



Fig. 1. Allometric regression of funicular index on head length for workers of *Plectroctena mandibularis* (□) and *P. conjugata* (■). $R^2 = 0.69$.

Table 2. Pearson's correlations of the first two components of a principal component analysis of worker morphology with each of the morphometric variables and with the funicular index for workers of *Plectroctena mandibularis* and *P. conjugata*.

| Variable | PC1 | r_1 | $P(r_1 = 0)$ | PC2 | r_2 | $P(r_2 = 0)$ |
|--|-------|--------|--------------|--------|---------|--------------|
| $\text{Log}_{10}(\text{head length})$ | 0.365 | 0.9863 | 0.0000 | -0.048 | -0.0227 | 0.7621 |
| $\text{Log}_{10}(\text{mandible length})$ | 0.358 | 0.9686 | 0.0000 | -0.147 | -0.0703 | 0.3484 |
| $\text{Log}_{10}(\text{scape length})$ | 0.360 | 0.9742 | 0.0000 | -0.048 | -0.0232 | 0.7575 |
| $\text{Log}_{10}(\text{eye length})$ | 0.333 | 0.9013 | 0.0000 | 0.891 | 0.4257 | 0.0000 |
| $\text{Log}_{10}(\text{petiole length})$ | 0.357 | 0.9638 | 0.0000 | 0.017 | 0.0082 | 0.9134 |
| $\text{Log}_{10}(\text{dorsal petiole width})$ | 0.360 | 0.9723 | 0.0000 | -0.030 | -0.0141 | 0.8505 |
| $\text{Log}_{10}(\text{funicular segment length})$ | 0.355 | 0.9605 | 0.0000 | -0.348 | -0.1664 | 0.0256 |
| $\text{Log}_{10}(\text{funicular segment width})$ | 0.338 | 0.9146 | 0.0000 | -0.240 | -0.1147 | 0.1254 |
| Funicular index | | 0.8486 | 0.0000 | | -0.107 | 0.0435 |

Principal component analysis carried out on the measurements of 180 workers showed only one significant axis ($E_1 = 7.3$; $E_2 = 0.2$), which summarized 91.3 % of the variation. The second axis explained only a further 2.85 % of the variance and failed to separate the taxa (Fig. 2). The separation of the traditional taxa along the first axis was quite marked, although discrete groups were not formed (Fig. 2). The component weights of the first axis (Table 2) were all similar, and correlated highly and significantly with every original variable (Table 2). Only eye length and funicular segment length were significantly, but weakly, correlated with the second component (Table 2). Funicular

index was significantly correlated with both components, although the degree of correlation with the second component was poor, and its correlation with the first component was weaker than that of the original variables.

In morphometric studies, the first axis of a principal component analysis of log-transformed data is generally an expression of size, and the second axis can be interpreted as a size-free expression of shape if all the original variables show similar, high correlations with the component scores (Bookstein 1989). Since they do so in this study (Table 2), the second axis suggests that workers of the two taxa are the same shape.