



On the genus *Philonthus* Stephens, 1829 (Coleoptera: Staphylinidae: Staphylininae) from Uttarakhand, India

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Abstract

Large Rove beetles (Coleoptera: Staphylinidae: Staphylininae) of the genus *Philonthus* Stephens, 1829 from Uttarakhand, India are studied and 25 species reported in the present paper. The diagnostic characters of the each species are also provided for easy identification. All these species are recorded for the first time from the state as this forms the pioneer work on Rove beetles of Uttarakhand, India. *Philonthus leptocerus* Fauvel is being reported for the first time from India.

Keywords: First Record, High Altitude Region, *Philonthus leptocerus*, Rove Beetles

Introduction

The family Staphylinidae, commonly known as Rove beetles, is one of the largest families of the order Coleoptera. They are usually found in habitats like damp rotten vegetables, trunks of decaying trees, leaf-litter, amidst bushes in paddy fields, under stones, bark or sometime associated with ants, termites and even in running water etc. Most of the earlier work on this group was published by Motschulsky (1858), Kraatz (1859), Fauvel (1895), Bernhauer (1915), Cameron (1930, 1931, 1932), Rougemont (1986a & b). The present study was based on the collections from several districts of Uttarakhand by different survey parties housed in the National Zoological Collections of the Zoological Survey of India, Kolkata. The study includes a total of 26 species under one genus and one subfamily, Staphylininae. This is the first taxonomic study of rove beetles of the genus *Philonthus* Stephens, 1829 from Uttarakhand state. Hence, all the 25 species are recorded for the first time from high altitude areas of the state.

Material and Methods

The specimens were mainly collected in the forests of Uttarakhand state by hand picking, and dusting. Light trapping method was also used during night. Several survey parties were involved in collecting the material during past several years. The collected materials were sorted out, set and pinned, studied and identified. The

identification is mainly based on the differences in the morphological characters majorly following Cameron (1932). All the identified collections are deposited in the National Zoological Collection of Zoological Survey of India, Kolkata.

Results

Taxonomic accounts of 25 species of Rove Beetles collected from Uttarakhand are provided hereunder.

Family STAPHYLINIDAE Latreille, 1802

Subfamily STAPHYLININAE Latreille, 1802

Tribe STAPHYLININI Latreille, 1802

Genus *Philonthus* Stephens, 1829

1. *Philonthus assamensis* Cameron, 1932 (Figure 1)

1932. *Philonthus assamensis* Cameron, *Fauna of British India, incl. Ceylon & Burma, (Coleoptera: Staphylinidae)*, 3: 100.

Material examined: 1 ex, India: Uttarakhand, Nainital, 19.x.1990, S. Biswas & K.V. Surya Rao.

Diagnosis: Head and abdomen black, thorax and elytra red, thorax with dorsal row of four punctures. Antennae with the first three joints reddish-yellow, the rest blackish. Legs reddish yellow, the tibiae infusate. Length 5 mm.

Distribution: India: Uttarakhand: Nainital, Assam, Manipur.

2. *Philonthus bipunctatus* Bernhaur, 1911 (Figure 2)

1911. *Philonthus bipunctatus* Bernhaur, *Ent. Blatt.*, 7: 90.

Material examined: 2 ex, India: Uttarakhand, Ghangharia, 28.viii.2002, S.K. Mondal & Party; 1 ex, Almora, Kafarkhan, 2.x.2001, P. Mukhopadhyay & Party.

Diagnosis: Black shining, the elytra greenish-bronze, the abdomen slightly iridescent. Dorsal row of thoracic punctures two. Antennae and legs black. Length 10–12mm.

Distribution: India: Uttarakhand (Ghangharia, Almora: Kafarkhan, Dehradun; Berars: Chakrata), Punjab (Nakodar). *Elsewhere*: Nepal.

3. *Philonthus castaneus* Gemminger & Harold, 1868 (Figure 3)

1868. *Philonthus castaneus* Gemminger & Harold, *Cat. Col.*, 2: 586.

Material examined: 1 ex, India: Uttarakhand, Tanakpur, 24.ii.1990, S. Biswas & K.V. Surya Rao, ex. 'Cow dung'.

Diagnosis: Head, terminal joints of antennae, and last segments of the abdomen blackish, thorax, elytra, and margin of the abdominal segments brownish or yellowish, legs testaceous. Thorax with dorsal row of four punctures, and laterally with four other. Length 5 mm.

Distribution: India: Uttarakhand (Tanakpur), Karnataka, Kerala (Silent Valley), WB (Gosaba).

4. *Philonthus chalceus* Stephens, 1832 (Figure 4)

1832. *Philonthus chalceus* Stephens, *Brit. Ent.*, 5: 227.

Material examined: 1 ex, India: Uttarakhand, Almora, Kafarkhan, 2.x.2001, P. Mukhopadhyay, ex. 'Cow dung'.

Diagnosis: Black, shiny, with greenish metallic reflex on the fore parts, especially on the elytra. Thorax with dorsal row of four large punctures. Abdomen with straight basal lines. Antennae and legs black, the last joint of the former sometimes reddish. Length 11–12 mm.

Distribution: India: Uttarakhand (Almora, Kafarkhan, Shimla Hills), Punjab (Nakodar).

5. *Philonthus chatterjeei* Cameron, 1926 (Figure 5)

1926. *Philonthus chatterjeei* Cameron, *Trans. Ent. Soc. Lond.*: 356.

Material examined: 10 ex, India: Uttarakhand, Uttarkashi, 15.xi.2001, S.K. Chakraborty; 2 ex, Dehradun, Rajaji

National Park, 27.x.2000, P. Mukhopadhyay.

Diagnosis: Black head suborbicular, Thorax with dorsal row of five punctures on either side of the disc. Elytra very finely and sparingly punctured. Palpi pitchy. Antennae black, the last joint testaceous. Legs pitchy, testaceous. Length 5.5 mm.

Distribution: India: Uttarakhand: Uttarkashi, Utanikichatt, Dehradun (Rajaji National Park), Mussoorie district.

6. *Philonthus cinctulus* (Gravenhorst, 1802) (Figure 6)

1802. *Staphylinus cinctulus* Gravenhorst, *Col. Micr. Brunsv.*: 167.

1932. *Philonthus cinctulus*: Cameron, *Fauna of British India, incl. Ceylon & Burma, (Coleoptera: Staphylinidae)*, 3: 77-78.

Material examined: 1 ex., India: Uttarakhand, Dehradun, 24.x.2001, P. Mukhopadhyay, ex. 'Cowdung'.

Diagnosis: Head and thorax black, with metallic reflex; elytra greenish or coppery bronze; abdomen black, thorax with dorsal row of three punctures. Antennae ferruginous, legs yellowish red. Length 11–12mm.

Distribution: India: Uttarakhand: Dehradun. Widely distributed throughout India and Sri Lanka.

7. *Philonthus confusus* Cameron, 1932 (Figure 7)

1932. *Philonthus confusus* Cameron, *Fauna of British India, incl. Ceylon & Burma, (Coleoptera: Staphylinidae)*, 3: 148.

Material examined: 3 ex, India: Uttarakhand, Uttarkashi, Bhatwari, 6.v.2002, S.K. Chakraborty, ex., 'Under Moss'.

Diagnosis: Head a little broader and so more square, the eyes a little larger, the elytra more finely, less deeply punctured, the abdominal puncturation and pubescence much less close. The antennae a little shorter and stouter, the penultimate joints a little more transverse, the first two joints pitchy. Length 5 mm.

Distribution: India: Uttarakhand: Uttarkashi, Bhatwari, Chakrata, Mussoorie and Simla district.

8. *Philonthus crassicornis* Fauvel, 1896 (Figure 8)

1896. *Philonthus crassicornis* Fauvel, *Rev. d'Ent.*, 14: 264.

Material examined: 1 ex, India: Uttarakhand, Uttarkashi, Bhatwari, 6.v.2002, S.K. Chakraborty, ex. 'Under Stone'.

Diagnosis: Head and thorax black. Elytra and abdomen

pitchy black, Thorax with dorsal row of five punctures. Antennae black, the first two joints reddish-yellow, the 11th and sometimes the 10th orange red. Legs reddish-yellow, the tibiae infusate. Length 3.5 mm.

Distribution: India: Uttarakhand: Uttarkashi, Bhatwari, Dehradun; Tamil Nadu: Nilgiri Hills. *Elsewhere:* Sri Lanka.

9. *Philonthus delicatulus* Boheman, 1858 (Figure 9)

1858. *Philonthus delicatulus* Boheman, *Eugen. Resa.*: 29.

Material examined: 1 ex, India: Uttarakhand, Tanakpur, Sarda river, 24.ii.1990, S. Biswas & K.V. Surya Rao.

Diagnosis: Black. The elytra with the sutural region distinctly, the posterior margin often narrowly and obscurely, the reflexed margin near the shoulder reddish. Abdomen, the posterior margins of the dorsal segments very narrowly and obscurely, those of the ventral segments more broadly and distinctly reddish. Antennae reddish-brown, the first joint yellow. Legs reddish-yellow. Length 6–7 mm.

Distribution: India: Uttarakhand: Tanakpur, Sarda river. Widely distributed in India and oriental region as far as China.

10. *Philonthus dohertyi* Cameron, 1932 (Figure 10)

1932. *Philonthus dohertyi* Cameron, *Fauna of British India, incl. Ceylon & Burma, (Coleoptera: Staphylinidae)*, 3: 102-103.

Material examined: 1 ex, India: Uttarakhand, Nainital, Lalkua, 2.iv.2001, S.K. Chakraborty, ex. 'Horse dung'; 1 ex, Chamoli, Garurgaon, ?.ii.2002, P. Mukhopadhyay, ex. 'Leaf litter'; 1 ex, Dehradun, Rajaji National Park, 26.x.2000, P. Mukhopadhyay, ex. 'Cowdung'.

Diagnosis: Head pitchy- black, thorax dark brown, with dorsal row of five punctures, both with slight metallic reflex; elytra with coppery and violaceous reflex. Abdomen pitchy black, the posterior margin of the segments distinctly reddish. Antennae ferruginous red, the 2nd and 3rd joints blackish. Legs reddish -yellow, the tibiae infusate. Length 7.5 mm.

Distribution: India: Uttarakhand: (Nainital: Lalkua, Chamoli: Garurgaon, Dehradun: Rajaji National Park). *Elsewhere:* Myanmar.

11. *Philonthus eustilbus* Kraatz, 1859

1859. *Philonthus eustilbus* Kraatz, *Arch. Naturg.*, 25, i: 98

Material examined: 1 ex, India: Uttarakhand, Tehri Garhwal, Dhaunlti, 1.xi.2000, P. Mukhopadhyay.

Diagnosis: Black. Abdomen strongly iridescent, the posterior margin of the ventral segments narrowly reddish; thorax multipunctate at the sides. Antennae black, the first joint more or less testaceous, the last often obscurely reddish. Legs reddish yellow, the tibiae often a little infusate. Length 6–8 mm.

Distribution: India: Uttarakhand (Tehri Garhwal, Dhaunlti, Dehradun), Sikkim, West Bengal (Darjeeling). Ex. 'in cut grass and sometimes in dry dung'. *Elsewhere:* Sri Lanka.

12. *Philonthus excelsus* Cameron, 1932 (Figure 11)

1932. *Philonthus excelsus* Cameron, *Fauna of British India, incl. Ceylon & Burma, (Coleoptera: Staphylinidae)*, 3: 147.

Material examined: 1 ex, India: Uttarakhand, Rudraprayag, alt. 800m, 6.ii.2002, P. Mukhopadhyay, ex. 'Under Stone by the side of Alakananda river'.

Diagnosis: Black. The elytra brilliant metallic-green; thorax with dorsal row of six punctures. Antennae with the first two joints reddish yellow, the following reddish-brown. Legs yellow, tibiae infusate. Length 5.5 mm.

Distribution: India: Uttarakhand (Rudraprayag, Chakrata dist. and Shimla hills). *Elsewhere:* Papua New Guinea, Peru.

13. *Philonthus fimetarius* (Gravenhorst, 1802) (Figure 12)

1802. *Staphylinius fimetarius* Gravenhorst, *Col. Mier. Brunav.*: 210

1932. *Philonthus fimetarius*: Cameron, *Fauna of British India, incl. Ceylon & Burma, (Coleoptera: Staphylinidae)*, 3: 92-93.

Material examined: 1 ex, India: Uttarakhand, Dehradun, Mussoori, 19.xi.2003, S.K. Chakraborty.

Diagnosis: Black. The elytra with greenish metallic reflex, often brownish towards the suture. Thorax with dorsal row of four punctures. Abdomen the posterior margin of the segments sometimes narrowly reddish. Antennae black. Legs brownish-yellow, the tibiae sometimes infusate. Length 5.5–6.5 mm.

Distribution: India: Uttarakhand: (Dehradun, Mussoori), Northern India. *Elsewhere:* Widely distributed in Europe. Ex. 'in dung'.

14. *Philonthus gardneri* Cameron, 1932 (Figure 13)

1932. *Philonthus gardneri* Cameron, *Fauna of British India, incl. Ceylon & Burma, (Coleoptera: Staphylinidae)*, 3: 101.

Material examined: 1 ex, India: Uttarakhand, Chamoli, 1.ii.1992, P. Mukhopadhyay, ex., 'Mule dung'.

Diagnosis: The head longer, slightly longer than broad, as broad as the thorax, the elytra longer, more strongly metallic and more closely punctured, the abdomen much more sparingly punctured. Length 6.3 mm.

Distribution: India: Uttarakhand (Chamoli), West Bengal (Darjeeling dist.).

15. *Philonthus leptocerus* Fauvel, 1895 (Figure 14)

1895. *Philonthus leptocerus* Fauvel, *Rev. d'Ent.*, 14: 266.

Material examined: 2 ex, India: Uttarakhand, Dehradun, Lacchiwala forest, 28.ii.2000, P. Mukhopadhyay, ex. 'Under bark'.

Diagnosis: Black. The elytra bronze-green, closely pubescent, subsericeous; thorax with dorsal row of seven punctures; abdomen with the posterior margin of the last two segments narrowly reddish, subsericeous and iridescent. Antennae black, the first and last joints reddish. Legs yellowish-red, the tibiae scarcely infusate. Length 7 mm.

Distribution: India: Uttarakhand (Dehradun, Lacchiwala forest). *Elsewhere*: Myanmar, also in Cochin China.

Remarks: First time recorded from India.

16. *Philonthus maindroni* Fauvel 1903 (Figure 15)

1903. *Phylonthus maindroni* Fauvel, *Rev. d'Ent.*, 22: 158.

Material examined: 2 ex, India: Uttarakhand, Rudraprayag, Augustamuni, 7.x.2004, P. Mukhopadhyay, ex. 'Garbage'; ex., Uttarkashi, Purala, 13.xi.2003, S.K. Chakraborty, ex., 'Garbage'; 1 ex, Almora, Sonari, 26.viii.2005, S.K. Chatterjee.

Diagnosis: Black, the elytra bronze-green. Thorax with dorsal row of four punctures. Antennae black. Femora yellow, the extreme apex of the coxae, tibiae, and tarsi blackish. Length 6–8 mm.

Distribution: India: Uttarakhand (Rudraprayag: Augustamuni; Uttarkashi: Purala; Almora: Sonari; Dehradun: Mussoorie and Chakrata dist.); Tamil Nadu: Nilgiri Hills: Coonoor (Type); Assam: Garo Hills (Siju cave).

17. *Philonthus nigrutilus* (Gravenhorst, 1802) (Figure 16)

1802. *Staphylinus nigrutilus* Gravenhorst, *Col. Micr. Brunsv.*: 41.

1932. *Philonthus nigrutilus*: Cameron, *Fauna of British India, incl. Ceylon & Burma, (Coleoptera: Staphylinidae)*, 3: 147-148.

Material examined: 2 ex, India: Uttarakhand, Pauri Garhwal, Khirsu, 6.xi.2000, P. Mukhopadhyay, ex. 'Coniferous leaf'.

Diagnosis: Black. The elytra pitchy-black or brown; thorax with dorsal row of six punctures. Antennae black, the first two joints reddish. Legs reddish-yellow, the tibiae often infusate. Length 4–5 mm.

Distribution: India: Uttarakhand: (Pauri Garhwal, Khirsu), Kashmir. *Elsewhere*: Europe, North America, South America, Australia. Cosmopolitan. Ex. 'Manure Hips and vegetable debris'.

18. *Philonthus nigritulooides* Cameron, 1932 (Figure 17)

1932. *Philonthus nigritulooides* Cameron, *Fauna of British India, incl. Ceylon & Burma, (Coleoptera: Staphylinidae)*, 3: 148.

Material examined: 2 ex, India: Uttarakhand, Pauri Garhwal, Khirsu, 6.xi.2000, P. Mukhopadhyay, ex. 'Pine leaf'.

Diagnosis: Length 3.75 mm. Head distinctly narrower and longer, and the elytra a little more coarsely punctured. Antennae a little longer, the penultimate joints as long as broad.

Distribution: India: Uttarakhand: (Pauri Garhwal, Khirsu).

19. *Philonthus peliomerus* Kraatz, 1859 (Figure 18)

1859. *Philonthus peliomerus* Kraatz, *Arch. Naturg.*, 25: 82

Material examined: 1 ex, India: Uttarakhand, Shatisari, 06.v.2002, S.K. Chakraborty, ex. 'Under Moss'.

Diagnosis: Elytra greenish-bronze. Thorax with dorsal row of four punctures. Antennae black, the last two joints bright yellowish-red. Femora yellow. Tibiae and tarsi infusate. Length 7.0–7.5 mm.

Distribution: India: Uttarakhand (Shatisari, Nilgiri Hills, Siwaliks, Mussoorie), Assam. *Elsewhere*: Sri Lanka.

20. *Philonthus pubipennis* Cameron, 1919 (Figure 19)

1910. *Philonthus pubipennis* Cameron, *The Ent. Mon. Mag.*, 55: 253.

Material examined: 2 ex, India: Uttarakhand, Jageshwar, ca 1700m, Almora, 14.iv.1989, G.K. Srivastava, ex. 'Under stone'.

Diagnosis: Black, shining; elytra pitchy, greenish-bronze; thorax with dorsal row of two punctures situated before the middle; antennae black, legs pitchy. Length 12 mm.

Distribution: India: Uttarakhand (Almora: Jageshwar). *Elsewhere*: Sri Lanka.

21. *Philonthus quediiiformis* Cameron 1932 (Figure 20)

1932. *Philonthus quediiiformis* Cameron, *Fauna of British India*, incl. *Ceylon & Burma*, (Coleoptera: Staphylinidae), 3: 76.

Material examined: 9 ex, India: Uttarakhand, Tanakpur, 24.ii.1990, S. Biswas & K.V. Surya Rao, ex. 'Cowdung'.

Diagnosis: Thorax with dorsal row of two punctures, the first of them placed considerably behind the anterior margin, the marginal puncture absent; elytra with a row of four large punctures, the shoulders, suture, and apical margin reddish-testaceous. Antennae stout, the 1st joint and the legs reddish-testaceous. Length 5.5 mm.

Distribution: India: Uttarakhand: (Tanakpur); Tamil Nadu (Nilgiri Hills).

22. *Philonthus rotundicollis* (Ménétriés, 1832) (Figure 21)

1832. *Staphylinus rotundicollis* Ménétriés, *Cat. rais.*: 145.

1932. *Philonthus rotundicollis*: Cameron, *Fauna of British India*, incl. *Ceylon & Burma*, (Coleoptera: Staphylinidae), 3: 84.

Material examined: 2 ex, India: Uttarakhand, Almora, Sukhidong, 26.ii.1990, S. Biswas & K.V. Surya Rao; 2 ex, Dehradun, Rajaji National Park, 26.x.2000, P. Mukhopadhyay, ex. 'Cow dung'; 03 ex, Rudraprayag, Agustamuni, 7.x.2004, P. Mukhopadhyay, ex. 'Garbage'; Kuthnor, 1ex, 10.xi.2003, S.K. Chakraborty; 1 ex, Bageswar, Baijnath, 24.iii.2001, S.K. Chakraborty, ex. 'Cow dung'.

Diagnosis: Head and thorax very finely rather closely punctured all over, bronze black, with slight greenish reflex on the fore parts. The thorax with dorsal row of four to six punctures. Antennae black. Legs brownish or blackish, the tarsi lighter. Length 8-11 mm.

Distribution: India: Uttarakhand (Almora: Sukhidong, Dehradun: Rajaji National Park; Rudraprayag: Agustamuni, Kuthnor, Bageswar: Baijnath). *Elsewhere*: Pamirs. Widely distributed in the Palaearctic region.

23. *Philonthus semiaenescens* Bernhauer, 1918 (Figure 22)

1918. *Philonthus semiaenescens* Bernhauer, *Arch. Naturg.* A: 182.

Material examined: 1 ex, India: Uttarakhand, Pauri Garhwal, Jwalpa Devi, 5.xi.2000, P. Mukhopadhyay, ex 'Cow dung'.

Diagnosis: Head, thorax and elytra bronze green; scutellum and abdomen black. Thorax with dorsal row of four large punctures. Antennae and palpi black. Femora yellowish-brown, tibiae and tarsi black. Length - 7 mm.

Distribution: India: Uttarakhand: (Pauri Garhwal, Jwalpa Devi, Chakrata and Mussoorie districts), Punjab (Muree). *Elsewhere*: Myanmar.

24. *Philonthus tractatus* Eppelsheim, 1895 (Figure 23)

1895. *Philonthus tractatus* Eppelsheim, *Wiener Entomologische Zeitung*, 14: 61.

Material examined: 2 ex, India: Uttarakhand, Kafarkhan, Almora, 2.x.2011, P. Mukhopadhyay, ex 'Cow dung'.

Diagnosis: Elytra brassy or copper-bronze. Abdomen iridescent. Antennae black, long and slender, the penultimate joints distinctly longer than broad, legs black. Length 12-14 mm.

Distribution: India: Uttarakhand: (West Almora: Dhauri Ganga); Shimla. *Elsewhere*: Tibet, Rongshar valley.

25. *Philonthus turbidus* Erichson 1840 (Figure 24)

1840. *Philonthus turbidus* Erichson, *Gen. Spec. Staph.*: 484.

Material examined: 1 ex, India: Uttarakhand, Almorah, Sukhidong, 26.ii.1990, S. Biswas and K.V. Surya Rao, ex. 'Cowdung'.

Diagnosis: Black. Thorax with dorsal row of six punctures. Abdomen slightly iridescent. Antennae black, the 1st joint and sometime the last reddish. Legs yellowish red. Length 8 mm.

Distribution: India: Uttarakhand (Almora: Sukhidong) and Assam. *Elsewhere*: Africa, Turkey, Saudi Arabia, Syria, USA.

Discussion

The genus *Philonthus*, falls in the category of large rove beetles, is the most species-rich taxon in the family Staphylinidae with well over 1300 species described worldwide (Channi-Posse, 2014). This hugely diverse genus is poorly studied and a modern revision of this genus from the Oriental region is long overdue. The most reliable sources for this genus are Cameron (1932), Smetana (1995) and Lobl & Smetana (2004). These beetles are predacious and hunt for food (such as termites) in leaf litter, fungi, dung etc. In India, as many as 168 species in the genus *Philonthus* have been reported; of them, record of 165 species were contributed by Cameron (1932, 1940, 1943), followed by 3 more species by Pajni & Kohli (1977). The present study provides information on 25 species of the genus *Philonthus* collected from Uttarakhand state. All the twenty five species were collected from high

altitude regions and they are being recorded for the first time recorded from Uttarakhand state. Among them four species are endemic to India, viz., *P. assamensis* Cameron 1932; *P. castaneus* Gemminger and Harold, 1868; *P. chatterjeei* Cameron 1926 and *P. quediiformis* Cameron 1932. Further, *Philonthus leptocerus* Fauvel 1895 has been recorded for the first time from India with its present report from Uttarakhand, which was earlier known from Myanmar only.

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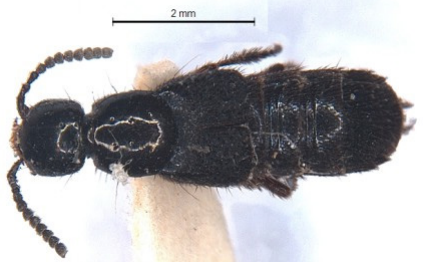


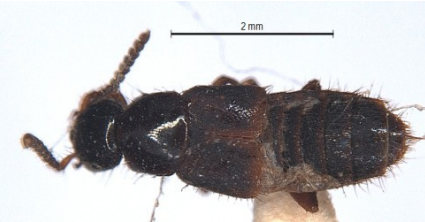




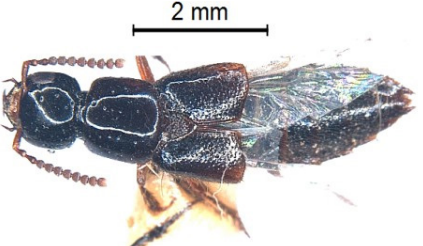



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Plate 1



Plate 2

		
<p>Figure 13. <i>P. gardneri</i> Cameron.</p>	<p>Figure 14. <i>P. leptocerus</i> Fauvel.</p>	<p>Figure 15. <i>P. maindroni</i> Fauvel.</p>
		
<p>Figure 16. <i>P. nigrutilus</i> Gravenhorst.</p>	<p>Figure 17. <i>P. nigrituloides</i> Cameron.</p>	<p>Figure 18. <i>P. peliomerus</i> Kraatz.</p>
		
<p>Figure 19. <i>P. pubipennis</i> Cameron.</p>	<p>Figure 20. <i>P. quediiformis</i> Cameron.</p>	<p>Figure 21. <i>P. rotundicollis</i> Ménétrés.</p>
		
<p>Figure 22. <i>P. semiaenescens</i> Bernhauer.</p>	<p>Figure 23. <i>P. tractatus</i> Eppelsheim.</p>	<p>Figure 24. <i>P. turbidus</i> Erichson.</p>