# THE INSECT FAUNA OF BEN LOMOND, TASMANIA, AUSTRALIA: FINDINGS FROM AN INTENSIVE SURVEY, SUMMER 2021–2022

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(with two figures, one table, ten plates and one appendix)

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An invertebrate fauna survey of Ben Lomond, in the Northeast Highlands of Tasmania, was conducted over the period November 2021 to February 2022 as part of the Tasmanian Museum and Art Gallery's *Expeditions of Discovery* program. The survey focused on insects in the higher-elevation parts of the mountain massif, taking in the sub-montane, montane and alpine zones. We identified numerous species that are noteworthy for their apparent rarity or biogeographical interest, including many that are endemic to higher-elevation parts of Tasmania. The Tasmanian Midlands, comprising lower-elevation, low-rainfall environments, have long been considered the source of a substantial discontinuity dividing Tasmania's higher-elevation flora and fauna to the east and west, with the Northeast Highlands being considered depauperate relative to the higher-elevation parts of western Tasmania. Our survey recorded many species known previously from western Tasmania but not documented from east of the Midlands, including some 30 moth species. In doing so, it has greatly reduced this perceived east–west differential regarding Tasmania's sub-montane to alpine insect fauna.

**Key Words: insect biodiversity, Ben Lomond, Tasmania.**

## INTRODUCTION

The Tasmanian Museum and Art Gallery (TMAG) instituted an *Expeditions of Discovery* program in 2017. The program entails an expedition annually, conducted by TMAG Zoology and Herbarium staff. The zoological focus is typically on insects. We have previously reported in this journal, and elsewhere, on the findings from earlier expeditions (Baker *et al*. 2020*,* Baker *et al*. 2021a, b*,* Grove *et al.* 2021, 2022). Our entomological survey of Ben Lomond, in northern Tasmania (fig. 1), was conducted over the period November 2021 to February 2022.

## METHODS

All sampling localities lay within the relatively accessible northern half of Ben Lomond National Park (fig. 2). Geologically, the entire area comprises a dolerite massif, albeit with one outcrop of Triassic sedimentary rocks at Coalmine Crag. Further details regarding the plateau's geology, geomorphology, soils and vegetation communities are provided in Davies and Davies (1989).

The survey focused on the fauna of the Ben Lomond Plateau, a zone lying mostly above 1,400 m elevation, where the environment can be described as 'alpine'. This zone (pl. 1) comprises the main high-elevation plateau of Ben Lomond, along with its incised, shallow valleys. Ben Lomond lacks any truly alpine species of *Eucalyptus*, in marked contrast to the western mountains and Central Plateau; it also lacks the cold-adapted taller conifers of the west. The entire plateau, therefore, sits above the treeline, and the vegetation comprises alpine shrublands and grasslands on free-draining ground, with bogs on more poorly drained ground. Exposed areas feature lichen heath, or feldmark. Boulder-fields and talus slopes are also prominent features.

To a lesser extent, sampling was also conducted on the northern ramparts of the plateau in the vicinity of Jacobs Ladder and Carr Villa, at around 1,200 m elevation – a zone which we characterise as 'montane'. Here, alpine cider gum *E. archeri* woodland predominates, grading to stunted gum-topped stringybark *E. tasmaniensis* (formerly known as *E. delegatensis* subsp. *tasmaniensis*) at lower elevations. In fire-protected situations there are patches of rainforest, dominated by myrtle beech *Nothofagus cunninghamii*, while shrublands predominate on dolerite boulder-fields and towards the upper elevational limit of the zone (broadly, the top of the mountain's dolerite 'ramparts'). Similar vegetation occurs on the higher slopes of other mountains in northeast Tasmania and on the Central Plateau.

Some additional sampling was conducted in the vicinity of the campground along the Ben Lomond Road, at around 1,000 m elevation, which we characterise as 'submontane'. This zone comprises a broad, continuous belt of forest around the entire Ben Lomond massif. Typically, it is dominated by tall *E. delegatensis* subsp. *tasmaniensis* with a shrubby understorey. Similar forest is widespread at intermediate elevations throughout Tasmania.

The main expedition was held from 6–12 February 2022. Prior to this, two preliminary visits were made. An initial reconnaissance visit (by SJG & Lynne Forster) took

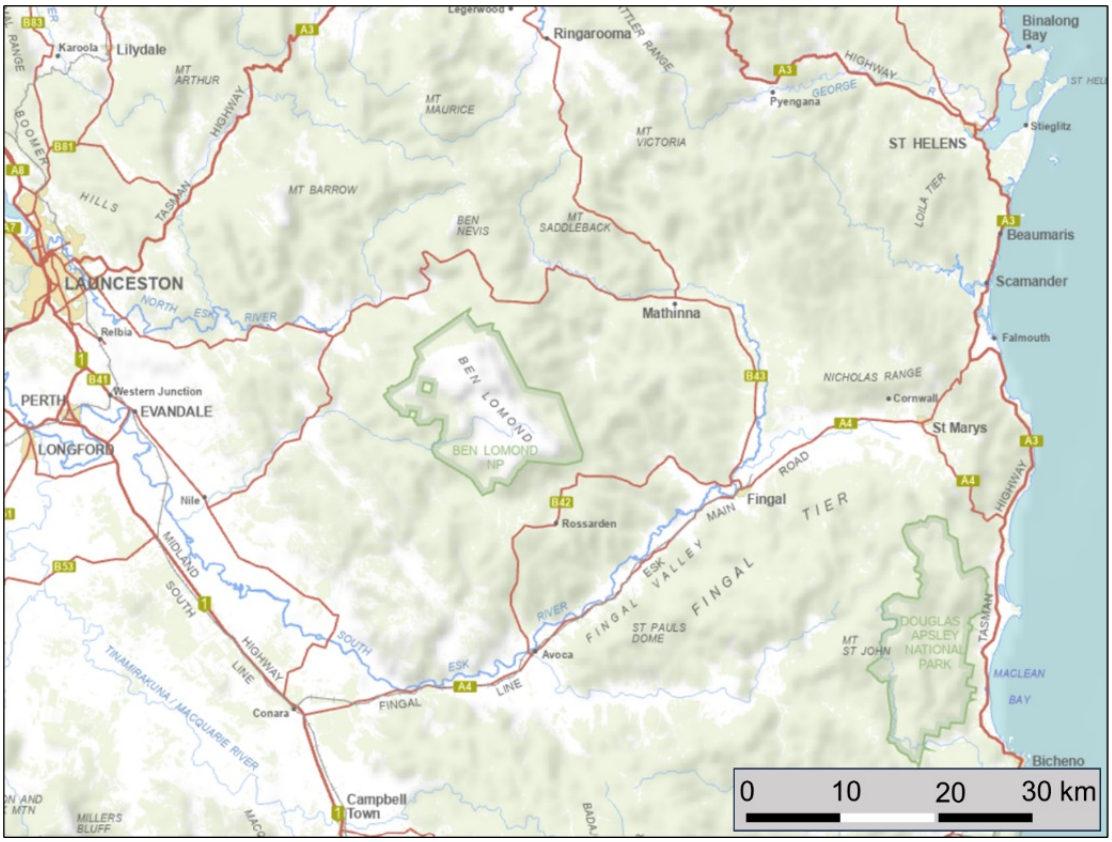


FIG. 1 — Part of northeastern Tasmania, showing the location of Ben Lomond National Park.

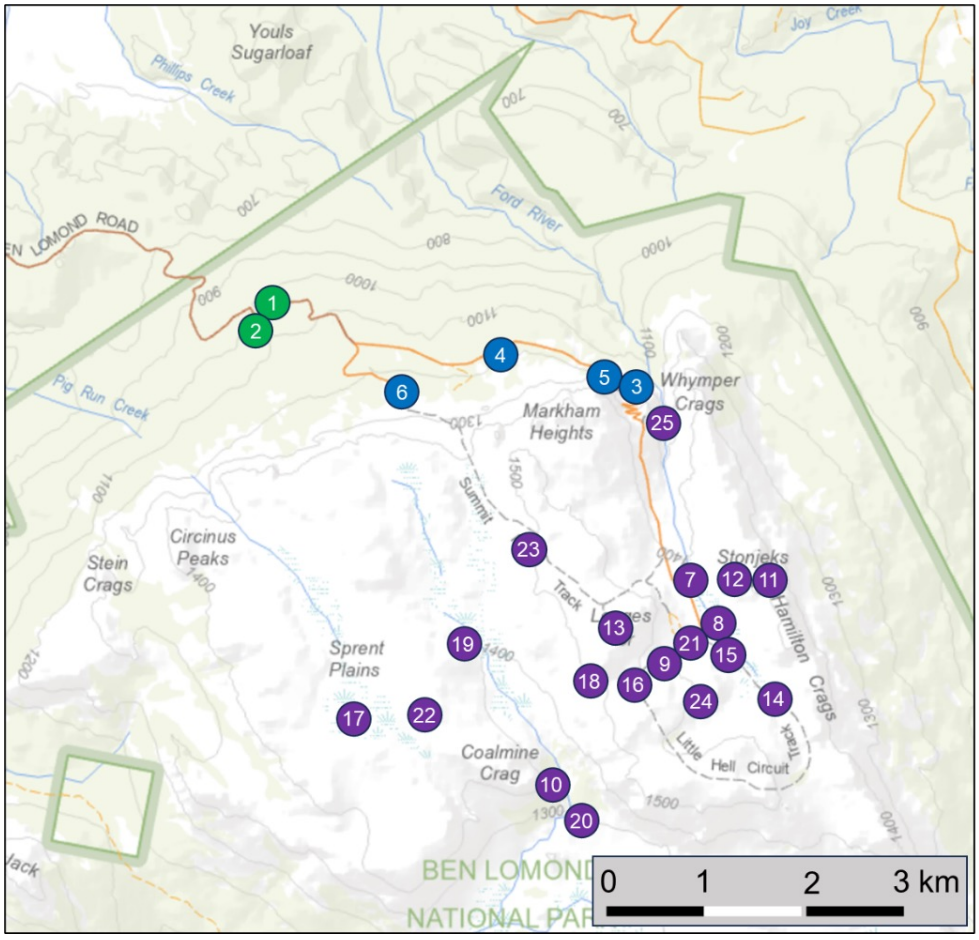


FIG. 2 — The northeastern portion of Ben Lomond National Park, showing the approximate locations of the collecting localities, numbered as in table 1. 'Sub-montane' localities are green; 'montane' are blue; and 'alpine' are purple.

PLATE 1 — Alpine shrubland on the northern part of the Ben Lomond plateau. Photo: Simon Grove

PLATE 2 — One of four Malaise traps used to sample flying insects. This one was in montane shrubby woodland near Carr Villa. Photo: Simon Grove

place from 5–6 December 2021. During this visit, some opportunistic hand collection of terrestrial insects in the vicinity of the campground was undertaken. Malaise traps – tent-like flight intercept traps (pl. 2) – were established at three locations at this time: a 'submontane' location near the Ben Lomond Road campground, a 'montane' location at Carr Villa, and an 'alpine' location in Meadow Vale. These sampled continuously, with a service and bottle changeover (by SJG) on 11 January 2022, until their removal during the main expedition, between 8–11 February 2022 (by SJG & Lynne Forster). A fourth 'alpine' Malaise trap was erected on the saddle near Normans Folly for the duration of the main expedition. Light traps – both UV lights (*LepiLed*: Brehm 2017) and bucket traps – were set up for single evenings or nights during the main expedition at a range of locations spanning the montane–alpine continuum, as detailed below. In addition, a 'submontane' UV light was operated (by SJG) near the Ben Lomond Road campground for the single night of the December 2021 reconnaissance visit. Arrays of ten dry pitfall traps (plastic pots) and eight pan traps (plastic picnic bowls – two yellow, two white, two green and two blue, charged with water and detergent) were also set up for the duration of the main expedition at two 'alpine' locations: close to the ski village, and close to the start of the Meadow Vale circuit. Elsewhere, sampling was by means of a combination of sweep-netting, vegetation beating, dip-netting and other forms of hand collection (referred to below, in aggregate, as netting/hand collection). All insect-collecting operated under DPIPWE Permit Number FA21002.

Table 1 lists the main localities visited grouped by elevational zone. Their locations are also plotted on figure 2.

Collected specimens were registered into the collections of the TMAG, Hobart. Data pertaining to these specimen records were provided to the *Atlas of Living Australia* (ALA) and the Tasmanian *Natural Values Atlas* (NVA). Malaise trap residues, containing thousands of further specimens belonging to taxa beyond the expertise of the authors, are also stored at the TMAG and remain available for further taxonomic sorting and research.

The ranges of described Tasmanian and Australian invertebrates are often poorly documented, presenting challenges for identifying which records represent significant range extensions/infills. Unless otherwise stated, we use the presence or absence of records on the ALA, which aggregates museum and other institutional collections and observational data from across the nation (and beyond), as our benchmark as to where a given species is already 'known' to occur'. However, we use this approach with caution since few museum or institutional collections are fully digitised, and the validity of observational (non-specimen-based) records is often questionable. It is worth noting that taxa that we were unable to identify to species level, either because we lack the relevant expertise or because they are apparently undescribed, cannot even be assessed in this regard.

## RESULTS

In total, 530 insect taxa were identified from our surveys (appendix 1). A sizeable proportion of these (187 taxa: 35%) remain unidentified at the species level. Best identified are the members of 'minor' orders, in which all taxa where we attempted identifications were identified to species. Moths and beetles were also comparatively well identified, while flies, bugs and wasps were less so – indicative of the poorer knowledge base in Australia generally regarding these faunal elements. Many of our records apparently represent significant range extensions, chiefly of alpine or montane species known from the mountains west of the Midlands and not previously recorded from the northeast.

### Alpine

This zone produced the greatest number of species of interest – most likely because more of our sampling was focused in this zone, in combination with the sheer extent of ground that this zone occupies on Ben Lomond and the fact that, compared to similar environments in western Tasmania, it appears to have been poorly sampled in the past.

TABLE 1 — Main localities visited, and the collecting techniques employed. The given coordinates are approximate and usually represent the central point of wider collecting areas

| Number on map | Locality | Coordinates | Techniques |
|---|---|---|---|
| Submontane zone | | | |
| 1 | Ben Lomond Road: campground environs | 41.5024°S, 147.6131°E | UV light trap, netting/hand collection, spotlighting |
| 2 | Ben Lomond Road campground: 150 m to SW | 41.5035°S, 147.6126°E | Malaise trap |
| Montane zone | | | |
| 3 | Ben Lomond Road: base of Jacobs Ladder | 41.5105°S, 147.6579°E | Sweep net, hand collection, UV light trap |
| 4 | Ben Lomond Road: roadside between Jacobs Ladder and lower car park | 41.507°S, 147.649°E | Netting/hand collection |
| 5 | Ben Lomond Road: foot of Jacobs Ladder | 41.5087°S, 147.6381°E | Bucket light trap |
| 6 | Carr Villa environs | 41.511°S, 147.629°E | Malaise trap, UV light trap, bucket light trap, netting/hand collection |
| Alpine zone | | | |
| 7 | Ben Lomond Road: roadside NE of ski village | 41.5292°S, 147.6668°E | Netting/hand collection |
| 8 | Ben Lomond Road: roadside close to ski village | 41.5348°S, 147.6649°E | Bucket light trap |
| 9 | Big Ben Creek environs | 41.536°S, 147.661°E | Netting/hand collection |
| 10 | Coalmine Crag environs | 41.543°S, 147.644°E | Netting/hand collection |
| 11 | Hamilton Crags: Stonjeks Lookout | 41.5291°S, 147.6779°E | Netting/hand collection |
| 12 | Hamilton Crags: W slopes | 41.528°S, 147.674°E | Netting/hand collection |
| 13 | Legges Tor and Giblin Peak summit area | 41.532°S, 147.659°E | Netting/hand collection |
| 14 | Meadow Vale: Little Hell Circuit Track | 41.5347°S, 147.6702°E | Malaise trap, UV light trap, bucket light trap, netting/hand collection, dip-net |
| 15 | Meadow Vale: start of Little Hell Circuit Track | 41.5335°S, 147.6689°E | Pan traps, pitfall traps, UV light trap, bucket light trap |
| 16 | Meadow Vale: Little Hell Circuit Track: Chairlift shed | 41.5353°S, 147.6617°E | UV light trap |
| 17 | Menamatta Tarns area | 41.5409°S, 147.6289°E | Netting/hand collection, dip-net |
| 18 | Normans Folly: saddle nearby | 41.5375°S, 147.6584°E | Malaise trap, bucket light trap |
| 19 | Rafferty Creek: upper valley | 41.537°S, 147.643°E | Netting/hand collection, dip-net |
| 20 | Rafferty Creek: valley SE of Coalmine Crag | 41.552°S, 147.653°E | Netting/hand collection |
| 21 | Ski Village environs | 41.5299°S, 147.6699°E | Pan traps, pitfall traps, UV light trap, bucket light trap, netting/hand collection, spotlighting |
| 22 | Sprent Plains E of Menamatta Tarns | 41.539°S, 147.633°E | Netting/hand collection |
| 23 | Summit Pass Track above Carr Villa | 41.528°S, 147.652°E | Netting/hand collection |
| 24 | Surprise Vale: plateau and ledges to N | 41.539°S, 147.669°E | Netting/hand collection |
| 25 | Watchtower lookout environs | 41.5136°S, 147.6614°E | Netting/hand collection |

The Tasmanian endemic jewel-beetle *Castiarina macquillani* (Buprestidae) (pl. 3) is one of the key finds. A single specimen was captured in flight, north of Surprise Vale. Prior to our expedition, it was only known from a series of specimens collected in 1987 on Algonkian Mountain, west of the Franklin River valley in western Tasmania, though it has since been reported from elsewhere in the west (Mount Doris and near Cradle Mountain) as well as near Liawenee on the Central Plateau. Two further jewel-beetle species were also collected, although they are not new for Ben Lomond: the Tasmanian endemic *Castiarina rudis*, a high-elevation species associated with *Orites* shrubs which is otherwise known from a scattering of localities on the Central Plateau and Vale of Belvoir, though it has since also been reported from Mount Barrow to the north of Ben Lomond; and *Nascioides quadrinotatus*, a lower-elevation species whose larvae feed in the wood of *Nothofagus cunninghamii*. The single specimen of the latter species was caught in a Malaise trap in Meadow Vale, far from the nearest *N. cunninghamii* tree. It presumably originated from rainforest around the periphery of the massif.

Another key beetle find was the Tasmanian endemic leaf-beetle *Palaeomela cribricollis* (Chrysomelidae) (pl. 4). Our single specimen was found close to the ski village, where the most-recent previous specimen was also collected in 1999. Otherwise, the species is only known from the type specimen, collected on Kunanyi–Mount Wellington about a century previously. Sadly, our record does little to improve understanding of the species' biology, since it was found on a small rock alongside a path while SJG and Lynne Forster were spotlighting at night. Despite intensive searching on likely foodplants for the duration of our expedition, no further specimens came to light.

The ground-beetle *Scopodes donabaueri* (Carabidae), apparently endemic to the Ben Lomond Plateau, was found widely during our expedition, typically under stones in feldmark-type settings. Four apparently undescribed (and probably Tasmanian endemic) beetle species recorded during our survey are the weevils *Exithius* sp TMAG_F122864 and Leptopiini gen. nr *Enchymus* sp. TMAG_F122746 (Curculionidae), for which our records are the only ones known; the weevil *Merimnetes* ZIMMERMAN sp. nov. (Curculionidae), which is also known from some other Tasmanian mountains; and the darkling-beetle *Adelium* sp. TMAG_F122419, which is also known from Quamby Bluff. The *Enchymus* relative, which was also found in the montane zone, is of note as it may be a close relative of the 'Weldborough Forest weevil', a very similar (and also undescribed) taxon that is on the Tasmanian Threatened Species list and is known only from the Poimena area, further to the east.

Finds of several other beetle species, all of which are endemic to Tasmania, appear to represent the first known records for northeast Tasmania of species otherwise known from west of the Midlands, as follows: the ground-beetle *Stichonotus decoloratus* (Carabidae); the ladybird *Diomus flavolaterus* (Coccinellidae); and the marsh-beetles *Copiacyphon uncatus*, *C. variabilis* and *Nothocyphon lanceolatus* (Scirtidae). A further marsh-beetle species,

PLATE 3 — The jewel beetle *Castiarina macquillani* (Buprestidae), photographed on the northern Ben Lomond plateau. Body length 16 mm. Photo: Simon Grove

PLATE 4 — The leaf-beetle *Palaeomela cribricollis* (Chrysomelidae), found on Ben Lomond two decades since last observed; otherwise known only from a single specimen collected over a hundred years ago on Kunanyi–Mount Wellington. Body length 5 mm. Photo: Simon Grove

*Pictacara montana*, whilst common in the west, was seemingly last recorded in the northeast (on Ben Lomond) in 1965.

The alpine-zone moth fauna from this survey includes many rarities and 22 new records for the northeast. Greatest diversity prevailed in Geometridae, with 25 species collected in the alpine zone. Most are members of the amphipolar tribe Xanthorhoini (sub-family Larentiinae), which has diversified widely in montane areas, particularly in Tasmania. Member species are usually diurnal, and often colourful. *Chrysolarentia* is the largest Australian genus in this tribe, with nine of the 33 described Tasmanian-occurring species collected during this expedition from

PLATE 5 — The moth *Microdes oriochares* (Geometridae), newly recorded for northeast Tasmania on Ben Lomond. Wingspan 20 mm. Photo: Cathy Byrne

PLATE 6 — The water snipe-fly *Dasyomma maculipenne* (Athericidae), newly recorded for northeast Tasmania on Ben Lomond. Body length 6 mm. Photo: Simon Grove

either the alpine or montane zones. For example, the endemic *Chrysolarentia photographica* was collected from Little Hell Circuit, representing a new record for the northeast – the only other known specimens having been found in the Tasmanian Central Highlands (Bush Blitz 2016) and on Mount Louisa in the Southwest National Park (Bush Blitz 2017), though there are observational records on the ALA from the 1990s, from both the southwest and the Central Highlands. From the same genus, a single specimen of *C. subrectaria*, taken at night (by light) in the ski village, is the first record for this species in Tasmania on the ALA, though it is widespread in the southeastern part of the Australian mainland. However, the holotype was collected from 'Tasmanie' (Guenée 1857) and there are further, undocumented records from the southeast of the state (P. McQuillan, pers. comm.). Four species from two other xanthorhoine genera, *Epyaxa* and *Xanthorhoe,* were also collected, with all but one of these confined to the alpine and montane zones.

Three more larentiine species of note from this survey are from other tribes. Most notable is *Microdes oriochares* (Larentiinae: Eupitheciini) (pl. 5), eight specimens of which were collected from the alpine zone, with four from the montane and one from the submontane zone. These are the first known Tasmanian records of this species, which also occurs at high elevations in Victoria, and on Mount Kosciuszko (NSW). In the same genus, a single specimen of the Tasmanian endemic *M. leptobrya* was collected at light near the ski village. The few recent, specimen-based records for this species are from high elevations in southwestern Tasmania (Bush Blitz 2017) and the Vale of Belvoir (Bush Blitz 2011). Otherwise, Turner (1939) described three type specimens from Waratah. Larvae of *Microdes* species typically feed on flower parts. Two specimens of *Poecilasthena panapala* (Larentiinae: Asthenini) were collected on the Plateau; in Tasmania, this moth is otherwise known from three 1934 specimens from Cradle Mountain; it is also present in Victoria's Central Highlands. Larval foodplants are unknown, but other species in the same genus feed on Epacridaceae.

A few species from other moth families collected in the alpine zone are also considered to be rare. The tribe Archipini (Tortricidae: Tortricinae) has diversified widely in alpine environments in Tasmania (McQuillan 1992). During our survey, six such species were collected. A single specimen of *Technitis technica*, collected at a light trap set in the ski village, represents a new record for the northeast. Whilst the ALA references two recent observational records from Burnie, specimen-based records are otherwise only known (in the Tasmanian part of its range) from Waratah (1939), Deloraine (1963) and Mount King William I (Central Highlands) (McQuillan 1992). The last of these records references a larva found and reared on the shrub *Ozothamnus thyrsoideus*, which is absent from the Ben Lomond Plateau; however, *O. rodwayi* is present and could be an alternative larval foodplant. *Acropolitis* sp. ANIC 6 is an as-yet undescribed and apparently rare archipine tortricid moth, a single specimen of which was collected in the ski village. Another Tasmanian endemic moth, *Thermeola tasmanica* (Erebidae: Arctiinae: Lithosiini), was collected in both the alpine and montane zones. All previous specimen records are from the south of the state, including Mount Field, Kunanyi–Mount Wellington, the Hobart area and, most recently, the Southwest National Park (Bush Blitz 2017); the only observational record (on the ALA) is also from the south (Nicholls Rivulet). Lithosiine caterpillars feed on lichens and algae.

Amongst the true flies, as with the beetles and moths, several of our finds represent the first records for the northeast of Tasmania of species otherwise known from west of the Midlands, as follows: the Tasmanian endemic water snipe-fly *Dasyomma maculipenne* (Athericidae) (pl. 6), whose larvae live in cold, shallow streams; the endemic austral snipe-fly *Austroleptis multimaculata* (Austroleptidae)

PLATE 7 — The austral snipe-fly *Austroleptis multimaculata* (Austroleptidae), newly recorded for northeast Tasmania on Ben Lomond. Body length 3 mm. Photo: Simon Grove

PLATE 8 — The scorpion-fly *Nannochorista maculipennis* (Nannochoristidae), newly recorded for northeast Tasmania on Ben Lomond. Body length 7 mm. Photo: Simon Grove

(pl. 7); the snipe-fly *Chrysopilus bifasciatus* (Rhagionidae); the endemic axe-snouted fly *Pelecorhynchus albolineatus* (Pelecorhynchidae); the endemic cranefly *Ischnotoma rubroabdominalis* (Tipulidae); the endemic dagger-fly *Empis maculosa* (Empididae); the shore-fly *Nostima duoseta* (Ephydridae); the ant-associated hoverfly *Oligeriops chalybeus* (Syrphidae), which in Tasmania is otherwise only known from the Vale of Belvoir; and the picture-winged fly *Spathulina acroleuca*, which is common on the Australian mainland but in Tasmania is only otherwise known from a 1965 record from Waratah. Our record of the bone-skipper fly *Piophilosoma norrisi* (Piophilidae), which was swept from a roadside wallaby carcase, comprises only the second of its species on the ALA (the first is an observation from 2020 near Fingal, also in the northeast of Tasmania).

Amongst the true bugs, a similar pattern emerges, in which our finds represent the first records for the northeast of Tasmania, as follows: the Tasmanian endemic shield-bug *Eupolemus picturatus* (Acanthosomatidae); the artheneid bug *Dilompus woodwardi* (Artheneidae); the seed-bugs *Remaudiereana inornata*, *Udeocoris nigroaeneus* and *Euander torquatus* (Rhyparochromidae); the Tasmanian endemic cicada *Diemeniana hirsuta* (Cicadidae); and the leafhopper *Arawa novella* (Cicadellidae).

Representatives of other insect orders showing this same pattern are as follows: the rainbow-ant *Iridomyrmex alpinus* (Formicidae); the ichneumonid wasp *Labium montivagum* (Ichneumonidae); the Tasmanian endemic scorpion-fly *Nannochorista maculipennis* (Nannochoristidae) (pl. 8); the endemic earwig *Gonolabis tasmanica* (Anisolabididae) (pl. 9) and the endemic caddisfly *Plectrotarsus tasmanicus* (Plectrotarsidae). Our record of the endemic giant stonefly

PLATE 9 — The earwig *Gonolabis tasmanica*, newly recorded for northeast Tasmania on Ben Lomond. Body length 25 mm. Photo: Simon Grove

*Eusthenia spectabilis* appears to be the first for Ben Lomond, although in the northeast it is otherwise known from the Mount Arthur area. Additionally, we recorded two Tasmanian endemic mountain-dwelling grasshoppers, *Russalpia albertisi* and *Tasmanalpina clavata* (Acrididae), both of which have previously been recorded from Ben Lomond.

## Montane

An apparently undescribed (and probably Tasmanian endemic) weevil species recorded during our survey is code-named Leptopiini gen. nr *Uroleptops* sp. TMAG_F139310 (Curculionidae), for which our single Ben Lomond specimen is the only one known. The same applies to our single Ben Lomond specimen of the helosciomyzid fly code-named *Eurotocus* sp. TMAG_F122966 (Helosciomyzidae).

As with the alpine zone, the insect fauna here included species for which our specimens represent the first for the northeast of Tasmania. Most such species seem to be generally associated with higher elevations and/or wetter forests. Among the beetles, these include the Tasmanian endemic soft-winged flower-beetle *Hypattalus montanus* (Melyridae); the Tasmanian endemic mycterid beetle *Trichosalpingus fumatus* (Mycteridae); and the ulodid beetle *Meryx aequalis* (Ulodidae). Amongst the true flies, these include the cranefly *Acracantha sydneyensis* (Tipulidae), the soldierfly *Australoactina costata* (Stratiomyidae) and the stiletto-flies *Actinomeros corniculaticaudatus* (a Tasmanian endemic), *Anabarhynchus montanus*, and *A. whitei* (also endemic) (all Therevidae). Amongst the true bugs, they include the leafhopper *Rhotidoides montana* (Cicadellidae) and the Tasmanian endemic cixiid planthopper *Aka dobsonensis* (Cixiidae) (pl. 10). The crabronid wasp *Acanthostethus tasmanicus* (Crabronidae) is also apparently new for the northeast, though it is known from the southeast.

Some 30 moth species recorded in the montane zone represent new records for the northeast, with 11 of these also collected in the alpine zone. These records highlight a regional knowledge gap that seems remarkable given that many of the species involved are common, large and distinctive, which ought to render them both readily collectable and identifiable. Larentiine moths (Geometridae: Larentiinae) collected in this zone include *Chrysolarentia heteroleuca* (Xanthorhoini) representing the only known Tasmanian record other than a 2024 observation on the ALA from Golden Valley (north of the Central Plateau); the species is relatively common in Victoria and NSW. A specimen of *C. leucozona*, collected at Carr Villa, represents only the second known Tasmanian specimen, the other being a 1909 record on the ALA from St Patricks River, about 20 km north of Ben Lomond; the species is also found in Victoria. A specimen of *Horisme mortuata* (Eupitheciini) collected at Carr Villa is one of two Tasmanian records for this species, the other (on the ALA) an observational record from the south of the state (Risdon Vale); the species also occurs in Victoria and NSW. *Melitulias oriadelpha* (Hydriomenini) was collected at multiple localities in the submontane zone, including Carr Villa. In Tasmania the species is otherwise known from the type locality, Cradle Mountain (Turner 1926) and from the far northwest; the species also occurs in Victoria and NSW.

Two notable erebid moth species in the lichen- and alga-feeding tribe Lithosiini (Erebidae: Arctiinae) were collected. A major discovery at Carr Villa concerns *Halone sobria*, a species with no other ALA records; however, there exists

PLATE 10 — The plant-bug *Aka dobsonensis* (Cixiidae), newly recorded for northeast Tasmania on Ben Lomond. Body length 4 mm. Photo: Simon Grove

one 1980 specimen, from Mount Nelson, Hobart, in the Australian National Insect Collection (ANIC). Anecdotally, it appears that the species also occurs on Kunanyi–Mount Wellington (P. McQuillan, pers. comm.). The species is probably endemic to Tasmania. The syntype, described under the name *H. nephobola* (Turner 1944) (now synonymised), was collected in Hobart; but the original type locality of *H. sobria* (Walker 1854) was given, seemingly in error, as Port Natal (South Africa). Also collected from Carr Villa was *Philenora omophanes*. The two other known Tasmanian specimen records (ANIC) are from Derwent Bridge (1989) and Beaconsfield (2004); there is also a 2021 ALA observational record from Loongana. The species also occurs in Victoria and on Mount Kosciusko (NSW).

Regarding Australia's largest moth family (Oecophoridae), a notable find was a specimen of *Thema endesma* (Oecophorinae: *Chezala* Group), collected at Jacobs Ladder. The species is otherwise represented in Tasmania by 1934 specimens in the TMAG collection from Kunanyi–Mount Wellington and Burnie; there is also a 2021 observational record (ALA) from Kunanyi–Mount Wellington. This species also occurs in Victoria and the ACT. It belongs to a very large guild of oecophorid moths whose larvae feed among leaf litter on dead leaves, particularly those of eucalypts. A single specimen of *Scieropepla serina* (Xyloryctidae) was collected. The family is endemic to Australia. The few records on the ALA for this species include a 1929 specimen from Scottsdale and several recent observational records recorded from the south (Sandford and Nicholls Rivulet) and northwest (Loongana) of the state. The larvae typically feed on dead eucalypt leaves still connected to fallen branches.

Other insect species of note in the montane zone are the following: the idiostolid bug *Monteithocoris hirsutus*,

which has long been considered endemic to the rainforests of northeast Tasmania, although recently also found on Tasman Island in the southeast; spotted mountain-grasshopper *Monistria concinna*; and the mountain katydid *Acripeza reticulata*. The latter two species were already known from Ben Lomond.

The montane zone is where most of the introduced species were collected, though most were present in the other zones as well. The list of exotic taxa comprises the following species: gorse seed-weevil *Exapion ulicis*, a species which in Tasmania seems to occur far more widely than its chief host-plant, *Ulex europaeus*; red dung-beetle *Aphodius fimetarius*; striped dung-fly *Oxysarcodexia varia*; European bumblebee *Bombus terrestris audax*; European wasp *Vespula germanica*; and cabbage white butterfly *Pieris rapae* and diamondback moth *Plutella xylostella* (both collected from the alpine zone only). European honeybees *Apis mellifera* were common throughout the survey area but were not collected.

### Submontane

The insect fauna at the localities sampled were typical of the habitat, albeit with some taxa of particular note. Trap samples were rich in 'lowland' species that were absent from samples collected at higher elevations. One of the rarer finds was the Tasmanian endemic false darkling-beetle *Ctenoplectron agile* (Melandryidae), otherwise known from just two localities, neither of which is in the northeast. The specific identity of a picture-winged fly codenamed Tephritidae unplaced sp. TMAG_F125990 remains unclear but it represents the only member of its taxon in the TMAG collections and may be an undescribed species. The same applies to the click-beetle *Parablax* sp. TMAG_F123004 (Elateridae) and to the weevils *Decilaus* sp. TMAG_F121147 and *Poropterus* sp. TMAG_F121146 (Curculionidae) – the last taxon represented by four individuals.

Several finds of otherwise relatively common and widespread species appear to represent the first occurrences from the northeast of Tasmania. These include: the hairy fungus-beetle *Litargops intricatus* (Mycetophagidae); the Tasmanian endemic marsh-beetles *Macrodascillus insolitus* and *Perplexacara latusmandibulara* (Scirtidae); the endemic false flower-beetle *Scraptia ocularis* (Scraptiidae); the leaf-beetle *Platycolaspis pubescens* (Chrysomelidae); the heteromyzid fly *Trixoleria maculata* (Heteromyzidae); the endemic snipe-fly *Atherimorpha occidens* (Rhagionidae); the endemic stiletto-fly *Anabarhynchus lanatus* (Therevidae); the soldier-flies *Damaromyia whitei* (Tasmanian endemic) and *Antissella parvidentata* (both Stratiomyidae); and the geometrid moth *Circopetes obtusata* (Geometridae). Our record of the austral snipe-fly *Austroleptis rhyphoides* (Austroleptidae) represents only the second one known from the northeast, while that of the endemic archipine tortricid moth *Rupicolana crotala* (Tortricidae) is the only one known other than the type specimens from Deloraine (Meyrick 1910).

## DISCUSSION

These surveys on Ben Lomond have brought to light a distinctive insect fauna (appendix), largely comprising species adapted to the cool-to-cold and often wet conditions that prevail at higher elevations in Tasmania.

Our records of seven insect taxa may possibly be the first for their species in Tasmania, though only one, the geometrid moth *Microdes oriochares*, is a described species; the other six may well prove to be both undescribed and endemic to Tasmania. Many of our finds represent range extensions for species formerly known only from similar environments to the west of the Midlands, such as on the Central Plateau or in the mountains of western Tasmania. These new detections reduce the insect faunistic differential between the Northeast Highlands and western Tasmania, in which the drier, lower-lying Midlands have been perceived as forming a more-or-less inhospitable barrier to the dispersal of plants and animals adapted to the cooler or wetter conditions of the mountains to either side (Mesibov 1996, Smith 2024 and their references therein). Their presence on both sides of this divide raises questions as to whether the Midlands are indeed an impervious barrier, or whether today's relatively mild Interglacial climate has effectively isolated cold-adapted species at high elevations on either side of the Midlands, whereas they might once have had more continuous distributions (albeit at lower elevations) during past Glacial periods. Perhaps different explanations apply to different species, as noted by Smith (2024): those which are stronger flyers, or which are more prone to being carried across country in strong air-currents once airborne, may cross the divide occasionally, whereas those that cannot fly have present-day distributions that are refugial. The extent to which either trait will allow species to cope with ever-rising temperatures during rapid climate changes is unknown. At least the absence of alpine eucalypt species on Ben Lomond limits the prospects that alpine shrubland habitats will be subsumed into woodland – for a while, at least.

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# APPENDIX

## Insect fauna collected on Ben Lomond, summer 2021–2022

The elevational zone(s) in which each taxon was found: a – alpine, m – montane, s – sub-montane. Taxa marked with + are new records for Tasmania, those marked with i are introduced taxa in Tasmania.

**BLATTODEA (COCKROACHES & TERMITES)**
**Ectobiidae**
- as *Balta* unplaced
- ams *Ellipsidion* sp TMAG_F13423

**COLEOPTERA (BEETLES)**
**Anthicidae**
- a Anthicidae unplaced sp TMAG_F123436

**Anthribidae**
- a Anthribinae gen nr *Cacephatus* sp TMAG_F6815
- m *Xynotropis* TFIC sp 01

**Attelabidae**
- s *Metopum* sp TMAG_F123338

**Bostrichidae**
- s *Xylion collaris (Erichson, 1842)*
- m *Xylobosca canina* (Blackburn, 1893)

**Brentidae**
- a *Apion tasmanicum* Lea, 1910
- am i *Exapion ulicis* (Forster, 1770)

**Buprestidae**
- a *Castiarina macquillani* (Barker, 1988)
- a *Castiarina rudis* Carter, 1934
- a *Nascioides quadrinotatus* (Van de Poll, 1889)

**Byrrhidae**
- a *Microchaetes scoparius* Erichson, 1842
- a *Pseudomorychus mixtus* (Lea, 1907)

**Cantharidae**
- am *Chauliognathus lugubris* (Fabricius, 1801)
- ams *Chauliognathus tricolor* (Castelnau, 1840)
- as *Heteromastix pauxillus* (Blackburn, 1888)

**Carabidae**
- s *Agonocheila curtula* (Erichson, 1842)
- a *Gnathaphanus melbournensis* (Castelnau, 1867)
- a *Hypharpax australis* (Dejean, 1829)
- am *Hypharpax peronii* (Castelnau, 1867)
- a *Notagonum marginellum* (Erichson, 1842)
- a *Promecoderus* sp TMAG_F116117
- a *Scopodes boops* Erichson, 1842
- a *Scopodes donabaueri* Baehr, 2010
- s *Scopodes tasmanicus* Bates, 1878
- a *Stichonotus decoloratus* Baehr, 2013
- a *Trechimorphus diemenensis* (Bates, 1878)

**Cerambycidae**
- s *Callidiopis scutellaris* (Fabricius, 1801)
- a *Dorcadida bilocularis* White, 1846
- s *Mecynopus cothurnatus* Erichson, 1842
- s *Zoedia divisa* Pascoe, 1862

**Chrysomelidae**
- a *Aporocera argentata* Chapuis, 1875
- m *Aporocera viridipennis* (Saunders, 1842)
- a *Arsipoda chrysis* (Olivier, 1808)
- m *Cadmus strigillatus* Chapuis, 1875
- a *Chaetocnema calida* (Blackburn, 1896)
- m *Ditropidus subaeneus* Chapuis, 1875
- as *Eboo viridula* (Erichson, 1842)
- am *Monolepta tasmaniensis* Lea, 1923
- a *Palaeomela cribricollis* (Lea, 1929)
- a *Paropsis porosa* Erichson, 1842
- ams *Paropsisterna bimaculata* (Olivier, 1807)
- a *Paropsisterna obliterata* (Erichson, 1842)
- a *Peltoschema* DE LITTLE sp 03
- a *Peltoschema delicatula* (Chapuis, 1877)
- am *Peltoschema orphana* (Erichson, 1842)
- s *Platycolaspis pubescens* Reid, 1994

**Clambidae**
- s *Sphaerothorax tasmani* (Blackburn, 1902)

**Cleridae**
- am *Lemidia cicatricosa* Lea, 1907
- a *Lemidia nigrovaria* Lea, 1907
- ams *Lemidia subaenea* Gorham, 1877
- ms *Neoscrobiger rauciceps* Blackburn, 1900
- s *Parapylus bicinctus* (Newman, 1842)
- s *Tenerus abbreviatus* White, 1849
- s *Thriocerodes* TFIC sp 01

**Coccinellidae**
- a *Coccinella transversalis* Fabricius, 1781
- m *Diomus elutus* (Lea, 1902)
- a *Diomus flavolaterus* (Lea, 1926)
- s *Rhyzobius forestieri* (Mulsant, 1853)
- ams *Rhyzobius josephi* Tomaszewska, 2010
- s *Rhyzobius pelion* Tomaszewska, 2010
- m *Rhyzobius pulcher* Blackburn, 1892
- ms *Rhyzobius* sp TMAG_F123175

**Corylophidae**
- s *Holopsis* unplaced
- m *Sericoderus* TFIC sp 16

**Cryptophagidae**
- s *Antarcticotectus tasmanicus* (Blackburn, 1907)
- m *Cryptogasterus lawrencei* Leschen, 1996
- m *Notocryptus* sp TMAG_F123179

**Curculionidae**
- s *Aades cultratus* (Fabricius, 1775)
- ams *Ancyttalia oleariae* (Lea, 1906)
- am *Aoplocnemis* sp TMAG_F122955
- m *Aoplocnemis* sp TMAG_F123143
- s *Decilaus* sp TMAG_F121147
- a *Elleschodes* TFIC sp 08
- s *Elleschodes wellingtoniensis* (Lea, 1908)
- s *Emplesis* TFIC sp 03
- s *Exithius cariosus* (Erichson, 1842)
- a + *Exithius* sp TMAG_F122864
- am + Leptopiini gen nr *Enchymus* sp TMAG_F122746
- m + Leptopiini gen nr *Uroleptops* sp TMAG_F139310
- a *Mandalotus* sp TMAG_F121400
- s *Merimnetes australis* (Boisduval, 1835)
- a *Merimnetes* ZIMMERMAN sp nov
- s *Methypora postica* Pascoe, 1865
- s *Ophrythyreocis cyclothyreus* (Lea, 1913)
- s *Parorthorhinus lepidotus* (Erichson, 1842)
- s *Pentamimus* sp TMAG_F73610
- s *Poropterus antiquus* (Erichson, 1842)
- s +*Poropterus* sp TMAG_F121146
- m *Pseudometyrus vicarius* Lea, 1910
- a *Roptoperus tasmaniensis* Lea, 1908
- a *Scotasmus* unplaced
- am *Storeus albosignatus* (Blackburn, 1890)
- s *Tapinocis corticalis* Lea, 1913

**Dermestidae**
- ms *Trogoderma* sp TMAG_F100945
- am *Trogoderma* sp TMAG_F127635
- s *Trogoderma* sp TMAG_F131161

**Dytiscidae**
- a *Allodessus bistrigatus* (Clark, 1862)
- a *Antiporus femoralis* (Boheman, 1858)
- a *Limbodessus* unplaced
- a *Sternopriscus multimaculatus* (Clark, 1862)
- a *Sternopriscus weckwerthi* Hendrich & Watts, 2004

**Elateridae**
- s *Acroniopus granulatipennis* (Lea, 1908)
- a *Agrypnus* TFIC sp 02
- m *Crepidomenus decoratus* Erichson, 1842
- ams *Enischnelater specularis* (Candèze, 1889)
- s *Parablax nunden* Calder, 1986
- s + *Parablax* sp TMAG_F123004

**Eucnemidae**
- s Eucnemidae unplaced sp TMAG_F123006

**Histeridae**
- s *Teretrius sorellensis* Blackburn, 1903

**Latridiidae**
- ams *Cartodere nodifer* (Westwood, 1839)
- ams *Cortinicara* unplaced
- a Latridiidae unplaced sp TMAG_F122896
- m Latridiidae unplaced sp TMAG_F123424

**Leiodidae**
- s *Nargomorphus globulus* Jeannel, 1936
- s *Neopelatops* TFIC sp 01

**Lucanidae**
- a *Lissotes obtusatus* (Westwood, 1838)

**Lycidae**
- s *Porrostoma atratus* (Fabricius, 1801)
- ams *Porrostoma rhipidium* (W.S. Macleay, 1826)
- s *Xylobanus simplicicornis* (Lea, 1909)

**Melandryidae**
- a *Callidircaea venusta* (Champion, 1895)
- s *Ctenoplectron agile* Champion, 1895
- s *Orchesia minuta* Lea, 1908
- s *Orchesia* TFIC sp 22

**Melyridae**
- s *Hypattalus exilis* Lea, 1909
- m *Hypattalus montanus* Lea, 1909

**Mordellidae**
- s *Mordella* TFIC sp 01

**Mycetophagidae**
- s *Litargops intricatus* (Blackburn, 1891)

**Mycteridae**
- m *Trichosalpingus fumatus* (Champion, 1895)
- a *Trichosalpingus lateralis* Lea, 1895
- m *Trichosalpingus* sp TMAG_F123416

**Nitidulidae**
- s *Thalycrodes pulchrum* Blackburn, 1891

**Oedemeridae**
- ams *Asclera sublineata* (Waterhouse, 1877)
- as *Pseudolycus haemorrhoidalis* (Fabricius, 1801)

**Phalacridae**
- s *Litochrus* TFIC sp 01
- s Phalacridae unplaced sp TMAG_F115902

**Ptinidae**
- s *Deltocryptus* sp TMAG_F121141
- a *Dryophilodes minor* Lea, 1924
- s *Dryophilodes* TFIC sp 04
- s *Hadrobregmus areolicolle* (Lea, 1924)
- s *Ptinus exulans* Erichson, 1842

**Pyrochroidae**
- as *Temnopalpus bicolor* Blackburn, 1888

**Salpingidae**
- s *Neosalpingus hybridus* (Erichson, 1842)

**Scarabaeidae**
- am i *Aphodius fimetarius* (Linnaeus, 1758)
- s *Heteronyx pilosellus* Blanchard, 1850
- m *Podotenus* sp TMAG_F121774
- ms *Telura vitticollis* Erichson, 1842

**Scirtidae**
- a *Copiacyphon uncatus* (Watts, 2007)
- a *Copiacyphon variabilis* (Armstrong, 1953)
- ms *Macrodascillus insolitus* (Watts, 2010)
- a *Nothocyphon lanceolatus* Zwick, 2015
- as *Perplexacara latusmandibulara* (Watts, 2010)
- a *Pictacara montana* (Lea, 1919)
- a *Pictacara tasmanica* (Blackburn, 1892)

**Scraptiidae**
- ams *Scraptia laticollis* Champion, 1895
- s *Scraptia ocularis* Lea, 1920

**Silphidae**
- a *Ptomaphila lacrymosa* (Schreibers, 1802)

**Staphylinidae**
- ams Aleocharinae unplaced sp TMAG_F122792
- am Aleocharinae unplaced sp TMAG_F22496
- m *Coproporus* TFIC sp 03
- s *Myrmecocephalus fauveli* Solsky, 1868)
- s *Quediomimus hybridus* (Erichson, 1840)
- s *Quedius baldiensis* Blackburn, 1891
- as Scydmaeninae unplaced
- s *Sepedophilus* sp TMAG_F103193
- m *Zyras* TFIC sp 03

**Tenebrionidae**
- a *Adelium* sp TMAG_F122419
- a *Coripera deplanata* (Boisduval, 1835)
- s *Pachycoelia sulcicollis* Boisduval, 1835

**Throscidae**
- s *Aulonothroscus elongatus* (Bonvouloir, 1859)

**Ulodidae**
- m *Meryx aequalis* Blackburn, 1891

**Zopheridae**
- s *Cotulades leucospila* (Hope, 1843)
- s *Docalis funerosa* (Hope, 1845)

**COLLEMOBOLA (SPRINGTAILS)**

**Katiannidae**
- m Katiannidae unplaced

**DERMAPTERA (EARWIGS)**

**Anisolabididae**
- a *Gonolabis tasmanica* (Bormans, 1880)

**Spongiphoridae**
- s *Nesogaster ruficeps* (Erichson, 1842)

**DIPTERA (TRUE FLIES)**

**Anisopodidae**
- s *Sylvicola dubius* (Macquart, 1850)
- s *Sylvicola funebris* (Fuller, 1935)

**Asilidae**
- m *Cerdistus flavicinctus* (White, 1914)
- a *Cerdistus luctificus* (Walker, 1851)
- s *Daptolestes bronteflavus* Robinson & Yeates, 2020

**Athericidae**
- a *Dasyomma maculipenne* Hardy, 1920

**Austroleptidae**
- a *Austroleptis multimaculata* Hardy, 1920
- ms *Austroleptis rhyphoides* Hardy, 1920

**Bibionidae**
- as *Dilophus* unplaced
- s *Plecia dimidiata* Macquart, 1846

**Bombyliidae**
- m *Sisyromyia aurata* (Walker, 1849)

**Calliphoridae**
- a *Calliphora hilli* Patton, 1925
- m *Calliphora stygia* (Fabricius, 1782)

**Chironomidae**
- m Chironomidae unplaced sp TMAG_F105529
- a Chironomidae unplaced sp TMAG_F121803
- a Chironomidae unplaced sp TMAG_F123441

**Dolichopodidae**
- am *Chrysotimus* sp TMAG_F121337
- ms *Diaphorus* sp TMAG_F123200
- a *Diaphorus* sp TMAG_F97448

**Drosophilidae**
- ms Drosophilidae unplaced sp TMAG_F122988

**Empididae**
- a Empididae unplaced sp TMAG_F121846
- a Empididae unplaced sp TMAG_F123473
- a *Empis maculosa* Daugeron & Plant, 2009
- a *Empis* sp TMAG_F121333
- m *Empis* sp TMAG_F123137
- ams *Empis* sp TMAG_F123237
- a Hemerodromiinae unplaced sp TMAG_F121804
- a *Hilarempis* sp TMAG_F122520
- s *Hilarempis* sp TMAG_F123254
- m Hilarini gen nr *Hilarempis* sp TMAG_F122307
- a Hilarini gen nr *Hilarempis* sp TMAG_F122349
- a *Sphicosa* sp TMAG_F122249

**Ephydridae**
- a *Hydrellia victoria* Cresson, 1932
- a *Nostima duoseta* Cresson, 1943
- a *Scatella* unplaced

**Helosciomyzidae**
- m + *Eurotocus* sp TMAG_F122966

**Heteromyzidae**
- a *Austroleria extensa* McAlpine, 1967
- m *Diplogeomyza* cf *conformis* McAlpine, 1967
- m *Diplogeomyza diaphora* Hendel, 1917
- s *Diplogeomyza maculipennis* (Malloch, 1926)
- am *Leriopsis* sp TMAG_F100274
- s *Tapeigaster brunneifrons* Malloch, 1927
- a *Tapeigaster nigricornis* (Macquart, 1851)
- ms *Trixoleria maculata* McAlpine, 1967

**Hybotidae**
- am *Hoplopeza pulcherrima* (Bezzi, 1904)
- ams *Hoplopeza* sp TMAG_F123242
- a Ocydromiinae unplaced sp TMAG_F122906

**Keroplatidae**
- s Keroplatidae unplaced sp TMAG_F113965
- m Keroplatidae unplaced sp TMAG_F122978
- s Keroplatidae unplaced sp TMAG_F123224
- am Keroplatidae unplaced sp TMAG_F47589

**Lauxaniidae**
- m *Ceratolauxania* sp TMAG_F98212
- a Lauxaniidae unplaced sp TMAG_F121785
- ms Lauxaniidae unplaced sp TMAG_F128648
- am *Poecilohetaerus aquilus* Schneider, 1991
- s *Rhagadolyra magnicornis* (Malloch, 1926)
- ams *Sapromyza magnifica* Malloch, 1926
- m *Sapromyza mallochiana* Evenhuis & Okadome, 1989
- ams *Sapromyza metallica* Walker, 1853
- m *Trypetisoma digitatum* Kim, 1994

**Limoniidae**
- a *Gynoplistia* sp TMAG_F96875

**Muscidae**
- a Muscidae unplaced sp TMAG_F121825
- a Muscidae unplaced sp TMAG_F41370

**Mycetophilidae**
- a Mycetophilidae unplaced sp TMAG_F121838

**Pelecorhynchidae**
- am *Pelecorhynchus albolineatus* Hardy, 1918

**Piophilidae**
- a *Piophilosoma norrisi* (Paramonov, 1954)

**Platystomatidae**
- as *Rivellia* sp TMAG_F121455
- m *Rivellia* sp TMAG_F122990

**Rhagionidae**
- a *Atherimorpha* cf *corpulenta* Paramonov, 1962
- ams *Atherimorpha occidens* Hardy, 1927
- s *Atherimorpha* sp nr *montana* Hardy, 1927
- a *Atherimorpha* sp TMAG_F122233
- a *Chrysopilus basifasciatus* Paramonov, 1962

**Sarcophagidae**
- m i *Oxysarcodexia varia* (Walker, 1836)

**Sciomyzidae**
- am *Dichetophora australis* (Walker, 1853)

**Stratiomyidae**
- ms *Antissella parvidentata* (Macquart, 1850)
- m *Australoactina costata* (White, 1914)
- ms *Boreoides tasmaniensis* Bezzi, 1922
- m Chiromyzinae unplaced sp TMAG_F31516
- s *Damaromyia whitei* (Hardy, 1920)
- m *Inopus* sp TMAG_F121819
- m *Odontomyia carinifacies* Macquart, 1850

**Syrphidae**
- m *Austalis pulchella* (Macquart, 1846)
- m *Eristalis tenax* (Linnaeus, 1758)
- as *Eumerus argyrogaster* Ferguson, 1926
- ams *Melangyna viridiceps* (Macquart, 1847)
- a *Oligeriops chalybeus* (Ferguson, 1926)
- ms *Psilota* sp TMAG_F96866
- m *Xanthandrus agrolas* (Walker, 1849)
- s *Xanthandrus* YOUNG sp 88-7
- am *Xanthandrus* YOUNG sp *ruficornis*

**Tabanidae**
- am *Dasybasis neolatifrons* (Ferguson & Hill, 1922)
- a *Dasybasis* sp TMAG_F46932
- m *Scaptia auriflua* (Donovan, 1805)
- ams *Scaptia jacksonii* (Macquart, 1837)

**Tachinidae**
- ams *Senostoma* unplaced
- m Tachinidae unplaced sp TMAG_F57514
- a *Trigonospila* unplaced

**Tephritidae**
- a *Austrotephritis bushi* (Hardy & Drew, 1996)
- a *Spathulina acroleuca* (Schiner, 1868)
- a *Sphenella ruficeps* (Macquart, 1851)
- m Tephritidae unplaced sp TMAG_F125990

**Therevidae**
- m *Actenomeros corniculaticaudus* Winterton & Irwin, 1999
- s *Anabarhynchus lanatus* Lyneborg, 2001
- ms *Anabarhynchus montanus* White, 1916
- m *Anabarhynchus whitei* Lyneborg, 2001

**Tipulidae**
- am *Acracantha sydneyensis* Skuse, 1890
- a *Ischnotoma rubroabdominalis* Alexander, 1922

**HEMIPTERA (TRUE BUGS)**

**Acanthosomatidae**
- a *Amphaces* cf *elongata* Distant, 1910
- a *Anischys lundbecki* (Jensen-Haarup, 1928)
- a *Eupolemus picturatus* Distant, 1910

**Achilidae**
- s Plectoderini MOIR genus 5 MOIR sp 85
- s Plectoderini MOIR genus 6 MOIR sp 87
- as Plectoderini MOIR genus 6 MOIR sp 88
- as *Dipsiathus obscurifrons* Emeljanov, 2005
- s *Parabunda tasmanica* Emeljanov, 2005

**Aphalaridae**
- m *Anoeconeossa* sp TMAG_F97427
- am *Creiis lituratus* (Froggatt, 1900)
- m *Ctenarytaina* sp TMAG_F122309
- s *Phellopsylla* sp TMAG_F123264
- m Spondyliaspidinae cf *Australopsylla* sp TMAG_F122979
- m Spondyliaspidinae cf *Blepharocosta* sp TMAG_F123420

**Aphididae**
- m *Myzus* cf *persicae* (Sulzer, 1776)

**Artheneidae**
- a *Dilompus woodwardi* Malipatil, 1988

**Ceratocombidae**
- s *Ceratocombus australiensis* Gross, 1950

**Cercopidae**
- ms *Anyllis leiala* Kirkaldy, 1906
- a *Bathyllus albicinctus* (Erichson, 1842)

**Cicadellidae**
- a *Arawa novella* Metcalf, 1968)
- a *Austroagalloides rosea* Evans, 1936
- ms *Batracomorphus elegans* (Evans, 1936)
- as Cicadellidae unplaced sp TMAG_F101390
- m Cicadellidae unplaced sp TMAG_F106140
- a Cicadellidae unplaced sp TMAG_F123439
- m Cicadellidae unplaced sp TMAG_F76645
- s *Diemoides smithtoniensis* Evans, 1938
- a *Neotartessus flavipes* (Spångberg, 1878)
- ms *Putoniessa dorsalis* (Walker, 1851)
- ms *Rhotidoides montana* Evans, 1937
- a *Rosopaella crofta* Webb, 1983
- m Tartessinae unplaced sp TMAG_F47837
- s *Tolasella* sp TMAG_F96921

**Cicadidae**
- a *Diemeniana hirsuta* (Goding & Froggatt, 1904)

**Cixiidae**
- m *Aka dobsonensis* Löcker, 2015
- ams *Chidaea armidalensis* Löcker & Holzinger, 2019
- a Cixiinae unplaced sp TMAG_F142311

**Coreidae**
- s *Gelonus tasmanicus* (Le Guillou, 1841)

**Corixidae**
- a *Sigara* unplaced

**Cryptorhamphidae**
- a *Cryptorhamphus orbus* Stål, 1860

**Cydnidae**
- m *Macroscytus* sp TMAG_F6477

**Idiostolidae**
- m *Monteithocoris hirsutus* Woodward, 1968

**Lygaeidae**
- a *Nysius* unplaced

**Micronectidae**
- a *Micronecta robusta* Hale, 1922

**Miridae**
- a *Coridromius* sp TMAG_F57794
- a Miridae unplaced sp TMAG_F122289
- a Miridae unplaced sp TMAG_F122633
- as Miridae unplaced sp TMAG_F57119
- am Miridae unplaced sp TMAG_F57339
- ams *Niastama punctaticollis* Reuter, 1904
- ams *Pseudopantilius australis* (Walker, 1873)

**Notonectidae**
- a *Anisops thienemanni* Lundblad, 1933

**Pentatomidae**
- s *Notius depressus* Dallas, 1851
- ms *Tinganina dimorpha* Bergroth, 1909

**Reduviidae**
- s *Nebriscus pupus* Bergroth, 1895

**Rhyparochromidae**
- as *Botocudo ornatulus* (Bergroth, 1895)
- ams *Brentiscerus putoni* (White, 1878)
- a *Euander torquatus* (Erichson, 1842)
- a *Remaudiereana inornata* (Walker, 1872)
- a Rhyparochromidae unplaced sp TMAG_F122291
- a Rhyparochromidae unplaced sp TMAG_F122852
- a *Telocoris* sp TMAG_F97797
- a *Udeocoris nigroaeneus* (Erichson, 1842)

**Schizopteridae**
- ms Schizopteridae unplaced sp TMAG_F123187

**Tettigarctidae**
- m *Tettigarcta tomentosa* White, 1845

**HYMENOPTERA (WASPS, BEES & ANTS)**

**Apidae**
- a i *Bombus terrestris audax* (Linnaeus, 1758)
- m *Exoneura* unplaced

**Bethylidae**
- a *Eupsenella* unplaced

**Braconidae**
- m Braconinae unplaced sp TMAG_F123405
- a Braconidae unplaced sp TMAG_F122775
- a *Doryctes* unplaced
- s Rogadinae unplaced sp TMAG_F94569

**Chalcididae**
- a Chalcididae unplaced sp TMAG_F122763

**Colletidae**
- am *Euhesma* sp TMAG_F123453
- m *Leioproctus* sp TMAG_F3995

**Crabronidae**
- m *Acanthostethus tasmanicus* (Turner, 1915)
- m *Pison rufipes* Shuckard, 1838

**Evaniidae**
- a *Szepligetiella* sp TMAG_F100790

**Formicidae**
- s *Camponotus hartogi* Forel, 1902
- a *Iridomyrmex alpinus* Heterick & Shattuck, 2011
- m *Myrmecia pilosula* Smith, 1858
- s *Myrmecorhynchus carteri* Clark, 1934

**Halictidae**
- am *Lasioglossum* unplaced

**Ichneumonidae**
- a Banchinae unplaced sp TMAG_F122751
- m Cryptinae unplaced sp TMAG_F112402
- a *Heteropelma* unplaced
- am *Ichneumon promissorius* (Erichson, 1842)
- a Labeninae unplaced sp TMAG_F9885
- a *Labium montivagum* Turner & Waterston, 1920
- s *Poecilocryptus nigromaculatus* Cameron, 1901

**Mutillidae**
- m *Ephutomorpha* sp TMAG_F127570

**Pompilidae**
- m *Epipompilus bushi* Evans, 1972
- m *Epipompilus gilesi* (Turner, 1910)
- m *Epipompilus* sp TMAG_F123150
- ams *Epipompilus tasmanicus* Evans, 1962
- s *Epipompilus turneri* Evans, 1962
- m Pompilidae unplaced sp TMAG_F123152
- a Pompilinae unplaced sp TMAG_F115028
- am *Sphictostethus aliciae* (Turner, 1914)
- s *Sphictostethus geevestoni* Krogmann & Austin, 2011

**Pteromalidae**
- m Pteromalidae unplaced

**Tiphiidae**
- s *Tachynomyia abdominalis* (Guérin-Méneville, 1842)

**Vespidae**
- m i *Vespula germanica* (Fabricius, 1793)

**LEPIDOPTERA (MOTHS & BUTTERFLIES)**

**Anthelidae**
- s *Anthela acuta* (Walker, 1855)
- m *Anthela nicothoe* (Boisduval, 1832)

**Crambidae**
- a Crambinae unplaced sp TMAG_F149387
- am Crambidae unplaced sp TMAG_F118319
- a *Eudonia cleodoralis* (Walker, 1859)
- a *Musotima nitidalis* (Walker, 1866)
- am *Scoparia plagiotis* Meyrick, 1887
- am *Scoparia syntaracta* Meyrick, 1885

**Depressariidae**
- m *Agriophara* sp TMAG_F149388
- m *Agriophara* sp TMAG_F29992
- m *Eutorna eurygramma* Meyrick, 1906

**Erebidae**
- s *Ardices glatignyi* (Le Guillou, 1841)
- m *Artigisa lignicolaria* (Walker, 1866)
- m *Chiriphe sicciodes* (Hampson, 1914)
- m *Halone sobria* Walker, 1854
- m *Philenora omophanes* (Meyrick, 1886)
- am *Thallarcha isophragma* (Meyrick, 1886)
- am *Thermeola tasmanica* Hampson, 1900

**Geometridae**
- m *Acodia orina* (Turner, 1926)
- am *Amelora acromegala* McQuillan, 1996
- a *Amelora oritropha* Turner, 1919
- m *Amelora sparsularia* (Guenée, 1857)
- m *Aponotoreas cheimatobiata* (Guenée, 1857)
- m *Archephanes zalosema* Turner, 1926
- m *Authaemon stenonipha* Turner, 1919
- am *Chloroclystis filata* (Guenée, 1858)
- a *Chlorocoma cadmaria (Guenée, 1857)*
- m *Chrysolarentia epicteta* (Turner, 1908)
- m *Chrysolarentia heteroleuca* (Meyrick, 1891)
- m *Chrysolarentia interruptata* (Guenée, 1858)
- m *Chrysolarentia leucozona* (Meyrick, 1891)
- a *Chrysolarentia photographica* (Turner, 1939)
- am *Chrysolarentia polycarpa* (Meyrick, 1891)
- a *Chrysolarentia psarodes* (Turner, 1904)
- a *Chrysolarentia subrectaria* (Guenée, 1858)
- s *Circopetes obtusata* (Walker, 1860)
- ms *Cyneoterpna alpina* Goldfinch, 1929
- m *Dolabrossa suffusa* Turner, 1926
- a *Epyaxa centroneura* (Meyrick, 1891)
- a *Euloxia leucochorda* (Meyrick, 1888)
- m *Furcatrox australis* (Rosenstock, 1885)
- m Geometrinae unplaced *melanoglypta* Lower, 1905
- m *Horisme mortuata* (Guenée, 1857)
- m Hydriomenini unplaced *severata* (Guenée, 1857)
- s *Hypobapta percomptaria* (Guenée, 1857)
- ms *Melitulias oriadelpha* Turner, 1926
- am *Microdes diplodonta* Turner, 1904
- a *Microdes leptobrya* Turner, 1939
- ams + *Microdes oriochares* Turner, 1922
- am *Microdes villosata* Guenée, 1857
- m *Mnesampela heliochrysa* (Lower, 1893)
- m *Mnesampela privata* (Guenée, 1857)
- m *Nearcha curtaria* (Guenée, 1857)
- am *Palleopa innotata* Walker, 1866
- am *Paralaea chionopasta* McQuillan, Young & Richardson, 2001
- a *Pasiphilodes testulata* (Guenée, 1857)
- ms *Plesanemma altafucata* McQuillan, 1984
- m *Poecilasthena euphylla* (Meyrick, 1891)
- a *Poecilasthena panapala* Turner, 1922
- am *Poecilasthena pulchraria* (Doubleday, 1843)
- m *Psilosticha attacta* (Walker, 1860)
- m *Scioglyptis* sp CB01
- m *Scopula liotis* (Meyrick, 1888)
- a *Scopula optivata* (Walker, 1861)
- m *Scopula perlata* (Walker, 1861)
- m *Taxeotis intextata* (Guenée, 1857)
- ams *Xanthorhoe anaspila* Meyrick, 1891
- am *Xanthorhoe anthracinata* (Guenée, 1857)
- am *Xanthorhoe strumosata* (Guenée, 1857)

**Hepialidae**
- m *Abantiades latipennis* Tindale, 1932

**Lasiocampidae**
- m *Pararguda nasuta* (Lewin, 1805)
- s *Pararguda rufescens* (Walker, 1855)
- m *Crocanthes glycina* Meyrick, 1904

**Lycaenidae**
- am *Neolucia hobartensis hobartensis* (Miskin, 1890)

**Lyonetiidae**
- m Bedelliinae unplaced
- m Lyonetiinae unplaced

**Noctuidae**
- am *Agrotis infusa* (Boisduval, 1832)
- ams *Cirphis ebriosa* (Guenée, 1857)
- a *Dasygaster padockina* (Le Guillou, 1841)
- m *Dasygaster pammacha* Guenée, 1852
- m *Dasygaster* sp TMAG_F146972
- a *Diarsia intermixta* (Guenée, 1857)
- m *Ectopatria* unplaced
- am Hadenini unplaced species inquirenda *epipolia*
- m Hadenini unplaced species inquirenda *ligniplena*
- m *Helicoverpa punctigera* (Wallengren, 1860)
- am *Leucania* ANIC sp 02
- m *Neumichtis iorrhoa* (Meyrick, 1902)
- m *Neumichtis nigerrima* (Guenée, 1857)
- am *Neumichtis sepultrix* (Guenée, 1857)
- am *Neumichtis* sp TMAG_F029835
- am *Neumichtis* sp TMAG_F141335
- am *Persectania ewingii* (Westwood, 1839)
- a *Proteuxoa atra* (Guenée, 1852)
- am *Proteuxoa hydraecioides* (Guenée, 1852)
- am *Proteuxoa sanguinipuncta* (Guenée, 1857)
- a *Proteuxoa* sp TMAG_F141362
- m *Proteuxoa* sp TMAG_F141376
- am *Proteuxoa* sp TMAG_F141378

**Nolidae**
- m *Nola* ANIC sp 03

**Notodontidae**
- m *Aglaosoma periblepta* (Turner, 1922)
- ms *Gallaba eugraphes* Turner, 1922
- am *Hobartina amblyiodes* (Turner, 1931)

**Nymphalidae**
- am *Heteronympha penelope diemeni* Waterhouse, 1937
- a *Oreixenica lathoniella lathoniella* (Westwood, 1851)

**Oecophoridae**
- am *Cosmaresta charaxias* (Meyrick, 1889)
- m *Oxythecta nephelonota* Meyrick, 1885
- a *Oxythecta* unplaced sp TMAG_F154208
- s *Oxythecta* unplaced sp TMAG_F154209
- am *Palimmeces hemiphanes* (Meyrick, 1883)
- m *Philobota* BB SW TAS sp 04
- m *Thema endesma* (Meyrick, 1884)

**Pieridae**
- a i *Pieris rapae* (Linnaeus, 1758)

**Plutellidae**
- a i *Plutella xylostella* (Linnaeus, 1758)

**Pyralidae**
- ams *Mimaglossa crypserythra* (Turner, 1904)
- m *Stericta marmorea* (Warren, 1891)

**Tineidae**
- m *Monopis ethelella* (Newman, 1856)

**Tortricidae**
- a *Acropolitis* ANIC sp 06
- m *Acropolitis ptychosema* Turner, 1927
- m Bactrini unplaced sp TMAG_F047715
- a *Constrictana constrictana* (Walker, 1866)
- m *Holocola* ANIC sp 66
- a *Meritastis lythrodana* (Meyrick, 1881)
- s *Rupicolana crotala* (Meyrick, 1910)
- a *Technitis technica* (Turner, 1939)

**Xyloryctidae**
- m *Scieropepla serina* Meyrick, 1890

**MECOPTERA (SCORPIONFLIES & ALLIES)**

**Nannochoristidae**
- a *Nannochorista maculipennis* Tillyard, 1917

**NEUROPTERA (LACEWINGS)**

**Chrysopidae**
- a *Apertochrysa edwardsi* (Banks, 1940)

**Hemerobiidae**
- ams *Micromus tasmaniae* (Walker, 1860)
- am *Notherobius nothofagi* New, 1988

**ORTHOPTERA (GRASSHOPPERS & CRICKETS)**

**Acrididae**
- a *Russalpia albertisi* (Bolívar, 1898)
- a *Tasmanalpina clavata* Key, 1991
- a *Tasmaniacris tasmaniensis* (Bolívar, 1898)

**Gryllacrididae**
- a *Kinemania ambulans* (Erichson, 1842)

**Pyrgomorphidae**
- m *Monistria concinna* (Walker, 1871)

**Tetrigidae**
- a *Paratettix argillaceus* (Erichson, 1842)

**Tettigoniidae**
- m *Acripeza reticulata* Guérin-Méneville, 1838

**Trigonidiidae**
- a *Bobilla* unplaced

**PLECOPTERA (STONEFLIES)**

**Eustheniidae**
- a *Eusthenia spectabilis* Gray, 1832

**THYSANOPTERA (THRIPS)**

**Phlaeothripidae**
- am *Idolothrips spectrum* Haliday, 1852

**TRICHOPTERA (CADDISFLIES)**

**Plectrotarsidae**
- a *Plectrotarsus tasmanicus* Mosely, 1936