomatosis and carcinomatosis syndrome (BPCS), Q fever (*Coxiella burnetti)*, and chlamydia (Bennett 2008, Woolford 2008). BPCS typically presents with lesions involving cutaneous and mucocutaneous surfaces. Smaller epithelial lesions resemble papillomas, whereas larger lesions are most commonly carcinoma-in situ and squamous cell carcinomas (Woolford et al. 2008). Lesions typically increase in size over time and involvement of the feet, eyes and mouth can lead to problems with ambulation, vision, and eating. Affected animals may die due to secondary infection or may require euthanasia on welfare grounds. The volume of existing knowledge of this disease in WBB, although now 10 years old, is substantial. However, uncertainties of prevalence, detection, transmission, and treatment complicate current understanding of disease risk. At a recent stakeholder meeting it was decided that a Disease Risk Analysis (DRA) should be undertaken to further examine the risk of BPCS and other disease. DRA is a process for identifying

significant disease risks and proposes measures to mitigate these risks. DRA in Australia is most frequently carried out in association with conservation translocations but has also been applied to investigating the potential role of disease in native mammal declines (Pacioni *et al*. 2015; Reiss *et al.* 2015).

We followed the IUCN (2014) Manual to undertake a DRA comprising a problem description, hazard identification, risk assessment, risk management, implementation and review. Risk communication was central to the success of the DRA. This DRA was unusual in that multiple possible source and destination environments existed. For this reason a one day workshop with key stakeholders was undertaken to formulate likely translocation pathways, including source populations, destination environments, and transportation methods, and also to clearly articulate translocation risks (e.g. genetics, expense, logistics) which may have a bearing on how disease risk is assessed. We presented the hazard list and justification to stakeholders, and engaged the group to prioritise hazards based on a likelihood and consequence matrix.

We then developed a disease risk management strategy for WBB to be translocated from a yet to be determined source and destination population/s based on structured, evidence based analysis of current information. Results of the DRA comprising assessment of disease importance in light of other medium to high risk non-infectious hazards will be presented, highlighting the importance of a holistic approach to DRA for conservation translocations.

(491words)

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