



ON A COLLECTION OF SILVANIDAE (COLEOPTERA: CUCUJOIDEA) FROM ARUNACHAL PRADESH, INDIA WITH TWO NEW SPECIES AND A LARVA

T. K. PAL AND B. BARAIK

Zoological Survey of India, M-Block, New Alipore, Kolkata-700 053

E-mail : tkpal51@rediffmail.com

INTRODUCTION

The Silvanidae are a moderately large family of the section Clavicornia of the superfamily Cucujoidea of the suborder Polyphaga. The silvanids are usually small (1.3-4.5 mm.) and seldom large (11.5 mm.), often subdepressed and reddish-brown, and occasionally with dorsal spots. They are largely associated with litter or vegetation debris and a good number of species are subcorticolous by habit. The Silvanidae are diversely represented in the tropical and subtropical parts of the world than in the temperate zones. The representatives of the family occur in all the continental areas of the world, but so far only a few species have been recorded from New Zealand and the oceanic islands. After Grouvelle (1908, 1912), the works of Pal & Sengupta (1977, 1979, 1984); Pal (1981, 1985), Pal, Sengupta & Crowson (1984); and Sengupta & Pal (1996) have contributed to the knowledge of the Silvanidae of India. Later, Pal & Halstead (1998) recorded *Acathartus* Grovelle from Mizoram: India with a new species. Sengupta & Pal (1996) in the *Fauna of India* volume recorded about 8 species under 5 genera from Arunachal Pradesh. The present work is based on the collection made by one author (TKP) since 1988 in different districts of Arunachal Pradesh state, that represent 23 species under 10 genera. A larva of *Uleiota* Latreille is also described.

CHARACTERS OF THE FAMILY SILVANIDAE

Body small to moderately large (1.3-11.5 mm.), usually parallel-sided and somewhat flattened or sometimes ovoid and subconvex, elytral punctation in rows.

Head usually little elongate, sometimes transverse, usually with a transverse impressed line on vertex behind eyes, fronto-clypeal suture present or absent, antennal insertions hidden or exposed but never distinctly dorsal; gular sutures well separated, anterior part of gular region without longitudinal grooves, genal process normal; antenna 11-segmented, often with 3-segmented club and sometimes without club; mandible with two or three apical teeth, well developed mola, sometimes with a large cavity on dorsal side, otherwise cavity reduced to a vestige and without dorsal tubercle; maxilla with distinct lacinia and galea, lacinia narrow and with or without apical spine, galea broad and its apex densely hairy, palpi with apical segment rarely securiform; labium with mentum transverse; palpi with apical segment rarely securiform or transverse or distinctly smaller than segment 2.

Prothorax usually elongated and sometimes transverse, side margins often serrated and sometimes with distinct teeth, pronotum without distinct prebasal impression, prosternum moderately broad with apical margin almost straight, front coxae usually closely and rarely widely situated, trochantins hidden; coxal cavities somewhat rounded, usually externally closed behind and rarely open.

Elytra punctured in regular rows and usually with 9 rows of punctures, rarely with scutellary striae, epipleura usually complete. Wing usually with single anal vein, sometimes with three or five anal veins; devoid of radial cell, R-m cross vein and subcubital fleck.

Mesocoxae often closely situated, sternal fitting between mesocoxae usually in a straight line and sometimes with a narrow projection from metasternum, mesocoxal cavities broadly opened outwardly; hind coxae transverse and moderately widely separated; metendosternite often reduced and without lateral plates, sometimes well developed with anterior tendons.

Legs moderately long, trochanters short and simple, femora swollen towards middle, tibiae slightly broadened at apex and usually with two spurs, tarsal formula 5-5-5 in both sexes, tarsal segments 1-3 usually simple or slightly lobed below.

Abdomen covered by elytra, all ventrites freely articulated, ventrite 1 longest and ventrites 2-5 more or less equal in length, ventrite 1 sometimes with open femoral lines, intercoxal process variable. Aedeagus inverted cucujoid-type, median lobe usually broadly elongated and with a median strut, articulated parameres well developed. Ovipositor well developed with separate paraprocts, valvifers, coxites and styli.

LIST OF TAXA

Family SILVANIDAE

Subfamily SILVANINAE

1. *Silvanus lewisi* Ritter
2. *Silvanus recticollis* Reitter
3. *Silvanus difficilis* Halstead
4. *Silvanus robustus* Halstead
5. *Silvanoprus scuticollis* (Walker)
6. *Silvanoprus indicus* Pal & Sengupta
7. *Silvanoprus cephalotes* (Reitter)
8. *Silvanoprus angusticollis* (Reitter)
9. *Silvanoprus longicollis* (Reitter)
10. *Silvanoides cribricollis* (Grouvelle)
11. *Protosilvanus lateritius* (Reitter)
12. *Protosilvanus granosus* (Grouvelle)
13. *Oryzaeophilus surinamensis* (L.)
14. *Acathartus idu* n. sp.
15. *Monanus concinnulus* (Walker)

Subfamily PSAMMOECINAE

16. *Psammoecus harmandi* Grouvelle
17. *Psammoecus trilochna* Pal
18. *Psammoecus simoni* Grouvelle
19. *Psammoecus trimaculatus* Motschulsky

Subfamily CRYPTAMORPHINAE

20. *Cryptamorpha foveicollis* n. sp.

Subfamily ULEIOTINAE

21. *Uleiota spinicollis* (Gory)
22. *Uleiota alticola* Pal, Sengupta & Crowson
23. *Uleiota puberula* (Reitter)

SYSTEMATIC ACCOUNT

Family SILVANIDAE

Subfamily SILVANINAE

Genus *Silvanus* Latreille

1804. *Silvanus* Latreille, *Histoire Naturelle, générale et particulière, des crustacés et des insectes*, 11: 158 [Type-species: *Ips unidentata* Olivier].

Diagnosis : Head devoid of fronto-clypeal suture, eyes moderately large and coarsely faceted, temple often flattened beneath eye, transverse impressed line on vertex behind eyes, 11-segmented antenna with 3-segmented club, antennal insertions hidden under projection of frons, mandible with 3 apical teeth, apical segments of maxillary and labial palpi fusiform; prothorax usually elongate, side margins finely serrated, front coxal cavities closed and prosternal process broad at apex; mesocoxae narrowly separated; wing with single aral vein; each elytron with 9 rows of striae punctures, tarsi of legs simple; intercoxal process of first abdominal ventrite broad and its apical margin broadly pointed, femoral lines closed.

1. *Silvanus lewisi* Reitter

1876. *Silvanus lewisi* Reitter, *Col. Heft*, 15: 76.
1973. *Silvanus lewisi*: Halstead, *Bull. Br. Mus. Nat. Hist. (Ent.)*, 29 (2): 52.
1977. *Silvanus lewisi*: Pal & Sengupta, *Oriental Ins.*, 11 (2): 272.

Diagnosis : Yellowish- to reddish-brown and covered with short pubescence; eyes about half as

long as head, temple shorter than one eye facet and its outer apical angle pointed, puncturation on vertex coarse and dense; elongated prothorax with anterior spine about half as long as eye and its tip pointed, lateral depressions on pronotal disc slightly marked, puncturation on pronotum coarse and dense and almost similar to that of vertex of head, elytra about twice as long as wide, parallel-sided with margins little wavy, punctures deep and large. Length - 2.08-2.47 mm.

Material : 34 ex. INDIA: Arunachal Pradesh, L. Subansiri Distt., 15 km. O-Kimin, 1 ex., 22.ix.1988. T.K. Pal, ex. under bark; L. Subansiri Distt. (currently Papum Pare Distt.), Chimpu, Itanagar, 1 ex., 27.v.1992, T.K. Pal, ex. under bark; W. Siang Distt., Wak, 16 km. O-Along, 12 ex., 3.iii.1989, T.K. Pal, ex. under bark; Changlang Distt., Tengmo, 17 km. O-Nampong, 3 ex., 9.iii.1990, T.K. Pal, ex. under bark; Diyun-Jyotsnapur, 25 km. O-Miao, 7 ex., 4.iii.1990, T.K. Pal, ex. under bark; L. Dibang Valley Distt., Mayu, Roing, 4 ex., 6.iv.2009, T.K. Pal, ex. under bark; Shantipur, 6 ex., 5.iv.2009, T.K. Pal, ex. old log and under bark.

Distribution : INDIA: Arunachal Pradesh (new record), Nagaland, Assam, Meghalaya, Sikkim, West Bengal, Himachal Pradesh, Uttarakhand, Tamil Nadu, Karnataka, Kerala, Andaman Is.

Elsewhere : Sri Lanka; Vietnam; Taiwan; Japan; Malaysia; Singapore; Indonesia; Philippines; New Guinea; Solomon Is.; Australia; Congo; Ghana.

2. *Silvanus recticollis* Reitter

1876. *Silvanus recticollis* Reitter, *Col. Hefte*, 15: 61.
 1879. *Silvanus reflexus* Reitter, *Verh. zool. bot. Ges. Wien*, 29: 85.
 1882. *Silvanus vitulus* Grouvelle, *Annali Mus. civ. Stor. Nat. Giacomo Doria*, 32: 294.
 1912. *Silvanus (Microsilvanus) vitulus*: Grouvelle, *Annl. Soc. ent. Fr.*, 81: 332.
 1912. *Silvanus (Microsilvanus) pumilus* Grouvelle, *Annl. Soc. ent. Fr.*, 81: 332.
 1912. *Silvanus (Microsilvanus) minimus* Grouvelle, *Annl. Soc. ent. Fr.*, 81: 334.
 1973. *Silvanus recticollis*: Halstead, *Bull. Br. Mus. Nat. Hist. (Ent.)*, 29 (2): 55.
 1977. *Silvanus recticollis*: Pal & Sengupta, *Oriental Ins.*, 11 (2): 274.

Diagnosis : Yellowish-brown and covered with short pubescence; eyes about one-third as long as head, temple about half as long as head and its outer margin arcuate, puncturation on vertex coarse and dense; slightly elongate prothorax apparently quadrate, moderately large anterior spine projecting forward and with blunt tip, no distinct lateral depressions on pronotum, puncturation on pronotum almost similar to that of vertex of head; elytra shorter than twice as long as broad, lateral margins slightly sinuate and little explanate, punctures deep and large. Length - 1.60-2.80 mm.

Material : 2 ex. INDIA: Arunachal Pradesh, E. Siang Distt., 6 km. O-Pasighat, 1 ex., 16.ii.1989, T.K. Pal, ex. haystack; Dibang Valley Distt., Mayu, Roing, 1 ex., 6.iv.2009, T.K. Pal, ex. haystack.

Distribution : INDIA: Arunachal Pradesh (new record), West Bengal.

Elsewhere : Thailand; Vietnam; Laos; Sulawesi; Japan; Mauritania; Congo; Zaire; Zimbabwe.

3. *Silvanus difficilis* Halstead

1973. *Silvanus difficilis* Halstead, *Bull. Br. Mus. Nat. Hist. (Ent.)*, 29 (2): 73.
 1977. *Silvanus difficilis*: Pal and Sengupta, *Oriental Ins.*, 11 (2): 279.

Diagnosis : Reddish-brown and covered with short pubescence; eyes slightly shorter than half of length of head, temple about as long as 1.5 to 2 eye facets with broad outer apical angle, puncturation on vertex coarse and dense; elongated prothorax, anterior spine about half as long as eye with slightly blunt tip, well developed lateral depressions on pronotal disc, puncturation on pronotum coarse and dense and almost similar to that of vertex of head; elytra little more than twice as long as broad, side margins little wavy, punctures deep and large. Length- 2.20-2.50 mm.

Material : 16 ex. INDIA: Arunachal Pradesh, L. Subansiri Distt., nr. Pitapol, 10 km. O-Yazali, 1 ex., 19.ix.1988, T.K. Pal, ex. under bark; Banderdewa, 1 ex., 25.vi.1991, T.K. Pal, ex. under bark; W. Siang Distt., Wak, 16 km. O-Along, 3 ex., 3.iii.1989, T.K. Pal, ex. under bark; Changlang Distt., Tengmo, 17 km. O-Nampong, 1 ex., 10.iii.1990, T. K. Pal, ex. under bark; Rima, 7 km. O-Nampong, 1 ex., 11.iii.1990, T.K. Pal, ex. under bark; Diyum-Jyotsnapur, 25 km. O-Miao, 9 ex., 4.iii.1990, T.K. Pal, ex. under bark.

Distribution : INDIA: Arunachal Pradesh, Nagaland, Manipur, Assam, Meghalaya, Mizoram, Sikkim, West Bengal, Himachal Pradesh, Uttarakhand, Madhya Pradesh, Maharashtra, Karnataka, Kerala, Tamil Nadu, Andaman Is.

Elsewhere : Sri Lanka; Myanmar; Vietnam; Taiwan; Malaysia; Singapore; Indonesia; Philippines; Moluccas; I. Delcas; Solomon Is.; Australia; New Ireland; West Africa.

4. *Silvanus robustus* Halstead

1973. *Silvanus robustus* Halstead, *Bull. Br. Mus. Nat. Hist. (Ent.)*, **29** (2): 71.

1977. *Silvanus curvispinus* Pal & Sengupta, *Oriental Ins.* **11** (2): 278.

Diagnosis : Yellowish- to reddish-brown and covered with short pubescence; eye slightly shorter than half as long as head; temple about as long as two eye facets, extended laterally beneath eye with broad apical angle; puncturation on vertex coarse and dense, moderately long antenna with basal and apical segments of club (segments 9 and 11) elongate; elongated prothorax, anterior spine at least half as long as eye and its outer margin curved inward, excluding anterior spines shape somewhat elliptical, lateral depressions on pronotum slightly marked near base, puncturation slightly coarser than that of vertex of head; elytra slightly more than twice as long as broad, sides little wavy, punctures deep and large; in male hind trochanter with a short spine. Length- 2.8-3.0 mm.

Material : 2 ex. INDIA: Arunachal Pradesh, L. Subansiri Distt., 10 km. O-Yazali, nr. Pitapol, 1 ex., 19.ix.1988, T.K. Pal, ex. under bark; Tirap Distt., Hukanjuri, 36 km. O-Khonsa, 1 ex., 14.iii.1990, T.K. Pal, ex. under bark.

Distribution : INDIA: Assam, Arunachal Pradesh, West Bengal, Andaman Is.

Elsewhere : Malaysia; Singapore; Indonesia; Philippines.

Genus *Silvanoprus* Reitter

1911. *Silvanoprus* Reitter, *Fauna Germanica*, **3**: 45 [Type species: *Silvanus fagi* Guérin-Méneville].

Diagnosis : Head devoid of fronto-clypeal suture, eyes moderately large and coarsely faceted, temple usually flattened beneath eye, vertex with a transverse impressed line behind eyes, 11-segmented

antenna with 3-segmented club, antennal insertions hidden under projection of frons, mandible with well developed mola and three apical teeth, apical segments of maxillary and labial palpi fusiform; prothorax usually elongate and rarely transverse, side margins finely serrated, front angles with more or less prominent spines, front coxal cavities closed and prosternal process broad at apex; mesocoxae closely situated; each elytron with nine rows of stria punctures; tarsal segment 3 of legs strongly lobed below; intercoxal process of first abdominal ventrite broad but narrowed towards apex, femoral (coxal) lines closed and usually narrowly separated from margins of hind coxal cavities.

5. *Silvanoprus scuticollis* (Walker)

1859. *Silvanus scuticollis* Walker, *Ann. Mag. Nat. Hist.*, (3) **3**:53.

1886. *Silvanus triangulus* Reitter, *Col. Hefle*, **15**: 60.

1912. *Silvanoprus scuticollis*: Grouvelle, *Annl. Soc. ent. Fr.*, **81**: 342.

1979. *Silvanoprus scuticollis*: Pal and Sengupta, *Entomologica Basiliensia*, **4**:70.

Diagnosis : Yellowish- to reddish-brown and covered with short pubescence; eyes slightly shorter than half of length of head, temple about as long as one eye facet and its outer apical angle slightly pointed, puncturation on vertex coarse and dense; prothorax broader than long and distinctly narrowed posteriorly, widest across anterior spines, anterior spine about two-thirds as long as eye, lateral depressions on pronotum slightly developed, puncturation on pronotum almost similar to that of vertex of head; elytra slightly less than twice as long as broad, side margins little wavy, punctures deep and large. Length- 2.15 - 2.55 mm.

Material : 35 ex. INDIA: Arunachal Pradesh, W. Kameng Distt., Elephant head point, 250 m., 15 km. O-Bhalukpong, 1 ex., 1.xii.1990, T.K. Pal, ex. haystack; W. Siang Distt., Malinithan Forest, 4 km. O-Likabali, 8 ex., 16.iii.1989, ex. haystack; Nilok, 10 km. O-Likabali, 6 ex., 14.iii.1989, T.K. Pal, ex. haystack; Tirap Distt., Namsangmukh, 10 km. O-Deomali, 1 ex., 18.iii.1990, T.K. Pal, ex. vegetable debris; L. Dibang Valley Distt., Roing, 1 ex., 3.iv.2009, T.K. Pal, ex. haystack; Shantipur, 1 ex., 5.iv.2009, T.K. Pal, ex. under bark; Kankong, 17 ex., 12.iv.2009, T.K. Pal, ex. haystack.

Distribution: INDIA: Arunachal Pradesh (new record), Assam, Nagaland, Manipur, Meghalaya, Mizoram, Tripura, Sikkim, West Bengal, Bihar, Uttar Pradesh, Uttarakhand, Tamil Nadu, Andaman Is.

Elsewhere : Sri Lanka; Malaysia; Indonesia; Japan; East Africa; Madagascar; France; Guyana; West Indies.

6. *Silvanoprus indicus* Pal & Sengupta

1979. *Silvanoprus indicus* Pal & Sengupta, *Entomologica Basiliensia*, 4: 71.

Diagnosis : Yellowish- to reddish-brown and covered with short pubescence; eyes less than half as long as head, temple as long as 2 to 3 eye facets and its outer apical margin broad, temple not flattened beneath eye, puncturation on vertex coarse and dense; prothorax elongate, slightly narrowed posteriorly, anterior spine short and its tip broadly pointed, side margins curved and sinuate near extremities, lateral depressions on pronotum slightly developed, puncturation on pronotum almost similar to that of vertex of head; elytra about twice as long as broad, side margins slightly wavy, punctures deep and large. Length- 2.30-2.33 mm.

Material : 27 ex. INDIA: Arunachal Pradesh, W. Siang Distt., Nilok, 10 km. O-Likabali, 2 ex., 14.iii.1989, T.K. Pal, ex. haystack; Lohit Distt., Kheram, 35 km. O-Namsai, 3 ex., 2.iii.1990, ex. haystack of mustard; Yatong (currently Anjaw Distt.), 25 km. O-Hayuliang, 3 ex., 25.ii.1990, T.K. Pal, ex. haystack; Dibang Valley Distt., Kankong, 19 ex., 12.iv.2009, T.K. Pal, ex. haystack.

Distribution : INDIA: Arunachal Pradesh (new record), Nagaland, Manipur, Assam, Meghalaya, Mizoram, Sikkim.

7. *Silvanoprus cephalotes* (Reitter)

1876. *Silvanus cephalotes* Reitter, *Col. Hefte*, 15: 62.

1908. *Silvanus longicollis*: Grouvelle (nec. Reitter), *Annl. Soc. ent. Fr.*, 77: 492.

1912. *Silvanoprus longicollis*: Grouvelle (nec. Reitter), *Annl. Soc. ent. Fr.*, 81: 342.

1979. *Silvanoprus cephalotes*: Pal & Sengupta, *Entomologica Basiliensia*, 4: 70.

Diagnosis : Yellowish- to reddish-brown and covered with short pubescence; eyes slightly shorter than half as long as head, temple about as long as

one eye facets and its outer apical angle slightly pointed, temple flattened beneath eye, puncturation on vertex coarse and dense and not ocellate-type; elongated prothorax widest near middle, anterior spine short, about one-fourth as long as eye or shorter and projected forward, side margins feebly arcuate, lateral depressions on pronotum slightly developed, puncturation on pronotum almost similar to that of vertex of head; elytra more than twice as long as broad, side margins slightly wavy, punctures deep and large. Length- 2.20-2.35 mm.

Material : 203 ex. INDIA: W. Siang Distt., Malinithan Forest, 4 km. O-Likabali, 6 ex., 16.iii.1989, T.K. Pal, ex. haystack; Nilok, 10 km. O-Likabali, 11 ex., 14.iii.1989, T.K. Pal, ex. haystack; E. Siang distt., 6 km. O-Pasighat, 10 ex., 16.ii.1989, T.K. Pal, ex. haystack; Lohit Distt., Kheram, 35 km. O-Namsai, 13 ex., 2.iii.1990, ex. haystack of mustard; Yatong (currently Anjaw Distt.), 25 km. O-Hayuliang, 6 ex., 25.ii.1990, T.K. Pal, ex. haystack; Nara, 14 km. O-Hayuliang, 1 ex., 26.ii.1990, T.K. Pal, ex. haystack; Tirap Distt., Namsangmukh, 10 km. O-Deomali, 13 ex., 18.iii.1990, T.K. Pal, ex. vegetable debris; Dibang Valley Distt., Shantipur, 93 ex., 5.iv.2009, T.K. Pal, ex. haystack; Kankong, 41 ex., 12.iv.2009, T.K. Pal, ex. haystack; Roing, 3 ex., 3.iv.2009, T.K. Pal, ex. beating bush; Mayu, Roing, 6 ex., 6.iv.2009, T.K. Pal, ex. haystack.

Distribution : INDIA: Arunachal Pradesh (new record), Nagaland, Manipur, Assam, Meghalaya, Mizoram, Tripura, Sikkim, West Bengal, Bihar, Uttar Pradesh, Uttarakhand, Delhi, Karnataka, Tamil Nadu.

Elsewhere : Bhuta; Nepal; Sri Lanka; Indonesia; Japan; China.

8. *Silvanoprus angusticollis* (Reitter)

1876. *Silvanus angusticollis* Reitter, *Col. Hefte*, 15: 59.

1912. *Silvanoprus angusticollis*: Grouvelle, *Annl. Soc. ent. Fr.*, 81: 341.

1979. *Silvanoprus angusticollis* : Pal & Sengupta, *Entomologica Basiliensia*, 4: 71.

Diagnosis : Yellowish- to reddish-brown and covered with short pubescence; eyes slightly shorter than half as long as head, temple shorter than one eye facet and its outer apical angle slightly pointed, temple flattened beneath eye, puncturation on vertex coarse and dense; elongated prothorax

widest across anterior spines, slightly narrowed posteriorly behind middle, anterior spine moderately long, slightly shorter than half as long as eye and projected antero-laterally, side margins feebly sinuate near extremities, lateral depressions on pronotum slightly developed, puncturation on pronotum almost similar to that of vertex of head; elytra about twice as long as broad, side margins slightly wavy, punctures deep and large. Length- 2.50-2.70 mm.

Material : 23 ex. INDIA: Arunachal Pradesh, W. Kameng Distt., Bomdila, 2462 m., 2 ex., 25.ix.2004, T.K. Pal, ex. beating bush; Gandhi Colony, Bomdila, 10 ex., 27.iv.2004, T.K. Pal, ex. beating bush; Sangti, 1577 m., 11 ex., 30.ix.2004, T.K. Pal, ex. haystack.

Distribution: INDIA: Arunachal Pradesh (new record), Nagaland, Mizoram, Meghalaya, Sikkim, West Bengal, Uttar Pradesh, Kashmir, Tamil Nadu.

Elsewhere : Bhutan; Nepal; Japan.

9. *Silvanoprus longicollis* (Reitter)

1876. *Silvanus longicollis* Reitter, *Col. Hefte*, 15: 60

1908. *Silvanus longicollis* Grouvelle (nec. Reitter), *Annl. Soc. ent. Fr.*, 77: 491.

1912. *Silvanoprus longicollis* Grouvelle (nec. Reitter), *Annl. Soc. ent. Fr.* 81: 341.

1984. *Silvanoprus longicollis*: Pal, *Rec. zool. Surv. India*, 81(3-4): 339.

Diagnosis : Yellowish- to reddish-brown and covered with short pubescence; eyes short, temple long, slightly longer than length of eye and its outer margin slightly rounded, antennal scape large and about twice as long as broad, antennal segments 2-8 narrow-elongate, club 3-segmented, puncturation on vertex coarse and ocellate; prothorax elongate and almost parallel-sided, anterior spine small, about half as long as eye and projected forward, puncturation on pronotum almost similar to that of vertex of head and little finer anteriorly, lateral depressions on pronotum indistinct; elytra about twice as long as broad, side margins little wavy, punctures deep and large. Length- 2.20 - 2.28 mm.

Material : 4 ex. INDIA: Arunachal Pradesh, W. Kameng Distt., Elephant head point, 250 m., 15 km. O-Bhalukpong, 1 ex., 1.xii.1990, T.K. Pal, ex. haystack; L. Dibang Valley Distt., Kankong, 3 ex., 12.iv.2009, T.K. Pal, ex. haystack.

Distribution : INDIA: Arunachal Pradesh (new record), Nagaland, Manipur, Mizoram, Meghalaya, Assam, Tripura, Sikkim, West Bengal, Uttar Pradesh, Uttarakhand, Tamil Nadu, Andaman Is.

Elsewhere : Sri Lanka; Malaysia; Indonesia; China; Japan; Madagascar; East Africa.

Genus *Silvanoides* Halstead

1973. *Silvanoides* Halstead, *Bull. Br. Mus. Hist. (Ent.)*, 29 (2): 87 [Type-species: *Silvanoides cheesmanae* Halstead].

Diagnosis : Head devoid of fronto-clypeal suture, eyes large and coarsely faceted, temple flattened beneath eye and shelf-like, transverse impressed line on vertex behind eyes indistinctly visible, 11-segmented antenna moderately long, segments 4 to 8 transverse or about as broad as long, club 3-segmented; mandible with well developed mola and 3 apical teeth, apical segments of both maxillary and labial palpi fusiform, maxillary lacinia with apical spine; prothorax elongate, front angles with prominent spines beneath level of anterior margin, side margins finely denticulate, front coxal cavities closed behind and prosternal process broad at apex, mesocoxae moderately widely separated, wing with single anal vein, each elytron with 9 rows of striae punctures; tarsi of legs simple; intercoxal process of first abdominal ventrite broad and broadly pointed at apex, femoral lines opened.

10. *Silvanoides cribricollis* (Grouvelle)

1897. *Silvanus cribricollis* Grouvelle, *Anali. Mus. Civ. Stor. Nat. Giacomo Doria*, 38 (series 2, 18): 397.

1912. *Neosilvanus cribricollis*: Grouvelle, *Annl. Soc. ent. Fr.*, 81: 324.

1985. *Silvanoides cribricollis*: Pal, *Rec. zool. Surv. India*, 82 (1-4): 196.

Diagnosis : Reddish-brown, rather shiny and covered with short pubescence; eyes large and about half as long as head, temple slightly shorter than width of an eye facet and sloped downward, puncturation on vertex fine and sparse; elongated prothorax slightly narrowed posteriorly, anterior spine short, broad and its tips somewhat pointed, side margins curved and slightly sinuate near posterior angles, lateral depressions on pronotal disc moderately developed, puncturation on sides of pronotum coarser than near middle; elytra more than twice as long as broad, side margins feebly

wavy, punctures deep and large. Length- 2.5 - 3.0 mm.

Material : 7 ex. INDIA: Arunachal Pradesh, L. Subansiri Distt., Seven Camp, 27 km. O-Kimin, 1 ex., 21.ix.1988, T.K. Pal, ex. under bark; nr. Pitapol, 10 km. O-Yazali, 1 ex., 19.ix.1988, ex. under bark; W. Siang Distt., Kamki, 26 km. O-Along, 4 ex., 4.iii.1989, T.K. Pal, ex. under bark; Chanlang Distt., Rima, 7 km. O-Nampong, 1 ex., 11.iii. 1990, T.K. Pal, ex. under bark;

Distribution : INDIA: Arunachal Pradesh, Meghalaya, Sikkim, Andaman & Nicobar Is.

Elsewhere : Indonesia.

Genus *Protosilvanus* Grouvelle

1912. *Silvanus* (*Protosilvanus*) Grouvelle, *Annl. Soc. ent. Fr.*, **81**: 336.

1973. *Protosilvanus* Grouvelle: Halstead, *Bull. Br. Mus. Hist. (Ent.)*, **29** (2): 89 [Type species: *Silvanus lateritius* Reitter].

Diagnosis : Elongated, parallel-sided, head devoid of fronto-clypeal suture, eyes large and coarsely faceted, temple flattened beneath eye and shelf-like, vertex with a distinct transverse impressed line behind eyes, 11-segmented antenna with 3-segmented club, antennal insertions hidden under projection of frons, mandible with well developed mola and three apical teeth, maxillary without apical spines, segments 2 of both maxillary lacinia and labial palpi longer than apical segments; prothorax elongated, front angles with prominent spines, side margins finely denticulate, front coxae widely separated and coxal cavities closed behind, sterno-pleural suture extending to lateral margin, mesocoxae widely separated; wing with single anal vein; each elytron with 9 rows of striae punctures, interstice 7 more or less carinate; tarsi of legs simple; intercoxal process of first abdominal ventrite broad and broadly pointed at apex, femoral (coxal) lines closed.

11. *Protosilvanus lateritius* (Reitter)

1878. *Silvanus lateritius* Reitter, *Verh. Zool. Bot. Ges. Wien*, **28**: 194.

1908. *Silvanus lateritius*: Grouvelle, *Annl. Soc. ent. Fr.*, **77**: 490.

1912. *Silvanus* (*Protosilvanus*) *lateritius*: Grouvelle, *Annl. Soc. ent. Fr.*, **81**: 336.

1973. *Protosilvanus lateritius*: Halstead, *Bull. Br. Mus. nat. Hist. (Ent.)*, **29** (2): 96.

Diagnosis : Dorsally flattened, reddish-brown and covered with short pubescence; eyes about half as long as head, temple shorter than width of an eye facet and sloped downward, antennal segments 9 and 10 with apical spines, puncturation on vertex coarse and dense; elongated prothorax slightly narrowed behind middle, widest across anterior spines, lateral depressions on pronotum rather well developed, puncturation on pronotum almost similar to that of vertex of head; elytra more than twice as long as broad, almost parallel-sided with side margins slightly wavy, punctures deep and large, interstice 7 strongly carinate and extending slightly beyond anterior three-fourths. Length- 2.9-3.5 mm.

Material : 56 ex. INDIA: Arunachal Pradesh, L. Subansiri Distt., Seven Camp, 27 km. O-Kimin, 1 ex., 21.ix.1988, T.K. Pal, ex. under bark; nr. Lichi, 25 km. O-Yazali, 14 ex., ix.1988, T.K. Pal, ex. under bark; Hawa Camp, 15 km. O-Kimin, 5 ex., 22.ix.1988, T.K. Pal, ex. under bark; Chimpu, Itanagar (currently Papum Pare Distt.), 1 ex., 27.v.1992, T.K. Pal, ex. under bark; W. Siang Distt., Doke, 12 km. O-Basar, 1 ex., 8.iii.1989, T.K. Pal, ex. Banana leaf sheath; Likabali, 1 ex. 12.iii.1989, T.K. Pal, ex. under bark; Wak, 16 km. O-Along, 2 ex., 16.iii.1989, T.K. Pal, ex. under bark; E. Siang Distt., Bilat, 30 km. O-Pasighat, 7 ex., 18.ii.1989, T.K. Pal, ex. under bark; Lohit Distt., Lathaw, 14 km. O-Namsai, 8 ex., 1.iii.1990, T.K. Pal, ex. under bark; nr. Parasuram Kund, 20 km. O-Tezu, 3 ex., 23.ii.1990, T.K. Pal, ex. under bark; Kheram, 35 km. O-Namsai, 4 ex., 2.iii.1990, T.K. Pal, ex. under bark; Changlang Distt., 3 mile M.V. Road, 2 ex., 5.iii.1990, T.K. Pal, ex. under bark; Tengmo, 17 km. O-Nampong, 3 ex., 10.iii.1990, T.K. Pal, ex. under bark; Rima, 7 km. O-Nampong, 1 ex., 11.iii.1990, T.K. Pal, ex. under bark; New Yumchum, 8 km. O-Miao, 3 ex., 6.iii.1990, T.K. Pal, ex. under bark; L. Dibang Valley Distt., Parbuk, 1 ex., 11.iv.2009, ex. under bark.

Distribution: India: Arunachal Pradesh, Nagaland, Assam, Meghalaya, Mizoram, Tripura, Sikkim, West Bengal, Bihar, Uttar Pradesh, Uttarakhand, Himachal Pradesh, Kerala, Tamil Nadu, Andaman Is.

Elsewhere : Nepal; Bangladesh; Myanmar; Sri Lanka; Thailand; Vietnam; Malaysia; Singapore; Indonesia; Philippines; Taiwan; China; Japan.

12. *Protosilvanus granosus* (Grouvelle)

1897. *Silvanus granosus* Grouvelle. *Ann. Mus. civ. Stor. nat. G. Doria*, 32 (Series 2 12): 396.
1912. *Silvanus (Protosilvanus) granosus*: Grouvelle, *Annl. Soc. ent. Fr.*, 81: 336.
1973. *Protosilvanus granosus*: Halstead, *Bull. Br. Mus. Nat. Hist. (Ent.)*, 29 (2): 93.

Diagnosis : Elongate, rather parallel-sided, dorsally flattened, reddish-brown, covered with short pubescence; eyes about half as long as head; temple short, thin, extended beneath eye with pointed tip; antenna moderately long, segments 9 and 10 transverse and devoid apical spines on sides, puncturation on vertex coarse and dense; elongate prothorax slightly narrowed behind middle, anterior spine small with slightly pointed tip, lateral depressions on pronotum moderately marked, puncturation on pronotum almost similar to that of vertex of head; elytra more than twice as long as broad, punctures deep and larg, interstice 7 slightly more raised than other interstices and prominent up to anterior three fourths. Length- 2.3- 2.9 mm.

Material : 21 ex. INDIA: Arunachal Pradesh, Papum Pare Distt., Itanagar, Chimpu, 3 ex., 27.v.1992, T.K. Pal, ex. under bark; W. Siang Distt., Doke, 12 km. O-Basar, 1 ex., 8.iii.1989, T.K. Pal, ex. decayed log; E. Siang Distt., Bilat, 30 km. O-Pasighat, 6 ex., 18.ii.1989, T.K. Pal, ex. under bark; Lohit Distt., Lathaw, 14 km. O-Namsai, 3 ex., 1.iii.1990, T.K. Pal, ex. under bark; Kheram, 35 km. O-Namsai, 4 ex., 2.iii.1990, T.K. Pal, ex. under bark; Changlang Distt., Diyun-Jyotsnapur, 25 km. O-Miao, 3 ex., 4.iii.1990, T.K. Pal, ex. under bark; 3 mile M.V. Road, 1 ex., 5.iii.1990, T.K. Pal, ex. under bark;

Distribution : INDIA: Arunachal Pradesh (new record), West Bengal, Andaman Is.

Elsewhere : Sri Lanka; Malaysia, Singapore; Indonesia; Philippines; Solomon Is.

Genus *Oryzaeophilus* Ganglbauer

1899. *Silvanus (Oryzaeophilus)* Ganglbauer, *Die Käfer von Mitteleuropa*, 3: 584 [Type- species: *Silvanus surinameusis* (Linnaeus)].
1911. *Oryzaeophilus* : Reitter, *Fauna Germanica*, 3: 45.

Diagnosis : Elongated, moderately depressed, somewhat parallel-sided, pronotum with three longitudinal carinae and six lateral teeth on either side. Head elongate, devoid of fronto-clypeal suture, eyes small to large, temple flattened beneath eye, no distinct transverse impressed line on vertex behind eyes; antenna moderately long, antennal insertions hidden under projection of frons, 11-segmented with 3-segmented club; mandible with well developed mola and three apical teeth, apical segments of both maxillary and labial palpi elongate and fusiform. Prothorax elongate, side margin with six distinct teeth, pronotum with a discal area demarcated by a median and two lateral carinae; lateral longitudinal groove on either side of median carina, front coxal cavities closed and prosternal process broad at apex, mesocoxae closely situated, lateral margins of mesosternal process not notched, no coxal lines on metasternum, hind coxae widely separated; each elytron with 9 rows striae punctures, intercoxal process of first abdominal ventrite broad with blunt apical margin, no femoral lines.

13. *Oryzaeophilus surinamensis* (Linnaeus)

1758. *Dermestes surinamensis* Linnaeus, *Systema Naturae*, ed. 10, 1: 357.
1758. *Tenebrio cursor* Linnaeus, *Systema Naturae*, ed. 10, 1: 418.
1775. *Tenebrio surinamensis*: Degeer, *Memoires pour Servir a l'Histoire des Insectes*, 5: 54.
1776. nec. *Dermestes sexdentatus* Boerner, *Oekonomische Nachrichten der Patriotischen Gessellschaft in Schlesien*, 4: 78 [now *Ips sexdentatus* (Boerner): Scolytidae].
1775. *Anobium frumentarium* Fabricius, *Systema Entomologica*: 62.
1783. *Ips sexdentata* Herbst, *Archiv der Insectengeschichte*, 4: 31.
1790. *Silpha sexdentata*: Gmelin, *Systema Naturae*, 1 (4): 1619.
1790. *Ips frumentaria*: Olivier, *Entomologie, ou Histoire Naturelle des Insectes*, 2 (18) *Ips*: 10.
1792. *Scarites cursor*: Fabricius, *Entomologia Systematica*, 1: 96.
1792. *Dermestes sexdentatus*: Fabricius, *Entomologia Systematica*, 1: 232.
1792. *Colydium frumentarium*: Fabricius, *Entomologia Systematica*, 1: 496.
1794. *Lyctus sexdentatus*: Kugelann, *Schneider's Magazine*, 1: 566.

1802. *Corticaria frumentaria*: Marsham, *Coleoptera Britannica*: 107.
1813. *Silvanus sexdentatus*: Gyllenhal, *Insecta Suecica Classis, 1, Coleoptera sive Eleuterata* 1 (3): 406.
1829. *Silvanus surinamensis*: Stephens, *A Systematic Catalogue of British Insects*: 92.
1846. *Silvanus bicornis* Erichson, *Naturgeschichte der Insecten Deutschlands. 1, Coleoptera* 3: 357.
1890. *Silvanus surinamensis* var. *bicornis*: Reitter, *Wien. ent. Ztg.*, 9: 255.
1899. *Silvanus (Oryzaephilus) surinamensis*: Ganglbauer, *Die Käfer von Mitteleuropa*, 3: 584.
1911. *Oryzaephilus surinamensis*: Reitter, *Fauna Germanica*, 3: 46.
1980. *Oryzaephilus surinamensis*: Halstead, *Zool. J. Linn. Soc.*, 69: 286.

Common name : Saw-toothed grain beetle.

Diagnosis : Elongate, moderately elevated carinae of pronotum, short temple, deep brown, covered with short and semisecret pubescence. Head (exposed part) about as broad as long, eye small to moderately large and about one-fourth as long as head, temple about as long as 3.5 to 4 eye facets or about as long as eye ; antenna moderately long, segments 4-8 about as broad as long, basal segments of club (9-10) transverse, apical segment (11) about as broad as long, puncturation on vertex coarse and dense; elongate prothorax with front margin rounded, teeth on margin broad and pointed, anterior tooth more acute, lateral carinae of pronotum slightly convergent towards extremities, longitudinal grooves on either side of median carina well marked, puncturation on pronotum similar to that of vertex of head; elytra more than twice as long as broad, punctures moderately large; interstices 3, 5 and 7 slightly carinate. Length- 2.5-3.0 mm.

Material : 12 ex. INDIA: Arunachal Pradesh, Papum Pare Distt., Itanagar, 2 ex., T.K. Pal, 30.viii.1989, T.K. Pal, ex. stored rice; 9 ex., 14.viii.1990, T.K. Pal, ex. stored rice; Naharlagun, 1ex., 10.x.2004, T.K. Pal, ex. beating bush.

Distribution : INDIA: Arunachal Pradesh (new record), West Bengal, Jharkhand, Uttarakhand, Tamil Nadu.

Elsewhere : Distributed to many countries in the Old and New world through transport of stored food items.

Genus *Acathartus* Grouvelle

1912. *Acathartus* Grouvelle, *Anns. Soc. ent. Fr.*, 81: 315
[Type species: *Silvanus insignis* Grouvelle].

Diagnosis : Elongated, subparallel; head devoid of fronto-clypeal suture, eyes small and prominent, head sloped to back of eye but not forming a distinct temple, back of head with well marked impressed line, 11-segmented antenna with 2-segmented or indistinctly 3-segmented club, antennal insertions hidden under projection of frons, submentum in male with a large median pit bearing a few setae, mandible with bifid apex, maxillary palpi with segments 2 and 3 subequal, apical segment longest and narrowed apically, apical segment of labial palpi longer than segment 2 and narrowed apically; prothorax elongated, pronotum with anterior margin raised along median part, anterior angles laterally produced and broadly rounded, sides straight or weakly undulating and serrated, front coxae moderately widely separated, sterno-pleural suture markedly impressed and extending to side margin near base of anterior angle; elytra subparallel, each elytron with 9 rows of striae punctures, alternate interstices slightly raised but not carinate; tarsal segment 3 produced apically to form a lobe on which small 4th segment articulated; intercoxal process of first abdominal ventrite narrowly pointed, femoral lines inconspicuous.

14. *Acathartus idu* n. sp.

General appearance (Fig. 1) elongated, dorsally depressed, sides subparallel, somewhat shiny, cuticle punctate and less distinctly pubescent, dark brown, ventral punctation finer than dorsal side.

Head slightly longer than broad, dorsally flattened, with feeble linear depressions over antennal insertions; eyes prominently projected, about one-fifth as long as head; temple extended beneath eye, about one-fourth as long as eye, gradually narrowed exteriorly and outer apical angle pointed; sides finely margined; puncturation on vertex moderately coarse and dense, finer and sparser towards anterior margin of clypeus. Antenna moderately long and slender, about 1.5x as long as head, scape moderately large and elongate, pedicel shorter and narrower than scape, segment 3 longer than pedicel and segments 4-8 shorter elongate and subequal in length, club somewhat 3-segmented (9-11), segment 9 about as



Fig. 1. *Acathartus idu* n. sp., dorsal view.

broad as long and slightly wider than preceding segment, segment 10 distinctly broader than 9 with concave apical margin, apical segment (11) about as broad as long and slightly narrower than 10.

Prothorax elongate (1.3:1.0), nearly subparallel, front margin raised medially, front angles produced laterally and broadly rounded; sides feebly sinuate behind front angles, margin finely serrate; pronotal

disc depressed, with shallow but distinct lateral depressions in basal half; puncturation moderately coarse and dense, coarser laterally than mesally; hind angles short and obtuse. Scutellum moderately large, broader than long, finely punctate.

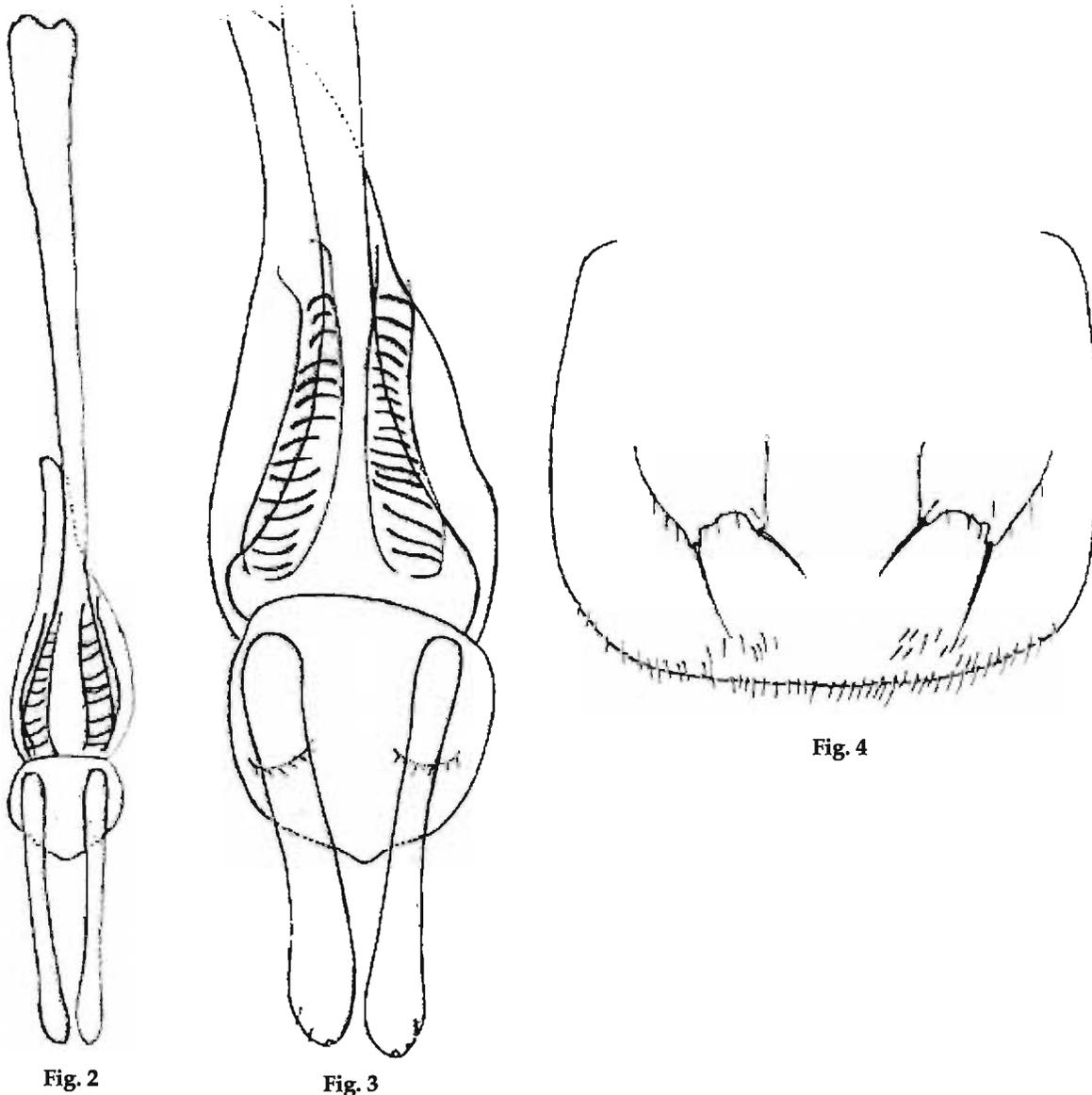
Elytra elongate (2.4:1.0), subparallel, slightly wider near posterior third, sides very slightly sinuate with narrowly explanate margins, apex

rounded, punctures moderately large and deep; alternate interstices raised, raised interstices with a medial row of posteriorly directed setae and bordered on either side by posteriorly converging setae, pubescence more distinctly visible towards sides than on middle.

On ventral side submentum of head with a large median pit (presumably secondary sexual character of male); prosternum with transverse striations on anterior part. Tarsal segment 3 of legs lobed; hind

tibia (male) bent inwards and with row of denticles on apical part of inner side; metafemur with low ridge near middle of inner side.

Aedeagus (Figs. 2, 3) with median lobe rounded to apex and slightly protuded medially, a row of small setae on either side of middle on dorsal surface; parameres elongate, slender, mostly subparallel and slightly widened above apex, no long apical seta, only two short subapical setae on outer side.



Figs. 2-4. *Acathartus idu* n. sp., Male genitalia: 2, Dorsal view of whole; 3, Enlargement to show detail of posterior part; 4, Sternites 8-9, dorsal view.

Measurements : Total length 3.86 mm., width of head across eyes 0.70 mm., length of antenna 0.84mm., length and width of prothorax 1.10 mm. and 0.80 mm., length and width of elytra 2.24 mm. and 0.87 mm.

Holotype : ♂, INDIA: Arunachal Pradesh, Lower Dibang Valley District, Ijingo, Roing, 15.iv.2009, T.K. Pal, ex. sweeping vegetation (Zoological Survey of India, Kolkata).

Etymology : The species is named after the tribe, *Idu* inhabiting Lower Dibang Valley District from where this species is found.

Remarks : The current species is the third species of *Acathartus* Grouvelle, and second one of the genus from India. This species differs from other Indian species, *A. mizoramensis* Pal & Halstead by the sides of prothorax behind anterior angles not weakly undulating, lateral depressions on pronotum are less well marked on basal half and recognisable only close to base, antennal segment 9 slightly transverse. This species shows some resemblances with *A. insignis* Grouvelle [Sumatra] but can be differentiated by the sides of prothorax feebly bisinuate behind anterior angles and not straight as in *insignis*. The male genitalia of this species differs from other two species by the slender parameres slightly widened above apex and devoid of long apical seta.

Genus *Monanus* Sharp

1879. *Monanus* Sharp, *Trans. Ent. Soc. Lond.*, 2: 85 [Type species: *Monanus crenatus* Sharp].

1899. *Emporius* Ganglbauer, *Die Käfer von Mitteleuropa*, 3: 429.

Diagnosis : Head devoid of fronto-clypeal suture, eyes moderately large and coarsely faceted, temple flattened beneath eye, no transverse line on vertex behind eyes; 11-segmented antenna with 3-segmented club, antennal insertions hidden under projection of frons; mandible with well developed mola and three apical teeth, apical segments of maxillary and labial palpi longer than other segments and fusiform, maxillary lacinia without apical spine; prothorax about as broad as long, side margins with a few setose denticles, front coxae contiguous and front coxal cavities closed behind, sterno-pleural suture extending usually to anterior denticle, mesocoxae contiguous; wing with single

anal vein; each elytron with nine rows of striae punctures, alternate interspaces with single and double rows of pubescence; tarsal segments 2 and 3 of legs strongly lobed below; intercoxal process of first abdominal ventrite broad and its apex slightly rounded, femoral (coxal) lines closed.

15. *Monanus concinnulus* (Walker)

1858. *Monanus concinnulus* Walker, *Ann. Mag. Nat. Hist.*, (3) 2: 207.

1867. *Silvanus signatus* Frauenfeld, *Verh. Zool. Bot. Ges. Wien*, 17: 438.

1874. *Cryptomorpha fasciatus* Wollaston, *Entomologist's mon. Mag.*, 10: 169.

1876. *Cryptomorpha concinnula*: Waterhouse, *Entomologist's mon. Mag.*, 13: 122.

1899. *Emporius signatus*: Ganglbauer, *Die Käfer von Mitteleuropa*, 3: 586.

1908. *Emporius concinnulus*: Grouvelle, *Annl. Soc. ent. Fr.*, 77: 489.

1912. *Monanus* (s. str.) *concinnulus*: Grouvelle, *Annl. Soc. ent. Fr.*, 81: 371.

1981. *Monanus* (s. str.) *concinnulus*: Pal, *Oriental Ins.*, 15 (3): 247.

Diagnosis : Moderately convex, rather shiny, yellowish- to reddish-brown and with black markings on elytra, covered with short pubescence; eyes shorter than one-third as long as head, temple about as long as 1.5 eye facets and its outer apical angle slightly pointed, antenna shorter than head and prothorax together, puncturation on vertex coarse and dense; quadrate prothorax slightly rounded anteriorly, side margin with about ten small and blunt denticles and each denticle bear an anteriorly directed seta, puncturation on pronotum almost similar to that of vertex of head; elytra shorter than twice as long as broad, side margins almost uniformly curved, a transverse black spot near middle and that extends towards apex along suture, punctures large. Length- 2.00-2.30mm.

Material : 18 ex. INDIA: Arunachal Pradesh, W. Siang Distt., Nilok, 10 km. O-Likabali, 1 ex., 14.iii.1989, ex. haystack; Lohit Distt., Digaru, 19 km. O-Tezu, 1 ex., 22.ii.1990, T.K. Pal, ex. haystack; L. Dibang Valley Distt., Shantipur, 2 ex., 5.iv.2009, T.K. Pal, ex. haystack; Kankong, 14 ex., 12.iv.2009, T.K. Pal, ex. haystack.

Distribution : INDIA: Arunachal Pradesh (new record), Nagaland, Manipur, Meghalaya, Mizoram, Tripura, Sikkim, West Bengal, Bihar, Uttar Pradesh, Uttarakhand, Delhi, Tamil Nadu, Karnataka, Andaman Is.

Elsewhere : Outside India this species is widely distributed in both the Old and New Worlds.

Subfamily PSAMMOECINAE

Genus *Psammoecus* Latreille

1829. *Psammoechus* Latreille, *Cuv. Règne Anim.* ed. 2, 5: 135 [Type species: *Dermestes bipunctatus* (Fabricius)].

1830. *Crypta* Stephen, *Illustration of British Entomology: Mandibulata*, 3: 103.

1846. *Psammoecus*: Erichson, *Naturgeschichte der Insekten Deutschlands 1*, Coleoptera, 3: 329.

Diagnosis : Elongate, slightly ovoid; head with fronto-clypeal suture, two lateral longitudinal striae on vertex originating near bases of antennae, eyes small to moderately large and coarsely faceted, temple may or may not extend beneath eye, transverse impressed line on vertex behind eyes, 11-segmented antenna with no distinguishable club, antennal insertions somewhat dorso-lateral, mandible with large basal mandibular cavity and three apical teeth, apical segments of both maxillary and labial palpi securiform or transverse, maxillary lacinia without apical spine; prothorax usually transverse, side margins with more or less prominent denticles, front coxae contiguous and coxal cavities closed behind, apical margin of prosternal process little sinuate, sterno-pleural suture extending to lateral margin; wing with single anal vein; each elytron with 10 rows of strial punctures; tarsal segments 1-3 of legs lobed below; intercoxal process of first abdominal ventrite broad and its apical margin broadly pointed, femoral lines almost marginal striae of hind coxal cavities.

16. *Psammoecus harmandi* Grouvelle

1912. *Psammoeus harmandi* Grouvelle, *Bull. Mus. Paris*, 28: 413.

1985. *Psammoeus harmandi*: Pal, *Rec. zool. Surv. India, Occ. Pap.*, 71: 19.

Diagnosis : Elongate-ovoid, moderately convex, slightly shiny, yellowish- to reddish-brown with blackish spots on elytra and antennal segments 9 and 10 blackish, covered with moderately long

pubescence; eyes shorter than half of length of head, temple moderately long and slightly flattened beneath eye, antenna long and slender, scape moderately large and about twice as long as broad, segments 3 to 7 longer than pedicel, segments 8 to 11 slightly wider than segment 7, segment 11 elongate and slightly acuminate at apex, puncturation on vertex coarse and dense; prothorax transverse, anteriorly about as wide as head across eyes, front margin and side margins slightly rounded, side margin with six minute teeth, puncturation on pronotum almost similar to that of vertex of head; elytra about one and a half times as long as broad, widest near middle, punctures moderately large, interstices narrower than punctures, a more or less rounded blackish spot on each elytron near middle and a somewhat rounded sutural spot behind them. Length - 3.0 mm.

Material : 11 ex. INDIA: Arunachal Pradesh, W. Kameng Distt., Sera Vill., 2250 m., 7 km. O-Bomdila, 8 ex., 18.xi.1990, T.K. Pal, ex. haystack; Changlang Distt., 3 mile M.V. Road, 2 ex., 5.iii.1990, T.K. Pal, ex. vegetable debris; Tirap Distt., Kheti, 10 km. O-Khonsa, 1 ex., 13.iii. 1990, T.K. Pal, ex. vegetable debris;

Distribution : INDIA: Arunachal Pradesh, Nagaland, West Bengal, Sikkim.

Elsewhere : Nepal.

17. *Psammoecus trilochana* Pal

1985. *Psammoeus trilochana* Pal, *Rec. zool. Surv. India, Occ. Pap.*, 71: 29.

Diagnosis : Elongate-oval, moderately convex, slightly shiny, yellowish-brown, blackish spots on elytra and antennal segments 9 and 10 blackish, covered with moderately long and semierect pubescence; eyes slightly longer than one-third as long as head, temple moderately long and slightly flattened beneath eye, antenna long and slender, scape little longer than twice as long as broad, segments 3- 7 longer than pedicel, segments 8-11 slightly wider than 7, segments 8 and 9 slightly elongate and segment 10 about as broad as long, segment 11 elongate and acuminate at apex, puncturation on vertex coarse and dense; prothorax about as broad as long and narrower posteriorly, anterior margin rounded and with a few small

denticles, side margin slightly sinuate at posterior half and with seven moderately large teeth, teeth about as broad as long and somewhat blunt, anterior and posterior angles obtuse and bearing teeth, puncturation on pronotum almost similar to that of vertex of head; elytra slightly less than one and a half times as long as broad, ovoid, punctures large and interstices narrower than punctures, lateral margin with longer and almost erect setae, a somewhat oblique blackish spot on each elytron near middle with extension along suture. Length- 3.1 mm.

Material : 28 ex. INDIA: Arunachal Pradesh, W. Kameng Distt., Kakaling, Bomdila, 2311 m., 7 ex., 26.ix.2004, T.K. Pal, ex. beating bush; Gandhi Colony, Bomdila, 21 ex., 27.ix.2004, T.K. Pal, ex. beating bush.

Distribution : INDIA: Arunachal Pradesh (new record), Nagaland, Himachal Pradesh.

Elsewhere : Nepal.

18. *Psammoecus simoni* Grouvelle

1892. *Psammoecus simonis* Grouvelle, *Annl. Soc. ent. Fr.*, **61**: 288.

1908. *Psammoecus simoni*: Grouvelle, *Annl. Soc. ent. Fr.*, **77**: 476.

1985. *Psammoecus simoni*: Pal, *Rec. zool. Surv. India, Occ. Pap.*, **71**: 31.

Diagnosis : Elongate-ovoid, moderately convex, slightly shiny, yellowish-brown with two transverse blackish spots on elytra, two large blackish spots near humeral angles, transverse spots and humeral spots connected by sutural blackish band; large round eyes slightly shorter than half as long as head, apical part of antennal segment 6 and segments 7-10 blackish, body covered with moderately long and semierect pubescence; eyes slightly shorter than half as long as head, temple short and slightly flattened beneath eye; antenna long and slender, scape to segment 7 more or less elongate, segments 8-10 as broad as long or slightly transverse, segment 11 elongate and acuminate apically; prothorax transverse, convex, narrowed behind middle, anterior margin rounded, lateral margin outwardly curved and with six more or less distinct teeth, posterior three teeth longer than others, transverse prebasal impression on pronotum well marked; elytra about 1.5x as long as broad,

ovoid and widest near middle, striae punctures moderately large and rounded, interstices about as broad as rows of punctures. Length- 2.5 mm.

Material : 1 ex. INDIA: Arunachal Pradesh, Lohit Distt. (currently Anjaw Distt.), Yatong, 25 km. O-Hayuliang, 1 ex., 25.ii.1990, T.K. Pal, ex. haystack;

Distribution : INDIA: Arunachal Pradesh (new record), West Bengal.

Elsewhere : Sri Lanka; Malaysia; Indonesia; Philippines; Seychelles; Madagascar.

19. *Psammoecus trimaculatus* Motschulsky

1858. *Psammoecus trimaculatus* Motschulsky, *Etud. Ent.*, **7**: 45.

1859.? *Cucujus incommodus* Walker, *Ann. Mag. Nat. Hist.* (3) **3**: 53.

1876. *Psammoecus trimaculatus*: Waterhouse, *Entomologist's mon. Mag.*, **13**: 124.

1876. *Telephanus cruciger* Waterhouse, *Entomologist's mon. Mag.*, **13**: 125.

1906. *Psammoecus trimaculatus*: Grouvelle, *Annl. Soc. ent. Fr.* **75**: 125.

1908. *Psammoecus trimaculatus*: Grouvelle, *Annl. Soc. ent. Fr.*, **77**: 406.

1985. *Psammoecus trimaculatus*: Pal, *Rec. Zoo. Surv. India, Occ. Pap.* **71**: 41.

Diagnosis : Elongate-oval, moderately convex, slightly shiny, yellowish-brown with blackish spots on elytra and antennal segments 7-10 blackish, elytra covered with moderately long pubescence; eyes slightly shorter than half as long as head, temple short and slightly flattened beneath eye, antenna long and slender, scape moderately large and elongate, segments 2-6 shorter, subequal and elongate, segments 7-11 slightly wider than segment 6, segment 7 slightly elongate, segments 8-10 about as broad as long or slightly transverse, segment 11 elongate and acuminate apically; prothorax transverse, anterior margin narrower than head across eyes, front margin and side margins feebly rounded, side margin with six or seven teeth of variable length, longest tooth in posterior half, slightly elongate and blunt apically; puncturation on pronotum coarse and dense, disc setose; elytra shorter than one and a half times as long as broad, widest near middle, punctures moderately large,

interstices about as wide as or wider than punctures, a more or less rounded blackish spot on each elytron in posterior half and a longitudinal sutural spot present behind them. Length- 2.5 mm.

Material : 36 ex. INDIA: Arunachal Pradesh, W. Siang Distt., Nilok 10 km. O-Likabali, 4 ex., 14.iii.1989, T.K. Pal, T.K. Pal, ex. haystack; Malinithan Forest, 4 km. O-Likabali, 1 ex., 16.iii.1989, T.K. Pal, ex. haystack; E. Siang Distt., 6 km. O-Pasighat, 14 ex., 16.ii.1989, T.K. Pal, ex. haystack; Lohit Distt. (currently Anjaw Distt.), Nara, 14 km. O-Hayuliang, 1 ex., 26.ii.1990, T.K. Pal, ex. haystack; Tirap Distt., Namsangmukh, 10 km. O-Deomali, 1 ex., 18.iii. 1990, T.K. Pal, ex. vegetable debris; W. Kameng Distt., Gandhi Colony, Bomdila, 1 ex., 27.ix.2004, T.K. Pal, ex. beating bush; L. Dibang Valley Distt., Shantipur, 6 ex., 5.iv.2009, T.K. Pal, ex. haystack; Kankong, 5 ex., 12.iv.2009, T.K. Pal, ex. haystack; Mayu, Roing, 3 ex., 6.iv.2009, T.K. Pal, ex. haystack.

Distribution : INDIA: Arunachal Pradesh, Assam, Nagaland, Manipur, Mizoram, Meghalaya, Sikkim, West Bengal, Jharkhand, Orissa, Uttarakhand, Uttar Pradesh, Jammu & Kashmir, Delhi, Karnataka, Tamil Nadu, Kerala, Andaman Is.

Elsewhere : Nepal; Bhutan; Sri Lanka; Myanmar; Malaysia; Japan; Madagascar.

Subfamily CRYPTAMORPHINAE

Genus *Cryptamorpha* Wollaston

1854. *Cryptamorpha* Wollaston, *Insecta Maderensia* : 156
[Type-species: *Cryptamorpha musae* Wollaston = *desjardinsi* (Guérin-Meneville)].

1859. *Pseudophanus* Leconte, *Proc. Acad. Philadelphia*: 84.

1867. *Parabrantes* Redtenbacher, *Reise Novara Zool.* 2: 40.

Diagnosis : Elongated, subparallel; head with fronto-clypeal suture, two longitudinal grooves present on lateral sides and often united, additional longitudinal impressed lines originating from lateral grooves and extending posteriorly to outer margin, eyes usually large and coarsely faceted, temple slightly flattened beneath eye, no transverse impressed line on vertex behind eyes, 11-segmented antenna with no distinguishable club, antennal insertions partly hidden under projection of frons, anterior part of gular region with a transverse groove, mandible with a large basal mandibular cavity, right mandible with 3 and left mandible

with 2 apical teeth, apical segments of maxillary and labial palpi elongated and fusiform, maxillary lacinia without apical spine; prothorax elongated to transverse, front coxae contiguous and coxal cavities closed behind, apical margin of prosternal process little sinuate, sterno-pleural suture extending to lateral margin; mesocoxae contiguous; wing with 5 anal veins; each elytron with ten rows of striae punctures and a scutellary striae; tarsal segments 1 and 2 of leg slightly lobed below, segment 3 bilobed; intercoxal process of abdominal ventrite 1 narrow and its apical margin slightly rounded, coxal lines almost marginal striae of hind coxal cavities, ventrites 2-5 shorter than 1 and subequal.

20. *Cryptamorpha foveicollis* n. sp.

General appearance (Fig. 5) elongate, moderately depressed, deeply foveate pronotum, yellowish-brown, with paired blackish spots on posterior half of elytra, dorsal surface punctate and finely pubescent.

Exposed part of head broader than long; eyes moderately large, about one-third as long as head; longitudinal grooves on vertex of head unite posteriorly and U-shaped, an additional longitudinal impressed line from anterior part of longitudinal groove extending posterad towards outer margin of head below eye, vertex of head impunctate and virtually glabrous; clypeus situated at a lower level than that of frons, impunctate-setose. Antenna long, slender, slightly shorter than length of elytra, scape moderately large, pedicel shorter and narrower than scape, segment 3 slightly longer and wider than pedicel; segments 4 and 5 longer and broader than 3, apices characteristically widened inwardly appearing somewhat lobulate; segments 6-9 shorter and subequal, segments 10-11 slightly wider than 9, segment 11 about 1.5x as long as 10 and acuminate at apex.

Prothorax slightly elongate (1.2:1.0), convex, sides arcuate, widest slightly beneath middle, front margin slightly emarginate; disc of pronotum with a deeply excavate, cup-shaped, slightly transverse fovea, apical margin of fovea tri-notched; puncturation on pronotum moderately coarse and dense, finely setose; sides finely margined, transverse impressed line on base of pronotum distinct. Scutellum moderately large, transverse, with a transverse impression and sparse pubescence.



Fig. 5. *Cryptamorpha foveicollis* n. sp., dorsal view.

Elytra more than twice as long as broad (2.2:1.0), somewhat parallel-sided and slightly widened behind middle, lateral margins slightly wavy and not explanate, apex separately rounded and forming a notch; scutellary striole short and consists of 7-8 punctures, punctures on rows deep and large, interstices distinctly narrower than rows of punctures, finely setose, an ovoid blackish spot on

either elytron near posterior third, surural line behind ovoid spots with an elongated darker area. Ventral side with finer punctures.

Aedeagus (Fig. 6): median lobe broad with acuminate apex; parameres broadly elongate, fusiform, slightly broadened medially, with a few apical setae and a few shorter setae on outer margin near middle at broadest part.

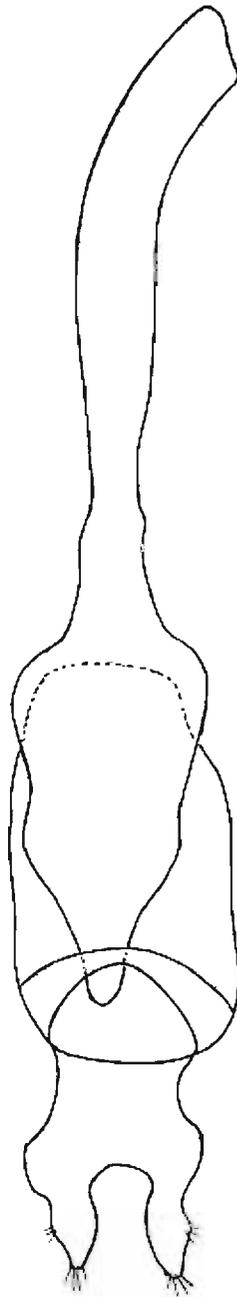


Fig. 6. *Cryptamorpha foveicollis* n. sp., Male genitalia, dorsal view.

Measurements : Total length 4.26 mm., width of head across eyes 0.80 mm., length of antenna 2.58 mm., length and width of prothorax 1.08 mm. and 0.92 mm., length and width of elytra 2.70 mm. and 1.26 mm.

HOLOTYPE : ♂, INDIA: Arunachal Pradesh, West Kameng District, Gandhi Colony, Bomdila, 27.ix.2004, T.K. Pal, *ex.* beating bush (Zoological Survey of India, Kolkata).

Etymology : The species name refers to the large-deep fovea on the pronotal disc of the species.

Remarks : This species is distinctly different from all other described species of *Cryptamorpha* in having a large excavated pronotum; characteristically widened apices of antennal segments 4 and 5 are also not seen in other species. The aedeagus shows some resemblances with that of *C. kaszabi* Pal & Sengupta in the shape of median lobe and parameres. But apex of median lobe elongated and more acuminate, and parameres are broadly elongate and broadened medially in this species.

Subfamily ULEIOTINAE

Genus *Uleiota* Latreille

1796. *Uleiota* Latreille, *Precis des caracteres generiques des Insectes disposes dans un orde naturel*: 46.
1801. *Brontes* Fabricius, *Systema eleutheratorum*, 2: 97.
1804. *Uleiota* : Latreille, *Histoire Naturelle, générale et particulière, des crustaces et des Insectes*, 11: 257.
1854. *Brontes* : Latreille, *Histoire Naturelle des Insektes*, 2: 408.
1858. *Brontes* : Redtenbacher, *Fauna Austriaca- Die Käfer*, ed. 2: 353.
1879. *Hyliota* : Reitter, *Verh. Zool. bot. Ges. Wien*, 29: 80.
- 1885-86. *Hyliota* : Reitter, *Francique Guillebeau : Tableaux Analytiques Determiner les Coleopteres europeins*, 1: 8.
1888. *Hyleota* : Seidlitz, *Fauna Baltica*, ed. 2: Gatt p. 55.
1899. *Uleiota* : Ganglbauer, *Die Käfer von Mitteleuropa*, 3: 592.
1911. *Uleiota* : Reitter, *Fauna Germanica*, 3: 48.
1984. *Uleiota* : Pal, Sengupta & Crowson, *Oriental Ins.*, 18: 217.

Diagnosis : Elongate, flat, with long antennae; head broader than long, without fronto-clypeal suture, eyes moderately large, temple flattened beneath eye and shelf-like, transverse impressed line on vertex behind eyes; antenna long, slender and filiform, 11-segmented, antennal insertions partly hidden under projection of frons; mandible with a large basal mandibular cavity and three apical teeth partly exposed and its outer margin with elongated discal area, maxillary lacinia without apical spine, apical segment of maxillary palpi elongate-fisiform, apical segment of labial palpi somewhat securiform; prothorax transverse, lateral

margins finely or distinctly dentate, pronotum flat and usually with lateral carinae; front coxal cavities open, coxae widely separated, prosternal process broad, sterno-pleural suture extending to lateral margin; mesocoxae widely separated and hind coxae slightly closer than mesocoxae; wing with three anal veins; each elytron with 9 rows of striae punctures, without scutellary striole; tarsi simple; intercoxal process of first abdominal ventrite broad at base, slightly narrowed and broadly rounded at apex, coxal lines almost marginal striae of hind coxae, a pair of small glandular cavity-like structure present behind hind coxal cavities.

20. *Uleiota spinicollis* (Gory)

1829-44. *Brontes spinicollis* Gory: In Guérin-Méneville, *Iconographie du Règne Animal de G. Cuvier. Insectes*: 205.

1877. *Hyliota atrata* Reitter, *Mitt. Munch. Ent. Ver.*, 1: 427.

1901. *Hyliota spinicollis*: Arrow, *Trans. Ent. Soc. Lond.*, 1901: 596.

1984. *Uleiota spinicollis*: Pal, Sengupta & Crowson, *Oriental Ins.*, 18: 219.

Diagnosis : Broadly elongate, rather parallel-sided, markedly flattened, dark brown, sides of prothorax with large and distinct teeth; head broader than long, eyes shorter than one-third as long as head, temple about as long as 4-5 eye facets and its tip broad, an elongated oval area on vertex encircled by a well marked depression, puncturation on vertex coarse and dense; antenna long and slender, slightly shorter than body length; prothorax broader than long, front margin straight and sloped downward near extremities, lateral margin with five distinct teeth, anterior tooth distinctly elongate and other teeth less so, pronotal disc with two shallow median and two lateral depressions, puncturation on pronotum slightly coarser than vertex of head; elytra more than twice as long as broad, parallel-sided with margins slightly wavy, punctures deep and large, 7th interstice strongly carinate and extending almost up to apex. Length- 9.3 mm.

Material : 2 ex. INDIA: Arunachal Pradesh, L. Subansiri Distt. (currently Papum Pare distt.), Chimpu, Itanagar, 1 ex., 27.v.1992, T.K. Pal, ex. under bark; Lohit Distt., Lathaw, 14 km. O-Namsai, 1 ex., 1.iii.1990, T.K. Pal, ex. under bark.

Distribution : INDIA: Arunachal Pradesh, Nagaland, Meghalaya, West Bengal.

Elsewhere: Myanmar; Indonesia (Java).

22. *Uleiota alticola* Pal, Sengupta & Crowson

1984. *Uleiota alticola*: Pal, Sengupta & Crowson, *Oriental Ins.*, 18: 221.

Diagnosis : Elongated, parallel-sided, dorsally flattened, little shiny, covered with short pubescence; head broader than long, eyes shorter than one-third as long as head, temple about as long as four eye facets and its outer apical angle broad, a short longitudinal depression near base of antenna; antenna long, slender, about as long as the body; puncturation on vertex moderately coarse and dense; prothorax broader than long, widest near anterior margin and slightly narrower posteriorly, anterior margin slightly sloped near extremities, lateral margin almost straight with 10-11 denticles, tip of denticles somewhat pointed, pronotum flat with shallow lateral depressions, puncturation on pronotum almost similar to that of vertex of head; elytra more than twice as long as broad, nearly parallel-sided, punctures deep and large, interstices narrower than rows of punctures, alternate interstices slightly wider and narrower, 7th interstice strongly carinate. Length- 5.12 mm.

Material : 31 ex. INDIA: Arunachal Pradesh, L. Subansiri Distt., Hapoli, Ziro, 1 ex., 18.ix.1988, T.K. Pal, ex. under bark; Chimpu, Itanagar (currently Papum Pare Distt.), 1 ex., 3.vii.1991, T.K. Pal, ex. under bark; W. Siang Distt., Malinithan Forest, 2 km. O-Likabali, 1 ex., 15.iii.1989, T.K. Pal, ex. under bark; Doke, 12 km. O-Basar, 13 ex., 8.iii.1989, T.K. Pal, ex. banana leaf sheath; Sododoke, 24 km. O-Basar, 1 ex., 10.iii.1989, T.K. Pal, ex. under bark; Darak, 10 km. O-Basar, 4 ex., 19.iii.1989, T.K. Pal, ex. under bark; Kamki, 16 km. O-Along, 1 ex., 4.iii.1989, T.K. Pal, ex. under bark; E. Siang Distt., Gette, 14 km. O-Yingkiong, 3 ex., 1.iii.1989, T.K. Pal, ex. under bark; W. Kameng Distt., Tippi, 163 m., 2 ex., 22.ix.2004, T.K. Pal, ex. under bark; L. Dibang Valley Distt., Hunli, 1250 m., 2 ex., 21.ix.1991, T.K. Pal, ex. under bark; Sally Lake, Roing, 1 ex., 4.iv.2009, T.K. Pal, ex. under bark; Tirap Distt., Tissa, 14 km. O-Longding, 1 ex., 16.iii.1990, T. K. Pal, ex. under bark.

Distribution : INDIA: Arunachal Pradesh, Nagaland, Meghalaya, West Bengal.

23. *Uleiota puberula* (Reitter)

1878. *Uliota puberula* Reitter, *Stettin ent. Ztg.*, **39**: 316.

1888. *Hyliota puberula*: Grouvelle, *Ann. Mus. Civ. Stor. Nat. Giacomo Doria*, (2) **6**: 625.

1984. *Uleiota puberula*: Pal, Sengupta & Crowson, *Oriental Ins.*, **18**: 223.

Diagnosis : Broadly elongate, rather parallel-sided, markedly flattened, reddish-brown, covered with short pubescence; head broader than long, eyes about half as long as head, temple shorter than two eye facets and its tip somewhat pointed, puncturation on vertex fine and moderately dense; antenna long and slender, slightly shorter than body length, scape broadly elongate and wider than other segments, segments 2 and 3 short and subequal, segments 4-11 longer than 3 and subequal; prothorax broader than long, slightly narrower posteriorly, anterior margin straight and slightly sloped near extremities, lateral margin almost straight with 9-10 small denticles, tip of denticles more or less pointed, pronotum flat with prominent sublateral ridges, pronotal disc depressed with well marked depressions near posterior angles, puncturation on pronotum slightly denser than that of vertex of head; elytra more than twice as long as broad, parallel-sided, lateral margins slightly wavy, rows of punctures deep and large, interstices distinctly wider than rows of punctures, 7th elytral interstice strongly carinate and extending almost up to apex. Length- 6.0 mm.

Material : 10 ex. INDIA: Arunachal Pradesh, L. Subansiri Distt. (currently Papum Pare Distt.), Chimpu, Itanagar, 1 ex., 3.vii. 1991, T.K. Pal, ex. under bark; Tirap Distt., Tissa, 14 km. O-Longding, 2 ex., 16.iii.1990, T.K. Pal, ex. under bark; W. Kameng Distt., Tippi, 163 m., 7 ex., 22.ix.2004, T.K. Pal, ex. under bark.

Distribution : INDIA: Arunachal Pradesh (new record), Meghalaya, West Bengal, Jharkhand.

Elsewhere : Myanmar.

KEY TO THE SUBFAMILIES, GENERA AND SPECIES OF SILVANIDAE OF ARUNACHAL PRADESH

1. Front coxal cavities externally widely open behind; tarsi simple; antennal scape markedly long, antenna long and filiform; facies parallel-sided with dorsal surface markedly flattened. ULEIOTINAE: *Uleiota* Latreille 2
- Front coxal cavities externally closed behind; tarsi usually lobed, sometimes simple; antennal scape moderately long, if markedly long and somewhat filiform antenna then body ovoid; facies subconvex or ovoid, if flattened and subparallel then antenna distinctly clubbed. 4
2. Sides of prothorax with large and distinct teeth; size large, about 9-11 mm. long. *Uleiota spinicollis* (Gory)
- Sides of prothorax with small denticles or serrations; size small, less than 6.5 mm. in length. 3
3. Temple of head long, about as long as 4-5 eye facets and its outer apical angle broad. Pronotum flat with shallow lateral depressions, no ridges. *Uleiota alticola* Pal, Sengupta & Crowson
- Temple of head short, about as long as 1-2 eye facets and its outer apical angle somewhat pointed. Pronotum flat with sublateral ridges. *Uleiota puberula* (Reitter)
4. Head with distinct fronto-clypeal suture and a pair of longitudinal grooves or striae; antennal insertions dorso-lateral and somewhat exposed, antennal club not distinguishable.....5
- Head without fronto-clypeal suture and devoid of longitudinal grooves or striae; antennal insertions hidden under projection of frons, antennal club more or less distinct..... (SILVANINAE) 9
5. Apical segments of labial and maxillary palpi elongated and more or less fusiform; elytra more or less parallel-sided with distinct scutellary striole; a curved transverse groove on anterior part of gular region of head; tarsal segment 3 bilobed and segments 1 and 2

- unilobed. Sides of pronotum arcuate and disc of pronotum deeply foveolate. (CRYPTAMORPHINAE) *Cryptamorpha foveicollis* Pal, n. sp.
- Apical segments of labial and maxillary palpi securiform or strongly transverse; elytra ovoid and without scutellary striole; head devoid of curved transverse groove on anterior part of gular region; tarsal segment 3 lobed below.... PSAMMOECINAE: *Psammoecus* Latreille 6
 - 6. Antennal segments 9-10 blackish.7
 - Antennal segments 7-10 blackish.8
 - 7. Teeth on lateral margin of prothorax minute, indistinct, either broader than long or about as broad as long; sides of prothorax rounded and not sinuate above posterior angles. *Psammoecus harmandi* Grouvelle
 - Teeth on lateral margin of prothorax partly long, distinct and longer than broad; sides of prothorax outwardly curved and slightly sinuate in posterior half. *Psammoecus trilochana* Pal
 - 8. Elytral pattern of four light patches on blackish base, two on either side. Two well marked transverse blackish spots near humeral angles of elytra. *Psammoecus simoni* Grouvelle
 - Elytra without pattern of four light regions on blackish base, with three blackish spots on yellowish-brown base. *Psammoecus trimaculatus* Motschulsky
 - 9. Lateral margin of prothorax finely serrated and without large teeth or denticles.10
 - Lateral margin of prothorax with more or less large teeth or denticles. 22
 - 10. Form elongate-subparallel; eyes small, about $1/5^{\text{th}}$ as long as head; prothorax with laterally prominent and rounded anterior angles, anterior third of prosternum with distinct transverse striations. Lateral depressions on pronotum less well marked and recognizable only near base *Acathartus idu* Pal, n. sp.
 - Form subparallel or elongate-ovoid; eyes large, distinctly longer than $1/4^{\text{th}}$ as long as head; anterior angles of prothorax either spinous or denticulate, anterior third of prosternum not striate.11
 - 11. Species markedly flattened; sterno-pleural suture of prothorax extending to lateral margin, front coxae widely separated; apical segments of maxillary and labial palpi shorter than segment 2; 7^{th} elytral interstice more or less carinate. *Protosilvanus* Grouvelle 12
 - Species moderately flattened; sterno-pleural suture of prothorax extending to base of anterior spine; front coxae nearly contiguous or less widely separated; apical segments of maxillary and labial palpi longest; no elytral interstice carinate. 13
 - 12. Antennal segments 9 and 10 with apical spines at extremities; median impressed line of metasternum extending anteriorly slightly beyond middle. *Protosilvanus lateritius* (Reitter).
 - Antennal segments 9 and 10 without apical spines; median impressed line of metasternum extending anteriorly up to apex of metasternum. *Protosilvanus granosus* Grouvelle
 - 13. Apex of anterior spines lying beneath level of front margin of prothorax; antennal segments 4-8 about as broad as long; femoral (coxal) lines of abdominal ventrite 1 opened. Dorsal surface of head and prothorax rather sparsely punctured and somewhat shiny. *Silvanoides cribricollis* (Grouvelle)
 - Apex of anterior spines of prothorax lying in a same level or beyond front margin of prothorax; antennal segments 4-8 elongated; femoral (coxal) lines of abdominal ventrite 1 closed. 14
 - 14. Tarsi simple. *Silvanus* Latreille) 15
 - Tarsal segment 3 strongly lobed below. *Silvanoprus* Reitter) 18
 - 15. Temple not distinctly flattened beneath eye to form a platform, eyes small with fewer facets; anterior spine of prothorax directed towards front and its tip blunt. *Silvanus recticollis* Reitter
 - Temple distinctly flattened beneath eye to form

- a platform, eyes moderately to markedly large and with many facets; anterior spine of prothorax directed slightly outward and its tip more or less pointed. 16
16. Temple markedly short and represented by a thin platform, length of temple shorter than width of one eye facet and its outer apical angle pointed. *Silvanus lewisi* Reitter
- Temple distinct and thick, length of temple longer than width of one eye facet and its outer apical angle somewhat broad. 17
17. Outer margin of anterior spine of prothorax curved inwardly and its tip projected somewhat inwardly and towards front, prothorax somewhat elliptical excluding anterior spines; antennal segment 9 slightly elongate; hind trochanter of male with a short spine.....
..... *Silvanus robustus* Halstead
- Outer margin of anterior spine of prothorax straight and directed more outwardly, prothorax not elliptical excluding anterior spines and narrowed posteriorly; antennal segment 9 distinctly transverse; hind trochanter of male devoid of spine.
..... *Silvanus difficilis* Halstead
18. Prothorax broader than long, width of prothorax across anterior spines more than 1.5x as broad as width across posterior angles, prothorax distinctly narrowed posteriorly, lateral margins almost straight, shape of prothorax somewhat triangular.
..... *Silvanoprus scuticollis* (Walker)
- Prothorax longer than broad, width of prothorax across anterior spines less than 1.25x as broad as width across posterior angles, prothorax slightly narrowed posteriorly behind middle, lateral margin distinctly sinuate, shape of prothorax different..... 19
19. Temple of head moderately long and not flattened beneath eye; temple about as long as 2-3 eye facets and inwardly notched.
..... *Silvanoprus indicus* Pal & Sengupta
- Temple of head very short or long and distinctly flattened beneath eye; temple either short thin with outer apical angle pointed, or long with outer apical margin rounded.....20
20. Temple of head long, about as long as eye or longer than eye and its outer apical margin rounded; puncturation of head and pronotum ocellate-type, coarse and somewhat rugose.
..... *Silvanoprus longicollis* (Reitter)
- Temple of head short, about as long as 1-2 eye facets and its outer apical angle somewhat pointed; puncturation of head and pronotum reticulate-type, coarse and dense..... 21
21. Front and middle femora with a distinct spine near middle ; lateral margin of prothorax more or less uniformly curved outwardly; anterior spine of prothorax small, projected in front and about as long as 1/4th of eye.
..... *Silvanoprus cephalotes* (Reitter)
- Front and middle femora devoid of any spine; lateral margin of prothorax distinctly wavy and sinuate across anterior third; anterior spine of prothorax longer, about half as long as eye and projecting somewhat outwardly.
..... *Silvanoprus angusticollis* (Reitter)
22. Lateral margin of prothorax with six distinct teeth or denticles; pronotum with three distinct longitudinal carinae. Length of temple of head about as long as 3.5-4 eye facets, eyes usually shorter than twice as long as temple.
..... *Oryzaephilus surinamensis* (L.)
- Lateral margin of prothorax with at least 8-10 teeth or denticles; pronotum convex and devoid of longitudinal carinae. Tarsal segments 2 and 3 strongly lobed below; elytra ovoid, moderately convex, with transverse blackish spot near middle of elytra.....*Monanus concinnulus* (Walker)

Larva of *Uleiota alticola* Pal,
Sengupta & Crowson

General body form (Fig. 7) elongated, somewhat depressed dorso-ventrally, nearly subparallel with slightly widened near middle, whitish soft-bodied with long antennae and urogomphi, mouthparts yellowish.



Fig. 7. Larva of *Uleiota alticola* Pal, Seng. & Crowson, dorsal view of whole.

Head (Fig. 8) transverse, side margins rounded, frontal suture indistinct and cucujoid-type, clypeus fused with frons, labrum distinctly separated from clypeus, endocarina and metopic suture absent, arrangement of setae on dorsal side as in figure. Ocelli indistinct and not characterized. Antenna rather long, 3-segmented, segments elongated, segment 2 more than twice as long as 1, segment 3 about as long as 2 but narrower, sensory appendage minute and lying ventrally on tip of segment 2. Mandible (Fig. 13) with three apical teeth, prosthema translucent at base and sharply pointed at apex; mola well developed, chitinized, with about 8 rows of dorsal fine transverse ridges and 15-16 rows of ventral curved asperated ridges.

Maxillary mala (Fig. 14) moderately sharply pointed at apex, at base of apical spine on outer margin with a few setae, a dorsal row of about 14 setae along inner margin of mala, cardo well developed, maxillary articulating area well defined and oval; palpi shorter than mala, length of palpal segments 1:2:2. Labium (Fig. 15) narrowed anteriorly, 2-segmented palpi, basal segment of palpi transverse, apical segment slightly narrower and longer than basal one, hypopharynx well developed, hypopharyngeal bracon present, hypopharyngeal rods and hypostomal margins distinct and diverging posteriorly.

Thorax and abdomen : Tergites with sparsely distributed simple setae. Prothorax (Fig. 9) slightly narrower than head and about as broad as mesothorax, metathorax slightly wider than mesothorax. First abdominal segment slightly shorter than metathorax and second abdominal segment, abdominal segments 4-8 narrower than first three segments, sternite 8 with its posterior angles bearing long setiferous prolongations, segment 9 with short tergite and its sternite forming an elongated tubular pygopod-like projection; urogomphi markedly long, narrow and not chitinized, each urogomphus with a conspicuous long apical seta (Fig. 10).

Spiracles and legs : All spiracles annular and lying on body surface (Fig. 11). Legs narrow and moderately long, coxae small and widely separated; claw simple, elongate, with two tarsungular setae lying one beneath other (Fig. 12).

Measurements : Total length 8.5 mm., length of head including labrum 0.75 mm. and width 1.15 mm, width of metathorax 1.12 mm., width of 9th abdominal segment across front margin 0.70 mm. (n= 1).

Material : 2 ex. INDIA: Arunachal Pradesh, L. Dibang Valley Distt., Hunli, 1250 m., 21.ix.1991, T.K. Pal, ex. under bark.

SUMMARY

The paper deals with 23 species under 10 genera of 4 subfamilies from the State of Arunachal Pradesh. All, except 8 species, are recorded first time from the State; 2 species (*viz.*, *Acathartus idu* and *Cryptamorpha foveicollis*) are described as new. The species are systematically keyed and characterized. The larva of *Uleiota alticola* is described.

ACKNOWLEDGEMENTS

The authors are indebted to the Director, Zoological survey of India for providing necessary facilities for the work. Ms. Jhikmik Dasgupta and Shri Bishwanath Ghosh helped in photography and image corrections of beetles and larva, used in the paper.

Figs. 8-15. Larva of *Uleiota alticola* Pal, Seng. & Crowson:

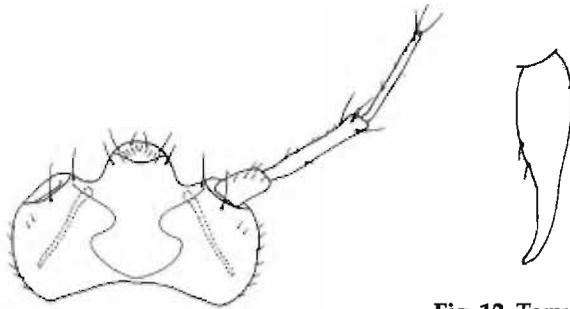


Fig. 8. Head, dorsal view

Fig. 12. Tarsungul

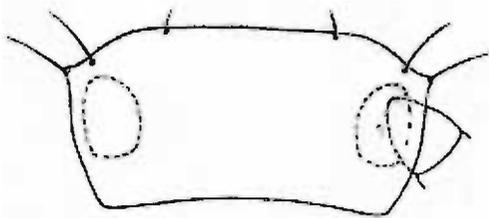


Fig. 9. Prothorax, dorsal view

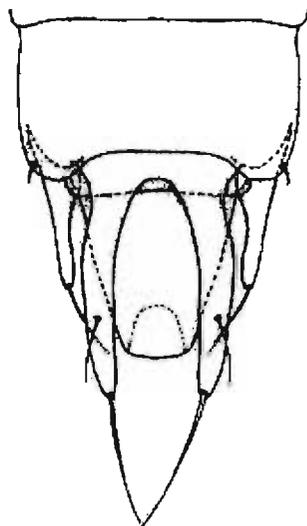


Fig. 10. Posterior abdominal segments, dorsal view



Fig. 11. Abdominal spiracle



Fig. 13. Left mandible, ventral view

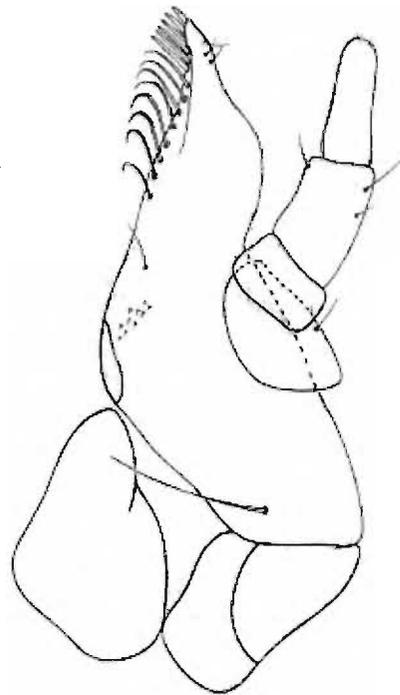


Fig. 14. Left maxilla, ventral view

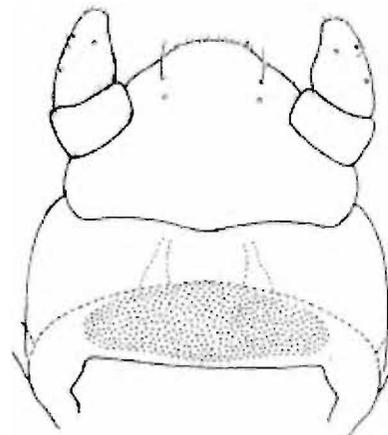


Fig. 15. Labium, ventral view.

REFERENCES

- GROUVELLE, A. 1908. Coléoptères de la région indienne. Rhysodidae, Trogositidae Nitidulidae, Colydiidae, Cucujidae. *Annls. Soc. ent. Fr.*, **77**: 313-495.
- GROUVELLE, A. 1912. Notes sur les Silvanini (Col. Cucujidae). *Annls. Soc. ent. Fr.*, **81**: 312-386.
- PAL, T. K. 1981. On *Monanus* Sharp (Coleoptera: Silvanidae) from India. *Oriental Ins.* **15** (3): 241-255.
- PAL, T. K. 1985. A revision of Indian *Psammoecus* Latreille (Coleoptera: Silvanidae). *Rec. zool. Surv. India, Occ. Pap. No.*, **71**, Misc. Pub. 1-54 pp.
- PAL, T. K. and HALSTEAD, D.G.H. 1998. A review of the genus *Acathartus* Grouvelle (Coleoptera: Silvanidae). *Annales Zoologici*, **48**(1/2): 45-50.
- PAL, T. K. and SENGUPTA, T. 1977. A revision of *Silvanus* (Coleoptera: Silvanidae) from India. *Oriental Ins.*, **11**(2): 269-284.
- PAL, T. K. and SENGUPTA, T. 1979. Ergebnisse der Bhutan Expedition 1972 des Naturhistorischen Museums in Basel. Coleoptera: Fam. Silvanidae. *Ent. Basel.*, **4**: 69-82.
- PAL, T. K. and SENGUPTA, T. 1984. On *Protosilvanus* (Coleoptera: Silvanidae) from India. *Oriental Ins.*, **18**: 235-249.
- PAL, T. K., SENGUPTA, T. and CROWSON, R.A. 1984. Revision of *Uleiota* Latreille (Coleoptera: Silvanidae) from India and Sri Lanka and its systematic position. *Oriental Ins.*, **18**: 213-233.
- SENGUPTA, T. and PAL, T. K. 1996. *Fauna of India and the Adjacent Countries; Clavicornia: Coleoptera, Family Silvanidae*. Zoological Survey of India, Kolkata, 262 pp.