

## Species Complexes

Greenslade and Halliday (1982) proposed three complexes within the *I. purpureus* group. These complexes (then called 'groups') were found to be useful in classifying these ants and are utilised, with slight modification, in this study. An additional complex is here proposed for two species not considered by Greenslade and Halliday (1982). Diagnosis and composition of these complexes are as follows.

*bigi* complex: eyes very large,  $EL > 0.50$  mm,  $REL > 0.27$ ; posterior region of pronotum (immediately anterior of the pro-mesonotal suture) in profile rising above the mesonotum in a broad, uniform, weakly convex arch. Included species: *I. bigi*, *I. variscapus*.

*purpureus* complex: lateral and/or dorsal regions of head with purple or blue, but never green, iridescence; eyes normal sized,  $EL < 0.45$  mm,  $REL < 0.23$ ; posterior region of pronotum (immediately anterior of the pro-mesonotal suture) in profile rising above the mesonotum in a broad, uniform, weakly convex arch. Included species: *I. greensladei*, *I. lividus*, *I. purpureus*, *I. spadius*.

*sanguineus* complex: lateral and/or dorsal regions of head with purple or blue (often reduced and nearly absent), but never green, iridescence; eyes normal sized,  $EL < 0.42$  mm,  $REL < 0.25$ ; posterior region of pronotum (immediately anterior of the pro-mesonotal suture) in profile rising above the mesonotum in a short, strongly convex arch. Included species: *I. reburrus*, *I. sanguineus*, *I. spodipilus*.

*viridiaeneus* complex: lateral and/or dorsal regions of head with at least weak green iridescence (often with purple iridescence as well); eyes normal sized,  $EL < 0.42$  mm,  $REL < 0.23$ . Included species: *I. galbanus*, *I. viridiaeneus*.

## Methods and Abbreviations

The present study utilises primarily morphological characters of workers to diagnose species within the *I. purpureus* group. Biochemical and molecular characters are not utilised. Characters that may present difficulties in interpretation or that require additional explanation are discussed below.

### Colour

In these ants, colour has two components: a background pigment colour and a superimposed iridescence which gives a metallic sheen or reflectance. The light source used when evaluating these colours is important, with fluorescent, solar and incandescent light giving slightly different results. In this study, all observations were made with a fibre-optic ring light using an incandescent bulb.

Unfortunately, colour may fade with age, especially if material is exposed to strong light for extended periods while stored in alcohol. This phenomenon is aggravated if plant material or soil is stored with the ants. The background colour is most susceptible, although the iridescence can be affected as well. Thus older material may differ significantly from fresh or living material and species-level identifications may not be possible.

### Male Genitalia

Male specimens are available for eight of the species recognised in this study (all except *I. bigi*, *I. spodipilus*, and *I. variscapus*). Significant variation was found in the shape of the distal digitus and in the region between the cuspis and the base of the digitus. In all known species except *I. spadius* the distal terminus of the digitus is down-turned and narrowed to a sharp point (Fig. 6). In *I. spadius* the distal terminus is distinctly up-turned and broadly rounded (Fig. 7). The cuspis is broadly rounded and connected to the basal digitus in a gentle sinuate curve (Fig. 6) in all species except members of the *sanguineus* complex. In the *sanguineus* complex (*I. spodipilus* not examined), the cuspis is angular and connected to the basal digitus through a strongly concave arch (Fig. 8). Other regions of the genitalia are similar in all species examined and provide no characters to discriminate species.

### Pilosity

Significant variation occurs in the appressed pubescence on the lateral regions of the first gastral segment (near the ventral margin of the sclerite), and in the colour of the erect setae of the mesosomal dorsum. During this study, it was found that the gastral pubescence is best viewed obliquely to the surface. Relative abundance of the pubescence is compared with dorsal regions. The colour of the erect mesosomal setae is determined while viewing against nearby body integument and not over the light source or open space. Improper viewing may result in setae considered 'dark' in this study being