

Even if a future revisionary study might reveal that BOLTON's (1977) list of synonymies is erroneous, we do not expect that species described from other biogeographical regions could pertain to the same biological entity as "*manobo*". The validity of the name *T. manobo* thus does not appear to be endangered by any older name.

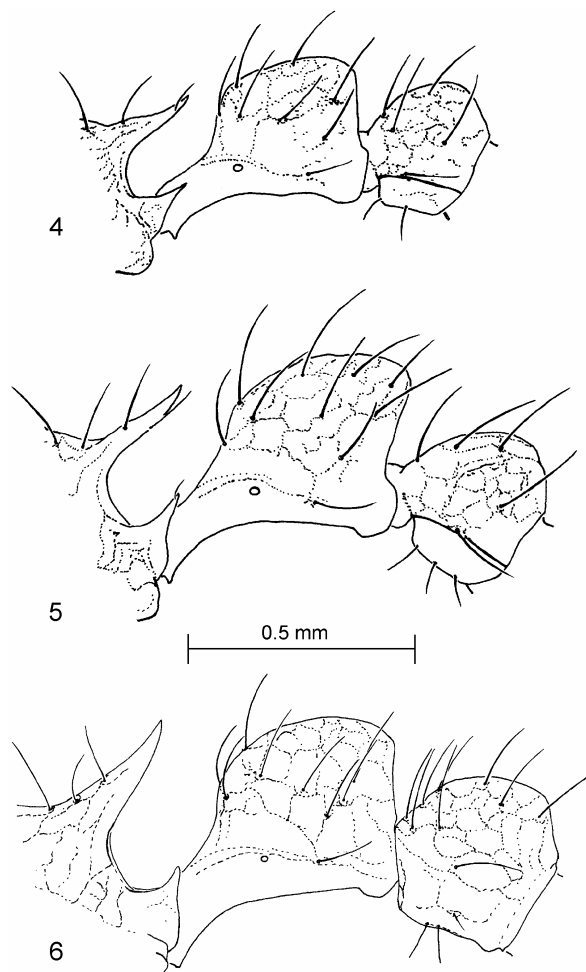
Combining all evidence, we thus confirm the valid species status of *T. manobo* and revive *T. scabrum* **sp.rev.** from synonymy with *T. pacificum*.

In-depth analysis of more material of *T. scabrum* might reveal the possible existence of several species presently summarized under the name *T. scabrum*. Especially the analysed workers from the high-altitude sample from Kinabalu NP, Sabah (# DW 1) appear to deviate (indicated by asterisks in Fig. 2), although they are smoothly classified as *T. scabrum* by DA. Considering further characters, especially surface sculpture, "typical" *Tetramorium scabrum* are known only from Borneo and West Malaysia.

From an evolutionary biology point of view the worker morphology states of the species of the *T. bicarinatum* group are interesting. First, as is evident from the NJ tree of *COI* (Fig. 1), the worker morphology of *T. pacificum*, *T. scabrum* and *T. manobo* could be the result of either convergent or plesiomorphic evolution. Note, however, that the branching order as depicted in Fig. 1 – namely that *T. cynicum* and *T. insolens*, morphologically well distinct from *T. pacificum*, *T. scabrum* and *T. manobo*, have emerged after speciation of the latter three species (Fig. 1) – is not supported by bootstrapping values > 75 % and can thus not be regarded resolved. Second, the phylogenetic reconstructions of the *COI* sequences indicate that the worker-morphology-based grouping of the *T. bicarinatum* group as suggested by BOLTON (1977) – namely into a species complex including, among others, *T. bicarinatum* and *T. insolens*, and another complex including, among others, *T. pacificum* and *T. cynicum* – may be blurred by plesiomorphy and / or convergence. The situation concerning worker morphology to some extent parallels that in the *Tetramorium caespitum/impurum* complex, where worker morphology likewise was speculated to be the result of convergent or plesiomorphic evolution (SCHLICK-STEINER & al. 2006b). However, the phylogeny presented here is based on a very small sample and is derived from a short stretch of a single gene. In recent times, incongruities between morphology and DNA were recognised to occur rather frequently, at a wide range of taxonomic levels (ant examples: JANDA & al. 2004, SEIFERT & GOROPASHNAYA 2004, KNADEN & al. 2005, ROSS & SHOEMAKER 2005). Among others, incongruities can be due to evolutionary processes affecting the markers of choice (see FUNK & OMLAND 2003 for a review). The presented phylogeny may not accurately reflect the species' history and thus more specimens per species, more comprehensive taxonomic sampling and more independent loci are needed to build a stronger inference of the branching history of these *Tetramorium* species.

### Verbal characterizations

In the following we attempt verbal characterizations of *T. pacificum*, *T. scabrum* and *T. manobo*. Note, however, that several specimens pose exceptions to these characterizations and that the characterizations hence should only be used to obtain a first impression of the species identity of a sample. Important morphometric characters ( $\mu\text{m}$ ) and re-



Figs. 4 - 6: Propodeal spines, petiole, and postpetiole, in lateral view (only setae on left body side drawn): (4) *T. pacificum* (Samar, Philippines); (5) *T. manobo* (Leyte, Philippines); (6) *T. scabrum* (Borneo; holotype).

lations of characters are highlighted here in the mode average  $\pm 1$  standard deviation, minimum - maximum.

***Tetramorium pacificum*:** Small sized (e.g., CW: 842  $\pm$  36, 738 - 924), dark brown to blackish-brown. Head longer than wide (CW / CL: 0.99  $\pm$  0.01, 0.96 - 1.03). Hairs on whole body short (e.g., FCHL: 221  $\pm$  19, 135 - 248). Postpetiole wider than maximum distance between tips of spines (SPWI / PPW: 0.88  $\pm$  0.05, 0.79 - 1.01), petiolar node in lateral view abruptly separated from peduncle (Fig. 4). Striae on base of first gaster tergite numerous, distinct, but short.

***Tetramorium scabrum*:** Large sized (e.g., CW: 1019  $\pm$  87, 893 - 1200), dark reddish-brown to blackish-brown. Head wider than long (CW / CL: 1.03  $\pm$  0.03, 0.98 - 1.09). Hairs on whole body frequently long (e.g., FCHL: 287  $\pm$  25, 245 - 354). Postpetiole wider than maximum distance between tips of spines (SPWI / PPW: 0.96  $\pm$  0.08, 0.87 - 1.12), petiolar node variable, in the type abruptly separated from peduncle (Fig. 5). Striae on base of first gaster tergite variable, very distinct and very long in typical specimens.

***Tetramorium manobo*:** Large sized (e.g., CW: 1019  $\pm$  77, 855 - 1184), light to middle reddish-brown. Head wider than long (CW / CL: 1.04  $\pm$  0.02, 1.00 - 1.08). Hairs on