

## Phylogenetic Analysis of *Pissonotus*

### Taxa, Characters, and Codings

All 43 species of *Pissonotus* plus an outgroup were subjected to maximum parsimony analyses. The 43 species placed in *Pissonotus* by this revision form a monophyletic group supported by the following synapomorphies of the male genitalia: the presence and form of the median processes of the pygofer; the strongly flattened aedeagus; and the anal segment with a pair of long processes that are widely separated basally, arising from the ventrocaudal angles. Other possible synapomorphies of *Pissonotus* include flattened parameres that are cupped into medially directed apices, the lateral processes of the pygofer, a weak genital diaphragm, and a dark chestnut postclypeus; but these features are variable within *Pissonotus*, and their absence would need to be interpreted as a derived feature for them to be considered as generic synapomorphies.

The phylogenetic relationships within the tribe Delphacini are unresolved, precluding the choice of a known close relative as an outgroup. The genus *Megamelus* Fieber, 1866, was chosen because it has median pygofer processes and the median frons carina of structure similar to *Pissonotus*, and lacks an oviduct gland, a feature considered primitive in the Delphacini (Strübing 1956a, b). Based on an examination of *P. binotatus*, *Pissonotus* also lacks the oviduct gland, suggesting that it too is a relatively primitive genus in the Delphacini. Additional outgroups may have been desirable to place *Pissonotus* within the broader context of delphacid phylogeny, but the intended purpose of these analyses was to suggest hypotheses to describe the intrageneric relationships of *Pissonotus*. The use of *Megamelus* as an outgroup provided both a root for *Pissonotus* and character polarization for clearly homologous comparisons between the 2 genera. Homology is less apparent with several possible alternative outgroups within Delphacini.

The data set comprised 46 characters (29 binary, 17 multistate; Table 2). *Megamelus metzaria* Crawford was used as a template to code characters for the genus *Megamelus*, but the coded character states were edited based on specimens of other species and on Beamer's 1955 revision to reflect that genus as a whole. All character states were treated as unordered except those marked