

REICHENBACHIA

STAATLICHES MUSEUM FÜR TIERKUNDE IN DRESDEN

Band 18

Ausgegeben: 10. Dezember 1980

Nr. 26

On Some Species of the Genus *Empoascanara* DIST.

(Homoptera, Auchenorrhyncha, Cicadellidae, Typhlocybinae)

With 158 Figures

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Warszawa

The new material coming from the Oriental Region and Australia allows me to describe 13 new species and 3 new subspecies of the nominate subgenus, two new species of the subgenus *Bza* DWOR. and to give complementary notes on some other species of the genus. The type material is preserved at the collections quoted below. The curator of holotype is mentioned on the first place at certain description.

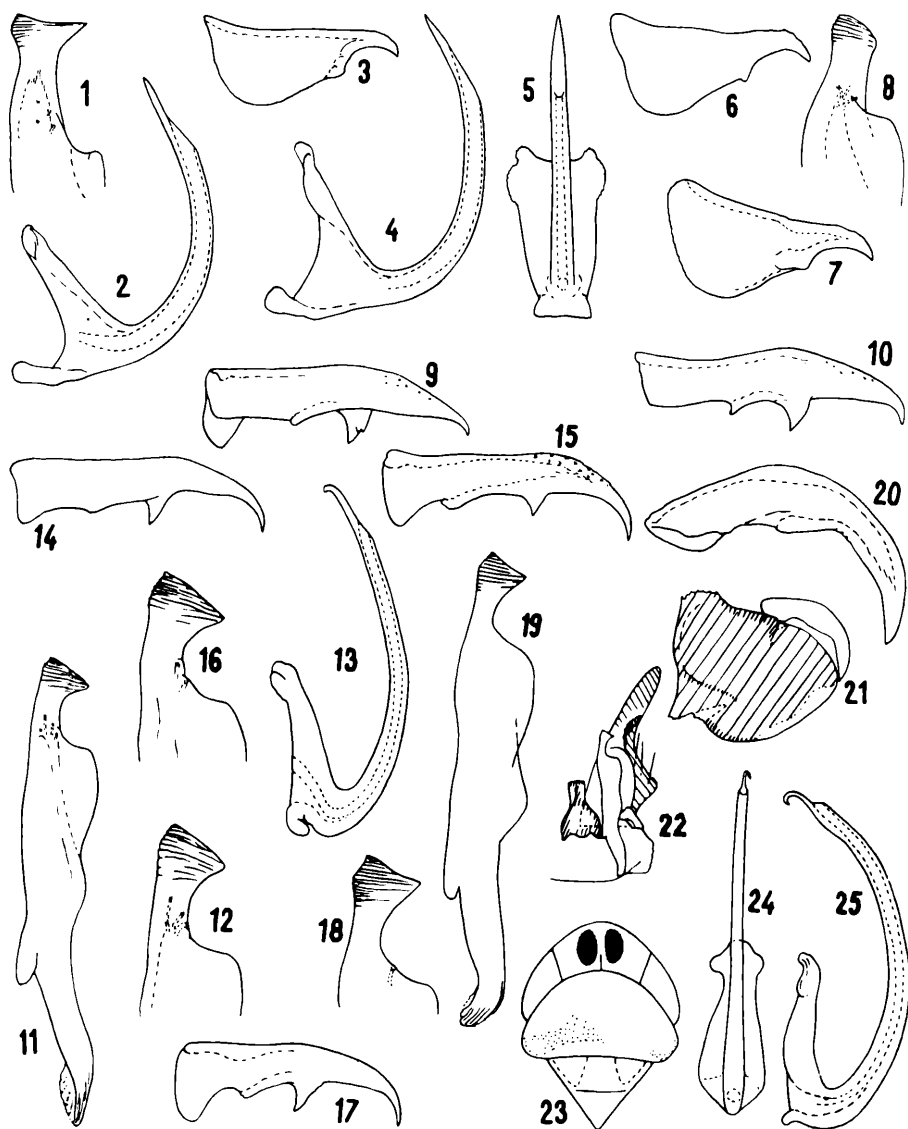
- ISEZ — Institute of Systematic and Experimental Zoology, Polish Academy of Sciences in Kraków
D — Staatliches Museum für Tierkunde in Dresden (G. D. R.)
Ber — Zoologisches Museum der Humboldt-Universität zu Berlin (G. D. R.)
BM — British Museum (Nat. Hist.) in London
MM — Moravian Museum in Brno (Czechoslovakia)
USNM — United States National Museum in Washington
CAS — California Academy of Sciences in San Francisco
FRI — Forest Research Institute in Dehra-Dun (India)
RI. — Collection of Dr. R. LINNAVUORI in Raisio (Finland)

Empoascanara (s. str.) *prinia* DISTANT, 1918 (Figs. 1–7)

Numerous females and 1 ♂, 2 ♀♀ (mounted together) labelled: "Chikkaballapura S. India T V Campbell" preserved at Zoological Survey of India in Calcutta; 2 ♂♂ (mounted together), same labels, preserved at USNM in Washington (figured). All of them belong to the same sample as female holotype, preserved at the British Museum. 4 ♂♂, 7 ♀♀, India, Karnataka, 30 km of Chikkaballapura, village Bannerghatta, Aug. 9, 1979, coll. I. DWORAKOWSKA; 9 ♂♂, 4 ♀♀, Sri Lanka, Colombo, June, 1902, coll. Dr. UZEL.

Empoascanara (s. str.) *indica* (DATTA, 1969) (Fig. 8)

1 ♂, India, Karnataka, Nandi Hills, Oct. 22, 1978; 5 ♂♂, 5 ♀♀, Karnataka, village Bannerghatta, Aug. 9, 1979; 1 ♂, Bannerghatta National Park, Aug. 9, 1979, coll. C. A. VIRAKTAMATH; 1 ♂, Karnataka, Chikkaballapura, coll. T. V. CAMPBELL; 2 ♂♂, 3 ♀♀, village Bannerghatta, Aug. 9, 1979; 2 ♂♂, Bannerghatta National Park, Aug. 9, 1979, coll. I. DWORAKOWSKA; 2 ♂♂, Karnataka, Bagalkot, Oct. 22, 1979, coll. C. A. VIRAKTAMATH; 1 ♂, Kerala, Walayar forest, Aug. 15, 1979, coll. S. VIRAKTAMATH; 11 ♂♂, 21 ♀♀, same loca-



Figs. 1-25.

Empoascanara (s. str.) *prima* DIST., specimens from Chikkaballapura: 1-7 1 apical part of paramere — 2: penis, side view — 3: appendage at upper margin of pygophore — 5: penis, posterior view. — *E.* (s. str.) *indica* (DATTA): 8. — *E.* (s. str.) *benigna benigna* DWOR.: 14-17 — *E.* (s. str.) *benigna lima* subsp. n., holotype: 9-13. — *E.* (s. str.) *dwukropka* sp. n.: 18-25. 21: proportions and scheme of pigmentation of pygophore side and upper appendage — 22: proportions and scheme of pigmentation of subgenital plate, paramere, connective and 9th abdominal sternite — 23: head and thorax, dorsal view

lity and date, coll. I. DWORAKOWSKA; 1 ♂, Delhi, Sept. 15, 1961, at light, coll. P. W. OMAN; 6 ♂♂, 3 ♀♀, New Delhi, Oct. 31, 1966; 1 ♂, Nov. 3, 1967; 1 ♂, Nov. 4; 2 ♂♂, Nov. 8; 2 ♂♂, Nov. 16, all collected at light trap by K. E. GIBSON; 15 ♂♂, 41 ♀♀, Madhya Pradesh, Jamtara nr. Jabalpur, Sep. 19; 2 ♂♂, 1 ♀, Jabalpur, Sep. 20; 6 ♂♂, 4 ♀♀, 30 km of Jabalpur, Udaipur, Sep. 21; 2 ♂♂, Indore, Sep. 22; 2 ♂♂, 5 ♀♀, 30 km S of Indore, Choral, Sep. 24; 27 ♂♂, 34 ♀♀, Khandwa, Sep. 26; 4 ♂♂, Sri Lanka, Kekirawa, Aug. 21, all collected by me on grasses in 1979.

***Empoascanara (s. str.) alami* (AHMED, 1970)**

4 ♂♂ (among them one paratype of *E. formosella* DWOR.), Bangla Desh, Chittagong, Pauchlaish, Apr. 5, 1970, coll. FR. DVORÁK; 9 ♂♂, Burma, Rangoon, Nov. 5, 1971, coll. I. DOSTÁL; 5 ♂♂, 6 ♀♀, Cambodia, Siem Reap, Nov. 1958, coll. N. L. H. KRAUSS; 1 ♂, Thailand, Chiangmai, Apr. 25; 1 ♂, Chiangmai, May, both collected at light trap by D. and E. THURMAN in 1952.

***Empoascanara (s. str.) benigna lima subsp. n.* (Figs. 9–13)**

The only observable features distinguishing the new subspecies from the nominate one are: penis stem only slightly fluently curved cephalad (Fig. 13) and upper appendage at pygophore terminated on very short hook (Figs. 9, 10). In Figs. 14–17 corresponding features of *E. (s. str.) benigna benigna* DWOR. are shown for comparison. Penis apex in the nominate subspecies (DWORAKOWSKA, 1979a) very often is as short as in the new one. Length ♂ 2.3 and 2.4 mm.

Holotype, male, India, Assam, Abhoypur For. Naphuk, 360 m, Oct. 12, 1961, coll. E. S. ROSS and D. Q. CAVAGNARO; *paratype*, ♂, Burma, Rangoon, Nov. 1957, coll. N. L. H. KRAUSS. (CAS, USNM)

***Empoascanara (s. str.) dwukropka sp. n.* (Figs. 18–25)**

Empoascanara ihaha DWOR. et PAWAR, 1975, in part.

Externally (Fig. 23) very similar to *E. sonani* (MATS.) and *E. ihaha* DWOR. et PAWAR.

Male genital apparatus resembles that of *E. benigna* DWOR. but pygophore appendage very large (Fig. 21) and arcuate (Fig. 20) and apical penis process thin short and curved (Figs. 24, 25).

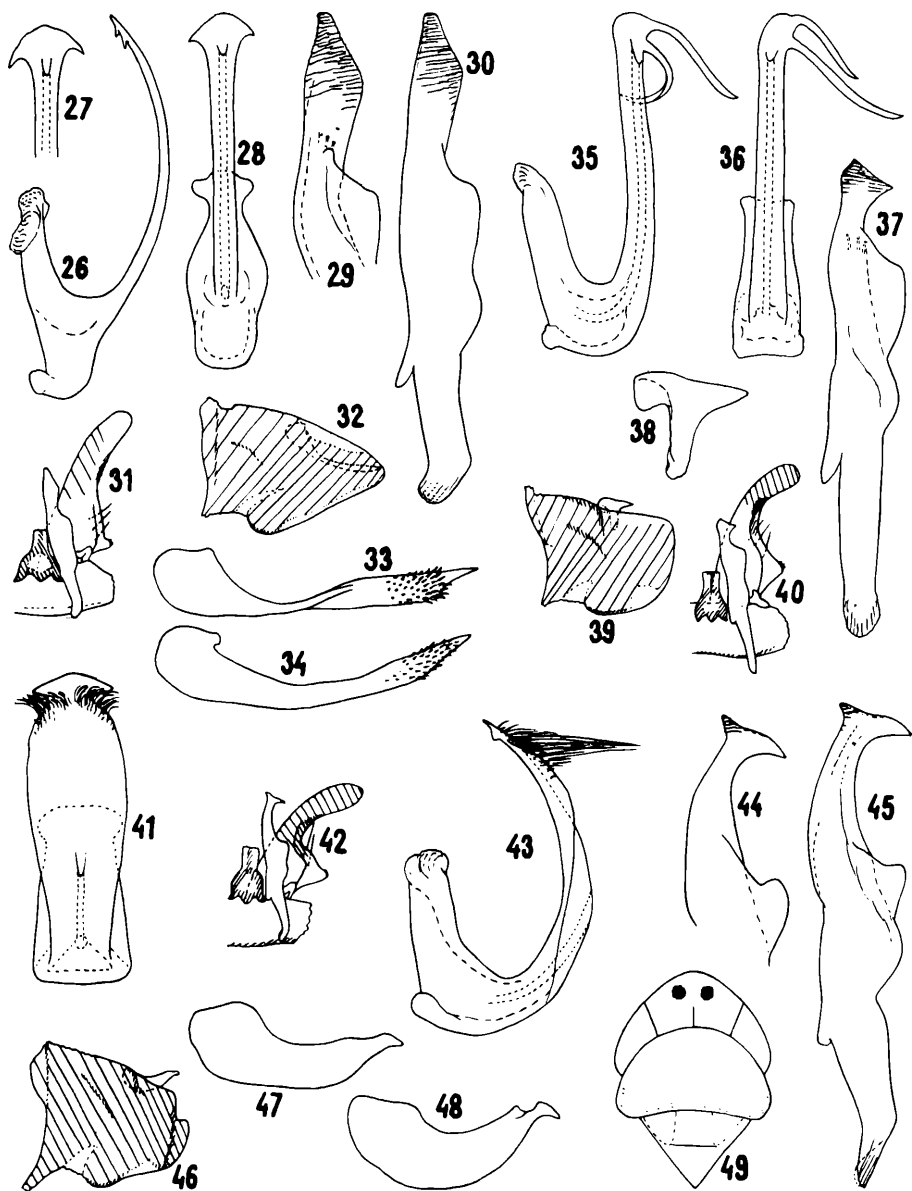
Length: ♂ 2.3 and 2.4, ♀ 2.5 mm.

Holotype, male, Philippines, Manila, coll. Robt. BROWN. *Paratypes* (a part of the type-series of *E. ihaha* DWOR. et PAWAR), 1 ♂, 2 ♀♀, Philippines, Los Baños, IRRI farm, rice, Oct. 10, 1973, coll. A. D. PAWAR. (USNM, MM, ISEZ)

***Empoascanara (s. str.) hirsuta sp. n.* (Figs. 26–34)**

Sides of face, pronotum anteriorly, scutum and scutellum, yellowish. Frontoclypeus and anteocular areas brownish. Almost whole anteclypeus, eyes, large cordiform patch at tip of vertex and basal triangles, blackish. Centre and a broad transverse fascia at hind margin of pronotum brownish-grey. Fore wing whitish-grey suffused with brownish-grey at costal and at hind margins and inside apical cells.

Subgenital plate resembles that of *E. alami* (AHMED) but sclerotized dark tubercles small and not numerous. Paramere proportions (Fig. 31) as in *E. alami* (AHMED) but its tip part



Figs. 26-49.

Empoascanara (s. str.) *hirsuta* sp. n.: 26-34. — *E. (s. str.) dravidana* sp. n.: 35-40. —
E. (s. str.) papaha sp. n.: 41-49.

(Figs. 29, 30) similar also to these of *E. nagpurensis* (DIST.) or *E. benigna* DWOR. Penis stem arcuate (Fig. 26) terminated on an asymmetrical plate (Figs. 27, 28). Pygophore process long (Fig. 32) tapering, covered with short hair-like spines apically (Figs. 33, 34).

Length: ♂ 2.4, ♀ 2.5–2.6 mm.

H o l o t y p e, male, and **p a r a t y p e s**, 2 ♂♂, 5 ♀♀, India, Madhya Pradesh, Jamtara nr. Jabalpur, Sep. 19, 1979, coll. I. DWORKOWSKA. (ISEZ, D, BM)

8 ♀♀ (not included to the type-series), Madhya Pradesh, Khandwa, Sep. 26, 1979, coll. I. DWORKOWSKA.

***Empoascanara* (s. str.) *snuga* DWORKOWSKA, 1979**

1 ♂, 1 ♀, India, Tamil Nadu, Conoor, Sim's Park, Aug. 11; 11 ♂♂, 6 ♀♀, Wellington, Aug. 12; 81 ♂♂, 75 ♀♀, Ketti, Aug. 12; 1 ♂, 6 ♀♀, Lovedale, Aug. 13; 4 ♂♂, 12 ♀♀, Ootacamund, Aug. 13; 1 ♂, 1 ♀, Shambaganur, Silver Cascade, Aug. 17, all collected on grasses by me in 1979; 1 ♀, Ketti, Aug. 12; 9 ♂♂, 24 ♀♀, Lovedale, Aug. 13; 6 ♂♂, 14 ♀♀, Ootacamund, Aug. 13; 6 ♂♂, 16 ♀♀, Shambaganur, Aug. 17, coll. S. VIRAKTAMATH in 1979, 11 ♂♂, 17 ♀♀, Ootacamund, Oct. 9, 1979, coll. C. A. VIRAKTAMATH.

***Empoascanara* (s. str.) *maculifrons* (MOTSCHULSKY, 1863)**

3 ♂♂, Sri Lanka, Peradeniya, Aug. 23, 1979, coll. I. DWORKOWSKA.

***Empoascanara* (s. str.) *truncata* (AHMED, 1971)**

12 ♂♂, 45 ♀♀, Nepal, Pokhara, Sep. 16; 1 ♂, Sarankot W of Pokhara, Sep. 17, coll. I. DWORKOWSKA in 1979; 1 ♂, India, Assam, Chabua, Oct. 28, 1943; 1 ♀, Chabua, Jan. 7, 1944, coll. D. E. HARDY; 10 ♂♂, 4 ♀♀, W Bengal, Calcutta, Oct., 1958; 1 ♂, Calcutta, Nov., 1958, coll. N. L. H. KRAUSS; 1 ♂, Philippines, Luzon, San Mateo, Isabelá, May 25, 1972, coll. A. D. PAWAR.

***Empoascanara* (s. str.) *dravidana* sp. n. (Figs. 35–40)**

Empoascanara truncata: DWORKOWSKA, 1978, nec *E. truncata* AHMED, 1971

Externally as *E. truncata* (AHMED) only slightly smaller and apical black patch on vertex shorter and broader.

Male genital apparatus similar to that of *E. truncata* (AHMED) but lower apical appendage at penis in the new species much longer than the upper one (Figs. 35, 36) while in *E. truncata* (AHMED), respecting its great variability, it is always shorter.

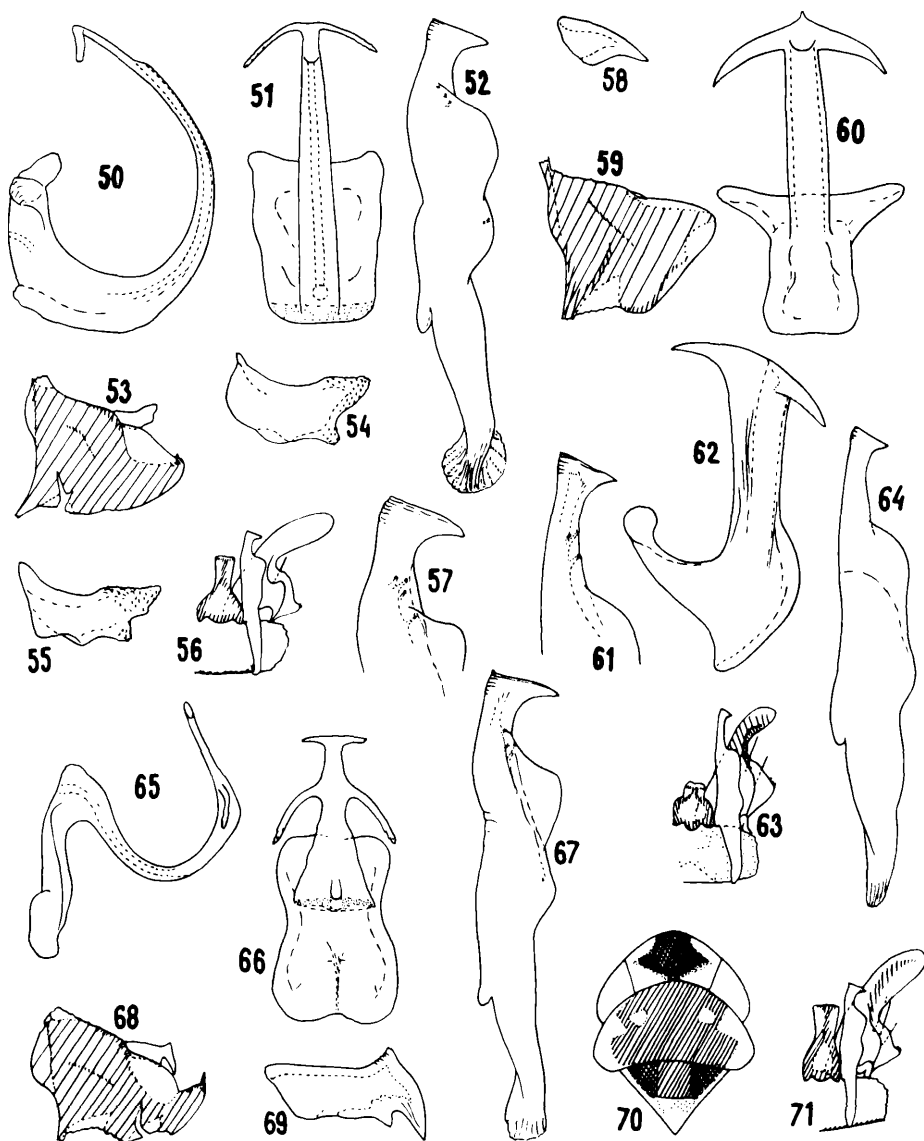
Length: ♂ 2.3 mm.

H o l o t y p e, male, India, Kerala, Walayar forest, Aug. 15, 1979, coll. I. DWORKOWSKA. (ISEZ)

***Empoascanara* (s. str.) *papaha* sp. n. (Figs. 41–49)**

Externally resembles *E. sonani* (MATS.) and *E. ihaha* DWOR. et PAWAR but paired blackish patches in the new species small (Fig. 49).

Male genital apparatus resembles that of *E. ihaha* DWOR. et PAWAR but in the new species neck region of upper part of paramere slimmer, postappendix produced (Figs. 44, 45) and upper process at pygophore side (Figs. 47, 48) more simple. Apical region of penis stem almost straight in profile, its subapical extension very short and needle-like processes longer and directed caudal in *E. papaha* sp. n. (Figs. 41, 43) while in *E. ihaha* DWOR. et PAWAR these features are developed differently. In posterior view the apical region



Figs. 50-71.

Empoascanara (s. str.) *dura* sp. n.: 50-57 — *E.* (s. str.) *peregrina* sp. n.: 58-64. — *E.* (s. str.) *tamara* sp. n. 65-71.

of penis shows a transversely expanded diamond-shaped lamella and canaliferous part of the penis stem is broader basally in the new species in comparison with the previous one.

Length: ♂ 2.25-2.40, ♀ 2.30-2.40 mm.

Holotype, male, Philippines, Luzon, Cabanatuan, W Ecya, Apr. 4, 1972, coll. A. D. PAWAR. **Paratypes** 1 ♂, Luzon, Bay-Laguna, Sep. 9, 1971, coll. A. D. PAWAR; 2 ♂♂, Philippines, San Jose, Mindoro, Oct. 1945, coll. E. S. ROSS; 2 ♂♂, 1 ♀, Manila, Sep. 30, 1951, coll. R. E. ELBEL; 1 ♀, Manila, coll. Robt. BROWN; 1 ♀, Manila, Sep. 12, 1926, coll. R. C. MCGREGOR. (BM, USNM, CAS)

***Empoascanara* (s. str.) *dura* sp. n.** (Figs. 50–57)

Vertex triangularly produced, greyish-testaceous. A large, almost oval patch in anterior part of vertex, eyes and basal triangles, blackish. Centre of face ochre-testaceous, sides pale. Lower $2/3$ of anteclypeus brownish. Fore wing brownish-dark grey, clavus and longitudinal sc and r cells the darkest. Transverse veins and longitudinal and apical cu veins, whitish. The 1st apical cell as well as apical part of longitudinal cu cell slightly infuscated, thus there is quite distinct light medial streak along fore wing.

Male genital apparatus resembles that of *E. mana* DWOR. et PAWAR but in the new species there is no manubrium at penis (Figs. 50, 51), neck region of apical part of paramere (Figs. 52, 56) very short and both pygophore appendages (Figs. 53–55) shaped differently.

Length: ♂♀ 2.2 mm.

Holotype, male, and **paratype**, ♀, Philippines, 4 km E of Los Baños, Oct. 31, 1979, coll. M. R. WILSON. (BM)

***Empoascanara* (s. str.) *peregrina* sp. n.** (Figs. 58–64)

The only specimen at my disposal has lost its natural shape and colouration during primary preservation in fluid. Anteclypeus and a large polygonal patch at anterior margin of vertex dark brown.

Penis resembles that of *E. dwalata* DWOR. but in the new species there is also an apical tooth (Figs. 60, 62). Neck region of upper part of paramere narrow and terminal broadening small (Figs. 61, 63, 64). Upper appendage at pygophore side rudimentary (Figs. 58, 59) but distinct and well sclerotized. Subgenital plate very broad basally (Fig. 63).

Length: ♂ about 2 mm.

Holotype, male, Australia, N. T., Stuart Hwy., Coomalie Ck., 50 m, Oct. 24, 1962, coll. E. S. ROSS and D. Q. CAVAGNARO. (CAS)

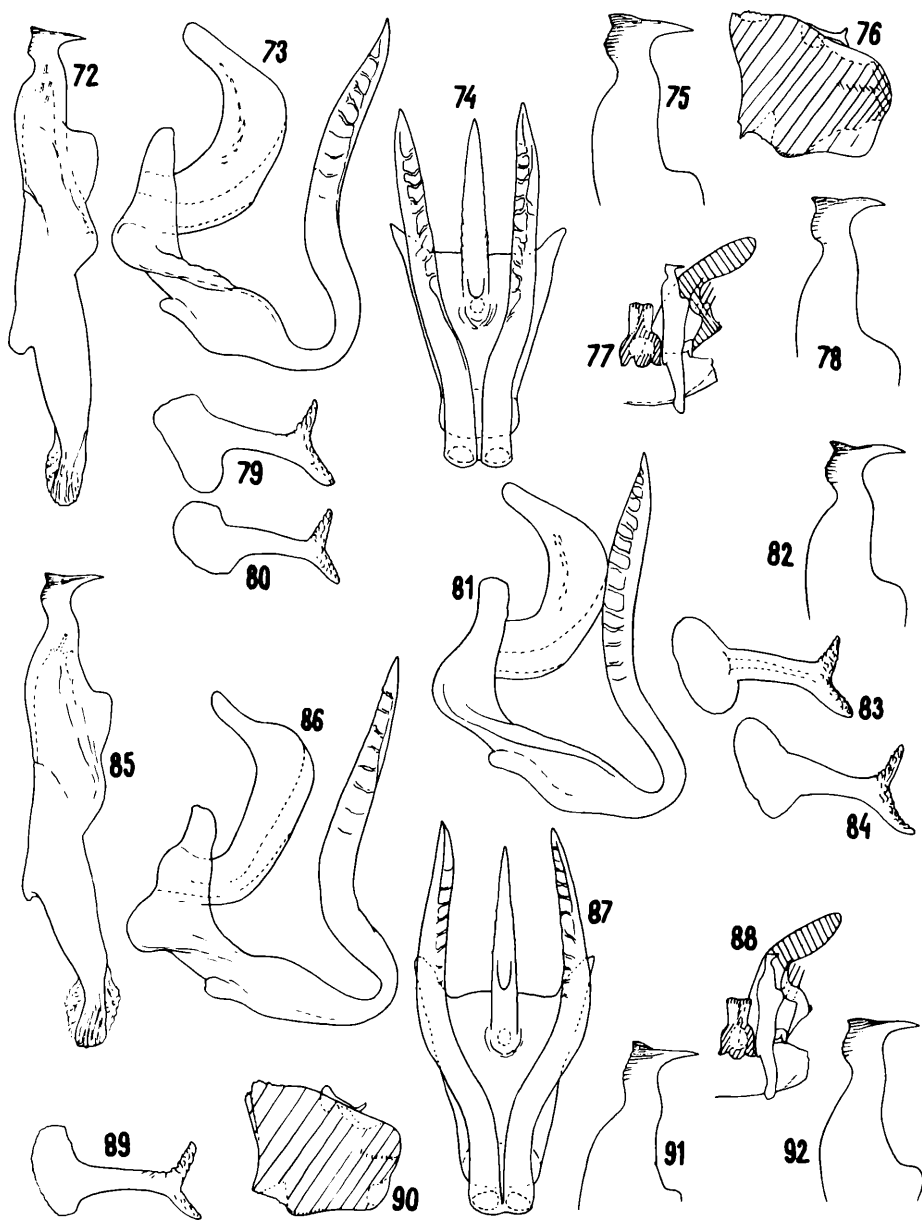
***Empoascanara* (s. str.) *tamara* sp. n.** (Figs. 65–71)

Upper side of head and thorax well pigmented. Background of vertex yellowish, pronotum sordid whitish. A dark pattern, seen in Fig. 70, brown, dark brown or blackish-brown. Eyes blackish. Face yellowish with two short oblique brown streaks at midline in upper part of frontoclypeus joining the big blackish-brown patch visible on vertex. Lower part of frontoclypeus light brown. Wings missing at the specimen.

Male genital apparatus similar to that of *E. pallidula* DWOR. et PAWAR but apical part of penis stem almost straight (Fig. 65), dorsal part of atrial rim not expanded and both pygophore appendages (Fig. 68) shaped differently in the new species.

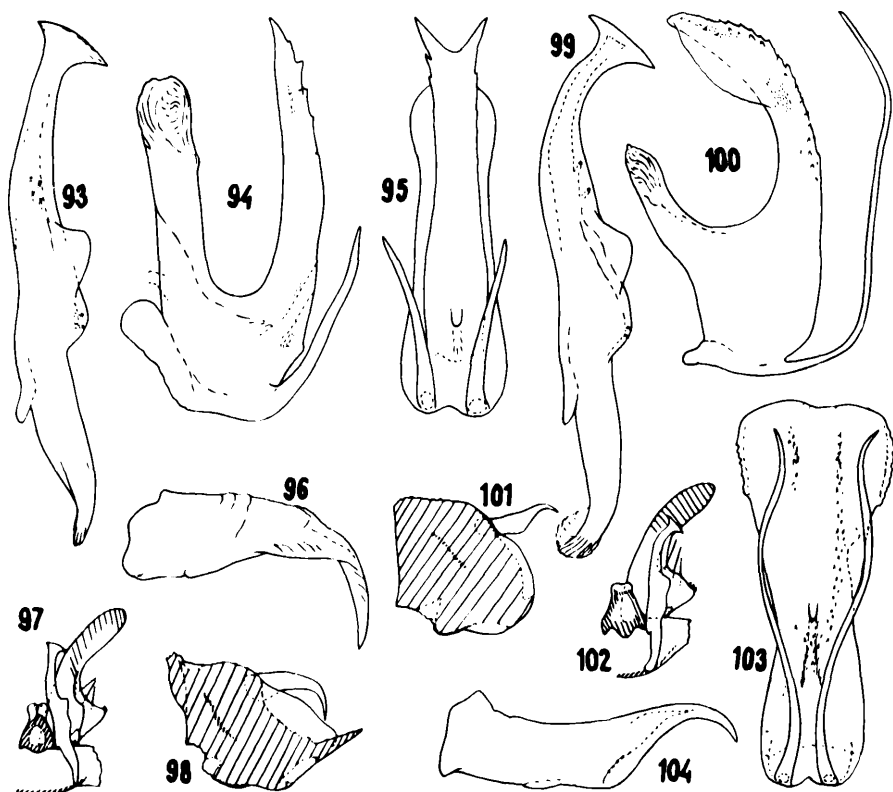
Length of male from apex of vertex to hind margin of pronotum: 0.4 mm.

Holotype, male, Philippines, Luzon, Banaue, Ifugo, Apr. 6, 1972, coll. A. D. PAWAR. (BM)



Figs. 72-92.

Empoasca (s. str.) *nigrobimaculata nigrobimaculata* (MOTSCH.) 72-80. — *E.* (s. str.) *nigrobimaculata minuta* subsp. n.: 81-84. — *E.* (s. str.) *sordida* sp. n.: 85-92.



Figs. 93–104.

Empoascanara (s. str.) *distincta* sp. n.: 93–98. — *E.* (s. str.) *cilla* sp. n.: 99–104.

***Empoascanara* (s. str.) *nigrobimaculata nigrobimaculata* (MOTSCHULSKY, 1863)
(Figs. 72–80)**

Vertex of male slightly produced in the midline. Upper side of body dark sordid brown with an ochre tint. Face ochre-brown centrally, terminal parts of lateral frontal sutures bordered with whitish. Transverse dark grey-brown fascia at hind margin of pronotum distinct. Centre of scutellum dark brown. Eyes and basal triangles black. Fore wing semi-transparent, dark brown. Wax-field blackish-brown.

Upper part of paramere (Fig. 72) short broad lamellate, slightly S-shaped owing to expansion of its ventral margin subapically mesad. Neck region of the apical part of paramere thickened, praeapical tooth thin and long, postappendix prominent (Figs. 75, 78) narrow. Penis stem broadly arcuated in side view, gradually narrowing apicad, often truncate at apex (Fig. 73), ornamented with small blunt teeth laterally. Penis manubrium quite short. Manubrial appendages sinuated, provided with distinct transverse ledges in terminal half, their apical $\frac{2}{3}$ deviated from each other in a form of letter V in posterior view (Fig. 74). Upper appendage at pygophore side (Figs. 76, 79, 80) bifurcated terminally with both arms thickened and tuberculated, the dorsal branch equally long or shorter than the ventral one.

Length: ♂ 2.6–3.0, ♀ 2.5–2.8 mm.

35 ♂♂, 29 ♀♀, Sri Lanka, Nuwara Eliya, grasses at the beginning of patch to the Piturutalagala pick; 17 ♂♂, 24 ♀♀, about 1500 m a. s. l.; 8 ♂♂, 8 ♀♀, slightly below 2000 m a. s. l. All collected by me on Aug. 24, 1979.

***Empoascanara* (s. str.) *nigrobimaculata minuta* subsp. n. (Figs. 81–84)**

Externally differs from the nominate subspecies by smaller size and lighter colouration. Male genital apparatus shows all features of *E. n. nigrobimaculata* (MOTSCH.) but apex of penis usually thinner and rounded and penis stem often broadened subapically (Fig. 8).

Length: ♂ 2.5–2.9, ♀ 2.3–2.7 mm.

Holotype, male, and paratypes, 7 ♂♂, 11 ♀♀, Sri Lanka, Pattipola, grasses, Aug. 25, 1979, coll. I. DWORAKOWSKA. (ISEZ, D, MM, BM, Ber., USNM)

***Empoascanara* (s. str.) *sordida* sp. n. (Figs. 85–92)**

Empoascanara nigrobimaculata: DWORAKOWSKA, 1972, nec MOTSCHULSKY, 1863.

Body form similar to that of *E. nigrobimaculata* (MOTSCH.) but smaller and much lighter. Upper side of body sordid light brownish, lighter beneath. Apex of vertex and centre of face ochreous. There is greyish transverse fascia at hind margin of pronotum and dark grey-brownish mark in the centre of scutellum. Eyes and basal triangles black. Fore wing brownish with longitudinal r and 3rd apical cells the darkest. Wax-field brown.

Apical part of paramere short, S-shaped as in *E. nigrobimaculata* (MOTSCH.) but slim. Penis stem comparatively narrow in side view, elongated, suddenly narrowing subapically, terminated on short and narrow slightly sinuated process (Fig. 86). Apical $\frac{2}{3}$ of manubrial processes deviated from each other in a form of letter U in posterior view (Fig. 87).

Length: ♂♀ 2.2–2.4 mm.

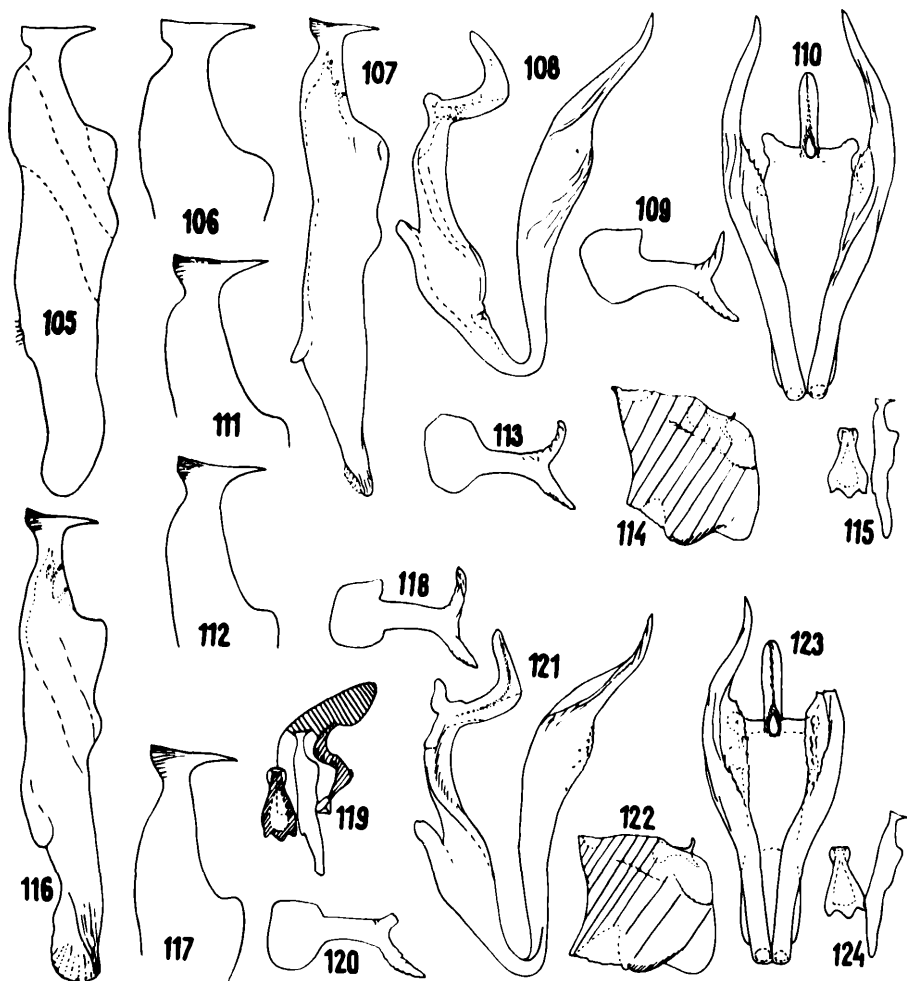
Holotype, male, and paratypes, 27 ♂♂, 24 ♀♀, Sri Lanka, Peradeniya, grasses, Aug. 23, 1979, coll. I. DWORAKOWSKA. (ISEZ, BM, D, USNM, MM, FRI, RL, Ber.)

***Empoascanara* (s. str.) *distincta* sp. n. (Figs. 93–98)**

Vertex of male angulately produced medially. The dark testaceous colouration of the only specimen at my disposal seems to be unnatural. Eyes blackish. Apex of vertex, basal triangles and fore wing infuscated. A brownish broad transverse fascia at hind margin of pronotum.

Male genital apparatus resembles that of *E. niazii* (AHMED et SAMAD). If to believe the drawings showing *E. niazii* (AHMED et SAMAD) (AHMED & SAMAD, 1972) the only two features differ the new species from the former one, viz: penis stem serrated laterally only below its medial incision (Fig. 95) and apical part of paramere about 10° , longer in comparison to its remaining parts (extreme point at caudal border of base of praecapical lobe) (Fig. 93). Lower penis processes have been just omitted in drawings showing *E. niazii* (AHMED et SAMAD). The upper appendage at pygophore side in *E. distincta* sp. n. in nature is curved more fluently than in Figs. 96 and 98 showing this structure pressed by a cover slip.

Length: ♂ about 2.3 mm.



Figs. 105–124.

Empoascanara (s. str.) *sathyamangalamensis sathyamangalamensis* (SOHI et KAPOOR), paramere of the holotype (the drawing performed by Dr. A. S. SOHI): 105, 106. — *E.* (s. str.) *sathyamangalamensis lepida* subsp. n.: 107–115. — *E.* (s. str.) *lyrifora* sp. n.: 116–124.

Holotype, male, India, Kerala, Erume I on Koratty river, 35 miles E of Kottayam, Feb. 6, 1965, coll. W. L. and J. G. PETERS. (CAS)

***Empoascanara* (s. str.) *cilla* sp. n. (Figs. 99–104)**

Vertex slightly produced in the midline. Background olivaceous. Colouring pattern much resembles that in *E. prima* DIST. Face slightly brownish medially. Eyes blackish. There are two distinct light semilunar transverse patches at about half of length of vertex joining upper terminals of lateral frontal sutures. Fore wing greyish to brownish, wax-field olivaceous-grey.

Male genital apparatus resembles that of *E. tagabica* DWOR. et TROLLE. Penis stem broadened laterad in its upper part bearing two marginal lamellae directed latero-cephalad and two dorsal ones directed latero-dorsad. All of them ornamented with teeth sculpture on their margins. Ventral gonopore situated on the level of dorsal margin of atrial rim (Figs. 100, 103). Paramere (Figs. 99, 102) with elongated apical part resembling that of *E. thomasi* DWOR. but with both ventral and dorsal extensions similarly shaped. Upper appendage at the pygophore proceeding the lobe (Fig. 101), hooked apically (Fig. 104).

Length: ♂ 2.5, ♀ 2.4 mm.

Holotype, male, and **paratype**, ♂, Sri Lanka, Peradeniya, grasses, Aug. 23. **Paratypes** 1 ♂, 1 ♀, Sri Lanka, Kekirawa, grasses, Aug. 21. All collected by me in 1979. (ISEZ, D, BM)

***Empoascanara* (s. str.) *sathyamangalamensis lepida* subsp. n.** (Figs. 107–115)

Externally hardly distinguishable from the nominate subspecies, only vertex a bit more produced medially and size smaller. Fore wing grey-brownish with an olivaceous tint wax-field slightly darker, olivaceous.

Male genital apparatus shows small differences in comparison with that of *E. sathyamangalamensis* s. str. The most distinct in the new subspecies is slimmer paramere. The base of upper part of paramere is quite narrow (Figs. 107, 111, 112; in Fig. 106 the same of the holotype of the nominate subspecies), its praecapical tooth thinner and postappendix slightly larger. Manubrial penis appendages (Figs. 108, 110) look like thinner than these figured at the original description of nominate subspecies (SOHI & KAPOOR, 1974) but this should be confirmed basing on new material from India.

Length: ♂ 2.10–2.30, ♀ 2.15–2.30 mm.

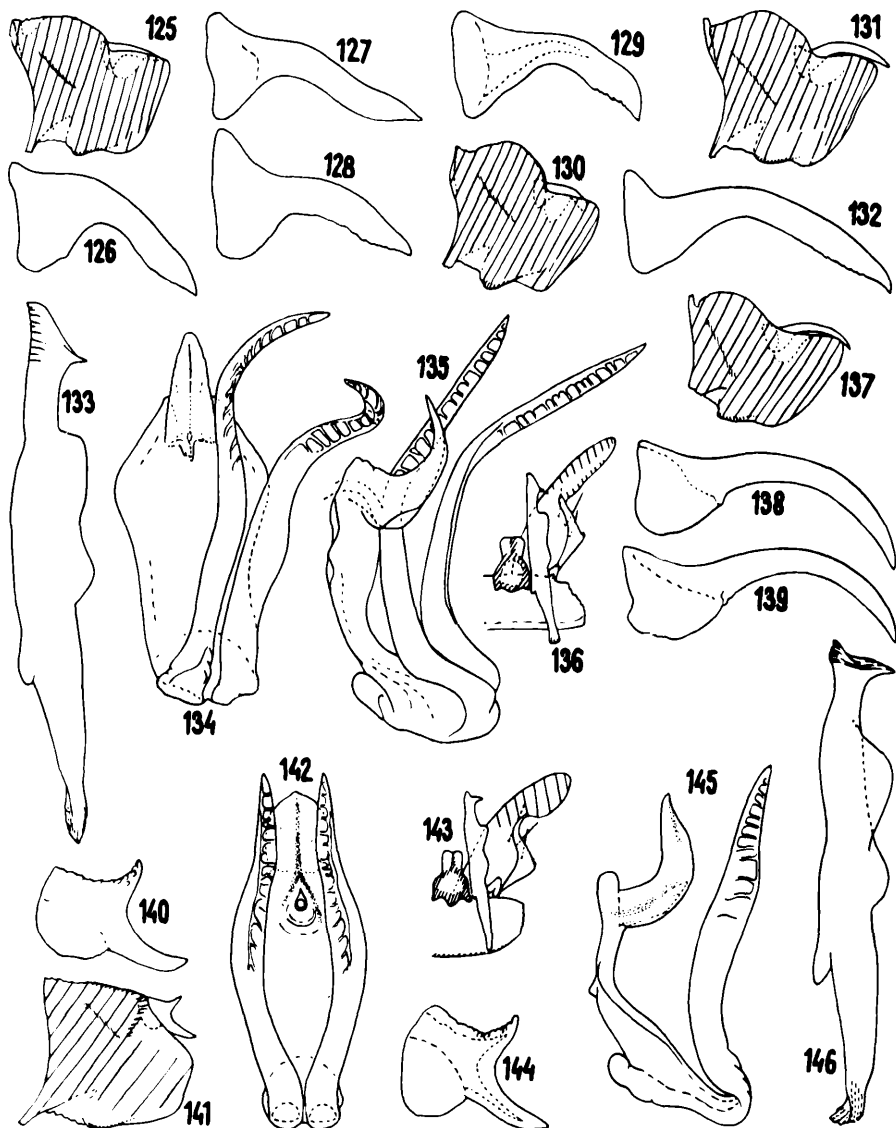
Holotype, male, and **paratypes**, 6 ♂♂, 5 ♀♀, Sri Lanka, Peradeniya, grasses, Aug. 23; 1 ♂ paratype, same locality, Aug. 22. All collected by me in 1979. (BM, ISEZ, D, USNM, Punjab Agricultural University in Ludhiana, India)

***Empoascanara* (s. str.) *lyrifora* sp. n.** (Figs. 116–124)

Externally very similar to *E. sathyamangalamensis* (SOHI et KAPOOR). Background ochre-brownish. Fronto- and anteclypeus infuscated, lateral parts of genae almost whitish. Apex of anteclypeus, a patch in centre of pronotum and a broad transverse fascia at its hind margin slightly infuscated. Eyes and basal triangles black. Fore wing semitransparent beige; wax-field darker.

Male genital apparatus much resembles that of *E. sathyamangalamensis* (SOHI et KAPOOR). Atrial penis extension in the new species angulate in side view and its horizontal part (canaliferous) longer than the vertical one (Fig. 121) while in the previous species it is rather uniformly arcuate. Manubrial penis processes of *E. lyrifora* sp. n. distinctly sinuated apically in lateral view and lyrae-shaped in caudal view (Fig. 123). Upper process at pygophore bifurcated apically (Figs. 118, 120) but contrary to that of *E. sathyamangalamensis lepida* subsp. n. its dorsal branch is longer than the ventral one. Apical part of paramere (Figs. 116, 117) comparatively slim, praecapical tooth broad and postappendix produced in the new species while in the previous one it is shaped differently (Fig. 105). Length: ♂ 2.35 mm.

Holotype, male, India, Kerala, Walayar forest, Aug. 15, 1979, coll. I. DWORAKOWSKA. (BM)

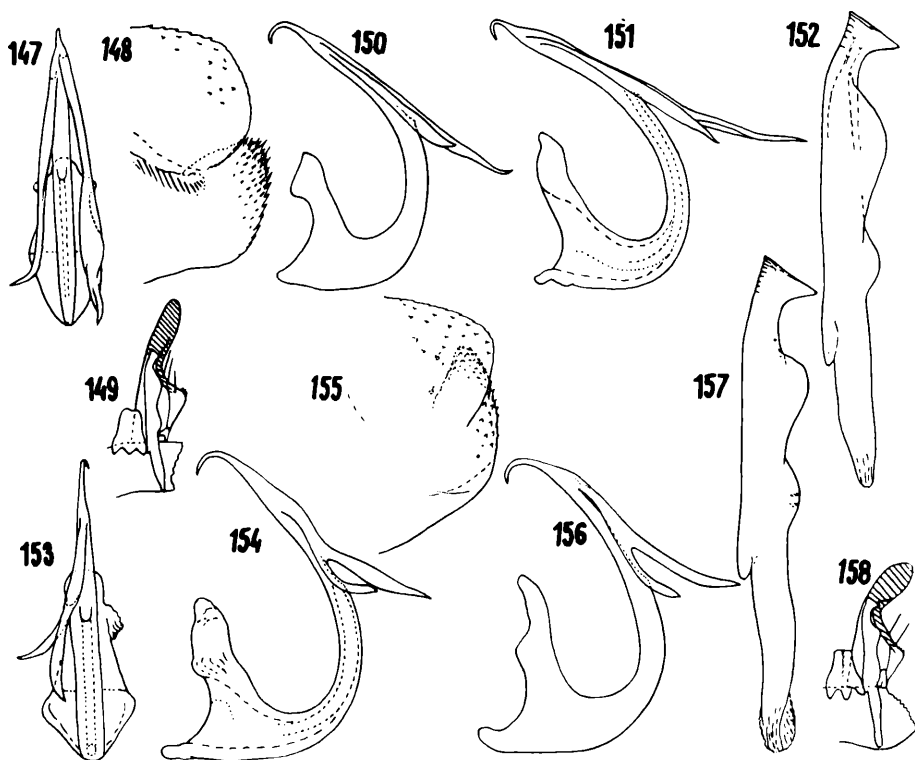


Figs. 125–146.

Empoascanara (*s. str.*) *nagpurensis* (DIST.): 125–130. 125–127 specimens from Jamtara — 128: specimen from Bagalkot — 129, 130: specimen from Coimbatore. — *E. (s. str.) serrata* (SINGH), specimen from Gokarna: 131, 132. — *E. (s. str.) defecta* sp. n.: 133–139. — *E. (s. str.) sipra* sp. n.: 140–146.

***Empoascanara* (*s. str.*) *nagpurensis* (DISTANT, 1918) (Figs. 125–130)**

1 ♂, 1 ♀, India, Karnataka, Bannerghatta, Aug. 9; 2 ♂♂, 4 ♀♀, Karnataka, Bagalkot, Oct. 22, coll. C. A. VIRAKTAMATH in 1979; 1 ♂, 2 ♀♀, Tamil Nadu, Coimbatore, Aug. 14; 11 ♂♂,



Figs. 147–158.

Empoascanara (Bza) regularis sp. n.: 147–152. — *E. (B.) wilsoni* sp. n. 153–158.

2 ♀♀, Madhya Pradesh, Jamtara nr. Jabalpur, at light, Sep. 19; 2 ♂♂, 2 ♀♀, Jabalpur, Sep. 20; 43 ♂♂, 91 ♀♀, Indore, grasses, Sep. 23; 6 ♂♂, 12 ♀♀, 30 km S of Indore, Choral, grasses, Sep. 24; 6 ♂♂, 3 ♀♀, Choral, Sep. 25; 80 ♂♂, 136 ♀♀, Khandwa, grasses, Sep. 26; 1 ♂, 2 ♀♀, Maharastra, Adjanta, Sep. 28, coll. I. DWORAKOWSKA in 1979.

***Empoascanara (s. str.) serrata* (SINGH, 1969) (Figs. 131, 132)**

1 ♀, Pakistan, Lahore, Oct.–Nov., 1957 4 ♂♂, Lahore, Mar.–Sep., 1958, coll. J. MALDONADO; 5 ♂♂, 3 ♀♀, India, New Delhi, Sep. 15, 1961, at light, coll. P. W. OMAN; 2 ♀♀, Delhi, Oct., 1958, coll. N. L. H. KRAUSS; 1 ♀, New Delhi, Oct. 23, 1966; 1 ♂, 3 ♀♀, New Delhi, Oct. 31, 1966; 1 ♂, Oct. 13, 1967; 1 ♀, Nov. 3, 1967; 1 ♂, Nov. 8, 1967 1 ♂, Oct. 9, 1968, all collected at light trap by K. E. GIBSON; 1 ♂, Nepal, Kathmandu Valley, Gokarna forest, Sep. 14, 1979, coll. I. DWORAKOWSKA.

***Empoascanara (s. str.) defecta* sp. n. (Figs. 133–139)**

The only specimen at my disposal has lost its natural shape and colouration during preliminary preservation in fluid. The only remain of its colouring pattern is broad dark brownish-grey transverse fascia at hind margin of pronotum.

Male genital apparatus shows great similarity with that of *E. serrata* (SINGH) but differs

from it by thin and arcuate upper appendage at pygophore (Figs. 137–139), longer post-appendix of paramere (Fig. 133) and by penis structure. Upper atrial extension of penis is sharply terminated in side view (Fig. 135) and tapering in posterior view (Fig. 134). Manubrial appendages longer in the new species than in *E. serrata* (SINGH) and convergent apically (Fig. 134). The asymmetry seen in drawings of penis of the holotype is caused by manubrial appendages broken at their bases.

Length: ♂ about 2.5 mm.

Holotype, male, India, W Bengal, Kalimpong, 1275 m, Oct. 26, 1961, coll. E. S. ROSS and D. Q. CAVAGNARO. (CAS)

***Empoascanara* (s. str.) *sipra* sp. n.** (Figs. 140–146)

Vertex produced in the midline. Background dark testaceous. Anteclypeus and sides of frontoclypeus brownish. An oval brown area between lateral frontal sutures continued on vertex in a form of two patches. Centre of pronotum and quite broad transverse fascia at its hind margin dark grey-brownish. Basal triangles and eyes black. Fore wing brownish, darker at hind margin on clavus and in mesal part of wax-field. Veins fuscous. Male genital apparatus resembles that of *E. orientalis* DWOR. but atrial extension of penis only slightly curved in side view (Fig. 145) and enormously expanded laterad (Fig. 142). Manubrium of penis and its appendages similar to these of *E. nigrobimaculata* (MOTSCH.) but sinuated in posterior view. Penis stem tubular and well separated from upper atrial extension like that in *E. ethiopica* DWOR. This detail, however, is not visible in side view being covered with lateral lamella of the atrial extension. Upper appendage at pygophore short, broad, bifurcated apically (Fig. 141). Apex of paramere similar to that of *E. orientalis* DWOR. but in the new species it is more developed spatially. Pracapical tooth thick, postappendix large (Fig. 146).

Length: ♂ 2.5 mm.

Holotype, male, China, W Hupch, Lichuan, Hsiaoho, Aug. 10, 1948, coll. GRESSITT and DJOU. (CAS)

***Empoascanara* (Bza) *regularis* sp. n.** (Figs. 147–152)

Vertex conically produced in the midline, brownish-yellow centrally, yellowish at sides. Distinct sordid whitish small patches at upper terminals of lateral frontal sutures and whitish streaks at inner borders of eyes. Eyes blackish. There is indistinct broad transverse greyish fascia at hind margin of pronotum expanding cephalad medially. Fore wing semitransparent, greyish; wax-field olivaceous.

Male genital apparatus differs from that of *E. (B.) risa* DWOR. (DWORAKOWSKA, 1979b) chiefly by thin and arcuate penis stem, fewer number of penis appendages and short upper part of paramere. Lower lobe of pygophore side ornamented with long, small spines (Fig. 148). Penis stem terminated on thin, short, hooked process and provided with two asymmetrical subapical appendages (Figs. 150, 151). Apex of paramere (Fig. 152) triangular, postappendix not distinguishable.

Length: ♂♀ 2.2–2.3 mm.

Holotype, male, and **paratypes**, 39 ♂♂, 43 ♀♀, Sri Lanka, Peradeniya, Aug. 23; **paratypes**, 12 ♂♂, 11 ♀♀, Peradeniya, Aug. 22. All collected by me on grasses in 1979. (ISEZ, D, BM, USNM, MM, Ber., FRI, RL, College of Agriculture Hebbal, Bangalore, India)

***Empoascanara (Bza) wilsoni* sp. n. (Figs. 153–158)**

Body form and colouring pattern very similar to these of *E. (B.) regularis* sp. n. Upper side testaceous. Face testaceous laterally, ochre centrally. Fore wing grey-brownish; wax-field and costal margin of corium darker.

Male genital apparatus very similar to that of *E. (B.) regularis* sp. n. but neck region of upper part of paramere longer, small postappendix present (Fig. 157), penis stem terminated on long, curved process and subapical penis processes fused basally (Figs. 153, 154, 156). Apical part of lower pygophore lobe sculptured with rather short spines (Fig. 155).

Length: ♂ 2.4 and 2.5 mm.

H o l o t y p e, male, Philippines, Luzon, Trinidad, Benguet, rice, Apr. 11, 1972, coll. A. D. PAWAR. **P a r a t y p e**, ♂, Luzon, 4 km E of Los Baños, rice, Oct. 31, 1979, coll. M. R. WILSON. (BM)

A c k n o w l e d g e m e n t s

My sincere thanks are due to Dr. A. S. SOHI (Punjab Agricultural University, Ludhiana, India) for re-investigation of the holotype of *Erythroneura sathyamangalamensis* SOHI et KAPOOR in my behalf, and to Drs. C. A. VIRAKTAMATH (Agricultural College Hebbal, Bangalore, India), T. N. ANANTHAKRISHNAN (Zoological Survey of India, Calcutta), P. LAUTERER (Moravian Museum, Brno), J. P. KRAMER (USNM, Washington), P. H. ARNAUD (California Academy of Sciences, San Francisco), and M. R. WILSON (University College, Cardiff, Great Britain) for the material used in this study.

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Jahr/Year: 1980

Band/Volume: [18](#)

Autor(en)/Author(s): Dworakowska Irena

Artikel/Article: [On Some Species of the Genus Empoascanara DIST.
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