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India

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Pyroghatsiana: A new genus of fire-colored beetles (Coleoptera: Pyrochroidae: Pyrochroinae) from the Southern Ghats, India

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Abstract. *Pyroghatsiana*, a **new genus** of pyrochroine Pyrochroidae is described from the Southern Ghats of the Indian continental southern tip. The only known specimen is a female, *Pyroghatsiana madurensis* (Pic), **new combination**, originally placed in *Dendroides* Latreille, and subsequently transferred to *Pseudodendroides* Blair. Several striking differences including the dorsal interocular width between the compound eyes, shape and length of the third antennal segment, and shape of the pronotum preclude placement of *Pyroghatsiana* in either *Dendroides*, *Pseudodendroides*, or any other existing pyrochroine genus.

Key words. *Pyroghatsiana madurensis* (Pic), new genus, new combination, Southern Ghats, India.

Introduction

For more than a hundred years following its inception, *Dendroides* (Latreille 1810) was generally misapplied to nearly any pyrochroine pyrochroid whose males exhibit strongly, often delicately pectinate antennae and dorsally enlarged, nearly holoptic compound eyes. Blair (1914: 311) observed, "... the genera of the Pyrochroidae have been very generally misunderstood." With respect to *Dendroides* in particular, Blair (1914: 313) noted, "Considerable misconception seems to have existed in the minds of European coleopterists as to the scope of this genus, and the numerous Old-World species assigned to it by various authors (e.g., Lewis, Pic, and myself) are really quite apart from it."

In 1912, Pic described the female of a new pyrochroid species from "Indes: Madura," attributing it to *Dendroides*. While reorganizing the generic classification of Pyrochroidae, Blair (1914) described several new genera. One of these, *Pseudodendroides*, was proposed to receive *D. niponensis* Lewis, *D. ocularis* Lewis, *D. assamensis* Pic, as well as Pic's *Dendroides madurensis*. The Japanese *Dendroides niponensis* Lewis was designated as the type species for the new genus.

Aside from two additional new species added to *Pseudodendroides* by Pic: *P. distinctipennis* (1938, China: Kansou) and *P. nitidicollis* (1955, Sikkim), the genus received no additional attention until Young (1999) transferred the Japanese *Pseudopyrochroa amamiana* Nakane and Taiwanese *Pseudopyrochroa umenoi* Kôno to *Pseudodendroides* and discussed the scope of both genera. More recently, Young (2004) transferred *D. assamensis* to the new *Dendroidopsis* Young, and *D. ocularis* to *Frontodendroidopsis* Young.

Through the kindness of Mrs. Azadeh Taghavian and Dr. Thierry Deuve, Muséum national d'Histoire naturelle, Paris, I was able to borrow the only known specimen of *P. madurensis*. According to Pic's original description he had only the female before him. Upon examination of Pic's "type" of *D. madurensis*, it is clear that neither its original placement in *Dendroides* nor subsequent transfer to *Pseudodendroides* is tenable.

Materials and Methods

Measurements. The specimen was measured for total length dorsally along the meson and humeral width transversely across an elytral base at the apex of the scutellum. Elytral length was measured along the sutural margin from the anterior mesoscutellar margin to the elytral apex and width was calculated by doubling the humeral width. Total length was determined in the following manner: head, pronotum, and elytra were measured separately and recorded. Thus, a value for body length was ob-

tained by adding the three measurements (head + pronotum + elytra). This procedure has been employed when measuring specimens of Pyrochroinae due to the considerable variation observed in the distance between the posterior margin of the head and the anterior pronotal margin (i.e. cervical distention and tilting of head) as well as variation in the distention of soft tissue between the prothorax and the elytral bases.

Specimen data. Label data are presented verbatim. Line breaks on labels are denoted by a double slash (/); metadata (not written on the labels, themselves) are presented in brackets ([]); when data are included on more than one label, this is noted with curved brackets ({ }). Scientific names are uniformly presented in *italics*.

Figures. Images were captured as TIFF files from a JVC® KY-F75U digital camera attached to a Leica® Z16 APO dissecting microscope with apochromatic zoom objective and motor focus drive, using a Synchroscope Automontage® System and software. Multiple images for a given “figure,” generally a “stack” of 10–30 images, were used to facilitate building the final image. Most images were illuminated with a combination of an LED ring light attached to the end of the microscope along with multiple gooseneck fiber-optics units positioned at various angles to reduce glare and shadows. The montaged images created were edited using a variety of software applications to form the final figure plates.

Anatomical term. The **ocular index** (= **OI**) was originally described for application to the taxonomy of alleculine Tenebrionidae (Campbell and Marshall 1964) wherein it, “permits making a positive statement with regard to the distance separating the [compound] eyes [dorsally], and ... facilitates treating an important key character quantitatively”. The OI is calculated as follows:

$$\text{OI} = \frac{\text{Minimum dorsal distance between compound eyes}}{\text{Maximal dorsal width across compound eyes}} \times 100$$

Collection acronyms. Pic’s type is housed in the Muséum national d’Histoire naturelle, Paris, France (PMNH). My personal collection (DYCC) houses material of all other pyrochroine genera and species used in making comparisons.

***Pyroghatsiana* Young, gen. nov. (Fig. 1–4)**

Type species: *Dendroides madurensis* Pic 1912, by present designation and by monotypy.

Description of adult female: With general characters of Coleoptera: Polyphaga: Cucujoidea (*sensu* Crowson 1955). Heteromorous (*sensu* Crowson 1955): maxillae 2-lobed; tarsal formula 5- 5- 4; prothoracic coxae conical, prominent and projecting, trochanters of heteromeroïd type (*sensu* Crowson 1955: fig. 106).

Description. Head: Cranium (Fig. 1-2) abruptly constricted behind eyes, forming a conspicuous cranial “neck”; frontoclypeal suture present; labrum moderately-sized, transversely rectangulate, bearing numerous moderately elongate setae. Compound eyes well developed, emarginate for accommodation of antennal insertions, somewhat coarsely faceted, devoid of intrafacetal setae. Antennae (Fig. 1–2) 11-segmented; antennomere 1 distally swollen; antennomere 2 small, ovate, 0.4X length of antennomere 1; antennomere 3 subfiliform with apex slightly wider than base, 3.6X length of antennomere 2, 1.3X length of antennomere 4; antennomeres 4–10 serrate to pectinate, the ramus of each antennomere subequal in length to, or slightly longer than the ramus of the preceding antennomere; antennomere 11 the longest, 1.2X length of antennomere 3. Mandibles symmetrical, moderately stout, short, strongly incurved, dorsoventrally flattened, apices bidentate, aboral face subglabrous, bearing sparse, short to moderately elongate, anteriorly directed setae. Maxillae each with cardo well developed, articulating distally with triangular basistipes; mediostipes arising from distal adoral aspect of basistipes; maxillary palpifer small; maxillary palpus consisting of 4 segments arising from apex of palpifer, article 1 small, bearing long, erect setae along its anterior margin, palpomeres 2 and 4 much longer than palpomere 3, palpomeres 2 and 3 bearing long, erect setae along their anterior margins, palpomere 4 subcultriform, bearing numerous short, mostly appressed, pale yellowish to gold setae, surface with numerous, fairly large, shallow

punctures. Labium: Submentum confluent with gular region, surface nearly glabrous; gular sutures and posterior tentorial pits conspicuous, well impressed; gular surface transversely wrinkled; mentum distinct, transverse, weakly hexagonal, bearing a transverse carina; ligula sclerotized basally, between palpigers, apex densely setose, bilobed; labial palpi each consisting of 3 setose segments, subequal in length, palpomeres 1–2 filiform, palpomere 3 slightly expanded, broadly rounded distally.

Thorax: Pronotum (Fig. 3) widest slightly basad middle, wider than long, maximal dorsal width 1.6X mesal length, sides broadly rounded, lacking lateral margins, distinctly narrower than elytra; prosternum transverse; prosternal process acute; prothoracic coxal cavities completely open externally and internally. Mesothorax with shield-shaped scutellum (Fig. 3), its mesal length 1.1X its maximal width; mesothoracic coxal cavities not closed outwardly by sterna; mesothoracic episterna contiguous anterad acuminate anterior margin of mesosternum. Metathorax with sternum well developed, convex, longer than wide. Legs ambulatory; prothoracic legs with trochantins well exposed, coxae prominent, elongate-conical, projecting; internal keel of metathoracic coxae (Fig. 4) elongate; tibial spurs short, stout, simple, inconspicuous; tarsi with penultimate segment strongly lobed below, lobe distally emarginate thus appearing somewhat bilobed; pretarsi consisting of paired claws, each slightly swollen basally, forming weakly, bluntly dentiform process; empodium strongly reduced, bisetose. Elytra (Fig. 1) well developed, long, rather flat, covering thorax, except for pronotum and mesothoracic scutellum, entirely covering abdomen, very slightly wider posteriorly; sutural length 3.0X elytral width; base of elytra 1.7X width of pronotal base; elytral apices individually rounded.

Abdomen: Venter (Fig. 4) with 5 completely visible ventrites; last ventrite widest basally, sides tapering to weakly acuminate apex.

Adult male and larvae: Unknown.

Etymology. *Pyroghatsiana* is derived from the Greek *Pyro-*, meaning “fire,” *ghats*, referring to the type locality in the Southern Ghats of India, and the Greek *-ana*, meaning “throughout.” The first part of the name refers to the definite pyrochroid appearance of this taxon. The second refers to a sub-section of India’s 1600km long Western Ghats mountain chain, which was recently added to the list of world heritage sites by the United Nations and is considered one of the global “hot-spots” of endemism and biodiversity (Meyers et al. 2000; UNESCO, MAB 2007). The gender of *Pyroghatsiana* is feminine.

Diagnosis and Remarks. Pyrochroidae: Pyrochroinae – head nearly prognathous, abruptly constricted behind the eyes, forming a conspicuous “neck”; eyes emarginate; antennal flagellum of female largely serrate to pectinate; base of pronotum narrower than basal width of elytra; prothoracic coxal cavities widely open externally and internally; tarsal formula 5- 5- 4.

Within Pyrochroinae, *Pyroghatsiana* is superficially suggestive of *Dendroides* Latreille. The distance between the compound eyes (Fig. 2) is much greater in the female of *Pyroghatsiana* (OI = 31.2) than in females of *Dendroides* spp.: e.g., Fig. 5 (OI = 17–18). The third antennal segment (Fig. 2) is considerably longer in *Pyroghatsiana* (antennomere 3 = 1.3X length of antennomere 4) than in *Dendroides* spp. (e.g., *D. canadensis* Latreille [fig. 5] antennomere 3 = 0.9X length of antennomere 4); it is also subfiliform and lacks a distinct serration (e.g. female of the Asian *Dendroides ussurensis* L. N. Medvedev [fig. 7]) or pectination (e.g., female *D. canadensis* and North American species). The transversely campanulate shape of the pronotum (Fig. 3), widest slightly basad middle, maximal dorsal width 1.6X mesal length, precludes placement of *Pyroghatsiana* in *Dendroides* (e.g., female *D. canadensis*, [fig. 6] pronotum widest anterad middle; maximal dorsal width 1.1X mesal length).

The character combination outlined above is inconsistent with any existing pyrochroine genus. While *Pyroghatsiana* may be phylogenetically close to *Dendroides*, discovery of the male is critical to developing a meaningful hypothesis of relationship.

Species Redescription

Pyroghatsiana madurensis (Pic 1912), **comb. nov.** (Fig. 1–4)

Dendroides madurensis Pic 1912: 18.

Pseudodendroides madurensis (Pic); Blair 1914: 315.

Redescription. Length (Fig. 1) from anterior labral margin to apex of elytra 13.1 mm. Color of antennomeres 1-2 yellowish-brown, 3-11 brown to piceous; compound eyes with ommatidia tan to black; abdominal venter (Fig. 4) largely rufopiceous, ventrites each with bilateral, yellowish-testaceous, irregularly ovate maculae; remainder of body and legs yellowish-testaceous.

Head: Cranial surface (Fig. 2) densely, coarsely, shallowly punctate; punctures of “neck” larger than those of remainder of cranial surface; compound eyes separated dorsally by 0.9X maximal mid-dorsal width of a single compound eye, ventrally by 1.7X maximal ventral diameter of a single compound eye; OI = 31.2; antennae moderately densely covered with short, mostly suberect, pale yellow, yellowish-brown, and gold setae.

Thorax: Pronotal disk (Fig. 3) densely, coarsely, shallowly punctate, moderately densely covered with yellowish, semierect to erect setae, posterior margin with well-developed bead; prosternal surface sparsely punctate, bearing numerous moderately elongate, yellowish setae. Scutellum (Fig. 3) with surface moderately densely covered with yellowish, mostly retrorse setae. Anterior margins of mesothoracic episterna reflexed ventrally posterad the prothoracic coxae. Metathorax with elytral vestiture consisting of short, dense, semierect to erect, pale setae; elytra with 2-3 poorly developed longitudinal costae; metathoracic venter with surface subglabrous, bearing numerous, fine, semierect, pale setae; remainder of thoracic venter moderately densely, shallowly punctate; vestiture consisting of short to moderately long, fine, mostly retrorse yellowish setae. Legs moderately densely covered with short, mostly erect, pale setae.

Abdomen: Abdominal venter (Fig. 4) bearing numerous, moderately elongate marginal setae. Venter largely rufopiceous, ventrites each with bilateral, yellowish-testaceous, irregularly ovate maculae, surface moderately coarsely, very shallowly punctate, with scattered, mostly decumbent, light yellow setae; setae most dense along lateral and apical margins of each ventrite.

Material Examined: (1 female) [INDIA: Southern Ghats: Tamil Nadu] [handwritten] Shembaganur [= Shenbaganur] // Madura [-i]; {2nd label} [handwritten] Type; {3rd label} [red, typed label] TYPE; {4th label} [handwritten; Pic's hand] *Dendroides* // *madurensis* Pic; {5th label} [label I added] **LECTO-TYPE:** // *Dendroides* // *madurensis* // Pic // Daniel K. Young; {6th label} [label I added] *Pyroghatsiana* // *madurensis* // (Pic) // Daniel K. Young // 2014; (PMNH).

Nomenclatural Remarks: Pic (1912: 18) clearly based his description solely upon the female: “*Dendroides madurensis* n. sp. [female symbol]” and the locality stated in the description, “Indes: Madura,” is largely consistent with the specimen label, “Shembaganur, Madura.” Additionally, the description states the length as “Long. 13 mill.” which is consistent with my calculation of 13.1 mm, and not expressed as a range of lengths. Thus, it is conceivable the single specimen in the Muséum national d'Histoire naturelle, Paris marked as “Type” is the holotype. However, since the specimen label does not specifically state it is the holotype, and since the description does not unambiguously state the description was based on a single specimen, I believe it must, per Recommendation 73F of the International Code of Zoological Nomenclature (2000) be treated as a syntype: “... an author should proceed as though syntypes may exist and, where appropriate, should designate a lectotype rather than assume a holotype ...” Further, because of the significance of this individual specimen, not only historically, but by virtue of the global “hot-spot” of endemism and biodiversity to which it belongs, I hereby designate the specimen as a lectotype, in keeping with The Code (Recommendation 74.7.3).

Distribution: The only known specimen is labeled Shembaganur [= Shenbaganur]; Pic's (1912) description lists “Madura” [= Madurai]. Both cities are located within the general boundaries of the Southern Ghats; Shenbaganur is 75.4 km WNW of Madurai. The Southern Ghats represent the southernmost region of India's 1600 km long Western Ghats mountain chain. The region was recently added to list of world heritage sites by the United Nations and is considered one of the global “hot-spots” of endemism and biodiversity (Meyers et al. 2000; UNESCO, MAB 2007).

Diagnosis: Presently, only a single female of *P. madurensis* is known. At this time, the generic diagnosis will adequately separate *P. madurensis* from any other pyrochroine pyrochroid species.

Acknowledgments

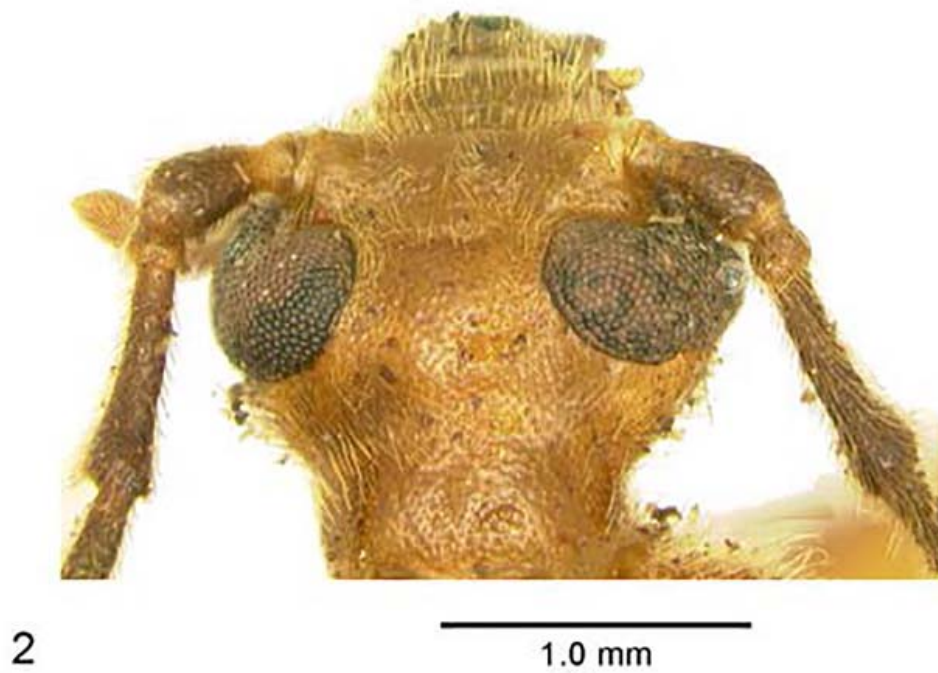
I am grateful to Mrs. Azadeh Taghavian and Dr. Thierry Deuve, Muséum national d'Histoire naturelle, Paris, France for the loan of Pic's type of *Dendroides madurensis*. The time and insights of Michael Ferro, Clemson University, and Darren Pollock, Eastern New Mexico University, are gratefully acknowledged as pre-submission reviewers of the manuscript. This research was supported in part by the University of Wisconsin Natural History Museums Council Block Grants Program.

Literature Cited

- Blair, K. G. 1914.** A revision of the family Pyrochroidae (Coleoptera). *Annals and Magazine of Natural History* (8)13: 310–326.
- Campbell, J. M., and J. D. Marshall. 1964.** The ocular index and its application to the taxonomy of the Alleculidae (Coleoptera). *Coleopterists Bulletin* 18: 42.
- Crowson, R. A. 1955.** The natural classification of the families of Coleoptera. Nathaniel Lloyd, London, 187 p.
- International Commission on Zoological Nomenclature. 2000.** International Code of Zoological Nomenclature, 4th Edition [Incorporating Declaration 44, amendments of Article 74.7.3, with effect from 31 December 1999 and the Amendment on e-publication, amendments to Articles 8, 9, 10, 21 and 78, with effect from 1 January 2012]. (Available at ~ <http://iczn.org/iczn/index.jsp>. Last accessed October 2015.)
- Latreille, P. A. 1810.** Considérations Générales sur l'Ordre Naturel des Animaux composant les Classes des Crustacés, des Arachnides, et des Insectes, avec un Tableau Méthodique de leurs Genres disposés en Familles. F. Schoell, Paris. 444 p.
- Myers, N., R. A. Mittermeier, C. G. Mittermeier, G. A. B. da Fonseca, and J. Kent. 2000.** Biodiversity hotspots for conservation priorities. *Nature* 403: 853–858.
- Pic, M. 1912.** Descriptions d'espèces et variétés diverses. *Mélanges Exotico-Entomologiques* 3: 6–20.
- Pic, M. 1938.** Mutations et Coléoptères nouveaux. *Echange* 54: 14–16.
- Pic, M. 1955.** Descriptions et notes. *Diversités Entomologiques* XV: 9–16.
- UNESCO, MAB. 2007.** World Heritage sites, Tentative lists, Western Ghats sub cluster. (Available at ~ <http://whc.unesco.org/en/list/1342>. Last accessed 30 March 2007.)
- Young, D. K. 1999.** Transfer of the Taiwanese *Pseudopyrochroa umenoi* and the Japanese *Pseudopyrochroa amamiana* to *Pseudodendroides* (Coleoptera: Pyrochroidae: Pyrochroinae). *The Pan Pacific Entomologist* 75: 1–7.
- Young, D. K. 2004.** *Dendroidopsis* and *Frontodendroidopsis*: Two new Asian genera of fire-colored beetles (Coleoptera: Pyrochroidae: Pyrochroinae), with descriptions of two new species of *Dendroidopsis*, and lectotype designations for *Dendroides assamensis* Blair and *Pseudopyrochroa binhana* Pic. *Oriental Insects* 38: 197–217.

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Figures 1–2. *Pyroghatsiana madurensis* (Pic), adult female. 1) habitus, dorsal view. 2) head, dorsal view.



3

1.0 mm



4

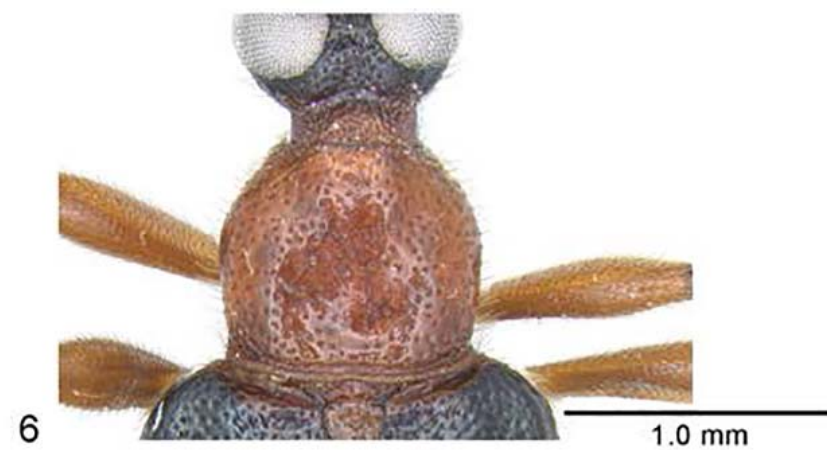
5.0 mm

Figures 3–4. *Pyroghatsiana madurensis* (Pic), adult female. **3)** pronotum-scutellum-elytral bases, dorsal view. **4)** habitus, left lateroventral view.



5

1.0 mm



6

1.0 mm



7

1.0 mm

Figures 5–7. *Dendroides* spp. **5–6)** *Dendroides canadensis* Latreille, adult female. **5)** head, dorsal view. **6)** pronotum-scutellum-elytral bases, dorsal view. **7)** *Dendroides ussuriensis* L. N. Medvedev, adult female. head, dorsal view.