



Fig. 1: Phylogeny of selected species of the *Tetramorium bicarinatum* group sensu BOLTON (1977). Neighbour Joining tree of nine haplotypes of *T. bicarinatum*, *T. pacificum*, *T. scabrum*, *T. manobo*, *T. insolens* and *T. cynicum* (GenBank accession numbers denoted for sequences obtained during this study), with *T. caespitum* and *Myrmica rubra* as outgroup, calculated with Tamura-Nei distances using 700 bp of the *COI* gene. The scale bar denotes 0.02 substitutions / site. Bootstrap values > 75 % are given above nodes, posterior probability values > 0.75 of the congruent MCMC branches after slashes.

defined. In this case, SPBA is measured at the level of the bottom of the interspinal meniscus.

SPWI Maximum distance between outer margins of spines; measured in same position as SPBA.

Single worker data were subjected to principal components analysis (PCA) using the software package Primer 5.2.9 (CLARKE & GORLEY 2001) and to discriminant analysis (DA) using SAS 9.1 (SAS INSTITUTE 2004). DA was based on pooled covariance matrices, according to the three-species-hypothesis. Optimal character combinations for DA were screened by using a combination procedure programmed as macro in SAS 9.1. The combination procedure allows an exhaustive search for the character combination that produces optimal discrimination (MODER & al. in press), i.e., discrimination with minimum classification error (and the fewest characters, if more than one combination produces minimum classification error).

The following morphometric data on the holotype of *T. manobo* were found in an electronic file of Stefan Schödl after his death, saved in .xls-format. No definitions were found along with the acronyms of characters, and we here give the original data. Brackets indicate formulas for index calculations as implemented in the .xls-spreadsheet.

"TL = 4.7, HL = 1.025, HW + eyes = 1.113, CI [(HW + eyes) * 100 / HL] = 108.5, SL = 0.825, SI [SL / 100 * (HW + eyes)] = 74.2, PW = 0.725, SPL = 0.375, SPB-Dist = 0.5, AL = 1.25, PTL = 0.6, PTH = 0.35, PTW = 0.4, PTI [PTL / PTH] = 171.4, PPL = 0.325, PPH = 0.338, PPW = 0.425, PPI [PPL / PPH] = 96.3, OMM = 12, EL = 0.221, REL EL = 0.216, EW = 0.171"

Most probably, the characters have been measured using an Olympus SZH 10 stereomicroscope with 1.0 × and 2.0 × achromatic lenses, and a cross-scaled ocular micrometer at magnifications of up to 140 ×. Data can be assumed to be given in mm.

Results and discussion

Integrating molecular and morphometric results

The 700 bp sequences of the *COI* gene of the 12 samples, representing nine haplotypes, were deposited in GenBank under accession numbers DQ523549 - DQ523560. No gaps arose in alignment. The phylogenetic analyses (Fig. 1) confirmed that *Tetramorium insolens*, *T. cynicum*, and *T. bicarinatum* are separate species and suggested that the samples hypothesized to be *T. pacificum*, *T. scabrum*, and *T. manobo* are embedded in the *T. bicarinatum* group. Furthermore, sequence divergence and node support suggested that these samples represent three species in accordance with our three-species-hypothesis. Minimum interspecific uncorrected sequence divergence between the analysed species of the *T. bicarinatum* group varied from 4.1 to 9.7 %, which is in the order of magnitude of the minimum interspecific divergences between congeners of *Cardiocondyla*, *Cataglyphis*, *Lasius*, *Messor*, *Myrmecina*, *Myrmica*, *Solenopsis* and *Tetramorium* ants (SAVOLAINEN & VEPSÄLÄINEN 2003, STEINER & al. 2004, HEINZE & al. 2005, KNADEN & al. 2005, ROSS & SHOEMAKER 2005, SCHLICK-STEINER & al. 2006a, b, STEINER & al. 2006a, b, c). Thus, the *COI* data are compatible with the three-species-hypothesis.

The values of the 13 morphometric characters for the 150 workers analysed are given in the Appendix (digital supplementary material to this article, at the journal's web pages); a synopsis is given in Table 1. PCA of the data suggested that the three ants hypothesized to represent three separate species were separated as a tendency, but partly overlapped (Fig. 2), the types of *T. pacificum* and *T. scabrum* being in regions of the species clouds well apart from the other species. *Tetramorium scabrum* appeared to be the most variable. Overall, PCA, an unsuper-