

A KEY TO THE IPSWICH FOSSIL BEETLES (COLEOPTERA) FROM THE PERMIAN OF AUSTRALIA*

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Nearly 240 million years ago, in the Permian period of the Palaeozoic era, there were a number of beetle species living in Ipswich (Australia), which are now represented by remains (impressions) of their elytra. A practical key for the identification of these fossil insects thought to represent 59 different species of the Coleoptera is presented following an examination of the types in the Department of Palaeontology, British Museum (Natural History) London and the original descriptions.

Introduction

The author had the opportunity of examining the fossil beetles of Ipswich from the Permian of Australia, represented by the impressions of their elytra, in the Department of Palaeontology of the British Museum (Natural History) London in 1962. Subsequently, a key to the species was prepared, mostly with the help of Tillyard and Dunstan.¹ For the technical terms used here, a reference may be made to the glossary of Torre-Bueno.² Since the classification of modern beetles is not based on elytra or makes very little use of them, the taxonomic placement of these fossils is only tentative. A key to 59 species representing 20 genera is presented below.

Artificial Key

- | | | |
|------|---|---|
| 1. | Elytron 2 mm or less in length | 2 |
| | Elytron more than 2 mm in length | 8 |
| 2(1) | Elytron less than 1.5 mm in length, with the surface faintly streaked, general outline sub-cuneate, and apex straight
<i>Leiodes pygmaeum.</i> | |
| | Elytron more than 1.5 mm in length | 3 |
| 3(2) | Elytron less than 4 mm in width, with 9 round costae, striae impunctate, and apex pointed
<i>Ademosynoides minor.</i> | |
| | Elytron more than 4 mm in width | 4 |
| 4(3) | Base of elytron blunt | 5 |
| | Base of elytron not blunt | 7 |
| 5(4) | Elytron sub-cuneate and very faintly ornamented with 3 faint granulate vittae, and apex curvate
<i>Leiodes planum.</i> | |

Elytron semi-cordate and not vittate 6

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|------|---|--|
| 6(5) | Elytron with the surface ornamented with 2 oblique striae, wide apart
<i>Aphelodes obliquum.</i> | |
|------|---|--|

Elytron without oblique straight lines but with the surface rugose
Aphelodes rugosum.

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|------|---|--|
| 7(4) | Elytron with the base curvate, apex obtuse, and general surface crenulate
<i>Ademosyne oliffi.</i> | |
|------|---|--|

Elytron with the base nearly straight, apex acute, and general surface granulate
Ademosyne parva.

- | | | |
|------|--------------------------------|---|
| 8(1) | Elytron 5 mm or less in length | 9 |
|------|--------------------------------|---|

Elytron more than 5 mm in length 34

- | | | |
|------|----------------------------------|----|
| 9(8) | Elytron 3.5 mm or less in length | 10 |
|------|----------------------------------|----|

Elytron more than 3.5 mm in length 26

- | | | |
|-------|-------------------------------|----|
| 10(9) | Elytron 1 mm or less in width | 11 |
|-------|-------------------------------|----|

Elytron more than 1 mm in width 17

- | | | |
|--------|-------------------------------------|----|
| 11(10) | Surface of elytron with 8-10 costae | 12 |
|--------|-------------------------------------|----|

Surface of elytron not with 8-10 costae 16

- | | | |
|--------|--------------------------|----|
| 12(11) | Elytron punctate-striate | 13 |
|--------|--------------------------|----|

Elytron impunctate-striate 14

- | | | |
|--------|--|--|
| 13(12) | Elytron tapered, with the apex acute, and general surface granulate
<i>Ademosyne major.</i> | |
|--------|--|--|

Elytron oblong-obate, with the apex obtuse, and general surface smooth
Ademosyne curvata.

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- 14(12) Elytron with the apex round and general outline cupolate
costae 8 *Ademosynoides alternata.* *Platycrossos subtumidus.*
- Elytron with the apex pointed and 22(20) General surface of elytron smooth 23
costae 9-10 15
- 15(14) Elytron with the base nearly straight, General surface of elytron not smooth 25
general outline long-ovate, convexity 23(22) Elytron tapered, with 10 round costae
high, and 9 round costae *Ademosyne ramoostata.*
- Ademosynoides obtusa.*
Elytron not as above 24
- Elytron with the base round, general 24(23) Elytron with 10 depressed costae
outline navicular-ovate, convexity low, *Ademosyne australiensis.*
and 9-10 flattish costae
Ademosynoides angusta.
Elytron with 9 nearly flat costae
Ademosyne lata.
- 16(11) Elytron with the base straight, apex 25(22) Elytron with 8 sub-carinate costae,
round, ornamented with 2 punctate convexity high, base curvate, general
striae, surface granulate and lateral surface granulate, and general outline
border very narrow *Ademosyne intermedia.*
Grammositum bilineatus.
Elytron with a round costae, convexity
moderately low, base irregular, general
surface grano-crenulate, and general
outline piri-ovate
- Elytron with the base acute, apex cur- *Ademosyne brevis.*
vate, ornamented with traces of rugae, *Ademosyne brevis.*
surface smooth, lateral border wide
Reeveana minor.
- 17(10) Surface of elytron with 8-10 costae 18
Surface of elytron different, irregularly 26(9) Elytron alveolate, and general outline
vittate and uniformly granulate *Simmondsia cylindrica.*
Polysitum minutus.
Elytron not alveolate 27
- 18(17) Elytron alveolate, longitudinally ridged 27(26) Elytron with 13 rows of variable tuber-
and cross-barred, and general outline cles
navicular-ovate *Etheridgea australis.*
Simmondsia subpiriformis.
Elytron not as above 28
- Elytron not alveolate 19 28(27) Surface of elytron smooth 29
- 19(18) Elytron punctate-striate 20
Surface of elytron not smooth, granulate,
pustulate, or wavy 31
- Elytron impunctate-striate, with 9-10 29(28) Elytron with 9-10 costae, apex round,
flattened costae, apex round, base cur- and general outline ovate or subulate-
vate, surface granulate, and general ovate 30
outline long-ovate
Ademosynoides striatella.
- 20(19) Elytron with wide borders 21
Elytron with 4 faint striae, apex curvate,
and general outline cuneate
Reeveana intermedia.
- Elytron without wide borders 22
- 21(20) Elytron with the base curvate, apex 30(29) Elytron with the base nearly straight,
pointed, general surface smooth, and 9-10 round costae, 2.1 mm wide
general outline ovate *Ademosyne congener.*
Platycrossos ligulatus.
Elytron with the base curvate, 9 flat
costae, 1-1.2 mm wide
Ademosyne punctata.
- Elytron with the base straight, apex 21
round, general surface not smooth,

- 31(28) Elytron with 9-11 costae 32
Elytron with lesser number of costae 33
- 32(31) Elytron with the base curvate, convexity high, and general surface granulate
Ademosyne rugulosa. 42
Elytron with the base round, convexity low, and general surface pustulate
Ademosyne vittamargina. 42(41) Elytron naviculate 43
Elytron with the surface sculpture minutely fluctuate-granulate without other ornamentation, and general outline subulate *Elaterites subulatus.* 43(42) Elytron with narrow lateral border, convexity moderately low, apex pointed, base sinuate, 10 low costae, striae fine-punctate, general surface granulate, and general outline navicular-ovate *Ademosyne adunca.* 46
Elytron ornamented with 8 narrow costae, doubly punctate striae, and general outline naviculate *Elaterium bipunctatum.* Elytron with wide lateral border, convexity moderately high, apex curvate or straight, base not sinuate, tuberculate or granulate, and general outline naviculate 44
- 34(8) Elytron 10 mm or less in length 35
Elytron more than 10 mm in length 55
- 35(34) Elytron 7.5 mm or less in length 36
Elytron more than 7.5 mm in length 51
- 36(35) Elytron 2 mm or less in width 37
Elytron more than 2 mm in width 40
- 37(36) Elytron with the apex round 38
Elytron with the apex curvate 39
- 38(37) Elytron with 10 flat costae, and lateral border narrow
Ademsynoides attenuata. 45(44) Elytron with 11 regularly tuberculated rows *Tillyardiopsis tuberculata.*
Elytron with 9-16 rows of variable tubercles *Tillyardiopsis variotuberculata.*
Elytron with the apex pointed 47
Elytron with the apex not pointed 48
- Elytron with 2 concentric vittae, and lateral border wide
Reeveana major. 47(46) Elytron with the striae punctate, and general surface smooth near base *Ademosyne cameroni.*
Elytron with the striae impunctate, and general surface granulate *Ademosynoides abnormis.*
- 39(37) Elytron with 10 low costae, striae impunctate, convexity low, and base acute
Tryoniopsis granulata. 48(46) Elytron with 14 obscure rows of ornamentation, sub-clathrate, and apex round *Mesothoris tenuiclathrata.*
Elytron ornamented in 4 tuberculated rows, with convexity high and base obtuse *Lobites tuberculatus.* Elytron with less than 10 rows of ornamentation or uniformly granulate, not clathrate, and apex not round 49
- 40(36) Elytron attenuated, with the apex round, 10 low costae, and striae punctate
Tryoniopsis punctata. 49(48) Elytron uniformly granulate, with the surface uniformly punctate, and base curvate *Polysitum punctatus.*
Elytron not attenuated 41
- 41(40) Elytron cylindraceous with 9 pitted striae, and rows of pits on lateral border
Elaterium punctomarginum.

- Elytron with 5-9 costae, surface granulate or rugulose, and base acute or nearly straight 50
- 50(49) Elytron with 9 costae, general surface granulate, and base nearly straight
Platycrossos tumidus.
- Elytron with 5 very narrow costae, general surface rugulose, and base acute
Elaterites transversus.
- 51(35) Elytron alveolate, very narrow sutural border 52
- Elytron not alveolate, sutural border narrow or wide 53
- 52(51) Elytron with 9 costae and cross-bars, and general outline long-ovate
Mesothoris clathraat.
- Elytron with 4 longitudinal sections, and general outline sub-lobiform
Mesothoris quadripavita.
- 53(51) Elytron with the apex pointed, 10 flat costae, and general surface granulate
Ademosynoides magnifica.
- Elytron with the apex curvate, and ornamented with tubercles or pits 54
- 54(53) Elytron with 3 longitudinal and 2 oblique rows of pits
Willcoxia magnopunctata.
- Elytron with 3 rows of tubercles
Lobites granulatus.
- 55(34) Elytron vittate 56
- Elytron not vittate 57
- 56(55) Elytron with 4 longitudinal vittae, surface rugulose, base curvate, apex round, sutural border narrow, and general outline long-coniform
Shepherdia quadrivittata.
- Elytron with 3 vittae, surface finely granulate, base acute, apex curvate, sutural border wide, and general outline cylindraceous
Lobites trivittatus.
- 57(55) Elytron with 17 pitted rows, and sutural border wide
Mesostigmodera typica.
- Elytron with 8-10 costae, and sutural border narrow 58
- 58(57) Elytron with 8 costae, punctate striae, not alveolate
Ulomites willcoxi.
- Elytron with 10 narrow costae and cross-bars, alveolate
Mesothoris grandis.

References

1. R.J. Tillyard, and B. Dunstan, *Mesozoic Insects of Queensland. Part I. Introduction and Coleoptera*, Queensland Geol. Surv. Publ., No. 273: pp. i-v+1-88+7 plates, Brisbane (1923).
2. J.R. de la Torre-Bueno, *A Glossary of Entomology*, Brooklyn Ent. Soc., pp. 1-336+ plates I-IX, Brooklyn, N.Y. (1950).