

Studies on African zygaenoid moths (Lepidoptera: Zygaenoidea) The genus *Psycharium* Herrich-Schäffer, with descriptions of four new species (Somabrachyidae)

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The genus *Psycharium* is revised for the first time. Until now, only a drawing of the female type species was known. The male and female of the type species, *P. pellucens* Herrich-Schäffer, and four new species, *montanum*, *kammanassiense*, *barnardi* and *natalense*, are comprehensively described. A key to the species of *Psycharium*, based on males and females (except for *P. natalense* where only males are known), is given. Descriptions of taxa include drawings of their genitalia.

African flannel moths (Somabrachyidae) consist of two genera with a highly interesting disjunct distribution. *Somabrachys* Kirby is found along the broad coastal strip from Morocco to Syria and in southern Spain, and *Psycharium* Herrich-Schäffer in the southwestern and eastern Cape and central Kwazulu-Natal. *Somabrachys* is better known taxonomically, the number of constituent species ranging from one to about 30, depending upon the taxonomic treatment or opinion of authors (Aurivillius 1894; Oberthür 1908, 1911, 1922; Seitz 1912; Jordan 1916; Hopp 1927; Hering 1933; Freina & Witt 1990). The monotypic *Psycharium* was only named and depicted by Herrich-Schäffer [1856] (Figure 1), but he never formally described nor assigned it to a family.

Since the mid-eighties extensive field work, including searches, breeding from field-collected material and light-trapping of these moths has been carried out in the Western Cape Province, South Africa. Larvae are frequently encountered, especially on the exotic conifer *Pinus radiata* D. Don. (Pinaceae), but rearing of larvae is, mainly due to high levels of parasitism, difficult and hardly rewarding. By these efforts, however, much material including large numbers of males, almost absent in institutional holdings, has been obtained. Material held by the National Collection of Insects, Pretoria, the Transvaal Museum, Pretoria and the South African Museum, Cape Town, was also included in this study. This has resulted in the discovery of several new taxa, including new species of *Psycharium*.

This article is part of a series dealing with Somabrachyidae. An introduction to the family, with comments on their relationship and main features, and a description of the adult morphology of *Psycharium* have been accepted for publication (Geertsema, in press a, b). Here the genus *Psycharium*, including descriptions of the type species, *P. pellucens* Herrich-Schäffer, and four new species (*P. montanum*, *P. kammanassiense*, *P. barnardi* and *P. natalense*), is dealt with. A key to the species is also given. Descriptions of related new taxa and descriptions of the larvae of some *Psycharium* species will follow later. The present study is taxonomic in nature.

Adults used in this study were mostly reared from field-collected larvae or from eggs. Genitalia were removed, kept in 10% KOH for 24 hours, cleaned, lightly stained with Chlorazol Black E, and dissected in glycerine. After drawing features of the genitalia, they were mounted in Canada Balsam

on slides (indicated as GP in the text) or stored in glycerine-filled microvials (indicated as Glyc).

Limited intraspecific variation in the structure of male genitalia of *Psycharium* is apparent, for example in *P. pellucens* (Figures 15–22) and *P. kammanassiense* (Figures 23–29), where the structure of the uncus, especially its tip, and shape of the valvae varies between some individuals. Female genitalia are weakly developed. The anterior lateral edges of abdominal segments 9+10 are extended into a pair of posterior apophyses, indicated as lateral arms in the illustrations. The lateral arms are small in *P. pellucens*, but well developed in the other species. The anterior apophyses are not well developed and present at most as ventro-lateral extensions of the anterior edge of the eighth abdominal segment.

In allocating type material, the following abbreviations apply: TM, Transvaal Museum, Pretoria; NCI, National Collection of Insects, Plant Protection Research Institute, Pretoria; SAM, South African Museum, Cape Town; BMNH, Natural History Museum, London, UK; USNM, National Museum of Natural History, Smithsonian Institution, Washington, DC, USA; AKM, Alexander Koenig Museum, Bonn, Germany; NNM, Nationaal Natuurhistorisch Museum, Leiden, the Netherlands; MNHN, Muséum national d'Histoire naturelle, Paris, France; KMMA, Koninklijk Museum voor Midden-Afrika, Tervuren, Belgium; and USEC, University of Stellenbosch Entomology Collection.

Psycharium Herrich-Schäffer [1856]

Psycharium Herrich-Schäffer [1856] 1850–1858: wrapper, pl. 80, fig. 461; Herrich-Schäffer [1858] 1850–1858: 76; Kirby 1892: 498; Aurivillius 1894: 189; Hampson 1900: 63; Hampson 1901: 451, no. 2045, fig. 190; Dyar & Strand 1913: 22; Janse 1917: 135; Jordan 1928: 136; Hopp 1927: 211; Hopp 1928: 445, fig. 76d (not 79d); Bryk 1936: 112; Alberti 1954: 152, 201; Tremewan, 1973: 139; Fletcher & Nye 1982: 138; Vári & Kroon 1986: 140, 164; Scoble 1992: 267; Miller 1994: 408; Epstein 1996: 85; Epstein, Geertsema, Naumann & Tarmann (in press); Geertsema (in press a,b).

Type species: *Psycharium pellucens* Herrich-Schäffer, [1856] 1850–1858: wrapper, pl. 80, fig. 461; [1858]: 76, by monotypy. 'Afr.?' [South Africa].

Psycharium differs, amongst other characters, from *Somabrachys* in the following: in male *Psycharium* Rs₁₊₂ of the

forewings and Sc+R₁ of the hindwings terminate before or close to, in *Somabrachys* Rs₂ and Sc+R₁ beyond, the wing apex; females of *Psycharium* are all winged, those of *Somabrachys* apterous.

Description

Male (Figures 2, 11, 12, 15–22). See also species description of *P. pellucens*. Forewings (Figures 11, 12) rather elongate, 2.5 times longer than broad, costa almost straight, slightly incurved, apex rounded, termen oblique merging into broadly rounded tornus, inner margin produced; cell slightly more than half length of wing with upper angle strongly produced, closed, veinlet M dividing cell, lower discocellular angled obliquely; R₁, merging with Sc, from near upper angle of cell, Rs₁₊₂ and Rs₃ stalked for about one-fourth of Rs₁₊₂, Rs₄ from upper angle of cell, M₁ between Rs₄ and distal part of veinlet in cell; discocellular below veinlet obliquely outward, M₂ and M₃ separate from lower cell angle, CuA₂ from about three-fourths of lower median, CuA₁ as far from CuA₂ as from M₃, 1A weak but present, 2A distinct. Hindwings pear-shaped, broadly rounded at apex, termen and tornus, inner margin more produced, costal margin almost straight; frenulum consisting of six unfused bristles, cell closed with veinlet slightly sclerotized but distinct near discocellulars; upper cell angle almost right-angled, upper and lower discocellulars almost continuous and slightly curved inward; Sc+R₁ and Rs from upper cell angle, M₁ slightly nearer to Rs than M₂ and slightly above veinlet, M₂ near lower angle, M₃ from lower angle, CuA₂ from three-fourths of lower median, CuA₁ nearer to M₃ than to CuA₂, CuP weak; A well developed.

Female (Figures 1, 3, 13, 40–42). See also species description of *P. pellucens*. Wings (Figure 13). Forewings elongate with straight costa, apex rounded, termen oblique, merging into broadly rounded tornus, inner margin not as strongly produced as in male; cell closed, slightly more than half of wing length with upper angle slightly produced, veinlet M dividing cell; lower discocellular angled obliquely; R₁ from upper angle of cell, Rs₁₊₂ and Rs₃ stalked for slightly less than one-fourth of Rs₁₊₂, Rs₄ from upper angle of cell, base of M₁ closer to distal part of cell veinlet than to base of Rs₄, discocellular below veinlet obliquely outward, M₂ and M₃ separate

from lower cell angle, CuA₂ from three-fourths of lower median, CuA₁ closer to CuA₂ than to M₃, CuP weak, 1A and 2A distinct. Hindwings with broadly elongate apex, tornus and inner margin evenly rounded, costal margin slightly rounded, frenulum consisting of six bristles, cell closed with veinlet distally distinct, upper cell angle almost right-angled, upper and lower discocellulars almost continuous and almost straight; Sc+ R₁ slightly before and Rs from upper angle of cell, M₁ closer to M₂ than Rs and slightly anterior to veinlet, M₂ near lower angle, M₃ from just before lower angle of cell, CuA₂ from about three-fourths of lower median, CuA₁ nearer to M₃ than to CuA₂, CuP distinct, A well developed.

Comments

Psycharium Herrich-Schäffer [1856] was established on the basis of a female (Figure 1) and its locality was indicated as probably Africa, confirmed in [1858]. The type, presumed to be in the Stuttgart Museum where the greater part of Herrich-Schäffer's material is kept, is apparently lost.

The familial assignment of *Psycharium* has been fairly subjective and often unsubstantiated. Herrich-Schäffer [1856] did not assign the genus to a family. Subsequently, it has been placed in various families, including Lymantriidae (Kirby 1892), Megalopygidae (Aurivillius 1894; Seitz 1912; Dyar & Strand 1913; Janse 1917; Hopp 1927; Fletcher & Nye 1982; Vári & Kroon 1986; Scoble 1992), Zygaenidae (Phaudinae/Anomoeotinae) (Jordan 1928; Hopp 1928; Bryk 1936; Alberti 1954), Arctiidae (Hampson 1900, 1901) and Somabrachyidae (Tremewan 1973; Miller 1994; Epstein 1996; Epstein, Geertsema, Naumann & Tarmann (in press) and Geertsema (in press a,b).

Biology

The genus *Psycharium* is confined in the Western Cape Province to the Fynbos biome, larvae feeding on species of Restionaceae (*Willdenowia striata*, *Ischyrolepis triflora*, *Restio triticeus*, *Calopsis hyalina*, *Mastersiella digitata*), Cyperaceae (*Ficinia indica*, *Tetraria fasciata*), Ericaceae (*Erica* sp.), Bruniaceae (*Berzelia* sp.) and in places where fynbos vegetation has been replaced by the exotic *P. radiata*, that species. Members of *Psycharium* are also known from isolated locality records from the Eastern Cape Province and Kwazulu-Natal; their distribution and of the species discussed here is given in Figure 51.

Eggs are laid in large clusters which are covered with urticating setae shed off the female's abdomen while ovipositing. Freshly hatched larvae undergo a moult before dispersal, often aided by ballooning, and commence feeding. Larvae are armed with urticating setae and when fully grown, spin cocoons on the ground. Larvae remain quiescent in the cocoons for some months, pupation taking place a few weeks before moth emergence. Male moths especially are very active but both sexes are short-lived. A definite seasonal cycle of stages is not apparent and larvae are present throughout the year with highest numbers during the winter months.

Key to the species of *Psycharium* (adults)

Males:

1. Overall wing colour brownish to brownish-black, with or without white spots.....2

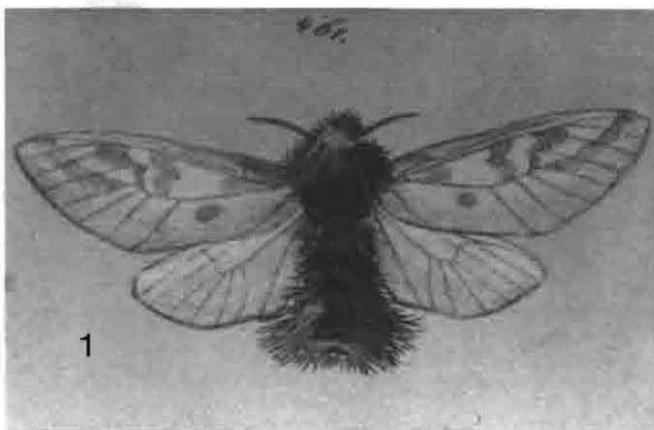
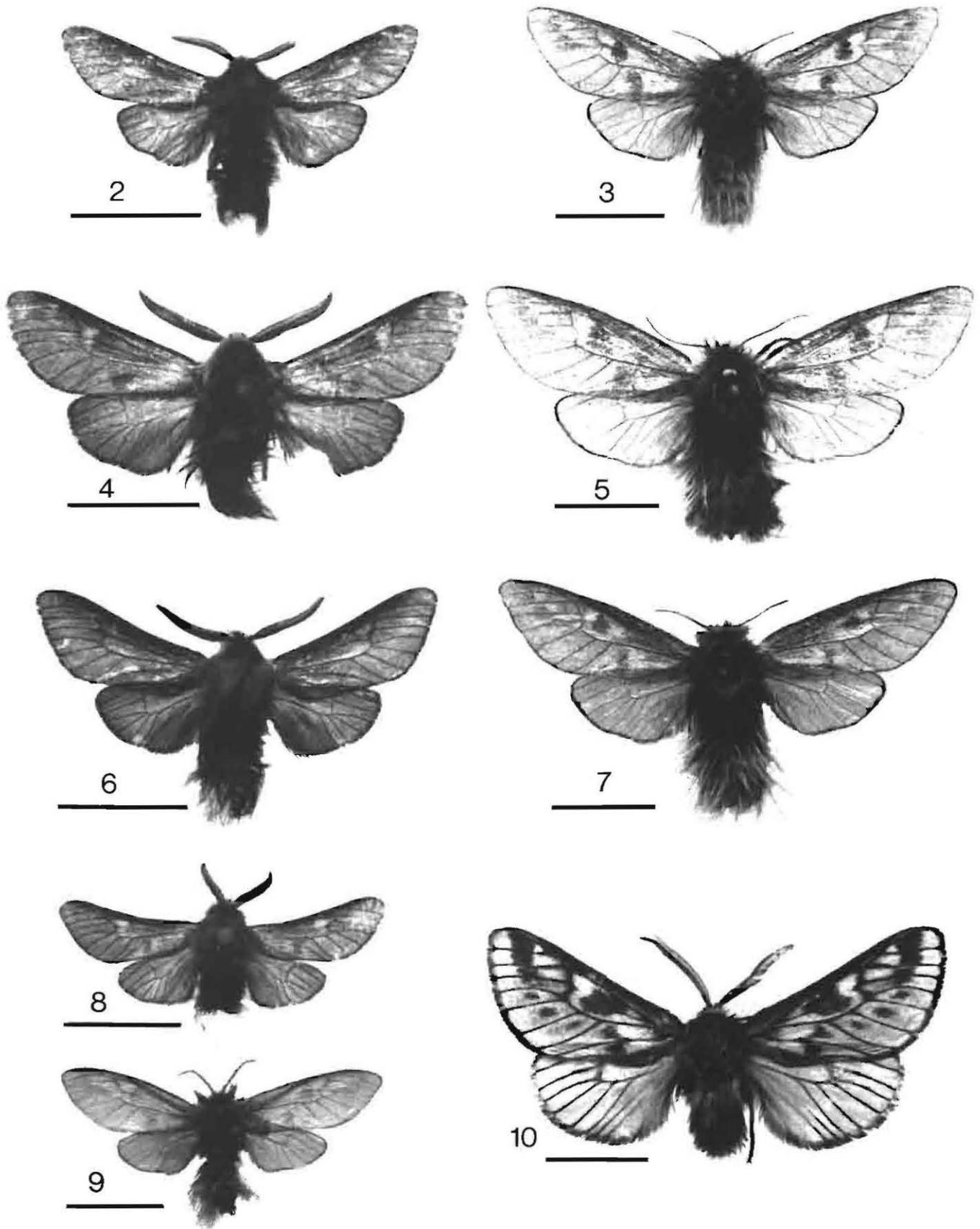


Figure 1 *Psycharium pellucens* Herrich-Schäffer [1856] 1850–1858, *Samml. neuer oder wenig bekannter aussereur. Schmett.* 1(1): wrapper, pl. 80. fig. 461.



Figures 2–10 Adult moths. 2. *Psycharium pellucens* Herrich-Schäffer, male, neotype (TM). 3. *P. pellucens* Herrich-Schäffer, female. 4. *P. montanum* sp. nov., male, paratype (TM). 5. *P. montanum* sp. nov., female. 6. *P. kammanassiense* sp. nov., male, holotype (TM). 7. *P. kammanassiense* sp. nov., female, paratype (TM). 8. *P. barnardi* sp. nov., male holotype (TM). 9. *P. barnardi* sp. nov., female, paratype (SAM). 10. *P. natalense* sp. nov., male, holotype (TM). Scale lines = 10 mm.

Overall wing colour white with brownish markings (showing resemblance to the female wing pattern)

- *P. natalense* sp. nov.
- 2. Antennae and prothoracic collar dark brown to black, frontal and labral pile of similar colour; antennae with 50 or less flagellomeres..... *P. pellucens* Herrich-Schäffer. Antennae and prothoracic collar light brown to brown; frontal and labral pile contrasting in colour; antennae usually with 50 to 60 flagellomeres 3
- 3. Black and white piliform scales of similar width on forewings; antennae about one-third length of forewings; upper angle of cell strongly acute *P. barnardi* sp. nov. White piliform scales broader than black scales on forewings; antennae about one-half length of forewings; upper angle of cell less acute..... 4
- 4. Forewings with distinct distal cellular spot; inner margin of forewings arching gradually near and towards base of wing..... *P. montanum* sp. nov. Forewings without distinct distal cellular spot; inner margin of forewings arching abruptly near and towards base of wing *P. kammanassiense* sp. nov.

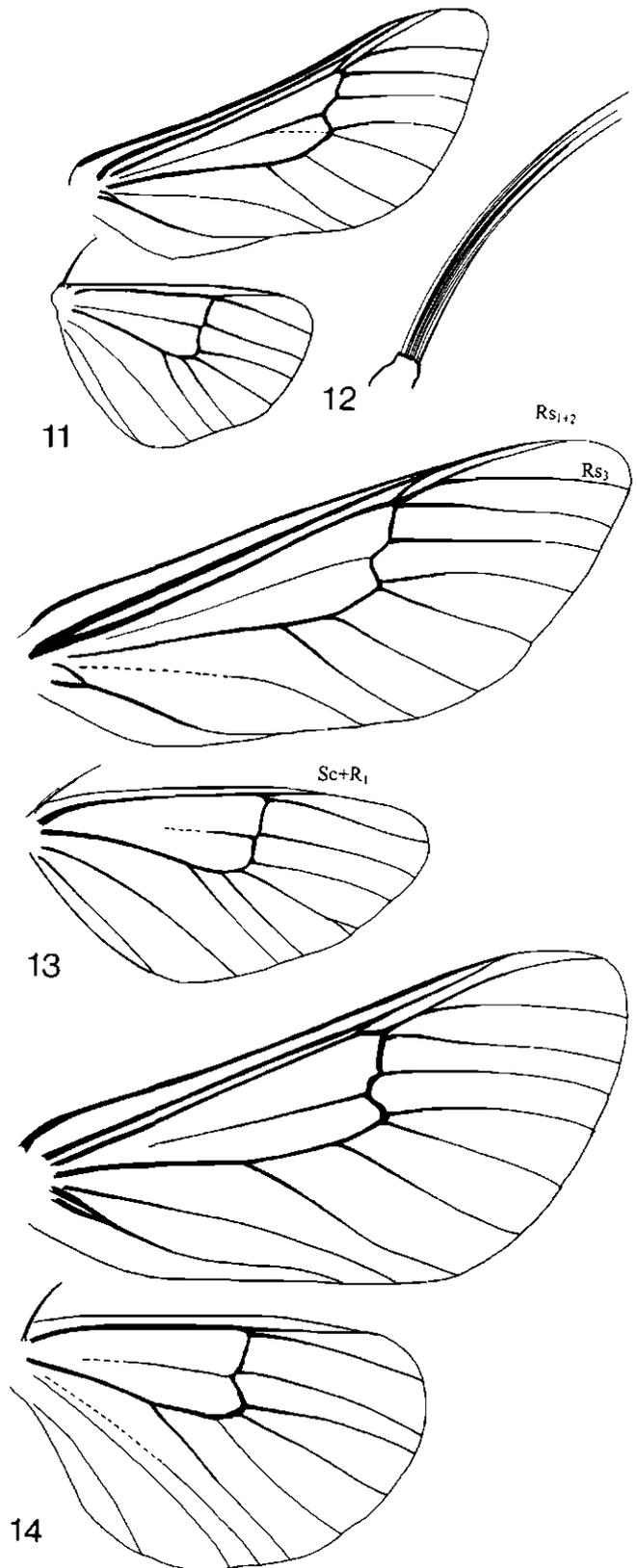
Females:

- 1. Upper angle of cell strongly acute, distal anterior cell margin close to costal margin; forewings narrow, apex pointed and tornus indistinct; middiscocellulars strongly produced towards M in cell..... *P. barnardi* sp. nov. Upper angle of cell acute, distal cell margin not close to costal margin; forewings broader, apex rounder and tornus clearly discernable; middiscocellulars not strongly produced towards M in cell 2
- 2. Distal cellular spot in forewings single; basal costal region uniformly black..... *P. pellucens* Herrich-Schäffer Distal cellular spot in forewings double, anteriorly and posteriorly of M; basal costal region with anteriorly whitish and posteriorly blackish suffusion..... 3
- 3. Frons between eyes converging towards labral region; distal cellular spot in forewings suffused; spot posterior to cell as large as cellular spot, suffused and extending between cell and inner margin of wing; upper and lower discocellulars forming about right angle towards wing base, lower discocellulars directed towards midcostal region *P. montanum* sp. nov. Frons between eyes parallel towards labral region; distal cellular spot in forewings distinct; in cell posterior spot larger than anterior spot; spots posterior to cell different in shape, almost separate, anterior spot larger; upper and lower discocellulars almost in straight line, lower discocellular slanted towards base of wing *P. kammanassiense* sp. nov.

Note: *Psycharium* females resemble each other to such an extent that it is not always possible to separate them with certainty; this is aggravated when females have lost their scaling. Association with males or even localities can provide clues to their identity; the most reliable means to associate males and females of the same species is by rearing groups of larvae from the same host.

***Psycharium pellucens* Herrich-Schäffer [1856]**

(Figures 1-3, 11-13, 15-22, 40-42, 51)



Figures 11-14 Wing venation. 11. *Psycharium pellucens*, male. 12. *P. pellucens*, male, frenulum. 13. *P. pellucens*, female. 14. *P. natalense*, male.

Psycharium pellucens Herrich-Schäffer, [1856]: 83. Holotype female, ? Africa [SOUTH AFRICA]. Type apparently lost.

Psycharium pellucens Herrich-Schäffer; Kirby 1892: 498; Aurivillius 1894: 189; Hampson 1900: 63; Hampson 1901: 451, fig. 190 (female); Dyar & Strand 1913: 22; Janse 1917: 135; Hopp 1928: 445, fig. 76d (not 79d); Jordan 1928: 135; Tremewan 1973: 139; Alberti 1954: 201; Fletcher & Nye 1982: 138; Vári & Kroon 1986: 66, 164.

Type locality and type species

When Herrich-Schäffer [1856] named and depicted a female *P. pellucens* (plate 80, fig. 461) (Figure 1) its locality was given as Afr.? Subsequently [1858] he stated that he did not have this specimen ('Für jetzt weiss ich in Ermangelung der natürlichen Exemplare nicht einzureihen') but that it did come from Africa ('Wohl aus Afrika'). This specimen could not be located in the Stuttgart Collection (Dr W. Schawaller *in litt.*). The antenna: (fore)wing ratio of the female of *P. pellucens* depicted by Herrich-Schäffer is estimated as 0.24. Ratios from randomly selected females of available study material yielded values of 0.31 (n=10) for specimens from the Cape Peninsula, 0.34 (n=10) for *P. montanum*, and 0.39 (n=4) for *P. kammanassense*. Allowing for artistic liberty or that part of the antennae were damaged, material from the Cape Peninsula or of *P. montanum* could be similar to the specimen depicted. However, the drawing (Figure 1) shows a distinct dark spot posterior to the forewing cell, distances between M_3 and CuA_1 and CuA_1 and CuA_2 in both wings equidistant, and the proximal quarter of the forewing cell blackish, agreeing with that present in Cape Peninsula females, those of *P. montanum* differing in wing markings and venational detail. I have therefore no doubt that the female figured by Herrich-Schäffer is identical to females from the Cape Peninsula. Accordingly, a male associated with females from Cape Town is here designated as neotype. *Heteromorpha costipunctata* (Eupterotidae) was also named and depicted by Herrich-Schäffer in the same work ([1856] (plate 66, fig. 375) with the type-locality Cape [of Good Hope] (Fletcher & Nye 1982). It is most likely that the female of *P. pellucens* formed part of a collection from this locality and the type-locality for it thus considered the Cape Peninsula (Western Cape Province, South Africa).

Material examined

Neotype, male: SOUTH AFRICA: WESTERN CAPE PROVINCE: Cape Town, Cecilia Forest Reserve [33.58S 18.28E], 27.xi.1980, H. Geertsema (TM).

Other material: 42 males, Cape Town, Claremont, [33.58S 18.28E], 2.5.(18)80, H.W. Oakley (TM), same locality, 6.5.(18)80, H.W. Oakley (4)(2-TM)(2-SAM); same locality as neotype, with dates: 5.xi.1979 (GP 040); 1980: 12.x., 3.xi.(5), 4.xi.(2), 10.xi., 27.x., 27.x.(GP 001), 3.xi.(GP 004), 12.xi., 18.xi.(3), 21.xi., 25.xi., 27.xi.(Figure 2), 24.xi., 1.xii.(GP 003), 2.xii., 4.xii., 5.xii., 6.xii., 15.xii.(GP 002), 18.xii.(GP 014), 18.xii., 20.xii.; 23.xi. 1984; 1985: 15.xi., 21.xi.; 1992: 3.xi., 14.xi.(2), 15.xi.; 52 females, Cape Town, Claremont, 6.5.(18)80, H.W. Oakley (4)(2-TM)(2-SAM), Kalk Bay, 1.(19)05, Lightfoot (SAM); Muizenberg Mtns, 12.5.(19)38, G.C. Dickson (3)(TM); same locality as neotype, with dates: 1978: 6.xii., 28.xi.(2), 1.xii.; 1980: 20.x.(2), 22.x., 23.x.(Glyc 003), 23.x.(G 010), 27.x.(GP 009), 30.x.(GP 008), 31.x.(2), 7.xi., 10.xi., 17.xi., 18.xi., 21.xi., 24.xi.(Figure

3), 29.xi., 1.xii.(3), 2.xii., 5.xii., 10.xii.(GP 006), 10.xii.(GP 007); 12.xi. 1981; 1985: 26.x., 16.xi., 24.xi.(Glyc 002), 4.xii.; 1987: 17.xii., 13.xii., 30.xii.; 22-25.xi.1991 (3); 1992: 24.x., 25.x., 3.xi., 8.xi., 23.xi., 28.xi.; all Cecilia material collected and bred on *P. radiata*, H. Geertsema. Material to be distributed to TM, NIC, SAM, BMNH, USNM, NNM, AKM, MNHN, KMMA and USEC.

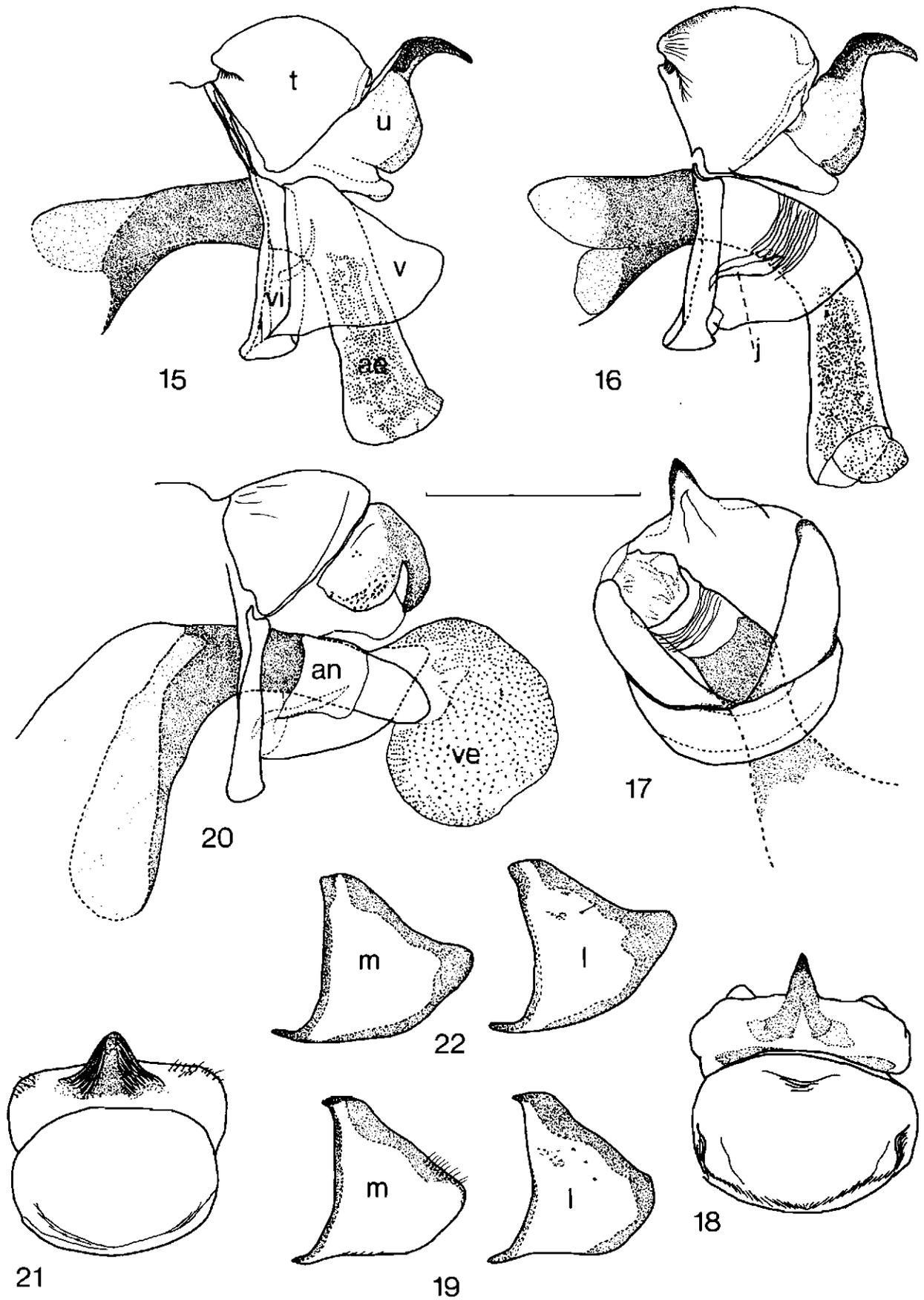
Diagnosis

Antennae of males blackish-brown to black, flagellum with up to 50 flagellomeres. Vertex with blackish setae, without distinct pronotal collar. Wings with short black piliform scales, overall wing colour brownish-black without pattern. Antennae of female filiform, blackish-brown, with 44 to 50 flagellomeres. Wings of females sparsely clad with short, black piliform setae, about half as long as the other white piliform setae; scales brownish-black along costal margin. Distal cellular spot single, ranging over middle of cell.

Description

Male (Figures 2, 11–12, 15–22). Wingspan 26–33 mm; antenna: wing ratio 0.33–0.46. Antennae bipectinate, light brown to blackish-brown, scapus bulbous, pedicellus about twice length of scapus, broad whitish scales distally on first two segments, first flagellomere longest, flagellomere tapering gradually distally and consisting of 45–50 flagellomeres; flagellomeres variable in shape. Epicranial region with white piliform scales, base of antennae surrounded by some white scales. Dorsally on antennal shaft small, pointed, scale-like setae; frontal tuft with ochrous-white piliform setae; clypeal tuft brownish-black, extending laterally of frontal tuft. Epicranial area bare with chaetosemata indistinct on lateral margin. Lateral of vertex, posterior to eyes short, curved, black bristly setae appressed and extending ventrad. Antennal sockets touching dorsal eye margins. Thorax and abdomen clothed with brownish-black to black pile; abdominal segments dorsally with long whitish setae on posterior margin of segments and cupreous short spiny setae densely packed on anterior and middle parts of segments. Pile on terminal abdominal segments long and wavy. Legs covered with blackish-brown setae, prosternal region covered with brownish-black pile, remainder of ventral body clothed with white to ochrous-white setal pile. Tegulae clothed with dark brown setae, pronotal antero-lateral margin of pronotal collar with ochrous-white setae. Wings overall brownish-black, outer wing margins with brownish-black scales. Wing scales of two distinct types: piliform black scales and narrow elongated scales, usually white; scales sparsely covering entire wing surface; white scales absent on hindwings. Forewings with white patch in radial angle of cell and small white subterminal patches present: anterior patch posterior to costal margin, indicated by a few white scales, a small patch anterior to Rs_3 and a slightly larger patch anterior to Rs_4 . Posterior to cell two medial patches of white scales, laterad to each other.

Male genitalia (Figures 15–22). Tegumen convex, lateral margins arched dorso-posteriorly from one-third of anterior margin; well-sclerotized. Uncus terminating in downcurved sclerotized point, medial projection of uncus lightly sclerotized, lateral margins moderately sclerotized; ventro-posterior margin of uncus rounded. Subscaphium present as narrow



Figures 15–22 *Psycharium pellucens*, male genitalia. 15. Lateral view. 16. Lateral view. 17. Ventral view. 18. Dorsal view, tegumen and uncus. 19. Lateral and mesal aspect of left valva. 20. Lateral view, vesica extended. 21. Dorsal view, tegumen and uncus. 22. lateral and mesal view of left valva. Abbreviations: t = tegumen, u = uncus, vi = vinculum, v = valva, ae = aedeagus, j = juxta, an = annellus, ve = vesica, m = mesal, l = lateral. Figures 15, 17–19 preparation GP 001, figure 16 preparation GP 002, figures 20–22 preparation GP 014. Scale line = 1 mm.

medial strip, ventrad of anal tube. Vinculum with narrow anterior margin, well sclerotized, of even width but wider and more robust ventrally. Anellus indistinct. Juxta enfolding lower half of aedeagal shaft, elongate triangular, basal part terminating abruptly in downcurved apex, keel lightly sclerotized. Valvae weakly sclerotized except along distal margins where moderately sclerotized; dorsal margins concave, ventral margins straight for two-thirds its length, then slightly arched dorso-posteriorly forming an obtuse angle and then terminating in blunt apex. Aedeagus strongly arched in anterior third, narrower in middle and gradually widening towards terminal part; vesica with regular spaced sclerotized specks. In some specimens tegumen with constricted anterior margin. Genitalia preparations GP 001, GP 002 and GP 014.

Female (Figures 3, 13, 40–42). Wingspan 36–46 mm; antenna: wing ratio 0.28–0.33. Vertex with black setae, base of antennae with white setae. Posterior to eye margin short brown appressed bristly setae. Antennae filiform, blackish-brown, shaft covered with piliform, white scales; flagellum with 44–50 flagellomeres. Antennal bases touching upper margin of eye. Chaetosemata as for male. Prosternum with brownish-white setae, lateral to prosternum and rest of body ventrally covered with white setae. Body dorsally clothed with long, white wavy piliform setae; cupreous setae on anterior and middle regions of abdominal segments. Wings sparsely clad with short, black piliform scales, wing margins bearing short ochrous and brownish-black scales. Costa of forewings suffused with white piliform scales along entire margin, petering out towards apex. White scales in cell of forewings forming a midcellular and a distal cellular spot, ranging over width of cell; blackish setae forming two separate black spots in midcellular region. White oval subterminal spots present as oblique series anterior to fork of Rs_3 and Rs_4 , posterior to fork and a smaller patch slightly mesad between Rs_4 and M_1 . Dense patch of white scales distad of lower discocellulars between M_2 and M_3 ; series of terminal white diffuse spots present in an oblique band from Rs_4 towards and posterior of lower angle of cell, forming a broad streak of white suffusion along distal and hindwing margins. Posterior to cell margin broad, black region present between white patch and spot between M_2 and M_1 . Hindwings uniform, brownish-black with black piliform scales only.

Female genitalia (Figures 40–42). Anal lobes oblong to broad, weakly sclerotized laterally and dorsally, dorsal part extending anteriorly. Lobes covered with short bristly setae; posterior apophyses moderately sclerotized with L-shaped lateral arms extending anteriorly and ventrally, ventral part almost twice as broad as lateral part, terminating in a broad lobe. Eighth segment broad and moderately sclerotized, of even width, without anterior apophyses and with short setae. Ostium prominent and wide; anterior plate weakly and central part hardly sclerotized, globular with latero-posterior lateral extensions, enclosing anterior part of atrium; posterior plate weakly sclerotized with mesal posterior rounded indentation towards ostium, lateral parts triangular with rounded corners, distinctly sclerotized laterally but less so medially. Bursa large but membranous, elongated oval; ductus weakly sclerotized. Genitalia preparation Glyc 002.

Psycharium montanum sp. nov.

(Figures 4–5, 43–45, 51, male in Geertsema, in press b)

Material examined

Holotype, male, SOUTH AFRICA: WESTERN CAPE PROVINCE: Stellenbosch, Jonkershoek Forest Reserve [33.58S 18.55E], 29.xi.1981, H. Geertsema (TM).

Paratypes: same locality as holotype, 62 males, 1980: 7.xi., 3.xii. (GP 020)(TM); 14.xi.1981; 1988: 16.v., 10.ix., 19.ix.(2), 23.ix., 26.ix. (3), 1.x., 10.x., 15.x., 26.x., 29.x., 1.xi., 2.xi., 7.xi., 15.xi., 19.xi.(2), 20.xi. (3), 24.xi., 26.xi., 8.xii., 14.xii., 18.xii., 21.xii.; 1990: 21.vi., 24.ix.; 1991: 17.vi., 21.vii., 26.vii., 29.vii., 5.viii., 6.viii., 7.viii., 13.viii. (2), 16.viii., 17.viii. (2), 20.viii., 22.viii., 26.viii., 31.viii., 5.ix. (2), 26.ix.; 1992: 20.ix., 24.ix., 29.ix., 2.x., 3.x. (5), 4.x.; 1994: 9.vi., 15.vii.; 66 females, 19.xi.1967 (TM); 1980: 26.xi. (Glyc 004), 10.xi., 25.xi.; 1981: 24.xi., 28.xi.; 6.x.1984; 14.xii.1987; 1988: 14.vii., 28.viii., 2.ix., 19.ix., 26.ix. (2), 10.x. (2), 15.x., 20.x. (4), 23.x. (5), 30.x. (2), 1.xi. (3), 6.xi. (3), 16.xi., 18.xi., 20.xi. (5), 21.xi. (3), 22.xi.; 1989: 27.v. (2), 28.viii.; 1991: 17.vi., 30.vii., 4.viii., 14.viii., 23.ix., 26.ix. (5); 1992: 4.x., 7.x., 8.x., 16.x. (2), 18.x., 30.x., 10.xi. All collected and bred on *P. radiata*, H. Geertsema. Paratypes distributed to TM, NIC, SAM, BMNH, USNM, NNM, AKM, MNHN, KMMA and USEC.

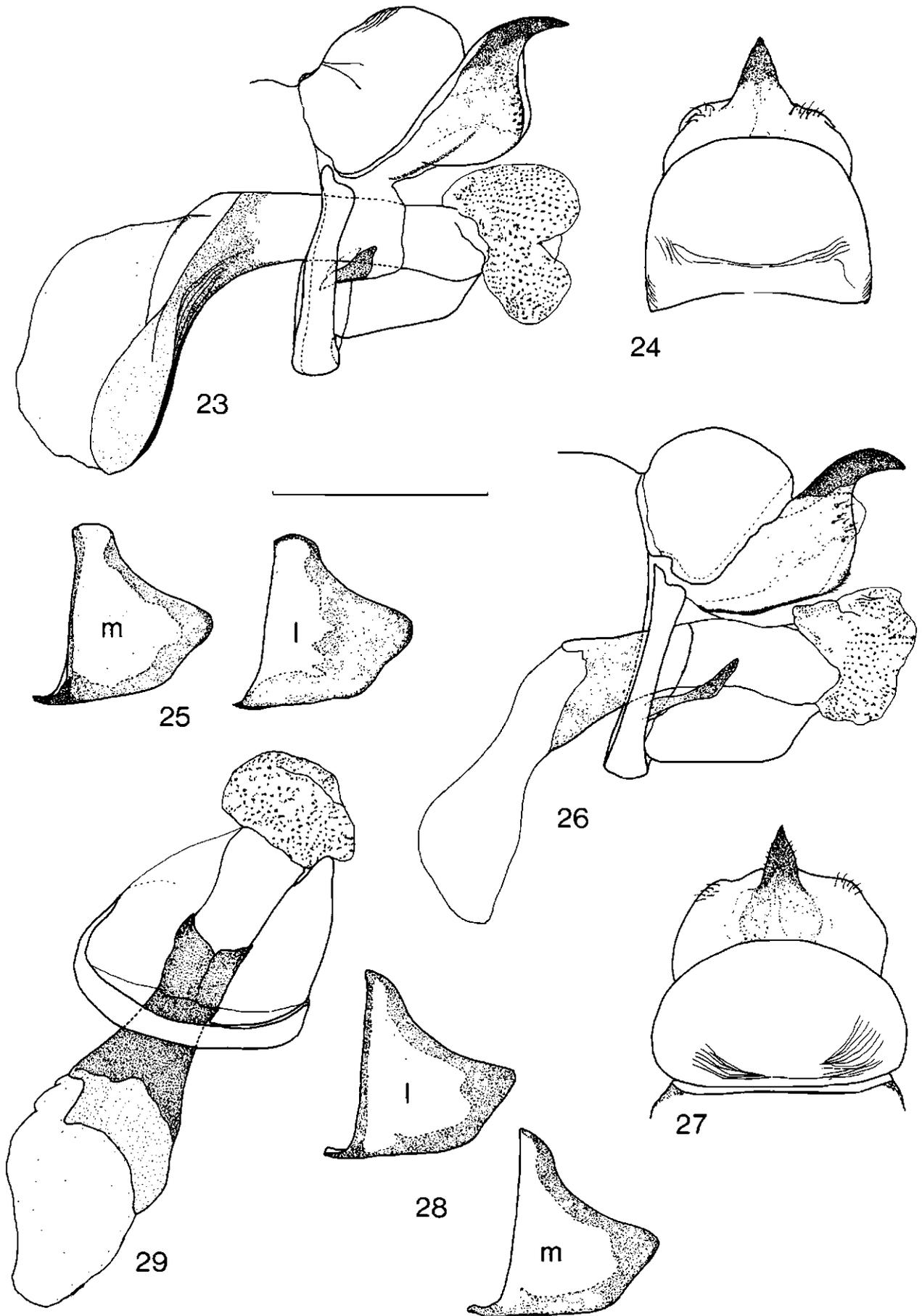
Other material, same details, with dates: 16 males, 1988: 18.x., 9.xi., 10.xi., 20.xi., 21.xi. (2), 28.xi. (2), 4.xii., 31.xii.; 1991: 30.vii., 12.viii., 14.viii., 26.viii., 10.xi.; 3.xi.1992; 9 females; 1988: 26.ix., 19.xi., 20.xi.; 30.vii.1991; 1992: 9.x., 22.x., 30.x., 9.xi.; 13.vii.1994.

Diagnosis

Male antennae light to dark brown, with more than 50 flagellomeres. Setae between antennal bases ochrous-white, frontal region with ochrous-brown setae medially, extending laterally and contrasting with black labral vestiture. Wings broad, forewings with distal cellular spot. Collar ochrous-brown, abdomen with dark brown pile, especially on posterior part of segments. In females subterminal series of oblique spots better defined than in *P. pellucens*; midcellular and distal cellular spots well developed. On anal margin of wings three distinct even-shaped large white spots towards CuA_1 .

Description

Male (Figure 4). Wingspan holotype 32 mm; paratypes 34–35 mm; antenna: wing ratio 0.33–0.48. Antennae bipectinate, dark-brown, first two segments with white piliform scales; 51 to 60 flagellomeres. Vertex with ochrous-brown pile, setae between antennae and on antennal bases ochrous-white. Frontal region with ochrous-brown setae medially, but with black setae along lateral margin, adjoining eyes and present on labrum, forming strong contrast. Postocular setae ochrous-brown. Chaetosemata as for *P. pellucens*. Ochrous-brown collar distinct; thorax dorsally covered with dense ochrous-brown pile. Abdomen dorsally covered with darker brown setae, especially posteriorly. Prosternal region with blackish-brown setae; other parts ventrally covered with ochrous-brown vestiture. Legs dark brown. Wings overall blackish-brown. Forewing costal margins black; terminal blackish



Figures 23–29 *Psycharium kammanassiense* sp. nov.. male genitalia. **23.** Lateral view, vesica extended. **24.** Dorsal view, tegumen and uncus. **25.** Lateral and mesal view of left valva. **26.** Lateral view, vesica extended. **27.** Dorsal view, tegumen and uncus. **28.** Lateral and mesal view of left valva. **29.** Ventral view of aedeagus and juxta. Figures 23–25 preparation GP 012, figures 26–29 preparation GP 011. Scale line = 1 mm.

scales present on wing margins. Whitish midcellular spot and distal spot in cell. Subterminal spots present as oblique series from junction of Rs_{1+2} towards region distad of cell between M_1 and CuA_2 , spot between Rs_3 and Rs_4 largest, on base of M_1 and CuA_2 smallest. On posterior margins three distinct evenly spaced large white spots between base of wing and CuA_1 . Hindwing uniform brownish-black, without markings.

Male genitalia have been depicted and described by Geertsema (in press b). Tegumen large with dorsal gibbositities, postero-medial margin overlying part of base of projection of uncus; tegumen sometimes with anterior ridge. Medial projection of uncus terminating in sharp, down-curved point; base of projection merging laterally into uncus; ventro-posterior margins weakly sclerotized with about 10–12 setae on lateral aspect. Subscaphium weakly sclerotized. Anterior margin of vinculum well sclerotized, widening towards base; dorsal and lateral parts broadening slightly towards base, ventral part arching slightly anteriorly. Anellus membranous. Juxta taking the shape of a bilobed plate, posterior emargination rounded, anteriorly diverging and apex arched slightly ventrad. Valvae with anterior margins almost straight, dorsal margins in middle strongly concave, ventral margins convex terminating in bluntly-rounded apex; dorsal and ventral margins well sclerotized. On inner dorsal side of valvae 5–6 setae on slightly raised bases. Anterior part of aedeagus opening into membranous structure, extended ventrally forming almost right-angle to middle section. Posterior third of aedeagus slightly curved ventrad, vesica with armature consisting of regularly spaced sclerotized specks. Genitalia preparation GP 020.

Female (Figures 5, 43–45). Wingspan paratypes 34–47 mm; antenna: wing ratio 0.34–0.51. Description as for female of *P. pellucens*, but subterminal series of oblique white streaks more clearly defined, black spots in midcellular region, arranged behind each other, similar to pair of black spots posterior to cell margin. Flagellum with 39 to 56 flagellomeres.

Female genitalia (Figures 43–45). Anal lobes triangular, weakly sclerotized medially, somewhat stronger laterally and dorsally; covered with bristly setae on slightly elevated bases. Posterior apophyses moderately sclerotized with L-shaped lateral arms extending anteriorly and ventrally; ventral part triangular, lateral arm as long as width of ventral part; inner angle of apophyses acute. Eighth segment broad, well sclerotized dorsally and laterally, with bristly, irregularly spaced setae; anterior apophyses extended anteriorly on lateroventral edge of segment, vestiture of segment almost similar to that on anal lobe. Lateroventral part of segment triangular, terminating into weakly sclerotized sternal region with short bristly setae similar to, but slightly longer than, those on anal lobes. Ostium prominent, anterior plate lightly sclerotized laterally but weakly medially and into ostium. Bursa large and broadly-oval, about one-third length of abdomen, membranous. Ductus slightly sclerotized, glandulae sebaceae well developed, as long as bursa. Genitalia preparation Glyc 004.

***Psycharium kammanassiense* sp. nov.**

(Figures 6, 7, 23–29, 49–51)

Material examined

Holotype, male, SOUTH AFRICA: WESTERN CAPE

PROVINCE: 10 km W. of Uniondale, Bassau [33.42S 22.50E], 18.xi.1980, H. T. Zeeman (TM). Paratypes: data as holotype, 4 males, 18.xi.1980 (GP 012), 2.xii.1980, 15.xii.1980 (GP 011), 26.xii.1980; 8 females, 12.xi.1980, 17.xi.1980, 18.x.1980 (Glyc 007), 21.xi.1980, 28.xi.1980, 30.xi.1980, 2.xii.1980, 7.xii.1980. Bred ex larvis on *P. radiata*. Paratypes in TM, NIC, BMNH and USEC.

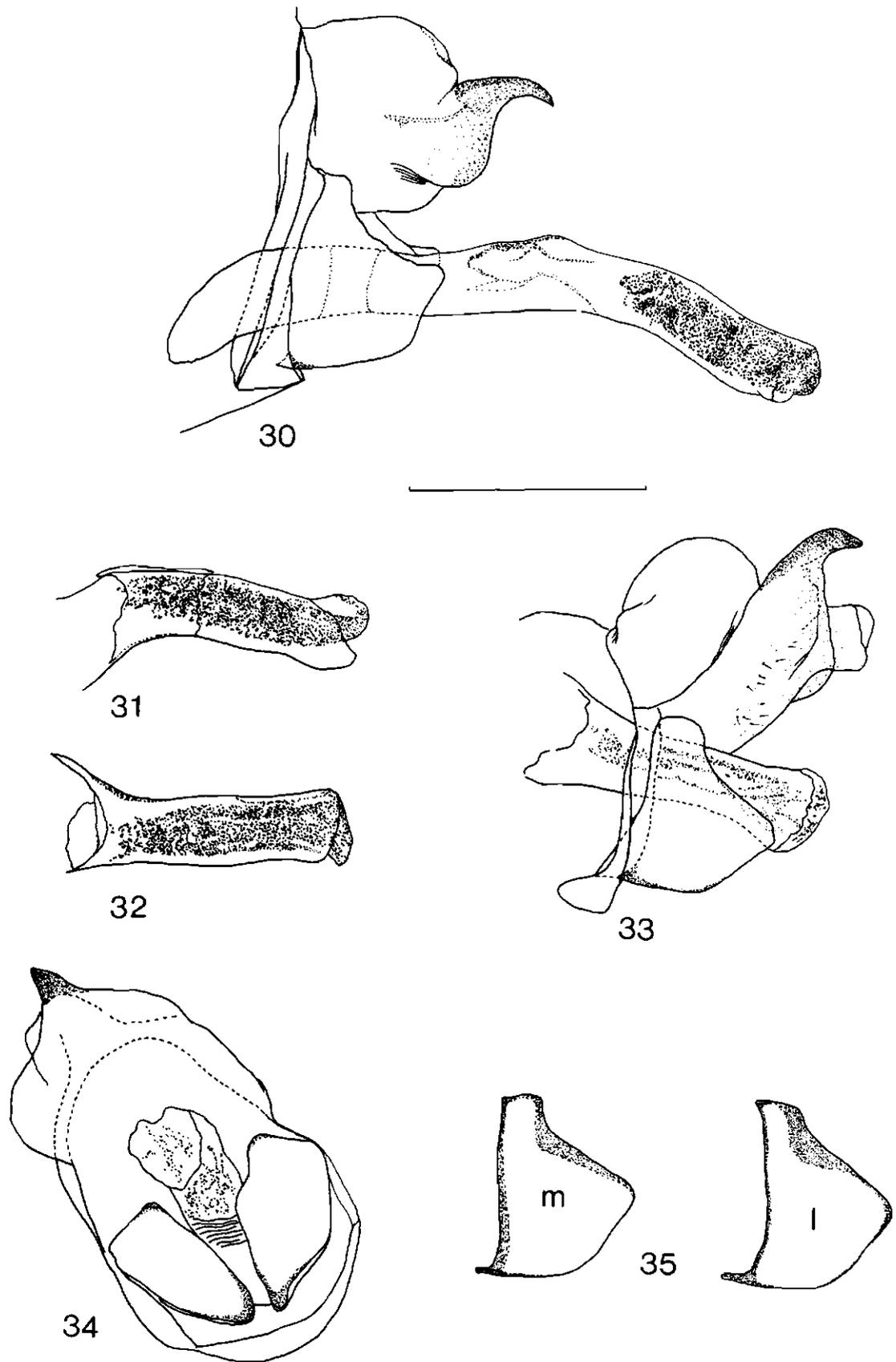
Diagnosis

Antennae of males light brown, flagellum with 48–60 flagellomeres. Labral area with tuft of off-white pile. Between antennal bases light ochrous-brown setae merging into pile on frons; labial vestiture dark brown, merging laterally into eye collar. Colour of prosternum indistinct from venter, light ochrous-brown. Pronotal collar with distinct median tuft of blackish setae. Scales on wings blackish-brown and white. Wings with basal ochrous suffusion. Apex of forewings in males pronounced; costal suffusion extensive between costa and cell and towards apex. Females with head partially hidden under prothorax; posterior and anterior to antennal bases longish white piliform setae, supplemented by broad scales on bases. Prosternum clothed with dark brown pile, remainder of venter ochrous-white. Dorsally, thorax with long white and some black setae. Forewings with small black scales, heavily suffused with white piliform scales, including basal part and costal margin.

Description

Male (Figures 6, 23–29). Wingspan holotype 32.5 mm; paratypes 32–33 mm; antenna: wing ratio 0.36–0.45. Antennae bipectinate, light brown, shaft with dorsal white piliform scales, flagellum with 48 to 60 flagellomeres. Epicranial area bare with chaetosema on lateral margin. Posterior to, between and surrounding antennal bases light ochrous-white setae which merge onto frons about half-way length of eyes. Labral area clothed with dark brown pile merging laterally with brown appressed bristly setae forming eye collar. Vestiture of prosternum not strongly differentiated from that on ventral thorax and abdomen, all consisting of light ochrous-white pile. Legs dark brown. Collar with distinct small median tuft of blackish setae. Thorax and abdomen dorsally slightly darker than on ventral side. Abdominal segments with dense appressed golden brown setae on dorsal anterior and larger, wavy setae on ventral margin of segments. Wings overall blackish, covered with blackish-brown and white piliform scales, but with ochrous suffusion basally on wings, narrow setal fringe on outer wing margins. Forewing margins with blackish-brown scales; costal margins blackish-brown. Midcellular spot indicated by few white setae, larger distal cellular spot centred on M and discocellulars; few scattered white scales present between M_1 and CuA_2 near tornus. Posterior to cell, midway between CuA_1 and CuA_2 , some suffused patches of white scales and two larger spots anterior to 1+2A. In holotype distal cellular spot large and submedial oblique row of diffuse spots from region anterior and posterior to Rs_3 towards lower angle of cell distinct; costal suffusion extends over wide costal region towards apex of wing. Hindwing as for *P. pellucens*.

Male genitalia (Figures 23–29). Posterior part of tegumen rounded and elevated, ridging towards anterior margin; setae



Figures 30–35 *Psycharium barnardi* sp. nov., male genitalia. 30. Lateral view, vesica extended. 31. Lateral and 32. Ventral view of aedeagus. 33. Lateral view. 34. Ventral view. 35. Lateral and mesal view of left valva. Figure 30 preparation G 1223 (TM)(Janse preparavit). figures 31–35 preparation GP 017. Scale line = 1 mm.

on posterior margin. Lateral margins obtuse-angled in middle, anteriorly lobe slightly produced dorsad towards vinculum. Dorsal part of uncus sclerotized, medial projection broad at base, gradually tapering to a sclerotized tip. Ventro-posterior margin of uncus rounded, merging dorso-medially onto anal tube. Anal tube invaginated posteriorly, sclerotized especially on ventral side. Subscaphium present as broad belt under anal tube, upturned toward anterior. Vinculum extended on dorsal anterior side, of even width except ventrally where slightly broader; saccus absent. Anellus membranous. Juxta present as pair of triangular plates with anterior tips elongated and arched ventrally. Valvae broadly triangular, middle part of dorsal margins strongly emarginated, ventral margins straight, no setae on inner surface. Aedeagus arched and broadening anteriorly; posteriorly of even width, bulging slightly near distal part of juxta. Vesica with many regular rows of sclerotized specks; orifice of aedeagal tube blunt. Genitalia preparations GP 012 and GP 011.

Female (Figures 7, 49–50). Wingspan 34–42 mm; antenna: wing ratio 0.39–0.41. Head small, partly retracted under collar; antennae light brown with short white piliform setae on basal antennal segments and dorsal part of shaft, number of flagellomeres ranging from 42 to 45. Posterior, anterior, and surrounding antennal bases with longer white piliform setae, supplemented by broader white scales. Frontal region with sparse whitish vestiture, lateral region with some blackish setae. Eye collars consisting of appressed bristly, curved brownish setae only present posterior to eyes. Prosternum and area between bases of legs with dark-brownish pile, remainder of ventral vestiture formed by pale ochrous-white setae. Collar with dark brown setae and posterior region with ochrous-white medial region. Thorax dorsally loosely clothed with long white and some black wavy setae. Abdomen with light golden brown setae on anterior and middle parts of segments, and on posterior margins clothed with long white setae. Wings almost transparent, sparsely clothed with smallish, black scales and heavily suffused with white piliform scales, giving forewing a greyish hue. Basal part and costal margin of forewings heavily irrorated with white scales; basal cellular spot white, elongated and triangular, interrupted by midcellular black spot, stretching along width of cell and separated into two spots; terminal cellular spot between latter and discocellulars. Subterminal row of oblique spots well developed from costal margin to lower angle of cell. Posterior to Rs_4 white overall suffusion beyond cell on remainder of wing; posterior to basal white spot in cell another black double spot present. Hindwing thinly scaled with basally longer vestiture, marginally bordered with narrow blackish fringe.

Female genitalia (Figures 49–50). Anal lobes weakly, anal region strongly sclerotized. Dorsal region of anal lobes extending to almost two-thirds of posterior apophyses; ventrally lobes slightly sclerotized ventro-posteriorly of anal opening, clothed with short setae. Posterior apophyses lightly sclerotized, more so in lateral part; ventral section projected anteriorly and triangular, tips of anterior triangle rounded and convex. Eighth segment broad, posterior half and dorsal part weakly sclerotized, anterior lateral part sclerotized, covered with short setae; anterior apophyses present on small, well sclerotized sclerites. Ostium prominent, round; anterior plate slightly sclerotized, lateral sides of atrium moderately sclero-

tized. Antrum extending postero-laterally into broadbased triangular extensions, separated from ventro-lateral margins of segment. Posterior part of ostium membranous. Bursa large, elongate to oval, membranous. Genitalia preparation Glyc 007.

Psycharium barnardi sp. nov.

(Figures 8–9, 30–35, 46–48, 51)

Material examined

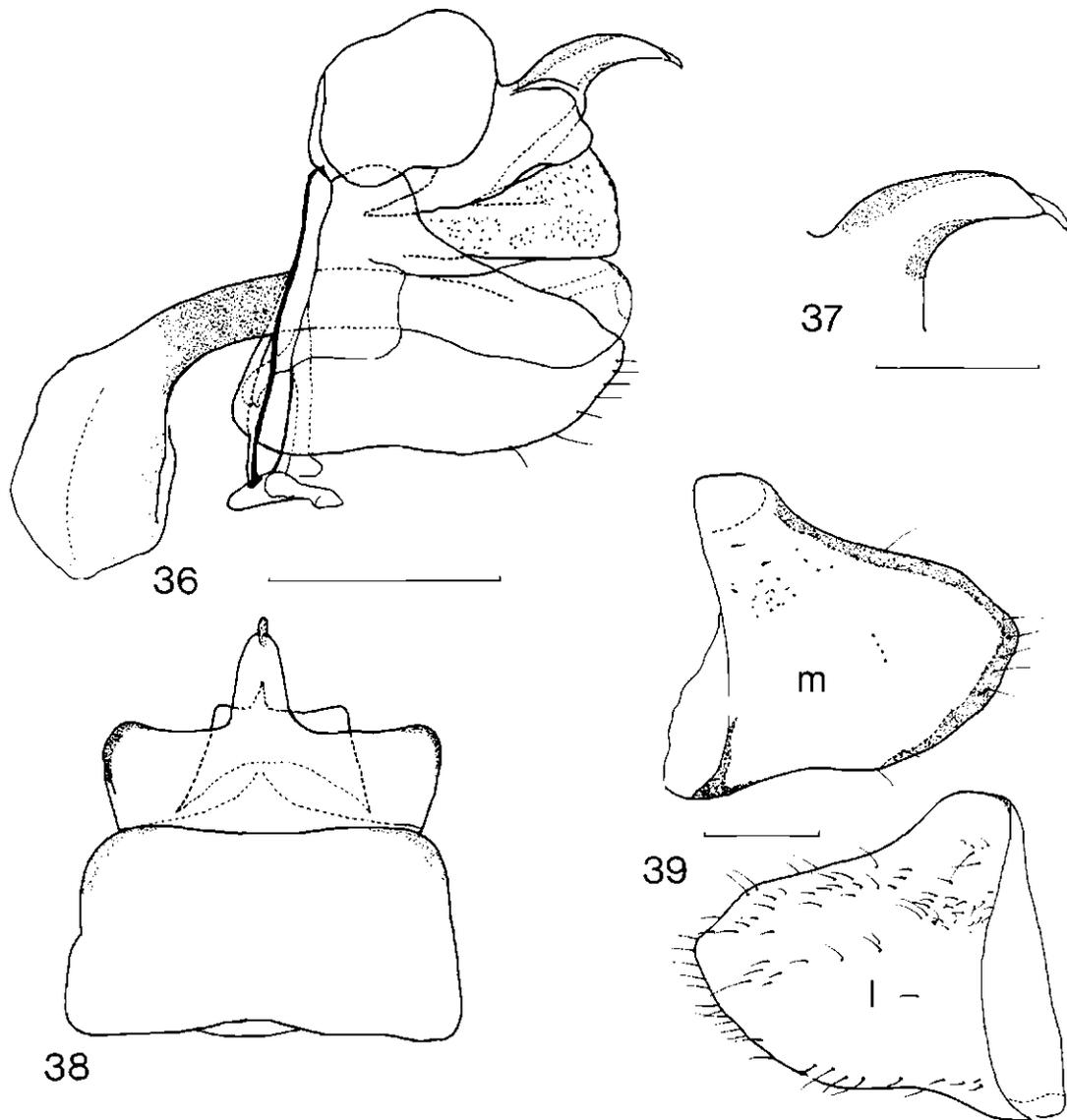
Holotype, male, SOUTH AFRICA: WESTERN CAPE PROVINCE: Riversdale Mountains [prob. Garcia Pass] [33.51S 21.11E], 6.ii.1927, (underside of label) K.H. Barnard, larva, Oct. 1926, (TM). Paratypes: data as holotype, 4 males, 2.ii.1927 (G 1223, 1369 (Janse prep.))(TM), 2.ii.1927 (SAM), 3.ii.1927, 8.ii.1927; 2 females, 2.ii.1927, 13.ii.1927 (Glyc 008). Paratypes in TM and SAM. All material bred from larvae collected in October 1926 by Dr. Barnard.

Diagnosis

Males with distinct white spot in distal part of cell, forewing narrow-elongate. Prosternum with light brown setae, venter with white to creamy-white vestiture. Brown setal tuft between and posterior of antennal base, frontal pile white, labral pile brownish. Tuft of white setae extending laterally over dorsal part of eyes. White and black piliform scales of similar width on forewings. Females with forewing distal cellular spot slightly developed, discocellulars angled inwards towards wing base.

Description

Male (Figures 8, 30–35). Wingspan holotype 27 mm; paratypes 25–30 mm; antenna: wing ratio 0.35–0.38. Antennae bipectinate, light brown, covered dorsally with white piliform scales, flagellomeres ranging from 49 to 53 in number. Brown setal tuft medially and posterior of antennal bases; between bases and ventrad whitish setae. Labial setae brownish. Eyes surrounded by brownish rigid setae, forming appressed ocular collar. Ventrally of antennal bases tufts of white setae extending laterally over dorsal part of eyes. Chaetosemata present, as for *P. pellucens*. Prosternum with light brown setae; other thoracal and abdominal regions ventrally clothed with white to creamy-white vestiture, terminal abdominal segments with long wavy setae. Thorax and abdomen dorsally covered by light to dark brown setae, region between thorax and abdomen ochrous-brown. Overall wing colour brownish-black, wing margins with brownish scales. Forewings with brownish-black and white piliform setae of similar width. Costal margins sparsely clothed with white setae. Cell with distinct midcellular patch loosely, and distal cellular patch densely, packed with white setae. Subterminal series of spots present, consisting of loosely arranged groups of white scales forming a continuous band from costal margin towards middle of discocellulars. Terminal band of spots indicated by thinly-spread white scales along margin, spreading sparsely over the entire sections between M_2 and CuA_1 ; two distinct spots distad and in middle of region posterior to cell and anterior to $1+2A$. Hindwings thinly clothed with scales, wing margins fringed with short blackish scales.

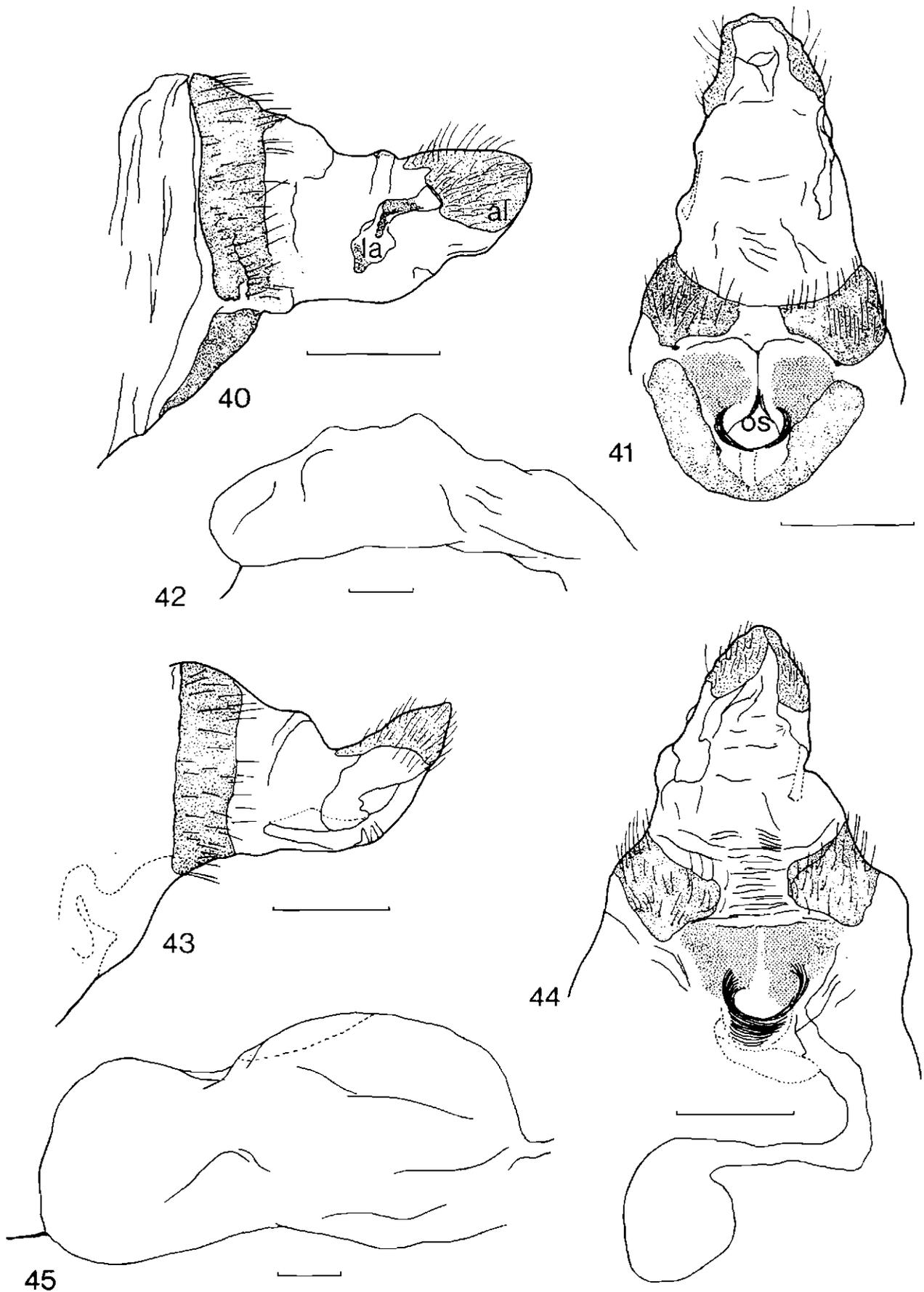


Figures 36–39 *Psycharium natalense* sp. nov., male genitalia. 36. Lateral view 37. Tip of uncus. 38. Dorsal view, tegumen and uncus. 39. Lateral and mesal view of valva. Figures 36–39 preparation Glyc 009, paratype (TM). Scale lines = 1 mm.

Male genitalia (Figures 30–35). Tegumen with middle and posterior part enlarged, lightly sclerotized, with setae on posterior margin. Uncus terminating in medial part with base extended over entire surface of base of uncus, gradually merging laterad. Ventro-posterior margin of uncus rounded, weakly sclerotized, with few setae. Subscaphium indistinct, dorsal part of anal tube with some pubescence. Vinculum widest near tegumen, tapering gradually ventrad; anterior margin well sclerotized with midlateral convexity. Ventral part of vinculum broad and thickened, saccus absent. Valvae subtriangular, costal anterior margins extended, sloping ventrally to about middle, then laterally towards apex. Ventral margins of valvae convex, slightly concave beyond middle; apex bluntly-rounded. On mesal surface of valvae a ridge, in middle and parallel to anterior margins with some setae. Anellus distinct but membranous. Juxta taking the form of a triangular lobe, encasing ventral part of anellus, anterior part of juxta broadest and arched, terminating in flattened medial plate. Aedeagus short and straight, slightly curved anteriorly;

orifice of aedeagus tapering towards ventral side; vesica with many sclerotized specks. In genitalia preparation G 1223 (Janse preparavit)(TM) the dorsal margin of the valve slightly more concave, resulting in an upturned apex; both tegumen and anellus distorted, tegumen being flattened laterally and anellus pulled posteriorly. Genitalia preparations GP 017 and G 1223 (TM).

Female (Figures 9, 46–48). Wingspan 33 mm; antenna: wing ratio 0.32. Epicranial region bare, sparse piliform white setae between antennal bases; antennae filiform, bases with longish white piliform scales, shaft dorsally covered with whitish, flat scales, flagellomeres 48 in number, frons with upturned white piliform scales. Midlabral region clothed with ochrous to brownish-white piliform scales; medial part of eye collar adjoining frons and labrum sparsely clothed with brownish short bristly setae, dense on posterior side of eye. Prosternum medially with whitish setae, otherwise venter with ochrous-brown vestiture. Legs clothed with longish white setae. Pronotal collar with light brown erect piliform



Figures 40–45 Female genitalia. **40.** *Psycharium pellucens*, lateral view. **41.** Ventral view. **42.** Bursa. **43.** *P. montanum* sp. nov., lateral view. **44.** Ventral view. **45.** Bursa. Abbreviations: al = anal lobe, la = lateral arm, os = ostium. Figures 40–42 preparation Glyc 002, figures 43–45 preparation Glyc 004. Scale lines = 1 mm.

setae, rest of thorax dorsally with sparse vestiture of white and light brown piliform setae. Abdomen with appressed cupreous setae on dorsal segments, white longer setae on posterior margin of segments. On terminal abdominal segments short, bristly curved setae on ovipositor lobes. Costal margin of forewings brownish-black. White and black scales on forewings of equal width, sparsely distributed over wing surface. Forewings heavily suffused with white scales. Basal half of cell white, medial part brownish-black; distal cellular white spot broadening towards costal region, extending over width of cell. Subterminally, oblique series of spots, broadest on costa and terminating gradually in lower angle of cell. Posterior to cell brown to blackish suffused spot extending from cell to inner margin. Hindwings without markings, with narrow brownish-black fringe.

Female genitalia (Figures 46–48). Anal lobes broadly triangular, dorsally extended, weakly sclerotized and sparsely covered with bristly setae. Posterior apophyses and central part of lateral arms lightly sclerotized but weakly on posterior part of arms and on anterior ventral lobes; lobes almost round. Eighth segment weakly sclerotized, anterior part lightly scler-

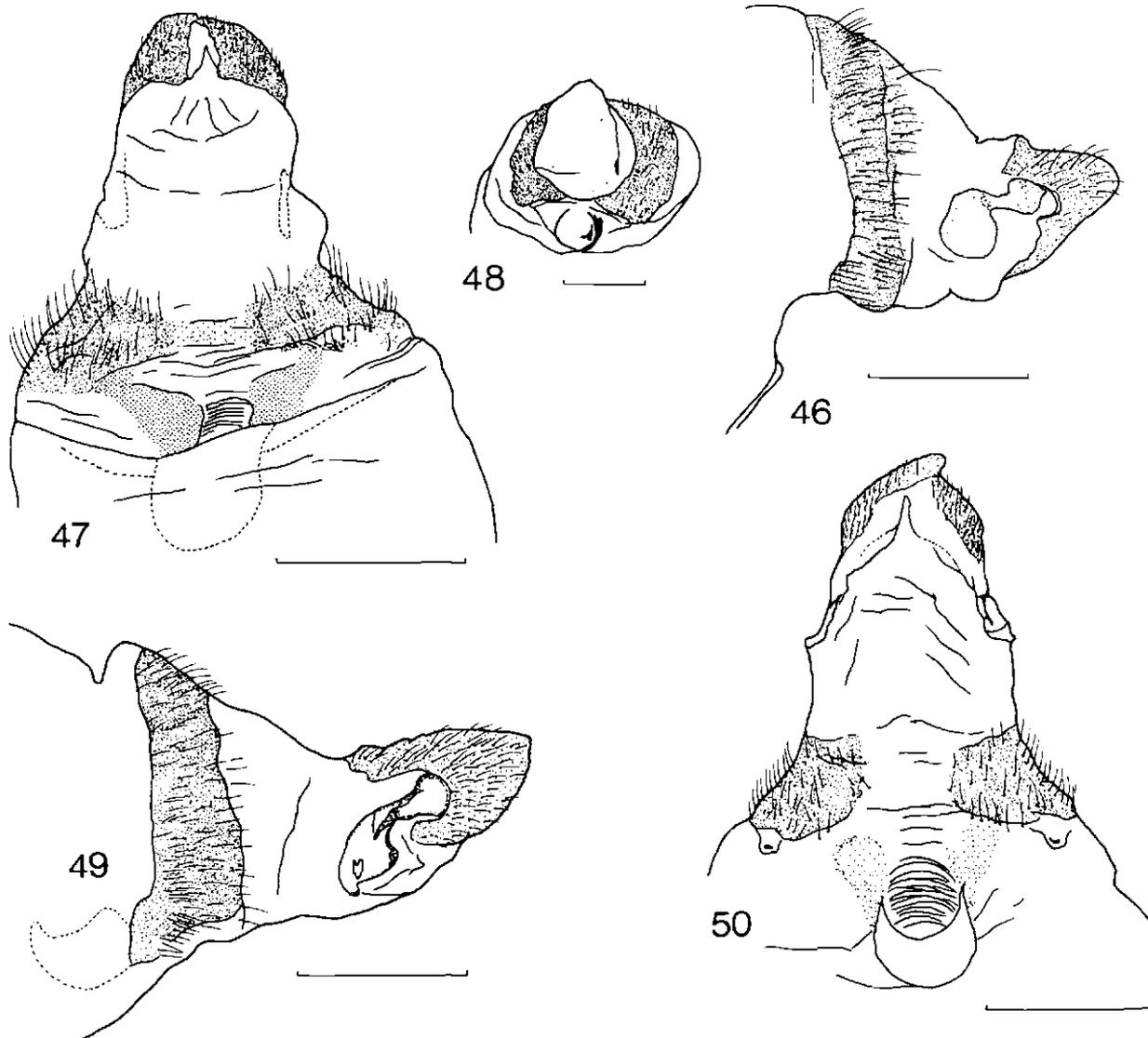
otized with short, bristly setae; midventral part more membranous, weakly sclerotized; anterior apophyses indicated by triangular extension of lateral sternal region. Ostium prominent and wide, with opening almost circular and internally strongly upturned; posteriorly, lateral extension broadly triangular and lightly sclerotized but only weakly so medially. Bursa membranous, ductus lightly sclerotized. Genitalia preparation Glyc 008.

***Psycharium natalense* sp. nov.**

(Figures 10, 14, 36–39, 51)

Material examined

Holotype, male, SOUTH AFRICA: KWAZULU-NATAL: Yellowwoods, Balgovan Nat. [29.23S 30.02E], October 1964, K.M. Pennington. Paratypes, 2 males: 1 male, Balgovan, Natal, 4200', 8.x.(19)34, R.C. Wood, No. 6802; 1 male. EASTERN CAPE PROVINCE (TRANSKEI): Ngqeleni (= Ngqeleni)[31.40S 29.01E], W. Pondoland, 13.9.07. H.H. Swinny; (right forewing and antenna lost, right hindwing



Figures 46–50 Female genitalia. 46. *Psycharium barnardi* sp. nov., lateral view. 47. Ventral view. 48. Ventro-caudal view. 49. *P. kamma-nassiense* sp. nov., lateral view. 50. Ventral view. Figures 46–48 preparation Glyc 008, figures 49–50 preparation Glyc 007. Scale lines = 1

glued to body)(Glyc 009). All material in TM.

Diagnosis

Overall wing colour white with brown markings, corresponding to wing pattern of female *Psycharium*.

Description

Male (Figures 10, 14, 36–39). Wingspan of holotype 49 mm, of paratype 45 mm; left wing of paratype 24 mm; antenna: wing ratio 0.42–0.48. Antennae bipectinate, light brown, 65 flagellomeres in holotype and 63 in paratypes. Setae posterior to antennal bases and between chaetosemata white, between bases and on basal antennal segments brownish. Elongated white scales on dorsal flagellar segments. Posterior to eye ridge of appressed, dense, bristly, brown setae, near antennal base partially covering eyes. Chaetosemata present as distinct round lobes on lateral margin of vertex, each encircled by whitish setae and some smaller whitish setae radiating from structure itself; dorsal region of eyes laterad to chaetosemata bare. Frons with short, close-cropped creamy-white pile changing to brown towards labral region. Distinct collar with light brown and some scattered white setae; medial part with distinct concentration of ochrous-white to off-white setae. Prosternum clothed with brownish setae, otherwise ventrally with light brown to ochrous-brown vestiture. Tegulae and thorax covered with brown setae, abdomen distinctly lighter, covered with ochrous-brown setae. Legs black to brownish-black. General ground colour of wings white to off-white, wing margins and veins distinctly brown. Entire costal region of forewings, anterior to R_1 , brownish-black. Midcellular brownish-black patch and a subterminal curved band, broadest near costa, extending from costa to middle of region between M_1 and M_2 . Central brownish spots, equidistant from cell, present posterior to M_2 , M_3 . CuA_1 , CuA_2 , and CuP , where largest; basal region anterior to CuP blackish-brown;

area posterior to 1+2A brownish-black. In one paratype, with right forewing missing and somewhat worn and rubbed, anterior part of subterminal band with smaller spots, otherwise wing markings similar. Hindwing without markings, veins blackish-brown; wings with marginal blackish fringes.

Male genitalia (Figures 36–39), paratype, genitalia preparation Glyc 009 (TM).

Uncus well sclerotized, base of uncus as broad as tegumen; latero-posterior margins rounded. Medial projection of uncus broad at base, extending towards lateral margins of uncus, tapering gradually and terminating abruptly into a down-curved point. Tapered part of projection, viewed in lateral aspect, at right angles to latero-posterior margin of uncus base. Latero-posterior margins of base well sclerotized, especially mesally, and extended into broad elongated lobes. Tegumen elevated posteriorly, as long as uncus, dorsally broad with medially convex posterior margin; ventro-posterior margin rounded, lateral margin posterior to vinculum slightly extended ventrally into well-sclerotized lobe. Vinculum connected to tegumen by slightly sclerotized region, dorsally narrow, widening towards base, broadest ventrally with slight convex medial region, representing saccus. Gnathos absent; anal tube well sclerotized, especially posteriorly around anal orifice. Dorsally, anal tube merging into uncus, terminal one-fourth free and ventral half free. Anal tube with fine pubescence, some setae present near lateral to basal part. Valvae almost triangular; bases of valvae broad, membranous to weakly sclerotized. Distal margins of valvae well sclerotized, ventral margins convex distally, dorsal margins concave in middle; terminal parts slightly elongated with rounded apex. Setae present on distal and lateral margins as small scattered groups on dorsal mesal surface. Setae on the right valve arranged on definite ridge, about one-third from dorsal margin. Anellus slightly sclerotized, surrounding aedeagus completely. Juxta lightly sclerotized, merging with ventral part of

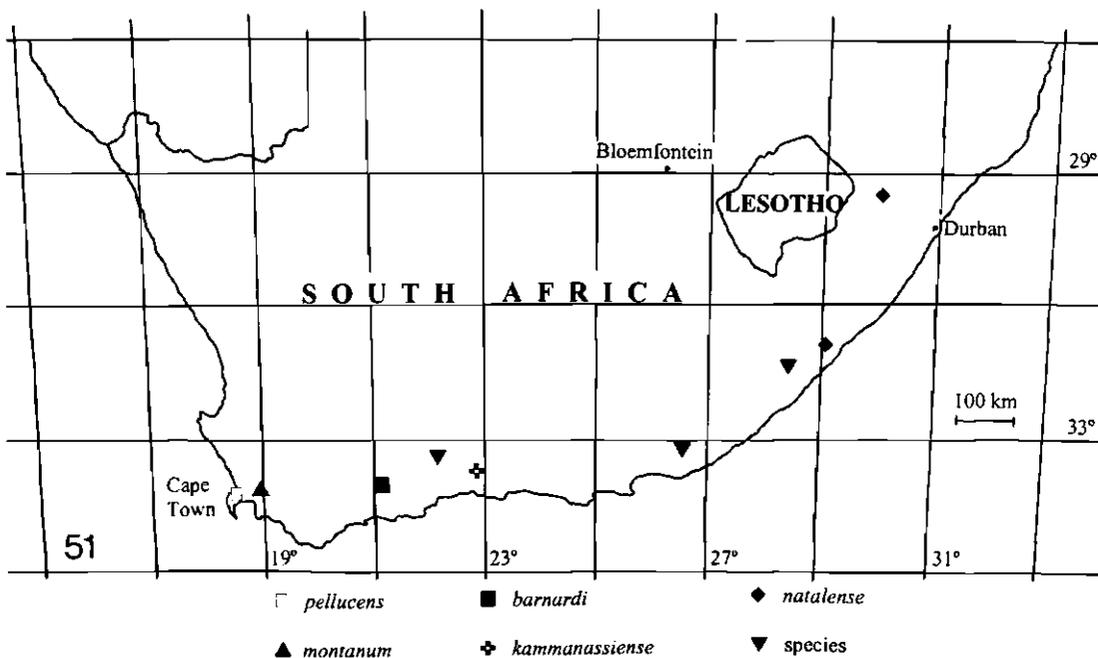


Figure 51 Distribution of species of *Psycharium*.

anellus and forming V-shaped enfolding distal structure. Basal part of juxta arched into thin, median, bilobed plate. Aedeagus stout, of even width, strongly curved ventrally and broadest at base, terminating in large bulbous membranous structure; middle part slightly curved, terminal part scoop-like. Vesica lightly sclerotized without cornuti.

Female: unknown.

Remarks

A number of specimens of *Psycharium* remain to be studied or described. Most are single females and include specimens from the Swartberg Pass, near Oudtshoorn, Western Cape Province, and from Grahamstown and Bashee River, Eastern Cape Province, South Africa (Figure 51).

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