

**Two New Species of Genus *Tricentrus* STÅL
Infesting *Dalbergia sissoo* (ROXB.) in Jammu (J & K, India),
with a Key to the Indian Species of the Genus
(Homoptera, Auchenorrhyncha, Membracidae)**

With 37 Figures

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Jammu

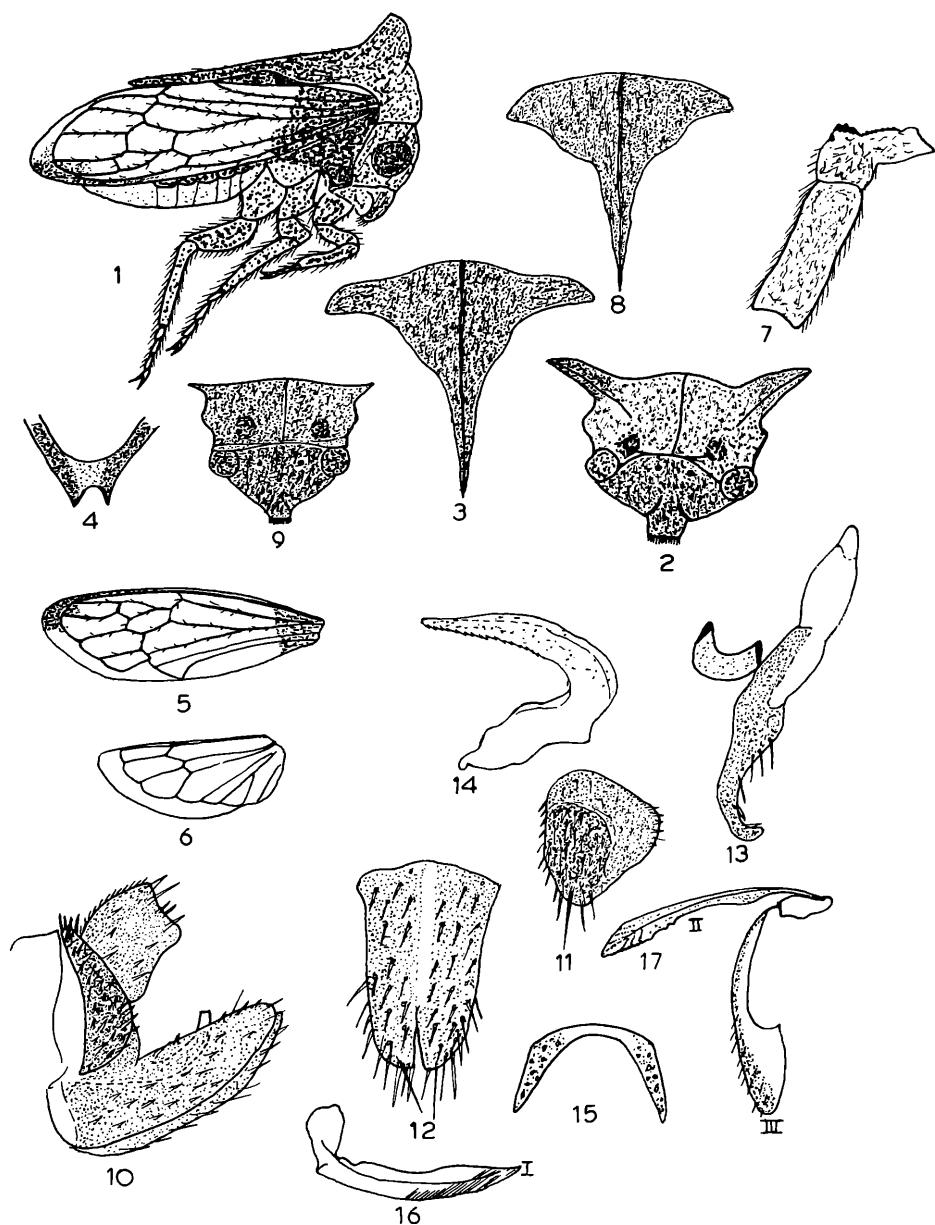
The genus *Tricentrus* STÅL is represented by 40 species in India which are described by DISTANT (1908, 1916) and ANANTHASUBRAMANIAN (1975, 1980a, b, 1982). The present paper adds two more new species (*ananthasubramaniani* sp. n. and *sissoo* sp. n.) of this genus which have been found infesting Shisham (*Dalbergia sissoo*) in Jammu region of J & K State.

Besides incorporating detailed descriptions, including both male and female genitalia of the two new species, a key to separate these species from all the known species of the genus so far described from India is also included for easy recognition of the species. Key is based on the original descriptions offered by DISTANT and ANANTHASUBRAMANIAN.

***Tricentrus ananthasubramaniani* sp. n. (Figs. 1–17)**

Colouration General colour dark piceous brown; tegmina ochraceous pale, basally dark brown, coriaceous, veins dark; hind wing hyaline with light brown venation; legs dark brown except tarsus which is pale. Eyes pale to brown; ocelli succineous.

Female Moderately small species, body oblong-ovate (Fig. 1). Head speckled with dense golden pilosity, about three times as wide as long, base convex at the junction with metopidium, obliquely directed backwards (Fig. 2). Vertex arcuate. Eyes subglobose, slightly projecting outwards. Ocelli closer to eyes than to each other, located above the centro-ocular line. Frontoclypeus thickly pilose, extending one-third of its length below the lower margins of vertex, tip roundly truncate, with long hairs extending beyond it, foliate lobes fused with clypeus (Fig. 2). Pronotum finely punctate. Scutellum (Fig. 4) partly visible, posteriorly narrow, deeply notched, sides pointed. Metopidium (Fig. 2) almost straight, wider than its height. Supraocular callosities black, prominent, covered with hairs. Humeral angles dark-brown, subacute, small. Suprahumeral horns (Fig. 3) about half times as long as width between their bases, obliquely directed upwards, then turned backwards, tips subacute, carinate. Posterior process stout, slightly sinuate at base then evenly sloping backwards, extending up to 5th apical tegminal cell. Central and lateral carination strong, central carination extending through metopidium, sprinkled with short hairs, extreme tip black, not impinging on tegmina. Tegmina (Fig. 5) slightly less than three times as long as wide, base thickly punctate, veins pubescent, 1st discoidal cell petiolate, longer than 2nd, small brown patch at the apex of 2nd and 3rd apical. Trochanters prominently toothed mesally, bearing 4 large teeth in a row besides smaller ones (Fig. 7). Abdomen robust, dorsally punctate. Ovipositor black.



Figs. 1–17 *Tricentrus ananthasubramaniani* sp. n. (1–7 and 15–17 female, 8–14: male). 1: lateral view, 2: frontal view, 3: dorsal view of pronotum, 4: scutellum, 5: tegmina, 6: hind wing, 7: hind trochanter and femur, 8: dorsal view of pronotum, 9: frontal view, 10: lateral view of genital capsule, 11: lateral valve, 12: subgenital plates, 13: style along with connective, 14: aedeagus, 15: 7th sternum, 16: I valvulae, 17: II and III valvulae.

Male Black, smaller than female; suprahumeral horns broad, shorter, carina weakly developed (Fig. 8). Eyes pale. Vertex straight, face densely pilose. Tips of humeral angles obtuse (Fig. 9).

Measurements (in mm): Female (male): Total body length 4.68 (4.41), length of tegmina 4.23 (3.78), width 1.53 (1.39), width between two suprahumeral horns 1.44 (1.35),

width across suprahumeral horns 3.69 (2.7), length of suprahumeral horns 0.9 (0.8). Width across humeral angles 2.38 (2.11), length of head 0.72 (0.80), width 2.16 (1.93). Height of metopidium 0.90 (0.85), width between two ocelli 0.52 (0.49), width between eye and ocelli 0.38 (0.33), length of pronotum 3.33 (2.88), width of vertex 1.44 (1.26).

Male genitalia Pygofer (Fig. 10) simple, sparingly setose; lateral valve (Fig. 11) triangular, sclerotized, heavily covered with long setae, with a medium large blunt tooth, fused with 1x tergum. Subgenital plate (Fig. 12) monosclerote, widest at base, narrow at distal end, apically furcated to about $\frac{1}{3}$ its length, covered with macro- and microsetae, fuscous brown with median longitudinal pale area. Styles (Fig. 13) with both anterior and posterior equal, anterior are broad, straight, membranous, devoid of setae, posterior one divergent, recurved, narrowing towards apex and with marginal setae. Connective concave anteriorly, articulation with styles through 2 small sclerites, merging through its body. Aedeagus (Fig. 14) curved, dorsal apodeme flattened, shaft directed dorsal, its cephalad margin fringed with numerous serrations, gonopore terminal.

Female genitalia 7th sternum (Fig. 15) deeply notched at posterior margin; notch reaching slightly over $\frac{3}{4}$ depth of segment, punctate, sides evenly sloping, non-sinuate; anterior margin smoothly concave. Valvulae I (Fig. 16) with its tip narrowed, sinuate above, transversely ridged, commencing from middle, extending up to the posterior margin ventrally, II valvulae (Fig. 17) with three large teeth, two closer to each other, third at distance, top coarsely serrate dorsally.

Remarks This species is nearest to *T. congestus* WALKER in its general appearance and pilosity, but it can be differentiated from it by distinct colouration of the body. Tegminal veins, in apices of suprahumeral and apex of posterior pronotal process which is impinging on tegmina in the case of *T. congestus* WALK.

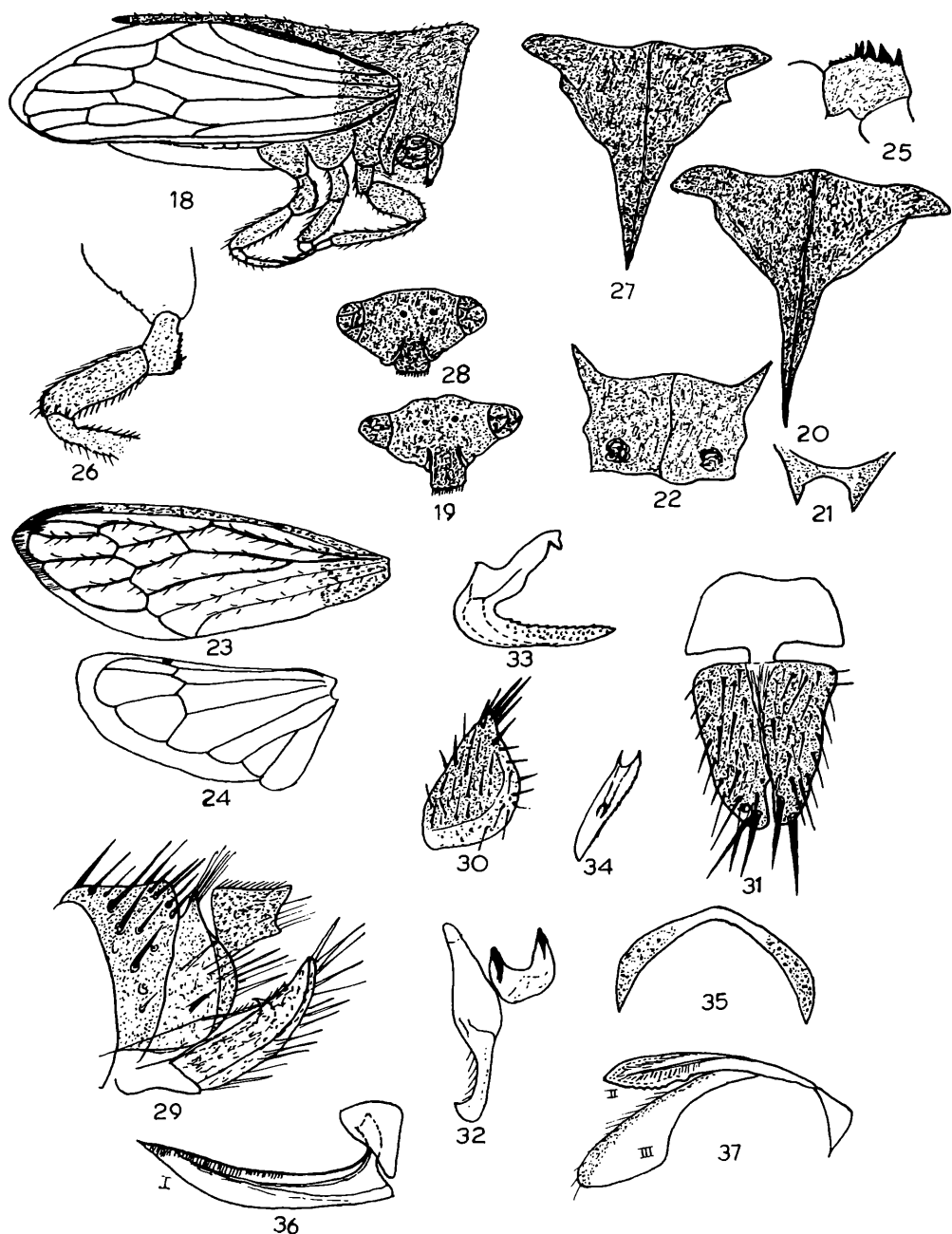
Holotype ♀, India, J & K, Jammu, P BADAN collection, 7.5.1983, ex *Dalbergia sissoo* (Roxb.). **Paratypes**, 4 ♀♀ and 2 ♂♂, coll. and other data same as for holotype.

This species has been named after Prof. K. S. ANANTHASUBRAMANIAN, Loyola College, Madras in honour of his extensive involvement in the taxonomy of treehoppers.

***Tricentrus sissoo* sp. n. (Fig. 18–37)**

Colouration General colour ferruginous, tegmina light-brown, venation dark-brown; ovipositor black; coxa, femora piceous brown; tibia, tarsus ochraceously-pale; eyes dark brown with pale thick lines in between; ocelli crystalline white.

Female Large species, body robust, oblong (Fig. 18). Head (Fig. 19) densely covered with long silvery hairs; about two times as wide as long, base slightly curved at junction with metopidium, vertical, declivous, vertex slightly convex, sinuate. Eyes semicircular, projecting outwards. Ocelli closer to eyes than to each other, located above centro-ocular line. Frontoclypeus long, densely pilose, subovate; tip broadly rounded, extending $\frac{1}{2}$ of its length below lower margin of vertex. Pronotum (Fig. 20) thickly punctate, compactly pilose from the bases of horns to the extreme tip of posterior process. Scutellum (Fig. 21) thickly covered with silvery hairs. Metopidium (Fig. 22) almost vertical, wider than high, uniformly pilose, supra-ocular callosities black, prominent, sparingly covered with hairs; humeral angles brown, tips subacute, not very prominent. Suprahumeral horns about half as long as width between their bases, obliquely turned upwards and outwards, tips sub-acute, black, carina well developed; posterior process stout, straight; central carination strong, extending through metopidium; lateral carinae fine; tip black, slightly directed upwards, reaching up to middle of tegminal 5th apical cell; extreme tip not impinging on tegmina. Tegmina (Fig. 23) about 3.5 as long as wide, subhyaline, basally coriaceous, punctate; veins thick and pubescent, apical limbus slightly blackish; 1st discoidal cell slightly longer than 2nd. Hind trochanters (Figs. 25, 26) strongly toothed on its inner surface. 5 teeth in a row, three strong, black, two slightly



Figs. 18-37 *Tricentrus sissoo* sp. n. (18-26 and 35-37 female, 27-34: male).

18: lateral view, 19: frontal view, 20: dorsal view of pronotum, 21: scutellum, 22: metopidium, 23: tegmina, 24: hind wing, 25: trochanter, 26: hind leg, 27: dorsal view of pronotum, 28: frontal view (only face), 29: lateral view of genital capsule, 30: lateral valve, 31: subgenital plates, 32: styles, 33: aedeagus, 34: ventral view of aedeagus showing subapical gonopore, 35: 7th sternum, 36: I valvulae, 37: II and III valvulae.

smaller with numerous small teeth. Middle and hind femora marked with ridges on inner surface.

Male Small, black, suprahumeral horns (Fig. 27) slightly longer, slender, more obliquely curved, turned upwards. Ocelli (Fig. 28) larger than in female. Vertex arcuate. Metopidium sloping backwards into disc.

Measurements (in mm): Female (male): Total body length 5.85 (5.22), length of pronotum 4.41 (3.24), length of suprahumeral horns 0.72 (0.9), width between suprahumeral horns 1.44 (1.12), width across suprahumeral angles 3.06 (3.01), width across humeral angles 2.79 (2.25), length of tegmina 5.4 (4.77), width 1.53 (1.39), length of head 1.17 (1.17), width 2.20 (2.16). Height of metopidium 0.99 (0.99). Width between ocelli 0.45 (0.45), width between eye and ocelli 0.36 (0.36), width of vertex 1.35 (1.35).

Male genitalia Pygofer (Fig. 29) broad, beset with micro- and macrosetae, lateral valve fused with 1x tergum, with a large, blunt tooth with long bristles, directed ventro-medially on dorsal margin (Fig. 30). Subgenital plate (Fig. 31) of two distinct sclerites, basal sclerite small, transverse, widest posteriorly, rounded anteriorly, joining distal sclerite through narrow, longitudinal median band. Distal sclerite elongated with caudal medial notch about $\frac{1}{3}$ its length, basal $\frac{1}{3}$ widest, covered with micro- and macrosetae. Styles (Fig. 32) with anterior and posterior arms fused, anterior simple, wide, posterior with divergent tips, recurved and blunt, beset with marginal setae. Connective (Fig. 32) quadrangular. Aedeagus (Fig. 33) with apodeme well developed, long and wide, shaft stout, slender, directed dorsad; cephalic surface with fine teeth, gonopore subapical (Fig. 34).

Female genitalia 7th sternum (Fig. 35) elliptical, punctured, hirsute, medially fragile, membranous, non-setose. I valvulae (Fig. 36) straight, pointed at extreme tip, fine, transverse ridges at inner surface. II valvulae (Fig. 37) with one large blunt tooth followed by dorsal, coarsely serrate half area and rest half up to the rounded tip finely serrate.

Remarks *Tricentrus sissoo* sp. n. comes closer to *T. pilosus* ANANTHASUB. but the different structures of the male genitalia, different number of teeth on hind trochanters/ monomorphic suprahumeral against polymorphic in *T. pilosus* are distinctive.

Holotype ♀, India, J & K, Jammu, P. BADAN collection, 7. 5. 1983, on *D. sissoo*. **Paratypes**, 3 ♀♀ and 2 ♂♂, same data as of holotype.

Key to Indian species of the genus *Tricentrus* (including the new species)

- 1 (72) Posterior process reaching upto or beyond the posterior angle of inner margin of tegmina.
- 2 (39) Tip of posterior process impinging on tegmina.
- 3 (38) Suprahumeral horns present.
- 4 (14) Suprahumeral horns projecting forward.
- 5 (8) Suprahumeral horns about three-fourths as long as width between their bases.
- 6 (7) Dark purplish; apices of suprahumeral horns subacute; posterior process uncarinate, basal half normal, apical half straight; tegmina purplish-brown, veins with long hairs; lateral areas of sternum white tomentosity.
(Distribution: Kodaikanal, Madras) **T. purpureus** ANANTHASUB.
- 7 (6) Brown; apices of suprahumeral horns subobliquely truncate; posterior process tricarinate, basal half heavy, laminate, apical half attenuate, slightly arched; tegmina pale bronzy-brown; lateral areas of sternum pale brown.
(Distribution: Madras, Darjeeling, Calcutta, Pussumbing) **T. congestus** WALK.

- 8(5) Suprahumeral horns as long as 1.5 times or twice than the distance between their bases, obliquely projecting forwards, robust.
- 9(12) 1st and 2nd discoidal cells of tegmina equal in length.
- 10(11) Black; apices of suprahumeral horns sub-obliquely subacute, divergent, posterior carinae weak; posterior process robust, continuous with scutellum, distal half arcuate; tegmina amber coloured; scutellum white tomentosity laterally.
(Distribution: Karnataka: Mysore) **T. nobilis** ANANTHASUB.
- 11(10) Pale-reddish brown; suprahumeral horns robust, broad, projecting outwards, little shorter than width between bases; posterior process short, robust, not centrally raised, lateral carinae weak, central carina finely continued through pronotum; tegmina amber coloured, 1st discoidal cell petiolate; lateral areas of sternum cretaceously sericeous.
(Distribution: H.P., Kunihar, Solan) **T. platycornis** ANANTHASUB.
- 12(9) 1st and 2nd discoidal cells unequal in length.
- 13(14) Castaneous-brown, a small sericeous spot at each basal angle of scutellum; suprahumeral horns twice as long as width between their bases, straightly obliquely project; posterior process robust, strongly centrally raised, central carination obscurely through pronotum; tegmina with apical margins paler and more ochraceous.
(Distribution: Tenasserim, Myitta) **T. projectus** DIST.
- 14(13) Greyish-brown; suprahumeral horns as long as width between bases, much flattened, apices obliquely truncate, anterior carina weakly developed; posterior process robust, anterior broad tapering behind to an acute point, anteriorly dark-brown, posteriorly light; tegmina dark-brown.
(Distribution: South India) **T. spathodei** ANANTHASUB.
- 15(4) Suprahumeral horns not projecting forward.
- 16(33) Suprahumeral horns short, directed upwards and outwards or backwards.
- 17(30) Frontoclypeus extending to $\frac{1}{2}$ of its length below lower margins of vertex.
- 18(25) 1st discoidal cell of tegmina petiolate.
- 19(24) 1st discoidal cell shorter than 2nd.
- 20(23) Tegmina 3 times longer than wide, 1st apical cell 6 times longer than its maximum width.
- 21(22) Black; suprahumeral horns about two-third as long as width between bases, obliquely directed upwards and outwards, tips subacute, carinae weakly developed; pronotum laterally compressed; process stout at base, slender beyond middle to apex; apical cells of tegmina bordered by dark-brown veins.
(Distribution: Pander Keshwar, Garwal Distt., U.P.) **T. compressus** ANANTHASUB.
- 22(21) Greyish-yellow; suprahumeral horns half as long as width between bases, tips black, subacute; posterior process moderately stout, dorsal carina strong, black, tip acute; tegmina reddish-brown, sides of thorax greyish-yellow with white tomentosity.
(Distribution: Kunihar, Solan, H.P.) **T. unicolour** ANANTHASUB.
- 23(20) Tegmina 2.75 times longer than wide, 1st apical cell about 5 times longer than wide, dull black; suprahumeral horns short, slender, carinae prominent, apices black, recurved; posterior process with a strong black, slightly arched dorsal carina; tegmina with a black patch opposite to 2nd apical cell.
(Distribution: Bichalim Uphill, Goa) **T. atrus** ANANTHASUB.

- 24 (19) 1st and 2nd discoidal cells of tegmina equal. Black; suprahumeral horns $\frac{1}{3}$ as long as width between bases, tips acute, carinae well developed; posterior process reddish brown at basal $\frac{1}{2}$, terminal $\frac{1}{5}$ black, tip acute; tegmina smoky brown.
(Distribution: Maharashtra, Poona, Gundgardrum) **T. minusculus** ANANTHASUB.
- 25 (18) 1st discoidal cell of tegmina non-petiolate.
- 26 (29) 1st discoidal cell much narrower than 2nd, suprahumeral horns shorter than distance between their bases.
- 27 (28) Black; suprahumeral horns $\frac{1}{2}$ as long as width between bases, tips slightly recurved; posterior process stout, black, depressed at base, then slightly arched at middle, tip subacute; tegmina hyaline, legs black up to femora, tibiae and tarsi greyish.
T. elegans ANANTHASUB.
(Distribution: Twang Camp, Kameng Div. Nefa)
- 28 (27) Piceous, thickly ferruginously pilose; suprahumeral horns short, strongly recurved, gradually narrowing to apices, apices obtusely acute; posterior process moderately short, robust, centrally strongly raised, apex subacute, basal $\frac{1}{2}$ ochraceous, apical $\frac{1}{2}$ black; tegmina talc-like, vein ochraceous.
T. decoratus DIST.
(Distribution: Momeit)
- 29 (26) 1st discoidal cell nearly as wide as 2nd. Black; suprahumeral horns as long as width between bases, apices subacute; posterior process robust. Slightly raised behind the level of metathorax, gradually narrowing, tip acute, pitch black, tegmina pale-brown.
T. dubius ANANTHASUB.
(Distribution: Tarakeswar, W.B.)
- 30 (17) Frontoclypeus extending three-fourths or more its length below lower margins of vertex; 1st discoidal cell petiolate, smaller than 2nd.
- 31 (32) Reddish-brown; suprahumeral horns about $\frac{1}{6}$ as long as space between bases, black, apices acute; posterior process black, tricarinate, apex acuminate; tegmina semihyaline, 1st apical cell of tegmina 3.5 times longer than its maximum width.
(Distribution: Solan, Kunihar, H.P.) **T. recurvicornis** ANANTHASUB.
- 32 (31) Rusty-brown; suprahumeral horns as long as space between bases, carinae and apical $\frac{1}{2}$ black, tips gently recurved; posterior process tawny brown, slightly arched at middle, apical $\frac{1}{2}$ attenuate; tegmina semihyaline, with a large pale-white fascia on basal 6th, apical cell of tegmina 9 times as long as wide.
(Distribution: Canning Garosthan Ghari, Calcutta, W.B.) **T. cornutus** ANANTHASUB.
- 33 (16) Suprahumeral horns robust and wide.
- 34 (35) Suprahumeral horns wide, compressed, horizontally produced, apices angularly recurved. Black; posterior process tricarinate, apex acute; tegmina dark ochraceous, basal angular area black.
T. pronus DIST.
(Distribution: Cochin; Kavalai)
- 35 (34) Suprahumeral horns neither compressed nor their apices angularly recurved.
- 36 (37) Pale greyish-brown, greyishly pilose; suprahumeral horns robust, transversely and upwardly extended, apices oblique and little recurved, upper surface rugose; posterior process moderately attenuate, darker on posterior $\frac{1}{2}$; tegmina subhyaline, venation ochraceous.
T. kamaonensis DIST.
(Distribution: Kumaon, Bhimtal, U.P.)
- 37 (36) Rusty-brown; suprahumeral horns as long as width between bases, basal $\frac{1}{2}$ tawny brown and thickly hairy, tricarinate; posterior process normal, not flattened, tip acute; tegmina rusty-brown, 1st discoidal longer than 2nd.
(Distribution: Collem; Goa) **T. longiceps** ANANTHASUB.

- 38 (3) Suprahumeral horns absent; reddish brown; posterior process robust, slightly sinuate, tip acute, lateral carinae black; tegmina 3 times longer than wide, pale-brown, veins stout, dark-brown. **T. decornis** ANANTHASUB.
(Distribution: Madras, South India)
- 39 (2) Tip of posterior process slightly inclined upwards.
- 40 (41) Black; suprahumeral horns non-carinate, short, broad, slightly directed upwards, apices broadly obliquely truncate; posterior process very broad, robust, lateral carination prominent on apical area. Tegmina talc-like, veins fuscous, apical area bronzy-brown beyond which the colour is pale. **T. cuneatus** DIST.
(Distribution: Sookna)
- 41 (40) Suprahumeral horns carinate.
- 42 (45) Suprahumeral horns projecting forwards.
- 43 (44) Greyish brown; suprahumeral horns moderately stout, about $\frac{1}{2}$ as long as distance between bases, tips subacute, tricarinate, dorsal carina strong; metopidium 1.5 times as wide as high; posterior process slender, tip acute; tegmina hyaline, 3 times longer than wide, 1st discoidal cell non-petiolate, as long as 2nd.
(Distribution: Sonai Rupai forest, Minomori, Nefa) **T. minomorii** ANANTHASUB.
- 44 (43) Greyish brown; suprahumeral horns greyish maroon with black patches, strongly tricarinate, tips strongly recurved and acute; metopidium twice as wide as high; posterior process greyish brown at basal fourth, golden-yellow in middle, tip shaded black; tegmina 2.5 times longer than wide; 1st discoidal cell petiolate, equal to 2nd. **T. longicornis** ANANTHASUB.
(Distribution: Manoharpur, Bihar)
- 45 (42) Suprahumeral horns not projecting forwards.
- 46 (53) Suprahumeral horns horizontally or transversally produced.
- 47 (48) Black; apices of suprahumeral horns acute, transversally, slightly upwardly produced; posterior process tricarinate, apex acute, upwardly produced; tegmina subhyaline, wrinkled, venation dark, basal angular area blackish.
(Distribution: Tenasserim, Myitta) **T. euschistus** (DIST).
- 48 (47) Apices of suprahumeral horns subacute.
- 49 (52) Extreme tip of posterior process subacute.
- 50 (51) Testaceous, face blackish, greyishly pilose; suprahumeral horns strongly transversally and horizontally produced, subacute; posterior process tricarinate, apex subacute non-apically recurved; tegmina subhyaline, basal angle fuscous.
(Distribution: Moulmein) **T. bovillus** DIST.
- 51 (50) Bronzy-brown, face blackish, palely pilose; suprahumeral horns widely robust, longly horizontally extended, apices oblique and very slightly recurved, longitudinally carinate; posterior process tricarinate, apex recurved; tegmina bronzy, large white coastal spot, white spot on scutellum and sternum.
(Distribution: Moulmein) **T. horizontalis** DIST.
- 52 (49) Extreme tip of posterior process acute; ochraceous; suprahumeral horns moderately short, broad, robust, transversely, upwardly produced, apices subacute; posterior process robust; tegmina subhyaline, veins brownish, basal area with an ochraceous spot on coastal area. **T. resectus** DIST.
(Distribution: Myomyo)
- 53 (46) Suprahumeral horns directed upwards and outwards or backwards.

- 54 (55) Black; suprahumeral horns slender, apex acute, centrally, longitudinally percurrently carinate; posterior process tricarinate; apex acute, upper surface of apical area dull castaneous; tegmina subhyaline; lateral areas of sternum whitely tomentose. **T. allaben** DIST.
(Distribution: E. Himalayas, Kurseong)
- 55 (54) Suprahumeral horns robust, short and broad.
- 56 (57) Bronzy-brown; suprahumeral horns upwardly, obliquely directed, apices subtruncate or obliquely truncate, posterior process robust, tricarinate, apex subacute, tegmina pale bronzy-brown, basal angular area darker. **T. aeneus** DIST.
(Distribution: E. Himalayas, Kurseong, Darjeeling)
- 57 (56) Suprahumeral apices acute or subacute.
- 58 (59) Castaneous-brown; posterior process centrally carinate, laterally subcarinate; suprahumeral horns upwardly and obliquely directed, apices narrowed, strongly recurved, subacute; tegmina moderately wrinkled, tabiae thickly pilose. **T. repandus** DIST.
(Distribution: Assam)
- 59 (58) Posterior process strongly or moderately tricarinate.
- 60 (71) Head and pronotum black or dark-brown.
- 61 (66) Head and pronotum black.
- 62 (65) Dorsal carination of posterior process finely through metopidium.
- 63 (64) Black; suprahumeral horns short, broad, apically recurved, longitudinally carinate behind middle; posterior process moderately stout, nearly straight, lateral margins sinuate, apex subacute; tegmina pale fuliginous, subhyaline with a bronzy tint. **T. fairmairei** STAL
(Distribution: Bangalore)
- 64 (63) Piceous, head with dense golden pilosity; suprahumeral horns about $\frac{1}{2}$ as long as width between bases, obliquely directed upwards and then backwards, apices subacute, carinate; posterior process stout, slightly sinuate at base, extreme tip black; tegmina ochraceous, veins pubescent. **T. ananthasubramaniani** sp. n.
(Distribution: Jammu, J & K)
- 65 (62) Dorsal carination of posterior process obscurely through metopidium. Black; suprahumeral horns short, broad, apices subacute, longitudinally carinate behind middle; posterior process robust, gradually narrowing to apex, tip acute, upcurved; tegmina dull bronzy, base black followed by creamy white spot. **T. albomaculatus** DIST.
(Distribution: S. India, Marikappam, Bombay)
- 66 (61) Head and pronotum brown.
- 67 (70) Tegmina 3 times longer than wide, 1st discoidal cell longer than 2nd.
- 68 (69) Brown, pronotum pilose; polymorphic suprahumeral horns, sprinkled with shining silvery hairs; posterior process stout, tips brown, projecting backwards behind clavus; tegmina pale bronzy, base opaque followed by a broad yellow patch. **T. pilosus** ANANTHASUB.
(Distribution: Madras, S. India)
- 69 (68) Fuscous brown; suprahumeral horns robust, more than three-fourths as long as width between bases; frontoclypeus extending three-fourths of its length below lower margins of vertex; posterior process tricarinate, basal $\frac{1}{2}$ heavy, apical $\frac{1}{2}$ attenuate, pale reddish brown, apex black; tegmina subhyaline. **T. cinereus** ANANTHASUB.
(Distribution: Lakshimpur, Calcutta, W.B.)
- 70 (67) Tegmina more than three and half times longer than wide; larger species, robust, oblong; frontoclypeus extending $\frac{1}{2}$ of its length below lower margins of vertex; suprahumeral horns $\frac{1}{2}$ as long as width between bases, obliquely turned upwards

and outwards, tips subacute, black; posterior process straight, apex slightly recurved; tegmina light brown, veins dark, pubescent. **T. sissoo sp. n.**

(Distribution: Jammu, J & K)

- 71 (60) Head and pronotum dark ochraceous; suprahumeral horns moderately broad, anteriorly little amplified rounded, apices subacute; posterior process robust, tricarinate, sides oblique, apical area black; tegmina pale ochraceous.

(Distribution: Tenasserim, Myitta)

T. selenus BUCK.

- 72 (1) Posterior process not reaching posterior angle of inner margins of tegmina.

- 73 (74) Dark purplish brown. Suprahumeral horns variable, robust, extending obliquely forwards and upwards, about 1.5 times as long as width between bases; posterior process tricarinate, tip acute, black. Tegmina purplish, nearly 2.3 times longer than wide, 1st discoidal cell petiolate, shorter than 2nd. **T. varicornis** ANANTHASUB.

(Distribution: Tenga river bed near Mt. Brigade, Wokro, Nefa)

- 74 (73) Suprahumeral horns short, broad or narrow, monomorphic.

- 75 (78) Head and pronotum testaceous or brown

- 76 (77) Testaceous; apices of lateral and posterior pronotal processes black; suprahumeral horns short and narrow, strong, medially carinate, subacute, slightly recurved; posterior process somewhat short, raised, tricarinate; tegmina talc-like, subhyaline veins brownish ochraceous, little granulose.

T. assamensis DIST.

(Distribution: Assam, Margherita)

- 77 (76) Fuscous-brown; suprahumeral horns obliquely erect, short, apices subacute, distinctly recurved; posterior process short, robust; tegmina pale bronzy, basal area dark of fuscous-brown.

T. bifurcus DIST.

(Distribution: Darjeeling)

- 78 (75) Head and pronotum black.

- 79 (82) Central carination finely continued through pronotum.

- 80 (81) Black; suprahumeral horns short, broad, slightly upturned, apex obtusely acute, recurved, indistinctly carinate behind middle; posterior process short, robust, raised, tricarinate; tegmina pale bronzy ochraceous, basally black, sternum cretaceously sericeous.

T. bicolor DIST.

(Distribution: Bombay)

- 81 (80) Black; suprahumeral horns very short, broad, recurved, apex roundly subtruncate; posterior process short, robust, raised, carination fine, apex projecting not impinging on tegmina; tegmina with bronzy-tint, veins piceous, base black.

(Distribution: Nilgiri Hills)

T. subangulatus DIST.

- 82 (79) Central carination obscurely through pronotum. Black; suprahumeral horns short, broad, slightly upturned, apex obtusely acute, recurved, indistinctly carinate behind middle. Posterior process short, robust, raised, scarcely elevated above scutellum. Tegmina pale bronzy, base piceous.

T. gibbosulus WALK.

(Distribution: Assam, Margherita, Calcutta, Ranchi)

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