

tive characters in Lattke's matrix from eight to four. These four uninformative characters were discarded from the matrix (i. e., 2, 21, 26, 29). Information about the characters for the three additional taxa was recompiled from various bibliographic sources (Watkins 1982; Bolton 1994; Ward 1990; Hölldobler et al. 1996; Grimaldi et al. 1997). In addition, specimens of *Cheliomyrmex morosus* (F. Smith), *Myrmecia forficata* Fabricius and *M. nigrocincta* F. Smith were available for examination. The use of literature as a source of information prevented the coding of many characters for the three additional taxa. This resulted in many missing values for those taxa (43.75% of missing values for *Nothomyrmecia* and *Apomyrma*; 37.5% for *Cheliomyrmex*. These percentages include a character that is inapplicable in all three taxa). This level of missing data can weaken the application of the parsimony criterion (Nixon 1999). To minimize this problem, twelve more characters were scored based on the aforementioned studies, yielding relatively lower missing value percentages (43.18% for *Apomyrma*; 34.1% for *Nothomyrmecia*; and 27.27% for *Cheliomyrmex*. *Apomyrma* still has a high missing value percentage because four of the added characters came from males and these are unknown for *Apomyrma*). Table 1 shows the final revised and expanded matrix containing 19 taxa and 41 characters (all informative).

Results

Reevaluation and expansion of Lattke's (1994) data resulted in the following characters (all characters are from adult workers unless otherwise noted):

- Degree of fusion between the basal antennal sclerites and frontal carinae: antennal sclerites independent of frontal carinae (0); antennal sclerite fused but discernable from frontal carinae (1); antennal sclerite completely fused and not discernable. This character appears to imply a nested series of states and therefore can be treated as additive. Nevertheless, doing so only introduces ambiguity on the results, and hence was treated as nonadditive to maximize congruence. Char. 1 of Lattke (1994).
- No. of maxillary palp segments: 6 (0); 5 (1); 4 (2); 3 (3); 2 (4); 1 (5). Char. 3 of Lattke.
- No. of labial palp segments: 4 (0); 3 (1); 2 (2); 1 (3). Char. 4 of Lattke.
- Anterior clypeal lamella: absent (0); present (1). Char. 5 of Lattke.
- Funiculus: filiform (0); incrassate (1); clubbed (2). Char. 7 of Lattke.
- Promesonotal suture: flexible (0); fused and immobile (1). Char. 8 of Lattke.
- Prosternal process: unlobed (0); posteriorly bifurcate (1). Char. 9 of Lattke.
- No. of stout moveable setae on the foretibial apex: 2 (0); 1 (1); none (2). Char. 10 of Lattke.
- Row of stout setae at the anterior edge of the foretarsal base: present (0); absent (1). Char. 11 of Lattke.
- Prominent seta on foretarsal base: absent (0); present (1). Char. 12 of Lattke.
- No. of mesotibial apical spurs: 2 (0); 1 (1); none (2). Char. 13 of Lattke.
- No. of metatibial apical spurs: 2 (0); 1 (1). Char. 14 of Lattke; he reported a third state, but none of the taxa included in his original matrix have this state.
- Empodia: present (0); absent (1). Char. 15 of Lattke.
- Metacoxal cavities: open (0); closed (1). Char. 16 of Lattke. See also Ward (1990b), Bolton (1990?), Baroni Urbani et al. (1992) and Grimaldi et al. (1997).
- Metabasitarsal sulcus: present (0); absent (1). Char. 17 of Lattke. See also Hölldobler et al. (1996).
- Petiol laterotergite: present (0); absent (1). Char. 18 of Lattke. See also Ward (1990).
- Petiolar tergum and sternum: not fused (0); fused (1). Char. 19 of Lattke.
- Anterior face of third abdominal segment: without a carina dorsal to the helcium (0); with such carina (1). Char. 22 of Lattke.
- Posterior border of petiolar sternite: with lateral lobes (0); lateral lobes absent (1). Char. 23 of Lattke.
- Sternum of helcium: inconspicuous (0); prominent (1). Char. 25 of Lattke.
- Abdominal III tergosternum fusion: absent (0); present (1). Char. 27 of Lattke.
- Abdominal IV tergosternal fusion: absent (0); present (1). Char. 28 of Lattke.
- Dorsal stridulatory organ: absent (0); present between segments III & IV (1). Char. 30 of Lattke.
- Ventral stridulatory organ: absent (0); present between segments III & IV (1). Char. 31 of Lattke.
- Abdominal segment IV presclerite: separated from rest of segment by a constriction (0); thickened as a distinct collar (1). Char. 32 of Lattke.
- Postpetiolar process: with a vertical anterior face and a sharp ventral edge which curves concavely posterad to join the rest of the gaster (0); with a vertical anterior face that forms an acute angle with the ventral border (1); process made up of low carina, anterior face of second abdominal segment forms a right angle with its ventral border (2); projects anteriorly as a shelf (3); absent (4). Char. 33 of Lattke.
- Jugal lobe of hind wing of queen: present (0); absent (1). Char. 34 of Lattke.
- Curvature of the gaster: absent (0); present (1). Char. 35 of Lattke, modified as described above.
- Lateral hypopygidial margins: without stout setae (0); with stout setae (1). Char. 36 of Lattke.
- Antennal sockets: inclined to almost vertical (0); horizontal (1). After Bolton (1994).
- Antennal sockets: concealed in full face view (0); exposed in full face view (1). After Bolton (1994).
- Clypeus: broad from front to back, antennal sockets far from anterior margin of head (0); reduced, antennal sockets almost reaching anterior margin of head (1). After Bolton (1994).