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A key to the Australian Chrysis with description of new species (Hymenoptera: Chrysididae)

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Australian Chrysis form three closely related groups in addition to a few wide-ranging and apparently adventive species. The latter are Linica Fabricius, schiodtei Dahlbom, fusicoennis Brulle, and fossulata F. Smith. The remaining 23 species, including those presently described, appear to be endemic in the Australia-New Guinea area. Some of these I have been able to recognize and they are included in the key. Others that I am unable to place, possibly through lack of material, are curtisensis from Queensland and dentifrontis from South Australia. I have seen types of nearly all the species in the key. Institutions and individuals who have provided specimens of the new species herein described are given below.


Abbreviations used in the key and descriptions are: F-I, F-II, etc., flagellomeres; LID, least interocular distance; TFC, transverse frontal carina; MOD, median ocellus diameter; T-I, T-II, etc., abdominal terga; S-I, S-II, etc., abdominal sterna; PD, puncture diameter.

The presumably endemic species of the three groups mentioned above have a similar TFC. It tends to jut outward, and to have 3 reverse v-shaped indentations, of which the medial one is the strongest (fig. 5). Also, the midcellus is lidded. The three groups can be separated as follows: (1) T-III with 6 teeth, S-II black spots transverse; (2) T-III with 4 teeth, S-II black spots semi-circular, contiguous, and medial (fig. 8), propodeal projection somewhat convex along its posterior margin (fig. 11); (3) T-III with 4 teeth, S-II black spots rounded or nearly rectangular but separated medially (fig. 9), propodeal angles straight or incurved posteriorly (fig. 10).

Male genitalia are helpful in distinguishing species. The gonostyle is particularly useful (figures 13c, 14c, 15c). However, the genitalia must be removed from the specimen, partly cleared (KOH) and dissected in the mounting medium so that the various parts can be somewhat flattened by the coverslip.

I have studied single specimens of possibly 8 additional species which appear to be undescribed. More material of these should be collected and utilized by some Australian taxonomist. One species, microtrema Mocsary was destroyed with the Hymenoptera collection of the Hamburg Museum. It will be difficult, if not impossible, to recognize. More complete synonymy and type depositories of all species will be given in a forthcoming generic revision by Lynn Kimsey and me.

Key to Australian Chrysis Linnaeus

1. T-III ending in 4 teeth (fig. 12). ........................................ 2
   T-III ending in 6 teeth ........................................ 12

2. S-II basal dark spots rounded, contiguous, and placed medially (fig. 8), propodeal projection convex posteriorly or apex curved forward (fig. 11). .
   S-II basal dark spots transverse or rounded and well separated (fig. 9) propodeal projection incurved posteriorly and apex pointed somewhat backward (fig. 10) ........................................ 7
3. T-III postpit area purple in contrast to green or blue-green at middle of pre-pit prepit area, scapal basin sloping gradually toward TPC. 

\[ \text{simulans Mocsary} \]

T-III postpit and prepit areas grading gradually in color, scapal basin ending above in a roughly projecting area beneath TPC. 

\[ \text{aginata Linsenmaier} \]

4. T-III tooth row median emargination almost a half circle, pit row moderately impressed in lateral view. 

\[ \text{impostor F. Smith} \]

T-III tooth row median emargination much less than a half circle (fig. 12), pit row weakly impressed in lateral view. 

\[ \text{fuscipennis Brulle} \]

5. F-I 2.3 (male) to 2.5 (female) x as long as broad, propodeal projection strongly lobed behind, gonostyle broadly rounded. 

\[ \text{perplexa Buysson} \]

F-I 2.0 or less (male) to 2.3 or less (female) x breadth, propodeal projection various, gonostyle stoutly pointed distally (fig. 15c). 

\[ \text{fuscipennis Brulle} \]

6. Propodeal projection strongly lobed toward middle of posterior margin, T-III medial punctation about as coarse as that toward apex of T-II, cusps moderately rounded distally (as in fig. 14b). 

\[ \text{crisotus Brulle} \]

Propodeal projection not strongly lobed but curved forward near apex (fig. 11), T-III medial punctation much finer than that toward apex of T-II, cusps broadly rounded distally (fig. 15b). 

\[ \text{fuscipennis Brulle} \]

7. Mesopleuron distinctly toothed. 

\[ \text{cristovoucensis Montrousier} \]

Mesopleuron not distinctly toothed. 

\[ \text{fuscipennis Brulle} \]

8. Mesopleuron tridentate, preocellar area not well defined by carinae, pit row separated medially by a knife-edged carina, T-II median ridge strong. 

\[ \text{fuscipennis F. Smith} \]

Mesopleuron bidentate, preocellar area well defined by carinae, pit row not separated by a knife-edged carina medially, T-II without a strongly raised median ridge. 

\[ \text{fuscipennis Brulle} \]

9. Metanotum unusually bulging or projecting in lateral view (figs. 2, 4). 

\[ \text{impostor Mocsary} \]

Metanotum broadly rounded in lateral view (fig. 1). 

\[ \text{notidanu Bohart} \]

10. Metanotum bulging in lateral view (fig. 2), F-I about 3x as broad as long. 

\[ \text{impostor Mocsary} \]

Metanotum with a strong toothlike projection in lateral view (fig. 4), F-I 2.5x as broad as long or a little less. 

\[ \text{notidanu Bohart} \]

11. T-II microreticulate subapically, dull; pit row not depressed medially in lateral view, propodeal projection unusually short. 

\[ \text{norsensanae Bohart} \]

T-II polished subapically between punctures; pit row depressed medially in lateral view, propodeal projection large (fig. 10). 

\[ \text{australia Bohart} \]

12. Propodeal projection with posterior margin straight or a little concave as viewed from above and slightly behind. 

\[ \text{crisotus Brulle} \]

Propodeal projection convex or convexly lobed along posterior margin as viewed from above and slightly behind. 

\[ \text{crisotus Brulle} \]

13. T-II punctures along midline separated by considerable polished areas, metanotum a little depressed medially, female F-I nearly 3x as long as broad. 

\[ \text{crisotus Brulle} \]

T-II punctures along midline close and without unusual polished areas, metanotum not depressed medially, female F-I 2x as long as broad or a little shorter. 

\[ \text{crisotus Brulle} \]


\[ \text{tassmaniana Mocsary} \]

T-III second pair of teeth nearly as sharp as middle pair. 

\[ \text{fuscipennis Brulle} \]
15. Mesopleuron with 1-3 projections or teeth, and/or metanotal projections... 16
Mesopleuron without distinct projections or teeth... 18

16. T-III with 7 teeth, median one small; metanotum medially depressed but not strongly projecting; mesopleuron bidentate... festina F. Smith
T-III with 6 teeth, metanotum with one or two definite projections, mesopleuron various... 17

17. Mesopleuron with a massive downward projection, T-III outer pair of teeth small and halfway from base to middle pair, F-I about as long as broad in both sexes, T-III strongly saddled (view laterally)... lineata Fabricius
Mesopleuron with 2 obtuse denticles, T-III teeth all posterior, F-I in female (male unknown) 2x long as broad, T-III hardly saddled... zyza Bohart

18. Abdominal terga with considerable coppery or reddish areas... 19
Abdominal terga green to purple, rarely with coppery tinges... 20

19. T-II with a pair of round coppery spots on a blue-green background; T-III distinctly swollen before pit row, blue-green to purple... schiodtei Dahlbom
T-II-III green and extensively coppery, especially on T-III, latter hardly swollen before pit row... bipartita F. Smith

20. Females, F-I 2x as long as broad or more... 19
Males, F-I often 1.6x as long as broad or less... 21

21. T-III tooth row with median emargination shallow, about as deep and broad an arc as lateral one; T-III prepit area not strongly bulged medially... 22
T-III tooth row with median emargination moderately deep, its arc narrower and/or deeper than lateral one; T-III prepit medial bulge various... 23

22. F-I about 2.8x as long as broad... agilis F. Smith
F-I about 2.0x as long as broad... syllis Bohart

23. T-III prepit bulge low, not prominent medially... perthensis (Linsenmaier)
T-III prepit bulge moderate, stronger medially... 24

24. Malar space 2.0 MOD or a little more... sollisita Mocsary
Malar space 1.5 MOD or a little less... intrudens F. Smith

25. F-I length more than 2x breadth, longer than F-II... 25
F-I length less than 2x breadth, not much longer than F-II... 26

26. F-II length more than 2x F-I (fig. 6)... syllis Bohart
F-II less than twice as long as F-I, which is longer than broad... 27

27. LID a little greater than eye breadth in front view, metanotum not at all depressed medially, malar space less than 1 MOD... perthensis (Linsenmaier)
LID about equal to eye breadth in front view, metanotum usually with a faint medial depression, malar space more than 1 MOD... 28

28. Malar space less than 1.5 MOD; gonostyle slender distally... intrudens F. Smith
Malar space 1.5 MOD; gonostyle broad, emarginate distally... sollisita Mocsary

_Chrysta ausiae_ Bohart,
new species

Male holotype: Length 7.5 mm. Green to blue, middle of scutum partly purple, S-II with a double median spot (fig. 8), wings weakly stained. Punctuation moderate and close, gradually finer posteriorly on abdome

_nal terga. F-I 2.0x as long as broad, malar space 1.5 MOD, subantennal space 1.2 MOD, scapal basin moderately concave and LID 3.0x F-II length, TFC irregular and with a v-shaped medial indentation, transverse area beneath TFC projecting and roughly punctate, midocellus lidded, mesopleuron and metanotum simple, propodeal projection curved forward
toward apex along posterior margin (fig. 11), T-III pit row nearly obsolete, 4 distal teeth rather short but sharp, emarginations shallower than a semicircle (as in fig. 12). Gonostyle stoutly pointed (fig. 15c), cuspis broadly rounded at apex (fig. 15b), S-VIII nearly as long as broad (fig. 15a).

**Female:** As in male except: F-I 2.5x as long as broad, T-III prepit bulge moderate medially.

**Holotype male,** Sorcery Rocks, Kakadu National Park, Northern Territory, Australia, XI-20-79 (I.D. Naumann, Canberra Mus.).

**Paratypes,** 1 female, same data as holotype; 3 females, Queensland: Cunnamulla (N. Geary, Davis Mus.), Charleville (A. Henderson); New S. Wales: Midkia (Woodhill, Macleay Mus.). Also, 2 females (without abdomen), Queensland: Biloela, Tombeyston.

*Chrysia australis* Bohart, new species

**Male holotype:** Length 9 mm. Mostly dark blue and purple with some areas more greenish, S-II with a pair of transverse bars separated medially, wings weakly stained. Punctuation moderately coarse and close, that on T-III nearly as coarse as on T-II. F-I 3x as long as broad, malar and subantennal spaces 1.5 MOD, scapal basin pubescent on outer third, coarsely punctate medially, TFC jutting forward strongly and with posterior ram which nearly enclose preocellar area, LID a little more than eye breadth and about twice F-I length, midcellus lidded, mesopleuron and metanotum simple, propodeal projection large and sharply pointed as well as incurved posteriorly, T-II median ridge evanescent, T-III pit row well formed and a little depressed medially, 4 distal teeth sharp, emarginations shallower than a semicircle. Gonostyle stout and with long inner hair (fig. 14c), cuspis slanting toward apex (about as in fig. 14b), S-VIII a little longer than broad.

**Female:** About as in male.

**Holotype male,** 30 km sw. Norseman, Western Australia, IX-19-80 (I.D. Naumann, J.C. Cardale, Canberra Mus.).

**Chrysia norvegicae* Bohart, new species

**Male holotype:** Length 8 mm. Green to blue-green, S-II with transverse but stout and slightly separated spots, wings weakly stained. Punctuation moderate on thorax and terga, that on T-III nearly as coarse as on T-II, fine on scapal basin where middle non-pubescent third has weak punctures and ridging. F-I 2x as long as broad, malar space 2 MOD, subantennal space 1.3 MOD, LID greater than eye breadth and 2.6x F-I length, TFC jutting strongly and punctate just below but not unusually rough there, posterior ram from TFC halfway toward midcellus which is lidded, mesopleuron simple, metanotum with a median keellike tooth (fig. 4), sharp propodeal projection incurved behind and pointing posteriorly, T-II and to a lesser degree T-III with a raised and smooth median ridge, T-III pit row well formed and a little depressed medially, 4 distal teeth sharp, emarginations quite shallow. Gonostyle stout and with long inner hair (fig. 13c), cuspis slanting toward apex (fig. 13b), S-VIII broader than long.

**Female:** about as in male except: Length 9 mm, F-I 2.5x as long as broad, LID 2.0x F-I length.
Explanation of Illustrations

Figs. 1-4, diagrammatic profiles of scutellum (scl), metanotum (mtm) and propodeum (ppm); 5, face and base of right antenna; 6-7, pedicel and flagellomeres I-III; 8-9, S-II; 10-11, left propodeal projection from above and slightly behind; 12, T-III, posterior; 13-16, male terminalia, (a, S-VIII; b, digitus overlying cusps; c, flattened gonostyle); 16, S-VIII. Drawings based on males except as indicated.
Holotype male, Round Hill Fauna Reserve, New South Wales, X-23-77 (G. Daniels, Canberra Mus.). Paratype female, Moorine Rock, W. Australia, X-22-78 (R.P. McMillian, Perth Mus.).

Chrysis xysta Bohart, new species

Female holotype: Length 12 mm. Greenish blue to purple, notum and terga mostly purple, S-II with a transverse black bar which is contiguous medially, wings brownish. Punctation coarse and close except about 1 PD apart toward middle of terga, fine and close on scapal basin beneath fine pubescence which covers all but irregularly punctate central tenth. F-I 2.1x as long as broad, malar and subantennal spaces 1.5 MOD, LID a little more than eye breadth, 2.2x F-I length, TFC jutting strongly forward but depressed medially, area just below TFC punctate and prominent, posterior ram nearly enclosing a depressed preocellar area with elongate punctation; midocellus lidded, mesopleuron and metanotum simple, propodeal projection posteriorly convex and apex directed outward, T-II with median ridge evanescent, T-III pit row weakly impressed all across, 6 distal teeth of which the two middle pair are sharp and in a line, outer pair right-angled, middle emargination nearly semicircular. Gonostyle ending in a finger-like projection, cuspis slender but with a slanting curve toward inner apex, S-VIII as long as broad, distal half moderately slender.

Holotype female, Bluff Range, Riggenden, Queensland XII-20-72 (H. Frauca, Canberra Mus.). Paratypes, 2 females, 10 km s. Coonabarabran, New S. Wales, I 17 80 (H.E. Evans, A. Hook, Davis Mus.); Eidsvold, Queensland (T.L. Bancroft, Canberra Mus.).

Chrysis yulla Bohart, new species

Male holotype: Length 8 mm. Blue-green, S-II with a transverse black bar, wings weakly stained. Punctation moderate and close, that of T-III nearly as coarse and closer than that of T-II, fine on scapal basin where lateral third is pubescent. F-I a little broader than long and less than half as long as F-II (fig. 6), malar space 1.5 MOD, subantennal space 1.0 MOD, LID slightly more than eye breadth and at least 5x F-I length, TFC not strongly projecting and with 3 backward-pointing angles each of which subtends a short carina, midocellus lidded, mesopleuron and metanotum simple, propodeal projection posteriorly convex and apex directed outward, T-II with median ridge evanescent, T-III pit row weakly impressed all across, 6 distal teeth of which the two middle pair are sharp and in a line, outer pair right-angled, middle emargination nearly semicircular. Gonostyle ending in a finger-like projection, cuspis slender but with a slanting curve toward inner apex, S-VIII as long as broad, distal half moderately slender.

Female: About as in male except: Length 8.5 mm, F-I twice as long as broad, T-III median emargination shallow.

Holotype male, Waiweva, Narrabri, New South Wales, III-11-75 (R.E. Fye, Canberra Mus.). Paratype female, Stanthorpe, Queensland, II-11-30 (Brisbane Mus.).