

Molecular systematics of the *Dendrolagus goodfellowi* species group (Marsupialia: Macropodidae)

MARK D. B. ELDRIDGE¹ , SALLY POTTER^{1,2} , RENAE PRATT¹ , REBECCA N. JOHNSON^{1,4} ,
TIM F. FLANNERY^{1,3}  AND KRISTOFER M. HELGEN¹ 

¹ Australian Museum Research Institute, Australian Museum,
1 William Street, Sydney, NSW 2010, Australia

² School of Natural Sciences, Macquarie University, NSW 2109, Australia

³ Melbourne Sustainable Society Institute, Melbourne University, Parkville, Vic 3010, Australia

⁴ Current address: National Museum of Natural History, District of Columbia,
Washington, 20560 United States of America

ABSTRACT. Tree-kangaroos (genus *Dendrolagus*) are a morphologically distinctive genus of specialized, arboreal macropodids confined to the wet forests of New Guinea and northeast Australia. A distinct Goodfellow's group, containing up to four species, has long been recognized. Resolving the relationships of taxa within the group has been hampered by limited samples of most taxa. Here we supplement published genetic data from high quality tissue samples with molecular data generated from museum specimens to improve taxon and geographic coverage. This includes specimens of the previously unsampled *D. g. goodfellowi*, the holotype and paratype of *D. deltae*, and additional specimens of *D. matschiei*, *D. spadix* and *D. g. buergersi*. DNA sequence data were generated from three mitochondrial loci. Phylogenetic analysis improved the resolution of relationships within the Goodfellow's group, with the morphologically similar *D. g. goodfellowi* and *D. g. buergersi* being recovered as sister taxa, while *D. pulcherrimus* was the sister to the closely related, but morphologically and ecologically distinct, *D. spadix* and *D. matschiei*. Despite being sister to *D. g. buergersi*, *D. g. goodfellowi* was highly divergent. However, the two are morphologically very similar and we recommend retaining the taxonomic status quo (recognizing them as two subspecies of a single species) until improved sampling and a more thorough analysis is possible. The problematic *D. deltae* was confirmed as a junior synonym of *D. matschiei*.

Keywords: New Guinea; mammal; taxonomy; morphology; genetics; museum

ZooBank registration: urn:lsid:zoobank.org:pub:449837A3-37C8-4F17-9A9C-D940F4698F25

ORCID iD: Eldridge 0000-0002-7109-0600 | Potter 0000-0002-5150-7501 | Pratt 0009-0004-1248-7351 | Johnson 0000-0003-3035-2827 | Flannery 0000-0002-3005-8305 | Helgen 0000-0002-8776-4040

Corresponding author: Mark Eldridge **Email:** Mark.Eldridge@Australian.Museum

Submitted: 5 October 2023 **Accepted:** 15 February 2024 **Published:** 15 May 2024 (in print and online simultaneously)

Publisher: The Australian Museum, Sydney, Australia (a statutory authority of, and principally funded by, the NSW State Government)

Citation: Eldridge, M. D. B., S. Potter, R. Pratt, R. N. Johnson, T. F. Flannery, and K. M. Helgen. 2024. Molecular systematics of the *Dendrolagus goodfellowi* species group (Marsupialia: Macropodidae). *Records of the Australian Museum* 76(2): 105–129. <https://doi.org/10.3853/j.2201-4349.76.2024.1864>

Copyright: © 2024 Eldridge, Potter, Pratt, Johnson, Flannery, Helgen. This is an open access article licensed under a Creative Commons Attribution 4.0 International License (CC BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original authors and source are credited.

