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ARTICLE

# Contribution to the knowledge of the endemic Australian genus *Binburrum* Pollock, 1995 (Coleoptera: Pyrochroidae: Pilipalpinae), with description of three new species

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**Abstract**

*Binburrum* Pollock, 1995 is a small group of fire-coloured beetles (Tenebrionoidea: Pyrochroidae: Pilipalpinae) endemic to Australia with five described species. Herein, three new species of *Binburrum* – *B. articuno* (southeastern South Australia), *B. moltres* (northeastern Queensland, Australia), and *B. zapdos* (northeastern Queensland) – are described based on comparative anatomy, highlighting the underestimated diversity of this genus. *Binburrum angusticollis* Pollock, 1995 is newly recorded from New South Wales, Australia. Descriptions of new species are supplemented with digital photographs and scientific illustrations of habitus and salient structures. A key for the identification of *Binburrum* is provided.

## Introduction

Pyrochroidae Latreille, 1807, known also as the fire-coloured beetles, is a tenebrionoid group predominantly distributed in temperate regions worldwide, with 220 species in 33 genera and 5 subfamilies (Young and Pollock 2010; Kai and Yoshitomi 2018). Amongst these subfamilies, Pilipalpinae Abdullah, 1964 is a relatively well-studied component, exhibiting a classic Gondwanan distribution: Australia, New Zealand, Chile, and Madagascar. This group constitutes the sole pyrochroid subfamily in Australia and includes 18 described species classified into four genera (Pollock 1995).

The pilipalpine genus *Binburrum* was established by Pollock (1995), comprising only five described species distributed from Tasmania, Victoria, and New South Wales to southern Queensland, Australia. The first three described species were placed originally in *Techmessa* F. Bates, 1874. This genus is now restricted to New Zealand. During a faunistic study on Australian Pyrochroidae, three undescribed species of *Binburrum* distributed in South

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Australia (one species) and northern Queensland (two species) were discovered in the Australian National Insect Collection, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Canberra, Australian Capital Territory, Australia. After careful examination and anatomical comparison, we concluded that they were new to science. We describe them in the present paper. Additionally, *B. angusticollis* Pollock, 1995 is recorded from New South Wales for the first time.

## Materials and methods

The specimens examined in this study are deposited in the collections of the Australian National Insect Collection, CSIRO, Canberra, Australian Capital Territory, Australia (ANIC) and the Museum of Victoria, Melbourne, Victoria, Australia (MV). The lectotype images of *Binburrum ephippiatum* (Wilson, 1926) are accessed from the Atlas of Living Australia website at https://images.ala.org.au/image/221a298f-d39c-478c-89a2-58acb0754839 [accessed 11 April 2020]. Data from specimens of described *Binburrum* species listed in Pollock (1995) are not repeated here. We provide only detailed label data of imaged and mentioned specimens of previously described species.

Terminology used in the descriptions follows that of Pollock (1995). Genitalia of both sexes were cleared in 10% potassium hydroxide solution, cleaned, and examined using a Leica M205C stereomicroscope (Leica Microsystems, Wetzlar, Germany) in glycerol on temporary slides. Genital structures were eventually stored in microvials in glycerol and pinned beneath the specimens. Images of external characters and male genitalia of *B. concavifrons* Pollock, 1995 were taken using a Leica DFC500 camera mounted on a Leica M205C microscope (Leica Microsystems). Source images were then aligned and stacked in the software program Leica Application Suite, version 4.9. Images of inner structures (excluding *B. concavifrons*) were taken using a Leica DFC 7000 T digital camera mounted on a Leica DIAPLAN compound microscope with Leica Application Suite X software (Leica Microsystems). Layers were then aligned in Helicon Focus (Helicon Soft, Kharkiv, Ukraine). Additional edits and plates were made in Photoshop CS6 software (Adobe, San Jose, California, United States of America). Body length was measured from the anterior margin of the clypeus to the elytral apices, and width was measured at the widest part of both elytra; absolute measurements are indicated in millimetres. A double backslash (//) is used to separate data from different labels on type specimens, and a single slash with a space before and after (/) is used to separate data from different lines on the same label. Abbreviations: ex(x). – specimen(s) of unidentified sex.

### Genus *Binburrum* Pollock, 1995

*Binburrum* Pollock, 1995: 621. Type species, by original designation: *Techmessa ruficollis* Blackburn, 1895.

**Diagnosis.** Body small- to medium-sized (usually < 9 mm, *ca*. 3.5–8.5 mm), distinctly parallel sided. Head and pronotum covered with coarse, umbilicate punctures. Antennomeres elongate filiform; antennomere 4 shorter than combined lengths of antennomeres 2 and 3. Elytral epipleuron distinct, traceable to at least apical fourth of elytron.

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**Key to adults of *Binburrum* Pollock, 1995 (modified from Pollock 1995)**

1. Epipleuron distinct to elytral apex ..... 2
–. Epipleuron traceable only to apical fourth of elytron ..... 3
2. Usually multicoloured, head black to light brown, pronotum orange to dark brown, elytra yellowish brown to black (Fig. 1C); frontoclypeal area distinctly, largely depressed; antennae extended to elytral midlength; elytra with length ca. 4.4–5.0 × pronotal length; male genitalia: tegmen with apicale narrowed apicad in dorsal view and obtusely pointed apically in lateral view (Fig. 4A–B), accessory lobes extended slightly beyond apicale; distribution: Victoria ..... *Binburrum concavifrons* Pollock, 1995
–. Unicoloured, entirely dark brown (Fig. 1F–G); frontoclypeal area slightly depressed; antennae extended to one-fifth of elytra; elytra with length ca. 6.1–6.3 × pronotal length; male genitalia: apicale nearly parallel laterally in dorsal view and rounded apically in lateral view (Fig. 4C–H), accessory lobes largely extended beyond apicale; distribution: South Australia ..... ***Binburrum articuno* new species**
3. Pronotum of male relatively broad, the same width or only slightly narrower than head; male genitalia: apicale distinctly cleft apically, nearly straight, not deflexed away from accessory lobes in lateral view (Fig. 6B, D, F) ..... 4
–. Pronotum of male relatively narrow, distinctly narrower than head; male genitalia: apicale not or shallowly concave apically, deflexed away from accessory lobes in lateral view (Fig. 5B) ..... 6
4. Lateral pronotal margins usually with several small, setigerous tubercles (Fig. 1E); elytral punctures large, with interpuncture distance slightly less than puncture diameter; male genitalia: apicale subequal to basale in length, deeply cleft apically, broad, round-sided and slightly narrowed apicad in lateral view (Fig. 6C–D); distribution: Tasmania, Victoria, and south New South Wales ..... *Binburrum ruficollis* (Champion, 1895)
–. Lateral pronotal margins without tubercles; elytral punctures smaller, with interpuncture distance subequal to puncture diameter; male genitalia: apicale slightly longer than basale, moderately cleft apically, broad, straight-sided and distinctly narrowed apicad in lateral view; distribution: New South Wales and Queensland ..... 5
5. Pronotal disc regularly and densely punctate; male genitalia: apicale slightly narrowed apicad (Fig. 6A–B), accessory lobes slightly extended beyond apicale, median lobe short, stout (Fig. 8A–B); distribution: New South Wales and south Queensland ..... *Binburrum bifoveicollis* (Lea, 1917)
–. Pronotal disc irregularly and relatively sparsely punctate, with medial region more glabrous (Fig. 3D); male genitalia: apicale distinctly narrowed apicad (Fig. 6E–F), accessory lobes largely extended beyond apicale, median lobe elongate, slender (Fig. 8E–F); distribution: northern Queensland ..... ***Binburrum zapdos* new species**
6. Unicoloured (Fig. 1A); elytra flat dorsally, sloped near apex only; male genitalia: apicale shorter than basale; distribution: northern New South Wales and southern Queensland ..... *Binburrum angusticollis* Pollock, 1995
–. Bicoloured, body orange with large, broad piceous fascia on elytra; elytra distinctly sloped near midlength; male genitalia: apicale the same as or longer than basale; distribution: Victoria and northern Queensland ...7
7. Body dark orange, with fascia in middle of elytra (Fig. 1D); head and pronotum sparsely punctate, with interpuncture distance the same as or greater than puncture diameter, punctures shallow, fine; elytral punctures small, longitudinally subelliptical, with interpuncture distance greater than puncture diameter; male genitalia: apicale longer than basale, hoodlike, not cleft apically in dorsal view and sinuate, distinctly deflexed away from accessory lobes in lateral view, accessory lobes inserted in proximal half of apicale, not extended beyond apicale, median lobe parallel laterally, slightly enlarged, bifid apically; distribution: Victoria ..... *Binburrum ephippiatum* (Wilson, 1926)
–. Body light orange, with fascia in posterior half of elytra (Fig. 1H); head and pronotum densely punctate, with interpuncture distance much less than puncture diameter, punctures deep, coarse (Figs. 2C, 3C); elytral punctures large, rounded, with interpuncture distance subequal to puncture diameter; male genitalia: apicale subequal to basale in length, concave, not deeply cleft apically in dorsal view and nearly straight, merely slightly deflexed away from accessory lobes in lateral view (Fig. 5), accessory lobes inserted in distal one-third of apicale, extended beyond apicale, median lobe slightly narrowed apicad (Fig. 5A, C); distribution: northern Queensland ..... ***Binburrum moltres* new species**

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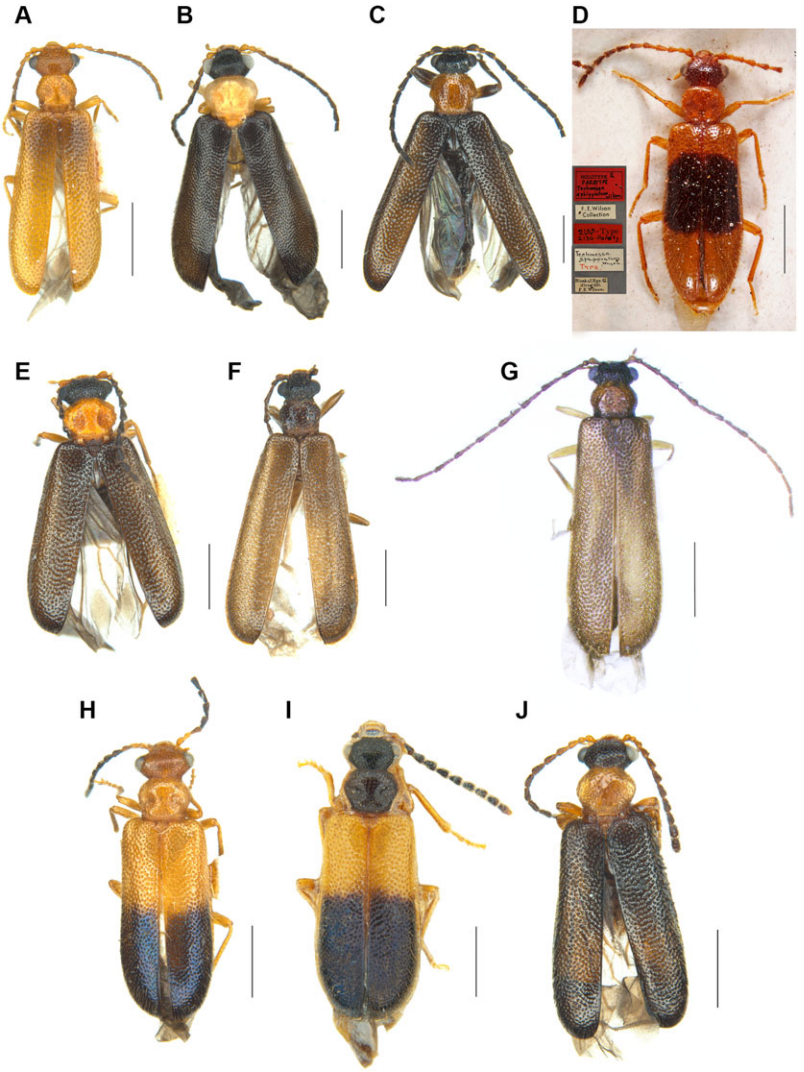


**Fig. 1.** Habitus of *Binburrum*, dorsal view. **A,** *B. angusticollis* Pollock, 1995, holotype; **B,** *B. bifoveicollis* (Lea, 1917); **C,** *B. concavifrons* Pollock, 1995, holotype; **D,** *B. ephippiatum* (Wilson, 1926), lectotype; **E,** *B. ruficollis* (Champion, 1895); *B. articuno* new species: **F,** holotype; **G,** paratype; **H,** *B. moltres* new species, holotype; **I,** *B.* sp., presumably colour variation of *B. moltres* new species; **J,** *B. zapdos* new species, holotype. Scale bar = 1.0 mm.

*Binburrum angusticollis* Pollock, 1995.
Figure 1A.

*Binburrum angusticollis* Pollock, 1995: 625.

**Material examined** (see Pollock (1995) for details of other specimens). *Holotype* male. **Queensland:** 28.15 S 152.28 E / The Head, nr Wilsons / Peak QLD 13 Oct / 1984 1. Naumann and / J. Cardale coll. // ANIC // 011 // HOLOTYPE / *Binburrum* / *angusticollis* ♂ / Pollock (ANIC). *Determined specimen*. **New South Wales:** 30.22 S, 152.43 E, The Glade/ Wonga Track, Dorrigo N.P., 13–15.xi.1990, A. Calder leg. (one male) (ANIC).

**Distribution.** Australia: northeastern New South Wales (**new record**) to southeastern Queensland.

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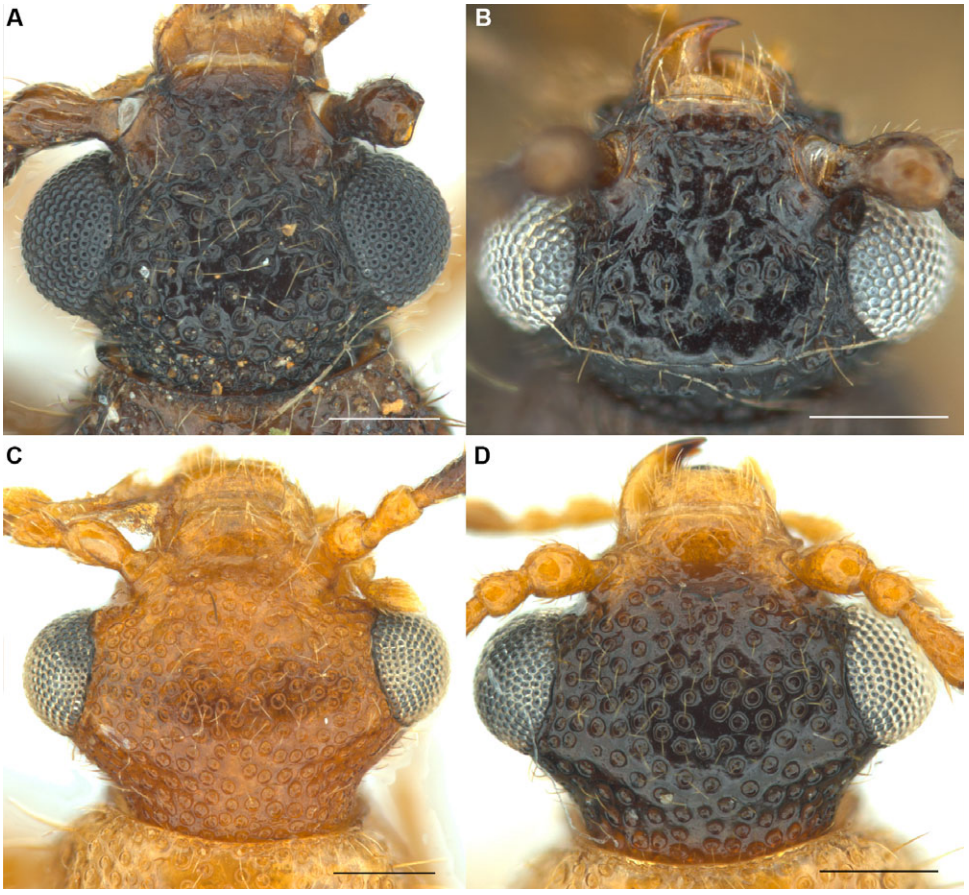


**Fig. 2.** Head of *Binburrum* new species, dorsal view. **A,** *B. articuno* new species: **A,** holotype and **B,** paratype; **C,** *B. moltres* new species, holotype; **D,** *B. zapdos* new species, holotype. Scale bar = 0.2 mm.

*Binburrum bifoveicollis* (Lea, 1917).
Figures 1B, 6A–B, 8A–B.

*Techmessa bifoveicollis* Lea, 1917: 292.

**Material examined** (see Pollock (1995) for details on other specimens)**. Queensland:** Binna Burra, Lamington National Park, 27.x.1993, S.A. Ślipiński & J.F. Lawrence leg. (one male) (ANIC).

**Distribution.** Australia: eastern New South Wales to southern Queensland.

*Binburrum concavifrons* Pollock, 1995.
Figures 1C, 4A–B, 7A–B.

*Binburrum concavifrons* Pollock, 1995: 628.

**Material examined** (see Pollock (1995) for details on other specimens). *Holotype* male. **Victoria:** 37.43 S 145.41 E VIC / Mt. Donna Buang, 1200 m / N of Warburton / 811 26 Jan.-11 Feb. 1987 / A. Newton & M. Thayer // wet scler.-*Noth. cunn.* / FMHD #87-219 flight / interc. (window) trap // HOLOTYPE / *Binburrum* / *concavifrons* ♂ / Pollock (ANIC). Paratype (one male). 38.43 S 143.35 E VIC / Otway NP 390 m Binn / Rd. 4.3 km N. Cape Horn / 808 25 Jan.-8 Feb. 1987 / A. Newton & M. Thayer // wet scler.forest / FMHD #87-210 flight / interc. (window) trap // PARATYPE / *Binburrum* / *concavifrons* ♂ / Pollock (one male) (ANIC).

**Distribution.** Australia: Victoria.

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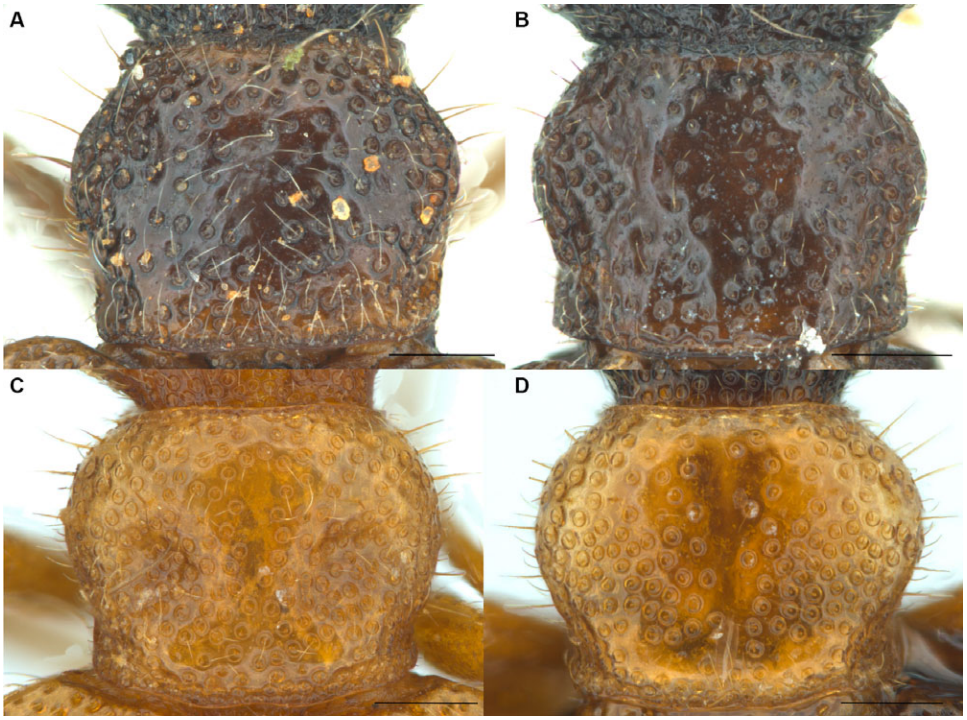


**Fig. 3.** Pronotum of *Binburrum* new species, dorsal view. *Binburrum articuno* new species: **A,** holotype and **B,** paratype; **C,** *B. moltres* new species, holotype; **D,** *B. zapdos* new species, holotype. Scale bar = 0.2 mm.

*Binburrum ephippiatum* (Wilson, 1926).
Figure 1D.

*Techmessa ephippiatum* Wilson, 1926: 40.

**Material examined** (see Pollock (1995) for details on other specimens). Lectotype ex. **Queensland:** HOLOTYPE & / PARATYPE / *Techmessa* / *ephippiatum* / Wilson // F. E. Wilson / Collection // 2135 - Type / 2136 Paraty // *Techmessa* / *ephippiatum* / Wilson / TYPE. // BlackallRgs. Q. / Oct. 1920. / F.E. Wilson. (MV).

**Distribution.** Australia: southeastern Queensland.

**Remarks.** The type material of *Techmessa ephippiatum* consists of two specimens on a single cardboard plate, the right specimen of which is marked as "Ty" in red ink. Pollock (1995) designated this specimen as lectotype (with the other specimen designated a paralectotype); however, the label that was placed on the pin by Pollock indicated a holotype and paratype. This was in error, and a new "lectotype / paralectotype" label will be substituted for the erroneous label.

*Binburrum ruficollis* (Champion, 1895).
Figures 1E, 6C–D, 8C–D.

*Techmessa ruficollis* Champion, 1895: 248.

**Material examined** (see Pollock (1995) for details on other specimens)**. New South Wales:** 34° 23′ S, 150°50′ E, Mt. Keira, 3 km W, 10.xi.1990, Tom Gush leg. (one male) (ANIC).

**Distribution.** Australia: Tasmania, and Victoria to southeastern New South Wales.

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*Binburrum articuno* Hsiao and Pollock, new species

**ZooBank Registration Number:**
urn:lsid:zoobank.org:act:CCF17731-0E20-4DF4-8FD3-BE185D47677F

Figures 1F–G, 2A–B, 3A–B, 4C–H, 7C–D.

**Type material. Holotype** male. **South Australia:** 34.07S 140.37E (GPS) / 12km SW Calperum HS / S.A. 10 Oct-7 Nov 1995 / A.Lambie & K.Pullen / Flight intercept/trough trap // Calperum Station/ / Bookmark Biosphere / Reserve / invertebrate Survey" (ANIC). Paratype (one male, three ex.): "34.07S 140.37E S.A. / 14km WNW Renmark / 5 Sept-12 Oct 1995 / Flight intercept/ pitfall / trap K.R. Pullen // Calperum Station/ / Bookmark Biosphere / Reserve / Invertebrate survey" (two ex.) (ANIC); "33.53S 140.44E S.A. / 32km N Renmark / 6 Sept-12 Oct 1995 / Malaise trap, mallee / K.R.Pullen // Calperum Station/ / Bookmark Biosphere / Reserve / invertebrate Survey" (one male) (ANIC); 33.53S 140.44E S.A. / 32km N Renmark / 6 Sept- 12 Oct 1995 / Flight intercept/ pitfall / trap K.R. Pullen // CALPERUM STATION/ / BOOKMARK BIOSPHERE / RESERVE / INVERTEBRATE SURVEY (one ex.) (ANIC).

**Diagnosis.** This species is distinguishable from its congeners by the entirely dark-brown body, depressed frons, elongate antennae, lateral pronotal margins without tubercles, and male genitalia with long triangular apicale slightly longer than basale in lateral view, and elongate accessory lobes largely extended beyond apicale. This new species somewhat resembles *B. concavifrons* Pollock, 1995 in depressed frontoclypeal area and long triangular apicale of male genitalia in lateral view

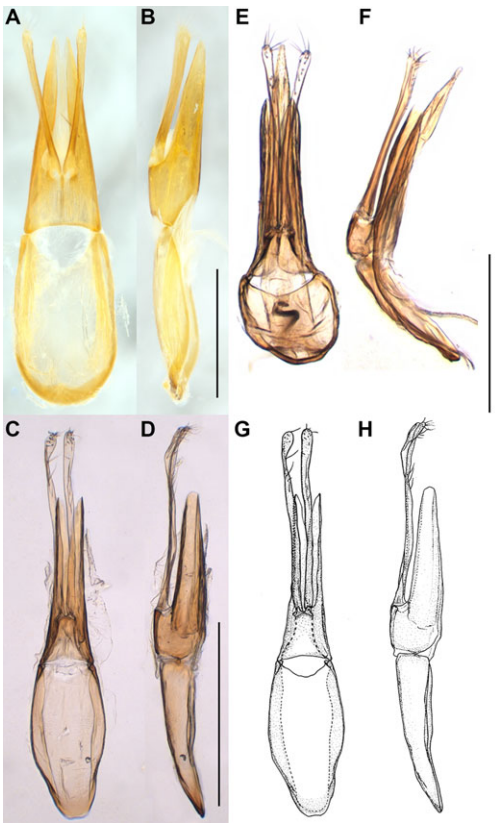


**Fig. 4.** Genitalic tegmen of *Binburrum articuno* new species, in comparison with *B. concavifrons* Pollock, 1995. *Binburrum concavifrons* Pollock, 1995, holotype: **A,** dorsal view and **B,** lateral view; *B. articuno* new species, holotype: **C,** dorsal view and **D,** lateral view; *B. articuno* new species, paratype: **E,** dorsal view, **F,** lateral view; *B. articuno* new species, holotype, hand drawings **G,** dorsal view and **H,** lateral view. Scale bar = 0.5 mm.

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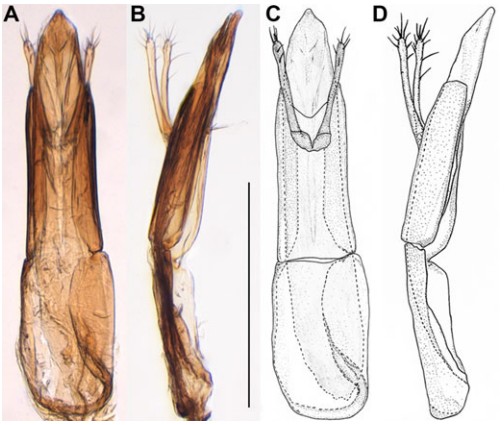


**Fig. 5.** Male genitalia of *Binburrum moltres* new species, holotype. **A,** dorsal view, **B,** lateral view; hand drawings **C,** dorsal view and **D,** lateral view. Scale bar = 0.5 mm.

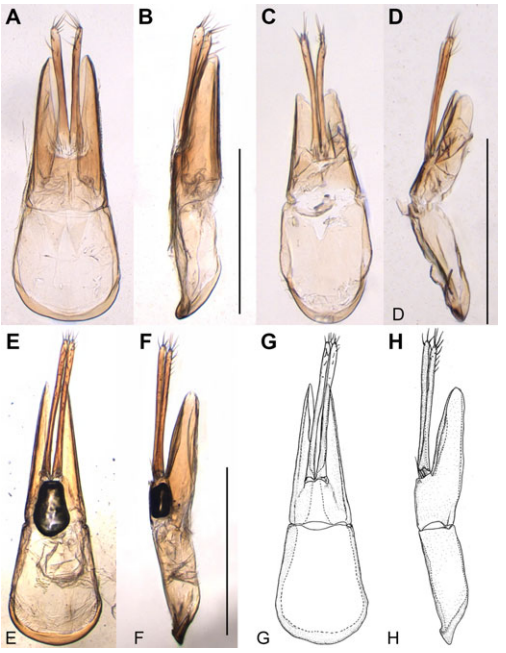


**Fig. 6.** Genitalic tegmen of *Binburrum zapdos* new species, in comparison with *B. bifoveicollis* (Lea, 1917) and *B. ruficollis* (Champion, 1895). *Binburrum bifoveicollis* (Lea, 1917): **A,** dorsal view; **B,** lateral view; *B. ruficollis* (Champion, 1895): **C,** dorsal view and **D,** lateral view; *B. zapdos* new species, holotype**: E,** dorsal view, **F,** lateral view, and hand drawings **G,** dorsal view and **H,** lateral view. Scale bar = 0.5 mm.

but can be easily recognised by the entirely dark-brown body (Fig. 1F–G) (head black to light brown; pronotum orange to dark brown; elytra yellowish-brown to black in *B. concavifrons*; Fig. 1C), frontoclypeal area slightly depressed (distinctly depressed in *B. concavifrons*), longer antennae, extended to apical fifth of elytra (antennae shorter, extended to elytral midlength in *B. concavifrons*), punctures on head and pronotum shallower, umbilicate (deeper, nonumbilicate in *B. concavifrons*), elytra more elongate, with length ca. 6.1–6.3 × pronotal length (shorter, with length ca. 4.4–5.0 × pronotal length in *B. concavifrons*), genitalic tegmen with apicale nearly parallel laterally in dorsal view and rounded apically in lateral view (Fig. 4C–H) (apicale narrowed apicad in dorsal view and obtusely pointed

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apically in lateral view in *B. concavifrons*; Fig. 4A–B), accessory lobes of tegmen largely extended beyond apicale (slightly extended beyond apicale in *B. concavifrons*).

**Description.** *Measurements.* Length: 4.25–5.05 mm (5.05 in holotype); width: 1.20–1.40 mm (1.40 in holotype).

*Colour* (Fig. 1F–G). Head black, with clypeus dark brown; antennae dark brown; pronotum dark brown to black; meso- and metaventrites, elytra, abdomen and legs dark brown; surface covered with pale, slightly yellowish setae.

*Head* (Fig. 2A–B). Eyes lateral, small, ratio of eye diameter to interocular space 1.0:2.1–2.5. Antennae elongate, extended to apical fifth of elytra. Punctures large, umbilicate; setae short; frontoclypeal area slightly depressed; frons evenly convex; antennal setae longer than setae on head, recurved apically.

*Pronotum* (Fig. 3A–B). Narrower than head and distinctly narrower than width across elytral humeri; pronotum wider than long; lateral pronotal margins slightly arcuate, subangulate at widest point, near midlength; margins smooth, without tubercles; median line absent; depressions indistinct, shallow, anteriorly divergent, situated near midlength; punctures moderately deep, umbilicate; punctation contiguous laterally, punctures irregularly distributed, sparsely distributed anteriorly and medially; setae longer than setae on head.

*Elytra*. Punctures relatively large, rounded, smaller towards elytral apex, with interpuncture distance slightly shorter than puncture diameter; epipleura distinct completely to elytral apex; elytra flat dorsally, sloped towards apex only.

*Male genitalia*. Apicale slightly longer than basale, cleft deeply apically, nearly parallel laterally in dorsal view and rounded apically in lateral view; accessory lobes very narrow, inserted together in proximal one-fourth of apicale, largely extended beyond apicale (Fig. 4C–H); median lobe distinctly narrowed apicad, spatulate distally (Fig. 7C–D).

**Etymology.** The specific epithet is named after the Articuno in the Japanese videogame *Pokémon*, one of the three legendary fictional birds, referring to the presumed rareness of this species that has only five known specimens. The specific name is treated as a noun in apposition. The specific names of new species given in this paper are in memory of this classic videogame, which inspired the first author to become a taxonomist ("real Pokémon trainer") in his childhood.

**Distribution.** Australia: southeastern South Australia.

*Binburrum moltres* Hsiao and Pollock, new species

**ZooBank Registration Number:** urn:lsid:zoobank.org:act:10D65DC0-F248-4657-9DFC-B9F360FBE279

Figures 1H, 2C, 3C, 5.

**Type material. Holotype** male. **Queensland:** "17.28S 145.29E QLD / BS1 Longlands Gap / 30Nv1995-7Jan1996 / L.Umback. 1150m / Malaise trap" (ANIC).

**Diagnosis.** This new species closely resembles *B. ephippiatum* (Wilson, 1926) in the orange-coloured body, with large, broad piceous fascia on elytra but can be easily recognised by the lighter orange-coloured body, with elytral piceous fascia in posterior half of elytra (Fig. 1H) (body colour darker, with fascia in middle of elytra in *B. ephippiatum*; Fig. 1D), head and pronotum densely punctate, with interpuncture space much shorter than puncture diameter, punctures deep, coarse (Figs. 2C, 3C) (sparsely punctate, with interpuncture space the same as or longer than puncture diameter, punctures shallow, fine in *B. ephippiatum*), punctures on elytra large, rounded, with interpuncture space subequal to puncture diameter (small, longitudinally subelliptical, with interpuncture space longer than puncture diameter in *B. ephippiatum*), genitalic tegmen with apicale subequal to basale in length (longer than basale in *B. ephippiatum*), concave, not deeply cleft apically in dorsal view and nearly straight, merely slightly deflexed away from accessory lobes in lateral view (Fig. 5) (apicale hoodlike, not cleft apically in dorsal view and sinuate, distinctly deflexed away from accessory lobes in lateral view in *B. ephippiatum*), accessory lobes of tegmen inserted in distal one-third of apicale, extending beyond apicale (accessory lobes of tegmen

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**Fig. 7.** Comparison of median lobes between *Binburrum concavifrons* Pollock, 1995 and *B. articuno* new species. *Binburrum concavifrons*, paratype: **A,** ventral view and **B,** lateral view; *B. articuno* new species, holotype: **C,** ventral view and **D,** lateral view. Scale bar = 0.5 mm.

inserted in proximal half of apicale, not extending beyond apicale in *B. ephippiatum*), median lobe slightly narrowing apicad (Fig. 5A, C) (parallel laterally, slightly enlarged, bifid apically in *B. ephippiatum*).

**Description.** *Measurements.* Length: 4.0 mm; width: 1.0 mm.

*Colour* (Fig. 1H). Head dark orange; antennae with scape and pedicel orange, antennomere 1 dark orange, blackish externally, remaining antennomeres black; pronotum orange; meso- and metaventrites orange; elytra orange, with large, broad piceous fascia in posterior half of elytra; abdomen orange to brown; legs orange; surface covered with yellowish setae.

*Head* (Fig. 2C). Eyes lateral, small, ratio of eye diameter to interocular space 1.0:3.7. Antennae short, extended to elytral midlength. Punctures large, umbilicate; setae short; frons evenly convex; antennal setae longer than setae on head, recurved apically.

*Pronotum* (Fig. 3C). Distinctly narrower than head and distinctly narrower than width across elytral humeri; pronotum wider than long; lateral pronotal margins arcuate; margins smooth, without tubercles; median line absent; depressions distinct, oval, anteriorly divergent, situated near midlength; punctures moderately deep, umbilicate, regularly distributed; setae longer than setae on head.

*Elytra*. Punctures relatively large, rounded, smaller towards elytral apex, with interpuncture distance subequal to puncture diameter; epipleura narrowed abruptly at ventrite 3 or 4, not present to elytral apex; elytra not flat dorsally, distinctly sloped in posterior half.

*Male genitalia*. Apicale subequal to basale in length, concave, not deeply cleft apically, nearly parallel laterally in dorsal view and nearly straight, merely slightly deflexed away from accessory lobes in lateral view; accessory lobes very narrow, inserted together in distal one-third of apicale, moderately extended beyond apicale (Fig. 5); median lobe nearly parallel laterally, slightly narrowed apicad, spatulate distally (Fig. 5A, C).

**Etymology.** The specific epithet is named after the Moltres in the Japanese videogame *Pokémon*, one of the three legendary fictional birds, referring to the presumed rareness of this species that has only one known specimen. The specific name is treated as a noun in apposition.

**Distribution.** Australia: northeastern Queensland.

**Remarks.** A female specimen collected from the same area (17.27 S, 145.29 E) exhibits similar colouration, with black head and dark-brown pronotum (Fig. 1I). Given the similarity in

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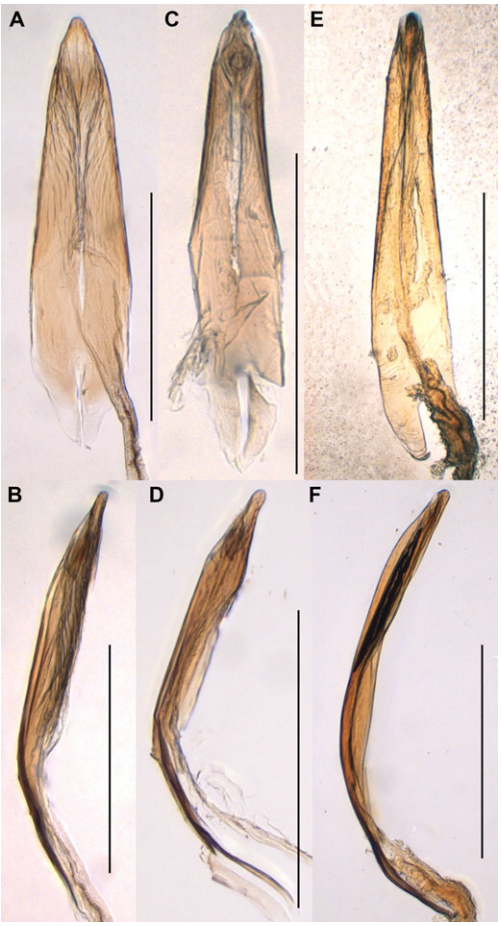


**Fig. 8.** Comparison of median lobes amongst *Binburrum bifoveicollis* (Lea, 1917), *B. ruficollis* (Champion, 1895), and *B. zapdos* new species. *Binburrum bifoveicollis* (Lea, 1917): **A,** ventral view and **B,** lateral view; *B. ruficollis* (Champion, 1895): **C,** ventral view and **D,** lateral view; *B. zapdos* new species, holotype: **E,** ventral view and **F,** lateral view. Scale bar = 0.5 mm.

distribution and the fact that colour variation frequently occurs in other *Binburrum* species, this specimen might represent a colour variety of *B. moltres*.

*Binburrum zapdos* Hsiao and Pollock, new species

**ZooBank Registration Number:** urn:lsid:zoobank.org:act:3AE66A1A-FF07-430 A-B4B7-27A86565DDE5

Figures 1J, 2D, 3D, 6E–H, 8E–F.

**Type material. Holotype** male. **Queensland:** "17.06S 145.36E QLD / Mt. Haig GS1 1150m / 31 Jul-31 Aug. 1995 / L.Umback / Malaise trap" (ANIC).

**Diagnosis.** This new species closely resembles *B. bifoveicollis* (Lea, 1917) and *B. ruficollis* (Champion, 1895) in the overall colouration, with blackish head and elytra and orange pronotum (Fig. 1B, E), but can be easily recognised by the rounded lateral pronotal margins, without tubercles (usually with small, setigerous tubercles in *B. ruficollis*), pronotal disc irregularly and relatively sparsely punctate, with medial region more glabrous (regularly and densely punctate in *B. bifoveicollis* and *B. ruficollis*), elytral punctures smaller, with interpuncture distance subequal to puncture diameter (punctures larger, with interpuncture distance slightly shorter than puncture diameter in *B. ruficollis*), genitalic tegmen with apicale slightly longer than basale (apicale and

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basale subequal in length in *B. ruficollis*), distinctly narrowed apicad and moderately cleft apically in dorsal view and broad, straight-sided and distinctly narrowed apicad in lateral view (Fig. 6E–H) (slightly narrowed apicad and moderately cleft apically in dorsal view and broad, straight-sided and distinctly narrowed apicad in lateral view in *B. bifoveicollis*; Fig. 6A–B) and (slightly narrowed apicad and deeply cleft apically in dorsal view and broad, round-sided and slightly narrowed apicad in lateral view in *B. ruficollis*; Fig. 6C–D), accessory lobes of tegmen largely extended beyond apicale (slightly extended beyond apicale in *B. bifoveicollis*), median lobe more elongate (Fig. 8E–F) (stouter in *B. bifoveicollis* and *B. ruficollis*; Fig. 8A–D).

**Description.** *Measurements.* Length: 4.0 mm; width: 1.2 mm.

*Colour* (Fig. 1J). Head black, with clypeus orange; antennae with scape, pedicel and antennomere 1 orange, antennomere 4–5 dark orange, blackish externally, remaining antennomeres dark brown to black; pronotum yellow to orange; meso- and metaventrites and elytra black; scutellum orange; abdomen dark brown to black; legs orange; surface covered with yellowish setae.

*Head* (Fig. 2D). Eyes lateral, small, ratio of eye diameter to interocular space 1.0:3.5. Antennae short, extended to elytral midlength. Punctures large, umbilicate; setae short; frons evenly convex; antennal setae longer than setae on head, recurved apically.

*Pronotum* (Fig. 3D). Slightly narrower than head and distinctly narrower than width across elytral humeri; pronotum wider than long; lateral pronotal margins rounded; margins smooth, without tubercles; median line absent; depressions indistinct, shallow, anteriorly divergent, situated near midlength; punctures moderately deep, umbilicate; punctures irregularly distributed, sparsely distributed anteriorly and medially; setae longer than setae on head.

*Elytra*. Punctures relatively large, rounded, smaller towards elytral apex, with interpuncture distance subequal to puncture diameter; epipleura narrowed abruptly at ventrite 3 or 4, not present to elytral apex; elytra flat dorsally, sloped towards apex only.

*Male genitalia*. Apicale slightly longer than basale, moderately cleft apically, distinctly narrowed apicad in dorsal view and broad, straight-sided and distinctly narrowed apicad in lateral view; accessory lobes very narrow, inserted together in proximal one-third of apicale, largely extended beyond apicale (Figs. 6E–H); median lobe distinctly narrowed apicad, spatulate distally (Figs. 8E–F).

**Etymology.** The specific epithet is named after the Zapdos in the Japanese videogame *Pokémon*, one of the three legendary fictional birds, referring to the presumed rareness of this species that has only one known specimen. The specific name is treated as a noun in apposition.

**Distribution.** Australia: northeastern Queensland.

## Discussion

The natural history of *Binburrum* is poorly known. Pollock (1995) indicated that larvae can be found under bark of a variety of hardwood trees, or *Nothofagus* (Nothofagaceae) and *Eucalyptus* (Myrtaceae), and also from various forest types. Adults are usually collected in flight-intercept traps or by general collecting off vegetation. Pollock (1995) determined that *Binburrum* is the sister group to a clade comprising *Morpholycus* Lea and *Cycloderus* Solier (Australia and southern South America, respectively). Support for this relationship was based on a single larval character: possession of a low, dome-like antennal sensorium. It was also found that within *Binburrum*, several species exhibited reversals, specifically the accessory lobes inserted basad of apicale midlength (character 12.0; Pollock 1995) and pronotal depressions absent (character 25.0; Pollock 1995). Relatively few species of the genus were known by Pollock (1995), and these phylogenetic hypotheses will likely be adjusted upon detailed examination of additional species.

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