

- true maximum; excavations of hind vertex and/or clypeus reduce CL.
- CW Maximum cephalic width; the maximum in *Cardiocondyla* is found usually across and including the eyes, exceptionally posterior of the eyes.
- CS Cephalic size; the arithmetic mean of CL and CW, used as a less variable indicator of body size.
- dFOV Mean inner diameter of foveolae or mesh-like surface structures on vertex at about half way between the median line of head and the inner eye margin; these structures are either real foveolae or meshes of a reticulum and usually have the base of a decumbent pubescence hair in their centre. In species whose foveolae or mesh-like structures are reduced (e.g., in the *C. stambuloffii* group) the mean diameter of the small punctures or tubercles at hair bases is measured as dFOV. At least six measurements are averaged. Use magnifications  $\geq 250\times$  and light diffusers to suppress irritating reflections.
- EYE Eye-size: the arithmetic mean of the large (EL) and small diameter (EW).
- MpGr Depth of metanotal groove or depression, measured from the tangent connecting the dorsalmost points of promesonotum and propodeum.
- PEH Maximum petiole height; the straight section of ventral petiolar profile at node level is the reference line perpendicular to which the maximum height of petiole node is measured at node level.
- PEL Diagonal maximum length of petiole in lateral view, measured from anterior corner of subpetiolar process to dorsocaudal corner of caudal cylinder.
- PEW Maximum width of petiole.
- PLG Mean length of pubescence hairs on dorsum of first gaster tergite as arithmetic mean of 6 measurements at least. Use magnifications  $> 250\times$  and light diffusers to suppress irritating reflections.
- PPH Maximum postpetiole height; the lateral suture of dorsal and ventral sclerites is the reference line perpendicular to which the maximum height of postpetiole is measured.
- PPW Maximum width of postpetiole.
- PoOc Postocular distance; use a cross-scaled ocular micrometer and adjust the head to the measuring position of CL. Caudal measuring point: median occipital margin; frontal measuring point: median head at level of posterior eye margin. Note that many heads are asymmetric; therefore average the left and right postocular distance.
- SL Maximum straight line length of scape excluding the articular condyle given as the arithmetic mean of both scapes.
- SP Maximum length of propodeal spines; measured in dorsofrontal view along the long axis of the spine, from spine tip to a line, orthogonal to the long axis, that touches the bottom of the interspinous meniscus. Left and right spine lengths are averaged. This mode of measuring is less ambiguous than other methods and yields higher spine length values in species with reduced spines.
- sqPDG Square root of pubescence distance on dorsum of first gaster tergite; the number of pubescence hairs  $n$  crossing a transverse measuring line of length  $L$  is counted; hairs just touching the line are counted

as 0.5. The pubescence distance PDG is then given by  $L/n$ . In order to normalise the positively skewed distributions, the square root of PDG is calculated. Exact counts are promoted by clean surfaces and flat, reflection-reduced illumination directed slightly skew to the axis of the pubescence hairs. Counting is performed at a magnification of  $320\times$ . Tergite pubescence is easily torn-off in *Cardiocondyla*. An effort should be made to evaluate undamaged surface spots. In specimens with mostly removed pubescence, PDG can be calculated from the mean distance of hair base pits (BD) and PLG using the formula  $PDG = BD^2/PLG$ .

### Canonical discriminant analysis

A canonical discriminant analysis (DA) was performed using the SPSS 10.0 statistical package for the whole *C. nuda* group based on sample means, and for the species pair *C. nuda* and *C. atalanta* based on individual workers. All characters passed the tolerance test in a DA to the level of 0.001 as implemented by SPSS both when calculated as primary (crude) or as indexed data. After running a "Leave-One-Out Cross-Validation" analysis (LOOCV, LACHENBRUCH & MICKEY 1968, LESAFFRE & al. 1989), the performance / reliability of a DA was assessed by the degree of coincidence of *a-priori*- and *a-posteriori*-hypotheses (error rate) and by a statistics of *a-posteriori*-probabilities.

### Material

The detailed data on field samples are arranged as follows: locality, collecting date, geographical coordinates in decimal format [in square brackets]. In samples without exact collecting dates available, names of collectors are given to allow an approximate estimation of the collecting period. A detailed account of the samples is not given for *C. mauritanica* and the *C. kagutsuchi* complex because these species are only marginally treated in this paper.

### *Cardiocondyla atalanta*

Twenty-eight samples with 48 workers in normal print are the basis of the morphological data sets. In further five samples marked with "\*\*\*", it was not possible to investigate the full character set. These samples could be determined based on PLG and sqPDF and are included in the distribution map.

**Australia:** Alice Springs: Kunoth Polk (leg. Greenslade, No 22110174) [23.51° S, 133.59° E]; Alice Springs: Kunoth Polk (leg. Greenslade, No 24110174) [23.51° S, 133.59° E]; Alton Downs, Birdsville - 48 km SW, 19.IX.1972 [26.28° S, 139.10° E]; Ayers Rock, 29.X.1981 [25.35° S, 131.03° E]; Belanglo State Forest, 16.II.1991 [34.53° S, 150.25° E]; Black Mountain, II.1997 [35.28° S, 149.09° E]; Broken Hill, Parkland, 18.V.1971 [31.96° S, 141.46° E]; Chilcott Islands, 8.IX.1967 [16.25° S, 150.00° E]; Chilcott Islands, 8.IX.1967 [16.95° S, 149.91° E]; Coongie - 25 km S, VIII.1975 [27.50° S, 140.00° E]; Cunnamulla, 17.IX.1974 [28.07° S, 145.67° E]; Derby-City, X.1982 [17.31° S, 123.62° E]; Flinders Ranges, 6.I.1999 [31.37° S, 138.63° E]; Flinders Ranges: Elatina Hut - 1 km NW (leg. Greenslade) [31.35° S, 138.63° E]; Flinders Ranges: Westwloona - 14 km WSW (leg. Greenslade) [31.50° S, 138.50° E]; Fowlers Gap, 19.II.1979 [31.02° S, 146.60° E]; Kimberley district (leg. Mjöberg), holotype *C. atalanta* [17.4° S, 126.6° E]; Lake