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**A NEW SPECIES OF *TREPHISA* MOORE (COLEOPTERA:
CARABIDAE: MORIOMORPHINI) FROM THE BRINDABELLA
RANGE, AUSTRALIAN CAPITAL TERRITORY**

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Abstract

Trephisa barrymoorei sp. n. is described from near the summit of Mt Gingera, Australian Capital Territory. This second species of *Trephisa* Moore shares numerous synapomorphies with the type species, *T. parallela* Moore, establishing cladistic criteria for recognizing *Trephisa* as a monophyletic taxon. The two species of *Trephisa* share other synapomorphies with species of *Teraphis* Castelnau, 1867 and these two genera are proposed as sister taxa. The two species of *Trephisa* are known only from high elevation sites: *T. parallela* from closed canopy *Nothofagus* forests on the Lamington and Springbrook Plateaux, Queensland and *T. barrymoorei* from snow gum (*Eucalyptus pauciflora* Sieber) forest on Mt Gingera in the Brindabella Range, A.C.T.

Introduction

Moore (1963), in his revision of the Australian Psydrinae, provided the first comprehensive treatment of genera now recognized as members of the tribe Moriomorphini (Sloane 1890, Liebherr 2011). Moore's (1963) treatment included descriptions of four new genera: 1, *Trephisa* Moore; 2, *Sitaphe* Moore; 3, *Theprisa* Moore; and 4, *Neonomius* Moore. All remain valid today. The first of these, *Trephisa*, was most precisely diagnosed by Moore (1963) based on reduced eyes, elongate labial paraglossae, submoniliform antennae and dorsally setose tarsomeres, although other more broadly distributed characters such as fully striate elytra and a carinate eighth elytral interval were also presented. Moore himself (1977) subsequently suggested that the microphthalmic condition of the cave-adapted *Teraphis cavicola* Moore, 1977 eliminated one of the diagnostic characters he used in 1963 to distinguish *Trephisa* from *Teraphis* Castelnau, 1867. He maintained *Trephisa* as distinct based on 'its narrow, subcylindrical build and also its minutely crenulate subhumeral (elytral) margins (Moore 1977: 94)', noting that a more thorough knowledge of the Australian fauna was required before arriving at any definitive conclusion. This contribution offers a new species of *Trephisa* that allows us to build on Moore's (1963) diagnosis of the genus and thereby to affirm Moore's recognition of *Trephisa* as a distinct lineage worthy of generic-level recognition.

Materials and methods

Specimens revised in this contribution were provided by the Museum of Comparative Zoology, Harvard University (MCZ: Philip D. Perkins curator) and the Queensland Museum (QMB: Susan Wright, collection manager). The holotype for the new species is deposited in the Australian National Insect Collection (ANIC: Cate Lemann curator) and a DNA-sequence voucher specimen of *T. parallela* is deposited in the Oregon State Arthropod

Collection (OSAC: David Maddison director). Specimens compared with the *Trephisa* specimens treated below were borrowed from the Field Museum of Natural History, Chicago (Al Newton and Margaret Thayer curators) and the Zoological Museum, University of Copenhagen (Alexey Solidovnikov curator). Specimen preparation protocols are identical to those described in Liebherr (2015), with the exception that the female reproductive tracts and their associated abdomens from specimens collected by P.J. Darlington, Jr., were cleared in cold 10% KOH for three days, not one as is usual for most specimens. The female reproductive tracts were then dissected from the abdomens, neutralised in weak acetic acid, stained using Chlorazol Black® in methyl cellosolve and slide mounted in glycerine for viewing. Several mensural and ratio-based attributes are used to describe the beetles. These include standardised body length, *i.e.* the sum of three measurements: the length of the head measured from anterior labral margin to cervical ridge adjacent to the pronotum, pronotal length measured along the midline and elytral length measured from the base of the elevated scutellar surface to the apex of the longer elytron. Ratio-based descriptors include: 1, ocular ratio, *i.e.* head width across outer surfaces of the eyes divided by the minimum frons width between the eyes; 2, ocular lobe ratio, or the length of the eye measured from above divided by the length of the ocular lobe from the front margin of the eye to the angled juncture with the gena; 3, mandibular length ratio, or the distance from the left mandibular apex to anterior (dorsal) condyle divided by the distance from the anterolateral margin of the labrum to that same condyle; 4, relative pronotal width, or maximum pronotal width divided by pronotal length along the midline; 5, relative pronotal basal constriction, or maximum pronotal width divided by pronotal width across its hind angles. Male genitalic characters are described based on terminology presented in Liebherr (2018) and female reproductive tract characters follow the terminology established in Ball and Shpeley (1983) and Liebherr and Will (1998). The number of specimens measured for external characters or assessed for genitalic characters is provided at the beginning of appropriate sections of the descriptions. Label data are transcribed verbatim, with different lines of text separated by a slash '/', and different labels separated by a double slash '//'. A photocopy of P.J. Darlington, Jr.'s 50 pp typescript 1956-1958 field diary for Australia, provided by P.D. Perkins to G.B. Monteith, Queensland Museum, is the source for Darlington's collecting information on *T. parallela*.

***Trephisa* Moore, 1963**

Trephisa Moore 1963: 282 (type species *Trephisa parallela* Moore, by original designation).

Diagnosis. Beetles of subparallel body form, with only moderately convex elytra, the elytral disc flat medially (Figs 1-2); eyes very small to moderately sized, with ocular lobe little projected from head, its hind margin at very

obtuse angle with gena and with lobe-gena juncture without groove; labial paraglossae elongate, narrow, porrect, extended as far beyond truncate, well-sclerotised anterior margin of ligula as distance from paraglossal base to ligular margin; pronotal laterobasal depression broad, consisting of medial longitudinal depression bordered laterally by a broad tubercle; a single dorsal elytral seta in the third elytral interval (unilaterally two setae or no setae can be present), the depression surrounding the dorsal seta very shallow and extended over only 1/4 of the interval breadth; basal elytral groove slightly undulated at the bases of the striae; mesepisternum punctate, with ~10 punctures in 2-3 dorsoventral rows covering its surface; suture between metepisternum and metepimeron reduced, obsolete, the surface between the sclerites nearly smooth; tarsomeres with a sparse covering of elongate setae, best represented on tarsomeres 4-5; elytral disc with regular, well developed transverse mesh microsculpture, the sculpticells 2-3 × broad as long.

Key to adults of the species of *Trephisa* Moore

- 1 Larger, more piceous beetles (Fig. 1), standardized body length 6.1-6.5 mm; eyes small, ocular ratio 1.25-1.27, ocular lobe ratio 0.56-0.68, 12-15 ommatidia present across horizontal diameter of eye; frontal grooves broad, deep, their surface laterad convex; frons irregularly punctate; elytral lateral margin smoothly convex posterad angulate, toothed humerus; ventral body surface uniformly dark, piceous except for contrastingly paler dark rufous tibiae *Trephisa barrymoorei* **sp. n.**
- Smaller, more rufous beetles (Fig. 2), standardized body length 4.8-5.6 mm; eyes very small, ocular ratio 1.06-1.12, ocular lobe ratio 0.31-0.41, 4-5 ommatidia present across horizontal diameter of eye; frontal grooves smooth, arcuately convergent, frons medially with 7-9 transverse strigae; elytral lateral margin distinctly crenulate posterad angulate, toothed humerus; ventral body surface dark brunneous, prothoracic and elytral epipleura rufobrunneous, legs entirely brunneous *Trephisa parallela* Moore

***Trephisa barrymoorei* sp. n.**

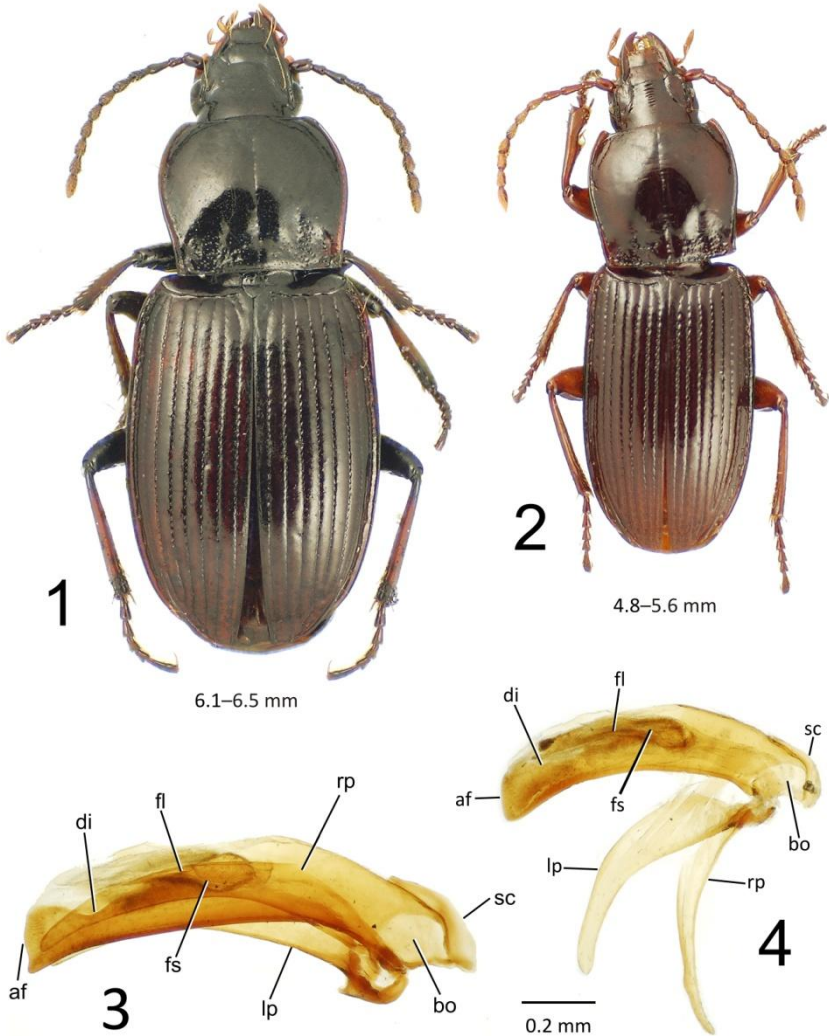
(Figs 1, 3, 5-8)

Type material. *Holotype* ♂ (dissected with male genitalia in polyethylene genitalia vial on pin), Brindabella / Rge to Mt. / Gingera ACT / 6000' May '57 // Phersita # 2 (handwritten) // HOLOTYPE / *Trephisa* / barrymoorei / J.K. Liebherr 2018 (black-margined red label) (MCZ specimen deposited in ANIC). *Paratypic allotype* ♀ (dissected with abdominal ventrites on mounting card and reproductive tract in genitalia vial on pin), same date-locality data (MCZ). *Paratype* ♂, same date-locality data (MCZ). The allotype and paratype bear an additional label beneath the date-locality label: Australia / Dec56 - Jun 58 / Darlingtons.

Diagnosis. In addition to the diagnostic features in the key couplet, this species exhibits a shallow transverse impression on the vertex between the hind margins of the eyes. There are either one or two dorsal elytral setae,

with the obvious anterior seta immediately mesad the third elytral striae situated before elytral midlength, whereas the anterior dorsal elytral seta of *T. parallela* individuals is placed at or posterad elytral midlength. The eighth elytral interval is distinctly carinate dorsad the well developed subapical sinuation in this species, whereas this interval is more broadly rounded, although equally upraised, dorsad the shallow subapical sinuation of *T. parallela*. Also, the strial punctures are slightly larger in this species and the elytral lateral marginal depression is broader, more explanate in this species, especially evident immediately posterad the humerus.

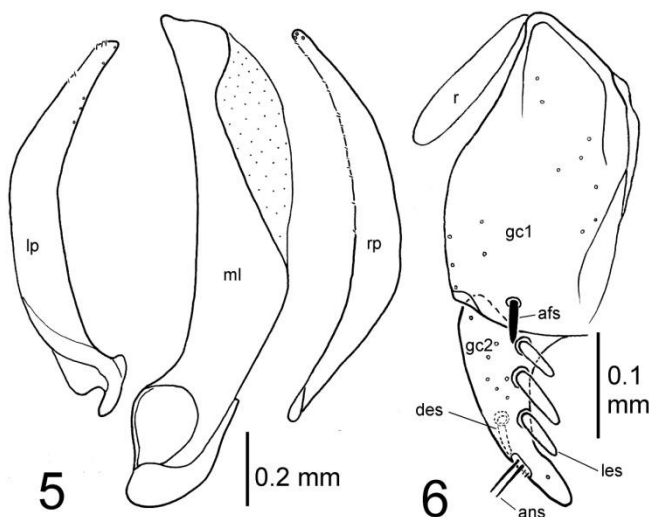
Description (n = 3). Head broad with small eyes, gena visibly surrounding eyes in dorsal view; two supraorbital setae each side; antennae robust, basal 3 antennomeres glabrous except for single apical setae on scape and pedicel, and apical ring of setae on antennomere 3, apical half of antennomere 4 and antennomeres 5-11 covered with fine pelage of setae; apical antennomeres submoniliform, length of antennomere 9 $1.2 \times$ maximal breadth; labrum slightly emarginate apically; mandible moderately elongate, mandibular length ratio 1.8; maxillary palpomeres glabrous, apical palpomere fusiform; maxillary lacinia with hook-like apex; labial palpomeres gracile, basal palpomere narrow, bisetose; mentum tooth broadly rounded, mentum lateral lobes broadly, convexly rounded to narrowly rounded apices and mentum surface moderately depressed at mental setae; submentum longitudinally impressed each side of midline, two setae each side. Pronotum broadly subquadrate, lateral margins slightly sinuate before nearly right hind angles; two pronotal setae each side, lateral seta about $1/3$ pronotal length from front angle, basal seta inside lateral and basal beads, equidistant from both margins; basal margin slightly undulated, a fine marginal bead present across base; median base moderately depressed relative to disc, convex medially, surface punctate laterally, with about 20 small punctures between midline and longitudinal impression on inner portion of laterobasal depression; outer portion of laterobasal depression slightly elevated in a low tubercle, the surface evenly punctate to the broad lateral convexity adjacent to the broad lateral marginal bead; median longitudinal impression continuous, irregularly punctate along its length, the punctures joined by fine shallow impressions; anterior transverse impression broad, shallow, evident only near middle of disc; anterior margin beaded in outer $2/3$ of breadth each side, the bead absent medially; front angles protruded and depressed relative to disc, apex of angles narrowly rounded; lateral marginal depression narrow just behind front angle but microsculpture still evident in the deepest portion, marginal depression broadened from lateral seta to oblique convexity inside hind angle; prosternum smooth, slightly depressed between procoxae, convex anteriorly, smooth laterally without any anteapical groove; proepisternum mostly smooth, variably with 10-17 very shallow and indistinct punctures distributed on proepisternum from near procoxal cavity dorsad along margin with propimeron; propimeron smooth, suture before meron impunctate.



Figs 1-4. *Trephisa* spp: (1) *T. barrymoorei* sp. n. holotype, dorsal view; (2) *T. parallela* male paratype (MCZ), dorsal view; (3) *T. barrymoorei* holotype male aedeagus, right view; (4) *T. parallela* paratype male aedeagus, right view. Scale bar for Figs 3-4 only. Abbreviations: af, apical face of median lobe; bo, basal opening of median lobe; di, dorsal invagination of ostial opening sclerotized margin, right side; fl, flagellum of internal sac; fs, flagellar sheath of internal sac; lp, left paramere; rp, right paramere; sc, sagittal crest of median lobe.

Elytra subquadrate, humeri broad; parascutellar seta present, very short; parascutellar striole short, comprising 2-3 connected punctures and broadly joining basal elytral groove at parascutellar seta; basal elytral groove moderately recurved to acutely angulate humerus, the groove undulated due to basal expansions of striae 1-5; a humeral tooth present at juncture of basal elytral groove and lateral elytral margin; 1-2 dorsal elytral setae, with each mesad third interval – actual counts for dorsal elytral setae for three type specimens, left + right elytron, are: 2 + 1, 1 + 1, 1 + 0; striae 1-8 all complete, punctate, the punctures slightly expanding strial breadth; interval 8 subcarinate apically; subapical and apical setae present in stria 7; lateral elytral setae arranged in anterior series of 7 setae, posterior series of 6. Metathoracic flight wings vestigial, the rudiment a broad subtriangular flap that does not extend beyond posterior margin of metanotum, flap with subcostal+radial and medial vein thickenings (viewed under elytron of dissected female specimen); metepisternum maximum width subequal to lateral length. Abdomen with ventrites 1-4 visibly punctate laterally, ventrite 4 with only 3 punctures; suture between visible ventrites 1 and 2 sinuous laterally, the surface of ventrite 2 inside the sinuosity depressed; sutures between ventrites 3-6 deep, broad, lined with distinct punctures; apical ventrite of male with 3 setae each side, all 6 setae equidistant from beaded margin and nearly equidistant neighbour to neighbour; apical ventrite of female also with 3 setae each side but with the 2 sets of 3 setae more separated along midline than each to the next on each side. Legs robust; profemur with 2 posterior setae; mesocoxa bisetose, a ventral seta and 1 seta on coxal ridge; mesofemur bisetose anteroventrally; metacoxa bisetose, 2 lateral setae present; metafemur bisetose anteroventrally; mesotibiae straight, apex broadly expanded; tarsomeres setose dorsally, in addition to apical and subapical setae, several elongate setae sparsely distributed over dorsum of tarsomeres 4 and 5. Microsculpture of frons indistinct, transverse mesh or lines visible over portions of surface; pronotal disc covered with a transverse mesh, sculpticell breadth 3-4 × length; pronotal base with evident transverse mesh, sculpticell breadth 2-3 × length; as also for *T. parallela*, the elytral disc is covered with a regular transverse mesh, sculpticell breadth 2-3 × length; abdominal ventrites with swirling isodiametric and transverse sculpticells.

Male genitalia (n = 1) (Figs 3, 5). Aedeagus gracile, evenly curved dorsally, with well developed basal sagittal crest, a basal opening on the right-hand side of median lobe that services sperm tube and a dorsal invagination along sclerotised margin of ostial opening; median lobe apex broadly rounded with short, nipple-like tip ventrally on apical face; internal sac bearing an elongate, acute flagellum and associated flagellar sheath; right paramere narrow, elongate, with ventral surface lined with very short setae and glabrous apex bearing several sensilla; left paramere more robust, its basal articulation resulting in a twisted lateral margin, with several sensilla and very short setae (sensilla basiconica) along margins near apex.



Figs 5-6. *Trephisa barrymoorei*, sp. n.: (5) male aedeagus, with median lobe in right-lateral view and parameres in ectal views; (6) female left gonocoxa, ventral view. Abbreviations: lp, left paramere; ml, median lobe; rp, right paramere; afs, apical fringe seta; ans, apical nematiform setae; des, dorsal ensiform seta; gc1, basal gonocoxite; gc2, apical gonocoxite; les, lateral ensiform setae.

Female reproductive tract (n = 1) (Figs 6-7). Gonocoxa bipartite, basal gonocoxite 1 with a single apical fringe seta (Fig. 6) and scattered sensilla; ramus present as a membranous fold; apical gonocoxite 2 moderately narrow basally, 2-3 lateral ensiform setae along lateral margin of gonocoxite, the setae less than $0.4 \times$ length of gonocoxite; 1 dorsal ensiform seta not visible in ventral view; 2 apical nematiform setae in sensory fossa set within $0.25 \times$ length from gonocoxite apex; bursa copulatrix broad, columnar, about twice as long as broad (Fig. 7); spermathecal duct joining bursa ventrally near juncture with common oviduct; a broadly rounded helminthoid sclerite present at juncture of spermathecal duct and bursa; spermathecal duct of similar diameter to spermathecal reservoir, the latter distinguishable by helicoid 'taenidia-like' cuticular ridges; spermathecal gland present, appended at base of spermathecal reservoir.

Etymology. The compound species epithet, *barrymoorei*, honours Dr Barry P. Moore's scientific legacy that spanned the fields of chemistry, chemical ecology and insect systematics.

Distribution and habitat. Based on the label data, the type series of this species from 6000' elevation would have been collected in the vicinity of the 6050 ft (1845 m) summit of Mt Gingera (Fig. 8). Notes from P.J. Darlington's collecting diary for that period state 'we made several trips to

the Brindabella Ranges during May, and the snow held off and the weather actually improved so much that on June 1 we reached Mt. Gingera ... and did some effective collecting there, although the ground was abnormally dry. The altitude is about 6000' and the high country is mostly covered with snow gum woods and some open areas (G. Monteith pers. comm.).' Darlington's access to Mt Gingera would have been via the road running west from Canberra that then approximately follows the State border between A.C.T. and New South Wales south along the crest of the Brindabella Range to Mt Gingera, situated directly on the border. Darlington nominated A.C.T. as the site of collection on his date-locality label.

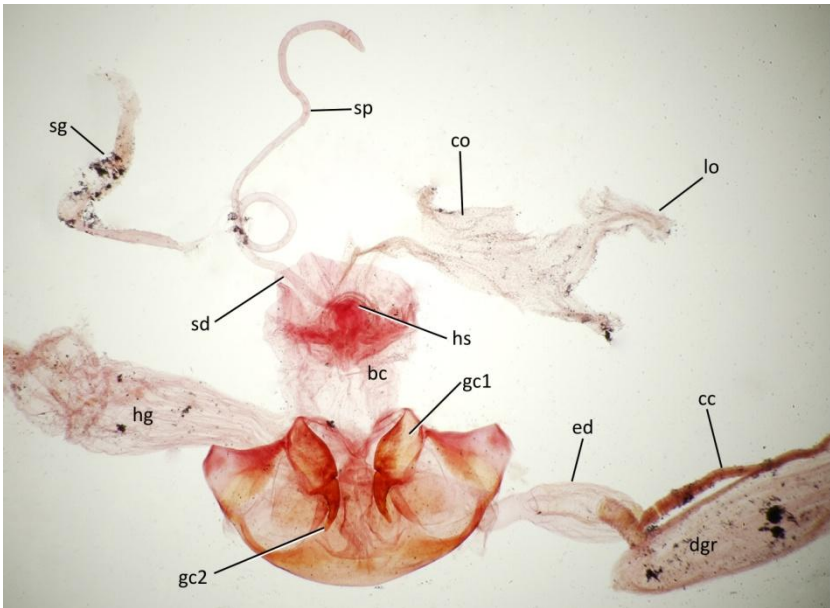


Fig. 7. Cleared and stained female reproductive tract of *Trepshis barrymoorei*, **sp. n.** paratypic allotype, ventral view. Abbreviations: bc, bursa copulatrix; cc, collecting canal of pygidial defensive gland; co, common oviduct; dgr, defensive gland reservoir; ed, efferent duct of defensive gland; gc1, basal gonocoxite; gc2, apical gonocoxite; hg, hindgut; hs, helminthoid sclerite; lo, lateral oviduct; sd, spermathecal duct; sg, spermathecal gland; sp, spermatheca.

Trepshis parallela Moore

(Figs 2, 4, 8)

Trepshis parallela Moore 1963: 282.

Type material. Holotype ♂ and paratype (immature) ♀ (ANIC), 'V. BinnaBurra / M' PhersonRge / May58, Q-NSW / 2600-3600' / Darlingtons.' Two paratypes, ♂ and ♀ with same data (MCZ).

Additional material. Two specimens, ♂ and immature ♀ with same label data as types (MCZ). Female specimen (QMB): 28°14'27.4"S/153°15'56.0"E / AUSTRALIA: Queensland / Springbrook National Park / nr. repeater tower, 1002 m / 28.xi.2010 // K.Will & G.B. Monteith / [AUS2010.xi.28.1]. Disarticulated female specimen used for DNA sequencing (QMB deposited in OSAC): Springbrook 14.3.97 / *Trephisa parallela* // DNA 1080.

Diagnosis. For external characters, see identification key and the diagnosis of *T. barrymoorei*. The male aedeagus differs from that of *T. barrymoorei* in the broadly rounded apex with evenly convex apical face and the less pronounced sagittal crest (Fig. 4). Some variability in these characters exists, as Moore's (1963; fig. 8) rendition of the holotypic *T. parallela* aedeagus presented a slight apical extension, not the broadly rounded apex as observed in the MCZ paratype (Fig. 4). Nonetheless, neither specimen has a tip as narrowly rounded as that of the *T. barrymoorei* holotype (Fig. 3).



Fig. 8. Distributional map for *Trephisa* spp. Finer scale maps to right indicate collecting localities relative to State or territorial borders and geographical features mentioned in the text.

Distribution and habitat. The type locality lies on the New South Wales-Queensland border, Lamington Plateau (Fig. 8). Darlington wrote in his collecting diary, ‘the higher parts of the [McPherson] range reach about 4000’ ... and on the very highest points are very small areas of almost pure *Nothofagus* forest.’ This is the northern limit of *Nothofagus* in Australia, although the genus occurs again on high mountains in New Guinea. We worked out from Binna Burra because I had worked the other end of the range in 1932. Above Binna Burra we took what is probably now a new genus of small-eyed Pterostichini, under deep stones in the closed forest ... (G. Monteith pers. comm.).’ His new genus of Pterostichini would have been these specimens, as Darlington included moriomorphines within Pterostichini (Darlington 1971: 186). Two other specimens have been collected more recently from the Springbrook Plateau 6 km east of the type locality (Fig. 8). These specimens were also collected from under deeply embedded stones within closed *Nothofagus* forest, confirming that this microphthalmic species is a deep-soil dweller. The two known localities, both at higher elevations, are separated by the deep Numinbah Valley.

Discussion

Recognition that *Trephisa Barrymoorei* shares numerous synapomorphies with *T. parallela* allows us to better define the groundplan of the genus. Based on preliminary results of an ongoing phylogenetic analysis of moriomorphine genera (JKL unpubl. data), the two *Trephisa* species comprise the sister group to *Teraphis*, represented by two examined species: *Ter. melbournesis* Castelnau and *Ter. crenulatus* (Sloane). These *Teraphis* species differ from the *Trephisa* above by: 1, labial paraglossae only moderately elongate, apex extended only half the distance from base beyond broadly truncate, well sclerotised ligular margin; 2, ocular lobe more protruded, lobe and gena meeting at an obtuse angle demarcated by a shallow groove; 3, pronotal median longitudinal impression more broadly impressed, the depression extended laterally onto disc; 4, pronotal laterobasal depression broad, extended from medial longitudinal impression to lateral convexity inside hind angle without a lateral tubercle between; 5, two dorsal elytral setae consistently present instead of one (although *Trephisa* setation is unstable with two setae unilaterally present rarely); 6, elytral basal groove evenly recurved, without the undulations at strial bases observed in *Trephisa* spp; 7, elytral strial punctation larger, the punctures expanding strial width; 8, elytral marginal depression broader, explanate from humerus to elytral midlength; 9, mesepisternum smooth to moderately punctate along its deepest dorsoventral excavation, versus distinctly punctate across the entire surface in *Trephisa* spp; 10, metepisternal-metepimeral suture present, distinct, not reduced; and 11, tarsomeres glabrous above, not bearing the sparsely distributed, elongate setae observed in *Trephisa* spp. Thus Moore’s (1977) decision to maintain *Trephisa* and *Teraphis* as distinct taxa is corroborated.

That *Teraphis* and *Trephisa* are sister taxa is supported by several characters, including: 1, small eyes with ocular lobe ratios less than 0.87 and fewer than 20 ommatidia across a horizontal diameter of the eye; 2, ligula broadly truncate with a well sclerotised margin; 3, pronotal front angles protruded, narrowly rounded to subangulate; 4, all eight elytral striae punctate to various degrees; 5, mesotibiae robust, apically expanded; 6, lateral reaches of abdominal ventrites 1-3 punctate; 7, sutures between abdominal ventrites 3-6 deep and lined with distinct punctures; and 8, apical male abdominal ventrite with 3 setae each side for a total of 6 marginal setae. Of these characters, four can be assessed only by examination of the body's ventral surface, meaning that they would be overlooked in a quick perusal of specimens in a drawer. Others such as degree of striae development and punctuation vary dramatically across the tribe Moriormorphini, so they can assist in grouping these genera only in concert with the other characters.

Due to the immense diversity of insects and the paucity of insect systematists, specimens can lie in institutional collections for generations before they are validly described. That Philip Darlington did not recognize *Trephisa barrymoorei* as being generically distinct from previously described moriormorphine taxa is attested to by his placing a hand-written label '*Phersita* #2' on the specimen presently designated as the holotype of this newly described species: *Phersita* being Sloane's (1903) unjustified replacement name for the previously described *Teraphis* Castelnau (Moore *et al.* 1987). Barry Moore visited the Museum of Comparative Zoology on 10 October 1961, recording the purpose of his visit in the MCZ guest book as 'to look at Carabidae (C.W. Farnum pers. comm.)'. He would have consulted with Prof. Darlington at that time, with Darlington allowing him to take on loan four specimens of the 'new genus of small-eyed Pterostichini (Darlington field diary, May 1957)' from Binna Burra, which Moore (1963) subsequently described as *Trephisa parallela*. Casting his eye over Darlington's '*Phersita* #2' during his museum visit did not result in Moore taking those specimens on loan, perhaps because he agreed that those specimens represented only another species of *Teraphis*? The characters differentiating *Teraphis* from the genus Moore described two years later are subtle, often involving difficult to examine characters of the mouthparts and underbody: just the sort of characters to miss during a brief museum visit to the very large Darlington collection of Australian Carabidae. Yet by borrowing, studying and subsequently describing the four specimens as *Trephisa parallela*, Moore established criteria by which any appropriate species could be assigned to the genus. Additional information provided by the new species described above enhances support both for the monophyly of *Trephisa* Moore and for the sister-group relationship between the genera *Trephisa* and *Teraphis*.

Acknowledgements

I thank C.W. Farnum for searching the MCZ guest book to document Barry Moore's 1961 visit with Prof. Darlington and D.R. Maddison for providing access to the Springbrook Plateau specimens of *T. parallela*. Special thanks go to Geoff Monteith for providing information from Darlington's collecting diary, his own collections of *Trephisa parallela* and for developing Figure 8 that presents the geographical context for the various collecting localities. Timely and constructive reviews were provided by N.A. Guthrie and K.W. Will.

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