

Found Alive After 6,000 Years: Modern Records of an ‘Extinct’ Papuan Marsupial, *Dactylonax kambuayai* (Marsupialia: Petauridae), with a Revision of the Systematics and Zoogeography of the Genus *Dactylonax*

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ABSTRACT. The Pygmy long-fingered possum, *Dactylonax kambuayai*, is the smallest of the striped possums (the petaurid subfamily Dactylopsilinae). It is a ‘Lazarus species’, found living when previously known only from fossils. Recently collected museum specimens, and observations and photographs of living individuals, correspond taxonomically to the only previously reported specimens of *D. kambuayai*, which are fossil remains from a nearby Holocene location, all occurring in low- to mid-elevation rainforests on the Vogelkop Peninsula of New Guinea. Together with the recent discovery of another Lazarus possum, ‘*Petauroides ayamaruensis*’, they represent the only marsupials known as modern animals only from low elevations (below 1000 m) on the Vogelkop Peninsula. Both of these species are diminutive species with enigmatic natural histories. In reviewing the systematics of this species, we demonstrate the distinctness of *Dactylonax* as a genus-level taxon, and clarify species boundaries in this genus. *Dactylonax palpator*, the type species of *Dactylonax*, was previously considered to be a widespread montane taxon, but is recognized here as two separate species: *D. palpator* is restricted to the Arfak Mountains of the Vogelkop, while *D. ernstmayri* is widely distributed on the New Guinean Central Cordillera and the Huon Peninsula at elevations above 800 m. *Dactylonax palpator* replaces, or co-occurs with, *D. kambuayai* at elevations between around 900 m and 1,400 m on the Vogelkop. We hypothesize that colonization of montane habitats on the Vogelkop by a *D. kambuayai*-like ancestor gave rise to the larger bodied *D. palpator*, and dispersal of this lineage to montane habitats in the Central Cordillera gave rise to the highly specialized *D. ernstmayri*. The fact that the montane taxon of the Vogelkop *Dactylonax* species couplet was able to migrate eastwards, while the lowland taxon was not, suggests that an unusual elevational zoogeographic filter was in play. We observe that *D. kambuayai* is thus far recorded from sites where the other small petaurid of New Guinea, *Petaurus papuanus*, is not recorded or is uncommon.

Keywords: Marsupialia; Petauridae; *Dactylonax*; *kambuayai*; *palpator*; *ernstmayri*; Lazarus taxon; Vogelkop; New Guinea; systematic review
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