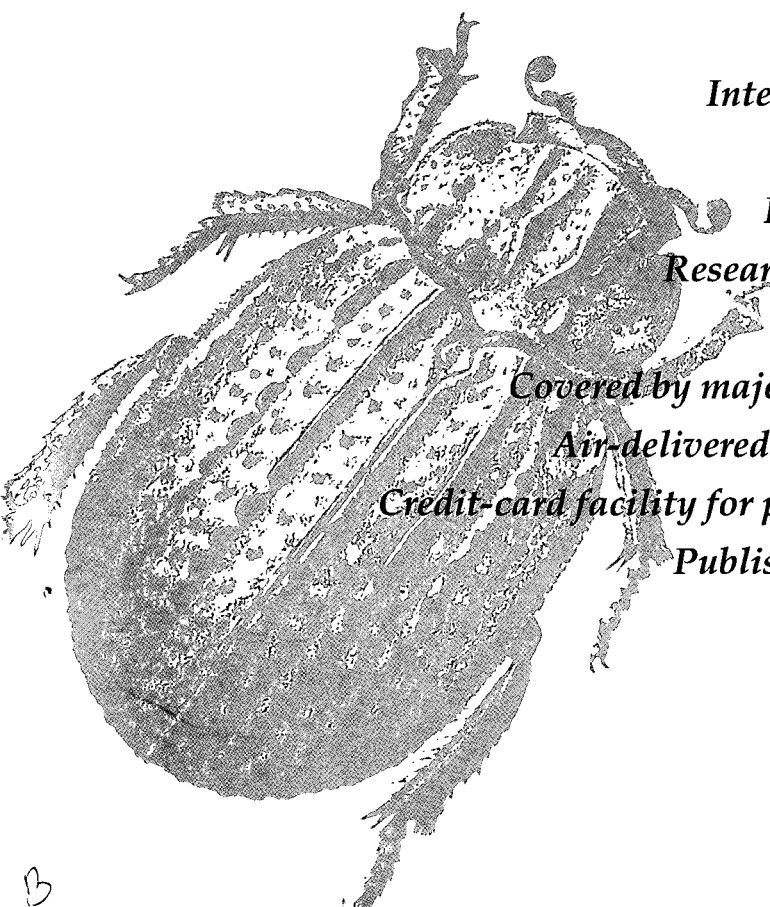


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## Revision of the *Iridomyrmex purpureus* Species-group (Hymenoptera : Formicidae)

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### Abstract

The ants of the *purpureus* group of the dolichoderine genus *Iridomyrmex* are revised. The group is defined for the first time and divided into four complexes (*bigi*, *purpureus*, *sanguineus*, *viridiaeneus*). Three of the previously known taxa, *I. purpureus purpureus* (F. Smith), *I. purpureus sanguineus* Forel and *I. purpureus viridiaeneus* Viehmeyer, are redescribed and the last two are raised to full species, while *I. detectus castrae* Viehmeyer is synonymised under *I. purpureus*. Additionally, eight new species (*I. bigi*, *I. galbanus*, *I. greensladei*, *I. lividus*, *I. reburrus*, *I. spadius*, *I. spodipilus*, *I. variscapus*) are described. A key for the separation of workers is presented, and known biologies and distributions are summarised.

### Introduction

The dolichoderine ant genus *Iridomyrmex* occurs from India east to China and south to Australia and New Caledonia (Shattuck 1992a). Most species occur in Australia, where they are especially common and ecologically important in arid and semiarid regions. The *I. purpureus* species-group, commonly referred to as the 'meat ants', forms one of the most prominent elements within *Iridomyrmex*. Most species of the group form large nests, often cleared of vegetation and covered with small pebbles, and forage in large numbers over a wide area around the nest. They are generally aggressive when disturbed and their presence in an area is easily detected. Species of the *Iridomyrmex purpureus* group have been found to be ecologically important components of all but the coldest and wettest terrestrial habitats (Greenslade 1976a), being dominant members of the ground foraging community and having a strong influence on the invertebrate community with which they interact.

The abundance of *I. purpureus* group individuals, combined with the group's ecological importance, has led to many biological and ecological studies. In these studies a wide range of topics have been investigated, including analysis of chemical components (Brophy *et al.* 1983; Cavill *et al.* 1984), community structure (Greenslade 1976a, 1987; Greenslade and Greenslade 1973), control (Greaves 1973), foraging behaviour (Doube 1967; Greenaway 1981; McIver 1991; Mobbs *et al.* 1978), genetic relationships (Halliday 1975, 1979, 1981), influence of light and humidity (Ettershank 1978; Nel 1965, 1967), karyotypes (Crozier 1968a, 1968b), nesting biology (Ettershank 1968, 1971), relation to soils (Greenslade 1974b, 1974c, 1976b; Greenslade and Thompson 1981), ritualised fighting (Ettershank and Ettershank 1982), social organisation (Halliday 1983; Hölldobler and Carlin 1985), species distributions (Greaves 1971; Greenslade 1974a, 1974b, 1976b; Greenslade and Halliday 1983), general biology/ecology (Greaves and Hughes 1974; Greenslade 1970, 1975a, 1975b), as well as an overview of the group (Greenslade and Halliday 1982). These studies combine to provide extensive details about most aspects of the biology and ecology of these ants.

There have been few formal taxonomic proposals for the classification of these ants. Earlier studies proposed numerous 'forms' to describe the apparent species discovered during various investigations, but no formal species descriptions were given. A synthesis of this accumulated information was presented in an overview of the group by Greenslade and Halliday (1982). Thus, the *I. purpureus* group at the start of this study consisted of one valid species with three subspecies, and seven 'forms' which were considered to represent undescribed but distinct species.

In the present study, the available biological information is combined with a morphology-based taxonomic study to develop formal descriptions and diagnoses for all species within the group, as well as to define the species group for the first time. This analysis has resulted in the recognition of nine of the 10 taxa listed by Greenslade and Halliday (1982), as well as an additional two species.

It became apparent early during the present study that even rigorous taxonomic methods involving detailed morphometric analysis and examination of pilosity and sculpturing would contribute little to our understanding of these ants. Even male genitalia, thought to be of value in separating species (Greenslade and Halliday 1982) proved to be of limited use, allowing recognition of only one species (*I. spadius*) and one complex (*I. sanguineus*). Earlier work undertaken using extensive field observations of microhabitat preferences, behavioural interactions and, to a lesser extent, nest structure, provided the best estimate of the actual biological species occurring in nature (see below). The most reliable characters for recognition of forms found during these field studies were a combination of worker integument colour and iridescence. These characters allow the recognition of the majority of forms, and are currently the best available for discriminating these species.

#### Current Taxonomic Status of the *Iridomyrmex purpureus* Group

The genus *Iridomyrmex* was established by Mayr (1862) for two species, *I. purpureus* (Smith) and *I. nitidus*. Over the next 130 years, an additional 150 taxa were added, but no attempt was made to revise or review the genus, in whole or in part. Documented problems with the species composition of *Iridomyrmex* (Brown 1958, 1977; Crozier 1968a) led to a revision and redefinition of *Iridomyrmex* and related genera (Shattuck 1992a). Under this new concept, *Iridomyrmex* was reduced to about 62 described taxa, including the *I. purpureus* group.

The current taxonomic understanding of the *I. purpureus* group is based largely on the work of Greenslade and Halliday. Their research has consisted of ecological studies involving interspecific interactions and distributional patterns (both geographical and in relation to habitat), and analysis of biochemical characters. The results of these studies are discussed below.

Greenslade (1974a, 1974c) was the first to recognise that the *I. purpureus* group consisted of more than the long-recognised forms *purpureus*, *viridiaeneus* and *sanguineus* (e.g. Greaves 1971). While conducting detailed studies of distribution, microhabitat preferences and behavioural interactions, he discovered that 'viridiaeneus' included two distinct forms, *viridiaeneus* strict sense and the 'blue form' (= *lividus* of the present study). He did not, however, propose formal taxonomic recognition of these taxa but, rather, treated them simply as 'forms'. In an earlier study, Greenslade (1970) had examined these forms, noting differences in nest structure, but treated them as representing the same species, *I. viridiaeneus*.

The distinctness of these three forms was examined by Halliday (1975) using comparisons of amylase enzyme allele frequencies. He found that *lividus* differed significantly in allele frequencies from forms *viridiaeneus* and *purpureus* and concluded that *lividus* was genetically isolated from them. However, in the same study, the forms *viridiaeneus* and *purpureus* were found to be very similar and not distinguishable using this enzyme system.

During this period, Greenslade continued his studies of the *I. purpureus* group and expanded the number of recognised forms to include the following: dark yellow or DY (= *spadius*), orange or O (= *spodipilus*), *purpureus*, *sanguineus*, small purple or SP (= *greensladei*), *viridiaeneus*, and yellow or Y (= *galbanus*). This system was summarised and presented during a symposium in 1977 (published as Greenslade and Greenslade 1984).

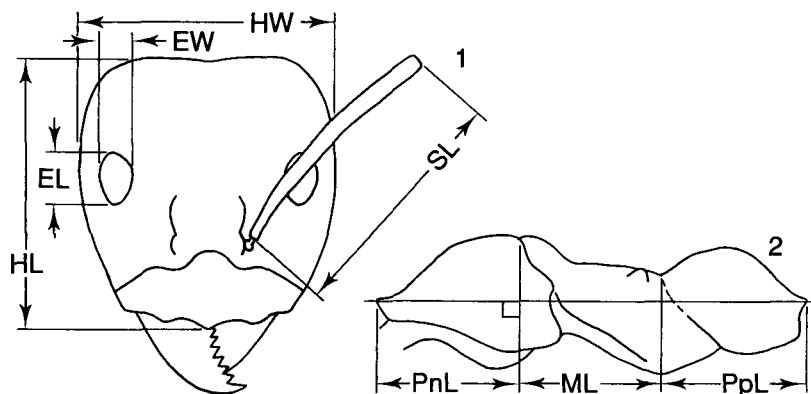
Halliday (1979, 1981) investigated the enzymes esterase and amylase within the *I. purpureus* group. His study using esterase allele frequencies found that the forms B (= *lividus*) and P (= *purpureus*) were diagnosable while the forms SP (= *greensladei*), V (= *viridiaeneus*) and Y (= *galbanus*) were not. Amylase, on the other hand, suggested that the species formed two groups: P (= *purpureus*) + V (= *viridiaeneus*) + Y (= *galbanus*) and B (= *lividus*) + SP (= *greensladei*). The members of each group could be separated from members of the other group on the basis of allele frequencies, but forms could not be distinguished from other members of the same group. Additionally, amylase showed that variation between the colour forms was lower than between most other species of Hymenoptera, while variation within colour forms was typical of other species in the order. These results suggest that (i) while these forms are good biological species, they are genetically very similar; and (ii) biochemical characters allow the recognition of some species but other species are so similar that they are not diagnosable using these characters.

Finally, Greenslade and Halliday (1982) examined the entire *I. purpureus* group, resulting in the recognition of two additional forms, K (= *reburus*) and SB (here considered conspecific with *viridiaeneus*). Descriptions of each form were limited to colour patterns, although it was stated that male genitalia were also of use in separating forms. Distributions were given for each form, and the forms were grouped into complexes ('groups'). As in earlier studies, however, no formal species descriptions were given. This action is not surprising given the very similar gene frequencies found by Halliday and the morphological conservatism found during the present work.

### Diagnosis of *Iridomyrmex* and the *I. purpureus* Group

Workers of *Iridomyrmex* can be recognised by the relatively posterior placement of the compound eyes, the anterolateral clypeal margin posterior to the mediolateral region and separated from it by a shoulder, and a central projection in the anteromedial clypeal margin, either pointed or rounded (sometimes only feebly projecting) (Shattuck 1992a, 1992b). Workers of the *I. purpureus* group can be diagnosed by the presence of erect setae on all surfaces of the tibiae and generally all surfaces of the scapes (sometimes limited to the outer scape surface only), relatively large size (head length greater than 1.45 mm, most often greater than 1.65 mm), a scape index less than 1.10 (Fig. 3), and a fairly broad head (cephalic index greater than 0.85, most often greater than 0.90). Additionally, *I. purpureus* group species are generally reddish with purple, green or blue iridescence.

*Iridomyrmex purpureus* group species are most similar to members of the *I. discors* group in that smaller *I. purpureus* group individuals are approximately the same overall size as larger *I. discors* group individuals, the colour is about the same, and species of both



Figs 1, 2. Measurements examined during this study. 1, head measurements (head positioned in full face view); 2, mesosomal measurements.

groups have erect setae on the tibiae and scapes. These groups differ, however, in relative scape length (Fig. 3), the shape of the mesonotum (in the *I. purpureus* group, divided into an anterior convex section separated from the posterior flat region by a distinct concave arch or angle; in the *I. discors* group, a smooth, uniform surface grading from convex anteriorly to flat posteriorly, without a concave arch or angle between them), and the pronotal pilosity (relatively shorter, straighter and slightly thicker in the *I. purpureus* group; relatively longer, gently arched posteriorly, and slightly thinner in the *I. discors* group). Additionally, the smaller workers of the *I. purpureus* group are most commonly *I. reburus* or *I. sanguineus*, both of which have the posterior region of the pronotum strongly arched (similar to Fig. 4). *I. discors* group workers of approximately the same overall size always have the posterior region of the pronotum in the form of a gentle curve which occupies more than half the length of the pronotum (similar to Fig. 5). These characters combine to allow placement of specimens into the appropriate group without difficulty.

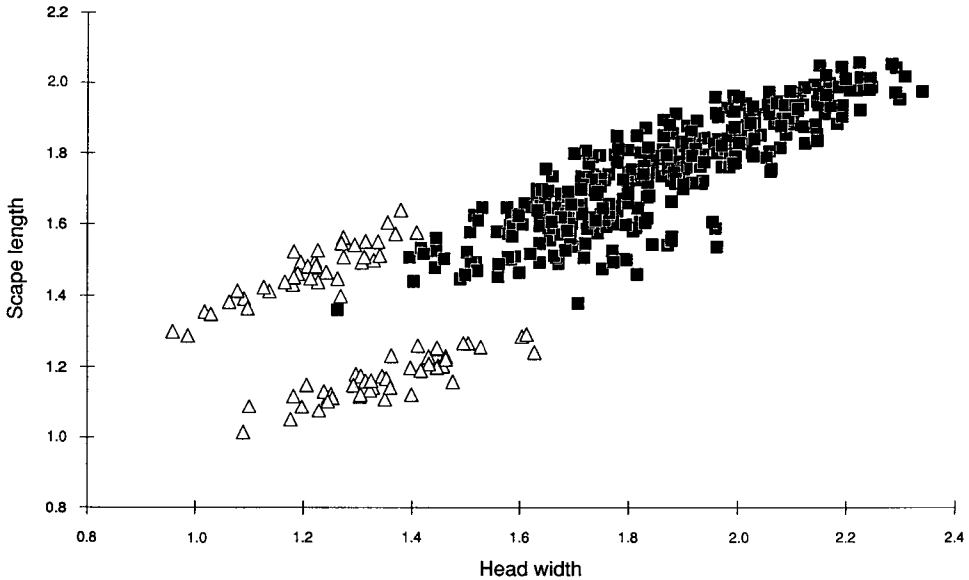
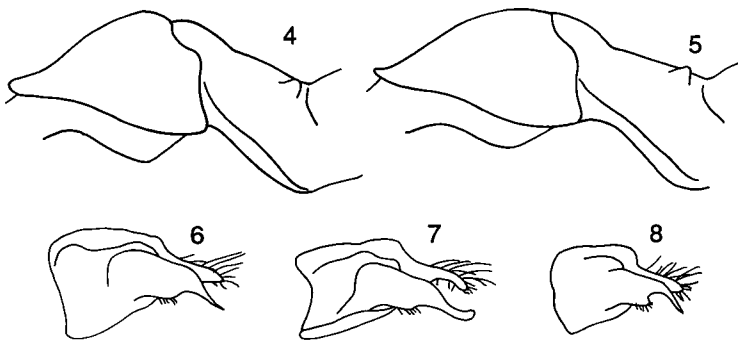


Fig. 3. Distribution of scape length and head width measurements (in millimetres) for species of the *I. purpureus* (■,  $n=349$ ) and *I. discors* (△,  $n=89$ ) groups.



Figs 4-8. 4, anterior mesosoma of *I. sanguineus*; 5, anterior mesosoma of *I. purpureus*; 6, medial view of male genitalia (volsella and paramere) of *I. purpureus*; 7, medial view of male genitalia (volsella and paramere) of *I. spadius*; 8, medial view of male genitalia (volsella and paramere) of *I. reburus*.

## 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

determined as 'pale' or 'transparent' because of light coming through the seta rather than reflected from it.

### *Morphometric Characters*

Size and shape characters were quantified and are reported as lengths or indices. Measurements were made with a stereo microscope using a dual-axis stage micrometer wired to digital readouts. All measurements were recorded in thousandths of millimetres, but are expressed here to the nearest hundredth. All head measurements (EL, EW, HL, HW) were taken in full-face (dorsal) view without moving the head between measurements (Fig. 1). Longitudinal mesosomal length measurements (PnL, ML, PpL) were taken in lateral view, parallel to a line ('measuring axis') drawn between the anterior-most point of the pronotal collar and the posterior-most point of the propodeal process dorsal of the petiolar insertion (Fig. 2).

- CI Cephalic index: HW/HL.
- EL Maximum eye length measured in full face view (Fig. 1).
- EW Maximum eye width measured in full face view (Fig. 1).
- HL Maximum head length in full face view, measured from the anterior-most point of the clypeal margin to the midpoint of a line drawn across the posterior margin of the head (Fig. 1).
- HW Maximum head width in full face view, excluding eyes in workers and queens, including eyes in males (Fig. 1).
- ML Mesonotal length measured from the pronotal-mesonotal suture to the metanotal groove parallel to the measuring axis (see above and Fig. 2).
- PnL Pronotal length measured from the anterior edge of the pronotal collar to the pronotal-mesonotal suture parallel to the measuring axis (see above and Fig. 2).
- PpL Propodeal length measured from the metanotal groove to the posterior-most point of the petiolar insertion parallel to the measuring axis (see above and Fig. 2).
- REL Relative eye length: EL/HW.
- SI Scape index: SL/HW.
- SL Length of the scape (first antennal segment) excluding the basal radicle (Fig. 1).

Abbreviations used are as follows:

*Collectors*: BBL, B. B. Lowery; CAK, C. A. Kirkby; JED, J. E. Dowse; JEF, J. E. Feehan; PJMG, P. J. M. Greenslade; RSM, R. S. McInnes; RWT, Robert W. Taylor; TG, T. Greaves.

*Museums*: ANIC, Australian National Insect Collection, Canberra, A.C.T.; BMNH, The Natural History Museum, London, U.K.; LACM, Los Angeles County Museum, Los Angeles, California, U.S.A.; MCZC, Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, U.S.A.; MHNG, Muséum d'Histoire Naturelle, Geneva, Switzerland; MVMA, Museum of Victoria, Abbotsford, Victoria; NHMB, Naturhistorisches Museum, Basel, Switzerland; USNM, United States National Museum of Natural History, Washington, D.C., U.S.A.

### **Key to Species of the *Iridomyrmex purpureus* Group**

#### **Based on workers**

1. Eyes large (EL < 0.48 mm, REL < 0.27); scapes with erect setae primarily on the outer surfaces only ..... 2
1. Eyes small (EL < 0.48 mm, REL < 0.27); scapes with erect setae on all surfaces ..... 3
2. Scapes distinctly bicoloured, with the lateral surfaces reddish brown to dark reddish brown and the central region yellowish red; head and mesosoma distinctly lighter in colour than the gaster ..... *I. variscapus*, sp. nov.
2. Scapes weakly bicoloured, with the lateral surfaces dark reddish brown and the central region reddish brown; head and mesosoma about the same colour as the gaster ..... *I. bigi*, sp. nov.
3. Lateral and/or dorsal regions of head with at least weak green iridescence (often with purple iridescence as well) ..... 4
3. Lateral and/or dorsal regions of head with purple or blue, but never green, iridescence .... 5
4. Head colour reddish brown, generally similar in colour to mesosoma, occasionally slightly lighter in colour than the mesosoma ..... *I. viridiaeneus* Viehmeyer
4. Head colour yellowish red, always distinctly lighter in colour than the mesosoma ..... *I. galbanus*, sp. nov.

5. Posterior region of pronotum (immediately anterior of the pro-mesonotal suture) in profile rising above the mesonotum in a short, strongly convex arch (Fig. 4); lateral regions of head often with at most very weak purplish iridescence ..... 6
- Posterior region of pronotum (immediately anterior of the pro-mesonotal suture) in profile rising above the mesonotum in a broad, uniform, weakly convex arch (Fig. 5); lateral regions of head with well developed iridescence (usually purple or blue) ..... 8
6. Erect mesosomal setae pale; posterolateral region of first gastral tergite with less than 6 appressed setae; known only from New South Wales, southern Queensland and South Australia ..... *I. spodipilus*, sp. nov.
- Erect mesosomal setae dark (sometimes superficially appearing pale when viewed against a lightly-coloured background); posterolateral region of first gastral tergite with more than 8 appressed setae; known only from northern Australia north of about 24°N. .... 7
7. In full face view, lateral margin of head with more than about 4 erect or suberect setae, and often with more than 10 ..... *I. reburrus*, sp. nov.
- In full face view, lateral margin of head generally without erect or suberect setae, but always with less than 5 ..... *I. sanguineus* Forel
8. Head light yellow-red, distinctly lighter in colour than the pronotum; known only from Queensland north of approximately Rolleston ..... *I. spadius*, sp. nov.
- Head reddish brown, at most only slightly lighter in colour than the pronotum; widespread in southern Australia with one species in southern Queensland ..... 9
9. Head and pronotum (or sometimes head only) lighter in colour than mesothorax ..... *I. purpureus* (Smith)
- Head and pronotum similar in colour to mesothorax ..... 10
10. Head and mesosoma dark reddish brown to black; head often with strong blue iridescence ..... *I. lividus*, sp. nov.
- Head and mesosoma reddish brown; head with purple iridescence (some lightly coloured specimens of *I. lividus* will key here, see Diagnosis for discussion of these specimens) ..... *I. greenladei*, sp. nov.

***Iridomyrmex bigi*, sp. nov.**

(Fig. 9)

*Iridomyrmex* sp. 24 (ANIC).—Halliday, 1978: 159.

*Material Examined*

**Holotype.** Worker, Northern Territory, Henbury Crater, 24°35'S., 133°09'E., 22.i.1991, S. O. Shattuck (SOSC #2097) (ANIC, type no. 7969).

**Paratypes.** 19 workers, same data as holotype; 15 workers, same data as holotype except SOSC #2101 (ANIC, BMNH); 17 workers, same data as holotype except SOSC #2104 (ANIC, MCZC).

**Other material** (in ANIC). **Queensland:** Millungera Station (TG); 16 miles SSW. of Gregory Downs Homestead (JED); 6 miles WNW. of Gilliat (JED). **Western Australia:** Cue (C. T. Mercovich); Meekatharra, golf course (C. T. Mercovich).

*Worker Diagnosis*

Eyes large (EL > 0.50 mm, REL > 0.27); mesosoma reddish brown; scapes only very weakly bicoloured.

*Description*

Iridescence between compound eyes purple or bluish purple and on lateral region of head (between compound eye and insertion of mandible) absent to weak purple. Pigment colour of mesosoma, coxae, legs and petiole reddish brown; head similar to mesosoma or slightly lighter in colour; lateral region of second gastral tergite shiny and without or with very weak green iridescence. Head pilosity (in full face view) present on occipital margin and with 2–6 setae near mandibular insertion. Ocelli present as either distinct cells or slight cuticular depressions. Ventrolateral pronotum with at most four erect setae. Mesosomal setae pale. Pilosity on first gastral tergite reduced. Anterodorsal region of propodeum flat.



### Measurements

*Holotype.* CI 1·03; EL 0·60; EW 0·33; HL 1·82; HW 1·88; ML 0·96; PnL 0·95; PpL 0·89; REL 0·32; SI 0·83; SL 1·56.

*Worker* ( $n=10$ ). CI 0·94–1·05; EL 0·56–0·62; EW 0·28–0·34; HL 1·60–1·91; HW 1·50–1·96; ML 0·82–1·00; PnL 0·82–0·99; PpL 0·84–0·94; REL 0·30–0·37; SI 0·78–0·97; SL 1·46–1·54.

### Comments

*Iridomyrmex bigi* and *I. variscapus* are easily separated from other species of the *I. purpureus* group on the basis of the large compound eyes. *Iridomyrmex bigi* is separated from *I. variscapus* by its much darker mesosomal colour and uniformly coloured antennal scapes.

*Iridomyrmex bigi* is apparently uncommon as it has been collected only six times ranging from Western Australia to Queensland (Fig. 9). The only known biological notes were made during the collection of the type series from a site south of Alice Springs, Northern Territory. The area where the nests were found was an open grassland with scattered mulga. The nests were fairly common, with about 15–20 being observed in an area approximately 200 m by 400 m. All nests were similar in structure, being low, bare mounds of compacted soil about 25 cm in diameter and about 3–4 cm high, cleared of vegetation, loose stones and soil. Each nest had a single entrance located at the centre of the mound. Active foragers were observed on and around nest mounds in the morning before about 0900 hours. No foraging activity was seen later in the day. During late morning, after about 1000 hours, several nests were found with the entrance holes blocked with a solid plug of earth. Whether these nests had been active earlier in the morning or were inactive could not be determined. It is assumed that the large eyes found in *I. bigi* and *I. variscapus* are adaptations for nocturnal or crepuscular foraging activity. This assumption is supported by the observation that foraging activity in *I. bigi* decreased markedly during mid-morning. Unfortunately, nocturnal foraging has not been directly observed in either of these species.

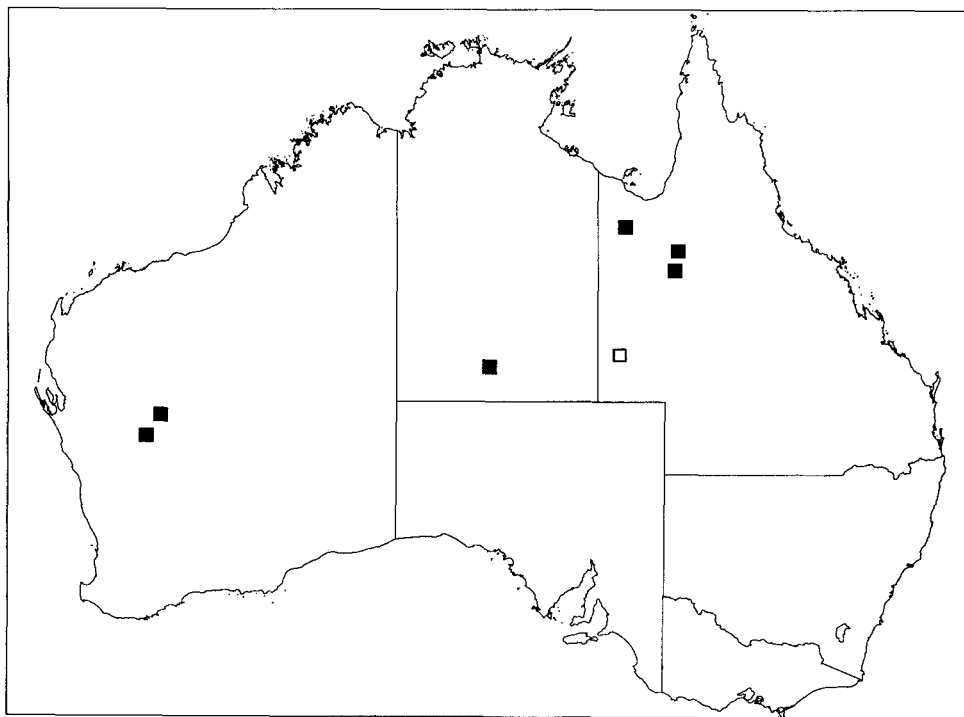


Fig. 9. Distribution of *I. bigi* (■) and *I. variscapus* (□) specimens examined during this study.

### Etymology

The specific name refers to the big eyes found in this species, and is here considered to be a noun in apposition.

### *Iridomyrmex galbanus*, sp. nov.

(Fig. 10)

*Iridomyrmex purpureus* form 'yellow' (or 'Y').—Halliday, 1979: 57.

### Material Examined

**Holotype.** Worker, South Australia, Minnipa [c. 32°51'S., 135°09'E.], 23.x.1958, E. F. Riek (ANIC, type no. 7970).

**Paratypes.** Nine workers, same data as holotype (ANIC, BMNH, MCZC).

**Other material** (in ANIC unless otherwise noted). **New South Wales:** Burke (C. Barrett); S. of Ita (PJM). **South Australia:** 1.5 km S. of Waddikee (PJM); 10 km NE. of Chilpuddie (PJM); 10 km SW. of Kimba, Eyre Peninsula (PJM); 10 km W. of Tuckey, Eyre Peninsula (PJM); 12 km E. of Warramboo (PJM); 13 km NE. of Darke Peak, Eyre Peninsula (PJM); 13 miles E. of Lock (TG); 14 km NE. of Kyancutta (PJM); 15 km N. of Darke Peak (PJM); 15 km SE. of Balumbah (PJM); 16 km E. of Warramboo (PJM); 17 km W. of Kimba (PJM); 20 km W. of Balumbah (PJM); 22 km NW. of Kimba (PJM); 25 km W. of Kimba (PJM); 26 km N. of Kimba (PJM); 28 km S. of Kimba (PJM); 2 km NW. of Kyancutta (PJM); 33 km E. of Murdinga, Eyre Peninsula (PJM); 35 km S. of Pinnaroo (PJM); 4 km E. of Moody Vale, Eyre Peninsula (PJM); 4 km N. of Cummins (PJM); 4 km N. of Granite Rocks, nr Minnipa (PJM); 4 km N. of Kyancutta (PJM); 4 km NE. of Nantuma, Eyre Peninsula (PJM); 4 km SE. of Mt Hill (PJM); 5 km N. of Darke Peak, Eyre Peninsula (PJM); 5 km NW. of Granite Rocks, nr Minnipa (PJM); 5 km W. of Lamerook (PJM); 7 km S. of Cummins (PJM); 7 miles S. of Kimba (PJM); 88 km W. of Lamerook (PJM); 8 km ENE. of Wharminda (PJM); 8 km S. of Kimba (PJM); Agar's Lake, NW. of Wudinna (PJM); Desert Downs, 10 miles SE. of Keith (R. B. Halliday and PJM); Desert Downs, nr Keith (R. B. Halliday and PJM); E. of Poochera, Eyre Peninsula (K. Casparson); Gawler Ranges (PJM); Granite Rocks, nr Minnipa (PJM); Hincks Cons. Pk, Eyre Peninsula (PJM); Kopi, Eyre Peninsula (PJM); Lamerook (RSM); Lock, Eyre Peninsula (PJM); Randall, Eyre Peninsula (PJM). **Victoria:** Manangatang (R. B. Halliday).

### Worker Diagnosis

Lateral and/or regions of head with at least weak green iridescence (sometimes reduced and nearly absent); head yellowish red, distinctly lighter in colour than the mesosoma.

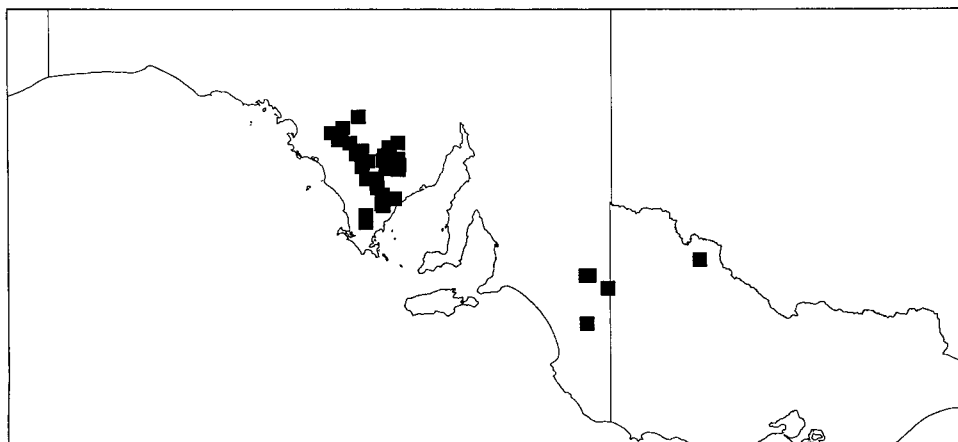


Fig. 10. Distribution of *I. galbanus* specimens examined during this study.

### Description

Iridescence between compound eyes and on lateral region of head (between compound eye and insertion of mandible) weak to strong green, or weak purple. Pigment colour of mesosoma yellowish red to reddish brown; head yellowish red, lighter in colour than the mesosoma; coxae and legs the same colour as, or slightly darker than, the mesosoma; petiole dark reddish brown; lateral region of second gastral tergite shiny and with green and purple iridescence. Head pilosity (in full face view) abundant on occipital margin, and with 4–8 (rarely up to about 12) pale or dark setae near mandibular insertion. Ocelli absent, or present but vestigial. Ventrolateral pronotum with scattered erect setae. Mesosomal setae dark. Pilosity on first gastral tergite abundant, reduced anteriorly. Anterodorsal region of propodeum flat or arched.

### Measurements

*Holotype.* CI 0.92; EL 0.34; EW 0.21; HL 1.93; HW 1.78; ML 1.00; PnL 0.93; PpL 1.01; REL 0.19; SI 1.01; SL 1.80.

*Worker* ( $n = 22$ ). CI 0.90–0.99; EL 0.33–0.40; EW 0.21–0.26; HL 1.84–2.37; HW 1.68–2.31; ML 0.90–1.23; PnL 0.93–1.24; PpL 0.97–1.23; REL 0.17–0.21; SI 0.87–1.03; SL 1.67–2.06.

### Comments

*Iridomyrmex galbanus* appears to be most closely related to *I. viridiaeneus* in that they are the only species in the *I. purpureus* group with green iridescence on the head. They are separable on the basis of the more lightly coloured yellowish red head which is always lighter in colour than the mesosoma in *I. galbanus*, while *I. viridiaeneus* has a reddish brown head which is at most only slightly lighter in colour than the mesosoma.

The presence of *I. galbanus* has been shown to be highly correlated with specific soil types (Greenslade 1987) in South Australia. This specialisation accounts for the limited distribution of *I. galbanus* (Fig. 10) which is allopatric to the main distribution range of *I. viridiaeneus* (Fig. 19)

### Etymology

The specific name, derived from Latin, describes the greenish-yellow body colour.

### *Iridomyrmex greensladei*, sp. nov.

(Fig. 11)

*Iridomyrmex purpureus* form 'small purple' (or 'SP').—Halliday, 1979: 57.

### Material Examined

*Holotype.* Worker, Western Australia, 15 km WSW. of Israelite Bay, 33°41'16"S., 123°43'03"E., 5.iv.1992, S. O. Shattuck (SOSC #2827) (ANIC, type no. 7971).

*Paratypes.* 22 workers, 5 queens and 41 males, same data as holotype (ANIC, BMNH, MCZC).

*Other material* (in ANIC unless otherwise noted). **South Australia:** 100 miles W. of Penong (E. F. Riek); 10 km E. of Paney HS, Gawler Ranges (PJM); 10 km N. of Buckleboo HS (PJM); 10 km NW. of Kimba (PJM); 11 km SE. of Buckleboo HS (PJM); 12.5 km NW. of Kimba (PJM); 120 miles W. of Penong (E. F. Riek); 12 miles E. of Kingoonya (TG); 12 miles E. of Penong (TG); 16 km NNW. of Kimba (PJM); 16 miles NW. of Colona (TG); 17 km NE. of Port Broughton (PJM); 18 miles W. of Penong (TG); 20 km E. of Paney HS, Gawler Ranges (PJM); 20 km S. of Iron Baron (PJM); 22 miles E. of Eucla (TG); 25 miles SW. of Iron Knob (E. F. Riek); 2 km SW. of Tandaie Dam (PJM); 31 miles NW. of Colona (TG); 31 miles SE. of Colona (TG); 35 miles E. of Ceduna (E. F. Riek); 3 km E. of Peterby, Gawler Ranges (PJM); 4 miles SE. of Ceduna (TG); 5 km N. of BM565, 25 km E. of Kimba (PJM); 5 km N. of Kyancutta (PJM); 9 miles S. of Nullarbor HS (TG); Belmonte, SW. of Kimba (PJM); Ceduna (E. F. Riek); Darke Peak, Eyre Peninsula (PJM); Mundoora Cons. Pk (PJM); N. of Buckleboo (PJM); Paney HS, Gawler Ranges (PJM); Port Augusta (RSM); Port Wakefield (G. P. Bogisch) (LACM);

Victoria Desert (PJM); Wudinna (PJM); Yalarna, SE. of Kimba (PJM); nr Minnipa, 8 km E. of Tcharlenlodon Hill (PJM). **Western Australia:** 100 km W. of Coolgardie (PJM); 10 km N. of Norseman (PJM); 10 km N. of Wongan Hills (PJM); 10 km S. of Menzies (PJM); 10 miles SE. of Coolgardie (TG); 10 miles W. of Mullewa (E. F. Riek); 112 km E. of Esperance (PJM); 112 km N. of Esperance (BBL); 11 miles NW. by N. of Norseman, 32°04'S., 121°41'E. (RWT); 13 km SW. of Jerramungup (PJM); 13 miles S. of Bridgetown (PJM); 13 miles SE. of Karonie (RWT); 153 km W. of Coolgardie (PJM); 15 km SE. of Coolgardie (PJM); 15 miles NE. by E. of Norseman, 32°04'S., 122°00'E. (RWT); 15 miles NW. of Mt Arid, 33°49'S., 123°02'E. (RWT); 16 km E. of Pinjarra (PJM); 16 miles S. of Parker Range (TG); 16 miles SW. of Coolgardie, 31°08'S., 120°59'E. (RWT); 17 miles ENE. of Woolgongie (TG); 19 miles NW. of Norseman, 32°01'S., 121°32'E. (RWT); 19 miles SE. by S. of Karonie, 31°12'S., 122°42'E. (RWT); 2 km E. of Balladonia (R. R. Snelling and J. Grey) (LACM); 20 km E. of Corrigin (PJM); 20 km E. of Payne's Find (A. M. and M. J. Douglas); 20 km E. of Southern Cross (PJM); 20 km W. of Corrigin (PJM); 20 miles W. of Payne's Find (J.H.C.); 21 miles NW. by W. of Fraser Range HS, 31°53'S., 122°29'E. (RWT); 21 miles W. of Naretha (TG); 220 km S. of Carnarvon (PJM); 23 miles E. of Pindar (J.H.C.); 23 miles W. of Eucla (TG); 25 km E. of Mingereis (PJM); 26 miles NW. by W. of Fraser Range HS, 31°48'S., 122°27'E. (RWT); 26 miles SSE. of Karonie, 31°19'S., 122°41'E. (RWT); 27 miles NW. by W. of Fraser Range HS, 31°49'S., 122°25'E. (RWT); 28 miles SW. of Balladonia Motel, 32°45'S., 123°33'E. (RWT); 2 miles E. of Zanthus (TG); 2 miles W. of Koonalda HS (TG); 2 miles W. of Payne's Find (J.H.C.); 2 miles WSW. of Ongerup (TG); 30 miles E. of Norseman (E. F. Riek); 33 miles SE. of Karonie, 31°26'S., 122°41'E. (RWT); 35 km N. of Wongan Hills (PJM); 36 miles SE. by E. of Zanthus, 31°29'S., 123°53'E. (RWT); 37 km SW. of Mt Ragged, 33°40'S., 123°11'E. (JEF); 3 km N. of mouth of Thomas R., 33°50'S., 123°01'E. (RWT); 3 miles W. of Karalee (TG); 40 km SE. of Ravensthorpe, 33°39'S., 120°27'E. (RWT); 40 miles E. of Ravensthorpe (E. F. Riek); 46 miles WNW. of Norseman, 31°59'S., 121°02'E. (RWT); 48 miles S. of Parker Range (TG); 49 miles W. of Madura HS (collector unknown); 4 miles E. of Ongerup (TG); 4 miles SE. of Pingrup (TG); 50 km N. of Kalgoorlie (PJM); 50 km W. of Brookton (PJM); 60 miles W. of Coolgardie (E. F. Riek); 63 miles N. of Perth (TG); 65 km S. of Wiluna (PJM); 6 km S. of Mt Ragged, 112 km E. of Esperance (BBL); 6 miles E. of Coonana (RWT); 6 miles SSE. of Tambellup (TG); 6 miles W. of Coonana (RWT); 70–75 km ENE. of Norseman (PJM); 75 km W. of Talbot Rd, Beverley

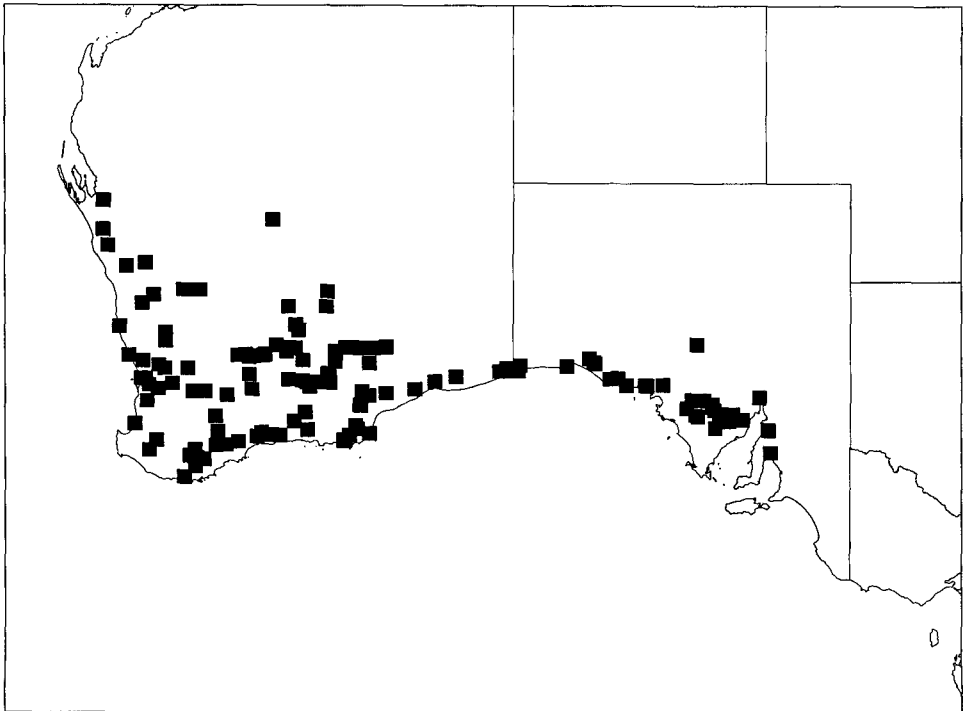


Fig. 11. Distribution of *I. greensladei* specimens examined during this study.

(A. M. and M. J. Douglas); 80 km E. of Jerramungup (PJM); 8 miles SW. of Coolgardie (RWT); 90 km N. of Norseman (PJM); 91 km W. of Mundrabilla (PJM); 94 km W. of Coolgardie (PJM); 96 km W. of Caiguna (PJM); 9 km SE. of Ravensthorpe (PJM); 9 miles W. of Kitchener (TG); Balladonia (TG); Booanya (A. E. Baesjou); Boyup Brook (PJM); Bunbury (A. Snell); Caiguna (PJM); Canning Reservoir, 11 km E. of Armadale, 32°09'S., 116°07'E. (T. A. Weir); Carnamah (E. F. Riek); Ceduna (K. Casparson); Cranbrook (PJM); Denmark (E. Simmons); Eucla (TG); Gibson, 33°31'S., 121°43'E. (RWT); Great E. Hwy, 260 mile post (PJM); Hill R. (E. F. Riek); Hyden (PJM); Israelite Bay (TG); Jacup (E. F. Riek); Junana Rock, Cape Arid Natl Pk (A. N. Andersen); Kanowna (PJM); Lake Grace (E. F. Kipps); Lort R., 44 miles W. of Esperance (TG); Mt Linden (T. F. Mosiston); Murchison R. (TG); Norseman (BBL); Northam (PJM); Perenjori (PJM); Perth (PJM); Rainbow Canyon, Kalbarri Natl Pk (R. R. Snelling and J. Grey) (LACM); Red Gum Pass, Stirling Range Natl Pk (R. R. Snelling and J. Grey) (LACM); Red Gum Spring, Stirling Range Natl Pk (R. R. Snelling and J. Grey) (LACM); Stirling Range (E. F. Riek); Swan R. (J. Clark); Tammin (TG); Thomas R. (TG); Thomas R., 23 km NW. by W. of Mt Arid, 33°51'S., 123°00'E. (JEF); Toodyay (M. S. Upton); Yarri (PJM); Yokinup Bay, Cape Arid Natl Pk (A. N. Andersen); nr Weebubbie Cave, nr Eucla (A. M. Richards).

### Worker Diagnosis

*Iridomyrmex greensladei*, a member of the *purpureus* complex, is morphologically similar to *I. purpureus* but can be separated by having the head, pronotum and mesothorax similar in colour or with the head slightly darker than the pronotum and mesothorax (the head and pronotum are lighter than the mesothorax in *I. purpureus*). *Iridomyrmex greensladei* is also similar to lightly coloured individuals of *I. lividus*. In the majority of cases (especially with living or freshly collected material) they can be separated on the basis of the lighter reddish brown body colour found in *I. greensladei*. However, some collections may be difficult to determine with confidence (see also Diagnosis under *I. lividus*).

### Description

Iridescence between compound eyes purple and/or blue and on lateral region of head (between compound eye and insertion of mandible) moderately developed purple. Pigment colour of mesosoma reddish brown; head same colour as the mesosoma; coxae and legs same colour or slightly darker than the mesosoma; petiole dark reddish brown; lateral region of second gastral tergite shiny and with weak green and/or weak purple iridescence. Head pilosity (in full face view) abundant on occipital margin, and with 2–4 pale setae near mandibular insertion. Ocelli absent. Ventrolateral pronotum with a few scattered setae. Mesosomal setae with dark pigment (sometimes translucent and appearing pale when viewed against a lightly coloured background). Pilosity on first gastral tergite abundant. Antero-dorsal region of propodeum flat to very weakly arched.

### Measurements

*Holotype*. CI 0.99; EL 0.38; EW 0.22; HL 2.09; HW 2.06; ML 1.05; PnL 1.06; PpL 1.11; REL 0.18; SI 0.88; SL 1.81.

*Worker* ( $n=30$ ). CI 0.89–1.01; EL 0.33–0.39; EW 0.18–0.24; HL 1.69–2.24; HW 1.51–2.18; ML 0.76–1.15; PnL 0.87–1.17; PpL 0.81–1.14; REL 0.17–0.22; SI 0.86–1.05; SL 1.57–1.95.

### Comments

There are three morphologically identifiable groups within *I. greensladei* as presently conceived. These variants are *I. greensladei* (strict sense), 'hairy', and 'pale-haired'. Each of these groups will be discussed, followed by justification for considering them to represent a single species.

*Iridomyrmex greensladei* (strict sense) is distributed from approximately Carnarvon, W.A., south and east to the Eyre Peninsula (Fig. 11) and includes the entire ranges of 'pale-haired' as well as the majority of the range of 'hairy'. *Iridomyrmex greensladei* (strict sense) is morphologically uniform over its entire distribution, showing only minimal and apparently random variation in size and pilosity. Colour, however, is slightly more variable. In the

Cape Arid–Esperance region, the majority of individuals are of the typical reddish brown colour while a small proportion (c. 1–2%) are noticeably lighter, being yellowish red. These lighter individuals occur in typical *I. greensladei* nests, and forage and defend the nest in the same manner as normally coloured workers. This is the only species in the *I. purpureus* group that shows this distinct polymorphism in body colour.

The 'hairy' form of *I. greensladei* is limited to extreme south-western Western Australia south of a line extending from approximately Esperance to just south of Geraldton. It differs from *I. greensladei* (strict sense) in having erect setae on the lateral margin of the head extending anterior of the posterior margin to at least the level of the compound eyes and often to the level of mandibular insertion. However, the available material suggests that this development of erect setae is clinal (from north-east to south-west) within *I. greensladei* (broad sense). There is a broad geographic zone north-east of a line approximately between Point Henry and Mandurah where both forms occur within many nest series, while south-west of this line the majority of specimens have erect lateral setae. This increase in pilosity is gradual and continuous and suggests that these forms belong to a single, variable species rather than two separate taxa.

The 'pale-haired' form of *I. greensladei* differs from the nominal form in having the erect mesosomal pilosity pale rather than dark. This form is currently known from a limited number of collections distributed from approximately Albany, Western Australia to the Western Australia–South Australia border. The presently available material does not allow separation of this form from *I. greensladei* (strict sense). In colour, size and shape, it is very similar to *I. greensladei* (strict sense) and is therefore considered part of that species. However, detailed collecting and examination of other character systems (e.g. biochemical, ecological, behavioural, male genitalia) may reveal that the pale-haired form is distinct from *I. greensladei* (strict sense).

### Etymology

This species is named after Dr John Greenslade, the first to suggest this form as distinct.

### *Iridomyrmex lividus*, sp. nov.

(Fig. 12)

*Iridomyrmex purpureus* form 'blue' (or 'B').—Greenslade, 1974a: 247.

### Material Examined

**Holotype.** Worker, South Australia, Cambrai [c. 34°39'S., 139°17'E.], Jan. 1974, P. J. M. Greenslade and C. A. Kirkby, Nest V8, (ANIC, type no. 7972).

**Paratypes.** 26 workers, same data as holotype; 81 workers, same data as holotype except as follows: 27 workers collected Nov. 1973, 27 workers collected Dec. 1973, 27 workers collected 5.ii.1974 (ANIC, BMNH, MCZC).

**Other material** (in ANIC unless otherwise noted). **New South Wales:** 100 km W. of Cobar (PJM); 10 km W. of Euston (PJM); 11 miles E. of Mt Boppy (TG); 15 miles N. of Broken Hill (BBL); 15 miles S. of Matakana (BBL); 1 mile N. of Condobolin (PJM); 20 km S. of Broken Hill (PJM); 21 miles SSW. of Fowler's Gap (TG); 22 km E. of Trentham Cliffs (T. Weir); 28 km SE. of Ivanhoe (PJM); 29 miles W. of Cobar (TG); 2 miles S. of Yanco HS (TG); 32 km N. of Wentworth (PJM); 40 km NNW. of South Lake Mere (PJM); 45 km ENE. of Pooncarie (PJM); 4 miles NW. of Nyngan (TG); 70 km N. of Wentworth (PJM); Acacia Vale, nr Broken Hill (PJM); Bogan R. (J. Armstrong); Bourke (C. L. Barrett); Broken Hill (BBL; F. W. Shepherd); Condobolin (PJM); Euston (W. W. Froggatt); Fifield, nr Trendle (BBL); Fowler's Gap (PJM); Fowler's Gap Research Stn, 31°05'S., 141°42'E. (I. D. Naumann and J. C. Cardale); Goolgowi (PJM); Griffith (collector unknown); Hillston (BBL); Mossgiel (TG); Mundi Mundi, nr Broken Hill (PJM); Silverton (PJM). **Northern Territory:** Charlotte Waters (JEF); c. 50 km E. of Finke (JEF); c. 56 km N. of Kulgera (JEF). **South Australia:** 0.5 miles S. of Black Rock (PJM); 100 km N. of Marla Bore (B. Hoffmann); 11 miles E. of Kimba (PJM); 12 km SSW. of Blyth (PJM); 12 miles N. of Nullarbor HS (TG); 13 miles SE. of Streaky Bay (TG); 14 km S. by W. of Beltana, 30°56'S., 138°23'E. (JEF); 15 km ENE. of Beltana, Flinders Ranges (PJM); 15 km NW. by W. of Granite Downs, 26°52'S., 133°22'E. (JEF.); 16 miles W. of Cook (TG); 18 miles SW. of Whyalla

(PJM); 1 mile N. of Black Rock (PJM); 1 mile S. of Orroroo (PJM); 1 mile W. of Ooldea (RSM and JED); 20 km SW. of Iron Knob (PJM); 20 km SW. of Kyancutta, Eyre Peninsula (PJM); 20 km W. of Nullarbor (R. R. Snelling and J. Grey) (LACM); 20 miles E. of Burra (PJM); 22 km SW. of Whyalla (PJM); 27 miles W. of Cook (TG); 2 km NE. of Kalamurina HS, 27°42'S., 138°16'E. (JEF); 2 km SE. of Tandraie Dam, Gawler Ranges (PJM); 2 miles E. of Streaky Bay (TG); 30 km WSW. of Mutooroo HS (PJM); 35 km SW. of Whyalla (PJM); 37 km S. of Granite Downs (T. A. Weir); 37 miles E. of Eucla (TG); 38 miles W. of Nullarbor HS (TG); 3 miles E. of Yatina (PJM and C. A. Kirby); 3 miles S. of Orroroo (PJM); 41 km W. by N. of Welbourn Hill, 27°18'S., 133°41'E. (JEF); 45 miles NW. of Colona (TG); 4 km E. of Peterby Yards, Gawler Ranges (PJM); 4 km SW. of Mt Double, Gawler Ranges (PJM); 4 miles S. of Orrorro (PJM); 4 miles W. of Koonalda (RSM and JED); 5.2 miles S. of Orroroo (PJM); 53 miles E. of Eucla (TG); 5 km E. of Tuckey, Eyre Peninsula (PJM); 5 miles ENE. of Watson (RSM and JED); 5 miles SW. of Melton (PJM); 6 miles SW. of Minburra (PJM); 7 km NW. of Morgan (PJM); 7 miles N. of Nullarbor HS (TG); 8 km E. of Paney HS, Gawler Ranges (PJM); 8 km N. of McLachlan Siding, Eyre Peninsula (PJM); 8 km S. of Paruna, nr Loxton (PJM); Alaeroma (PJM); Andamooka (PJM and C. A. Kirby); Bindyi, Koonamore (PJM); Black Oak Ck, Koonamore (PJM); Blyth (BBL); Calca, nr Streaky Bay (BBL); Cambrai (PJM); Chowilla (PJM); Coober Pedy (PJM; RSM); Coomba, Eyre Peninsula (PJM); Edward Creek Railway siding (RSM); Eighteen Mile Bore (PJM); Enrudina (PJM); Gawler Ranges (PJM); Hallett Cove (PJM); Hamilton HS, 26°43'S., 135°05'E. (JEF); Kapunda (PJM); Koonamore (PJM); Middleback HS (A. Johnson); Minburra (PJM); Moockra Tower (PJM); Mt Rat, Yorke Peninsula (PJM); Mt Willoughby (RSM); Nonning HS (PJM); Old Gluepot (PJM); Ooldea (J. A. Kershaw); Oraparinna, Flinders Ranges (PJM); Renmark (BBL); Sturt Vale HS (PJM); Waukaringa Bore (PJM and CAK); Yalarna, SE. of Kimba (PJM); c. 15 km SW. of Abminga (PJM); c. 1 km NW. of Beresford, 29°14'S., 136°39'E. (JEF); c. 25 km W. of Mt Sarah (JEF); c. 33 km SE. of Oodnadatta, 27°47'S., 135°39'E. (JEF); c. 55 km SE. of Oodnadatta, 27°56'S., 135°48'E. (JEF); nr Woolgangi (PJM). **Victoria:** 15 km W. of Nyarrin (PJM); 20 miles NW. of Swan Hill (TG); L. Hattah (J. E. Dixon); Sea Lake (J. C. Goudie); Swan Hill (F. H. Hill). **Western Australia:** 14 miles E. of Madura (E. F. Riek); 1 mile W. of Forrest (TG); 32 miles W. of Forrest (TG); 48 km W. of Nullabor HS (RWT); 5 km W. of Reid (PJM); 6 miles E. of Nurina (TG); 6 miles W. of Karonie (TG); 75 miles E. of Balladonia (TG); 9 miles SW. of Loongana (TG); Balladonia (E. F. Riek); Booanya (A. E. Baesjou); Caiguna (BBL); Forrest (C. Barrett); Israelite Bay (TG).

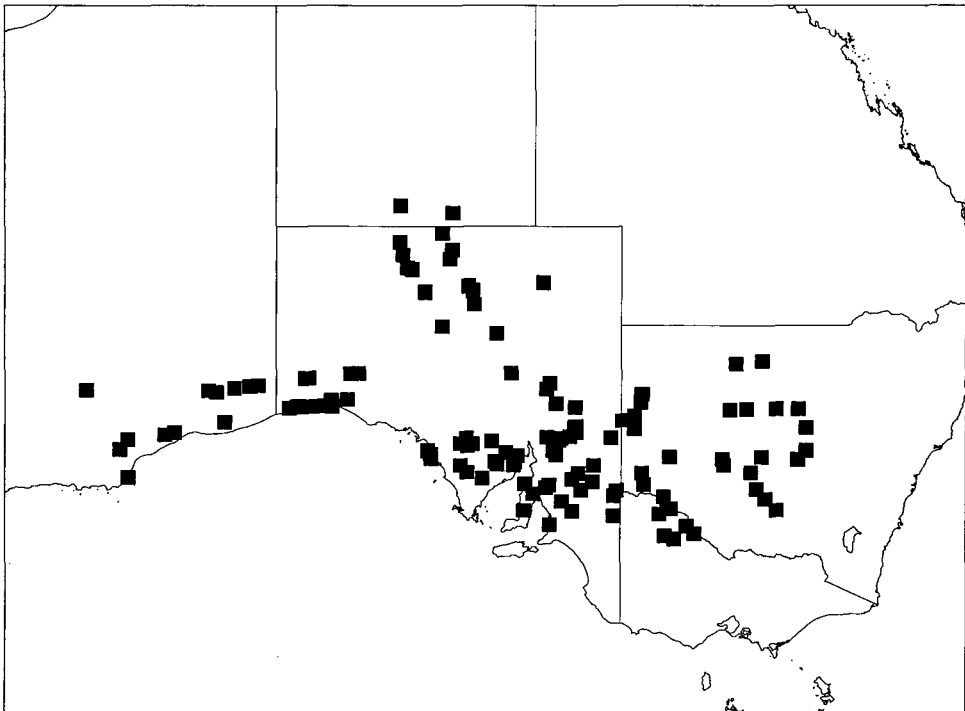


Fig. 12. Distribution of *I. lividus* specimens examined during this study.

### Worker Diagnosis

A member of the *purpureus* complex with the head and mesosoma reddish brown to black and similar in colour; head often with strong blue iridescence. Dark individuals with strong blue iridescence are immediately recognisable (all other dark species in the *I. purpureus* group are reddish brown and have purple and/or green iridescence, when present). Individuals that are lighter in colour (either naturally or through fading after collection) are similar to *I. greensladei* and *I. purpureus*. Separation from *I. greensladei* is generally possible because of the darker reddish brown body colour and stronger blue iridescence, especially in living or freshly collected material, and from populations that are sympatric with *I. greensladei*. Allopatric populations of *I. lividus* show a wider range of colour than populations that are sympatric with *I. greensladei* and some individuals are indistinguishable on the basis of the morphological characters examined during this study. *Iridomyrmex lividus* can be separated from *I. purpureus* by having the head, pronotum and mesothorax similar in colour, rather than having the head and pronotum lighter in colour than with the mesothorax. Additionally, the erect mesosomal setae are generally pale in *I. lividus*, while they are generally dark in *I. purpureus*. It should be noted, however, that some faded material may be nearly impossible to place with confidence.

### Description

Iridescence between compound eyes and on lateral region of head (between compound eye and insertion of mandible) varying from strong blue to reddish purple to nearly absent. Pigment colour of mesosoma very dark reddish brown to black; head same colour as mesosoma; coxae and legs dark reddish brown to black, tarsi lighter; petiole similar in colour to mesosoma; lateral region of second gastral tergite shiny and with blue/green to slightly purple iridescence. Head pilosity (in full face view) abundant on occipital margin, and with 2–6 pale setae near mandibular insertion. Ocelli absent. Ventrolateral pronotum with scattered erect setae. Mesosomal setae with dark pigment, but often translucent and appearing pale when viewed against a lightly coloured background. Pilosity on first gastral tergite moderately abundant. Anterodorsal region of propodeum flat to weakly arched.

### Measurements

*Holotype.* CI 0.92; EL 0.36; EW 0.23; HL 1.97; HW 1.81; ML 0.93; PnL 1.04; PpL 1.00; REL 0.20; SI 0.95; SL 1.72.

*Worker* ( $n=30$ ). CI 0.87–0.99; EL 0.31–0.38; EW 0.19–0.23; HL 1.75–2.15; HW 1.58–2.12; ML 0.77–1.02; PnL 0.92–1.19; PpL 0.82–1.11; REL 0.17–0.22; SI 0.85–1.01; SL 1.51–1.84.

### Comments

*Iridomyrmex lividus* is easily recognised in the field and from recently collected material by its dark colour with strong blue iridescence. Some older, faded material, however, can be difficult to separate from *I. greensladei* (see Diagnosis above and under *I. greensladei*). Ecologically, these species differ in that *I. lividus* nests consist of a single entrance hole with at most a small cleared area immediately around the entrance and without gravel or small pebbles, while *I. greensladei* nests are typically large multi-entrance mounds covered with gravel (although smaller nests with less-distinct mounds also occur). The morphological similarity between these species is also reflected in other systems. It has been shown that neither of the allozymes esterase (Halliday 1979) nor amylase (Halliday 1981) differ in allele frequency between these two species. Additionally, both species are broadly sympatric (Figs 11, 12) and have been shown to be ecologically similar (Greenslade 1987). Despite these similarities, these two species show differences in competitive abilities with each other and with other species of the *I. purpureus* group (Greenslade 1987), and are morphologically distinguishable given appropriate material.

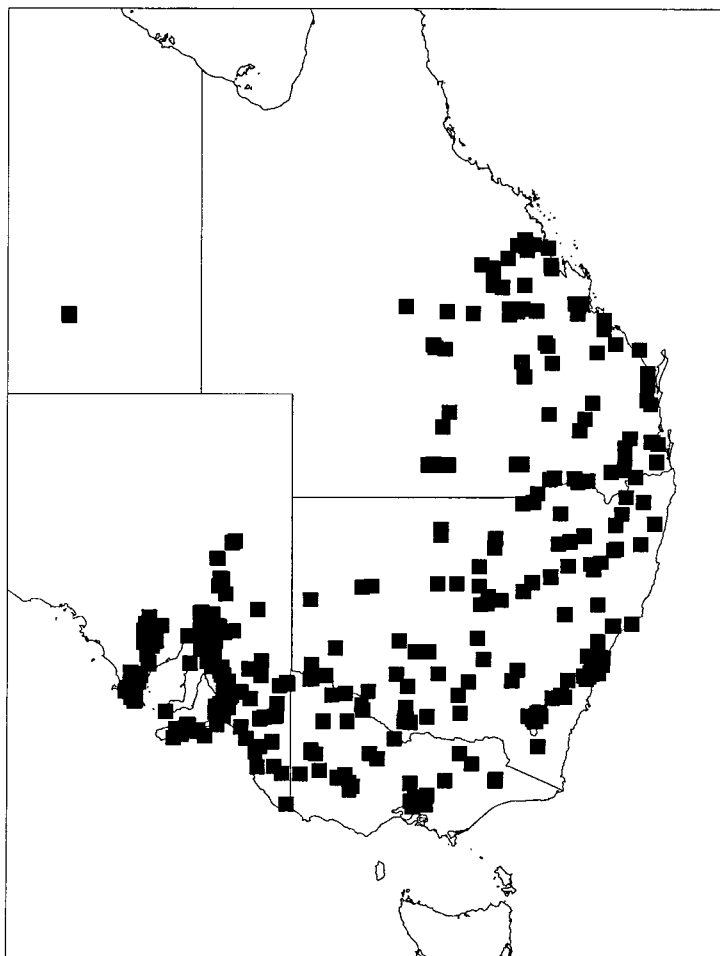
### Etymology

The specific name, derived from Latin, describes the bluish body iridescence.



*Iridomyrmex purpureus* (F. Smith)

(Figs 5, 6, 13)

*Formica purpurea* F. Smith, 1858: 40.*Formica detecta* F. Smith, 1858: 36.—Lowne, 1865: 275.*Iridomyrmex purpureus*.—Mayr, 1862: 702, comb. nov.*Liometopum aeneum* Mayr, 1862: 704.—Mayr, 1876: 81.*Formica Smithii* Lowne, 1865: 276.—Mayr, 1870: 955.*Hypoclinea (Iridomyrmex) purpurea*.—Mayr, 1870: 954, comb. nov.*Hypoclinea purpurea*.—Mayr, 1876: 81.*Iridomyrmex detectus*.—Dalla Torre, 1893: 168.*Camponotus horni* Kirby, 1896: 205 (worker nec queen).—Clark, 1930: 20 (see below for details).*Iridomyrmex detectus* var. *castrae* Viehmeyer, 1925: 31, syn. nov.*Iridomyrmex purpureus castrae* Viehmeyer.—Greenslade, 1974a: 247.*Material Examined**Types**F. purpureus*. Holotype (unique syntype) worker from Melbourne, Victoria, Australia (BMNH).*F. detecta*. Unspecified queen material from Hunter R., New South Wales, Australia (not located in the museums listed above under 'Methods and Abbreviations').*L. aeneum*. Unspecified queen material from Australia (specific locality not given) (not located in the museums listed above under 'Methods and Abbreviations').**Fig. 13.** Distribution of *I. purpureus* specimens examined during this study.

*F. Smithii*. Unspecified worker material from near Sydney, New South Wales, Australia (not located in the museums listed above under 'Methods and Abbreviations').

*C. horni*. Lectotype worker and 4 paralectotype workers (designated below, lectotype in MVMA, paralectotypes in BMNH, MCZC) from Palm Ck, Northern Territory, Australia.

*I. detectus* var. *castrae*. One worker syntype from Liverpool, New South Wales, Australia (MHNG).

*Other material* (in ANIC unless otherwise noted). **State uncertain:** Farwood (C. E. Stoyles). **Australian Capital Territory:** Acton, Canberra (A. Wetherly); Black Mtn (TG); Black Mtn, nr Haydon Drive (R. Y. Berg); Blundells (TG); Canberra (TG; P. S. Ward; R. R. Snelling and J. Grey); Mt Ainslie (C. G. Brooks); Mt Majura, nr top (C. G. Brooks); Paddy's R. (TG); Tharwa Rd (L. G. Webber); Yarralumla, Stirling Pk, 35°18'S., 149°07'E. (R. J. Kohout). **New South Wales:** 10 km N. of Mossgiel (PJM); 10 km S. of Grafton (PJM); 10 km W. of Pooncarie (PJM); 10 miles E. of Broken Hill (BBL); 10 miles E. of Somerton (TG); 10 miles N. of Bourke (JED); 10 miles NE. of Mungindi (TG); 10 miles SSW. of Mungindi (TG); 12 miles NW. of Deniliquin (TG); 15 km E. of Goulburn (PJM); 15 km SW. of Goulburn (PJM); 17 miles NW. of Trangle (TG); 1 km S. of Appin, nr Sydney (PJM); 1 km S. of Cambelltown (PJM); 1 miles NNE. of Carinda (TG); 20 km NW. of Deniliquin (PJM); 20 km W. of Jerilderie (PJM); 21 miles NNE. of Carinda (TG); 23 km NW. of Wollongong (PJM); 25 km NNE. of Musswellbrook (PJM); 27 km SW. of Cowra (PJM); 2 miles E. of Maitland (D.R.); 2 miles ESE. of Miowera (L. J. Chinnick; 3.3 km SW. of Young (PJM); 30 km SSW. of Sydney (PJM); 32 miles E. of Wilcannia (J. Boyd); 33 miles NE. of Hay (PJM); 35 km NW. of Wentworth (PJM); 38 km SW. of Sydney (PJM); 3 miles SSE. of Wilcannia (TG); 40 km W. of Hillston (PJM); 40 km WSW. of Coonabarabran (PJM); 4 km S. of Liverpool (PJM); 4 km S. of Tabbita (BBL); 4 miles S. of Deepwater (TG); 55 km SSW. of Casino (PJM); 57 km NE. of Goulburn (PJM); 5 miles NNW. of Tenterfield (TG); 60 km E. of Cobar (PJM); 6 miles NE. of Bendemeer (TG); 7 km E. of Fernances, 33°11'S., 151°04'E. (P. S. Ward); 75 km E. of Armidale (PJM); 9 miles W. of Gunnedah (TG); Adams Lookout, nr Bungonia (R. Y. Berg); Ardlethan, 34°22'S., 146°51'E. (S. A. Harrington); Armidale, 30°31'S., 151°35'E. (S. A. Harrington; BBL); Asquith (H. P. Schrader); Balranald (PJM); Berowra (B. L. C. Stoyles); Bogan R., nr Nevertire Rd (TG); Brookong, nr Lockhart (TG); Callubri HS, 39 miles SSE. of Nyngan (TG); Chatswood (A. Musgrave); Cobar (PJM); Como, nr Sydney (A. Musgrave); Condoblin (PJM); Cooma (PJM); Cooper Pk, Sydney (K. K. Spence); Darling R., nr Bourke (TG); Deniliquin (I. Valentine); Emmett Vale (I. Valentine); Emmett Vale, nr Wanganella, 35°06'S., 144°48'E. (D. Briese); Emu Vale, nr Deniliquin (PJM); Eungai (Carter and Deane); Gilgandra (T. Wilson); Gordon (A. Musgrave); Hawks Nest, Myall Lake Natl Pk (PJM); Hay (PJM); Hillston (BBL); Ingleburn (PJM); Kapunda, N. of Nyngan (PJM); L. Cowal (W. Vestjens); Legume (PJM); Liverpool (PJM); Maitland (collector unknown); Moree (PJM); Mt Kaputar (PJM); Mt Kuring-Gai [=Kuringai Chase Natl Pk] (T. Wilson); Myall Mundi (TG); Narrabri (PJM); Narrandera, 34°45'S., 146°31'E. (S. A. Harrington); Nurradjong (A. Musgrave); Nyngan (V. Mankin); Picton, nr Sydney (PJM); Pymble (J. McAreavy); Queanbeyan (O. Thompson); Razorback, nr Camden (J. V. Peters); Richmond (PJM); Southerland (W. M. Wheeler) (LACM); St Leonard, N. of Sydney (F. Mucke) (LACM); St Mary's, Sydney (BBL); Tamworth (T. Wilson); Tooleybuc (R. B. Halliday); Toongabbie (T. A. Murphy); Wallangarra (Cotwell); Warrumbungle Range (PJM); Whallen Ck, 25 miles NNE. of Collarenebri (TG); Woronora (M. L. Bason); nr Mt Wood HS (TG). **Northern Territory:** Simpson Gap, 23°43'S., 133°43'E. (JEF); Simpson Gap, nr Alice Springs (PJM); R. R. Snelling and J. Grey) (ANIC, LACM). **Queensland:** 10 km N. of Nebo (BBL); 115 km S. of Rolleston (PJM); 11 miles E. of Blackwater (JED); 120 km S. of Mackay (PJM); 120 km W. of Nebo (PJM); 13 miles W. of Rockhampton (TG); 13 miles WNW. of Capella (JED); 14 miles S. of Maryborough (TG); 14 miles SE. of Bauhinia Downs HS (JED); 15 km N. of Maryborough (PJM); 15 km SW. of Charleville, 26°32'S., 146°12'E. (M. S. Upton); 15 km W. of St George (PJM); 15 miles N. of Miriam Vale (A.H.W.); 15 miles N. of Tara (JED); 16 km W. of Cunnamulla (PJM); 17 km S. of Emerald (PJM); 18 miles ESE. of Emerald (JED); 19 miles SE. of Blackall (JED); 20 miles N. of Wyandra (JED); 22 miles SW. of Sarina (JED); 25 km N. of Nebo (PJM); 25 km NW. of Tambo (PJM); 25 miles E. of Emerald (TG); 2 km W. of Cunnamulla (V.E.F.); 30 km E. of Alpha (PJM); 30 km NE. of Bingera (PJM); 30 km W. of Nebo (PJM); 30 miles E. of Longreach (JED); 35 km S. of Gladstone (PJM); 35 miles N. of Clermont (TG); 3 miles E. of Talwood (TG); 3 miles N. of Cunnamulla (JED); 40 miles NNW. of Taroom (JED); 45 km E. of Cunnamulla (PJM); 48 miles NNE. of Clermont (JED); 4 miles WNW. of Yelarbon (TG); 50 km N. of Clermont (PJM); 50 km N. of Gin Gin (PJM); 50 miles SW. of Mackay (PJM); 58 km E. of Nebo (PJM); 5 km W. of Goolao, Rockhampton (PJM); 66 km S. of Rolleston (PJM); 6 miles NNE. of Bauhinia Downs HS (JED); 6 miles S. of Greenmount (TG); 6 miles SW. of Karara (TG); 75 km W. of Miles (PJM); 7 miles E. of Goondiwindi (TG); 7 miles N. of Goondiwindi (JED); 80 km SW. of Mackay, nr Nebo (BBL);

8 km W. of Warwick (PJMG); 8 miles S. of Warwick (TG); 8 miles SSE. of Nebo (JED); 8 miles SSE. of Wondoan (JED); 9 miles N. of Claremont [= Clermont] (TG); 9 miles W. of Northampton (J.H.C.); Barakula State Forest (PJMG); Beaudesert (S. H. Parlett); Brisbane (F. A. Cudmore); Bruce High, 47 miles SW. of Mackay (A. Wetherly); Bungunya, E. of St George (PJMG); Chinchilla (PJMG); Clermont (F. A. Cudmore; BBL); Cunnamulla (PJMG); Dingo Ck, 1 km E. of Traveston, 26°18'S., 152°48'E. (RWT and R. Kohout); Emerald (PJMG); Gladstone (A. Musgrave); Gympie (F. A. Cudmore); Isaac R., 60 miles NNE. of Clermont (JED); Jericho (F. A. Cudmore); Malchi (P.W.); Mt Morgan (F. A. Cudmore); Mullungerra (TG); Perseverance Dam, nr Crows Nest (PJMG); Rockhampton (BBL); St George (PJMG; BBL); St Lawrence (F. A. Cudmore); Toowoomba (TG); Wooroorooka (TG); Yarrall Station, N. of Burrott (S. A. Harrington); vic. Jolly's Lookout (RWT).

**South Australia:** 0.5 miles S. of Black Rock (PJMG); 1.5 km W. of Lameroo (PJMG); 1.5 miles S. of Black Rock (PJMG and CAK); 10 km E. of Booleroo Centre (PJMG); 10 km ESE. of Umberatana (PJMG); 10 km N. of Melrose (PJMG); 10 km NW. of Blinman (PJMG); 10 km SW. of Kingscote, Kangaroo I. (PJMG); 10 km W. of Tumby, Eyre Peninsula (PJMG); 10 km WSW. of Lameroo (PJMG); 10 miles N. of Wirha (PJMG and CAK); 11 km S. of Kimba (PJMG); 12 km N. of Koppio, Eyre Peninsula (PJMG); 12 km SSW. of Blyth (PJMG); 13.5 km N. of Kimba (PJMG); 13 km S. of Quorn (PJMG); 13 km SE. of Buckleboo HS, N. Eyre Peninsula (PJMG); 14 km NW. of Kimba (PJMG); 15 km ENE. of Beltana, Flinders Ranges (PJMG); 15 km N. of Kimba (PJMG); 16 miles N. of Gawler (TG); 18 km NE. of Buckleboo HS, N. Eyre Peninsula (PJMG); 18 km NNE. of Meninjie (PJMG); 18 km S. of Quorn, Flinders Ranges (PJMG); 19 km S. of Kimba (PJMG); 19 miles W. of Murray Bridge (TG); 1 km NW. of Elatina Hut (PJMG); 1 km W. of Cape Willoughby, Kangaroo I. (PJMG); 1 mile S. of Rhynie (TG); 23 km E. of Kimba, nr Napandee (PJMG); 25 km ESE. of Kimba (PJMG); 25 km NE. of Port Augusta (PJMG); 2 km N. of Cape Tournefort, Port Lincoln (PJMG); 2 km S. of Edillilie, Eyre Peninsula (PJMG); 2 miles NE. of Lake Ada, Kangaroo I. (PJMG); 2 miles S. of Yahl (PJMG and CAK); 3 km E. of Horse Rock, Port Lincoln (PJMG); 3 km S. of Kaldow, Eyre Peninsula (PJMG); 3 km SE. of Brooker, Eyre Peninsula (PJMG); 3 km W. of Vivonne, Kangaroo I. (PJMG); 4.2 miles S. of Orroroo (PJMG and CAK); 41 km W. of Iron Knob (R. R. Snelling and J. Grey) (LACM); 46 miles N. of Kingston (PJMG); 4 km S. of Cummins, Eyre Peninsula (PJMG); 4 km SW. of Auburn (PJMG); 4 km SW. of Kimba, Eyre Peninsula (PJMG); 4 km SW. of Orroroo (PJMG); 4 miles S. of Orroroo (PJMG and CAK); 4 miles SE. of Loxton (PJMG and CAK); 5 km N. of Verran, Eyre Peninsula (PJMG); 5 km S. of Port Germein (PJMG); 5 km SSW. of Bunbury (PJMG); 5 km W. of Geranium (PJMG); 5 km W. of Orroroo (PJMG); 6 km E. of Parndana, Kangaroo I. (PJMG); 6 km E. of Waddikee, Eyre Peninsula (PJMG); 6 km NW. of Mt Pleasant (PJMG); 6 km NW. of North Shields, Port Lincoln (PJMG); 6 km W. of Wanilla, Eyre Peninsula (PJMG); 6 miles NW. of Peterborough (PJMG and CAK); 7 km NW. of Morgan (PJMG); 7 km S. of Peake (PJMG); 7 km W. of Penneshaw (PJMG); 8.5 km S. of Kimba (PJMG); 80 km NW. of Iron Knob (PJMG); 8 km E. of Coffin Bay, Port Lincoln (PJMG); 8 km NW. of Kingscote, Kangaroo I. (PJMG); 8 km NW. of Morgan (PJMG); 8 km S. of Stokes Bay (PJMG); 8 km SE. of Konanda, Eyre Peninsula (PJMG); 8 km W. of Shag Cove, Lincoln Natl Pk (PJMG); 8 miles NW. of Peterborough (PJMG and CAK); 9 km W. of Cockaleechee, Eyre Peninsula (PJMG); Adelaide Hills (BBL); Aldgate, Mt Lofty Ranges (W. M. Wheeler) (LACM); Alligator Gorge (PJMG); American R., Kangaroo I. (PJMG); Bay of Shoals, Kangaroo I. (PJMG); Belair (PJMG); Big Swamp, Port Lincoln (PJMG); Birdwood (PJMG); Black Hill, S. Flinders Ranges (PJMG); Black Range, S. Flinders Ranges (PJMG); Bridgewater (PJMG); Broad Acres, SE. of Kimba (PJMG); Caltowie (PJMG and CAK); Cambrai (PJMG); Cockaleechee, Eyre Peninsula (PJMG); Coolatoo, Coorong Natl Pk (PJMG); Coorong (E. S. Hanks); Crystal Brook (PJMG and CAK); Curtinye Hill, SE. of Kimba (PJMG); Cygnet R., Kangaroo I. (PJMG); Desert Pound, nr Keith (PJMG); Englebrook (PJMG and CAK); Fairview Cons. Pk, N. of Lucindale (PJMG); Fort Well, Port Lincoln (PJMG); Gladstone (PJMG and CAK); Gulnare (PJMG and CAK); Hale (PJMG); Hale Natl Pk (PJMG); Hallett Cove (PJMG); Horse Rock, Port Lincoln (PJMG); Ingalta, S. of Renmark (PJMG); Innes Natl Pk, York Peninsula (PJMG); Kangaroo I. (W. A. Campbell); Kapunda (PJMG); Kohinoor Heights, Kangaroo I. (PJMG); Koppio, Eyre Peninsula (PJMG); Kuitpo (PJMG); MacDonnell (Dudley) Peninsula, Kangaroo I. (PJMG); Mambray Ck, Flinders Ranges (PJMG; E. F. Riek); Maslin Beach (PJMG); Melrose (PJMG); Micham (TG); Moockra Tower (PJMG); Morialpa, Mt Lofty Ranges (E. Yeatman); Mortlock, nr Auburn, Mt Lofty Ranges (PJMG); Mt Lofty Ranges (A. H. Elston); Mt Remarkable Ck (PJMG); Mt Remarkable, N. Ridge, Flinders Ranges (PJMG); N. of Koppio, Eyre Peninsula (PJMG); Napperby, Flinders Ranges (PJMG); Noora, E. of Loxton (PJMG); Old Gluepot (PJMG); Oodla Wirra (PJMG); Oraparinna, Flinders Ranges (PJMG); Parrawirra (PJMG); Port Germein (RSM); Port Pirie (C. H. Thompson); Purnong (S. W. Fulton); Quorn (RSM); Redhill (PJMG and CAK); R. Finniss (PJMG); Riverton (PJMG and CAK); S. Alligator Gorge (PJMG); Sandy Ck, Mt Lofty Ranges (E. Yeatman); Snowtown (PJMG and CAK); South Cambrai (PJMG); Telowie Gorge, 10 km E. of Port Germein

(G. A. Holloway); Umberatana, Flinders Ranges (PJM); Ungarra, Eyre Peninsula (PJM); Waikerie (PJM); Waitpinga (PJM); Whyalla (TG); Wilpena Pound (PJM; BBL); Wirrabara (PJM and CAK); Yacka (PJM and CAK); nr Verran, Eyre Peninsula (PJM). **Victoria:** '37°11S 147°46'E' (S. A. Harrington); '37°14S 146°6'E' (S. A. Harrington); 10 miles NE. of Ararat (R. B. Halliday); 14.5 miles E. of Ararat (R. B. Halliday); 1 mile W. of Ararat (R. B. Halliday); 20 miles SW. of Horsham (R. B. Halliday); 2 miles SE. of Halls Gap (R. B. Halliday); 2 miles W. of Edenhope (R. B. Halliday); 48 km W. of Mildura (PJM and R. B. Halliday); 5 km ESE. of Merbein (PJM and J. A. Roberts); 5 miles SE. of Halls Gap (R. B. Halliday); Ararat (G.F.H.); Bannerton (A. C. Wilson); Bayswater (collector unknown); Beaumaris (TG); Bright (PJM and R. B. Halliday; BBL); Cullulleraine, nr Mildura (PJM and R. B. Halliday); Eltham (J. E. Dixon); Emerald (E. Jarvis); Greensborough (J. McAreavy); Halls Gap (T. Wilson); Healesville (H. A. Arnold) (LACM); Inglewood (collector unknown); Kilmore (collector unknown); L. Hattah (J. E. Dixon); Little Desert, 9 miles S. of Kiata (A. Musgrave); Melbourne (collector unknown); Mt Kuring (T. Wilson); Nhill (J. Searle); Nyah (Soudie; J. C. Boudie) (ANIC, LACM); Ovens Valley, 36°26'S, 146°34'E. (S. A. Harrington); Patho (H. A. Potter); Sea Lake (Goudie); Stawell (R. B. Halliday; J. A. Hill); Tallarook (F. G. Holdaway); Tamba Hwy, N. of Walnut, 37°14'S, 147°45'E. (S. A. Harrington); Wedderburn (E. F. Riek); Winiam (A. G. Campbell); Wyperfeld Natl Pk (E. S. Hanks).

### Worker Diagnosis

A member of the *purpureus* complex with the head and pronotum similarly coloured and slightly lighter than the reddish brown mesothorax (occasionally with only the head lighter, the pronotum and mesothorax being similar in colour); and dark (but sometimes translucent) erect mesosomal setae.

### Description

Iridescence between compound eyes and on lateral region of head (between compound eye and insertion of mandible) weak to strong purple. Pigment colour of mesosoma reddish to reddish brown; head and pronotum generally lighter than the mesothorax and propodeum (occasionally with pronotum and mesothorax similar in colour); coxae and legs slightly darker than the mesothorax; petiole reddish brown, slightly darker than the mesothorax; lateral region of second gastral tergite moderately shiny to shiny and with green/blue or green and purple iridescence. Head pilosity (in full face view) abundant on occipital margin, and with 3–8 pale setae near mandibular insertion. Ocelli absent. Ventrolateral pronotum with scattered erect setae. Mesosomal setae dark. Pilosity on first gastral tergite abundant. Anterodorsal region of propodeum flat to broadly arched.

### Measurements

**Worker** ( $n=53$ ). CI 0.90–1.03; EL 0.33–0.42; EW 0.19–0.26; HL 1.79–2.31; HW 1.63–2.29; ML 0.86–1.26; PnL 0.89–1.22; PpL 0.87–1.26; REL 0.17–0.21; SI 0.87–1.04; SL 1.70–2.05.

### Comments

*Iridomyrmex purpureus* is common and widespread in south-eastern Australia (Fig. 13), and its large and obvious mounds make it one of the most commonly collected species in the group.

The population from the McDonnell Ranges, N.T., is a disjunction from the normal range of *I. purpureus*. Collections have been made numerous times from several areas and the species seems firmly established in the area. This north-western population is similar to eastern populations in some characters (overall colour and dark erect setae) while it also shares characters with the geographically closer S.A. populations (reduced appressed pubescence on the lateroventral first gastral tergite).

The worker and queen of *I. purpureus* were described as separate species by Smith (1858), the worker as *Formica purpurea* and the queen as *Formica detecta*. Lowne (1865) recognised this and synonymised *F. detecta* under *F. purpurea*, thus choosing *purpurea* as the valid name for this taxon. This practice was followed by subsequent authors, including Emery (1888), Forel (1878) and Mayr (1862, 1870, 1876), but not by Dalla Torre (1893). Dalla Torre choose to use *I. detectus* for this species, rather than *I. purpureus*, and this practice

was adopted by later authors, including Emery (1912), Forel (1910) and Viehmeyer (1914, 1925). This practice continued until the late 1960s, when the name *I. purpureus* was again used for this and related species (e.g. Ettershank 1968). Since then there has been a gradual shift in usage in favour of *I. purpureus*, but with occasional use of *I. detectus* instead. In fact, *I. purpureus* is the correct name for this taxon. Under the rules of the Code, neither name had precedence as they were of the same rank and appeared on the same date (in this case, in the same publication). However, Lowne (1865), acting as the first reviser, synonymised *detecta* under *purpurea*, and thus determined the precedence of these names. His original choice must now be followed, and *I. purpureus* used as the correct name for this species.

The species *Camponotus horni* was described by Kirby (1896) from 'several' worker and queen syntypes collected at Palm Ck, Northern Territory, Australia (24°04'S., 132°40'E.). Clark (1930) re-examined the Kirby material and placed the worker in synonymy with *Iridomyrmex purpureus* (then called *I. detectus*) while redescribing the queen as a *Camponotus* (in the subgenus *Tanaemyrmex*). I have examined 2 queens (in MVMA) and 7 workers (3 in MVMA, 3 in BMNH, 1 in MCZC) which apparently form the bulk of the Kirby material. I concur with Clark's placement of the queens in *Camponotus* and the workers as synonyms of *Iridomyrmex purpureus*. Additionally, I designate one of the MVMA workers as a lectotype, with the remaining examined material designated as paralectotypes. This seems consistent with Kirby's concept of the species based on his discussion in the original description. The queens (one damaged and missing several legs, the other represented by only wing fragments and 2 partial legs) belong to *Camponotus*, and with the designation of a worker lectotype are left with no taxonomic status. However, the Clark (1930) description is sufficient to make this name available and he therefore becomes the author of *Camponotus horni*. I designate the more complete queen specimen as the lectotype (the other as paralectotype). (*Camponotus horni* Clark is a junior homonym of *Camponotus horni* Kirby, but no replacement name is proposed because of the uncertain taxonomic status of *C. horni* Clark.)

*Iridomyrmex reburrus*, sp. nov.

(Figs 8, 14)

*Iridomyrmex* 'Katherine' or 'K'.—Greenslade and Halliday, 1982: 249.

*Material Examined*

*Holotype*. Worker, Northern Territory, Kapalga, Kakadu Natl Pk, 12°33'S., 132°19'E., 30.i.1991, S. O. Shattuck (SOSC #2227) (ANIC, type no. 7973).

*Paratypes*. 33 workers, same data as holotype (ANIC, BMNH, MCZC).

*Other material* (in ANIC unless otherwise noted). **Northern Territory**: 10 km SW. of Katherine (PJM); 20 km W. of Kapalga (PJM); 27 km SW. of Katherine (PJM); 28 miles N. of Daly Waters (G. Campbell); 30 km NW. of Katherine (PJM); 30 km SW. of Katherine (PJM); 30 miles S. of Darwin (G. Campbell); 34 km NW. of Katherine (PJM); 40 km NW. of Katherine (PJM); 45 km NW. of Katherine (PJM); 4 miles N. of Pine Creek (TG); 5 km S. of Jabiru (PJM); 5 km S. of Jabiru, Alligator Rivers area (PJM); 5 km SE. of Katherine (PJM); 99 km S. of Darwin, Stuart Hwy (collector unknown); Adelaide R. (L. Chinnick); Berrimah Experimental Farm, Darwin (N. W. Forrester); Berry Springs, nr Darwin (BBL); Black Point, Coburg Peninsula, 11°07'S., 132°09'E. (T. A. Weir); Cooper Ck, 12°17'S., 133°20'E. (RWT); Darwin (collector unknown); C. Barrett; G. F. Hill); Darwin airport (PJM); Deception Bay, Groote Eylandt, 13°43'S., 136°30'E. (P. Mele); Elcho I. (C. Barrett); Eley HS, Roper R. (H. S. Giles); Fanny Bay, Darwin (A. N. Andersen; G. Campbell); Jabiru (PJM); I. D. Naumann); Jabiru, Alligator Rivers area (PJM); Kapalga (PJM); Kapalga, Alligator Rivers area (PJM); Kapalga, Kakadu Natl Pk (A. N. Andersen); Katherine Gorge (A. N. Andersen); Koolpinyah (C. Barrett); Manbulloo, SW. of Katherine (PJM); Melville I. (collector unknown); Millingumba I. (C. Barrett); Munmarlary, Kakadu Natl Pk (A. N. Andersen); Nanguluwurr, Kakadu Natl Pk (R. R. Snelling) (LACM); Rookery Point, Kapalga, Kakadu Natl Pk (A. N. Andersen); Yule I. (C. Barrett). **Queensland**: 15 miles SSW. of Normanton (JED); 18 miles WSW. of Ingham (JED); 22 km SE. of Mt Carbine (R. R. Snelling and J. Grey) (LACM); 23 km N. of Townsville (TG); 28 miles SSE. of Townsville (JED); 3.5 km SW. by S. of Mt Baird, 15°10'S., 145°07'E. (I. D. Naumann); 30 km S. of Ingham (PJM); 6 miles W. of Dimbulah (A.H.W.); 8 km E. of Woodstock

(PJMG); 8 miles ESE. of Yelvertoft HS, NW. of Mt Isa (JED); Cardington, Townsville (collector unknown); Coen aerodrome (C. N. Smithers); Lawn Hill Station, 18°30'S., 138°10'E. (A. N. Andersen); Mareeba (H. Hill); Mt Elliott Natl Pk, 22 km SW. of Giru (BBL); Mt Molloy (BBL); Mt Surprise (BBL); Musgrave, 14°47'S., 143°30'E. (P. S. Ward); Norman R. crossing, nr Normanton, 17°51'S., 141°08'E. (R. J. Kohout); Peninsula Rd, 1 km N. of Archer R., 13°26'S., 142°56'E. (P. S. Ward); Silver Plains, Cape York Peninsula (J. L. Wassell); Station Ck, 10 miles E. of Coen, Silver Plains (C. N. Smithers); Townsville (W. M. Wheeler) (LACM). **Western Australia:** 10 miles NNW. of Gordon Downs HS (RSM and JED); Broome, bird observatory (A. A. Burbidge); Derby (J. G. Campbell); Emu Rock (H. Reynolds); Goora Hill (TG); Kalumburu, Kimberley region (A. N. Andersen); King Edward R., Kimberley region (A. N. Andersen).

### *Worker Diagnosis*

Pronotal profile with the posterior region (immediately anterior of the pro-mesonotum suture) rising above the mesonotum in a short, strongly convex arch; in full face view, the lateral margin of the head with more than 4 erect or suberect setae, and often with more than about 10.

### *Description*

Iridescence between compound eyes and on lateral region of head (between compound eye and insertion of mandible) absent to well-developed purple (usually more weakly developed on lateral region). Pigment colour of head and mesosoma yellowish red to reddish; coxae and legs with moderate infuscation, darker than the mesosoma; petiole dark reddish brown (sometimes lighter coloured ventrally); lateral region of second gastral tergite shiny and with green and sometimes purple iridescence. Head pilosity (in full face view) abundant on dorsal surface and often the entire lateral margin; sometimes reduced laterally to 4–6 erect or suberect setae located between the posterolateral corners and the level of the compound eyes. Ocelli absent (rarely present but vestigial). Ventrolateral pronotum with erect setae. Mesosomal setae generally dark, sometimes translucent and appearing pale when

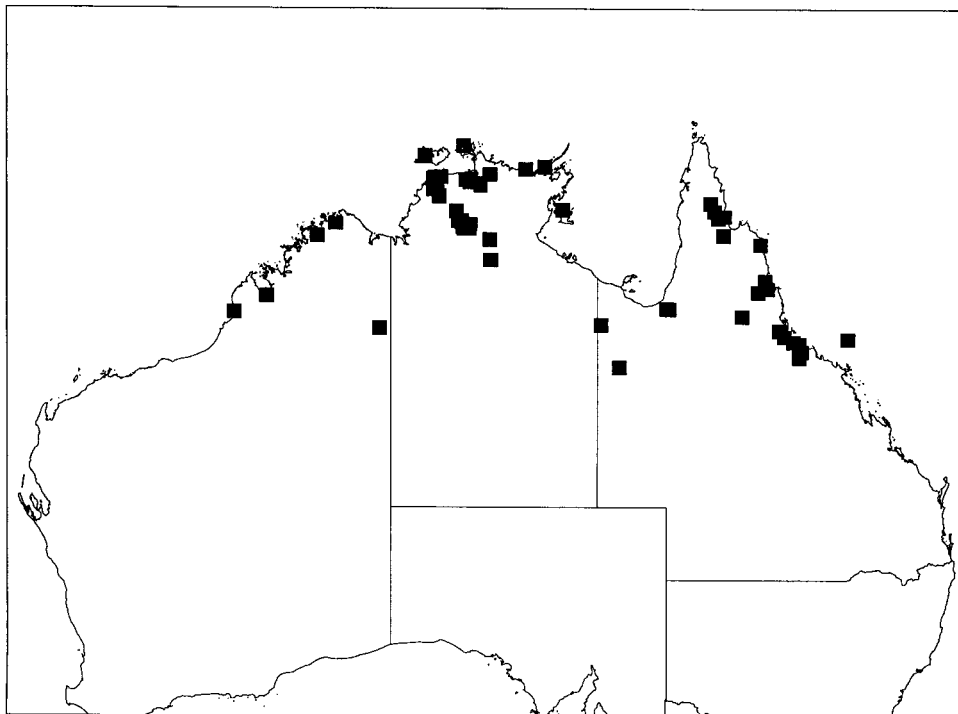


Fig. 14. Distribution of *I. reburrus* specimens examined during this study.

viewed against a lightly coloured background. Pilosity on first gastral tergite abundant, reduced anteriorly. Anterodorsal region of propodeum generally flat, sometimes weakly arched.

### Measurements

*Holotype*. CI 0.92; EL 0.32; EW 0.19; HL 1.91; HW 1.75; ML 0.84; PnL 0.99; PpL 0.92; REL 0.18; SI 0.94; SL 1.64.

*Worker* ( $n=30$ ). CI 0.86–0.95; EL 0.26–0.36; EW 0.16–0.23; HL 1.46–2.09; HW 1.26–1.99; ML 0.64–1.06; PnL 0.75–1.08; PpL 0.68–1.04; REL 0.17–0.21; SI 0.89–1.08; SL 1.36–1.82.

### Comments

*Iridomyrmex reburrus* is morphologically similar to *I. sanguineus* in iridescence and in the shape of the posterior pronotum, but differs in having erect or suberect setae present on the lateral margins of the head. *Iridomyrmex reburrus* also averages slightly darker in colour than *I. sanguineus*, especially in living or freshly collected material. However, in older museum material there is broad overlap in colour between these two species. Geographically, *I. reburrus* is sympatric with *I. sanguineus*, but does not extend as far west, south or east as the latter (Figs 14, 16). Additionally, *I. reburrus* is much less common and more patchily distributed than is *I. sanguineus*, and is apparently limited to slightly wetter sites (e.g. floodplain margins, creek edges, urban lawns) (A. N. Andersen, personal communication).

The separation of *I. reburrus* from *I. sanguineus* is based on the development of erect or suberect setae on the lateral margin of the head above the area immediately posterior to the mandibular insertion. The number of setae varies only slightly between individuals from a single nest series, with a much greater amount of variation occurring between nest series. The majority of *I. reburrus* workers have about 15–40 erect setae distributed continuously and approximately uniformly along the entire lateral margin from the posterolateral corner to the mandibular insertion. In some samples, erect or suberect setae may be reduced to about 6–8 located between the posterolateral corner and the level of the compound eyes. There is also a very limited number of nest series (approximately 2% of the material examined) in which some individuals have only 2 to about 4 setae while others have between 4 and about 10. In contrast to *I. reburrus*, *I. sanguineus* generally lacks erect or suberect setae laterally. However, in a few of the nest series examined, some individuals were found to have a limited number of suberect to decumbent setae located between the posterolateral corner of the head and the level of the compound eyes. In these cases, the individuals without erect setae were much more common than individuals with them. Therefore, the identity of single specimens that possess between about 2 and 6 lateral setae may not be reliably determined without reference to other specimens from the same nest series.

Both *I. reburrus* and *I. sanguineus* show the widest variation in body size found within the *I. purpureus* species-group. It was originally thought that the smaller individuals of both species were separate taxa from the larger individuals. However, all metric characters examined show continuous variation (e.g. head length and width, see Fig. 15) between the extreme size forms with no evidence for gaps or other differentiation. Therefore, it is concluded that this variation is intraspecific rather than interspecific, and that both of these species show considerable variation in size.

### Etymology

The specific name, derived from Latin, describes the hairy head.

### ***Iridomyrmex sanguineus* Forel, stat. nov.**

(Figs 4, 15, 16)

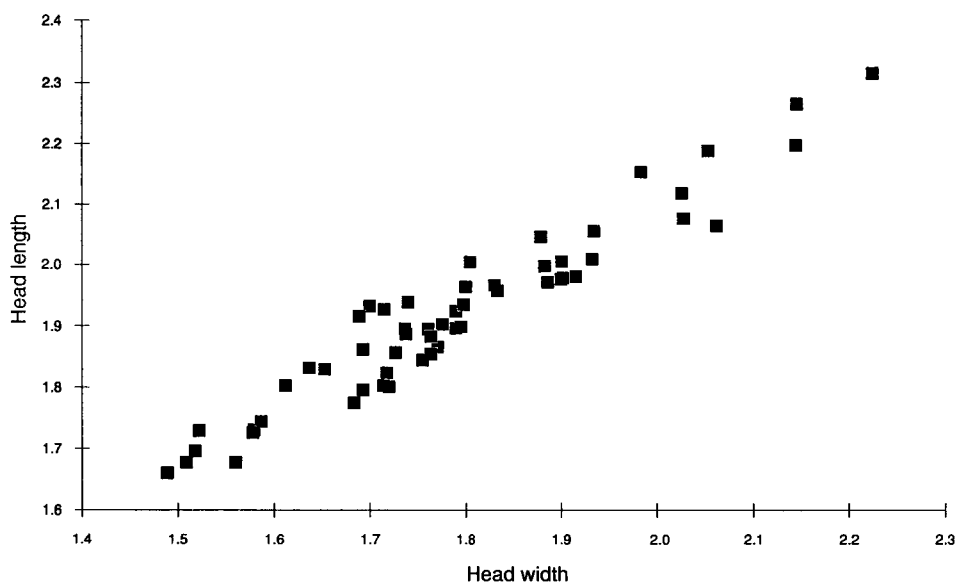
*Iridomyrmex detectus* var. *sanguinea* Forel, 1910: 53.—Forel, 1915: 79 (queen description).

*Iridomyrmex purpureus sanguineus* Forel.—Greenslade, 1974a: 247.

*Material Examined*

**Types.** Nine worker syntypes, Mackay, Queensland (3 individuals in ANIC, 6 individuals in MHNG).

**Other material** (in ANIC unless otherwise noted). **State uncertain:** 'N. W. Australia' (H. Basedow); S. end of Vanderlin I. (W. E. J. Paradise). **Northern Territory:** 12 km SW. of Katherine (PJM); 13 km NW. of Katherine (PJM); 13 miles E. by S. of Victoria River Downs HS, 16°27'S., 131°12'E. (M. Mendum); 15 km SE. of Katherine (PJM); 15 km SW. of Katherine (PJM); 16 km NW. of Katherine (PJM); 18 miles SW. of The Granites (RSM and JED); 22 km SE. of Katherine (PJM); 22 km SW. of Katherine (PJM); 23 km SW. of Katherine (PJM); 25 km W. of Tennant Creek (PJM); 30 km SW. of Katherine (PJM); 31 km SW. of Katherine (PJM); 35 km SW. of Katherine (PJM); 40 km SE. of Katherine (PJM); 41 km N. of Barrow Ck (R. R. Snelling and J. Grey) (LACM); 47 km SW. of Katherine (PJM); 48 km SW. of Katherine (PJM); 4 miles NW. of Tanami (RSM and JED); 4 miles SE. of Yuendumu Mission (RSM and JED); 50 km SW. of Katherine (PJM); 51 miles NW. of Anthony Lagoon (TG); 55 km SW. of Katherine (PJM); 60 km N. of Yuendumu (PJM); 60 km SW. of Katherine (PJM); 7.5 km SW. of Katherine (PJM); 8 km SE. of Katherine (PJM); 9 km NW. of Adelaide R., 13°11'S., 131°03'E. (P. S. Ward); Auvergne (L. Chinnick); Avon Downs, W. of Camooweal, 20°07'S., 137°30'E. (E. Rackemann); Balbirini, nr McArthur R. (PJM); Batten Point, 30 km NE. by E. of Borroloola, 15°54'S., 136°32'E. (M. S. Upton); Birraduk Ck, 12°17'S., 133°13'E. (RWT); Borroloola (PJM); Darwin (C. Barrett; G. F. Hill; S. Skinner; H. Wesselman); Deception Bay, Groote Eylandt, 13°43'S., 136°30'E. (P. Mele); E. of Monmoona (A. H. Wetherly); Fanny Bay, Darwin (G. Campbell); Flora R. (W. B. Spencer); Inverway (L. Chinnick); Katherine, 14°28'S., 132°15'E. (BBL; D. Rackemann); Katherine Experimental Farm, Katherine (collector unknown); Katherine Gorge (PJM); Manbulloo, 25 km SW. of Katherine (PJM); Mataranka (PJM); Mulga Camp (TG); Newcastle Waters (L. Chinnick); Newry (R. Munyard); Oenpelli, E. Alligator R. (J. E. Bray); Ord R. crossing (L. Chinnick); Rimbija I., Wessell Is, 11°01'S., 136°45'E. (T. A. Weir); SE. of Anthony Lagoon (TG); Tanami (PJM); Tennant Creek (E. Allchurch); Top Springs (L. Chinnick); Wave Hill (L. Chinnick; R. Munyard); Willeroo (L. Chinnick); nr Johnston Lagoon (TG). **Queensland:** 10 km N. of Mareeba (BBL); 10 miles ENE. of Undilla HS, NE. of Camooweal (JED); 10 miles ESE. of Croydon (JED); 10 miles W. of Mt Garnet (BBL); 10 miles W. of Townsville (JED); 11 miles E. of Blackwater (JED); 11 miles E. of Kingo (JED); 11 miles SSW. of Donor's Hill HS (JED); 12 km N. of Collinsville (BBL); 12 km SE. of Mingela (PJM); 12 miles N. of Claremont (TG); 12 miles WNW. of Proserpine (JED); 12 miles WSW. of Camel Creek HS, W. of Ingham (JED); 14 km N. of Lotus Ck, Mackay to Marlborough (RWT); 15 miles NE. of Bransby HS (TG) [probably incorrectly labelled]; 15 miles W. of Bowen



**Fig. 15.** Distribution of head length and width measurements (in millimetres) for *I. sanguineus* ( $n=54$ ).



(JED); 15 miles W. of Canobie HS (JED); 16 miles E. of Riversleigh HS, NE. of Camooweal (JED); 16 miles NNW. of Lorraine HS (JED); 16 miles SSW. of Gregory Downs HS, S. of Burketown (JED); 18 miles N. of Planet Downs HS, S. of Burketown (JED); 1 mile S. of Carpentaria Downs HS, SE. of Einasleigh (JED); 1 mile SE. of Lorraine HS (JED); 2.8 miles S. of Cloncurry (D. Hill); 20 km N. of Cairns (BBL); 20 miles N. of Proserpine (collector unknown); 20 miles W. of Georgetown (JED); 21 miles E. of The Lynd HS, SE. of Einasleigh (JED); 22 miles NE. of Camooweal (JED); 22 miles SW. of Gregory Downs HS, S. of Burketown (JED); 25 miles N. of Bowen (A.H.W.); 2 km W. of Emerald (J. McIver); 2 miles SE. of Cloncurry (JED); 2 miles SE. of Mary Kathleen (JED); 30 miles ESE. of Camooweal (JED); 31 km E. of Camooweal (R. R. Snelling and J. Grey) (LACM); 37 miles SE. of Cloncurry (JED); 3 miles N. of Bibbohra (collector unknown); 45 km N. of Bowen, Bruce Hwy (BBL); 4 km S. of Calcium, 19°41'S., 145°50'E. (RWT); 4 miles E. of Herberton (A.H.W.); 4 miles NE. of Gregory Downs HS, S. of Burketown (JED); 4 miles SSW. of Bowen (JED); 4 miles W. of Maggieville HS, N. of Normanton (JED); 50 km NW. of Townsville (PJM); 50 miles SW. of Mackay (PJM); 52 km S. of Woodstock (PJM); 5 miles W. of Haydon (JED); 5 miles WNW. of Mary Kathleen (JED); 5 miles WSW. of Milgarra HS, S. of Normanton (JED); 6 miles N. of Mt Mulloy (F.J.G.); 6 miles W. of Cloncurry (JED); 6 miles W. of Donaldson Tel. Off. (JED); 6 miles WNW. of Gilliat (JED); 6 miles WNW. of Kangaroo Hills HS, WSW. of Ingham (JED); 7 km E. of Charters Towers (PJM); 7 miles E. of Forsayth (JED); 7 miles E. of Koolamarra (JED); 7 miles NE. of Mareeba (collector unknown; A.H.W.); 7 miles NW. of The Lynd HS, SE. of Einasleigh (JED); 80 km SW. of Mackay, nr Nebo (BBL); 8 km W. of Mt Garnet (BBL); 8 miles ESE. of Yelvertoft HS, NW. of Mt Isa (JED); 8 miles SW. of Stirling HS, NE. of Normanton (JED); 93 km W. of Nebo (PJM); Almaden, Chillagoe Dist. (W. D. Campbell); Beaglehole, Townsville (collector unknown); Blackdown Tableland, Dawson Range, 23°45'S., 149°07'E. (R. J. Kohout); Botanical Gardens, Cooktown (BBL); Camooweal (C. Barrett); Cape Ferguson (PJM); Captain Cook Natl Pk, Cooktown (BBL); Charters Towers (PJM; BBL); Chillagoe, 17°14'S., 144°30'E. (RWT and JEF); Clarmont (F. A. Cudmore); Croydon (BBL); Davies Ck, 16 km SE. of Mareeba (J. McIver); Duaringa Forestry Office (PJM); Emerald (PJM); Forsayth (BBL); Forty Mile Scrub Natl Pk (J. McIver); Giru (BBL); Home Cliffs (E. H. Bourne); Innisfail (BBL); Iron Range (E. Stager) (LACM); James Cook Univ., Townsville (J. McIver); Karumba (JED; L. Weatherill); Lawn Hill Station, 18°30'S., 138°10'E. (A. N. Andersen); Lizard I. (H. Heatwole); Lizard I., NNE. of Cooktown (M. S. and B. J. Moulds); Magnetic I. (F. Gay); Manfred (TG); Mareeba (TG; A. V.

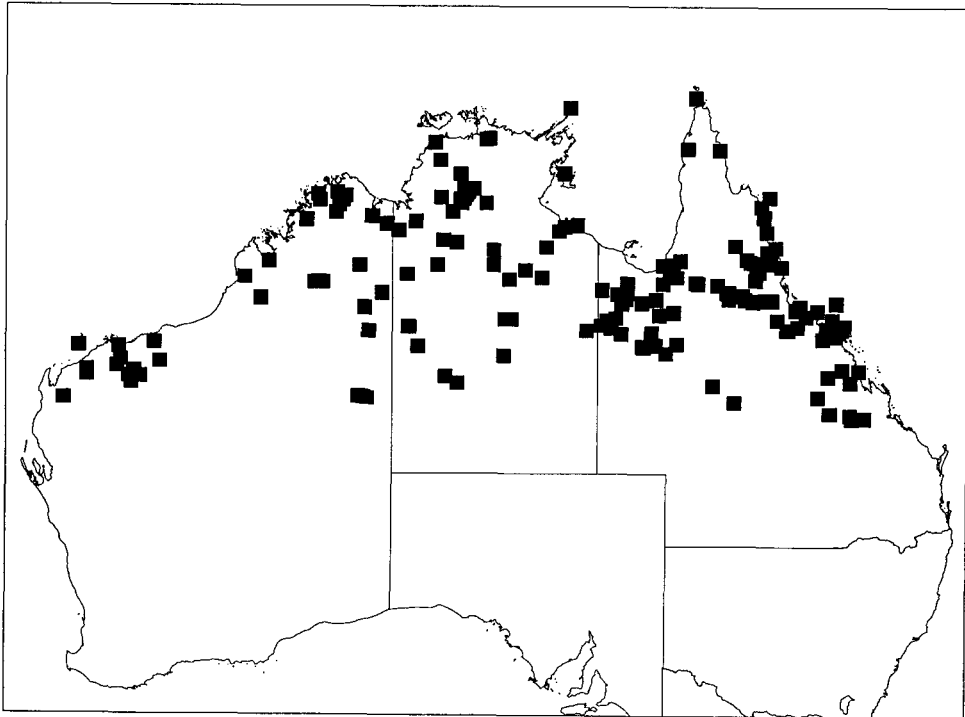


Fig. 16. Distribution of *I. sanguineus* specimens examined during this study.

Hill; BBL); Mt Cottell, 17°22'S., 144°52'E. (RWT and JEF); Mt Helen Station Rd, Paluma Range (RWT); Mt Webb Natl Pk, 15°04'S., 145°07'E. (I. D. Naumann); Mullungerra (TG); Norman R. crossing, nr Normanton, 17°51'S., 141°08'E. (R. J. Kohout); North Pine R. (A. Musgrave); Picnic Bay, Magnetic I. (BBL); Robin Hood (collector unknown); Round I. mixed with Restoration Rock (H. Heatwole); Taldora Station, N. of Julia Ck (R. Makim); The Common, nr Townsville (G. F. Hill); Thursday I. (N. L. H. Krauss); Townsville (F. P. Dodd; TG; PJMG; G. F. Hill; BBL); Townsville airport (BBL); Weipa Mission (TG); Winton (F. A. Cudmore); Wrotham Park (PJMG); c. 8 km SW. of Mt Garnet (RWT and JEF); nr Chillagoe, 17°14'S., 144°30'E. (RWT and JEF). **Western Australia:** 10 miles NNW. of Gordon Downs HS (RSM and JED); 11 miles S. of Pippingarra HS (J.H.C.); 12–20 miles SSW. of Kalumburu Mission, King Edward R., N. of Kimberleys (W. Leutert); 12 miles N. of Hamersley HS, Hamersley Range (RSM and JED); 14 miles W. of Mt Webb, 22°53'S., 127°55'E. (RSM and JED); 150 km S. of Dampier (PJMG); 163 km SE. by E. of Broome, 18°49'S., 123°17'E. (I. F. B. Common); 167 km W. of Fitzroy Crossing (R. R. Snelling and J. Grey) (LACM); 17 miles SW. of Coolawanyah HS, NW. of Wittenoom Gorge (RSM and JED); 1 mile SW. of Mt Herbert, S. of Roebourne (RSM and JED); 20 miles E. of Broome (RSM and JED); 21 miles NW. of Wittenoom Gorge (RSM and JED); 23 miles E. of Fitzroy Crossing (PJMG); 25 km WSW. of Barradale Roadhouse (PJMG); 25 miles WNW. of Mt Webb, 22°51'S., 127°45'E. (RSM and JED); 2 km ENE. of Millstream (JEF); 2 miles NE. of Abydos (J.H.C.); 3 km SW. of Wolf Creek Crater (A. Burbidge); 3 miles ENE. of Coolawanyah HS, NW. of Wittenoom Gorge (RSM and JED); 3 miles N. of Bibbohoa (collector unknown); 3 miles N. of Hamersley HS, Hamersley Range (RSM and JED); 4 km W. of King Cascade, CLAM Site 28/3, 15°38'S., 125°15'E. (T. Weir); 80 km ESE. of Onslow (PJMG); Balgo Mission, 20°09'S., 127°58'E. (A. R. Peile); Barrow I., 20°46'S., 115°24'E. (H. Heatwole); Carson Escarpment, 14°49'S., 126°49'E. (I. F. B. Common and M. S. Upton); Coolawanyah (J.H.C.); Derby (J. G. Campbell); Drysdale R., 14°39'S., 126°57'E. (I. F. B. Common and M. S. Upton); Fitzroy Crossing (L. Chinnick); Fossil Downs, Kimberleys (Likins); Geraldton (J. Clark) [probably incorrectly labelled]; Gregory L., 2 km W. of Lens Bore (A. Burbidge); Halls Creek (L. Chinnick; S. A. Harrington); La Grange Mission, 120 miles S. of Broome (K. M. McKelson); Lone Dingo, Mitchell Plateau, 14°35'S., 125°45'E. (I. D. Naumann and J. C. Cardale); Millstream (E. B. Britton); Morgan Falls, 15°02'S., 126°40'E. (I. F. B. Common and M. S. Upton); Old Doongan, 15°19'S., 126°32'E. (I. F. B. Common and M. S. Upton); Pollack Hills, 40 miles WNW. of Mt Webb, 22°49'S., 127°31'E. (RSM and JED); Roebourne (K. T. Richards); Wyndham (R.G.L.).

### Worker Diagnosis

Pronotal profile with the posterior region (immediately anterior to the pro-mesonotum suture) rising above the mesonotum in a short, strongly convex arch; in full face view, the lateral margin of the head generally without erect or suberect setae, but always with fewer than 5.

### Description

Iridescence between compound eyes and on lateral region of head (between compound eye and insertion of mandible) absent to well-developed purple (usually more weakly developed on lateral region). Pigment colour of head and mesosoma light yellow to reddish; coxae and legs often with light infuscation, either the same colour as mesosoma or slightly darker; petiole slightly to much darker than mesosoma; lateral region of second gastral tergite moderately to very shiny and often with purple iridescence. Head pilosity (in full face view) present on occipital margin, and with 0–4 (rarely up to 8) setae near mandibular insertion. Ocelli absent. Ventrolateral pronotum with at most a few erect setae. Mesosomal setae pale to dark. Pilosity on first gastral tergite reduced, especially anteriorly. Anterodorsal region of propodeum flat to uniformly arched.

### Measurements

*Worker* ( $n = 55$ ). CI 0.88–1.00; EL 0.30–0.40; EW 0.17–0.24; HL 1.66–2.32; HW 1.49–2.23; ML 0.71–1.13; PnL 0.82–1.23; PpL 0.82–1.23; REL 0.17–0.21; SI 0.85–1.06; SL 1.45–1.92.

### Comments

*Iridomyrmex sanguineus* is the most common and widespread species of the *I. purpureus* group species in northern Australia (Fig. 16). It is most similar to *I. reburrus*, but lacks

erect or suberect setae on the lateral margin of the head (see Comments under *I. reburrus* for discussion of this character). *Iridomyrmex sanguineus* also shows a large amount of variation in overall body size. As discussed under *I. reburrus*, this variation is continuous and does not indicate that separate species are involved but, rather, suggests that these samples represent a single, variable species.

*Iridomyrmex spadius*, sp. nov.

(Figs 7, 17)

*Iridomyrmex* 'dark yellow' or 'DY'.—Greenslade and Halliday, 1982: 249.

*Material Examined*

*Holotype*. Worker, Queensland, Millstream Natl Pk [c. <sup>17°39'S, 145°26'E</sup>~~21°35'S, 117°05'E~~], 6.viii.1975, B. B. Lowery (ANIC, type no. 7974).

*Paratypes*. 16 workers, same data as holotype (ANIC, BMNH, MCZC).

*Other material* (in ANIC unless otherwise noted). **Queensland**: 10 km W. of Springsure (PJM); 15.5 km S. of Emerald (PJM); 1 mile S. of Carpentaria Downs HS, SE. of Einasleigh (JED); 22 miles N. of Emerald (TG); 5 miles ENE. of Greenvale Homestead, W. of Ingham (JED); 6 miles N. of Emerald (JED); 6 miles WSW. of Greenvale Homestead, W. of Ingham (JED); 9 miles ESE.

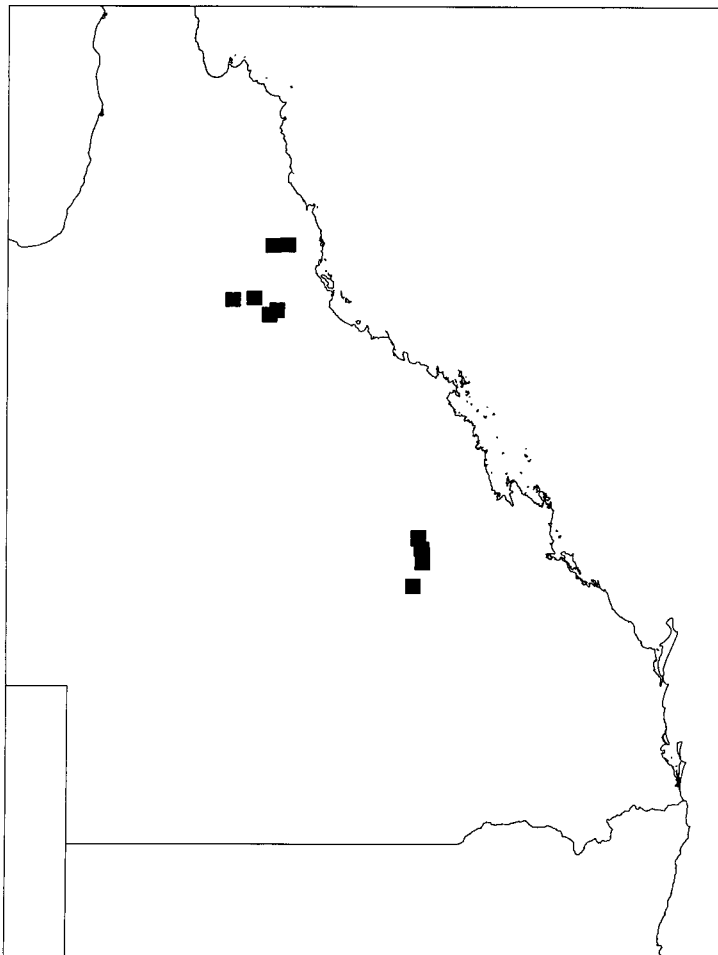


Fig. 17. Distribution of *I. spadius* specimens examined during this study.

of Capella (JED); Conjuboy Ck, E. of Einesleigh (BBL); Emerald (J. Hayes); Millstream Falls Natl Pk (BBL); Mt Garnet (BBL); vic. Mt Garnet (RWT).

### *Worker Diagnosis*

Head light yellow-red, much lighter than mesosoma; superficially similar to some *I. galbanus* (similarly coloured mesosoma with lighter-coloured head) but differs in lacking green iridescence on the lateral regions of the head, and in distribution (Queensland rather than South Australia and Victoria).

### *Description*

Iridescence between compound eyes and on lateral region of head (between compound eye and insertion of mandible) absent to very weak purple. Pigment colour of mesosoma dark reddish brown; head light yellow-red (often slightly darker dorsally); coxae and legs similar in colour to, or slightly lighter than, mesosoma; petiole slightly darker than mesosoma; lateral region of second gastral tergite moderately shiny to shiny and with green and/or purple iridescence. Head pilosity (in full face view) abundant on occipital margin, and with 2–6 pale setae near mandibular insertion. Ocelli absent. Ventrolateral pronotum with 2–5 erect setae. Mesosomal setae with dark pigment (sometimes translucent and appearing pale when viewed against a lightly coloured background). Pilosity on first gastral tergite abundant, sometimes reduced anteriorly. Anterodorsal region of propodeum varying from flat to weakly arched.

### *Measurements*

*Holotype*. CI 0.95; EL 0.34; EW 0.22; HL 1.95; HW 1.84; ML 0.99; PnL 0.95; PpL 1.00; REL 0.18; SI 0.95; SL 1.75.

*Worker* ( $n=12$ ). CI 0.89–0.95; EL 0.34–0.38; EW 0.20–0.23; HL 1.83–2.11; HW 1.66–1.99; ML 0.89–1.07; PnL 0.90–1.05; PpL 0.93–1.07; REL 0.19–0.21; SI 0.91–1.05; SL 1.64–1.81.

### *Comments*

There are a limited number of collections of *I. spadius* from two disjunct areas in Queensland (Fig. 17). The northern population occurs approximately between Ravenshoe and Einesleigh, whereas the southern population is in the vicinity of Emerald. No collections of this species have been made between these two areas, which are separated by about 550 km.

Two other species of the *I. purpureus* group show a distributional limitation in this same region. *I. sanguineus* is distributed across northern Australia (Fig. 16) and its southern limit in Queensland is approximately the same as that for *I. spadius*. However, even though *I. sanguineus* is widely distributed to the north and along the coast almost as far south as Rockhampton, it is not known to occur in the inland area between the northern and southern *I. spadius* populations.

*I. purpureus* is found in south-eastern Australia north to about Mackay (Fig. 13), and its northern limit includes the range of the southern *I. spadius* population. This northern boundary is very similar to that found in both *I. sanguineus* and *I. spadius* in this region. Thus three species of meat ants show approximately the same distribution pattern in east-central Queensland.

### *Etymology*

The specific name, derived from Latin, describes the chestnut-brown body colour.

### *Iridomyrmex spodipilus*, sp. nov.

(Fig. 18)

*Iridomyrmex* 'orange' or 'O'.—Greenslade and Halliday, 1982: 249.

### Material Examined

**Holotype.** Worker, South Australia, 21 km WNW. of William Creek, 28°49'S., 136°09'E., 22.ix. 1972, J. E. Feehan (ANIC, type no. 7975).

**Paratypes.** 37 workers, same data as holotype (ANIC, BMNH, MCZC).

**Other material** (in ANIC unless otherwise noted). **New South Wales:** 10 km S. of Olive Downs HS (PJM); 13 miles S. of Warri Warri Gate (L. J. Chinnick); 13 miles SE. of Milparinka (TG); 14 km N. of Tibooburra (PJM); 16.5 km S. of Olive Downs HS (PJM); 21 miles N. of Tibooburra (L. J. Chinnick); 22 km N. of Tibooburra (PJM); 4 miles E. of Osaca Bore (TG); 4 miles NW. of Coally HS, Milparinka dist. (L. J. Chinnick); Fowler's Gap (PJM); Sturt Natl Pk (PJM); Wapah Hill, Tibooburra dist. (L. J. Chinnick). **Queensland:** 11 miles WSW. of Noccundra (TG); 1 mile N. of Little Dingera, nr Bransby (L. J. Chinnick); 1 mile N. of Pyampah HS, Bulloo Overflow (L. J. Chinnick); 1 mile N. of Warri Warri Gate (TG); 1 mile NNW. of (old) Narylco HS (TG); 5 miles SSE. of Nappa Merrie HS (TG); Thargumindah (PJM); Tickalara HS (new) (L. J. Chinnick). **South Australia:** 1 km E. of Curdimurka, 29°29'S., 137°06'E. (JEF); 21 km WNW. of William Creek, 28°49'S., 136°09'E. (JEF); 9 miles NW. of Woomera (TG); Andamooka (PJM); Anna Creek (collector unknown); Boopiechee Railway siding (RSM); Hamilton HS, 26°43'S., 135°05'E. (JEF); Hawks Nest Well (RSM); Marree (H. Mincham); Monarro Station (PJM); Oodnadatta (G. F. Hull); Pimba (RSM); Wintinna HS (RSM); Woomera (PJM); c. 1 km NW. of Beresford, 29°14'S., 136°39'E. (JEF); c. 25 km W. of Marree, 29°38'S., 137°48'E. (JEF); c. 55 km SE. of Oodnadatta, 27°56'S., 135°48'E. (JEF); c. 7 km SE. of William Creek, 28°57'S., 136°24'E. (JEF); c. 8 km N. of Abminga (JEF).

### Worker Diagnosis

A member of the *sanguineus* complex recognisable by the pale erect setae on the mesosomal dorsum and the reduced appressed pubescence on the lateroventral regions of the first gastral tergite. *Iridomyrmex spodipilus* is the only southern member of the complex and is allopatric to the other species.

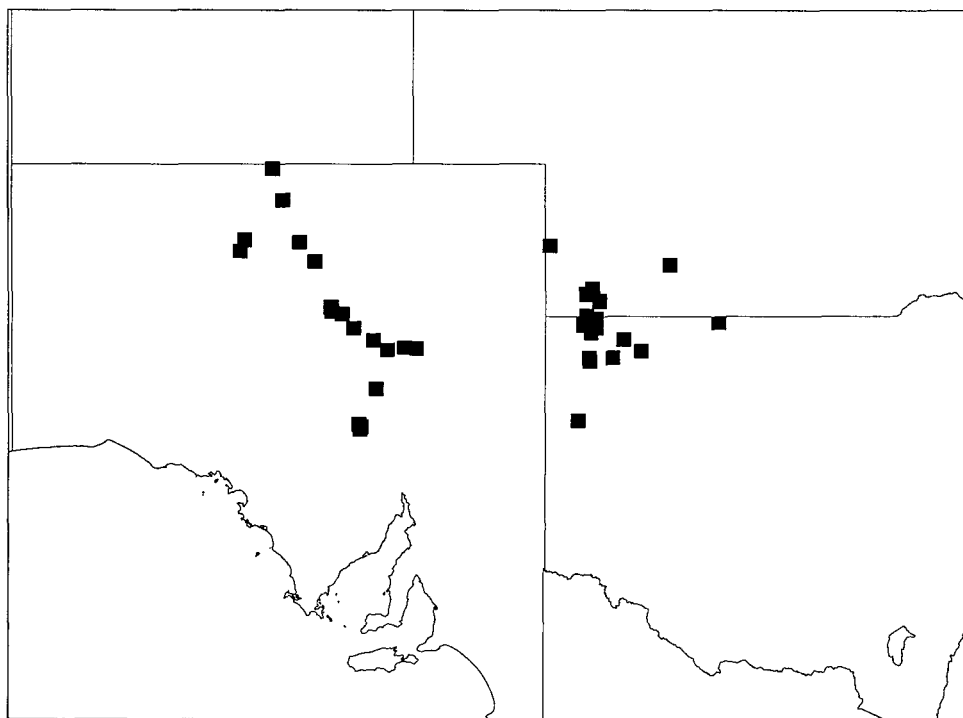


Fig. 18. Distribution of *I. spodipilus* specimens examined during this study.

*Description*

Iridescence between compound eyes and on lateral region of head (between compound eye and insertion of mandible) absent to very weak purple. Pigment colour of mesosoma yellowish red; head the same or slightly darker in colour than mesosoma; coxae and legs similar in colour to mesosoma to heavily infuscated and much darker than mesosoma; petiole dark yellowish red to reddish brown; lateral region of second gastral tergite shiny and with green iridescence. Head pilosity (in full face view) abundant on occipital margin (or rarely absent), and with 4–6 setae near mandibular insertion. Ocelli absent. Ventrolateral pronotum with 2–5 setae. Mesosomal setae pale. Pilosity on first gastral tergite reduced. Anterodorsal region of propodeum arched.

*Measurements*

*Holotype*. CI 0.93; EL 0.37; EW 0.22; HL 1.96; HW 1.82; ML 0.89; PnL 0.99; PpL 0.92; REL 0.21; SI 0.88; SL 1.60.

*Worker* ( $n=24$ ). CI 0.86–0.95; EL 0.34–0.41; EW 0.15–0.24; HL 1.65–2.07; HW 1.44–1.90; ML 0.74–1.00; PnL 0.80–1.04; PpL 0.75–1.00; REL 0.19–0.24; SI 0.87–1.02; SL 1.48–1.71.

*Comments*

The geographic range of *I. spodipilus* is divided into two apparently allopatric populations separated by the Simpson Desert (Fig. 18). While both populations share the characters used above to diagnose this species, they differ as follows: the western (South Australian) populations are lighter in overall colour with the head and mesosoma being similar yellowish red, while the eastern (New South Wales and Queensland) populations are slightly darker with the head lighter in colour than the mesosoma; additionally, the western populations average slightly larger than the eastern populations [SL 1.49–1.71 v. 1.47–1.62, total mesosoma length (PnL + ML + PpL) 2.42–2.94 v. 2.32–2.84, with a similar trend in most other measurements as well]. Despite these differences, the similarities in erect pilosity colour and gastral appressed pubescence suggest that these populations represent a single species showing geographic variation in colour and size.

*Etymology*

The specific name, derived from Latin, describes the ash-coloured body setae.

*Iridomyrmex variscapus*, sp. nov.

(Fig. 9)

*Material Examined*

*Holotype*. Worker, Queensland, Sandringham [c. 24°03'S., 139°04'E.], 6.vi.1980, P. J. M. Greenslade (ANIC, type no. 7976).

*Paratypes*. 11 workers, same data as holotype (ANIC, BMNH, MCZC).

*Worker Diagnosis*

Eyes large (EL > 0.50 mm, REL > 0.27); mesosoma yellowish red; scapes distinctly bicoloured.

*Description*

Iridescence between compound eyes weak purple and on lateral region of head (between compound eye and insertion of mandible) absent. Pigment colour of mesosoma yellowish red; coxae, legs and petiole slightly darker, head slightly lighter than mesosoma; lateral region of second gastral tergite shiny and with weak green and purple iridescence. Head pilosity (in full face view) present on occipital margin and with 2–6 setae near mandibular insertion. Ocelli present (anterior ocelli vestigial and reduced to a shallow depression). Ventrolateral pronotum with 2–5 erect setae. Mesosomal setae pale. Pilosity on first gastral tergite reduced. Anterodorsal region of propodeum flat.

### Measurements

*Holotype.* CI 1.03; EL 0.57; EW 0.31; HL 1.74; HW 1.79; ML 0.92; PnL 0.95; PpL 0.90; REL 0.32; SI 0.84; SL 1.50.

*Worker* ( $n=4$ ). CI 1.03–1.05; EL 0.54–0.58; EW 0.30–0.32; HL 1.62–1.81; HW 1.71–1.87; ML 0.92–0.96; PnL 0.89–1.01; PpL 0.85–0.94; REL 0.31–0.32; SI 0.81–0.84; SL 1.38–1.54.

### Comments

*Iridomyrmex variscapus* is most similar to *I. bigi* in having large eyes and a broad head. It differs in being lighter in colour and in having a distinctly bicoloured scape. The only known workers were collected in the eastern Simpson Desert (Fig. 9) from a nest in very hard interdune soil and with a single entrance, and were crepuscular (P. J. M. Greenslade, personal communication).

### Etymology

The specific name describes the bicoloured scape.

### *Iridomyrmex viridiaeneus* Viehmeyer, stat. nov.

(Fig. 19)

*Iridomyrmex detectus* var. *viridiaeneus* Viehmeyer, 1914: 41.

*Iridomyrmex purpureus viridiaeneus*. — Greenslade, 1974a: 247.

*Iridomyrmex* 'small black' or 'SB'. — Greenslade and Halliday, 1982: 249.

### Material Examined

*Types.* Seven worker syntypes, Killalpaninna, South Australia [3 individuals in NHMB (Baroni Urbani 1977: 75); 1 individual in ANIC; 1 individual in USNM; 2 individuals in MHNG].

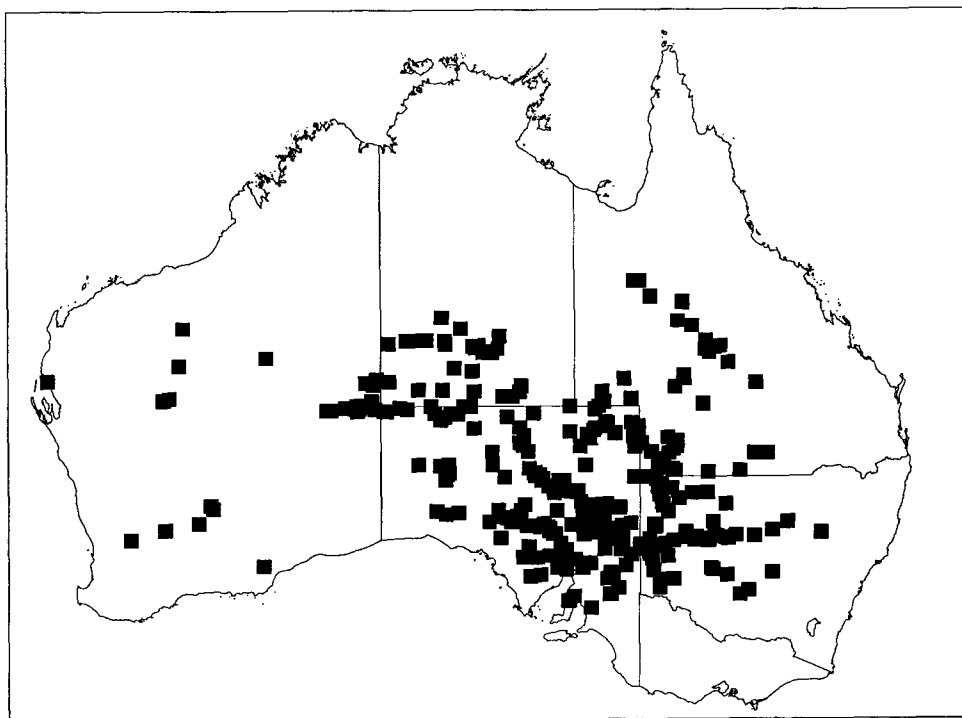


Fig. 19. Distribution of *I. viridiaeneus* specimens examined during this study.

*Other material* (in ANIC unless otherwise noted). **'Central Australia':** Hart Range (T. Hodge-Smith). **New South Wales:** 'Coombah Road House', 32°59'S., 141°37'E. (R. J. Kohout); 10 km W. of Wilcannia (PJM); 10 miles ENE. of Barnato L., W. of Cobar (L. J. Chinnick); 10 miles NW. of Clifton Downs (TG); 11 miles ENE. of Topar Hotel, E. of Broken Hill (TG); 120 km S. of Broken Hill (PJM); 12 km SW. of Ivanhoe (PJM); 130 km W. of Cobar (PJM); 15 miles E. of Wilcannia (J. Boyd; T. Boyd); 15 miles N. of Broken Hill (BBL); 16 miles WSW. of Wilcannia (TG); 17 miles NW. of Wilcannia (L.J.C.); 18 miles SSW. of Packsaddle Mt (TG); 19 km W. of Rankins Springs (collector unknown); 19 miles W. of Cobar (TG); 1 mile E. of L. Gunyulka, E. of Wilcannia (TG); 1 mile W. of Worungil Tank, W. of Wilcannia (TG); 24 km S. of Olive Downs HS (PJM); 2 miles N. of Moama HS (TG); 2 miles NNE. of Moama HS, SE. of Poopaloo L. (L. J. Chinnick); 2 miles S. of Cobham L., Milparinka dist. (L. J. Chinnick); 33 miles E. of Broken Hill (J. Boyd); 35 km N. of Broken Hill (BBL); 3 miles E. of Boppy Mt (TG); 3 miles WNW. of Volo HS, L. Poopaloo (TG); 40 km N. of Wentworth (PJM); 40 km W. of Broken Hill (PJM); 40 miles W. of Wanaaring (S. J. Paramonov); 4 miles N. of One Tree HS, Milparinka dist. (L. J. Chinnick); 50 km W. of Pooncarie (PJM); 5 miles E. of Salisbury Downs HS (TG); 5 miles SE. of Milparinka (L. J. Chinnick); 5 miles SSW. of Fowler's Gap (TG); 5 miles WSW. of Topar Hotel, E. of Broken Hill (TG); 60 miles E. of Wilcannia (TG); 65 km S. of Broken Hill (PJM); 65 km W. of Pooncarie (PJM); 6 miles NW. of Cobham L. (TG); 6 miles SE. of Milparinka (TG); 7 miles SSW. of Cobham L. (TG); 85 km W. of Cobar (PJM); 8 km SW. of Goolgowi (PJM); 95 km E. of Wilcannia (PJM); 9 miles E. of L. Gunyulka, E. of Wilcannia (TG); 9 miles N. of Tibooburra (L. J. Chinnick); Birkalla (TG); Boronia Downs (TG); Broken Hill (PJM); D. Hogan; BBL); Burndale HS, nr Burke's Cave, Broken Hill (BBL); Condoblin (PJM); Fowler's Gap (PJM); A. C. Grice); Ivanhoe (PJM); Kapunda, N. of Nyngan (PJM); Kinchega Natl Pk (A. Wade); L. Mere, 40 km NNW. of Louth (PJM); Mundi Mundi, nr Broken Hill (PJM); Pooncarie, 75 miles S. of Menindee (R. Mew); Poopaloo L., 1 mile WNW. of Volo HS (L. J. Chinnick); Quambone (TG); Sandstone Paddock, Fowler's Gap Research Stn, 31°02'S., 141°40'E. (P. Greenaway); Silverton (PJM); Sturt Natl Pk (PJM); The Gap, Koonenberry Range, NW. of White Cliffs (L. J. Chinnick); Tibooburra, town area (L.C.); Tilpa, 160 km SW. of Burke (M. McInerney); Wanaaring Rd (TG); Willandra Natl Pk (BBL); c. 37 km S. of Broken Hill, 32°18'S., 141°26'E. (R. J. Kohout). **Northern Territory:** 1.5 km N. of Alice Springs (PJM); 121 km W. of Ayers Rock (PJM); 13 miles SW. of Kulgera (RSM and JED); 151 km S. of Alice Springs (PJM); 15 km E. of Jessie Gap, Alice Springs (PJM); 15 miles ESE. of Papunya Native Settlement (RSM and JED); 2 km E. of Emily Gap, Alice Springs (PJM); 39 km NE. of Andado HS, 25°08'S., 135°31'E. (JEF); 34 miles W. of Sandy Blight Junction (RSM and JED); 48 miles W. of Papunya Native Settlement (RSM and JED); 6 km N. of Yuendumu (PJM); 7 miles E. of Hamilton Downs HS (RSM and JED); 8 miles NNW. of Hamilton Downs HS (RSM and JED); 9 km E. of Curtin Springs, 25°19'S., 131°51'E. (JEF); Alice Springs, 23°33'S., 134°25'E. (S. A. Harrington); Alice Springs, 23°42'S., 133°53'E. (JEF); Attartinga, NW. of Alice Springs (PJM); Batchelor (G. F. Hill); Ehrenberg Range, 50 miles E. of Sandy Blight Junction (RSM and JED); Harts Range, 23°01'S., 134°30'E. (S. A. Harrington); Hull R., 33 km ESE. of Docker R., 24°58'S., 129°23'E. (JEF); Kunoth Paddock, 30 km NW. of Alice Springs (W. R. Low); Kunoth Paddock, nr Alice Springs (PJM); Mt Leisler, 16 miles SW. of Sandy Blight Junction (RSM and JED); Napperby Ck, 27 miles ESE. of Mount Wedge HS (RSM and JED); Old Andado, c. 15 km E. by N. of Andado HS, 25°23'S., 135°26'E. (JEF); c. 50 km E. of Finke (JEF); c. 56 km N. of Kulgera (JEF); Rankine R. (TG); Simpson Gap, 23°43'S., 133°43'E. (JEF); Tempe Downs (P. Ranford); Valley of Winds, The Olgas, 25°18'S., 130°44'E. (JEF); c. 5 km ESE. of Papunya Native Settlement (RSM and JED); c. 5 km N. of Henbury HS, 24°30'S., 133°15'E. (JEF); c. 9 km E. of Finke (JEF). **Queensland:** 100 km SE. of Windorah (PJM); 105 km SW. of Longreach (PJM); 10 km N. of Birdsville (PJM); 11 miles SE. of Kihee HS (TG); 14 miles NW. of old Tickalara HS (L. J. Chinnick); 15 km N. of Jundah (PJM); 15 miles W. of Winton (JED); 1 mile N. of Naryilco (Yanko HS) (TG); 18 miles ESE. of McKinlay (JED); 1 mile W. of Naryilco (Yanko HS) (TG); 20 km SE. of Tambo (PJM); 21 miles WNW. of Kihee HS (TG); 22 miles WSW. of Noccundra (TG); 23 miles NE. of Bransby HS (TG; PJM); 25 km N. of Windorah (PJM); 25 km NW. of Hungerford (PJM); 25 km S. of Longreach (PJM); 25 km SW. of Longreach (PJM); 25 km W. of Monkira (PJM); 28 miles SE. of Orientos HS (TG); 2 miles S. of (new) Naryilco HS (Yanko) (L. J. Chinnick); 30 miles E. of Longreach (JED); 35 km E. of Cameron Corner (PJM); 35 miles SE. of Nappa Merrie (TG); 3 miles N. of Nappa Merrie (TG); 40 km E. of Cameron Corner (PJM); 40 km NW. of Blackall (PJM); 45 km SE. of Winton (PJM); 4 miles N. of Kaampa (JED); 4 miles W. of (new) Naryilco (Yanko HS) (TG); 55 km W. of Bollon (PJM); 5 miles N. of (old) Naryilco HS (L. J. Chinnick); 5 miles N. of Woomoonooka (TG); 65 km W. of Bollon (PJM); 6 miles E. of Haydon (JED); 6 miles W. of Tickalara HS, Grey Range (TG); 70 km E. of Cunnamulla (PJM); 7 miles E. of Woomoonooka (TG); 7 miles WNW. of Oorindi (JED); 80 km S. of Cunnamulla (PJM); Darr R., 31 km NW. by N. of Longreach,



23°13'S., 144°04'E. (M. S. Upton); Ifracombe (R. Kumar) (LACM); Jundah (PJM); Longreach (C. Barrett); Nappa Merrie (TG); Nocundra (TG); Nockatunga HS (TG); Nulla 1:250 000 Barolka (PJM); Pierikoola waterhole, W. of Betoota (PJM); summit Grey Range, 4 miles NW. of (old) Tickalara HS (L. J. Chinnick). **South Australia:** 10 km E. of Mt Ive HS, Gawler Ranges (PJM); 10 km N. of L. Eyre South, 15 km W. of Caravan Bore (PJM); 10 km N. of Observatory Hill, Victoria Desert (PJM); 10 km NW. of Arkaroola, Flinders Ranges (PJM); 10 km SW. of Arrabury (PJM); 10 miles S. of Braemar (PJM); 10 miles W. of Childara Rock, 31°36'S., 134°34'E. (PJM); 11 km N. of Whyalla (PJM); 11 miles W. of Granite Downs HS (RSM and JED); 120 km NE. of Macumba HS, Simpson Desert (PJM); 12 km ESE. of Umberatana, Flinders Ranges (PJM); 12 km from Orparinna HS in direction of Brachina Gorge (BBL); 14 miles SE. of Ooldea (RSM and JED); 14 miles SW. of Ernabella Mission (RSM and JED); 15 km E. of Vokes Hill (PJM); 15 km NE. of Umberatana, Flinders Ranges (PJM); 15 km NW. of Kalabity HS (PJM); 15 miles SSW. of Observatory Hill (RSM and JED); 15 miles W. of Mt Morris, Musgrave Range (RSM and JED); 16 km N. of Iron Baron (PJM); 16 miles NW. by W. of Mt Ive HS (Key, Upton, Balderson); 16 miles SE. of Woocalla (TG); 17 miles S. of Emu (RSM and JED); 17 miles W. of Kingoonya (TG); 18 km S. of Quorn, Flinders Ranges (PJM); 18 miles SW. of Melton (PJM and CAK); 19 miles NW. of Woomera (TG); 1 mile S. of Victory Downs HS (RSM and JED); 1 mile SW. of Melton (PJM and CAK); 20 km ENE. of Teruchi WH, Eyres Ck, E. of Simpson Desert (PJM); 20 km ENE. of Umberatana, Flinders Ranges (PJM); 20 km N. of Billeroo Hut (PJM); 20 km W. of Cameron Corner (PJM); 20 km W. of Poeppel Corner (PJM); 20 miles W. of Mt Whinham (RSM and JED); 21 km WNW. of William Creek, 28°49'S., 136°09'E. (JEF); 22 miles SW. of Melton (PJM and CAK); 23 km WNW. of Benagerie HS (PJM); 23 miles WSW. of Mulga Park HS (RSM and JED); 24 km NW. of Olary (PJM); 25 km SW. of Port Augusta (PJM); 25 km W. of Sturt Vale HS (PJM); 25 miles E. of Coondambo (TG); 29 miles SW. of Ernabella Mission (RSM and JED); 2 km S. of Mt Rose, Flinders Ranges (PJM); 2 miles SE. of Mt Davies, Tomkinson Range (RSM and JED); 2 miles W. of Kingoonya (TG); 30 km W. of Emu (PJM); 30 miles WNW. of Emu (RSM and JED); 32 km E. of Copley, Flinders Ranges (PJM); 35 km W. of Balumbah, Eyre Peninsula (PJM); 38 km NW. of Kalabity HS (PJM); 3 km NW. of Radium Hill (PJM); 3 km W. of Emu camp, Victoria Desert (PJM); 40 km W. of Emu (PJM); 45 miles W. of Ernabella Mission (RSM and JED); 47 km N. of Kingoonya (PJM); 4 km SW. of Kimba, Eyre Peninsula (PJM); 50 km S. of Olary (PJM); 54 miles SSE. of Mt Willoughby (RSM and JED); 55 km S. of Birdsville (PJM); 56 miles W. of Musgrave Park Mission (RSM and JED); 5 km E. of Gibraltar Rocks, N. of Tarcoola (PJM); 5 km S. of Anna Creek (PJM); 5 km S. of Erudina, Flinders Ranges (PJM); 5 miles ENE. of Watson (RSM and JED); 5 miles N. of Braemar (PJM); 5 miles SSE. of Mt Morris, Musgrave Ranges (RSM and JED); 5 miles W. of Coondambo (TG); 65 km E. of Clifton Hills (PJM); 6 km E. of Frome Downs HS (PJM); 6 km W. of Koonchera, Birdsville Track (PJM); 6 km WNW. of Morgan (PJM); 6 miles E. of Tarcoola (TG); 7 km NW. of Morgan (PJM); 7 miles E. of Iron Knob (PJM); 7 miles NE. of Orreroo (PJM and CAK); 7 miles W. of Barton (TG); 7 miles W. of Mt Davies, Tomkinson Range (RSM and JED); 8 km S. of Wertaloona, Flinders Ranges (PJM); 8 miles E. of Wilgena (TG); 8 miles S. of Woomera (TG); 8 miles SSW. of Mt Whinham (RSM and JED); 9 km NE. of Marree, 29°35'S., 138°10'E. (JEF); 9 miles ENE. of Kenmore Park HS (RSM and JED); 9 miles NW. of Woomera (TG); Algebuckina (RSM); Altan Downs old HS, c. 48 km SW. of Birdsville (JEF); Andamooka (PJM); Anna Creek Railway siding (RSM); Antikootirrima Waterhole, 36 km S. of Abminga, 26°27'S., 134°52'E. (JEF); Arkaroola, Flinders Ranges (PJM); Birdsville Rd, c. 6 km NW. of Marree, 29°39'S., 138°04'E. (JEF); Birdsville Track (M. King); Bon Bon (RSM); Booleroo Centre, Flinders Ranges (PJM); Boorthanna Railroad siding (RSM); Brachina Ck, Flinders Ranges (PJM); Caravan Bore, 8 km N. of L. Eyre South (PJM); Cartoongan waterhole, 25 km W. of Coongie (PJM); Chambers Gorge, Flinders Ranges (PJM); Clifton Hills, Birdsville Track (PJM); Cockburn (BBL); Coober Pedy (RSM); Coondambo HS (C. E. Chadwick); Copley (R. Bedford; RSM); Cordillo Downs (PJM); Coward Springs, 29°24'S., 136°49'E. (JEF; RSM); Coward Springs, Margaret R. (PJM); Curdimurka, 29°29'S., 137°06'E. (JEF; PJM; RSM); Curdimurka, L. Eyre South (BBL); E. of L. Frome, 39 km N. of Billeroo Dam (PJM); E. of L. Frome, 76 km N. of Billeroo Hut (PJM); Farina (PJM); Fred Spring, 16 km E. of Curdimurka (PJM); Gawler Ranges (PJM; A. M. Lea) (ANIC, LACM); Goyders Lagoon, c. 15 km NNE. of Clifton Hills HS, 26°54'S., 138°57'E. (JEF); Hesso (RSM); Innamincka (J. Forrest); Kalacopah Ck, 120 km W. of Clifton Hills (PJM); Kelly's Bore, E. of L. Blanche, nr Camerons Corner (PJM); Kingoonya-Iron Knob, nr Monaree (PJM); Koonamore HS (PJM); Koonchera dune, Cordillo 237686 (J. Forrest); L. Frome, 38 km N. of Billeroo Hut (PJM); L. Meramangye, Victoria Desert (PJM); L. Oolgoopiarie, 25 km WNW. of Coongie (PJM); Leap Year Bore, 35 km S. of Arrabury (PJM); Macumba HS (G. F. Hill); Marree (RSM); Miamia Yard, 1:250 000 Gason 636549 (PJM); Moolooloo, Flinders Range (White); Moonarie, 260 km NW. of Iron Knob

(PJM); Morgan (PJM; RSM); Mt Chambers Gorge, Flinders Ranges (PJM); Mt Eba HS (RSM); Mt Finke (PJM); Mt Gason, c. 41 km SSW. of Clifton Hills HS, 27°22'S., 138°43'E. (JEF); Mt Gunson, SE. of Woomera (PJM); Mt Lyndhurst, 30 miles E. of Farina (E. Troughton); Mt Willoughby (RSM); Musgrave Ranges (BBL); NE. of L. Frome, 15 km SW. of L. Cootabarlow (PJM); Nesso, c. 50 km N. of Port Augusta (BBL); New Kalamurina, Warburton River (PJM); Nunn's Bore, 20 miles E. of William Creek (PJM); Nunn's Bore, S. of William Creek (PJM); Old Gluepot (PJM); Oodnadatta (PJM; G. F. Hill); Oraparinna, Flinders Ranges (PJM); Parachilna (RSM); Paralana Hot Springs area (PJM); Patchawara Ck (PJM); Purni Bore, Simpson Desert (PJM); Rotten Swamp, 65 km E. of L. Frome (PJM); S. end of L. Hart (BBL); SW. of Iron Knob (PJM); Stuart Creek, N. HS (PJM); Wamier Ck crossing, 10 km E. of Francis Swamp (PJM); Warburton R., 1:250 000 Gason 640554 (PJM); William Creek (RSM); Wirrappa (RSM); Woomera (P. Burden); c. 12 km N. of Beltana, 30°37'S., 138°23'E. (JEF); c. 17 km SE. of Oodnadatta (JEF); c. 22 km N. of Beltana, 30°37'S., 138°23'E. (JEF); c. 25 km W. of Marree, 29°38'S., 137°48'E. (JEF); c. 27 km SE. of William Creek, 29°05'S., 136°31'E. (JEF); c. 35 km S. of Parachilna, 31°27'S., 138°25'E. (JEF); c. 36 km ESE. of Curdimurka, 29°36'S., 137°26'E. (JEF); c. 60 km N. of Oodnadatta (JEF); nr Morgan (F. J. Mitchell). **Western Australia:** 10 miles E. of Blackstone Camp, Blackstone Range (RSM and JED); 10 miles ESE. of Warburton Mission (RSM and JED); 10 miles NE. of Mt Cooper, Cavenagh Range (RSM and JED); 10 miles WNW. of Mt Davies, Tomkinson Ranges (RSM and JED); 13 miles N. of Mt Aloysius (RSM and JED); 13 miles NW. of Mt Cooper, Cavenagh Range (RSM and JED); 15 miles W. of Southern Cross (E. F. Riek); 16 miles WNW. of Mt Cooper, Cavanaugh Range (RSM and JED); 18 miles WNW. of Mt Davies, Tomkinson Ranges (RSM and JED); 1 mile E. of Mt Cooper, Cavenagh Range (RSM and JED); 21 miles ESE. of Peak Hill (RSM and JED); 26 miles E. of Giles (RSM and JED); 28 km W. by S. of Docker R. (N.T.), 24°55'S., 128°48'E. (JEF); 2 miles N. of Giles, Rawlinson Range (RSM and JED); 30 miles E. of Peak Hill (J.H.C.); 30 miles W. of Coolgardie (E. F. Riek); 41 miles NNE. of Giles (RSM and JED); 46 miles SW. of Mundiwindi (RSM and JED); 4 miles E. of Blackstone Camp, Blackstone Range (RSM and JED); 50 km N. of Kalgoorlie (PJM); 6 miles SW. of Roy Hill HS (RSM and JED); 6 miles SW. of Warburton Mission (RSM and JED); 78 km E. by N. of Warburton, 26°03'S., 127°22'E. (JEF); Black Stone Range, 26°02'S., 128°15'E. (K. T. Richards); Booanya (A. E. Baesjou); Canegrass, 70 km NNW. of Kalgoorlie, 30°11'S., 121°10'E. (JEF); Carnarvon (L. Weatherill); Cavenagh Range, 26°12'S., 127°55'E. (K. T. Richards); Devon Hills (K. T. Richards); Mt Fanny, 25°46'S., 128°34'E. (K. T. Richards); Mu Hills, 23°56'S., 123°44'E. (K. T. Richards); Schwerin Mural, Crescent Range, 24°52'S., 128°50'E. (K. T. Richards); Tammin (TG); Winburn Rocks, 95 km E. by N. of Warburton, 26°03'S., 127°31'E. (JEF). **Victoria:** 37 km N. of Hwy 1 on Pinnaroo Rd (R. R. Snelling and J. Grey) (LACM); 52 km N. of Hwy 1 on Pinnaroo Rd (R. R. Snelling and J. Grey) (LACM).

### *Worker Diagnosis*

Lateral regions of head with at least weak green iridescence; head similar in colour to, or darker than, mesosoma (occasionally slightly lighter than mesosoma).

### *Description*

Iridescence between compound eyes and on lateral region of head (between compound eye and insertion of mandible) green, or green and purple. Pigment colour of mesosoma dark reddish brown; head generally similar in colour to, or slightly darker than, mesosoma (occasionally slightly lighter in colour); coxae and legs similar in colour to, or slightly darker than, mesosoma; petiole slightly darker than mesosoma; lateral region of second gastral tergite moderately shiny to shiny and with green and purple iridescence. Head pilosity (in full face view) abundant on occipital margin, and with 2–8 pale setae near mandibular insertion. Ocelli absent or present but vestigial. Ventrolateral pronotum with or without erect setae. Mesosomal setae dark. Pilosity on first gastral tergite abundant, reduced anteriorly. Anterodorsal region of propodeum flat or arched.

### *Measurements*

*Worker* ( $n=70$ ). CI 0.89–1.01; EL 0.29–0.41; EW 0.18–0.26; HL 1.55–2.37; HW 1.40–2.34; ML 0.73–1.37; PnL 0.78–1.22; PpL 0.72–1.21; REL 0.17–0.22; SI 0.84–1.08; SL 1.51–2.05.

### Comments

The form SB (Greenslade and Halliday 1982) is morphologically very similar to *I. viridiaeneus* and is here considered conspecific with it. Form SB was diagnosed as being on average smaller than *I. viridiaeneus*, especially head width in areas of sympatry. More-detailed measurements taken during the present study reveal broad overlap in all characters, and, additionally, all indices are essentially identical and fall on the same regression lines in both forms. Additional collections (including males) combined with behaviour and ecological observations will be required to fully resolve the status of this form.

The distribution of form SB is completely sympatric with *I. viridiaeneus*, although it shows a much more restricted distribution and occupies only a small portion of the entire range of *I. viridiaeneus*. Form SB is limited to two disjunct populations, one in the Alice Springs region and one in extreme north-west New South Wales and south-west Queensland. Both of these regions are near the limits of the range of *I. viridiaeneus* and therefore may represent zones of marginal habitat for the species. The New South Wales/Queensland population of SB, in fact, shows a very similar distributional pattern to the eastern population of *I. spodipilus*. These marginal habitats may explain the unusually large amount of metric variation found in this species and the occurrence of the small individuals found in these areas.

Populations of *I. viridiaeneus* from western Western Australia differ slightly from populations from eastern Western Australia and east thereof. They are much less common than eastern populations, according to collection records (see 'Other material' above and Fig. 19), and differ in colour and morphology. The green iridescence on the dorsum of the head is less well developed, especially in northern areas, and is often nearly replaced with reddish iridescence. Also, the posterior region of the pronotum is more strongly arched than in eastern populations (again, more distinct in northern areas). However, both these characters do occur in eastern populations of *I. viridiaeneus* (although uncommonly) and the conditions found in the western populations are within the range of variation that occurs in eastern populations. Because of this, the western populations are thought to be conspecific with eastern populations and to have differentiated slightly, most likely due to habitat differences between these regions.

### Concluding Remarks

The *I. purpureus* group is one of the best known set of species in *Iridomyrmex*. Most species in this group are commonly encountered and are represented in many collections by large amounts of material. However, there are some species that are poorly known, having been collected only a few times. This disparity is caused by several factors, including size of range, geographic distribution, and daily activity patterns.

The extensive collections of most species of the *I. purpureus* group has allowed the detailed taxonomic study of these ants. Unfortunately, the species within this group are morphologically very similar, with colour the best character for taxonomic discrimination found during this and previous studies. Several pairs of taxa are difficult to distinguish even with the detailed morphological methods used here. This morphological similarity is also reflected in other systems, including the isozyme systems so far examined. These taxa would benefit greatly from studies using other character systems, such as different isozyme systems or biochemical characters.

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