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Kaniyarikkal Divakaran Prathapan

Alexander S. Konstantinov

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***YAMINIA*, A NEW GENUS OF FLEA BEETLE FROM THE ORIENTAL REGION
(COLEOPTERA: CHRYSOMELIDAE)**

K. D. PRATHAPAN
Department of Entomology
Kerala Agricultural University, Vellayani P.O.
Trivandrum - 695 522
Kerala, INDIA
prathapankd@gmail.com

AND

A. S. KONSTANTINOV
Systematic Entomology Laboratory, USDA
c/o Smithsonian Institution P.O. Box 37012
National Museum of Natural History
MRC-168 Washington, D.C. 20013-7012 U.S.A
alex.konstantinov@ars.usda.gov

Abstract

A new genus and species of flea beetle, *Yaminia gmelini* Prathapan and Konstantinov, from southern India, is described and illustrated with comparative notes and host plant information.

The Oriental flea beetle fauna is second only to that of the Neotropical Region in generic diversity. Despite important monographs on this fauna (Maulik 1926; Scherer 1969; Gressitt & Kimoto 1963; Kimoto & Takizawa 1994, 1997), a considerable gap exists in the knowledge of Oriental flea beetles compared to those of the Palearctic and Nearctic regions. A new genus of flea beetles feeding on *Gmelina* spp. (Verbenaceae) in southern India is described here. Dissecting techniques and terminology follow Konstantinov (1998). The types are deposited in the following collections: National Museum of Natural History, Smithsonian Institution, Washington D.C. (USNM); University of Agricultural Sciences, Bangalore (UASB); National Pusa Collection, Indian Agricultural Research Institute, New Delhi (NPC), Natural History Museum, London (BMNH), and the personal collection of the first author (PKDC).

***Yaminia* Prathapan and Konstantinov, new genus
(Figs. 1–11)**

Description. Body length 2.7 to 3.3 mm, width 1.4 to 1.7 mm, oblong (Fig. 1), moderately flat in lateral view. Color without metallic sheen. Head hypognathous, flat in lateral view. In lateral view, vertex forms slightly convex line while frons appears strongly arched with intersection of vertex and frons being notched (Fig. 3). Vertex slightly convex, distinctly punctate, rugose near postcallinal sulcus. Supraorbital pore well developed, circular, not surrounded by shallow grooves, with about eight setiferous pores near anteromesal side. Antennal callus well developed, convex, longer than wide, anterior end acutely triangular and

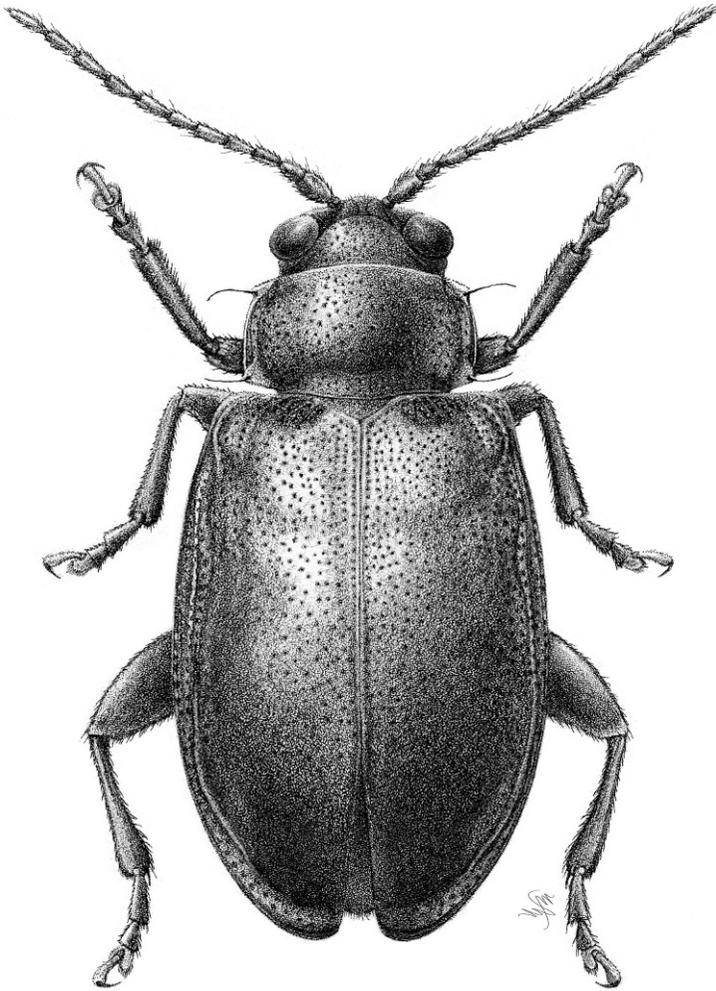
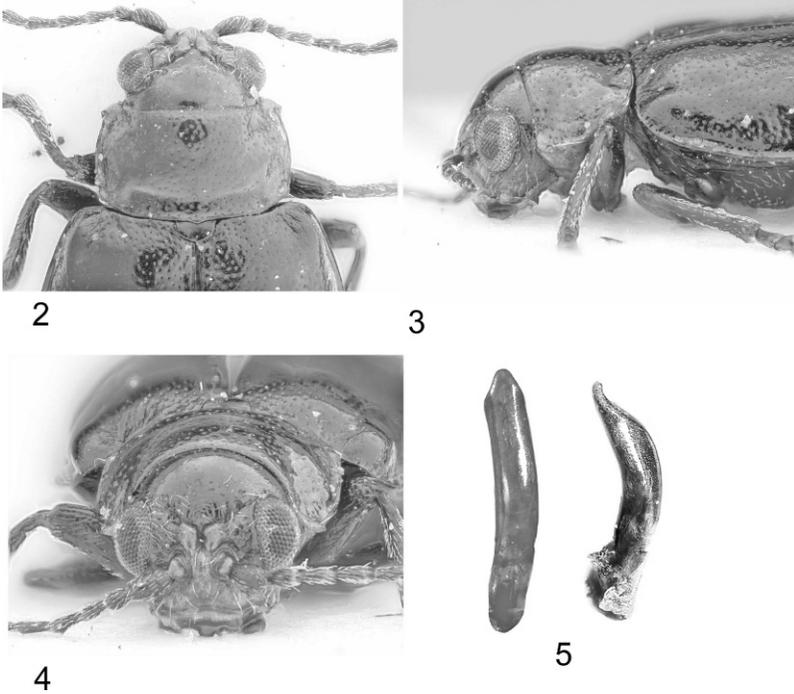


Fig. 1. Dorsal habitus of *Yamina gmelini* new species.

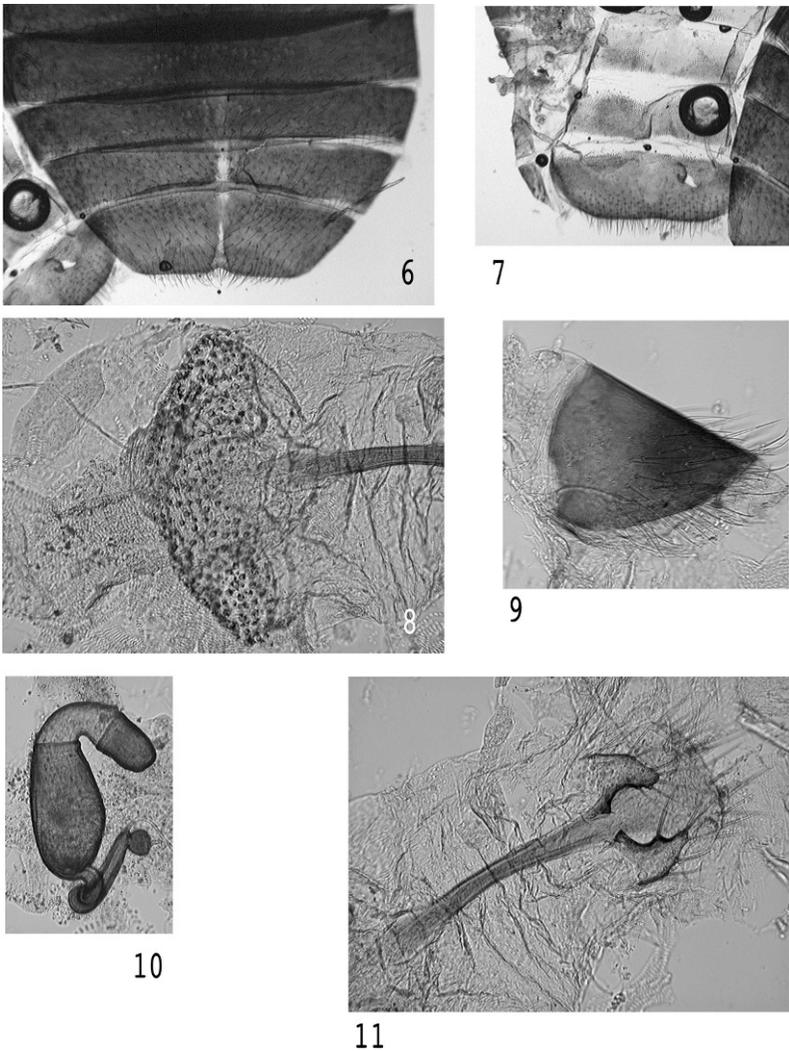
partially entering into interantennal space (Fig. 4). Midfrontal sulcus deep, wide; suprafrontal sulcus distinct but shallow; supraorbital sulcus poorly developed; supracallinal sulcus well developed, curved; orbital sulcus deep, wide, straight. Subgenal suture well developed along base of mandible. Orbit subequal to antennal socket in width, undifferentiated from antennal callus, rugose with shallow pits, with about seven setose punctures near eye. Transverse diameter of eye 2.2 times transverse diameter of antennal socket. Distance between eye and adjacent socket 0.8 times diameter of socket. Distance between antennal sockets subequal to diameter of socket. Frontal ridge short, acutely narrowed and raised between antennal sockets, widening anteriorly, merge with anterofrontal ridge. Anterofrontal ridge triangular, laterally raised, anteriorly flat, with poorly defined vertical carina extending to frontal ridge along middle. Frontoclypeal



Figs. 2–5. *Yamina gmelini*. 2) pronotum and head dorsally; 3) head, pronotum and bases of elytra in lateral view; 4) head, frontal view; 5) median lobe of aedeagus (ventral and lateral views).

suture with row of long setae, discontinuous medially. Labrum with a transverse row of six setiferous pores, with a pair of sensilla on either side of middle pair of setae. Apical margin with seven sensilla on each side. Length of tornea subequal to width of labrum. Mandible with five denticles. Labium with three palpomeres per palpus, third palpomere longest. Maxilla with lacinia wider than galea. Sensilla patch of apical maxillary palpomere longer than wide with seven embedded sensilla. Penultimate palpomere slightly longer than wide. Antenna filiform, hardly reaching half of elytron. First antennomere thick, second a little longer than half of first, third and fourth slender, subequal, longer and thinner than second, fifth longer or equal to fourth, sixth slightly shorter than fifth or fourth, seventh subequal to sixth, seventh to tenth apparently all longer or subequal to eighth, apical antennomeres vary considerably in relative length and thickness. Eyes laterad, inner margin weakly convex, vertical diameter 1.3 times transverse diameter.

Pronotum (Fig. 2) 1.8 times wider than long, anteriorly as wide as posteriorly, sides weakly convex, narrowly explanated, with antebasal transverse impression delimited laterally by curved, impressed line on either side. Impressed lateral border of antebasal transverse impression continue along its anterior border, posterior border merge with posterior margin of pronotum. Pronotum with 2 more impressions laterally on each side: a transverse impression just behind anterior margin, a small depression antero-laterad of antebasal impression. Disc



Figs. 6–11. *Yamina gmelini*. 6) female apical abdominal sternites; 7) female apical abdominal tergites; 8) vagina; 9) female tergite VIII; 10) spermatheca; 11) vaginal palpi and tignum.

distinctly punctate, punctures being larger and deeper laterally as well as posteriorly. Anterolateral callosity short, transverse, convex, anteriorly higher than posteriorly, seta bearing pore situated at posterodorsal face, forms denticle at pore. Posterolateral callosity poorly developed, slightly protruding. Posterior margin weakly bisinuate. Anterior coxal cavity open. Intercoxal prosternal process moderately wide, posteriorly widened, convex on top, apical margin convex, projecting beyond coxa. Distance between proximal margin of prosternum to coxal cavity 0.3 times as long as distance from proximal margin

of prosternum to end of intercoxal prosternal process. Minimum width of intercoxal prosternal process 0.7 times distance from anterior margin of prosternum to coxal cavity. Proendosternites well developed, top nearly rounded. Visible part of mesoscutellum nearly 2 times broader than long with apparently concave lateral margins and broadly rounded apex, surface longitudinally depressed with minute transverse wrinkles. Longitudinal diameter of mesocoxal cavity 3.1 times as long as mesosternum above mesocoxal cavity. Mesosternal intercoxal process 1.6 times as wide as prosternal intercoxal process, depressed on top in anterior half, posterolateral corners angulated. Mesendosternites narrower at base than middle, narrowing apically, mesal margin obtusely angulate, not connecting with mesepisternomer ridge. Metanotum fully developed, medial groove on metanotum not distinctly longer than allocrista, metascutum larger than metascutellum. Metasternum slightly shorter than 2 times length of mesosternum. Metendosternite with stalk nearly 2.5 times as long as wide, with full set of ridges, arms basally wide, narrowing apically, tendons from stalk reach metepisternomer ridge. Elytron with maximum width at distal 1/3. Humeral callus well developed with depression mesally. Elytral apex convex, forming obtuse angle with sutural margin. Epipleuron subhorizontal, moderately broad, maximum width less than that of mesofemur, extending beyond distal 3/4, not reaching apex. Lateral margin of elytron delimiting epipleuron dorsolaterally narrowly reaching apical margin, visible from above. Elytral punctures confused, deep, larger than those on pronotum, interstices flat. Suture with depression behind scutellum. Elytron with three sensilla patches: basal patch larger than narrow medial patch, third near apex. Elytral base with large sensilla stripe. Narrow sensilla stripe near lateral margin between medial and apical sensilla patches. Wings with full set of veins.

Pro- and mesotibiae with sharp, tiny apical spine, dorsally convex and carinate, ridge on protibiae indistinct. First protarsomere in male not distinctly wider than in female. Metafemur robust with convexity near proximal 1/3 of anterior margin, posterior margin not distinctly convex. Metatibia nearly straight in dorsal and lateral views; dorsal surface convex with longitudinal ridge; apex dorsally flat, without callosity, with row of thick bristles on either side; apical spur subequal to tarsal claw, articulated laterally. Metatibia 2.9 times as long as first metatarsomere. First metatarsomere distally wider than proximally, ventrally flat and densely covered with thin pointed setae different from those on dorsal side; second metatarsomere shorter than first, longer than third, without dense setae ventrally; third metatarsomere bilobed, about as wide as long, setae on ventral side dense, plumose or thin and pointed. Claws appendiculate.

Abdomen (Figs. 6, 7) with five distinct sternites. Apical sternite as long as 2 preceding sternites together, without internal appendages basally. Intercoxal part of first abdominal sternite raised along lateral margins forming ridges which converge anteriorly. Apical tergite of female 1.6 times wider than long, without a groove along middle, with long setae distally (Fig. 7).

Spermatheca (Fig. 10) with pump well differentiated from receptacle, pump with horizontal part longer than vertical, receptacle nearly 2.5 times longer than broad, outer side almost straight, inner side convex, duct originates at obtuse angle to long axis, bent twice near base, then becomes straight and parallel to receptacle. Tignum (Fig. 11) grooved along middle, both ends widened, less sclerotized, distal end much wider than proximal end with setae near distal margin. Vaginal palpi unique (Fig. 11), appear separate in dissection, lack distinct longitudinal sclerotizations, mesal margin strongly emarginated, lateral margin

convex, narrowing distally, length of a palpus slightly less than 2 times maximum width, with setae on chalaza. Vagina wide in middle, covered with large denticles (Fig. 8). Median lobe of aedeagus simple, asymmetrical at apex, convex in lateral as well as ventral views, without windows, distal opening partially covered by single lamina (Fig. 5).

Sexual dimorphism. Posterior margin of last abdominal sternite bisinuate forming lobe in middle in male. In female, last abdominal sternite with emarginated posterior margin besides a longitudinal groove along middle (Fig. 6). Longitudinal groove continues along penultimate sternite too, though less distinctly.

Immature stages unknown, adult nocturnal.

Type species. *Yaminia gmelini* new species

Etymology. *Yamini* in Sanskrit means night. Refers to the nocturnal habit of the beetle. The name is feminine.

Host. The adults feed on the leaves of *Gmelina* spp. (Verbenaceae).

Discussion. *Yaminia* can be separated from all known flea beetle genera by the following characters: well developed antennal callus entering into interantennal space with all sulci surrounding it, except supraorbital, strongly developed; triangular, laterally raised anterofrontal ridge with a weak vertical carina along middle (Fig. 4); pronotum with depressions lateral to antebasal transverse impression (Fig. 2); all tibial apices armed with a sharp spine and unique vaginal palpi lacking longitudinal sclerotization and appearing separate from each other (Fig. 11).

Yaminia closely resembles *Phygasia* Dejean, from which it can be differentiated by a deep postcallinal sulcus, a well developed triangular anterofrontal ridge, the lateral impressions on the pronotum lateral to antebasal transverse impression, the armed mid- and foretibiae and the vaginal palpi which are unique and separated. In *Phygasia* the post callinal sulcus is weak, the anterofrontal ridge is poorly developed, the pronotum lacks lateral impressions other than antebasal transverse impression, the mid- and foretibiae are unarmed and the vaginal palpi appear fused. *Altica* Geoffroy can be separated from *Yaminia* by the larger size, the weakly developed postcallinal sulcus, the anterofrontal ridge which forms a distinct narrow transverse ridge, the antebasal transverse impression which extends completely across the pronotum, the lack of impressions laterally on the pronotum and the fused vaginal palpi.

Yaminia gmelini Prathapan and Konstantinov, new species

(Figs. 1–11)

Description. Head, prothorax reddish brown; elytra black; mesosternum, all coxae brown; antenna, metathoracic and abdominal sternites, legs piceous to dark brown. Pronotum with punctures slightly smaller than those on elytron, lateral margin anteriorly wider than posteriorly. Prosternum rugose, profusely setose. Elytron with weak postbasal transverse impression. Distance between elytral punctures vary greatly, from being less than radius of a puncture to more than width of a puncture. Aedeagus in ventral view with sides nearly parallel, narrowing to apex, apex slightly asymmetrical; moderately curved in lateral view.

Etymology. This species is named after the well-known botanist and entomologist J. F. Gmelin, after whom the host plants are named.

Host plants. *Gmelina arborea* Roxb. and *G. asiatica* Linn. (Verbenaceae). Adults defoliate by feeding near the margins of the leaves. *G. arborea* is a fast

growing tree used in reforestation programs. Its wood is used for making handicrafts. The plant also is valued as an ingredient in medicines in Ayurveda, the traditional health care system of India.

Type material. Holotype male. Labels: 1) INDIA Karnataka Bangalore 916 m 25.xii.1997 Prathapan coll. 2) ex. *Gmelina asiatica* 3) *Yaminia gmelini* sp. nov. des. D. Prathapan & A. Konstantinov (USNM).

Paratypes (33 specimens). 2 males, 8 females. The same labels as holotype; 4 males, 1 female; same labels as holotype except the date 23.xii.1997; 1 female same labels as holotype except the date 1.vi.1998; 5 males, 4 females (one specimen macerated and dissected) without the label ex *Gmelina asiatica*, date 19.vi.1998; 2 males without ex *Gmelina asiatica*, date 26.xi.1999; 3 males, 1 female without ex *Gmelina asiatica*, date 9.vi.2000 (6 USNM, 2 UASB, 2 NPC, 2 BMNH, 21 PKDC).

Discussion. Although Verbenaceae is among the preferred families of host plants of flea beetles (Jolivet and Hawkeswood 1995), only cassidines are so far known to feed on *Gmelina*. This is the first host record of a flea beetle on this genus of trees and shrubs.

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