Beach Flies (Diptera: Tethinidae: Tethininae)

From Australia and Papua New Guinea, with Descriptions of Two New Genera and Ten New Species

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ABSTRACT. This paper deals with the subfamily Tethininae of the Beach Flies Tethinidae from Australia and Papua New Guinea. Two new genera and ten new species are described: Sigaloethina phaia n.gen. and n.sp., Thitena cadaverina n.gen. and n.sp., Dasyrhicnoessa atripes n.sp., D. ciliata n.sp., D. humilis n.sp., D. longisetosa n.sp., D. macalpinei n.sp., D. ostentatrix n.sp., D. pallida n.sp., and D. priapus n.sp. A new species group, the Dasyrhicnoessa ciliata-group, is proposed. It differs from congeners primarily in its long-haired arista, slender body and legs, and peculiarities in the male terminalia. New records for Australia and Papua New Guinea are also given for species previously described. The recently described Dasyrhicnoessa clandestina Munari, 2002 is recorded for the second time from Fiji where it was found in association with D. insularis (Aldrich, 1931). A key is proposed to all genera and species of Tethininae known from Australia and Papua New Guinea. An updated checklist to the world species of Dasyrhicnoessa as well as a catalogue of the Tethininae of Australia and Papua New Guinea are also given.


Tethinids are small flies chiefly inhabiting the temperate and tropical shores of all seas and oceans of the world. Some species are also found inland, associated with saline environments, in particular continental salt lakes and alkaline hot springs. Within the family, many species seem to be strictly dependent on proximity to the sea, i.e. true thalassophilous flies mostly inhabiting the intertidal zone, wrack heaps, salt marshes, dune vegetation, lagoon-litoriparian zones, mangroves (particularly species of Dasyrhicnoessa Hendel), and salty soils or bare sand. Other species are more widely halophilous, and are commonly found on various types of saline biotopes, irrespective of the presence of littoral environments. Some species in the subfamily Pelomyiinae are associated with meadows that occur in mountain passes, forests, and desert oases. In the subfamily Apetaeninae, a few subantarctic species occur on seabird guano and are strictly associated with colonies of penguins and other shorebirds. Tethinids are also recorded from habitats that have been adversely modified by human activity, such as meadows polluted by industrial emissions (Bährmann, 1982) or slaughterhouses and poultry farms (Zuska & Laštovka, 1969). These synanthropic habitats are usually sites of salt accumulation and enrichment. The biology and immature stages of this family are poorly known (for a brief synopsis see Mathis & Munari, 1996). Often sites where tethinids occur have numerous individuals of only a few species.

The family is subdivided into five subfamilies that include 15 genera with approximately 160 species (including the new taxa described in the present work).
Historical review

Records of beach flies from Australia and Papua New Guinea are fragmentary. The oldest citation of tethinids from Australia dates to 1924, when Malloch described *Tethina nigriseta* from Woolgoolga, NSW. This is a very common species on the eastern seashores of Australia. Later, Malloch (1935) described *Tethina (Macrotethina) tibiseta* (a junior synonym of *Pseudorhicnoessa spinipes*), *Dasyrhicnoessa fulvescens* and *D. serratula* from Townsville, Qld. In the same paper, Malloch also described *Tethina (Tethina) pallidiseta* from Collaroy, NSW, a common species in southern and eastern Australia, and he listed *T. nigriseta* from Sydney and Townsville.

The subfamily Zaleinae has an uncertain systematic position between Canacidae and Tethinidae (themselves in turn possible subgroups of a same family) and comprising species with transitional features that prevent satisfactory and reliable taxonomic attribution. D.K. McAlpine (1982, 1985) designated the new subfamily and described the genus *Zalea* represented by three species from New Zealand and New South Wales. A few years later, Colless & D.K. McAlpine (1991) published an important synopsis dealing with the Australian flies, in which the family Tethinidae was concisely defined and included illustrations (head and wing) of *Tethina nigriseta*.

In the only work specifically dealing with beach flies from southwestern Australia, Munari (2000) described the genus *Plesiotethina*, with the single species *P. australis*, and the peculiar species *Tethina hirsuta*. Also, in the same paper, *Tethina ochracea* (Hendel) and *T. pallidiseta* Malloch were reported from southwestern Australia.

Most of the above-mentioned species are also recorded in Mathis & Sasakawa’s (1989) and Mathis & Munari’s (1996) catalogues dealing with Australasian/Oceanian and World faunas respectively. The citations reported in the two catalogues obviously take into account only the well known records from the literature and do not contain original distribution data. No Tethinid species have been previously recorded from Papua New Guinea.

Materials and methods

The present work is based on the study of more than 1400 specimens of Tethininae from the collection of the Australian Museum, Sydney. The material is mostly from the eastern coast of Australia with some specimens from elsewhere in Australia, Papua New Guinea and a few Pacific islands (for the latter localities see the final appendix). Most specimens are glued to triangular points or double mounted by minute in blocks. Because specimens are small, usually less than 4 mm in length, study and illustration of male terminalia required use of dissecting and compound microscopes. In the text, genera and species as well as the localities of capture under each species, are listed in alphabetical order. Holotype and paratype label data are quoted without interpretation; a slash (/) indicates the end of a line of print or handwriting, two slashes (//) signifies another label. Significant supplementary or qualifying information is presented in brackets. The descriptions of new species are based primarily on their respective holotypes with variation being accounted for in the remarks section or directly added in the description itself.

Under the description of each new species, the holotype measurements are given with paratype range between parentheses where appropriate. The morphological terminology chiefly follows that published in the Manual of Nearctic Diptera (J.F. McAlpine, 1981), except for the first antennal flagellomere for which the term “postpedicel” (sensa Stuckenberg, 1999) has been used. The fine figures illustrating the habitus of both *Sigaloethina phaia* and *Thitena cadavera*, as well as the scutellum of the latter species, have been skilfully drawn and inked by Mrs. Gioiella D’este (courtesy of MCV), an artist of the Natural History Museum, Venice. All remaining figures, mostly illustrating male terminalia, were drawn and inked by the author.

Acronyms for museums, especially to indicate the deposition of a primary type: AM, Australian Museum, Sydney, Australia; BMNH, The Natural History Museum [former British Museum (Natural History)], London, England; BPBM, Bernice P. Bishop Museum, Honolulu, Hawaii, USA; DEI, Deutsches Entomologisches Institut, Eberswald, Germany; MCV, Natural History Museum, Venice, Italy; NMW, Naturhistorisches Museum, Vienna, Austria; TAU, Tel Aviv University, Tel Aviv, Israel; USNM, National Museum of Natural History (former United States National Museum), Smithsonian Institution, Washington, D.C., USA; ZSM, Zoologische Staatssammlung München, Germany. Abbreviations for primary types: HT, holotype; and LT, lectotype. States and territories of Australia are abbreviated as follows: NSW, New South Wales; NT, Northern Territory; QLD, Queensland; TAS, Tasmania; VIC, Victoria; WA, Western Australia.

Key to genera and species of Tethininae from Australia and Papua New Guinea

Note: the following key should be regarded as preliminary, particularly with regard to the species of the genus *Dasyrhicnoessa*, due to the marked similarity among species as well as the scarcity of available material. The characters of the male specimens are used because female features are not diagnostic. *Plesiotethina australis* has been provisionally inserted in the key for practical purposes, although it may not belong in the Tethininae as it “may be regarded as a possible sister group either to *Tethina* or even to the entire subfamily Tethininae” (Munari, 2000). Conversely, *Dasyrhicnoessa serratula* has been intentionally excluded from the key because of its doubtful specific status (see text).

1 Disc of scutellum setulose (Fig. 30); at least mid and hind tibiae with strong setae .............................................................................................................. 2

—— Disc of scutellum bare; tibiae usually evenly setulose, bearing short setae and setulae (except for *Tethina hirsuta* having legs strongly setulose) .................................................................................................................. 3
2 Costal vein abbreviated, not extending beyond end of vein R₄₊₅; legs of male normally setulose, without long villosity; at least hind femur and tibia with more or less extended apical dark ring; 6 rows of acrostichal setulae on anterior half of scutum. *Pseudorhincnoessa spinipes* Malloch

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Costal vein not abbreviated, reaching end of M₁; legs of male, in particular forelegs, bearing characteristic long and thick villosity (Fig. 29); femora and tibiae unicolorous; 8–9 rows of acrostichal setulae on anterior half of scutum. *Thitena cadaverina* n.gen. and n.sp.

3 Lower face, just above vibrissal angle, with small, shining, sclerotized tubercle; anterior surstylus of male terminalia absent [genus *Tethina* Haliday] ................................................................. 4

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Lower face simple, without shining, sclerotized tubercle; anterior surstylus of male terminalia present ........................................................................................................ 7

4 Setal vestiture of body and legs whitish ................................. *Tethina pallidiseta* Malloch

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Setal vestiture of body and legs black ..................................... 5

5 Legs with tibiae bearing rows of strong, posterodorsal setae; 5 (2+3) dorsocentral setae; abdomen distinctly setose, in any case always with setae much more numerous, stronger, and longer than congeners ........................................................................................................ 6

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Legs with tibiae evenly setulose, bearing short black setae and setulae; 4 (1+3) dorsocentral setae; abdomen with unmodified setation ........................................................................................................................................... 9

6 Lateral profile of head with vertically flattened face; longitudinal, subshining stripe of gena distinctly broad; acrostichal setulae usually in 2–3 rows; terminalia of male with surstylus bearing numerous, stout spinulae about as long as or shorter than thickness of apical part of surstylus in posterior view ......................................................... *Tethina ochracea* (Hendel)

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Lateral profile of head not vertically flattened but slightly depressed; gena uniformly microtomentose, without longitudinal, subshining stripe; 4 rows of acrostichal setulae; terminalia of male with surstylus bearing numerous, very long, stout spinulae, mostly distinctly longer than thickness of apical part of surstylus in posterior view (Fig. 28) .................. *Tethina nigriseta* Malloch

7 Body cuticle distinctly glossy dark brown; anterior surstylus of male terminalia distinctly larger than posterior surstylus, arising from extremity of lower apical part of epandrium, and bearing characteristic triangular patch of microtrichia on outer surface (Fig. 24) ............................................................... *Sigaloethina phaia* n.gen. and n.sp.

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Body cuticle distinctly dull to translucent yellowish, generally covered with more or less dense microtomentum; anterior surstylus of male terminalia usually smaller than posterior surstylus, never arising from extremity of lower apical part of epandrium, and without patch of microtrichia on outer surface ........................................................................................................ 8

8 Eye without interfacial setulae; vibrissal angle of gena poorly marked, gently curved upwards; true vibrissa absent; acrostichal setulae short and thin, almost microscopic in male; ctenidium of fore femur absent; anterior surstylus of male terminalia rudimentary, reduced to small, knoblike sclerite bearing cluster of long, thin setulae .......................................................................................... *Plesiotethina australis* Munari

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Eye densely micropubescent; vibrissal angle of gena strongly marked; true vibrissa present; acrostichal setulae of normal length in both sexes; ctenidium of fore femur variable; anterior surstylus of male terminalia more or less developed, never rudimentary or knoblike [genus *Dasyrhicnoessa* Hendel] ........................................................................................................ 9
9 Abdomen with 3 (2 lateral and 1 median) dark, rounded spots on each tergite .......................................................... *Dasyrhicnoessa tripunctata* Sasakawa

—— Abdomen without dark, rounded spots.......................................................... 10

10 Arista bearing distinctly long, spaced hairs (Fig. 8); body and legs bright yellow to yellowish; slender flies [*ciliata*-group] .......................................................... 11

—— Arista micropubescent to short-haired (Fig. 7); colour of body and legs variable; flies of usual aspect within genus.......................................................................... 13

11 Fore femur with ctenidial comb formed by short, strong, black spinulae, in females distinctly weaker and thinner; 4 rows of acrostichal setulae; mid femur of male with posteroventral armature formed by spine-like, black setae arranged on entire length of femur; posterior surstylus of male terminalia lacking characteristic cluster of thin setulae on inner side (Figs. 5–6) .............. *Dasyrhicnoessa ciliata* n.sp.

—— Fore femur lacking true ctenidium, only weak row of thin setulae present; 5–6 rows of acrostichal setulae; mid femur of male with posteroventral armature formed by spine-like, black setae mostly arranged on distal half of femur; posterior surstylus of male terminalia with characteristic cluster of thin setulae on inner side (Figs. 11–12, 20–21) .......................................................................................................... 12

12 Setae of mesonotum long, distinctly longer than ones of congeners; postocular setae of normal size; last tarsomere of legs very slightly infuscated; cerci of male terminalia small, in lateral view as long as anterior surstylus (Figs. 11–12).................................................. *Dasyrhicnoessa longisetosa* n.sp.

—— Setae of mesonotum of normal size; postocular setae somewhat long and very distinctive; tarsi homogeneously yellowish; cerci of male terminalia strikingly longer and broader than ones of congeners, in lateral view noticeably longer than anterior surstylus (Figs. 20–21) ...................................................................................................................... 13

13 Hind tibia of male bearing long, thin, yellowish pubescence on posteroventral distal half; male terminalia (Figs. 13–14) with epandrium bearing characteristic cluster of 8–9 very long setae on entire anteroventral part; anterior surstylus strongly reduced, hardly visible in lateral view; cerci long and narrow in both lateral and caudal views; small-sized, body length < 1.4 mm .............. *Dasyrhicnoessa macalpinei* n.sp.

—— Hind tibia evenly setulose, bearing short setae and setulae; male terminalia with epandrium not as above, at most bearing 3 long setae on anteroventral part (Fig. 9), in latter case cerci distinctly stumpy; anterior surstylus more or less developed, always well discernible in lateral view; cerci not as above; body length > 1.4 mm.............................................................................. 14

14 Mid and hind legs with last tarsomere pitch-black, and foreleg with distal two tarsomeres of same colour, strongly contrasting with remaining yellowish tarsomeres; terminalia of male horseshoe-shaped in posterior view (Fig. 4)................................. *Dasyrhicnoessa atripes* n.sp.

—— Distal tarsomeres of legs at most slightly infuscated; terminalia of male not as above......................................................................................................................... 15

15 Acrostichal setulae in 4 rows irregularly arranged on anterior half of scutum; yellow species with first three tergites of abdomen widely pitch-black (this character must be verified by examination of more abundant material), strongly contrasting with remaining tergites; setal vestiture of mesonotum pale brownish to golden yellow; fore femur lacking true ctenidium ....................... *Dasyrhicnoessa fulvescens* Malloch

—— Acrostichal setulae in 6 distinct rows on anterior half of scutum; darker species having brownish yellow to dark grey thorax; first three tergites of abdomen differently coloured, never strongly contrasting with remaining tergites; setal vestiture of mesonotum distinctly brown to black, often with setae showing golden reflections; presence of true ctenidium variable................................................................. 16
16 Gena with distinct, longitudinal, apparently translucent, narrow stripe; abdomen with posterior surstyli of male terminalia noticeably and characteristically exposed outwardly ................. *Dasyrhicnoessa ostentatrix* n.sp.

—— Gena homogeneously microtomentose; abdomen with posterior surstyli of male terminalia partially to fully hidden inside postabdominal sclerites ................................................................. 17

17 Posteroventral armature of male mid femur with distal part characteristically crest-shaped, formed by strong, close, black spinulae abruptly decreasing in length distally; anterior surstylus of male terminalia large, paddle-shaped, very much longer than small knoblike posterior surstylus ................................................................. *Dasyrhicnoessa ferruginea* (Lamb)

—— Posteroventral armature of male mid femur with distal part not crest-shaped, at most entire armature formed by regularly spaced spinulae gradually decreasing in length on distal third; anterior surstylus of male terminalia distinctly to slightly shorter than posterior surstylus, latter never knoblike ................................................................. 18

18 Anterior surstylus of male terminalia small, rodlike or similar to short lobe, bearing few apical hairs (Figs. 9, 18) ........................................................................ 19

—— Anterior surstylus of male terminalia noticeably broad, not rodlike or short lobe-shaped, bearing numerous microspinulae or strong setae on posterior and apical margins ........................................................................................................ 21

19 True ctenidium of fore femur present; posterior surstylus of male terminalia posteriorly directed (lateral view), bearing characteristic row of long, strong setae on lower edge (anterior margin). *Dasyrhicnoessa sexseriata* (Hendel)

—— True ctenidium of fore femur absent; posterior surstylus of male terminalia vertically directed (lateral view), bearing more or less sparse, microscopic hairs on anterior margin (Figs. 9, 18) ......................................................... 20

20 Golden yellow patches on both sides of ocellar triangle somewhat broad, merging before anterior ocellus; longest diameter of eye about 5.6x genal height; anterior surstylus of male terminalia short and squat, lobe-shaped; posterior surstylus (lateral view) stumpy, subquadrate, medially only slightly wider than long, pointed apically (Fig. 9) ........................................................................................................ *Dasyrhicnoessa humilis* n.sp.

—— Golden yellow patches on both sides of ocellar triangle separated, generally not merging before anterior ocellus; longest diameter of eye about 4.5x genal height; anterior surstylus of male terminalia relatively long and thin; posterior surstylus (lateral view) moderately slender, lobe-shaped, distinctly longer than wide, rounded apically (Fig. 18) .................................................................................. *Dasyrhicnoessa pallida* n.sp.

21 Yellowish species; anterior surstylus of male terminalia large, subquadrate to subtrapezoidal (lateral view), having both posterior and ventral margins microscopically and very irregularly serrated, bearing some sparse, marginal microspinulae .... *Dasyrhicnoessa vockerothi* Hardy & Delfinado

—— Noticeably darker species, brownish grey to dark grey; anterior surstylus of male terminalia distinctly subrectangular in lateral view, kidney-shaped in posterior view, bearing several, close, long and strong setae on both posterior and apical margins ........ *Dasyrhicnoessa insularis* (Aldrich)
**Taxonomic account**

*Dasyrhicnoessa atripes* n.sp.

Figs. 1–4

**Type material.** HOLOTYPE ♂. Australia, New South Wales “NSW: Wategos / Beach, Cape Byron / 7 Nov. 2000 // Beach, Cape Byron / 7 Nov. 2000 [sic] // HOLOTYPE / Dasyrhicnoessa / atripes sp. n. ♂ / L. Munari des.” AM K186735.

Habitus. Grey species with yellow legs and yellowish grey wings. All setae and setulae black, except for abdominal setae having golden reflections. Head. Missing. Nevertheless, considering that the morphological characters as well as the chaetotactic pattern of the head in most species belonging to this genus are not very informative at the specific level, I have judged it reasonable to name and describe the new species since the rest of the specimen is in excellent condition. Thorax. Entirely dark brown, covered with grey microtomentum; 1+3 dorsocentral setae; 6 rows of acrostichal setulae on anterior half of scutum, otherwise arranged in 4–6 rows; prescutellar acrostichals long and strong; postpronotal lobe bearing 3 setae, each with different inclination, posterior seta long and strong, anterior setae shorter and distinctly weaker; 1 long presutural seta; 2 notopleurals about subequal in length; 1 supra-alar, below it 1 shorter and weaker seta; 2 postalar, external one distinctly longer and stronger; scutellum with apical area yellowish, bearing 4 long marginal setae, apical ones longer; both proepisternal and proepimal setae present; anepisternum with several long setae, and 3 long, posteriorly directed, posteromarginal setae, mid one longer and stronger, and 1 erect seta at posterodorsal margin; katepisternum with scattered, short pubescence, bearing long and strong posterodorsal seta; anepimeron, katatergite and meron without setae and setulae. Legs. Entirely yellow, except for last tarsomeres which are pitch-black; evenly setulose, bearing short black setae and setulae; foreleg having coxa with long and strong setae, and femur with long posterodorsal and posteroventral setae, latter ones on apical half only; fore femur with ctenidial comb formed by short, black spinulae anterodorsally on distal third; mid femur with comb of posteroventral, short, spine-like setae, decreasing in length distally; hind femur not swollen; mid and hind legs with last tarsomere pitch-black, foreleg with last two tarsomeres of same colour, strongly contrasting with remaining yellowish tarsomeres. Wing. Veins yellowish, membrane yellowish grey; alula with fringe formed by several, close, long, black setae; costal vein reaching end of M₁, bearing several, short, spaced, microscopic setulae on dorsal and ventral surfaces; R₉,₁₀ slightly bisinuate, diverging from R₉,₁₀ distally; R₈,₁₀ and M₁ parallel; crossvein r-m ending at basal third of cell dm; crossvein dm-cu distinctly shorter than half of last section of CuA₁; halter pale yellow. Abdomen. Blackish, with setal vestiture formed by dark setulae and black posteromarginal setae on each tergite, latter setae having golden reflections; transverse stripes at posterior edge of tergites somewhat broad, yellowish. Male terminalia (Figs. 1–4). Epandrium bearing pair of moderately long setae dorsally, and several short setae on remaining posterior surface; cercus small, pubescent, covered with microscopic hairs and with long setae dorsally; anterior surstylus stumpy in lateral view, narrow in posterior one, bearing sparse, thin setae on inner side; posterior surstylus very stumpy, bearing several spine-like setae on inner side; aedeagal apodeme long, straight, only slightly bent distally; ejaculatory apodeme large, as long as or slightly longer than half of aedeagal apodeme, with broad distal fan; distiphallus long, ribbon-like, micropubescent.

Female. Unknown.

**Distribution.** Australia (NSW).

**Remarks.** Additional material of this interesting species is needed to corroborate the consistency of the character state “colour of last tarsomeres pitch-black” and to see the head.

**Etymology.** Compound word, from the Latin "colour of last tarsomeres pitch-black" and to see the head.

*Dasyrhicnoessa ciliata* n.sp.

Figs. 5–6

**Type material.** HOLOTYPE ♂. Australia, Northern Territory “NT: Buffalo Ck, / Darwin; 2–5 Mar. / 1996; D.K. McAlpine, / G.R. Brown” // “HOLOTYPE / Dasyrhicnoessa / ciliata sp. n. ♂ / L. Munari des”, AM K186736. The specimen is in excellent condition, and is double mounted (glued on the tip of a triangular card label); abdomen dissected, stored in glycerol in a small plastic tube, and pinned below the specimen. PARATYPES 2 ♀ ♀ same data as holotype. One paratype has an additional, orange label with handwritten “Laboulb.” The holotype and one paratype are deposited in AM, the second paratype is preserved in MCV.

**Description.** Size. Body length 2.3 mm (2.1–2.3), wing length 1.9 mm (1.8–1.9), wing width 0.7 mm (0.67–0.72). Habitus. Yellow species with setal vestiture of thorax black. Head yellow with antenna bearing very long-haired arista. Wings yellowish grey. Head. Entirely yellow; frons, including orbital vittae, homogeneously yellow, except for usual golden yellow patch on both sides of occellar triangle; paraventral setae well developed, inclinate; inner vertical seta slightly inclinate, strong, about as long as laterocillate outer vertical seta; postocular and postgenal setae somewhat long, former setae in 1–2 rows; upper postocular seta long, inclinate towards inner vertical seta; anocellar triangle bearing pair of long, thin pseudopostocellar setae in addition to pair of strong occellars; 2–3 very short, thin setulae between occellars and pseudocellars; 3 strong, laterocillate orbital setae; row of long, thin, inclinate setulae on orbital vitta between two anterior orbitals and frontalts; 3 pairs of frontal setae, anterior one short and thin in male holotype, plus 2 pairs of thin setulae, all setae and setulae inclinate, mid pair with setae distinctly cruciate at apex; antenna with large and pubescent postpedicel, bearing blackish, very long-haired arista (Fig. 8); eye micropubescent, very large, distinctly oblong vertically, its longest diameter 5× as long.

"NSW: Wategos / Beach, Cape Byron / 7 Nov. 2000 // Beach, Cape Byron / 7 Nov. 2000 [sic] // HOLOTYPE / Dasyrhicnoessa / atripes sp. n. ♂ / L. Munari des.” AM K186735.
as genal height: 6–8 blackish peristomal setae, three anteriors, including vibrissa, very strong and long; mouth parts pale yellow, with labellum shorter than length of buccal cavity, and palpus long, slightly clavate, bearing scattered setulae. Thorax. Entirely yellow, slightly translucent, with setal vestiture black; 1+3 long dorsoentral setae; 4 rows of acrostichal setulae on anterior half of scutum, otherwise arranged in 2–3 rows; posterior surface of scutum mostly bare (holotype); prescutellar acrostichals very long and strong; postpronotal lobe bearing 3 setae, each with different inclination, posterior seta long and strong, anterior setae shorter and weaker; 1 long presutural seta; 2 notopleurals
about subequal in length; 1 supra-alar, below it 1 shorter and weaker seta; 2 postalar, external one distinctly longer and stronger; scutellum with 4 long marginal setae; both proepisternal and proepimeral setae present; anepisternum with scattered pubescence, bearing 3 long, posteriorly directed, posterosomal setae, middle one longer and stronger, and 1 erect, thin seta at posterosomal margin; katepisternum with few scattered setulae and bearing long posterosomal seta; anepimerite, katergite and meron without setae and setulae. Legs. Evenly setulose, bearing short blackish to yellowish setae and setulae, except for foreleg having coxa with long, black setae, and femur with a few posterosomal setae and remarkable row of very long, slightly curved, posteroventral setae; fore femur with ctenidium formed by long, strong, black spinulae (in female distinctly weaker); mid femur of male with row of long, spaced, spine-like, posteroventral black setae evenly arranged on entire length of femur; all legs, including coxae, yellow; last tarsomere slightly infuscate. Wing. Veins brownish yellow, membrane yellowish grey; alula with fringe formed by erect, black setae; costal vein reaching end of M₁, bearing several, spaced, microscopic setulae on dorsal and ventral surfaces; R₄₊₅ slightly bisinuate, diverging from R₄₊₅ distally; R₅₊₆ and M₁ parallel; crossvein r-m ending before middle of cell dm; crossvein dm-cu distinctly shorter than one third of last section of CuA₂; halter whitish. Abdomen. Brown, bearing several thin setae and setulae; transverse stripes at posterior edge of tergites narrow, whitish. Male terminalia (Figs. 5–6). Epandrium bearing two pairs of very long setae dorsally, and several short setae on remaining posterior surface; cercus moderately long, pubescent, covered with microscopic hairs and with long setae dorsally; anterior surstylus small, simple, with sparse, thin setae on both outer and inner sides; posterior surstylus rather broad, with anterior outline markedly sinuous, lobe-shaped; inner side of posterior surstylus with many setae and apical cluster of short, stout tubercles; aedeagal apodeme long and straight; distal fan of ejaculatory apodeme poorly developed; distiphallus long, ribbon-like, bearing long micropubescence.

Female. Similar to male, except for slight sexual dimorphism. Abdomen pale reddish yellow, marked by medial, longitudinal, brown stripe, and with transverse stripes at posterior edge of tergites hardly discernible; apex of postabdomen with segments telescopically retractile. Female terminalia. Cerci moderately long, straight, setulose; spermathecae spherical, smooth.

Distribution. Australia (NT).

Remarks. This new species is characterized by a long-haired arista (an apomorphic character state with respect to the ground plan of the Tethinidae, Figs. 7–8) as well as by the very enlarged posterior surstylus of the male terminalia (Fig. 5). Both these peculiar features, in addition to the yellow body and legs, and the characteristic slender habitus of the flies, are also found in D. longisetosa and D. priapus (see below). In my opinion, these three species form a taxonomic group, named here “the Dasyrhicnoessa ciliata-group”, in which D. ciliata would seem to be the sister species of the monophyletic clade D. longisetosa plus D. priapus, the latter two species additionally sharing a peculiar cluster of thin setulae arising from the medial side of posterosomal surface of the posterior surstylus (Figs. 11–12, 20–21) as well as sharing the lack of a true ctenidium which is well developed in D. ciliata.

Etymology. From the Latin ciliatum meaning bearing eyelashes. The specific epithet refers to the long-haired arista of the antennal postpedicel.

Dasyrhicnoessa ferruginea (Lamb, 1914)


Distribution. Afrotropical: Kenya, Madagascar, Seychelles (Albdrab, Astove, Mahé). South Indian Ocean Islands: Amsterdam Island, Australasian/Oceanian: Australia (QLD) [new distribution], Caroline Islands ( Yap), Mariana Islands ( Saipan), Palau, Papua New Guinea [new distribution]. Oriental: China (Hong Kong - Lantau), Malaysia (Sabah, Singapore), Philippines (Balabac, Busuanga, Calicoan, Culin, Leyte, Mindanao, Negros Oriental, Palawan).

Remarks. Males of this widespread species are easily distinguished from congeners by the peculiar shape of the posteroventral armature of the mid femur (see key). Conversely, the females are not so easily identifiable, since they are very similar to females of many other species.
**Dasyrhicnoessa fulvescens** Malloch, 1935


**Distribution.** Australia (QLD).

After thorough examination of the holotype preserved in AM. I am now able (see Munari, 2002) to confirm the validity of this species and dispel any doubt about a possible (see Malloch, 1935) conspecificity with *Dasyrhicnoessa serratula* Malloch. *Dasyrhicnoessa fulvescens* is chiefly characterized by the following combination of characters: body and legs entirely pale to fulvous yellow, except for syntergite 1+2 and tergite 3 broadly blackened (I do not know whether this colour is of pigmenal nature or due to postmortem factors affecting the internal organs); all setae and setulae golden brownish or golden yellow; arista micropubescent; fore femur lacking true etenidium, but with 3–4 microscopic, thin hairs present at its place; 4 rather regular rows of acrostichal setae on anterior half of scutum (thus, not “irregularly sexseriate” as erroneously stated by Malloch). Microscopic, thin hairs present at its place; 4 rather regular rows of acrostichal setae in addition to pair of strong ocellars; 3 pair of frontal setae intercalated with 3 pairs of short, thin setulae, all setae and setulae inclinate, mid pair cruciate at apex; antenna with postpedicel slightly infuscated, brownish, bearing microscopically pubescent, brown arista; Eye micropubescent, large, distinctly oblong vertically, its longest diameter 5.6x as long as genal height; 7 blackish peristomial setae, 3 anterior ones, including vibrissa, long and strong; mouth parts pale yellow, with labellum stumpy, distinctly shorter than length of buccal cavity, and palpus long, slender, bearing scattered black setae. **Thorax.** Yellowish grey; 1+3 dorsoventral setae; 6 rows of acrostichal setae on anterior half of scutum, otherwise arranged in 4 rows; prescutellar acrostichals long; postpronotal lobe bearing 3 setae, each with different inclination, posterior seta long and strong, anterior setae shorter and weaker; 1 very long presutural seta; 2 notopleurs about subequal in length; 1 supra-alar, below and before it four short and weak setae; 2 postalars, external one distinctly longer and stronger; scutellum with 4 long marginal setae; proepisternal seta long and strong, proepimeral one weak and slightly shorter; anepisternum with scattered setae, bearing 3 long, posteriorly directed, depressomarginal setae, mid one distinctly longer and stronger, and 1 erect seta at posteroventral margin; katapisternum with few scattered setae, bearing long and strong posteroventral seta; anepimeron, katatergite, and meron without setae and setulae. **Legs.** Evenly setulose, bearing short, blackish setae and setulae, except for foreleg having coxa with scattered, pale brownish, long setae, and femur with posteroventral and posteroventral rows of spaced, long setae; fore femur without true etenidium, only with single row of very short, thin, black setae (possibly spine-like) anteroventrally on distal half; mid femur of male with row of spaced, spine-like, posteroventral black setae, decreasing in length distally; all legs, including coxae, yellow, with last tarsomere slightly infuscated. **Wing.** Veins pale brownish, membrane yellowish grey; alula with fringe formed by long, erect, blackish setae; costal vein reaching end of M3, bearing several, spaced, microscopic setae on both dorsal and ventral surfaces; R5+6 distinctly bisinuate, diverging from R5+6 distally; R5+6 and M3 parallel; crossvein r-m ending at basal third of cell dm; crossvein dm-cu slightly shorter than one third of last section of CuA1; halter yellowish. **Abdomen.** Syntergite 1+2 yellowish, remaining tergites black, each of them with narrow, apicomarginal, white stripe; setal vestiture blackish. **Male terminalia** (Figs. 9–10). Epandrium bearing some long to very long setae on distal half, in particular on anteroventral surface, intermixed with shorter setae on entire posterior surface; cercus small, pubescent, dorsally covered with microscopic hairs and with long setae; anterior surstylus short and stumpy, bearing scattered, thin setae; posterior surstylus rather squat, bearing several long setae and apical cluster of thick tubercles on inner side; aedeagal apodeme long and straight, distinctly sclerotized on distal half; ejaculatory apodeme with well-developed distal fan; distiphallus long and slender, ribbon-like, bearing micropubescence on its basal half and subapically.

**Female.** Similar to male, except for slight sexual dimorphism. **Female terminalia.** Cerci long, straight, bearing scattered, thin setae; spermathecae spherical, smooth.

**Distribution.** Australia (NSW, QLD).
Etymology. From the Latin humilis meaning poor, humble or unpretentious. The specific epithet refers to the modest habitus and size of the new species as well as to the simple morphological features of the male terminalia.

*Dasyrhicnoessa insularis* (Aldrich, 1931)


Distribution. Afrotropical: Cameroon, Madagascar, Nigeria. Australasian/Oceanian: American Samoa (Tutuila), Australia (QLD) [new distribution], Canton Island, Caroline Islands (Ponapei, Chuuk, Yap, Palau), Fiji Islands (Ovalau, Suva [new distribution], see Appendix], Viti Levu), Hawaii (Hawaii, French Frigate Shoals, Hilo, Maui, Oahu, Pearl and Hermes Reef), Kiribati (Butaritari, Makin, Eita, Tarawa, Abemama), Line Islands (Christmas), Mariana Islands (Saipan, Tinian), Marquesas (Hivaoa, Nuku Hiva), Marshall Islands (Majuro, Japant, Parry, Lib, Jibu, Jaluit, Namorik), Palmyra Island, Pitcairn Island, Rapa Island, Society Islands (Bora Bora, ?Moorea [see appendix]), Wake Island.

Nearctic: Bermuda, USA (Florida). Neotropical: Bahamas (South Bimini), Belize, Brazil (Ceará), Mexico (Tabasco), West Indies (Cuba, Dominica, St. Lucia, St. Vincent).

Remarks. A pantropical species easily distinguished from congeners only by examination of the male terminalia. Females not strictly associated with males in the same biotope are not reliably identifiable.

*Dasyrhicnoessa longisetosa* n.sp.

Figs. 11–12

Type material. HOLOTYPE ♂ Papua New Guinea “Mangroves, / Port Moresby, / Papua 25 Oct. 1963 / D.K. McAlpine” // “HOLOTPUS / Dasyrhicnoessa / longisetosa” sp.n. / L. Munari des.” AM K186738. The specimen is in excellent condition, and is double mounted (glued on the tip of a Munari des.” AM K186738. The specimen is in excellent biotope are not reliably identifiable.


Distribution. Afrotropical: Cameroon, Madagascar, Nigeria. Australasian/Oceanian: American Samoa (Tutuila), Australia (QLD) [new distribution], Canton Island, Caroline Islands (Ponapei, Chuuk, Yap, Palau), Fiji Islands (Ovalau, Suva [new distribution], see Appendix], Viti Levu), Hawaii (Hawaii, French Frigate Shoals, Hilo, Maui, Oahu, Pearl and Hermes Reef), Kiribati (Butaritari, Makin, Eita, Tarawa, Abemama), Line Islands (Christmas), Mariana Islands (Saipan, Tinian), Marquesas (Hivaoa, Nuku Hiva), Marshall Islands (Majuro, Japant, Parry, Lib, Jibu, Jaluit, Namorik), Palmyra Island, Pitcairn Island, Rapa Island, Society Islands (Bora Bora, ?Moorea [see appendix]), Wake Island.

Nearctic: Bermuda, USA (Florida). Neotropical: Bahamas (South Bimini), Belize, Brazil (Ceará), Mexico (Tabasco), West Indies (Cuba, Dominica, St. Lucia, St. Vincent).

Remarks. A pantropical species easily distinguished from congeners only by examination of the male terminalia. Females not strictly associated with males in the same biotope are not reliably identifiable.

*Dasyrhicnoessa longisetosa* n.sp.

Figs. 11–12

Type material. HOLOTYPE ♂ Papua New Guinea “Mangroves, / Port Moresby, / Papua 25 Oct. 1963 / D.K. McAlpine” // “HOLOTPUS / Dasyrhicnoessa / longisetosa” sp.n. / L. Munari des.” AM K186738. The specimen is in excellent condition, and is double mounted (glued on the tip of a triangular card); abdomen dissected, stored in glycerol in a small plastic tube, and pinned below the specimen. PARATYPES Australia, Queensland: “Mangroves, / Gladstone, Qld. / 19 Dec. 1961 / D.K. McAlpine”, 1♂; “Mangroves. / Mackay, Q. / 19 Jan. 1967 // D. McAlpine & / G. Holloway coll.”, 4♀ 3♀ 1♀. The holotype and most of the paratypes are deposited in AM, a few paratypes are preserved in MCV.

Distinguishing features. The new species is closely related to both *D. ciliata* n.sp., and *D. priapus* n.sp., in particular to the latter species, differing from them noticeably in the morphology of the male terminalia.

Description. Size. Body length 2.0 mm (2.0–3.1), wing length 1.8 mm (1.8–2.6), wing width 0.6 mm (0.6–1.0).


Head. Entirely yellow; frons, including orbital vittae, homogeneously yellow, except for usual golden yellow patch on both sides of ocellar triangle; paravertical setae well developed, inclinate; inner vertical seta inwardly curved, strong, about as long as or slightly longer than laterocinulate outer vertical seta; postocular and postgenal setae somewhat longer, former ones in single row; upper postocular seta long and strong, inclinate towards inner vertical seta; ocellar triangle bearing pair of long, thin pseudopostocellar setae in addition to pair of strong ocellars; 2–3 very short, thin setae between ocellars and pseudopostocellar; 3 strong, laterocinulate orbital setae; row of long, thin, inclinate setae on orbital vitta between two anterior orbitals and frontals; 3 pairs of frontal setae plus 2 pairs of thin setae, all setae and setulae inclinate, two anterior frontal setae cruciate at apex; antenna with large and pubescent postpedicel, bearing blackish, long-haired arista (an apomorphic character state); eye micropubescent, very large, slightly oblong vertically, its longest diameter 7.7× as long as genal height; 6 dark brown peristomal setae decreasing in length and strength from front to back; vibrissal seta long and strong; mouth parts pale yellow, with labellum as long as or slightly shorter than length of buccal cavity, and palpus long, slightly clavate, bearing scattered black setulae. Thorax. Entirely yellowish, with mesonotum slightly darker than pleura; 1–3 very long dorsocentral setae; 5–6 rows of acrostichal setulae on anterior half of scutum, otherwise arranged in 4 rows; prescutellar acrostichals very long and strong; postpronotal lobe bearing 3 setae, each with different inclination, posterior seta long and strong, anterior setae shorter and slightly weaker; 1 long presutural seta; 2 notopleurals about subequal in length; 1 supra-alar, below and before it two short and weaker setae; 2 postalars, external one distinctly longer and stronger; scutellum with 4 long marginal setae; both proepisternal and proepimeral setae present; anepisternum with scattered setulae, bearing 3 long, posteriorly directed, posteromarginal setae, mid one longer and stronger, and 1 erect seta at posterodorsal margin; katepisternum with few scattered setulae, bearing long and strong posterodorsal seta; anepimeron, katategiter, and meron without setae and setulae. Legs. Evenly setulose, bearing short, yellowish to brownish yellow setae and setulae, except for foreleg having coxa with long setae, and femur with a few posterodorsal and posteroventral setae; fore femur without true ctenidium, only with short row of thin setae anteroventrally at distal third; mid femur of male with row of posteroventral, spine-like, long, spaced, black setae on distal half; all legs, including coxae, yellow, with last tarsomere very slightly infuscated. Wing. Veins yellowish, membrane yellowish grey; alula with fringe formed by long, erect, diaphanous setae; costal vein reaching end of M1, bearing several, spaced, microscopic setae on dorsal and ventral surfaces; R3+4 slightly bisinuate, diverging from R3+4 distally; R5+5 and M1 parallel; crossvein r-m ending before middle of cell dm; crossvein dm-cu distinctly shorter than half of last section of CuA1; halter yellowish. Abdomen. Mostly yellowish, with setal vestiture formed by golden brown setae and darker posteromarginal setae on each tergite; transverse stripes at posterior edge of tergites yellow, hardly discernible. Male terminalia (Figs. 11–12). Epandrium bearing two pairs of long setae dorsally, and several short setae on remaining posterior surface; cercus of normal size, pubescent, dorsally covered with microscopic hairs and with long, thin setae; anterior surstylos simple, straight, bearing sparse, thin setae on inner side; posterior surstylos almond-shaped in lateral view, narrow and pointed in posterior view, bearing few stout tubercles on posterior margin of distal half
and characteristic cluster of thin setae on posterior margin of mid surface; aedeagal apodeme straight to slightly bisinuate; ejaculatory apodeme large, as long as or slightly shorter than aedeagal apodeme, with distal fan broad, well developed; distiphallus long, ribbon-like, with ventral micropubescence on basal half as well as subapically; marginal, membranous, aedeagal lobe distinctly visible medially.

**Female.** Similar to male, except for slight sexual dimorphism. **Female terminalia.** Cerci long, straight, bearing several thin setulae; spermathecae spherical, smooth.

**Distribution.** Australia (QLD), Papua New Guinea.

**Remarks.** Apart from the various, often considerable, morphological features of the body and male terminalia, the new species is recognizable by having the mesonotal setae distinctly longer than those of congeners.

**Etymology.** Compound word, from the Latin *longus* meaning long, and *saetosus* meaning bearing setae or bristly. The specific epithet refers to the relatively long setae of the head and thorax.
Dasyrhicnoessa macalpinei n.sp.
Figs. 13–14

**Type material.** **Holotype** ♂ Australia, Northern Territory “NT: Buffalo Ck, / Darwin; 2–5 Mar. / 1996; D.K. McAlpine, / G.R. Brown // HOLOTPUS / Dasyrhicnoessa / macalpinei sp.n. ♂ / L. Munari des.” AM K186739. The specimen is in relatively good condition; the left fore tibia and tarsus are missing, and the head is glued near the specimen. The holotype is deposited in AM, and is double mounted (glued on the tip of a triangular card label); abdomen dissected, stored in glycerol in a small plastic tube, and pinned below the specimen.

**Description.** **Size.** Body length 1.3 mm, wing length 1.3 mm, wing width 0.5 mm. **Habitus.** Small fly with body and legs pale yellowish. Setal vestiture pale yellow to dark brownish. Wings yellowish grey. **Head.** Yellowish to greyish yellow; frontal and orbital vittae pale yellow, distinctly paler than rest of frons; ocellar triangle and occiput greyish; golden yellow patch on both sides of ocellar triangle; paravertical setae thin, strongly inclinate; inner vertical seta inwardly curved, strong, about as long as laterocline outer vertical seta; postocular and postgenal setae very short, thin, former setae in 1–2 irregular rows; upper postocular seta long, inclinate towards inner vertical seta; ocellar triangle bearing pair of moderately long, thin pseudopostocellar setae in addition to pair of strong ocellars; a few very short, thin setulae between ocellars and pseudopostocellars, and behind latter setae; 3 strong, laterocline orbital setae intermixed with sparse, short setulae; 3 pairs of frontal setae intercalated with 3 pairs of short, thin setae, all setae and setulae inclinate; antennal postpedicel bearing brownish, short-hairied arista; eye micropubescent, very large, slightly oblique, subrectangular, its longest diameter 5.5x as long as genal height; 5 brownish to black peristomal setae, two anterior ones, including vibrissa, long and strong; mouth parts pale yellow, with labellum stumpy, shorter than length of buccal cavity, and palpus long, slender, bearing scattered short setae.

**Thorax.** Yellowish; 1+3 dorsocentral setae; acrostichal setulae in 4 irregular rows; prescutellar acrostichals long; postpronotal lobe bearing 3 setae (only two are discernible in holotype, lower seta being missing), each with different inclination, posterior seta long and strong, anterior setae shorter and weaker; 1 long presutural seta; 2 notopleurals, anterior one slightly longer; 1 supra-alar (missing in holotype), below it 1 shorter and weaker seta; 2 postalars, external one distinctly longer and stronger; scutellum with 4 long marginal setae; both proepisternal and proepimeral setae present; anepisternum with scattered setulae, bearing 3 long, posteriorly directed, postero marginal setae, mid one distinctly longer and stronger, and 1 erect seta at posterior disk margin; katepisternum with few scattered setae, bearing long and strong postero dorsal seta; anepimeron, katatergite, and meron without setae and setulae. **Legs.** Evenly setulose, bearing short brownish to blackish setae and setulae, except for foreleg having coxa with scattered, pale brownish, long setae, and femur with postero dorsal and posteroverentral rows of spaced, long setae; hind tibia with long, posteroverentral pubescence on distal half, formed by several, erect, yellowish setae; fore femur without true ctenidium, only with row of short, thin setulae anteroventrally on distal half; mid femur with comb of 6 spine-like, short, subequal in length, posteroverental black setae on distal half; all legs, including coxae, yellow; last tarsomere slightly infuscate. **Wing.** Veins yellowish, membrane yellowish grey; alula with fringe formed by erect, blackish setae; costal vein reaching end of M1, bearing several, spaced, microscopic setulae on both dorsal and ventral surfaces; R2+3 distinctly bisinuate, diverging from R3+4 distally; R4+5 and M1 parallel; crossvein r-m ending just before middle of cell dm; crossvein dm-cu distinctly shorter than half of last section of CuA2; halter yellow. **Abdomen.** Yellowish brown, with setal vestiture formed by golden brown setae and setulae; transverse stripes at posterior edge of tergites yellowish. **Male terminalia (Figs. 13–14).** Epandrium bearing characteristic cluster of long, strong setae on entire anteroventral surface, in particular on anterior part, and short setae on all remaining posterior surface; cercus long and narrow, pointed apically, pubescent, dorsally covered with microscopic hairs and with long setae; anterior surstylus strongly reduced, rounded at apex, bearing scattered, thin setae; posterior surstylus subrectangular in lateral view, long, straight, and narrow in posterior view, bearing numerous short setae and cluster of short, stout tubercles on distal third; aedeagal apodeme long and straight, without evident sinuosity; ejaculatory apodeme diaphanous, poorly sclerotized, with distal fan well developed; distiphallus long, slender, ribbon-like, distinctly pointed at apex, bearing several, scattered, microscopic hairs.

**Female.** Unknown.

**Distribution.** Australia (NT).

**Remarks.** As regards the external morphology, the new species is particularly characterized by having the hind tibia of the male bearing long, thin, yellowish pubescence on the posteroverental distal half. Personally, I have never observed this character in any other Dasyrhicnoessa species. It would be interesting to know whether the females also share such a peculiar feature.

**Etymology.** The new species is gratefully named after Dr David K. McAlpine who collected the holotype and facilitated my study of a large number of specimens held at the Australian Museum.

Dasyrhicnoessa ostentatrix n.sp.
Figs. 15–17

**Type material.** **Holotype** ♂ Australia, New South Wales “Swept Sea grass / Careel Bay, / Avalon, NSW. // 12 May 1984 / D.K. McAlpine / D.J. Bickel // HOLOTPUS / Dasyrhicnoessa / ostentatrix sp.n. ♂ / L. Munari des.” AM K186740. The specimen is in excellent condition, and is double mounted (glued on the tip of a triangular card); abdomen dissected, stored in glycerol in a small plastic tube, and pinned below the specimen. **Paratypes** (many specimens were prepared by AM technicians using the brochette double mounting method): **Australia, New South Wales:** same data as holotype, 45 ♂ and 28 ♀; “NSW: Broken Head / nr Byron Bay / 7–8 Nov. 2000 // Shoreline rocks / D.K. McAlpine”, 3 ♂ 2 ♀; “Bundagen, via Repton / NSW 15 Jan. 1971/D.K. McAlpine / & A. Hughes // MV lamp”, 1 ♂; “Careel Bay / N. South Wales / 27 Oct. 1962 // Mangroves / D.K. McAlpine”, 3 ♂ 11 ♀; ibidem,
Figs. 13–17. Terminalia of male. *Dasyrhicoessa macalpinei* n.sp.: (13) lateral view (the arrow indicates the small anterior surstylus), (14) posterior view. *Dasyrhicoessa ostentatrix* n.sp.: (15) lateral view, (16) posterior surstylus outline variability, (17) posterior view. Scale bar: 0.1 mm.


**Description.** *Size*. Body length 1.8 mm (1.2–2.1), wing length 1.8 mm (1.5–1.9), wing width 0.6 mm (0.5–0.6).

**Habitus.** Dark grey to ochreous yellow species, with setal vestiture dark brown to black. Wings yellowish grey. **Head.** Frons brownish yellow, with frontal and orbital vittae pale yellowish, and with golden brown patch on both sides of dark grey ocellar triangle, latter concolorous with postcranium; antennal postpedicel infuscated; face, parafacial, and gena pale yellow; gena with distinct, longitudinal, narrow, translucent stripe as in many species of *Tethina* Haliday; paravertical setae long and thin; inner vertical setae inclinate, strong, about as long as lateroclinate outer vertical seta; postocular and postgenal setae short, former ones in 1–2 irregular rows; upper postocular setae long, inclinate towards inner vertical seta; ocellar triangle bearing pair of moderately long pseudopostocular setae in
addition to pair of strong ocellars; few short, thin setulae between ocellars and pseudopostocellar; 3 strong, laterocline orbital setae; row of thin, inclinate setulae on orbital vitta between two anterior orbitals and frontals; 3–4 short, additional setulae before anterior orbital setae, between this one and anterior margin of orbital vitta; 3 pairs of frontal setae intercalated with 3–4 pairs of short, thin setulae, all setae and setulae inclinate; antenna with brownish postpedicel, bearing short-haired, black aristae; eye micropubescent, large, oblique, its longest diameter 5.2x as long as genal height; 6–7 black peristomial setae, three anterior ones, including vibrissa, long and strong; mouth parts pale yellowish, with labellum slightly shorter than length of buccal cavity; palpus long, slender, bearing scattered black setulae.  

Thorax. Dark grey to ochreous; 1+3 dorsocentral setae; 6 rows of acrostichal setulae on anterior half of scutum, otherwise arranged in 4 rows; prescutellar acrostichals long and strong; postpronotal lobe bearing 3 setae, each with different inclination, posterior seta long and strong, anterior setae shorter and weaker; 1 long presutural seta; 2 notopleurals about subequal in length; 1 supra-alar, below it 1 short seta; 2 postalaros, external one distinctly longer and stronger; scutellum with 4 long marginal setae; both proepisternal and proepimeral setae present; anepisternum with few, scattered setulae (more numerous in most paratypes), bearing 3 long, posteriorly directed, posteromarginal setae, mid one distinctly longer and stronger, and 1 erect seta at postero dorsal margin; katepisternum with few, scattered setulae, bearing long and strong posterior dorsal seta; anepimeron, katatergite, and katepisternum with few, scattered setulae, bearing long and directed, posteromarginal setae, mid one distinctly longer. Legs. Evenly setulose, bearing short, blackish setae and setulae, except for foreleg having coxa with scattered, black, long setae, and femur with posterodorsal and posteroventral rows of spaced, long, strong setae; ctenidium of fore femur formed by few (4 in holotype), weak, short, spinulose; mid femur of male with long row of spaced, spine-like, posteroverentral black setae, decreasing in length distally; all legs, including coxae, yellowish grey; last two tarsomeres slightly infuscated. Wing. Venation pale brownish, membrane yellowish grey; alula with fringe formed by long, erect, blackish setae; marginal setulae intercalated with 3–4 pairs of short, thin setulae, all setae directed posterodorsal; 2 notopleurals about subequal in length; costal vein reaching end of M1, bearing several, spaced, spine-like, posteroventral black setae, decreasing in length distally; all legs, including coxae, yellowish grey; last two tarsomeres slightly infuscated. Ctenidium of fore femur formed by few (4 in holotype), weak, short, spinulose; mid femur of male with long row of spaced, spine-like, posteroverentral black setae, decreasing in length distally; all legs, including coxae, yellowish grey; last two tarsomeres slightly infuscated. 

Female. Similar to male, except for slight sexual dimorphism. Female terminalia. Cerci moderately long, setulose; spermathecae spherical, smooth.

Distribution. Australia (NSW, VIC).

Remarks. The new species shows a marked variability in coloration, with individuals having dark grey to ochreous yellow thorax, and with dark brown to black setal vestiture. That implies a considerable degree of difficulty in identifying the female specimens, unless they are strictly associated with several male specimens from the same biotope. In the preserved material, the males are easily distinguished from congeners in having the abdomen, when observed laterally, with the posterior surstyli distinctly and characteristically exposed outwards. Also, the lateral outline of the surstyli often exhibits a fair variability (Figs. 15–16).

Etymology. From the Latin ostentatrix meaning exhibitionist, parading or showing. The specific epithet refers to the external male terminalia which are distinctly exposed outwards.

**Dasyrhicnoessa pallida n.sp.**  
Figs. 18–19

Type material. **HOLOTYPE** ♂ Australia, Queensland “Mangroves. / Mackay, Q. / 19 Jan. 1967. / D. McAlpine & / G. Holloway coll. // HOLOTYPE / Dasyrhicnoessa / pallida sp.n. ♂ / L. Munari des.” AM K186741. The specimen is in excellent condition, and is double mounted (glued on the tip of a triangular card); abdomen dissected, stored in glycerol in a small plastic tube, and pinned below the specimen. **PARATYPES** Australia, Queensland: same data as holotype, 2♂ 6♀. The holotype and most of the paratypes are deposited in AM, a couple of paratypes are preserved in MCV.

Description. **Size.** Body length 2.2 mm (2.1–2.5), wing length 1.8 mm (1.7–2.0), wing width 0.7 mm (0.6–0.8). **Habitus.** Yellowish to greyish yellow species with setal vestiture dark brown to blackish. Wings yellowish grey. **Head.** Yellow, except for frons reddish yellow having orbital vittae distinctly lighter and usual golden yellow patch on both sides of ocellar triangle; paravertrical setae well developed, thin, inclinate; inner vertical seta inclinate, strong, about as long as laterocline outer vertical seta; postocular and postgenal setae short, former ones in single row; upper postocular seta long, inclinate towards inner vertical seta. Ocellar triangle bearing pair of moderately long, thin pseudopostocellar setae in addition to pair of strong ocellars; a few very short, thin setulae between ocellars and pseudopostocellar; 3 strong, laterocline orbital setae; row of thin, inclinate setulae on orbital vitta between two anterior orbitals and frontals; 6 short, strong, additional setulae before anterior orbital setae, between this one and anterior margin of orbital vitta; 3 pairs of frontal setae intercalated with 3 pairs of short, thin setulae, all setae and setulae inclinate, frontal setae often cruciate at apex. Antenna with large and pubescent postpedicel, bearing blackish, microscopically pubescent arista. Eye micro-pubescent, large, slightly oblong vertically, its longest diameter.
4.6x as long as genal height; 6 blackish peristomal setae, three anterior ones, including vibrissa, long and strong. Mouth parts pale yellow, with labellum stumpy, shorter than length of buccal cavity, and palpus long, slightly clavate, bearing scattered black setulae. **Thorax.** Yellowish with scutum greyish, slightly darker than pleura and scutellum; 1+3 dorsocentral setae; 6 irregular rows of acrostichal setulae on anterior half of scutum, otherwise arranged in 4 rows; prescutellar acrostichals long and strong; postpronotal lobe bearing 3 setae, each with different inclination, posterior seta long.
and strong, anterior setae shorter and weaker; 1 long presutural seta; 2 notopleurals about subequal in length; 1 supra-alar, below and before it 2–3 short and weaker setae; 2 postalars, external one distinctly longer and stronger; scutellum with 4 long marginal setae; proepisternal seta long and strong, proepimeral one weak and slightly shorter; anepisternum with scattered setulae, bearing 2–3 long, posteriorly directed, postero marginal setae, mid one distinctly longer and stronger, and 1 erect seta at postero dorsal margin; katepisternum with few scattered setulae, bearing long and strong postero dorsal seta; anepimeron, katergite, and meron without setae and setulae. Legs. Evenly setulose, bearing short blackish setae and setulae, except for foreleg having coxa with few pale brownish to black long setae, and femur with postero dorsal and posteroventral rows of spaced, long setae; foretarsus without true ctenidium, only with simple row of very short, and posteroventral rows of spaced, long setae; fore femur with posteroventral comb of spine-like, short, subequal in length, slightly but distinctly curved forward, black setae on distal half. All legs, including coxae, yellow; last with posteroventral comb of spine-like, short, subequal in length, slightly but distinctly curved forward, black setae on distal half. All legs, including coxae, yellow; last tarsomere not or indistinctly infuscated. On distal half. All legs, including coxae, yellow; last tarsomere not or indistinctly infuscated.

Wing. Veins yellowish, membrane yellowish grey; alula with fringe formed by long, erect, blackish setae; Costal vein reaching end of M₁, bearing several, spaced, microscopic setulae on both dorsal and ventral surfaces; R₁-₅ distinctly bininate, diverging from R₄-₅ distally; R₄-₅ and M₁ parallel; crossvein r-m ending before middle of cell dm; crossvein dm-cu distinctly shorter than one third of last section of CuA₁; halter yellow. Abdomen. Mostly yellowish to brownish yellow, with median, acrostichal setulae on anterior half of scutum, otherwise distinctly infuscated. Wing. Veins yellowish, membrane yellowish grey; alula with fringe formed by long, erect, blackish setae; Costal vein reaching end of M₁, bearing several, spaced, microscopic setulae on both dorsal and ventral surfaces; R₁-₅ distinctly bininate, diverging from R₄-₅ distally; R₄-₅ and M₁ parallel; crossvein r-m ending before middle of cell dm; crossvein dm-cu distinctly shorter than one third of last section of CuA₁; halter yellow. Abdomen. Mostly yellowish to brownish yellow, with median, acrostichal setulae on anterior half of scutum, otherwise distinctly infuscated.

Male terminalia (Figs. 18–19). Epandrium bearing some long setae dorsally and ventrolaterally, and several short setae on all remaining posterior surface; cercus of normal size, dorsally covered with microscopic hairs and with long setae; anterior surstylos short, straight, narrow, bearing few apical, thin setae; posterior surstylos lobe-shaped, distinctly squat in caudal view, bearing many short setae and apical cluster of stout tubercles on inner side; aedeagal apodeme long and straight; ejaculatory apodeme stumply, with distal fan moderately though distinctly developed; distiphallus long and slender, ribbon-like, with evident microsetulae on basal half as well as subapically.

Female. Similar to male, except for slight sexual dimorphism. Female terminalia. Cerci long, straight, bearing thin setulae dorsally and apically; spermatheca spherical to subspherical, in a few paratypes with chitinized wall surrounding spermathecal duct opening distinctly invaginated (possibly collapsed).

Distribution. Australia (QLD).

Remarks. In this species the lateral profile of the male terminalia vaguely resembles that of Dasyrhicinaessa mathisi Munari even though the latter species has the anterior surstylos noticeably longer and stouter. Additionally, the two species are easily separable by the different colour of the body and legs.

Etymology. From the Latin pallidus meaning pale. The specific epithet refers to the pale hue of the body in this new species.

Dasyrhicnoessa priapus n.sp.

Figs. 20–22

Type material. Holotype ♂ Australia, Queensland “Mangroves / Eurimba, Qld. / 28 Mar. 1975 / D.K. McAlpine // HOLOTYPUS / Dasyrhicinaessa / priapus sp.n. ♂ / L. Munari des.” AM K186742. The specimen is in relatively good condition: head, thorax, wings, and forelegs are very well preserved (including setal vestiture), but, unfortunately, the hind legs are missing, the left mid leg is glued near the specimen, the right mid leg has both tibia and tarsus missing, and the surviving femur is broken medially. The specimen is double mounted (glued on the tip of a triangular card); abdomen dissected, stored in glycerol in a small plastic tube, and pinned below the specimen. Paratype: same data as holotype, 1 ♀. Holotype and paratype are deposited in AM.

Description. Size. Body length 2.2 mm (3.0), wing length 1.9 mm (2.6), wing width 0.7 mm (0.9). Habitus. Yellowish species with setal vestiture dark brown having golden reflections. Head yellow with antenna bearing long-haired arista. Wings yellowish grey. Head. Entirely yellow; frons, including orbital vittae, homogeneously yellow, except for usual, golden yellow patch on both sides of ocellar triangle; paraversal setae very long and rather strong, inclinate; inner vertical seta inwardly curved, strong, about as long as lateroocellate outer vertical seta; postocular and postgenal setae somewhat long, former ones very distinctive and in single row; upper postocular seta long and strong, inclinate towards inner vertical seta; ocellar triangle bearing pair of long pseudostepocellar setae in addition to pair of strong ocellars; two very short, thin setulae between ocellars and pseudostepocellar; 3 very strong, lateroocellate orbital setae; a few long, thin setulae on orbital vitta in addition to orbital setae; 3 pairs of frontal setae plus 2 pairs of thin setulae, all setae and setulae inclinate, former ones cruciate at apex; antenna with large and pubescent postpedicel, bearing dark brown, long-haired arista; eye micropubescent, very large, slightly oblong vertically, its longest diameter 6.6x as long as genal height; parafacial very narrow, as a consequence vibrissal angle distinctly protruding; anterior margin of gena distinctly curved upwards, bearing three strong peristomal setae (including vibrissa); 5 dark brown peristomal setae decreasing in length and strength from front to back; vibrissal seta very long and strong; mouth parts pale yellow, with labellum distinctly shorter than length of buccal cavity; palpus long, slightly clavate, bearing scattered black setulae. Thorax. Entirely yellowish, with mesonotum slightly darker than pleura; 1+3 long dorsocentral setae; 6 rows of acrostichal setulae on anterior half of scutum, otherwise arranged in 4 rows; prescutellar acrostichals very long and strong; postpronotal lobe bearing 3 setae, each with different inclination, posterior seta long and strong, anterior setae shorter and slightly weaker; 1 long presutural seta; 2 notopleurals about subequal in length; 1 supra-alar, below and before it 2 shorter and weaker setae; 2 postalars, external one distinctly longer and stronger; scutellum with 4 long marginal setae; both proepisternal and proepimeral setae present; anepisternum with scattered pubescence, bearing 2–3 long, posteriorly directed, posteromarginal setae, mid one (missing in holotype) longer and stronger, and 1 erect seta (missing in holotype) at postero dorsal margin;
katepisternum with scattered pubescence on anterior part, bearing long and strong posterodorsal seta; anepimeron, katatergitae, and meron without setae and setulae. Legs. (In holotype the hind legs and the tibia and tarsus of the right mid leg are missing, the left mid leg is glued near the specimen) Evenly setulose, bearing short black setae and setulae, except for foreleg having coxa with very long setae, and femur with posterodorsal and posteroventral setae; fore femur without true ctenidium, only with long row of thin setulae; mid femur of male with posteroventral armature formed by spine-like, very long and spaced setae on distal half; legs, including coxae, yellow; tarsi entirely yellowish. Wing. Veins yellowish brown, membrane yellowish grey; alula with fringe formed by very long, erect, diaphanous setae; costal vein reaching end of M1, bearing several, long and strong posterodorsal seta; anepimeron, katepisternum with scattered pubescence on anterior part, bearing long and strong posterodorsal seta; anepimeron, katatergitae, and meron without setae and setulae. Legs. (In holotype the hind legs and the tibia and tarsus of the right mid leg are missing, the left mid leg is glued near the specimen) Evenly setulose, bearing short black setae and setulae, except for foreleg having coxa with very long setae, and femur with posterodorsal and posteroventral setae; fore femur without true ctenidium, only with long row of thin setulae; mid femur of male with posteroventral armature formed by spine-like, very long and spaced setae on distal half; legs, including coxae, yellow; tarsi entirely yellowish.

**Remarks.** With its characteristically patterned abdomen (see key), *Dasyrhicnoessa tripunctata* is the most easily distinguishable species among all congeners.
**Dasyrhicnoessa vockerothi** Hardy & Delfinado, 1980


**Distribution.** Afrotropical: Seychelles (Aldabra, Mahé). Australasian/Oceanian: Australia (NSW, NT, QLD) [new distribution], Caroline Islands (Truk, Palau), Gilbert Islands, Hawaii (Hilo, Kauai, Maui, Molokai, Oahu), Mariana Islands (Guam, Saipan), Marshall Islands, ?New Caledonia, Papua New Guinea [new distribution], Wake Island. Oriental: Japan (Ryukyus), Sri Lanka, Malaysia (Sabah, Sarawak).

**Remarks.** A rather common, Indopacific species characterized by having uniformly yellowish body and male terminalia with anterior surstylus of peculiar and unmistakable shape (Sasakawa, 1995, fig. 6).

An updated checklist of the world species of *Dasyrhicnoessa* Hendel, 1934

<table>
<thead>
<tr>
<th>Dasyrhicnoessa spp</th>
<th>distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>aquila</em> Munari, 2002</td>
<td>Australasian/Oceanian</td>
</tr>
<tr>
<td><em>atripes</em> n.sp.</td>
<td>Australasian/Oceanian</td>
</tr>
<tr>
<td><em>bicolor</em> Munari, 2002</td>
<td>Australasian/Oceanian</td>
</tr>
<tr>
<td><em>boninensis</em> Sasakawa, 1995</td>
<td>Australasian/Oceanian</td>
</tr>
<tr>
<td><em>ciliata</em> n.sp.</td>
<td>Australasian/Oceanian</td>
</tr>
<tr>
<td><em>clandestina</em> Munari, 2002</td>
<td>Australasian/Oceanian</td>
</tr>
<tr>
<td><em>ferruginea</em> (Lamb, 1914)</td>
<td>Afrotopical, South Indian</td>
</tr>
<tr>
<td><em>fulva</em> (Hendel, 1913)</td>
<td>Oriental</td>
</tr>
<tr>
<td><em>fulvescens</em> Malloch, 1935</td>
<td>Australasian/Oceanian</td>
</tr>
<tr>
<td><em>humilis</em> n.sp.</td>
<td>Australasian/Oceanian</td>
</tr>
<tr>
<td><em>insularis</em> (Aldrich, 1931)</td>
<td>Nearctic, Neotropical, Afrotopical, Australasian/Oceanian</td>
</tr>
<tr>
<td><em>longisetosa</em> n.sp.</td>
<td>Australasian/Oceanian</td>
</tr>
<tr>
<td><em>mathisi</em> Munari, 2002</td>
<td>South Pacific Islands</td>
</tr>
<tr>
<td><em>macalpinei</em> n.sp.</td>
<td>Australasian/Oceanian</td>
</tr>
<tr>
<td><em>ostentatrix</em> n.sp.</td>
<td>Australasian/Oceanian</td>
</tr>
<tr>
<td><em>pallida</em> n.sp.</td>
<td>Australasian/Oceanian</td>
</tr>
<tr>
<td><em>platypes</em> Sasakawa, 1986</td>
<td>Oriental</td>
</tr>
<tr>
<td><em>priapus</em> n.sp.</td>
<td>Australasian/Oceanian</td>
</tr>
<tr>
<td><em>serratula</em> Malloch, 1935*</td>
<td>Australasian/Oceanian</td>
</tr>
<tr>
<td><em>sesseriana</em> (Hendel, 1913)</td>
<td>Oriental, Australasian/Oceanian</td>
</tr>
<tr>
<td><em>tripunctata</em> Sasakawa, 1974</td>
<td>Oriental, Australasian/Oceanian</td>
</tr>
<tr>
<td><em>vockerothi</em> Hardy&amp;Delfinado, 1980</td>
<td>Afrotopical, Oriental, Australasian/Oceanian</td>
</tr>
<tr>
<td><em>yoshiyasui</em> Sasakawa, 1986</td>
<td>Oriental</td>
</tr>
</tbody>
</table>

*a* platypes needs revision, its generic status being questionable.

*b* serrata of uncertain specific status.

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**Pseudorhincnoessa spinipes** Malloch, 1914


Material examined. **Australia, Northern Territory**: Smith Point, Cobourg Pen., 5.iii.1996, D.K. McAlpine, 18♂ 7♀; **Australia, Queensland**: Kurrimine Beach, 43 km South of Innisfail, 23.i.1991, D.K. McAlpine & B. Day, 1♀; Lloyd Bay, 3 mi N of Claudia River mouth, on beach, 25.xii.1971, D.K. McAlpine and G.A. Holloway, 13♂ 15♀; Lloyd Bay, Lockhart River, MV lamp, 24.x.1974, G. and A. Daniels, 2♂ 4♀; Restoration Beach, near Portland Roads, 13.x.1974, G. Daniels, 4♂ 1♀; [as *P. tibiseta* (Mall.)] Townsville [type locality of the junior synonym *Tethina tibiseta* Malloch], [without date], F.H. Taylor, (SPHTM Coll.), 2♂ 2♀; [as *P. tibiseta* (Mall.)] ibidem, at light, 1♀.

**Papua New Guinea**, Oro Bay, Northern Distri., 9.xii.1972, G.A. Holloway, 3♀; Port Moresby, Ela Beach, 6.x.1963, D.K. McAlpine, 10♂ 18♀; ibidem, 10.i.1964, 1♀.[AM]

**Distribution.** Australasian/Oceanian: Australia (NT [new distribution], QLD), Caroline Islands (Palau, Yap), Mariana Islands (Guam, Saipan), Marshall Islands (Alu, Likiep, Majuro), Papua New Guinea [new distribution]. Oriental: Malaysia (Sabah, Sarawak, Singapore), Philippines, Japan (Ryukyus), Taiwan, Vietnam.

**Sigaloethina** n.gen.

**Type species.** *Sigaloethina phaia* n.sp. (Fig. 23).

**Diagnosis.** Dark flies having fairly to noticeably glossy cuticle; head higher than long; face depressed and partially membranous; lower face, above vibrissal angle, without tubercle (like *Dasyrhicnoessa*); cephalic chaetotaxy typical of subfamily (though with setulae of frons and vittae a little impoverished in numbers); frons without discernible shining patch on both sides of ocellar triangle; arista of postpedicel bearing spaced, long hairs; eye densely micropubescent, very large, its longest diameter over 8x as long as genal height. Thorax entirely dark brown, glossy, slightly convex dorsally, with chaetotaxy typical of subfamily; disc of scutellum bare; thoracic cuticle covered with more or less faint grey microtomentum. Legs evenly setulose except for foreleg having coxa and femur with long setae; arkium of fore femur vestigial or even absent; mid femur of male with row of posteroventral, spine-like setae on entire length of femur; all legs with femora dark brown, remaining parts yellow to yellowish brown. Wing like those in *Dasyrhicnoessa* species, that is with vein R 2+3 slightly binsinate; halter yellowish. Abdomen shining, black, with narrow, apicomarginal, pale brownish stripe on each tergite; tergites bearing several black setae and setulae. Male terminalia with lobe-shaped anterior surstylus (Fig. 24) noticeably larger than posterior surstylus, latter straight and relatively narrow; anterior surstylus bearing characteristic triangular patch of microtrichia on outer surface; both surstyli bearing several tubercles on inner sides (Fig. 25); cerci small; distiphallus (Fig. 26) fairly complex, bearing membranous lobe medially; postabdomen of female with two spherical, smooth spermathecae.

**Remarks.** *Sigaloethina* is closely related to *Dasyrhicnoessa* differing from it particularly in having the body cuticle noticeably glossy, the frons lacking a discernible shining patch on both sides of the ocellar triangle, the setal vestiture of the frons slightly, even though distinctly, sparse, and for
the peculiar morphology of the male terminalia. On the basis of the present knowledge, *Sigaloethina* might be regarded as the sister group of *Dasyrhicnoessa*.

**Etymology.** The generic epithet derives from the fusion of the ancient Greek word *sigaloëis* meaning glossy or shiny, with the generic name *Tethina*, and refers to the body of these flies having glossy cuticle. Gender feminine.

*Sigaloethina phaia* n.sp.

Figs. 23–26


**Description.** Size. Body length 2.1 mm (1.6–2.3), wing length 2.1 mm (1.5–2.3), wing width 0.8 mm (0.5–0.8).

**Habitus** (Fig. 23). Dark brown species having glossy cuticle, generally covered with thin, greyish microtomentum. Wings yellowish grey.

**Head.** Dark brown, except for anterior surface of frons, antenna, face, parafacial, and gena being yellow; frons without discernible golden patch on both sides.

![Image of Sigaloethina phaia](image.png)
of ocellar triangle, or, if weakly present, absolutely not contrasting with rest of glossy, dark surface; paravertical setae thin, strongly inclinate; inner vertical seta inwardly curved, strong, about as long as laterovertical outer vertical seta; postocular setae relatively long and strong, arranged in single row: upper postocular seta long, inclinate towards inner vertical seta; ocellar triangle bearing pair of thin pseudopostocular setae in addition to pair of strong ocellars; 3 strong orbital setae, mid one distinctly laterovertical, anterior and posterior setae more weakly laterovertical to posteriorly directed; orbital vitta, apart from strong orbitals, almost entirely bare, at most with very few, thin setule; 2 pairs of frontal setae, posterior pair with short, thin setae (some paratypes bear 1 to 3 pairs of such setae), anterior pair (in most paratypes equivalent to mid pair) with setae cruciate at apex; antenna with pedicel bearing very long dorsal setae, and postpedicel with arista bearing several long hairs; eye densely micropubescent, large, subrectangular, its longest diameter 8.2× as long as genal height; 7 black peristomatal setae, four anteriors, including vibrissa, distinctly spaced, strong and long; shining knob above vibrissal angle absent (like Dasyrhiconoea); mouth parts yellowish, with labellum small and stumpy, and palpus long and slender, bearing few black setulae. Thorax. Entirely dark brown, noticeably glossy; with setal vestiture black, mostly covered with light grey microomentum; 1+3 dorsocentral setae; 4 rows of acrostichal setulae on entire length of scutum; prescutellar acrostichals long and thin; postpronotal lobe bearing 3 setae, each with different inclination, posterior seta very long and strong, anterior setae shorter and weaker; 1 long presutural seta; 2 notopleural subsqua in length; 1 supra-alar, below it 1 shorter seta; 2 postalar, external one very long; scutellum bare, except for usual 4 long marginal setae; both proepisternal and proepimeral setae present, latter seta distinctly thinner; anepisternum with scattered pubescence, bearing 2–3 long, posteriorly directed, postero-marginal setae, mid one distinctly longer and stronger, and 1 erect, thin seta at posterodorsal margin; katepisternum with scattered pubescence, bearing long, erect, posterodorsal setae; anepimeron, katatergite, and meron without setae and setulae. Legs. Evenly setulose, bearing short blackish setae and setulae, except for foreleg having coxa with long black setae, and femur with very long, markedly spaced, postero-dorsal and posteroventral setae; fore femur having vestigial ctenidium, at most with 1–2 spine-like setae (among the paratypes there are specimens without evident ctenidial spinulae, only with few, spaced, thin setae; conversely, a few other specimens show 1–4 weak, spaced spinulae which could represent the rudiments of a true ctenidium); mid femur of male with row of robust, subequal in length, posteroventral, spine-like setae arranged on entire length of femur; all legs show yellow coxae, dark brown femora, yellowish brown to yellow tibiae, and yellow tarsi; fore and hind femurs of male slightly swollen. Wing. Veins brownish yellow, membrane yellowish grey; alula with fringe formed by erect, blackish setae; costal vein reaching end of M1 (sometimes as faint segment), bearing microscopical setae on both dorsal and ventral surfaces; R2+3 slightly bisinuate, diverging from Rp5 distally; R4+5 and M1 parallel; crossvein m-r ending before middle of cell dm; crossvein dm-cu distinctly shorter than one third of last section of CuA1; halter yellowish. Abdomen. Shining, black, with narrow, apicomarginal, pale brownish stripe on each tergite; tergites bearing several black setae and setulae. Male terminalia (Figs. 24–26). Epandrium broad, bearing sparse setae on posterior surface, few of them long and strong, in particular on dorsal surface and on posterior-marginal part of distal half; cercus of normal size, pubescent, covered with microscopic hairs and with long setae dorsally; anterior surstylus arising from lower part of epandrium, distinctly larger than posterior surstylus, vaguely subtriangular, with external angles broadly rounded, its transverse axis almost perpendicular to longitudinal axis of epandrium, bearing patch of close microtrichia forming triangular area on outer surface, and with numerous, stout tubercles on posterior inner side; posterior surstylus simple, elongated, broadly rounded apically, bearing several stout tubercles on inner side; aedeagal apodeme long, bisinuate proximally; ejaculatory apodeme with broad distal fan; phallus (Fig. 26) relatively short; distiphallus with basal half distinctly sclerotized, bearing many spine-like papillae, distal half bearing strongly diaphanous membranous lobe, and with unusual, partly sclerotized folding zone dividing phallus in two halves.

Female. Similar to male, except for very slight sexual dimorphism. Female terminalia. Ceri slender, narrow, bearing setulae dorsally and apically; spermathecae spherical, smooth.

Distribution. Australia (NSW, NT).

Remarks. The two specimens from Buffalo Creek (Northern Territory) are smaller than the other paratypes from New South Wales. However, the male terminalia are similar and I regard the specimens from both areas as conspecific.

Etymology. From the ancient Greek phaios meaning dusky or brown. The specific epithet refers to the dark brown colour of the new species.

Sigaloethina sp. near phaios n.sp.


Remarks. The female specimen from Gladstone (QLD) shows a peculiar, dense microomentum on the thorax and abdomen, resembling the characteristic pruinescence covering the peel of a plum. This specimen, labelled with the abbreviation “cf.,” might be an undescribed species.

Tethina nigriseta Malloch, 1924

Figs. 27–28


Distribution. Australia (NSW, QLD, VIC [new distribution]).

Remarks. This species is probably the most common tethinid fly inhabiting the shores of NSW and VIC.

**Tethina pallidiseta** Malloch, 1935


Distribution. Australia (NSW, TAS [new distribution], VIC [new distribution], WA) (see Munari [2000] for WA record).

Remarks. This species is very easily recognizable by its white setae and setulae.

**Thitena n.gen.**

Type species. *Thitena cadaverina* n.sp. (Fig. 29).

Diagnosis. Robust, yellowish brown flies with legs bearing strong setae and long and thick villosity which is particularly developed in male; head roundish; face depressed, bearing shining, foldlike tubercle above vibrissal angle; cephalic chaetotaxy typical of subfamily; frons without discernible golden patch on both sides of ocellar triangle, only with slight infuscation; arista microscopically pubescent; eye roundish, with few, sparse interfacetal setulae; longest diameter of eye over 3.5× as long as genal height. Thorax very slightly flattened dorsally, with chaetotaxy typical of subfamily; disc of scutellum pubescent (Fig. 30); all thoracic setae distinctly thinner than those in all other Tethininae. Legs very robust, strongly villose, particularly forelegs in male (an apomorphic character state with respect to the ground plan of the Tethinidae); tarsi of male stumpy, with tarsomeres noticeably short (in particular basitarsomeres), setulose, and flattened; true ctenidium absent; tibiae with rows of strong setae. Wing typical of subfamily; halter pale yellow. Abdomen rather robust, with tergites and sternites well sclerotized; male terminalia (Figs. 31–32) with very

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Fig. 29. Thitena cadaverina n.gen. and n.sp., habitus. (Drawing by G. D’Este).
long and slender anterior surstylus, and large posterior surstylus externally covered with dense microtrichia; both surstyli subequal in length and reciprocally parallel. Spermathecae of female spherical, smooth.

Remarks. For some morphological and chaetotactic traits as well as for the general habitus, the new genus would seem to be related to Pseudorhichoessa, differing from it particularly for the following characters besides those given in the key: larger size; body and legs distinctly more robust and setulose; frons with numerous additional setulae; thoracic setae distinctly thinner; true ctenidium of fore femur absent; fore tibia with row of strong setae; mid and hind tibiae with different chaetotactic pattern; tarsi of male stumpy, with tarsomeres noticeably short (in particular basitarsomeres), setulose, and flattened; crosseein dm-cu longer, about as long as half of last section of CuA; abdomen with sternites well sclerotized; male terminalia with anterior and posterior surstyli subequal in length and reciprocally parallel.

Etymology. The generic epithet derives from an anagram of the generic name Tethina. Gender feminine.

**Thitena cadaverina n.sp.**

Figs. 29–32

**Type material.** **HOLOTYPE** δ Australia, Western Australia “Barrow Island / W. Australia / 12.i.1977 H. H. 75 / H. Heatwole / W.H. Butler // On dead turnstone / 12 Feb. 1977 / Beach / Barrow Is. W.A. / H. H. 75. // HOLOTPUS / Thitena cadaverina / gen. n., sp. n. δ // L. Munari des.” AM K186744. The specimen is in fairly good condition (many setae missing, posterior edge of both the wings a little damaged), and is double mounted (glued on the tip of a triangular card label); abdomen, including terminalia, in situ. **PARATYPES Australia, Western Australia:** same data as holotype, 4 δ 7 ♂ ♂. The holotype and most of the paratypes are deposited in AM, a couple of paratypes is preserved in MCV.

**Description.** **Size.** Body length 4.1 mm (3.3–4.1), wing length 2.7 mm (2.2–2.7), wing width 1.0 mm (0.8–1.0). **Habitus** (Fig. 29). Robust, yellowish brown species with legs bearing strong setae and long and thick villosity. Wings brownish yellow. **Head.** Frons brownish yellow to brown, with very narrow, whitish orbital vitta; ocellar triangle and postcraniol surface covered with dark grey microtomentum; antenna yellow, distinctly infuscated; face, parafacial, and gena pale yellowish, latter homogeneously microtomentum; frons without golden patch lateral to ocellar triangle, only with slight infuscation; paravertical setae strongly developed, cruciate at apex; inner vertical seta inclinate, strong, about as long as laterocline outer vertical seta; postocular and postgenal setae arranged in several irregular rows; 2 upper postocular setae inclinate towards para- verticals, external seta distinctly longer; ocellar triangle bearing pair of well-developed pseudopostocellar setae, distinctly longer than half of strong ocellars; a few very short setulae between ocellars and pseudopostocellars, and behind latter setae; 3 strong, laterocline orbital setae; several additional setulae between orbitals and frontalts, distinctly more numerous between two anterior orbitals and anterior pairs of frontal setae; 3–4 pairs of strong, frontal setae intercalated with 3 pairs of shorter and weaker setae, all setae and setulae inclinate; antenna with postpedicel bearing microscopically pubescent aristae; eye roundish, with strongly impoverished micropubesence formed by very few, sparse interfascial setulae; longest diameter of eye 2.8–3.3x as long as genal height; 7 strong peristomal setae (including vibrissa) decreasing in length posteriorly; very narrow, glossy stripe along peristomal edge, between this one and peristomial setae, ending above vibrissal angle to form foldlike, shining facial tubeclie; face depressed, without median carina; mouth parts yellow, with labellum shorter than length of buccal cavity, and palpus long, slender, slightly clavate, bearing scattered, golden brown setulae. **Thorax.** Brownish, covered with dark grey microtomentum; postpronotal lobe yellowish, faintly shining, distinctly contrasting with rest of brown thoracic surface; setae of mesonotum brownish to black, noticeably thinner than those in all other Tethininae species; 1+3 dorsocentral setae; 8–9 rows of acrostichal setulae on anterior half of scutum, otherwise arranged in 6 rows; prescutellar acrostichals long; prostriatal lobe bearing 3 setae, each with different inclination, posterior seta very long, anterior setae shorter, remaining surface with numerous strong setulae; 1 presutural seta; 2 notopleurals subequall in length; 1 supra-alar, below it 1 shorter seta; 2 postalars, external one slightly, even though distinctly, longer; scutellum with 4 long marginal setae and many additional setulae on discal surface (Fig. 30); proepisternal and proepimeral setae subequall in length and strength; anepisternum with pubesence almost fully covering entire surface, bearing 3 long, posteriorly directed, posternomarginal setae, mid one long and strong, and 1–2 erect, thin setae at posteroordinal margin; katepisternum very poorly pubescent on mid and upper parts, but with dense and very long brown villosity on lower surface, bearing long, erect seta on posteroordinal margin; anepimeron, katatergite, and meron without setae and setulae. **Legs.** Ventral and posteroventral sides of all legs, in particular of forelegs, strongly shaggy in male and with rows of long and robust setae present in both sexes; foreleg having yellow coxa bearing several, long, black setae; ventral and posteroventral surfaces of both fore femur and tibia of male covered with thick, very long and rather ruffled, golden villosity; fore tibia with row of posteroordinal black setae; fore femur bearing few setae dorsally and row of several, long, posteroventral setae; ctenidium absent, only short row of long, thin, golden setae in its place; mid leg...
with more or less bristly femur, and with tibia bearing antero- and posterodorsal rows of strong and long setae on distal two thirds of its length; hind leg with femur distinctly swollen in male, and with tibia bearing anteroventral and antero- and posterodorsal rows of long and strong setae (in variable number) on distal two thirds of its length; tarsi of male stumpy, with tarsomeres noticeably short (in particular basitarsomeres), setulose, and flattened; all legs brownish, with last tarsomeres darker. **Wing.** Veins light brownish to yellowish, membrane brownish yellow; alula with fringe formed by several, erect, golden brown setae; costal vein reaching end of M₁, with apex of first section, just above subcostal break, bearing long and strong spine-like seta; dorsal and ventral surfaces of costal vein with hardly discernible, microscopic setulae; R₂+₃ almost straight to perceptibly bisinuate, slightly, even though distinctly, diverging from R₄+₅ distally; R₄+₅ and M₁ parallel; crossvein r-m ending before middle of cell dm; crossvein dm-cu about as long as half of last section of CuA₁; halter pale yellow. **Abdomen.** In male, with tergites and sternites well sclerotized, former rather broad, with narrow, yellowish, marginal stripes, and covered with several brownish to black setulae as well as with moderately long, golden brown, marginal setae which are longer on postabdominal segments; epandrium of male terminalia distinctly exposed. **Male terminalia** (Figs. 31–32). Entire surface of epandrium bearing numerous, short setae; cercus tiny, dorsally covered with microscopic hairs and with long setae; anterior surstylus very long and slender, about as long as posterior surstylus, narrow, slightly bent forwards, bearing very long, spaced, thin setae on inner side; posterior surstylus large, bent forwards, distinctly tapered and pointed apically (in lateral view), externally covered with dense microtrichia, bearing several thin setae and short, stout tubercles on inner side of posterior margin; aedeagal apodeme relatively short, sinuated medially; ejaculatory apodeme with distal fan poorly developed, having regular, subtriangular, unindentated margin; distiphallus stumpy, short, ribbon-like, covered with dense micropubescence. **Female.** All legs distinctly setulose, but without remarkable long villosity; for the rest, external morphology and chaetotaxy similar to male, except for slight sexual dimorphism; abdominal sternites well developed and distinctly sclerotized; 6th tergite and sternite large, latter with roundish margin; both tergites and sternites brown, bearing several marginal setae and setulae. **Female terminalia.** Cerci small, relatively short, setulose; spermathecae spherical, smooth. **Distribution.** Australia (WA). **Remarks.** More material of this interesting species is desirable as most of the type series is damaged. Many specimens have a collapsed thorax and many setae and setulae are missing. **Etymology.** From the Latin *cadaverinus* meaning of dead body, corpse, carcass. The specific epithet refers to the substrate upon which the new species was collected: a dead Turnstone (a migratory shorebird of the genus *Arenaria*) possibly washed up on the beach.
A catalogue of the Tethininae of Australia and Papua New Guinea

Genus *Dasyrhicnoessa* Hendel


**atripes** n.sp. Distribution: Australia (NSW).

*Dasyrhicnoessa atripes* n.sp. (described in the present work) [New South Wales: Wategos, Cape Byron, beach; HT ♂, AM K186735; figures of ♂ terminalia].

**ciliata** n.sp. Distribution: Australia (NT).

*Dasyrhicnoessa ciliata* n.sp. (described in the present work) [Northern Territory: Buffalo Ck, Darwin; HT ♂, AM K186736; figures of antenna and ♂ terminalia].

**ferruginea** (Lamb). Distribution, see text.


*Tethina ferruginea*.—Cogan, 1980: 693 [generic combination, Afrotropical catalog].

*Dasyrhicnoessa ferruginea*.—Munari, 1988: 48 [generic combination, lectotype designation].

**fulvescens** Malloch. Distribution, see text.


**humilis** n.sp. Distribution: Australia (NSW, QLD).

*Dasyrhicnoessa humilis* n.sp. (described in the present work) [New South Wales: Careel Bay, Avalon; HT ♂, AM K186737; figures of ♂ terminalia].

**insularis** (Aldrich). Distribution, see text.

*Tethina insularis* Aldrich, 1931: 395 [(USA) Wake Island; HT ♀, USNM (41629)].

*Rhicnoessa insularis*.—Hendel, 1934: 44 [key], 48 [generic combination, citation].


*Dasyrhicnoessa ferruginea* of authors, not Lamb, 1914 [misidentification].

**longisetosa** n.sp. Distribution: Australia (QLD), Papua New Guinea.

*Dasyrhicnoessa longisetosa* n.sp. (described in the present work) [Papua New Guinea: Port Moresby, mangroves; HT ♂, AM K186738; figures of ♂ terminalia].

**macalpinei** n.sp. Distribution: Australia (NT).

*Dasyrhicnoessa macalpinei* n.sp. (described in the present work) [Northern Territory: Buffalo Ck, Darwin; HT ♂, AM K186739; figures of ♂ terminalia].

**ostentatrix** n.sp. Distribution: Australia (NSW, VIC).

*Dasyrhicnoessa ostentatrix* n.sp. (described in the present work) [New South Wales: Careel Bay, Avalon, swept sea grass; HT ♂, AM K186740; figures of ♂ terminalia].

**pallida** n.sp. Distribution: Australia (QLD).

*Dasyrhicnoessa pallida* n.sp. (described in the present work) [Queensland: Mackay, mangroves; HT ♂, AM K186741; figures of ♂ terminalia].

**priapus** n.sp. Distribution: Australia (QLD).

*Dasyrhicnoessa priapus* n.sp. (described in the present work) [Queensland: Eurimbula, mangroves; HT ♂, AM K186742; figures of ♂ terminalia].

**serratula** Malloch [sp. inq.]. Distribution, see text.


**sexseriata** (Hendel). Distribution, see text.

*Rhicnoessa sexseriata* Hendel, 1913: 110 [Taiwan: Anping; HT ♀, DEI].


*Dasyrhicnoessa sexseriata*.—Mathis & Munari, 1996: 12 [generic combination].

*Dasyrhicnoessa asymbasia* Sasakawa, 1995: 56 [Caroline Islands: Yap Islands, Rummang Island (at light); HT ♂, USNM; figures of ♂ terminalia].—Mathis & Munari, 1996: 12 [synonymy].

**tripunctata** Sasakawa. Distribution, see text.

*Dasyrhicnoessa tripunctata* Sasakawa, 1974: 5 [Philippines: Palawan, Tinabog (3 km NE); HT ♂, BPBM (10355)].
Dasyrhicnoessa phyllodes Sasakawa, 1995: 64 [Caroline Islands: Palau Islands, Babelthuap Island, Almongui (Ngaramlungui); HT ♂, USNM; figures of ♂ terminalia].—Munari, 1996: 10 [synonymy].

vockerothi Hardy & Delfinado. Distribution, see text.
Dasyrhicnoessa vockerothi Hardy & Delfinado, 1980: 373 [Hawaii: Kauai, Haena (collected on beach); HT ♂, BPBM].

Dasyrhicnoessa occidentalis Munari, 1986: 47 [Seychelles: Mahé, Mahé Beach (10 km N); HT ♂, MCV]; Munari, 1990: 53 [synonymy].

Genus Plesiotethina Munari


Plesiotethina australis Munari, 2000: 240 [Australia: southwest Australia, south of Shoal Bay (6 km S Albany; salt meadow); HT ♂, ZSM; figures of head and ♂ terminalia].

Genus Pseudorhicnoessa Malloch


Macrotethina Malloch, 1935: 91 (as a subgenus of Tethina). Type species: Tethina (Macrotethina) tibiseta Malloch, by original designation.

spinipes Malloch. Distribution, see text.
Pseudorhicnoessa spinipes Malloch, 1914: 307 [Taiwan: Takao; HT ♀, USNM].—Munari, 2002: 549, 550 [citation, Malaysia, Philippines, Australia (QLD), discussion].

Tethina (Macrotethina) tibiseta Malloch, 1935: 91 [Australia: Queensland, Townsville; HT ♂, AM].

Genus Sigaloethina n.gen.

Sigaloethina n.gen. (described in the present work). Type species: Sigaloethina phaia n.sp.

phaia n.sp. Distribution: Australia (NSW, NT).

Sigaloethina phaia n.sp. (described in the present work) [New South Wales: Careel Bay, Avalon, mangroves; HT ♂, AM K186743; figures of habitus and ♂ terminalia].

Genus Tethina Haliday

Tethina Haliday, in Curtis, 1837: 293 (as a subgenus of Opomyza; published in synonymy; first made available by use in Haliday, 1838: 188). Type species: Opomyza (Tethina) ilota Haliday, 1838, by subsequent monotypy (Haliday, 1838: 188).


Tethina hirsuta Munari, 2000: 244 [Australia: southwest Australia, Hopetoun (southern coast); HT ♂, ZSM; figures of head, legs, abdomen, ♂ terminalia, spermathecae].
nigriseta Malloch. Distribution, see text.


Rhincoessa nigriseta.—Hendel, 1934: 43 [key], 47 [citation].

Tethina (Tethina) nigriseta.—Malloch, 1935: 92 [citation].

ochracea (Hendel). Distribution: Afrotrropical: Cape Verde Islands, Senegal, Seychelles (Aldabra), South Africa. Australasian/Oceanian: Australia (WA). Oriental: Taiwan. Neartropical: Chile, Mexico. Palaearctic: Algeria, Azores, Bulgaria, Canary Islands, Egypt, France, Greece, Israel, Italy, Madeira, Malta, Spain (including Balearic Islands), Tunisia, Turkey.


Rhincoessa texana Malloch, 1913: 148 [USA. Texas. Nueces: Corpus Christi; HT ♀, USNM (15807)].

Tethina texana.—Sturtevant, 1923: 7 [generic combination].—Munari & Evenhuis, 2000: 147 [synonymy].
Tethina chilensis Malloch, 1934: 455 [Chile: Antofagasta, Antofagasta; HT ♀, USNM (allotype on same pin)].—Munari & Evenhuis, 2000: 147 [synonymy].


cadaverina Malloch. Distribution, see text.


Genus Tithena n.gen.

Tithena n.gen. (described in the present work). Type species: Tithena cadaverina n.sp.

cadaverina n.sp. Distribution: Australia (WA).

Tithena cadaverina n.sp. (described in the present work) [Western Australia: Barrow Island, on dead Turnstone; HT ♀, AM K186744; figures of habitus, scutellum, and ♀ terminalia].

Conclusions

Even though restricted to the subfamily Tethininae, I hope that this study, together with an earlier paper on the beach flies from the southwestern coast of Australia (Munari, 2000), lays the foundations for further research. This study suggests that Tethina is much less diverse in species than Dasyrhicnoessa. Tethina species mainly inhabit maritime sandy beaches, that are, in some localities, subject to anthropogenic effects related to leisure and industry. Conversely, Dasyrhicnoessa species mainly occur in inhospitable environments such as mangrove forests around lagoons and inland bodies of water, or impenetrable littoral belts. These two particular littoral ecosystems have produced in the past, differing speciation rates within these two genera. It appears that the genus Tethina is poorly represented in Australia whereas the pan-tropical Dasyrhicnoessa has many species awaiting discovery. A similar situation exists with the better known Afrotropical fauna where the endemic Afrothetina is far more numerous than Tethina.

The data on the beach flies of Papua New Guinea are too scant to allow a fair assessment of its fauna. Possibly the Tethinidae of Papua New Guinea are more similar to the fauna of Malaysia and Melanesia.

With regard to Australia, our knowledge contains a huge gap as little is known about the Tethinidae of Northern Territory, Western Australia and South Australia. An indication of this may be the fact that two new genera and three new species from Western Australia, including Thitena cadaverina described here, have been found from scantly material, fruit of quite occasional dipterological collections.

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References


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**Appendix—Tethinidae from Pacific islands**

In the material examined there were a few specimens from some Pacific Ocean islands; this material is cited below:

### Dasyrhicnoessa clandestina Munari, 2002

(Munari, 2002: 543)

**Material examined.** Fiji Islands, Suva, xii.1929, K62562, H.R. Rabone, 1 ♀ [AM].


### Dasyrhicnoessa insularis (Aldrich, 1931)

(Munari, 2002: 543)

**Material examined.** Fiji Islands, Suva, xii.1929, K62562, H.R. Rabone, 1 ♀ [AM].

**Remarks.** Five females captured in association with both the male specimens of this and the previous species (D. clandestina) have no consistent diagnostic character for separation, and are provisionally treated as “Dasyrhicnoessa cf. clandestina/insularis”.

### Dasyrhicnoessa cf. insularis (Aldrich, 1931)

**Material examined.** French Polynesia, Society Is., Moorea, viii.1928, A. Tonnoir, 1 ♀ [AM]

**Remarks.** After examining this female specimen, merely named on label “Dasyrhicnoessa uniformis, Type” by Malloch but neither described nor published as a new species, I feel it should be regarded, tentatively, as Dasyrhicnoessa insularis (Aldrich).