

Table 3. Comparison of the utility of various complimentary nuclear markers for species diagnosis in the ponerine ants of the Malagasy.

Taxa	18S	28S	ITS1	Comments
<i>Anochetus goodmani</i>	Intra – no variation. Inter – 2 bp from <i>A. boltoni</i> , and 3 bp from <i>O. troglodytes</i> , <i>O. coquereli</i>	Intra – no variation across north Inter – >15 bp divergent from <i>A. madagascarensis</i> .	Intra – extreme variation (length and substitution) across range. Some corresponding to deep CO1 splits – provisionally orthologous. However, deep paralogous divergences have been sequenced within single individuals through different amplifications and extractions.	rRNA is, <i>a priori</i> , difficult to differentiate orthologous from paraologous. Not as immediately useful as an independent marker without cloning.
<i>Anochetus boltoni</i>	Intra – no variation. Inter – 2 bp from <i>A. goodmani</i> , 2 bp from <i>O. troglodytes</i> and no difference from <i>O. coquereli</i> .	N/A	Intraspecific variation of 1% (indels and substitutions) between the two sampled populations.	
<i>Anochetus madagascarensis</i>	N/A	Intra – no variation. Inter – >15 bp divergent from <i>A. goodmani</i> .	Intra – variation that does NOT reflect CO1 variation.	rRNA is, <i>a priori</i> , difficult to differentiate orthologous from paraologous. Not as immediately useful as an independent marker without cloning. -Positive <i>Wolbachia</i> test.
<i>Anochetus grandidieri</i>	N/A	N/A	Low intraspecific variation that does reflect CO1 geographic variation.	- Positive <i>Wolbachia</i> test.
<i>Anochetus pattersoni</i>	N/A	N/A	N/A	
<i>Odontomachus coquereli</i>	Intra – no variation. Inter – 2 bp from <i>O. troglodytes</i> . 2 bp from <i>A. boltoni</i> , and 3 bp from <i>A. goodmani</i> .	Intra – variation. Large variation at geographically distal ends of distribution. Inter – differentiates between three Malagasy species.	Intraspecific variation that only partially reflects geography and CO1 variation – while some clearly does not. Paralogous and orthologous	
<i>Odontomachus troglodytes</i>	Intra – no variation. Inter – 2 bp from <i>O. coquereli</i> . 3 bp from <i>A. boltoni</i> , and 3 bp from <i>A. goodmani</i> .	Intra – some variation that does not correspond to geography or CO1. Inter – does not differentiate between <i>O. simillimus</i>	Intraspecific variation that only partially reflects geography and CO1 variation	All specimens tested positive for <i>Wolbachia</i> .
<i>Odontomachus simillimus</i>	N/A	Intra – no variation. Inter – does not differentiate <i>O. troglodytes</i>	N/A	

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Queen measurements: maximum and minimum based on $n = 5$. HL 0.88–1.15, HW 0.81–1.07, CI 92–96, EL 0.17–0.23, ML 0.39–0.56, MI 44–49, SL 0.62–0.87, SI 77–81, WL 1.08–1.46. FL 0.68–0.96, PW 0.60–0.78.

Male measurements: maximum and minimum based on $n = 5$ from Madagascar: HL 0.58–0.73, HW 0.78–0.94, CI 129–135, EL 0.37–0.46, SL 0.10–0.15, SI 13–16, WL 1.17–1.52, FL 0.78–1.08

Worker diagnosis: Inner blade of mandible without teeth and denticles; apical end of inner blade without a notched semicircular concavity (Fig. 2a). Eyes small (0.05–0.11 mm), projecting dorsolaterally. In full face view, antennal scape usually not reaching, and not surpassing posterior margin of occipital lobe. Dorsal surface of head with numerous short setae. Pilosity and sculpture as in Figures 3 a–d.

Queens alate: Very similar to workers, only slightly larger than respective size class (Figs 3e–h). Ergatoid queens not recorded.

Within a single locality, two size classes of workers, queens and males are present in this species, but the differences within a site do not hold up when variation across all sites is included. These differences suggest that two reproductive and developmental pathways can occur in this species. Further work is needed to explore the biotic or abiotic factors that trigger the development of small and large castes.

The species is most similar to *A. madagascarensis* but can be easily distinguished by its small eyes and scape that does not surpass the occipital lobe. *A. madagascarensis* has large eyes (0.24–0.26 mm), and scapes that surpass occipital lobes.

Distribution and biology. *A. grandidieri* is endemic to Madagascar and is widespread throughout Madagascar in forest and shrubland habitats below 1,550 m elevation (Fig 4b). It has been collected in gallery, dry, littoral, lowland, and montane forest, in desert spiny bush thicket in the southwest, and Uapaca woodland in the central plateau. As in many soil dwelling ants, *A. grandidieri* has reduced eyes (EL/HW 0.11–0.13) and short