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Accessory Publication

A revision of the Australian carpenter bees, genus *Xylocopa* Latreille, subgenera *Koptortosoma* Gribodo and *Lestis* Lepeletier & Serville (Hymenoptera : Apidae)

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Abstract

The Australian carpenter bees, genus *Xylocopa* Latreille, subgenera *Koptortosoma* Gribodo, and *Lestis* Lepeletier & Serville, are revised. Six species of *X.* (*Koptortosoma*) are recognised after solving problems with the association of the sexes. *Xylocopa* (*K.*) *waterhousei*, sp. nov. and *X.* (*K.*) *lieftincki*, sp. nov. are described as new, and two previously recognised species, *X.* (*K.*) *wallabia* Lieftinck and *X.* (*K.*) *xerophila* Lieftinck are synonymised with *X.* (*K.*) *parvula* Rayment. Two species of the subgenus *Lestis* are recognised, while the three species-level names, *X.* (*L.*) *gibbonsi* Cockerell, *X.* (*L.*) *violascens* Cockerell, and *X.* (*L.*) *australensis* Kirby are synonymised with *X.* (*L.*) *bombylans* (Fabricius). A key for the identification of the species is provided, and descriptions, information about mating behaviour, nesting substrates, flower records and distribution maps are given for all species.

Abbreviations

Specimens were borrowed from the following collections. The acronyms are used in the 'Material examined' sections.

AM	Australian Museum, Sydney
ANIC	Australian National Insect Collection, Canberra
BMNH	The Natural History Museum, London
FUIC	Flinders University Insect Collection, Adelaide
MV	Museum Victoria, Melbourne
NTM	Museum and Art Galleries of the Northern Territory, Darwin
QM	Queensland Museum, Brisbane
RMNH	National Museum of Natural History, Leiden
SAM	South Australian Museum, Adelaide
SMUK	Snow Entomological Division of the Natural History Museum of the University of Kansas
UQIC	University of Queensland Insect Collection, Brisbane
WAM	Western Australian Museum, Perth

Material examined

Localities are arranged alphabetically under each collection, and the collections are ordered alphabetically under the states. The locality information was copied directly from the specimen labels, even if place names were misspelled. Only the dates and the collector names are adapted to consistent style.

Xylocopa (Lestis) aeratus Smith, comb. nov.*Specimens examined: (129 males and 118 females)*

New South Wales: (AM): 2♂, Bayview, 26.ii.1966, R. B. Disney; 1♀, Berowra, 20.v.1985, J. McCallum; 2♂, Cheltenham, 17.ix.1950; 2♀, Cheltenham, 17.ix.1950; 1♀, Cheltenham Valley, 20.iii.1935, K. C. McKeown; 1♂, Cowan, 18.v.1947; 1♀, Cowan, 12.i.1947, NY934; 1♀, Cowan, 18.v.1947; 1♀, Cowan, 8.x.1944, NY232; 1♂, Duff's Forest nr Sydney, 14.xi.1970, D. K. MacAlpine; 1♀, Glenorie, 7.xii.1968, G. Daniels, coll. Apple Gum; 1♂, Goondera Ridge Royal Nat. Park, 2.x.1978, G. Daniels; 1♂, Goondera Ridge Royal Nat. Park, 24.x.1976, G. & A. Daniels; 1♀, Goondera Ridge Royal Nat. Park, 2.x.1974, G. & A. Daniels; 1♀, Kurrajong Blue Mts, 16.xi.1986, A. Sundholm; 1♂, Mangrove Mt., vii.1929, Miss Steinbeck, K59556; 2♀, Mangrove Mt. vii.1929, Miss Steinbeck, K59556; 1♀, Newness, 2.viii.1970, G. Daniels; 1♂, Norton's Basin, Nepean, 3.x.1929, Waccall, K60887; 1♀, Royal National Park nr Sydney, 1.xii.1982, B. Day; 1♀, 3 km N via Taree, 14.xii.1987, G. Williams; 1♀, Sydney, K15175; 1♀, Sydney; 1♀, Sydney, K47984; 1♂, Waterfall, 1.xi.1980, D. A. Doolan; 1♀, Waterfall, 1.xi.1980, D.A. Doolan; 3♂, K9536; 1♀, K27083; 2♀, K9536. **(ANIC):** 1♀, Armidale, 12.x.1968, C. W. Frazier; 1♀, Boonoo Boonoo Falls, 28.xi.1981, G. Daniels & M. A. Schneider; 1♀, Colo Putty road Colo river crossing, 11.xi.1994, A. Sundholm & F. Douglas, on *Leptospermum* flowers; 1♀, Como, 23.ii.1962, G. Willan; 1♂, Glen Innes Prison Farm, xii.1970; 1♂, Jervis Bay (ACT), 2.x.1952, S. J. Paramonov, mites removed RBH 8.3.95; 1♀, Narrabeen, 15.iv.1937, M. F. Day, from *Xanthorrhoea*, mites removed RBH 8.3.95; 3♂, Silent Grove, 1.xi.1969, R. Hardie; 3♀, Silent Grove, 1.xi.1969, R. Hardie; 1♂, Sydney, 9.xii.1905; 1♀, Waterfall, 30.xii.1936, Fuller. **(BMNH):** 1♂, 1♀, Calarad-Dam, 23.xi.1958, M. I. Nikitin, B.M.1959–57, on blooming *Leptospermum*; 1♀, Sidney(=Sydney), 5064; 1♀, Sydney, A. M. Lea, 1904–245. **(MV):** 1♂, Cowan, 6.ix.1954, A. N. Burns; 1♀, Cowan, 6.ix.1954, A. N. Burns; 1♀, Hawkesbury R., 31.xii.1930, A. N. Burns; 1♀, Hornsby, 1928, G. Mocatta, E. Mocatta, C. Deanne; 1♂, Wentworth Falls, 31.xii.1930, A. N. Burns; 3♀, Wentworth Falls, 5.iii.1932, G. A. Waterhouse. **(QM):** 1♂, Sydney K10264; 2♀, Sydney K10264. **(RMNH):** 1♂, Sydney, x.1887, *Lestis bombylans* 1900 Friese det. **(SAM):** 1♀, Dorrigo, W. Heron; 1♀, Sydney, G. Masters, 1735/4084(?).

Queensland: (BMNH): 1♀, Granite Belt. Dist. Fletcher, ii.1966, E. Sutton, J.A.Grant BM/CSIRO Expd. BM.1973–346. **(QM):** 2♂, Fletcher, E. Sutton, E. Sutton coll. don. sept 1973.

South Australia: (AM): 1♀, Birchmoore Lagoon 15 km from Kingscote, Kangaroo I., E. Troughton, K42891; 1♂, Adelaide, A. H. Dairs(?), 12/Ent. Club 44–12. **(FUIC):** 19♂, Kangaroo Island, Flinders Chase Nat. Pk, 5–Aug.ix.1995, Schwarz, M. P., Reyes, S. G., Bull, N. J., Steen, Z. ; 3♀, Kangaroo Island, Flinders Chase Nat. Pk, 5–Aug.ix.1995, Schwarz, M. P., Reyes, S. G., Bull, N. J., Steen, Z. **(MV):** 2♀, Kangaroo Isl., 5.i.1970, F. Collett. **(SAM):** 1♂, Aldinga; 1♀, Aldinga, 28.vii.1896, W. J. Kimbes; 2♂, C. Borda, 13.ii.1905,

J. Kopfe(?), *Lestis muscaria*; 2♀, C. Borda, 13.ii.1905, J. Kopfe(?), *Lestis muscaria*; 6♂, Cape Borda, Kangaroo Is., 22.x.1970, T. F. Houston, ex nest; 2♂, near Cape Borda Kangaroo Is., 5.x.1970, T. F. Houston, ex nest; 3♀, near Cape Borda Kangaroo Is., 5.x.1970, T. F. Houston, ex nest; 15♂, Cape Borda, Kangaroo Is., 22.x.1970, G. Cameron, ex nest; 1♀, DeMole River W KI, vi.1991, A. Foley; 1♂, Kangaroo Is., vi.1937; 2♂, Kangaroo Is., J. G. O. Tepper; 1♀, Kangaroo Is., 17.xi.1886, solitary nest in stalk *Xanthorrhoea*; 1♀, Kangaroo Is., 23.ix.1884, J. G. O. Tepper; 1♀, Kangaroo Is., vi.1937; 1♀, Kangaroo Is.; 1♀, Kangaroo Is., S. H. Sheridan; 7♀, Kangaroo Is., J.G.O. Tepper; 2♂, Kangaroo Is. 4 km WNW of Murray Lagoon, 20.iii.1978, T. F. Houston, Ex burrow in *Xanthorrhoea* scape.; 3♂, Kangaroo Is. 4 km WNW of Murray Lagoon, 14.iii.1978, T. F. Houston, ex burrow in *Xanthorrhoea* scape; 6♂, Kangaroo Is. nr. Rocky River H.S., 12.iii.1978, T. F. Houston, ex burrow in *Xanthorrhoea* scape; 1♂, KI bet. Breackneck R. and Rocky R. Ranger HQ. Flinders Chase Cons. Pk, 7.xi.1987, G. F. Gross, ex vehicle net; 1♀, Kangaroo-Is., v.1977, W. White; 1♂, Naracoorte; 1♀, Naracoorte, 24.ix.1888, R.D.; 1♀, Naracoorte; 1♀, Rocky River, 4.x.1970, T. F. Houston, on *Leucopogon*; 3♀, 4 mi. N of Seal Bay, Kangaroo Is., 8.x.1970, T. F. Houston, ex nest; 12♂, Seal Bay Road Kangaroo Is., 8.x.1970, T. F. Houston, ex nest; 9♀, Seal Bay Road Kangaroo Is., 8.x.1970, T. F. Houston, ex nest; 2♀, near Stokes Bay, Kangaroo Is., 6.x.1970, T. F. Houston, ex nest. **(WAM):** 2♂, Cape Borda, Kangaroo Is., 22.x.1970, G. Cameron, ex nest; 2♀, Cape Borda, Kangaroo Is., 22.x.1970, G. Cameron, ex nest; 1♂, Flinders Chase Kangaroo Is., Rocky River, 31.x.1964, G. Barker; 2♀, Flinders Chase Kangaroo Is., Rocky River, 31.x.1964, G. Barker.

Victoria: (ANIC): 1♂, Grampians, .x.1938; 1♂, Melbourne, before, 1929; 1♂. **(BMNH):** 2♂, Grampians, xi.1892, 1907/68; 2♀, Grampians, xi.1892, R. E. Turner, 1907/68; 2♀, Melbourne, c.7.8.00. **(MV):** 1♂, Grampians, 5.x.1922, F. P. Spry; 2♂, Grampians, xi.1884, W. K.; 2♂, Grampians, xi.1928, R. Oldfield; 3♂, Grampians, W. K.; 1♀, Grampians, 5.x.1922, F. P. Spry; 2♀, Grampians .xi.1892, W.K.; 5♀, Grampians, xi.1884, W.K.; 12♀, Grampians, W. K. **(QM):** 1♀, Ararat, H. W. Davey; 1♂, Mallee. **(SAM):** 2♂, Gramp.; 2♂, Grampians .xi.1928, R. Oldfield; 1♂, Victoria–NW.

Unknown localities: (BMNH): 2♂, Smith coll. press. by Mrs. Farren White. 99–303. **(SAM):** 3♂, locality ?, W. White's collection.

Xylocopa (Lestis) bombylans (Fabricius), comb. nov.

Specimens examined: (66 males and 308 females)

New South Wales: (AM): 1♀, Calna Ck Mt Kuring-Gai, 24.ix.1950, A. Musgrave; 1♀, Calumet 36 mls NE of Binnaway, 24.iv.1932, C. F. Garnsey; 1♂, Cowan, 12.x.1946, NY 51; 1♂, Cowan, 31.x.1943, NY 51; 1♀, Cowan, 31.x.1943, NY 52; 2♂, Coff's Hrbr, 21.vii.1950, L.F. Cluff; 7♀, Coff's Hrbr, 21.vii.1950, L. F. Cluff; 1♂, Elsmore, 23.ix.1960, A. B. Gibson; 1♀, Glenorie, 7–XII–1968, G. Daniels, coll. Apple Gum; 1♀, Goondera Ridge Royal Nat. Park, 24.x.1974, G. & A. Daniels; 1♀, Harwood Is., 19.iii.1957, A. Cameron; 1♂, Hornsby, 6.ii.1904, C. Gibbons, K48986; 2♀, Hornsby, 6.ii.1904, C. Gibbons, K48986; 1♂, Kuring-Gai Chase Nat. Pk. near Sydney, 26.ix.1971, G. Daniels; 1♀, Mt Kaputer Nat. Pk., 13.i.1978, G. Daniels, 900m; 1♀, Nandewar Rge. nr. Narraby, 6.xi.1932, K.C. McKeown, K66296; 1♂, National Park, 2.viii.1914, C. Gibbons, K57725, 'holotype *Lestis aerata gibbonsi* Cock.'; 1♀, Nth Ripton, iv.1935; 1♀, Plumthorpe, Barraba,

7.v.1958, M. E. Showers; 3♀, Sydney, K48381; 1♀, Yeppoon, 13.xii.1936. **(BMNH)**: 1♂, 'type *Lestis aerata violescens* Ckll.', between Sydney and Moreton Bay, 56/94; 1♀, Port Stephens, viii.1903, J. J. Walker, 1904-167; 1♀, Sidney(=Sydney), 5064; 1♀, Staud (?), xii.1912, 903, C. T. Trechmann Bequest B.M.1964-549, Lepeletier Atlas Pl.3, Fig.2; 1♀, 96-250, *Lestis aerata*. **(MV)**: 3♂, no labels; 3♀, no labels; 6♀, Camden Haven, 16.ix.1958, A. N. Burns; 5♀, Clarence R., from WN(?) Wilcox; 1♀, Dorrigo, 7.iv.1947, A. N. Burns; 7♀, Hawkesbury R., 31.xii.1930, A. N. Burns; 2♀, Wardell, 11.i.1933, A. N. Burns. **(QM)**: 1♀, Broadwater, 14.xii.1978, K. J. Lambkin; 1♀, nr. Rivertree, 15.xii.1969, E. C. Dahms; 1♀, White Swamp, 23.iii.1939 'logotype *Lestis bombylans var. violacea* Rayment P. D. Hurd '64'. **(SAM)**: 1♂, Dorrigo, W. Heron; 1♀, Hornsby, 6.ii.1914, C. Gibbons; 1♀, Sydney; 11♂, 29♀, Woy Woy near Gosford, 27.i.1971, T. F. Houston, ex nest in *Banksia* branch. **(UQIC)**: 1♀, 12 km W Grafton, 7.xi.1993, R. Eastwood. **(WAM)**: 1♀, 3 mls E Legume, 25.ix.1967, T. F. Houston; 1♂, Woy woy near Gosford, 27.i.1971, T. F. Houston, ex nest in *Banksia* branch;

Queensland: (AM): 1♀, Byfield State Forest, 3.i.1976, G. Daniels; 5♀, Carnarvon Ra., 28.ix.1954, J. T. Brooks; 1♀, Claudie river, Iron Range, 19.ix.1974, G. Daniels; 1♀, Claudie river, Iron Range, 28.ix.1974, M. S. Moulds; 1♀, Kuranda, 30.x.1973, G. Williams; 1♀, Lake Placid nr. Cairns, 24.v.1958, D. K. MacAlpine; 1♀, Mackay, 1947, A. Marriage; 2♀, 4 miles NE Mt Lamond, Iron Range, 22.xii.1972, D. K. MacAlpine & G.A. Holloway; 1♂, Red Point Cape York Pen., 12.xii.1986, R. B. Lachlan, 14°33'S, 144°46'E. **(BMNH)**: 1♀, Cooktown, D. Le Souef, 99-250; 1♀, Cooktown, x.1902, R. E. Turner, 1907-68; 1♂, Hunter Ri, 51/36; 1♀, Hunter Ri, 51/36; 6♀, Kuranda, F. P. Dodd, 1916-27; 1♂, Mackay, viii.1891, Smith coll. press. by Mrs. Farren White. 99-303., 306, 1907/68; 1♀, Mackay, xi.1899, 305; 1♀, Mackay, 305; 1♀, Mackay, 305 H. J., E. Saunders 93-49; 1♀, Mackay, viii.1891, G. Turner, 305, 1892-16; 2♀, Mackay.ix.1899, 305, *Leptosp.*; 28♀, Mackay, xii.1899, *Cassia*; 2♀, North Queensland; 2♀, Queensland, E. Saunders, 93-46, 305 H.J.; 2♂, Sydney, iv.1892, *Lestis aerata*; 1♀, Townsville, 7, ii.1902; 2♀, Tully Falls, 11.i.1962, E. B. Britton, B.M.1962-153; 3♂, Smith coll. press. by Mrs. Farren White. 99-303.; 1♀, 57/58. **(MV)**: 3♀, Acacia Ridge, Brisbane, 17.ix.1964, A. N.; 1♀, Blackall Rg., i.1930, C. Borch; 1♀, Brisbane, 10.x.1954, J. Kek; 1♂, Burleigh, 18.ix.1960, A. N. Burns; 1♀, Burleigh, 5.x.1958, A. N. Burns; 1♀, Burleigh, 8.ix.1965, A. N. Burns; 1♀, Burleigh, 20.ix.1958, A. N. Burns; 9♀, Burleigh, ix.1965, A. N. Burns; 4♀, Burleigh, 15.ix.1965, A. N. Burns; 1♀, Caloundra, 5.iii.1961, J.K.; 1♀, Caloundra, 18.ix.1960, J. K.; 1♀, Caloundra, 25.ix.1960, J.K.; 4♀, Claudie R., ii.1914, MacGillovry; 1♂, Coen, 22.ix.1959, E. Smith; 14♀, Coen, 22.ix.1959, E. Smith; 1♀, Endeavour River, 5.x.1922, F.P. Spry; 1♀, Eunguella, 17-23.ix.1923, GMG; 1♀, Kuranda, 2.i.1953, G. B.; 1♀, Kuranda, 14.i.1951, G. B.; 1♀, Maroochydore, 5.x.1955, A. N. Burns; 1♀, Mt Tamborine, 5.i.1956, C. King; 1♀, Mt Tamborine, i.1956, C. King; 2♀, Mt Tamborine, 4.x.1966, A. N. Burns; 1♀, Stradbroke Island, ix.1954, A. N. Burns; 1♀, Tully Falls, 18.iv.1954, G. B. **(QM)**: 1♀, Acacia Ridge Bne, 13.x.1963, E. C. Dahms; 1♀, Acacia Ridge Bne, 17.ii.1964, E. C. Dahms; 1♀, Bribie Is., x.1918, H. Hacker; 1♀, Bribie Isd, xii.1922, H. Hacker; 1♂, Brisbane, 14.x.1913, H. Hacker; 1♂, Brisbane, 18.ix.1914, H. Hacker; 1♂, Brisbane, 24.i.1913, H. Hacker; 1♀, Brisbane, 14.x.1913, H. Hacker; 1♀, Brisbane, 19.x.1923, H. Hacker; 1♀, Brisbane, 23.ix.1920, H. Hacker; 2♀, Brisbane, 16.ix.1918, H. Hacker; 1♂, Caloundra, 20.iv.1916, H. Hacker; 2♀, Cooloola, 17.viii.1970, E. C. Dahms, *Banksia* dom. Open forest.; 1♀, 8.5 km SSE Dayboro Samsonvale Cemetery, 3.x.1996, S. Evans, 27°16'S, 152°52'E; 1♀, 8.5 km SSE Dayboro Samsonvale Cemetery, 12.x.1997,

C. M. Rodriguez; 1♀, Dayboro, 11.x.1997, J. Wright, 27°12'S 152°50'E; 1♀, Flinders Peak, via Peak Crossing, 13.ix.1995, C. J. Burwell, D.K. Yeates, 27°49'S, 152°49'E; 1♀, Fraser Is., xi.1992, ANZSES Expdn., Swamp; 1♀, Getton, 10.xii.1933, M. Powell; 1♀, Gordonvale, 12.iv.1923, T. K. Scheibel; 2♀, Mantaka, 6.ii.1972, A. Walford-Huggins; 1♀, Maroochydore, vi.1922; 1♀, Moreton Isd, iv.1916, F. Allen; 1♀, Mt Moffatt Nat. Pk. base & summit Mt Rugged, 26.ii.1996, C. J. Burwell, S. Evans, 24°54'S, 148°00'E; 5m, Stradbroke Isd, 17.ix.1915, H. Hacker; 1♀, Stradbroke Island, 3.xii.1912, H. Hacker; 2♀, Stradbroke Island, 2.x.1911, H. Hacker; 2♀, Stradbroke Island, 17.ix.1915, H. Hacker; 1♂, Whitsunday Is., i.1934, N. Geary. **(RMNH):** 1♀, Stauding Cooktown. **(SAM):** 3♀, ?, capt S. A. White collection; 1♀, Bowen, A. Simson, 1900/4595(?); 2♀, Cairns dist., F. P. Dodd; 1♀, Cooktown S. Australia(?); 4♀, Kuranda, F. P. Dodd; 1♀, Montville, 5.ii.1930, C. B.; 1♀, 5 mi. S of Mooloolaba (?), 8.xi.1968, T. F. Houston, reared ex nest; 1♀, Normanby R. crossing, 19.viii.1967, T. F. Houston, *Hardenbergia*; 1♀, Palm Isl., G.J.H.H.; 1♀, 2 mls N Peregrin, 14.ii.1967, T. F. Houston; 1♀, Pt Douglas, vi.1956, J. Baldwin; 1♂, Stradbroke Isd, 17.ix.1915, H. Hacker; 1♀, Stradbroke Island, 17.ix.1915, H. Hacker; 5♀, near Tamborine village, 20.ix.1968, T. F. Houston, ex nest in *Tristania*; 1♀, 8 mls NE Woodenbong, 25.ix.1967, T. F. Houston. **(UQIC):** 1♂, Archerfield, 29.ix.1962, A. Macqueen; 1♂, Blackdown Tableland SW of Dingo, 4.ix.1974, M. Curtis, ex hollow sapling Stony Ck Falls area; 1♀, Bribie Is., 26.ix.1984, D. K. Yeates; 1♀, Brisbane, 1962, A. Gillison; 1♂, Burrum Heads, 6.ix.1989, G. and A. Daniels, 25°11'S, 152°36'E; 1♀, Burrum Heads, 27.viii.1985, R. Eastwood; 2♀, Burrum Heads, 6.ix.1989, G. & A. Daniels, 25°11'S, 152°36'E; 1♂, Caloundra, 23.x.1978, R. Eastwood; 1♀, Caloundra, 26.i.1931; 1♂, Capt Billy landing Cape York Pen., 19.iii.1992, G. Daniels, M.A. Schneider, 11°38'S, 142°51'E; 1♂, Carlisle Is. Mt Skiddaw, 23.xii.1986, J. Moss; 1♀, 2 mls W Central Station, Frazer Island, 18.viii.1971, E. M. Exley, on *Aotus* sp.; 1♀, 7 km S Duncoich Nth Stradbroke Is., 9.ix.1990, C. J. Burwell, ex *Leptospermum*; 1♂, Frazer I., 15.viii.1971, E. M. Exley, *Xanthorrhoea* stem; 1♀, Frazer I., 15.viii.1971, E. M. Exley, *Xanthorrhoea* stem; 1♀, Gordon creek area, Claudie Riv. district, 6.vii.1982, M. A. Schneider, G. Daniels; 1♀, Gunshot Ck 13 km NW Heathlands H.S., 16.iii.1992, M. A. Schneider, G. Daniels, 11°43'S, 141°28'E; 1♂, 1 km SE Heathlands H.S., Cape York Pen., 13.iii.1992, M. A. Schneider, G. Daniels, 11°45'S, 142°35'E; 2♀, Iron Ra., West Claudie R., 3.xii.1985, D. Yeates, open forest; 1♀, Iron Range, 15.ix.1974, M. S. Moulds; 1♀, Iron Range, 17.ix.1974, M. S. Moulds; 1♀, Iron Range, Cape York Pen., 2.vi.1971, B. K. Cantrell; 1♀, Iron Range, Cape York Pen., 5.v.1968, G. Monteith; 1♀, Jimna, 14.iii.1986, C. Burwell; 1♀, Kookaburra Cave area, Mt Moffatt sect., Carnarvon Nat. Pk, 22.ix.1986, D. K. Yeates; 1♀, Lake Birrabeen, Fraser Island, 15.viii.1971, E. M. Exley, on *Aotus* sp.; 1♀, Lake Jennings and Lake Birrabeen, Fraser Is., 19.viii.1971, E. M. Exley; 1♀, Lockerbie Scrub Cape York Pen., 31, viii.1985, E. M. Exley; 1♀, Mahogany forest, Mt Moffatt sect., Carnarvon Nat. Pk, 24.ix.1986, D. K. Yeates; 1♀, Middle Claudie R. Iron Range, 16.ix.1974, M.S. Moulds; 1♂, Mount Tinbeerwah nr Cooroy, 29.ix.1985, G. & A. Daniels, 26°24'S, 152°26'E; 1♀, Mount Tinbeerwah nr Cooroy, 29.ix.1985, G. & A. Daniels, 26°24'S, 152°26'E; 1♂, Mt Coolum, 17.ix.1989, R. Eastwood, 26°54'S, 153°05'E; 1♀, Mt White, Coen, 11.vi.1986, D.Sands; 1♂, M'yadore, 11.ix.1943, J. A. Beck; 1♂, Mydore, 26.xii.1921, J. A. Beck; 1♂, M'yadore, 29.ix.1943, J. A. Beck; 2♂, Nr.Landsborough, 27.iv.1975, I. Naumann, ex *Xanthorrhoea* stalk; 2♀, Nr Landsborough, 27.iv.1975, I. Naumann, ex *Xanthorrhoea* stalk; 1♀, on Woodford to Beerburum rd., 5.ii.1990, G. V. Maynard & C. J. Burwell; 2♂, S.of Lake Benaroon, Frazer Island, 17.viii.1971, E. M. Exley; 1♀, Severnlea via Stanthorpe, 10.xii.1980, E. M. Exley & J. King, on

Leptospermum sp.; 1♀, Shiptons Flat, 37 km S Cooktown, 29.xi.1985, D. Yeates, open forest; 1♀, Stockyard Ck, Upper Tingalpa, 23.ix.1981, C. Hagan; 1♂, Venman Bushland Reserve nr. Capalaba, x.1990, C. J. Burwell; 2♀, Yeppoon, 18–23.xii.1979, H.E. & M.A. Evans, A. Hook. **(WAM)**: 1♀, Capalaba, 20.ix.1958, C.D. Michener; 1♀, Mt Tambourine, 5.x.1966, H. Micham; 1♀, Mt Tambourine, 5.x.1966, T. F. Houston; 1♂, near Tambourine village, 20.ix.1968, T. F. Houston, ex nest in *Tristania*; 2♀, Paluma.xii.1990, Coll. C. L. Gross, on *Melastoma affine*.

South Australia: (SAM): 1♀, Karatta, 10.xi.1886, in hollow flowerstem of *Xanthorrhoea*; 1♀, Kngroo-Isl, v.1877, W. White; 1♀, Kangaroo Is, J. G. O. Tepper.

Victoria: (BMNH): 1♀, probably mislabeled, same data in same handwriting as specimen collected at Townsville, 7, ii.1902; 1♀, Plenty R.

Unknown localities: (AM): 1♀, Datonga, 14.ix.1945, NY 52; 1♀, K14004; 1♀, K13777; 1♀, 9.i.1952, BOOT1. **(BMNH)**: 1♀, Australia, Smith coll. press. by Mrs. Farren White. 99-303. **(RMNH)**: 1♀, C. Austr, 1893, v. Mull, *Lestis bombylans* 1900 Friese det.; 1♂, Felder, Nov.Holl.

Xylocopa (Koptortosoma) aruana Ritsema

Specimens examined: (47 males and 272 females)

New South Wales: (AM): 1♀, Lauriton, 27.ix.1961, A. Holmes; 4♀, Lauriton, 22.ix.1961, A. Holmes; 1♀, 12 km S of Macksville, .i.1994, Keatings. **(ANIC)**: 1♀, Wolli Wolli (?), 19.iv.1965, C. H. Fealy, on *Cassia*; 1♀, Woodford. **(BMNH)**: 1♂, NS.Wales, 74/60, X. (*Maiella*) *aruana* Ritsema det. M. A. Lieftinck 1956; **(SAM)**: 1♀, Pt Macquarie, 21.x.1913, A.R. MacCullen. **(UQIC)**: 1♂, 25 km W Grafton, 19.ix.1981, C. Hagan; 1♀, Clarence R.

Northern Territory: (AM): 1♀, Cape Arnhem, 19.iii.1948, J. E. Bray. **(ANIC)**: 1♀, Black Point, Cobourg Pen., 6.ii.1977, R. C. Lewis, 11°09'S, 132°09'E; 1♀, 12 km NE by E of Darwin, 16.xi.1979, I. D. Naumann, 12°45'S, 130°56'E; 1♀, Fogg Dam, 53 km E by S of Darwin, 18.xi.1979, T. Weir, 12°34'S, 131°19'E; 3♀, Garoen Pt, Melville Is., 1.viii.1951; 2♀, Hector's Camp, Mary River, 25.vi.1933, X. (*Maiella*) *aruana* Ritsema det. M. A. Lieftinck 1956; 1♀, 9 km N by E of Mudginberri H.S., 26.v.1973, M. S. Upton, 12°31'S, 132°54'E; 1♀, Lee Point, 15 km NNE of Darwin, 17.xi.1979, T. Weir, 12°02'S, 130°54'E; 1♀, 12 km SW by S of Oenpelli, 12.xi.1972, J. C. Cardale, 12°25'S, 132°59'E. **(BMNH)**: 1♂, Port Darwin, xii.1902, R. E. Turner, 1907/68, X. (*Maiella*) *aruana* Ritsema det. M. A. Lieftinck 1956; 1♂, Port Darwin, 84/34, X. (*Maiella*) *aruana* Ritsema det. M. A. Lieftinck 1956; 1♂, Port Darwin, xii.1902; 1♂, Port Darwin, xi.1902; 1♀, Port Darwin, xi.1902, R. E. Turner, 1907/68, X. (*Maiella*) *aruana* Ritsema det. M.A. Lieftinck 1956; 3♀, Port Darwin, xii.1902; 3♀, Port Darwin, R. C. L. Perkins Coll., 1942-95, X. (*Maiella*) *aruana* Ritsema det. M. A. Lieftinck 1956; 1♀, Gove, 1970, M. W. Yarrow. **(NTM)**: 1♀, 5 km NNW of Cahills crossing (East Alligator River), 5.v.1975, A. Allwood & T. Angeles, 12°23'S, 137°52'E; 1♀, Channel Is. on bridge, 16.iv.1991, M. Burke, on *Hyptis* sp.; 1♂, Darwin, 19.ii.1988, N. Burningham; 1♀, Darwin, 2.iii.1954, K. G. Brown; 1♀, Darwin, 4.xi.1982, D. Williams; 1♀, Darwin, 6.x.1989, J. Driss; 1♀, Darwin, 27.i.1956, L. D. Crawford; 1♀, Darwin, viii.1983, M. B. Malipatil; 1♀, Darwin, ix.1988, M.B. Malipatil; 3♀, Darwin, 12.ii.1985, S. Collins, emerged from dead branch of soursop tree; 1♀, Darwin Ber. Exp. Farm, 6.ii.1979, O. Fakalata & R. Nelson; 1♀,

Darwin Ber. Exp. Farm, 29.xii.1978, O. Fakalata & R. Nelson; 1♀, Darwin, Eastpoint, iv.1994, G. R. Brown; 1♂, Darwin, Fannie Bay, 8.ii.1996, G. R. Brown; 1♀, Darwin, Fannie Bay, 8.ii.1996, G. R. Brown; 2♂, 1♀, Darwin, Fred's Pass, 8.xi.1994, G. R. Brown & J. E. Purdie, 12°32'S, 131°03'E; 1♀, Darwin, Fred's Pass, 8.xi.1994, G. R. Brown, emerged 11/12/1994; 1♀, Darwin, Fred's Pass, 15.xi.1994, G. R. Brown, nesting in dead branch of *Lophostemon grandiflorum*, 12°32'S, 131°03'E; 1♀, Darwin, Fred's Pass xii.1994, G. R. Brown, emerged from nest; 1♀, Darwin, Karama, 22.ix.1996, R. Pengilli; 1♀, Darwin, Lee Point, 24.x.1995, G. R. Brown; 1♀, Darwin, nr Virginia, 24.x.1996, S. Gregg, 12°33'S, 131°02'E; 1♂, Darwin, Wulagi, 27.iii.1992, Jones; 1♀, Dundee Beach, 1.iii.1996, Brown & McAlpine, 12°43'S, 130°21'E; 1♀, Elcho Island, Galiwinku, 4.vi.1996, G. R. Brown, 12°02'S, 135°34'E; 1♀, Fannie Bay, 10.x.1967, Coll. K. Hockler; 1♀, Fogg Dam Area, 24.ii.1983, P. Murray; 1♀, Humpty Doo, 1.iv.1960, E. Rustwick; 1♀, Kakadu N.P., Baroalba Spring, 10.vii.1991, Wells & Webber, 12°48'S, 132°49'E; 1♀, Kakadu N.P., Ngarradj Warde djokeng, 27.vi.1980, M. B. Malipatil, on grass & sedge; 1♀, Litchfield N.P. nr Drovers Rest, 11.i.1994, G. R. Brown; 1♂, Malak, 16.ix.1992, D. Horner; 2♀, Melville Bay nr Mt Bonner, 13.x.1993, G. R. Brown; 2♀, Melville I., 3 Ways, 16.x.1996, G. R. Brown, 11°39'S, 130°42'E; 1♀, Melville I., Pickertaramoor, 11.x.1996, Brown & Dalli, 11°46'S, 130°53'E; 1♀, 9 km N by E of Mudginberri H.S., 26.v.1973, T. Weir & N. Forrester, 12°31'S, 132°54'E; 1♀, Nhulunbury, 9.x.1993, G. R. Brown; 2♀, Palmerston, 28.ix.1984, S. Collins. **(SAM)**: 1♂, Darwin, xii.1963, W. P. Walsh, gen. prep. no. 22; 1♀, Darwin, M. Hark; 2♀, Darwin, W. H. Hunt; 7♀, Darwin, G. F. Hill; 4♀, Darwin, P.O., Stuart Highway, 12.vii.1997, R. Leys, R. Foster, J. Birrell; 2♂, 3♀, Darwin, Leanyer, 12.vii.1997, R. Leys, R. Foster, J. Birrell, from nest in hardwood pergola; 1♂, Groote Eylandt, N. B. Tindale, gen. prep. no. 23; 1♀, Halluk, 29.v.1903; 1♂, Port Darwin, gen. prep. no. 12; 1♀, Roper River, N. B. Tindale; 1♀, 31.vii.1889, K. J. Pater. **(UQIC)**: 1♀, Darwin, 11.ix.1979, H. E. & M. A. Evans; 3♀, Darwin, 7.viii.1912, Prof. Spencer; 1♀, Flora R., 7.viii.1912, Prof. Spencer; 1♀, Gove Airport NE Arnhem Land, ix.1973; 2♀, 26 km along Mt Bunday Road, via Darwin, 24.xi.1974, E. M. Exley & R. I. Storey, on *Eucalyptus* sp.; 1♀, Mylie Pt Darwin, 17.ii.1992, R. Eastwood, 12°28'S, 130°50'E; 1♀, Wildman Riv. 150 km W Darwin, 12.vi.1988, T.A. Heard, ex flowers of Cashew *Anacardium occidentale*, Vocher specimen, T.A. Heard Aust. J. Agric. Res., 41(6) 1990. **(WAM)**: 1♂, Darwin, vii.1990, R.P. McMillan; 1♀, Darwin, Mindil Beach, 28.xii.1968, T.F. Houston, on flowers of *Canavalia rosea*; 1♀, Mary River, area of, 30.vii.1990, R.P. McMillan, 12°50'S, 131°40'E.

Queensland: (AM): 1♀, Murray Is., Torres Strait viii.1907, Hedley & McCulloch, K28359; 4♀, Murray Is., Torres Strait, K28359; 1♀, K37248; 1♀, Groote Eylandt G. of Carpentaria, vi.1948, J. E. Bray; 1♀, Brown Lake, Stradbroke Is., 1.iii.1980, G. Daniels; 1♀, Jardine R., 7.ix.1968, R. & E. Tovey; 1♀, 19 ml W Claudie riv., 13.ix.1974, G. Daniels; 1♀, Dunk Island, 11.xi.1955, R. Dobson; 2♀, Claudie R., 4 miles W Mt Lamond, 24.xii.1971, D. K. McAlpine, G. A. Holloway & D. P. Sands; 1♀, J. O. Campbell; 1♀, Claudie R nr Mt Lamond, 27.v.1966, D. K. McAlpine; 1♀, Condamine, 14.iii.1937, N. Geary; 1♂, K1888; 1♂, Wilson R., K1888. **(ANIC)**: 1♀, Annan Riv., 3 km W by S Black Mt, 26.iv.1981, I. D. Naumann, 15°41'S, 145°12'E; 3♀, Bamaga, Cape York, 26.iii.1964, I. F. B. Common, I. M. S. Upton; 2♀, Bill's Point, Mary R., 9.viii.1929, I. M. Mackerras & T.G. Campbell, X. (*Maiella*) *aruana* Ritsema det. M. A. Lieftinck 1956; 2♀, Bluff Ra., west slopes Biggenden, 6.i.1972, H. Frauca; 1♀, Caloendra, Deane; 1♂, Cape Ferguson, Townsville, 21.iii.1978, N. Duke; 1♂, Cape York, 1908, Elynen, X. (*Maiella*) *aruana* Ritsema det. M. A. Lieftinck 1956; 1♀, Captain

Billy Ck, 12.x.1976, D.P. Sands; 1♀, Captain Billy Creek, Cape York Pen., 9.vii.1975, S. R. Monteith, 11°40'S, 142°50'E; 1♀, Caravan Park Tinaroo, iii.1972, N. MacFarland; 4♀, Caravan Park Tinaroo, iii.1972, N. MacFarland; 1♀, Double Sloping Hummock via Rosedale, 27.x.1974, H. Frauca; 2♀, Forest Station, Bulburin State Forest, 2.iv.1972, S. R. Monteith; 2♀, Fruit Bat Falls, 20.xi.1992, P. Zborowski & A. Calder, by hand, 11°26'S, 142°26'E; 1♀, Heathlands, 21.x.1992, P. Zborowski & A. Calder, malaise trap, 11°45'S, 142°35'E; 1♀, Heathlands, 24.ii.1993, P. Zborowski, 11°45'S, 142°35'E; 1♀, Heathlands, 24.ii.1993, P. Zborowski, 11°45'S, 142°35'E; 5♀, Heathlands, 15.i.1992, I. Naumann, T. Weir, 11°45'S, 142°35'E; 2♀, Hinchinbrook Is., i.1967, R. Howe; 1♀, Homer Creek, 22.iii.1993, A.M.E. Roach, Stop CY93-11, around house, 11°58'S, 142°55'E; 1♀, Lockerbie Area, Cape York, 13.iv.1973, S. R. Monteith; 2♀, Long Pocket (Brisbane), 6.iii.1992, J. Kojima; 1♀, 11 km ENE Mt Tozer, 11.vi.1986, J. C. Cardale, 12°43'S, 143°18'E; 1♂, 3 km ENE Mt Tozer, 28.vii.1986, J. C. Cardale, 12°44'S, 143°14'E; 1♀, Palm Ck, 12 km S of Miriam Vale, 6.v.1970, Z. Liepa; 1♀, Stanthorpe, xii.1959, Jean Harslett; 1♀, Sue (Warraber) Island, 13.i.1978, R. Lewis, 10°12'S, 145°49'E; 1♀, Warraber Island, 31.i.1978, 10°12'S, 142°49'E; 2♀, Watalang RA., via Rosedale, iv.1975, H. Frauca; 1♀, Woodstock Ck 2 m N of Marlborough, 12.iv.1965, C. W. Frazier. **(BMNH)**: 7♀, Mackay, xii.1899, Cassia; 1♀, Tully Falls, 11.i.1962, E. B. Britton, B.M.1962-153; 1♀, 1♂, Queensland, E. Saunders, 93-49, 4562, X. (*Maiella aruana* Ritsema det. M. A. Lieftinck 1956; 1♂, Mackay, v.1894, 309; 1♀, Mackay, G. Turner, 1892-16, X. (*Maiella aruana* Ritsema det. M. A. Lieftinck 1956; 1♀, Sarina, 1934-304, X. (*Maiella aruana* Ritsema det. M. A. Lieftinck 1956; 1♀, Sarina, Museum Leiden ex coll. J. v.d. Vecht, X. (*Maiella aruana* Ritsema det. M. A. Lieftinck 1956. **(MV)**: 1♂, Burleigh, 15.ix.1965, A. N. Burns, collection, A. N. Burns; 1♂, Burleigh, 28.ix.1960, A. N. Burns, collection, A.N. Burns; 1♂, Claudie R., ii.1914, O. MacGillivray. **(NTM)**: 1♀, Townsville James Cook Uni, 30.iii.1983, Y. McErlain. **(QM)**: 1♀, Acacia ridge, Brisbane, 11.iv.1961, Mrs. E. J. Slatter; 1♂, Brisbane, 5.ix.1921, H. Hacker; 1♂, Brisbane, 13.ix.1921, H. Hacker; 1♀, Brisbane, 8.i.1918, H. Hacker; 1♀, Brisbane, 9.i.1918, H. Hacker; 1♀, Brisbane, 18.iii.1912, H. Hacker; 1♀, Brisbane, 21.ii.1918, H. Hacker; 1♀, Brisbane, 22.x.1991, D. Davis; 3♀, Brisbane, 13.ix.1921, H. Hacker; 1♂, Brisbane, Keperra, 12.x.1995, B. Rayment; 2♀, Brisbane, Keperra, 12.x.1995, B. Rayment; 2♂, Cairns dist., F.I. Dodd; 1♀, Cecil Plains, from H.T. State School; 1♂, Cooperoo, 22.x.1942, Mrs. T. Louf; 1♀, Dunk Isd, v.1914, Hamlyn Harris; 1♀, 8 km W of Miriamvale, 24.iv.1982, E. Johansen; 1♀, Palm Is., 29.v.1926; 1♀, Palm Is., 30.v.1926; 1♂, Palm Isd, 16.ix.1923, G. A. Waterhouse; 1♀, Palm Isd, 16.ix.1923, G. A. Waterhouse; 1♀, Palmwoods, 6.iii.1960, G. Miles; 1♀, Peel Is., 13.iii.1952, R. Foilding; 1♀, Pialba, Hamlyn Harris; 1♀, Sandy Cope, 20.iii.1951, Chapman; 1♂, Stradbroke Island, 17.ix.1915, H. Hacker; 2♀, Stradbroke Island, 2.x.1911, H. Hacker; 1♂, Thursday Is., 2.vii.1910; 1♀, Woodford, 11.x.1954, S. Phillips. **(SAM)**: 1♀, 15 km N of Gin Gin, near Mystery Craters, 24.ii.1997, R. Leys, on *Cassia*; 5♀, 7 km N of Gin Gin, 25.ii.1997, R. Leys, on *Cassia fistula*; 1♀, 7 km N of El Arish, 16.ix.1997, R. Leys, M. P. Schwarz; 1♀, 7 km N of El Arish, 16.ix.1997, R. Leys, M. P. Schwarz; 2♀, Ayr, 25.v.1956, J. Baldwin; 5♀, Beaudesert, 22.ii.1997, R. Leys; 1♀, Bowen, A. Simson; 1♀, Brisbane, 14.ix.1966; 1♀, Brisbane, x.1966, T. F. Houston, *Crotalaria*; 4♀, Bundaberg, Childers Rd, 24.ii.1997, R. Leys, on leopard tree; 1♀, Cooktown, 14.ix.1893, G. Ininck; 4♀, Horn I., Torres Straits; 1♀, Lae, vii.1954, H. Womersley; 4♀, Mabulag I., Torres Straits, viii.1924, C. T. McNamara; 1♀, Melville I., W. D. Dodd; 1♂, Moa I., Torres Strait, J.W. Schomberg, gen. prep. no. 13; 1♀, Moa I., Torres Straits, G. A. Lusambe; 2♀, Moa I., Torres Straits, J. W. Schomberg;

11♀, Murray Island, Torres Straits, A.M. Lea; 1♀, Nemo River, x.1969, S. W. White; 1♀, Palmerston, v.1891, Dr. Stirling; 2♀, Rockhampton–Yeppoon, 5.v.1956, J. Baldwin; 2♀, Smithfield Heights, 17.ix.1997, R. Leys, M. P. Schwarz; 1♀, Sommerset, C. T. McNamara; 1♂, 6♀, South Mission Beach, 13.ix.1997, R. Leys, M. P. Schwarz, from nest; 2♀, Tamborine, 20.ii.1963. **(UQIC)**: 1♀, Bowen, 12.ii.1933; 1♂, Brisbane, ix.1955, D. B. Jones, gen. prep. no. 30; 1♀, Brisbane, 18.xii.1984, T. A. Heard; 1♀, Brisbane, J. Miller; 2♀, Brisbane, 5.ii.1923, A. Burns; 1♀, Burleigh, 15.ix.1965, A. Burns; 1♀, Caloundra, 28.iii.1954, J. Kerr; 1♂, Capt Billy landing Cape York Pen., 18.iii.1992, G. Daniels, M. A. Schneider, 11°38'S, 142°51'E; 2♀, 6 km NE road junction Claudie Riv district, 27.vi.1982, G. Daniels & M. A. Schneider; 1♀, Claudie R., 5.v.1961, J. Kerr; 1♀, Claudie R., 11.ii.1914, D. Magillivray; 1♀, Claudie R., 11.ii.1914, J. A. Kershaw; 1♀, Cooktown, 12.xi.1978, E. M. Exley & K. Walker, on *Eucalyptus papuana*; 1♀, Dunk Is., 31.xii.1949, G.B.; 1♂, Forest Hill, 14.i.1985, T. A. Heard, on *Cajanus cajan*; 1♀, Forest Station Bulburin State Forest via Many Peaks, 12.iv.1974, I. Naumann, 600♂; 1♀, Gunshot Ck, 13 km NW Heathlands H.S., 16.iii.1992, G. Daniels & M. A. Schneider, 11°43'S, 141°28'E; 1♀, 14 km S of Heathlands H.S., 12.iii.1992, G. Daniels & M. A. Schneider, 11°51'S, 142°38'E; 1♀, Iron Range, Cape York Pen., 26.v.1971, B. K. Cantrell; 1♀, Iron Ra., West Claudie River, 3.xii.1985, D. Yeates, open forest; 1♀, Kim Res., 30.xii.1952, D. Manion; 1♀, Kuranda, 14.i.1951, G. B.; 1♀, Lockerbie, Cape York, 6.vi.1969, G. B. Monteith; 1♂, 11 km E Mareeba, 29.x.1978, E. M. Exley & K. Walker, on *Eucalyptus alba*; 1♀, Moa (Banks) Is., Torres Strait, Eet Hill Vicinity, 9.vii.1977, G. B. Monteith & D. Cook; 1♀, Mt Tamborine, 5.i.1956, C. King; 1♀, Mutee Head, Cape York Pen., 29.viii.1985, E. M. Exley, 10°54'S, 142°14'E; 1♂, M'yadore, 29.ix.1943, J. A. Beck; 3♀, Pastoe R. Crossing Coen. Iron Range Rd., 11.ix.1974, B. J. Moulds; 1♀, Rurukun(?) Mission c. York, 2.viii.1949; 1♀, Silver Plains Coen, 23.xii.1958, L. W.; 7♀, Stradbroke Isl., 13.ix.1954, A. Burns; 1♂, Sunnybank, 18.ix.1927–; 1♂, Wictalabo?, 24.viii.1966, W. McDonald; 1♂, Queensland, E. Saunders, 93-49, 4562, X. (*Maiella*) *aruana* Ritsema det. M. A. Lieftinck 1956; 1♂, Mackay, v.1894, 309; 1♀, Mackay, G. Turner, 1892-16, X. (*Maiella*) *aruana* Ritsema det. M. A. Lieftinck 1956; 1♀, Sarina, 1934-304, X. (*Maiella*) *aruana* Ritsema det. M. A. Lieftinck 1956; 1♀, Sarina, Museum Leiden ex coll. J. v.d. Vecht, X. (*Maiella*) *aruana* Ritsema det. M. A. Lieftinck 1956; 3♀, Stradbroke Isl., 1.iii.1980, H. E. & M. A. Evans & A. Hook Coll.; 1♀, St. Lucia, iii.1987, T. A. Heard; 1♀, Kingston Brisbane, 17.viii.1978, S. Menger, on *Jasmine*; 1♀, 6 km NE road junction Claudie Riv. dist., 5.vii.1982, G. Daniels & M. A. Schneider; 1♀, Dunwich North Stradbroke Is., 13.iv.1985, M. A. Schneider; 1♀, Albany Creek near Brisbane, 30.iv.1980. **(WAM)**: 1♀, Brisbane, 1.iv.1966, A. Hahn, on weed; 1♂, Samford, 2.iii.1963, J. S. Welch.

South Australia(?): (ANIC): 1♀, xi.1890, Rev. Blackburn;

Western Australia: (ANIC): 1♂, Marun CALM Site 8/4 Prince Frederick Harbour, 11.vi.1968, I. D. Nauman, 15°00'S, 125°21'E. **(WAM)**: 1♀, Wyndham.

Unknown locality: (BMNH): 1♂, H.J. 305, 92/16, X. (*Maiella*) *aruana* Ritsema det. M. A. Lieftinck 1956.

Papua New Guinea: (RMNH): Aru Ins., Rosenberg, **lectotype** *aruana* Rits. (Lieftinck); 1♀, *Xylocopa aruana* Rits. (I.Aru), F. Sm. Coll. 79-22, X. (*Maiella*) *aruana* Ritsema det. M.A. Lieftinck 1957. **(SAM)**: 1♀, Binaturi R., iv.1913, S. Hen, X. (*Maiella*) *aruana* Ritsema det. M. A. Lieftinck 1956; 1♂, Pt Moresby, 22.xi.1952, J. R. Sharp; 1 female; 1♀, Pt Moresby, 7.i.1966, ex coll. A. J. Brighton, University of Western Australia.

Xylocopa (Koptortosoma) lieftincki, sp.nov.

Specimens examined: (55 males and 205 females):

Holotype: Northern Territory: (ANIC): ♂, Rimbija Is. Wessel Islands, 18.i.1977, E. D. Edwards, 11°01'S, 136°45'E.

Paratypes: **Northern Territory: (ANIC):** 1♂, Rimbija Is. Wessel Islands, 18.i.1977, E. D. Edwards; 1♂, Rimbija Is. Wessel Islands, 11.i.1977, E. D. Edwards, 11°01'S, 136°45'E; 2♂, 4♀, Rimbija Is. Wessel Islands, 3.ii.1977, T. A. Weir, 11°01'S, 136°45'E.

New South Wales: (AM): 1♀, Bingara nr Tamworth, 1926, W. S. Dun, K54382; 1♀, Bogangat, xii.1996; 1♀, Bugaldie, 21.i.1994, P. Manchen, 31°07'S, 149°07'E; 1♀, Hillyvale Stn nr Narrabri, ix.1991, S. Hull; 1♀, Lauriton, 27.ix.1961, A. Holmes; 1♀, Nambuca Heads, 27.xi.1935, D. J. Fraser. **(ANIC):** 1♀, Casino, ix.1931, C. W. Frazier; 2♀, Narrabri, 1891, Musson, X. (*Maiella*) *aruana* Ritsema, det M. A. Lieftinck 1956; 1♀, Tamworth, 3.iii.1932; 1♀, Woods Reef, Barraba, x.1932, on *Wisteria*. **(BMNH):** 1♀, Barraba Woods Reef, x.1932, 1934-304, on *Wisteria*, X. (*Maiella*) *aruana* Ritsema det. M. A. Lieftinck 1956; 1♂, NS.Wales, 74/60, X. (*Maiella*) *aruana* Ritsema det. M. A. Lieftinck 1956.

Northern Territory: (ANIC): 1♀, Birraduk Ck, 18 km E by N of Oenpelli, 4.vi.1973, J. C. Cardale, 12°17'S 133°13'E; 1♀, Brock's Creek, 9.iii.1933, T. Campbell, X. (*Maiella*) *aruana* Ritsema, det M. A. Lieftinck 1956; 1♂, 1 km N of Cahills Xing (East Alligator R.), 31.x.1972, M. S. Upton, 12°25'S, 132°58'E; 1♀, 7 km NW by N of Cahills Crossing (E Alligator R.), 12.vi.1973, J. C. Cardale, 12°23'S, 132°56'E; 1♀, Cooper Ck, 19 km E by S of Mt Borradaile, 5.vi.1973, J. C. Cardale, 12°06'S, 133°04'E; 1♀, Jabaluka Lagoon, 14 km N of Mudginberri H.S. 14.xi.1972, J. C. Cardale, 12°28'S, 132°52'E; 1♀, Koongarra, 15 km E of Mt Cahill, 12.vi.1973, J. C. Cardale, 12°52'S, 132°50'E; 1♂, Mt Brockman, 14 km S by E of Mudginberri H.S., 11.vi.1973, J. C. Cardale, 12°43'S, 132°54'E; 1♀, 9 km N by E of Mudginberri H.S., 26.v.1973, J. C. Cardale, 12°31'S, 132°54'E. **(NTM):** 1♀, Barunga, v.1992, C. Coleman; 1♀, Birraduk Ck, 18 km E by N of Oenpelli, 4.vi.1973, T. Weir & A. Allwood, 12°23'S, 132°57'E; 2♂, 5 km NNW of Cahills crossing (East Alligator River), 28.v.1973, T. Weir & N. Forrester, 12°23'S, 132°57'E; 1♀, 7 km Nw by N of Cahills Crossing (East Alligator River), 9.vi.1973, T. Weir & A. Allwood, 12°23'S, 132°56'E; 1♀, Cooper Ck, 19 km E by S of Mt Borradaile, 5.vi.1973, T. Weir & A. Allwood, 12°06'S, 133°04'E; 1♀, Elsey Ck, 10 ml. E of Mataranka on Roper Bar Rd., 22.iii.1972, A. Allwood & N. W. Forrester; 2♀, Katherine, 15.vi.1976, G. Thompson; 2♀, Katherine Gorge N.P., 5.xii.1980, M.B. Malipatil, sweeping vegetation on escarpment; 1♀, Moline Rock Hole, 6 km E by NE of Mt Daniels, 23.v.1974, T. Weir & T. Angeles, 13°34'S, 132°15'E; 1♀, Nhulunbuy, 13.x.1993, G. R. Brown; 1♀, Renner Springs Roadhouse, 3.iv.1981, M. Malipatil & J. Hawkins, 18°19'S, 133°48'E. **(SAM):** 2♀, Darwin, G. F. Hill; 1♀, Darwin, 5.v.1948, F. Angel; 1♀, Port Darwin; 1♀, Roper River, N. B. Tindale; 4♀, Roper River, H. R. Warren; 1♂, Ubirr, 2 km NW of Border Store, 15.vii.1997, R. Leys, R. Foster, J. Birrell, 12°24'S, 132°58'E. **(UQIC):** 1♀, Wildman Riv. 150 km W Darwin, 12.vi.1988, T. A. Heard, ex flowers of Cashew *Anacardium occidentale*, Vocher specimen T. A. Heard, Aust. J. Agric. Res., 41(6) 1990.

Queensland: (AM): 2♀, Cooktown, 9.vi.1951, A. Musgrave; 3♀, Cooktown, 26.vi.1951, A. Musgrave; 2♀, Mackay, 1947, A. Musgrave; 1♀, Mackay, 9.i.1941, A. Musgrave; 1♀, Friday I., Torres Strait, 5.vii.1976, E. Cameron; 2♀, Lizard I. NNE of Cooktown, 17.xi.1974, M. S. & B. J. Moulds; 3♀, Hope Vale, 34 mls N of Cooktown, 21.vi.1951, A. Musgrave; 1♀, Condamine, 14.iii.1937, N. Geary; 1♀, Sydney?, K37248; 1♀, Yeppoon, 17.xi.1978, R. Eastwood; 1♀, Yeppoon.x.1924, A. Musgrave, K50706; 2♀, Townsville, i.1994, W. Mackenzie; 1♀, Hammond I., Torres Strait, 5.v.1986, R. B. Lachlan & M. R. Palfreyman; 1♀, Texas, T. W. Camble; 1♀, Australia, K37248; 1♀, Somerset, 15.vi.1976, P. Webber; 2♂, Mackay, 1947, A. Musgrave; 1♂, Lizard I. NNE of Cooktown, 17.xi.1974, M. S. & B. J. Moulds; 1♂, Hammond I., Torrese Strait, 11.v.1986, R. B. Lachlan & M. R. Palfreyman. **(ANIC):** 2♀, Annan R, Cooktown, 1905, Brown, X. (*Maiella aruana* Ritsema, det M. A. Lieftinck 1956; 1♂, Annan Riv Cooktown, ii.1905, Braun, X. (*Maiella aruana* Ritsema det. M. A. Lieftinck 1956; 2♂, Bowen, 11.iii.1992, J. Kojima; 1♀, Bowen, 25.ix.1950, E. F. Riek, X. (*Maiella aruana* Ritsema, det M. A. Lieftinck 1956; 2♀, Bowen, 11.iii.1992, J. Kojima; 1♀, Bowen, 27.ix.1950, E. F. Riek; 1♀, Bucasia, 21.xi.1991, Ken. J. Sandery; 1♀, Burnside, 22.iii.1929, T. G. Campbell; 2♀, Cairns, 15.i.1917, X. (*Maiella aruana* Ritsema, det M. A. Lieftinck 1956; 1♂, Cairns, 1.v.1940; 1♀, Cairns, v.1934, Mansky; 1♂, 4 km SW of Casuarina Mill, 30.iv.1981, I. D. Nauman, 15°03'S, 145°15'E; 1♀, Charter Towers Plant, 20.vii.1912, X. (*Maiella aruana* Ritsema, det M. A. Lieftinck 1956; 1♀, Chillagoe, 1915, Clark, X. (*Maiella aruana* Ritsema, det M. A. Lieftinck 1956; 1♀, Cooktown, 27.vi.1906; 1♀, 31 km NW by N of Cooktown, 20.v.1977, I. F. B. Common & E. D. Edwards, 15°18'S, 145°01'E; 1♀, Edungalba, 1.v.1940; 1♀, Edungalba, 5.xii.1940; 1♀, Flying Fish Pt, Innesfail, 23.iv.1958, T. G. & C. A. Campbell; 2♀, Green Island, Barrier Reef, vi.1930, R. S. Tillyard, X. (*Maiella aruana* Ritsema, det M. A. Lieftinck 1956; 3♀, Hayman Is, 24.x.1950; 1♀, Heathlands, 15.i.1992, I. Naumann, T. Weir, 11°45'S, 142°35'E; 1♀, Home Hill, vii.1943, F. W. Hely, X. (*Maiella aruana* Ritsema, det M. A. Lieftinck 1956; 1♀, 75 km N Hope Vale Mission, 4.x.1980, J. C. Cardale, 15°14'S, 145°07'E; 1♀, Lolworth Station, 29.vi.1907, Mrs Black, X. (*Maiella aruana* Ritsema, det M. A. Lieftinck 1956; 1♀, Mac I. Hold, 14.iii.1940; 1♀, Michell River settlement, iv.1969, A. L. Dyce; 2♀, Mossman, 12.xii.1939; 1♀, Mowbray River, 20.vii.1959, T. G. Campbell; 1♀, Musselbrook Waterhole, 17.iv.1995, G. V. Maynard, Blue Pea, 18°36'S, 138°07'E; 4♀, nr. Cairns, vi.1969, R. Hardie; 3♀, Palm Is., 20.xii.1930, I. M. Mackerras, X. (*Maiella aruana* Ritsema, det M.A. Lieftinck 1956; 1♂, Palm Island, 20.xii.1930, I. M. Mackerras; 2♂, Palm Island, M. J. Mackerras; 1♀, Palm Island, M. J. Mackerras; 2♀, Ridgepole Waterhole, 24 km ESE Musselbrook Camp, 19.v.1995, I. D. Naumann, 18°40'S, 138°20'E; 1♀, Sandstone Outcrops 30 km W of Fairview, via Laura, 22.vi.1976, G. B. & S. R. Monteith; 1♀, Sue (Warrabar) Island, 1.xii.1977, E. D. Edwards, 10°12'S, 142°49'E; 1♂, Sue (Warrabar) Islands, 28.i.1978, R. Lewis, 10°12'S, 145°49'E; 1♂, Sue (Warrabar) Islands, 25.i.1978, R. Lewis, 10°12'S, 145°49'E; 1♀, Taringa; 1♂, Thursday Is., 30.xi.1976, Paton, in tree stem; 1♀, Thursday Island, 1.xii.1976, Paton, Monsoon forest; 1♀, Thursday Island, 29.xi.1976, Curreg, open forest; 1♀, Townsille, 5.v.1934; 1♂, Townsille, x.1956; 1♀, Townsville, 12.i.1959, K. L. Harley; 1♀, Townsville, 14.xii.1968, P. Ferrar; 1♂, Yeppoon, 19.i.1949, I. F. B. Common, X. (*Maiella aruana* Ritsema det. M. A. Lieftinck 1956; 1♂, Yeppoon, 3.i.1962, I. F. B. Common; 1♂, Yeppoon, 20.xii.1961, I. F. B. Common; 1♂, 2 mls S of Yeppoon, 18.ix.1954, I. F. B. Common; 1♂, 50 mls N of Yeppoon, 30.xii.1964, I. F. B. Common. **(BMNH):** 5♀, Mackay, xii.1899, *Cassia*; 1♀, Mackay, iv.1900; 1♀, Redlynch, ix.1938, R. F. Sternitzky, B.M.1949-61

Papuan-Australian Exp.; 2♂, Lizard Is., 54, X. (*Maiella*) *aruana* Ritsema det. M. A. Liefstinck 1956; 1♀, N Queensland, vi.1918, R. Veitch, 1918-123, X. (*Maiella*) *aruana* Ritsema det. M. A. Liefstinck 1956; 1♀, North Queensland, R. C. L. Perkins Coll., 1942-95, X. (*Maiella*) *aruana* Ritsema det. M. A. Liefstinck 1956; 1♀, Cooktown, D. Le Souef, 99-250, X. (*Maiella*) *aruana* Ritsema det. M. A. Liefstinck 1956; 1♀, Townsville, i.1902, F. P. Dodd, 1902-319, X. (*Maiella*) *aruana* Ritsema det. M. A. Liefstinck 1956; 1♀, Sarina, 1934-304, X. (*Maiella*) *aruana* Ritsema det. M. A. Liefstinck 1956; 1♀, Timor (?) Australia, Smith coll. pres. by Mrs. Farren White. 99-303, 92.H., X. (*Maiella*) *aruana* Ritsema det. M. A. Liefstinck 1956. **(MV)**: 2♂, Green Is., 21.i.1935, A. N. Burns; 1♂, Green Is., 25.iii.1935, A. N. Burns; 1♂, Green Is., Cairns, 1.ix.1929; 1♂, Mackay, 31.iii.1928, A. N. Burns, collection A. N. Burns; 1♂, Mackay, 11.ii.1928, A. N. Burns, gen. prep. no. C1; 1♂, Mackay, 1.iii.1929, A. N. Burns; 1♂, Mackay, 25.ix.1928, A. N. Burns; 1♂, Mackay, 5.x.1928, A. N. Burns; 1♂, Newry Is., 26.x.1946, J. G., collection A. N. Burns; 1♂, Prince of Wales Isl., Torres Strait, 29.v.1969, N. E. Boiss. **(QM)**: 1♀, Dalby, 19.x.1918; 1♀, Gordonvale; 1♂, Green Is., Cairns, 1.ix.1929; 1♀, Halftide nr. Mackay, 7.i.1965, E. C. Dahms, on beach.; 1♀, Mackay, 18.vii.1934, M. Powell; 1♀, Pallarenda Pt nr Townsville, 26.i.1965, E. C. Dahms, open forest, net; 1♀, Pebbly Beach, 18.i.1965, E. C. Dahms, on ground.; 4♂, Townsville, F. Taulor. **(RMNH)**: 1♀, Queensland University (Brisbane?), 5.viii.1970, A. C. Geijskes. **(SAM)**: 1♀, Batavia River, N.B. Tindale; 1♂, Bowen; A. Simson, gen. prep. no. 16; 1♂, Bucasia, 24.ix.1990, Ken. J. Sandery, gen. prep. no. 14; 1♀, Bucasia, 4.x.1990, K. J. Sandery; 1♀, Cairns, 6.iv.1984, C. Rojewski; 1♀, Cairns, 5.vi.1984, C. Rojewski; 1♀, Cairns; 1♀, Cape Tribulation, 15.ix.1997, R. Leys, M. P. Schwarz; 1♂, 1♀, Cow Bay Air Port, 25 km SW of Cape Tribulation, 15.ix.1997, R. Leys, M. P. Schwarz, from nest in dead *Melastoma*; 1♀, 5 km NE Edungalba, 18.i.1991, A. Stolarski; 2♀, Gayndah; 1♀, Karmanton, 7.v.1963, P. Aitken & N. B. Tindale; 3♀, Mabulag I., Torres Strait, viii.1924, C. T. McNamara; 1♂, Mackay, 4.ii.1928, AB, gen. prep. no. 24, det. *Xylocopa* (*Mesotrichia*) *bryorum* Fabr. id. Raym. Meringa Q.25.6.25 AB; 1♀, Moa I., G. A. Lusawibi(?); 1♀, Moa I., Torres Strait; 1♀, 2 km E Mornington Is. Mission, 29.iv.1960, P. Aitken & N. B. Tindale, on beach; 1♀, 12 km S of Mossman, 13.ix.1997, R. Leys, M. P. Schwarz; 1♀, 7.5 km N of Mossman, 16.ix.1997, R. Leys, M. P. Schwarz; 1♀, 7.5 km N of Mossman, 16.ix.1997, R. Leys, M. P. Schwarz; 1♀, North Myall Beach nr. Cape Tribulation, 15.ix.1997, R. Leys, M. P. Schwarz; 3 female, Oak Beach 30 km S of Mossman, 13.ix.1997, R. Leys, M. P. Schwarz; 1♀, Palm I., A. M. Lea; 1♀, Palm I., A.M. Lea; 2♀, 4 km WNW Riversleigh H.S., S side Gregory River, 1.v.1986, F.A. Forrest, on flowering bush; 1♀, Saibai I., Torres Strait, viii.1924, C. T. McNamara; 1♀, Saibai I., Torres Straits, viii.1924, C. T. McNamara; 2♀, Sommerset, ; 1♂, Stewart R., W. D. Dodd, gen. prep. no. 21; 4♀, Sweers Is., 27.v.1960, P. Aitken & N. B. Tindale; 1♀, Thursday I., N. B. Tindale; 1♀, Thursday I., N. B. Tindale; 3♀, Thursday I., A. M. Lea & C. T. McNamara; 3♀, Thursday I., A. M. Lea & C. T. McNamara; 1♂, Townsville, G. F. Hill, gen. prep. no. 25. **(UQIC)**: 1♀, Brisbane, x.1961, J.K.; 1♀, Bushley, 15.iii.1924, A. N. Burns; 1♀, Cairns, 27.iii.1950, A. N. Burns; 1♂, Carlisle Is., 9.xii.1986, S. R. Monteith; 1♀, Coen, 22.viii.1959, E. T. Smith; 6♀, Coen, 22.viii.1959, E. T. Smith; 5♀, Coen, 22.ix.1959, E. Smith; 1♀, Coen District Cape York Pen., 13.viii.1963, J. L. Wassell; 1♂, Cooktown, vii.1984, R. de Keyzer, gen. prep. no. 11; 1♀, Cooktown, vii.1970, J. C. Lesouef; 1♀, Endeavour River, 5.x.1922, F. P. Spry; 1♀, Gorden Vale, 3.v.1918, E. Janers; 1♀, Green Is., 21.i.1935, A. N. Burns; 2♀, Green Is., 21.i.1935, A. N. Burns; 1♀, Green Is., 10.vi.1963; 4♀, Green Is., 22.vi.1962, J. C. Lesouef; 1♀, Kuranda, 14.i.1951, G. B.; 1♀, Kuranda, 25.vi.1951, A. N. Burns; 1♀, Kuranda,

4.xii.1957, A. N. Burns; 1♀, Lake Barrine, 17.i.1935, A. N. Burns; 1♀, Little Mulgrave, 12.iii.1950, A. N. Burns; 1♀, Mackay, 10.iv.1931, A. N. Burns; 1♀, Magnetic Is., 26.ii.1956; 1♀, Newry Is., 26.x.1946, I. G.; 3♀, Port Douglas Lookout, Port Douglas, 21.xi.1978, K. Walker, on *Tristania suaveolens*; 1♀, Prince of Wales Isl., Torres Strait, 27.v.1969, N. E. Boiss; 2♀, Townsville, G. F. Hill; 1♀, Westwood, 29.i.1924, A. N. Burns; 1♀, Westwood, 17.i.1924, A. N. Burns; 1♀, Westwood, 8.ii.1924, A. N. Burns; 1♀, Westwood, 23.ii.1924, A. N. Burns; 1♂, Yeppoon, 18-23.xii.1979, H. E. & M. A. Evans & A. Hook, gen. prep. no. 31; 1♀, Yeppoon, 6.v.1962, J. McMullen; 1♂, Yeppoon, 18-23.xii.1979, H. E. & M. A. Evans & A. Hook; 4♀, Yeppoon, 18.xii.1979, H. E. & M. A. Evans & A. Hook. **(WAM)**: 1♂, Fishery Falls, 16.x.1949, JGB; 1♀, Shute Harbour, 13.viii.1967, T. F. Houston.

***Xylocopa (Koptortosoma) waterhousei*, sp. nov.**

Specimens examined: (12 males and 12 females):

Holotype: Northern Territory: (ANIC): 1♂, 9 km N by E of Mudginberri H.S., 10.vi.1973, J. C. Cardale, on flowers of *Calytrix brachychaeta* F. Muell. var *tenuifolia*, 12°31'S, 132°54'E.

Paratypes: Northern Territory: (ANIC): 3♀, 9 km N by E of Mudginberri H.S., 10.vi.1973, J. C. Cardale, on flowers of *Calytrix brachychaeta* F. Muell. var *tenuifolia*, 12°31'S, 132°54'E. **(NTM)**: 4♂, 2♀, 9 km N by E of Mudginberri H.S., 10.vi.1973, T. Weir & A. Allwood, 12°31'S, 132°54'E.

Northern Territory: (ANIC): 2♂, Birraduk Ck, 18 km E by N of Oenpelli, 5.vi.1973, J. C. Cardale, 12°17'S, 133°13'E; 2♀, 15 km E of Mt Cahill, 6.iii.1973, M.S. Upton, 12°52'S, 132°50'E; 1♂, Mudginberri, 28.iii.1971, A. L. Dyce, gen. prep. C4. **(NTM)**: 1♂, Birraduk 18 km E by N of Oenpelli, 4.vi.1973, T. Weir & A. Allwood, 12°16'S, 133°13'E; 2♂, Koongarra 15 km E of Mt Cahill, 6.x.1975, A. Allwood & T. Angeles, 12°52'S, 132°50'E; 1♀, Koongarra 15 km E of Mt Cahill, 12.vi.1973, J. C. Cardale, 12°52'S, 132°50'E. **(QM)**: 1♂, Gorge NE of Mt Gilruth, 10.vii.1979, G. Monteith & D. Cook, 13°02'S, 133°05'E. **(SAM)**: 4♀, Gubara 20 km S of Jabiru, Kakadu N.P., 16.vii.1997, R. Leys, R. Foster, J. Birrell, 12°50'S, 132°53'E.

***Xylocopa (Koptortosoma) parvula* Rayment**

Specimens examined: (11 males and 73 females):

Northern Territory: (ANIC): 1♂, 22 km WSW of Borroloola, 2.xi.1975, J. C. Cardale; 1♀, 46 km SSW of Borroloola, 23.iv.1976, D. H. Colless, 16°28'S, 136°09'E; 1♂, Brock's Creek, 8.iii.1932, F. Don, 'holotype *X. (Maiella) xerophila* Lieft.' det. M. A. Lieftinck 1957; 1♀, Brock's Ck, 2.iv.1936, T. G. Campbell; 1♀, Brock's Ck, 13.iii.1931, T. G. Campbell, *X. (Maiella) aruana* Ritsema det. M. A. Lieftinck 1956; 1♂, Burnside 8 km Brock's Creek 2.iv.1932, T. Campbell; 1♀, Caranbirini Waterhole, 33 km SW of Borroloola, 3.xi.1975, J. C. Cardale, 16°16'S, 136°05'E; 1♀, Cattle Creek, 54 km S by W of Borroloola, 27.x.1975, J. C. Cardale, 16°32'S, 136°10'E; 1♂, Cooper Ck, 19 km E by S of Mt Borradaile, 5.vi.1973, J. C. Cardale, 12°06'S, 133°04'E; 2♀, Litchfield Daly R., 5.iv.1929, T. G. Campbell, *X. (Maiella) aruana* Ritsema det. M.A. Lieftinck 1956; 2♀, McArthur River, 48 km SW of Borroloola, 29.x.1975, J. C. Cardale, 16°27'S, 136°05'E; 1♂, 9 km

N by E of Mudginberri H.S., 10.vii.1973, J. C. Cardale, 12°31'S, 132°54'E. **(SAM)**: 1♀, Hidden Valley N.P. Kununurra, 18.vii.1997, R. Leys, R. Foster, J. Birrell; 2♀, Jabiru, Kakadu N.P., 15.vii.1997, R. Leys, R. Foster, J. Birrell; 7 female, Pine Creek, 10.vii.1997, R. Leys, R. Foster, J. Birrell; 2 female, Wyndham, 19.vii.1997, R. Leys, R. Foster, J. Birrell; 1♀, Wyndham K.R.S. **(UQIC)**: 1♀, Borrooloola, 5.xi.1911, G. F. Hill; 2♀, Darwin, 25.iv.1948, F. A.; 1♀, Horn Islet, Sir Edward Pellew Group, 1.ii.1968, B. Cantrell; 2♀, 14 mls E of Katherine, 15.iii.1973, E. M. Exley, on *Euc. latifolia*; 3♀, Mataranka Homestead via Mataranka, 18.xi.1975, E. M. Exley & R.I. Storey, on *Eucalyptus tectifera*; 1♀, Seventeen Mi. Cr.Katherine Gorge N.P., 14.xi.1986, T. A. Heard. **(WAM)**: 1♀, Darwin, 1969, A.D.Smith; 1♀, Kildurk, 29.i.1968, D. Durack; 1♂, Snake Creek nr Adelaide R., 7.v.1964, N. Berry + N. Cross; 1♀, Snake Creek nr Adelaide R., 7.v.1964, N. Berry & N. Cross.

Queensland: (AM): 1♀, Almaden, Chillagoe dist. i.1927, W. D. Campbell, K55533; 1♀, Coconut Ck 45 km N of Aurakun, 25.xi.1981, M. Robinson; 1♀, Eidsvold, Dr. Bancroft, K35138; 1♀, 10 km W of Georgetown, 1.i.1990, M. S. & B. J. Moulds; 1♀, Kurumba, xii.1963, J. C. Yaldwyn; 1♂, centre of North Island, Pellow Group, Gulf of Carpentaria, Dr. W. E. J. Paradiice, K51002. **(ANIC)**: 1♂, Charter Tower Plant, 20.vii.1912, 'paratype X. (*Maiella*) *wallabia* Lieft.' det. M. A. Lieftinck 1957; 1♀, Musselbrook Gorge 19 km NE by E Musselbrook Camp, 15.v.1995, I. D. Naumann, on *Calytrix*, 18°30'S, 138°17'E; 1♀, Ridgepole Waterhole 24 km ESE Musselbrook Camp, 11.v.1995, I. D. Naumann, 18°40'S, 138°20'E. **(SAM)**: 1♀, 4 km WNW Riversleigh H.S., S side Gregory River, 1.v.1986, F. A. Forrest, on flowering bush. **(UQIC)**: 1♀, Louie Ck, 7 km S Lawn Hill Nat. Park, 28.iv.1995, G. Daniels & M. A. Schneider, 18°45'S, 138°31'E; 1♂, Murrays Spring, Musselbrook Resource Centre Lawn Hill Nat. Pk., 21.iv.1995, G. Daniels & M. A. Schneider, 200♂, 18°35'S, 138°04'E; 1♂, Murrays Spring, Musselbrook Resource Centre Lawn Hill Nat. Pk., 24.iv.1995, G. Daniels & M. A. Schneider, 200♂, 18°35'S, 138°04'E; 1♀, Sellheim, 31.v.1985, M. P. Ablin, from *Parkinsonia* flowers;

Western Australia: (ANIC): 1♀, 1 km NE of Millstream H.S., 4.iv.1971, E. F. Riek, 21°35'S, 117°04'E; 1♀, 1 km NE of Millstream H.S., 7.iv.1971, Uton & Mitchell, 21°35'S, 117°04'E; 1♀, 1 km NE of Millstream H.S., 9.iv.1971, Uton & Mitchell, 21°35'S, 117°04'E; 3♂, 3 km NW by W of Millstream H.S., 5.iv.1971, E. F. Riek, 21°34'S, 117°03'E; 1♀, Wyndham, ii.1931, Dr. Webster, **type X. parvula** Rayment. **(RMNH)**: 1♀, Derby, 23.iii.1963, P. Slater; 1♂, Goosehill, 40 km E of Wyndham, Kimberley, 8- ix.1968, G. F. Mees, gen. prep. no. 15; 4♀, Lennard River (Kimberley), 27.vii.1968, G. F. Mees; 1♀, Manning Creek (Kimberley), 13.viii.1968, G. F. Mees; 1♀, 10 km N of Lennard River (Kimberley), 31.vii.1968, G. F. Mees. **(SAM)**: 2♀, El Questro, 63 km S of Wyndham, 20.vii.1997, R. Leys, R. Foster, J. Birrell, nest in dead branch *Ficus*; 1♀, 25 km SE Perry Lagoon, Old Halls Creek Road, 19.vii.1997, R. Leys, R. Foster, J. Birrell, on flowers of 3 m heigh yellow Fabaceae, 15°41'S, 128°16'E; 1♀, Northern Highway, 21.vii.1997, R. Leys, R. Foster, J. Birrell, on flowers of 3m heigh yellow Fabaceae, 16°11'S, 128°22'E; 2♀, Purnululu N.P., Kurrajong Campsite, 22.vii.1997, R. Leys, R. Foster, J. Birrell, nest in dead branch *Ficus*, 17°23'S, 128°19'E; 1♀, Fortescue R. Hammersley Range, W. D. Dodd. **(UQIC)**: 1♀, 9 km W Kununurra, 10.xii.1975, E. M. Exley & R. I. Storey, on *Melaleuca* sp.; 1♀, 9 km W Kununurra, 11.xii.1975, E. M. Exley & R. I. Storey, on *Melaleuca* sp.; 1♀, Broome, 17.xii.1975, E. M. Exley & R. I. Storey, on *Eucalyptus*; 1♀, Broome, 16.xii.1975, E. Exley & R. Storey, flowering *Cassia*; 5♀, Kununurra area, 5.iii.1973, E. M. Exley; 1♀, Wyndham, K.R.S., 5.x.1953, R. Lukins. **(WAM)**: 1♀, Beverley Springs Stn., i.1972, G. Black; 2♀, Derby, 15.x.1967, G. Beamish; 1♀,

Koolan Island, vii.1968, F. C. van Ingen; 2♀, Koolan Island, 5.ix.1974, F. C. van Ingen; 1♀, Millstream, 17.vii.1958, R. P. McMillan; 1♂, Phillips Range Kimberley Div., 12.v.1973, C. A. & T. F. Houston, hovering in tree top; 1♀, Roebourne, ix.1964, J. Nelley; 1♀, 15 km SE of Timber Creek on Victoria Hwy, 20.iv.1980, G. Anderson & D. Symon, on *Solanum eberneum*; 1♀, Wotjulum, 16.iv.1955, A. Douglas, flowers hillside; 1♀, Wotjulum, 16.iv.1955, A. Douglas, *Grevillea* flowers; 1♀, Wyndham, ii.1954, K.R.S., ex coll. G. Bornemissza, University of Western Australia.

Xylocopa (Koptortosoma) nigroclypeata Rayment

Specimens examined: (6 males and 28 females):

Western Australia: (ANIC): 1♀, Wyndham, ii.1931, Dr. Webster, **holotype** *X. nigroclypeata* Rayment; **(BMNH):** 1♀, Baudin I., 90-126, X. (*Maiella*) *aruana* Ritsema det. M. A. Lieftinck 1956; 1♀, Condillac. I., 91-155, X. (*Maiella*) *aruana* Ritsema det. M. A. Lieftinck 1956. **(SAM):** 6♀, Hidden Valley N.P. Kununurra, 18.vii.1997, R. Leys, R. Foster, J. Birrell; 3♀, Perry Lagoon N.P., Old Halls Creek Rd, 19.vii.1997, R. Leys, R. Foster, J. Birrell; 1♂, Winjana Gorge, 8.v.1973, C. & T. Houston, gen. prep. no. 32, 17°25'S, 124°55'E, ex nest branch; 9♀, Winjana Gorge, 8.v.1973, C. & T. Houston, ex nest branch, 17°25'S, 124°55'E; 1♀, Wyndham, 19.vii.1997, R. Leys, R. Foster, J. Birrell. **(WAM):** 1♀, Cockatoo Island, 18.vi.1979, R. Easton; 1♀, Geiki Gorge nr Fitzroy Crossing, 2.v.1973, C. A. & T. F. Houston; 1♂, Hidden Valley N.P. near Kununurra, 5.i.1969, T. F. Houston 724-1, on flowers of *Scaevola*; 1♂, Koolan Island, 1970, F. C. van Ingen; 1♀, Kununurra, 2.ii.1984, U. C. Edwards; 1♂, Winjana Gorge, 8.v.1973, C. & T. Houston, ex nest branch, 17°25'S, 124°55'E; 2♂, Yammera Gap-Barker Gorge, Kimberley, 7.iv.1988, T. F. Houston 685-7a, at nest in dead branch of *Terminalia hadleyana*; 3♀, Yammera Gap-Barker Gorge, Kimberley, 7.iv.1988, T. F. Houston 685-7a, at nest in dead branch of *Terminalia hadleyana*.

Xylocopa (Koptortosoma) disconata Friese

Specimens examined: (5 males and 36 females):

Queensland: (AM): 1♀, Claudie R. near Mt Lamond, 28.v.1966, D. K. McAlpine; 1♀, Iron Range, 20.iv.1975, M. S. Moulds; 1♀, Kuranda, H. J. Carter, K46511; 2♀, Leo Ck track, 300m McIlwraith Rg., 11.i.1990, M. S. & B. J. Moulds; 1♀, Lockerbie Scrub, Cape York, 11.iv.1975, M. S. Moulds; 1♂, Lockerbie Scrub, Cape York, 11.iv.1975, M. S. Moulds; 1♀, Punsand Bay, Cape York, 16.v.1986, R. B. Lachlan & M. R. Palfreyman. **(ANIC):** 1♂, Bamaga Cape York, 5.iv.1964, I. F. B. Common & M. S. Upton; 1♂, Bamaga Cape York, 26.iii.1964, I. F. B. Common & M. S. Upton, gen. prep. C3; 1♀, Gap Ck, 5 km ESE Mt Finnigan, 13.v.1981, I. D. Naumann; 1♀, Garradunga, 18.vii.1995, J. Hasenpisch; 4♀, Iron Range, 2.ix.1971, E. F. Riek; 2♀, Iron Range, 10.iv.1964, I. F. B. Common, I. M. S. Upton; 1♀, 7 km E Kuranda, on CALMs road, 24.iii.1992, J. Kojima; 1♀, Lockerbie Scrub, Cape York, 14.iv.1973, G. B. Monteith; 1♀, Lockerbie Area, Cape York, 13.iv.1973, S. R. Monteith; 1♀, Miskin Creek nr. Mena Creek, 4.v.1960, T. G. Campbell; 1♀, 11 km ENE Mt Tozer, 11.vii.1986, J. C. Cardale, 12°43'S, 143°18'E; 1♀, 3 km ENE Mt Tozer, 28.vi.1986,

J. C. Cardale, 12°44'S, 143°14'E; 1♀, 9 km ENE Mt Tozer, 5.vii.1986, J. C. Cardale, 12°43'S, 143°17'E. **(BMNH)**: 1♀, compared with holotype Museum Berlin, Cairns Kur (=Kuranda), iii.1902, R. E. Turner, 1907/68, X. (*Maiella*) *disconata* Friese det. M. A. Lieftinck 1957; 1♂ (**allotype**), Cape York, iv.1902, R.E. Turner, 1907/68, X. (*Maiella*) *disconata* Friese det. M. A. Lieftinck 1957. **(QM)**: 1♂, Cairns, coll. Sunten. **(SAM)**: 1♀, Cairns, 6.iv.1984, C. Rojewski; 2♀, Cairns dist, F. R. Dodd; 1♀, Daintree N.P., Cape Tribulation, 15.ix.1997, R. Leys & M. P. Schwarz, on *Scaevola*; 1♀, Daintree N.P., Cow Bay, 17.ix.1997, R. Leys & M. P. Schwarz, nest in dead *Melastoma*; 1♀, Daintree N.P., South Myall Beach, 15.ix.1997, R. Leys & M. P. Schwarz, nest in dead branch of *Casuarina*; 2♀, El Arish, 16.ix.1997, R. Leys & M. P. Schwarz, on *Crotalaria*; 2♀, Smithfield Heights, 16.ix.1997, R. Leys & M. P. Schwarz, on *Crotalaria*. **(SMUK)**: 1♀, Paluma, xii.1991, C. L. Gross, on *Melastoma affine*. **(UQIC)**: 1♀, Barron Waters, 21.iii.1950, A. Burns, 1♀, Cape Tribulation, 17.xii.1986, G. Daniels & M. A. Schneider, 16°04'S, 145°28'E; 1♀, Capt. Billy Landing, Cape York Pen., 19.iii.1992, G. Daniels & M. A. Schneider, 11.38'S, 142°51'E; 2♀, Claudie R., 22.iv.1966, J. Kerr; 1♀, Codfish Ck, 8.x.1950, A. Burns; 1♀, Iron Range, Cape York Pen., 26.v.1971, B. K. Cantrell; 1♀, Redlynch, 22.iv.1980, H. E. & M. A. Evans; 1♀, 4–5 km Portland Roads, 6.vi.1982, G. Daniels & M. A. Schneider.