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A new record of a Coleoptera species *Agrilus zigzag* Marseul, 1866 of the family Buprestidae Leach, 1815 collected from NARC Garden, Islamabad, Pakistan

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Abstract

A new record of Coleoptera species *Agrilus zigzag* Marseul, 1866 that belongs to the subfamily Agrilinae Lacordaire, 1857 of Family Buprestidae Leach, 1815 collected from NARC Garden, Islamabad, Pakistan in 2005 has been made. The present study provides a detailed morphological and taxonomical description of the newly collected specimen.

Keywords: Coleoptera, Arginine, *Agrilus*, Islamabad

1. Introduction

Buprestidae contains over 15,000 described species distributed throughout the world on almost every continent [1, 2, 3, 4, 5] Members of the family Buprestidae (jewel beetles) of the class Insecta belonging to phylum Arthropoda are usually present in the semidesert and humid tropical areas [6]. A large number of workers have described the Buprestidae intensively throughout the world by numerous workers [7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20] *Agrilus* is the largest genus within the family Buprestidae (Coleoptera), with nearly 3,000 described species worldwide [21]. Usually, *Agrilus* spp. only attack angiosperms while the conifers normally remain unattached [22]. *Agrilus* spp. tend to be specialists and are restricted to a single genus of host plant. While most *Agrilus* species are not considered to be serious pests of agriculture or forests, at least two species have recently shown serious damage to trees in their newly invaded areas in North America, the emerald ash borer (EAB), *A. planipennis* Fairmaire, and the gold spotted oak borer (GSOB), *A. auroguttatus* Shaefer. EAB were accidentally introduced to Michigan in late 1990s from its native range (northeast Asia, in parts of China, Russia, and Korea) possibly via wooden crates or pallets for cargo shipment [23]. [24] listed 28 1 described species of *Agrilus* Curtis 1825 and an incredible 343+ further species awaiting description [25]. Recorded 72 species of *Agrilus*, with 25 new species described therein. A total of 39 species, 6 sub-species belonging 14 genera, 5 Subfamilies and 10 tribes of the family Buprestidae were recorded [26]. The main objective of the present study is to provide detailed morphological characters and provide relevant information.

2. Material and Methods

The biological material that was collected from NARC garden, Islamabad, in 2006 and was kept in the NARC Museum, Islamabad. It was borrowed from NARC Museum for taxonomic study and after examination it was returned to the same Museum. Dried specimen was placed in warm water for about 30 minutes, dissected into several large parts, which were further softened and cleared of nonchitinous material in a 10% warm KOH solution. The sample was identified on the basis of its identified taxonomic characters such as antennae, labrum bilobed and setose; mandible, maxillary, labial, eyes, pronotum legs, elytra, abdomen, genitalia and confirmed and compared with the catalogue, literature, keys.

3. Result**3.1 Family Buprestidae Leach, 1815**

The important characteristics of Jewel beetles vary in size, 2 mm-80 mm; shape cylindrical to flattened, elongate-ovoid, generally convex above;

colour various, often bright iridescent or dark coloured with different maculae; head greatly deflexed; antennae serrate, some with flabellate or pectinate; labrum bilobed and setose distally; mandible stout, curved; maxillary palpi with four palpomeres; labial palpi with three palpomeres; eyes lateral, elongate-oval to reniform; pronotum slightly broader than head; legs simple, sometimes tibiae dentate or spinose; elytra with different vestiture, rugose or carinate; abdomen with five sternites; male genitalia trilobed type.

3.2 Subfamily Agrilinae Lacordaire, 1857

Subfamily *Agrilinae* Lacordaire, 1857; Chujo, 1950: 6; Bellamy, 1985: 129, 1985: 121, 1997: 75, 1997: 79, 2000: 189; Bily, 1979: 221, 1979: 47, 1982: 115, 198: 119, 1998: 94, 2011: 211; Stebbing, 1994: 218; Halperin, 2000: 108; Mae Rae, 1991: 104; Karayyan, 2004: 153; Hastir, 2002: 10; Hawkeswood, 2002: 41; Tozlu, 2000: 79. Jendek, 2002: 1, 2006: 33.

Body usually narrowly elongate; antennal poriferous pits terminal, external cavities broad and situated at some distance from the eyes, front constricted at the insertion of the antennae, base of prothorax sinuous at the side and lobed in the middle, mesocoxae not more separated than procoxae, anterior margin of metacoxae concave; tarsal claws toothed or appendiculate.

3.3 Tribe Agrilini Laporte, 1835

Agrilini Laporte, 1835; Bellamy, 1997: 76, 1998: 94, 2000: 189; Bily, 1974: 75, 2011: 211; Balachowsky, 1962: 284; Mae Rae, 1991: 114; Holm, 1979: 155; Hastir, 2002: 11; Hawkeswood, 2002: 41; Chujo, 1950: 6; Jendek, 2002: 24, 2007: 109; Tozlu, 2000: 94.

Pronotum with submarginal carina, prosternal process pointed or rounded, anterior margin of metasternum deeply triangularly or rounded excavated; scutellum usually with transverse carina; legs neither flattened nor lightly folding; tarsi elongate, segment 1st of metatarsi as long as following 3 combined.

3.4 *Agrilus* Curtis 1825

Agrilus Curtis 1825: No. 67; Obenberger 1936: 935- 1246; Blackwelder 1944: 323- 33 1. Type species: *Buprestis viridis* Linnaeus 1758 (original designation). *Agrilus zigzag* Mars *Agrilus* Curtis, 1825: 67; Bellamy & Hespeneide, 2002: 39; *Teres* Harris, 1830: 2.

Euryotes Dejean, 1836: 92; *Paradomorphus* Waterhouse, 1887d: 183; *Sambooides* Kerremans, 1900b: 16; *Callichitones* Obenberger, 1931h: 181; *Therysambus* Descarpentries & Villiers, 1967c: 1007.

Body slender, robust; coloration variable from black to bronze, golden, green, brown with different shades and black; eyes convex or flat, distinctly projecting beyond outline of head; antennae serrate from 5th segment; frons between eyes subparallel, linearly diverging upwards in front; pronotum widest in anterior half, sides subarcuate or straight, disc of pronotum convex in front of middle or broadly depressed, marginal or submarginal carina separated or not separated, prosternal process subparallel, distinctly widened between coxae; prehumeral carina elevated or not, lateral pronotal depression deep or conspicuous; prosternal lobe emerginate or broadly rounded in front; elytra globeus with white ornamental pubescence or different colors, apices separately truncate or evenly rounded; lateral margin of abdomen abruptly arcuate or nearly straight at structure between 1st and 2nd sternites.

Type species: *Buprestis viridis* Linnaeus, 1758. (Fixed by

original designation).

3.5 *Agrilus zigzag* Marseul, 1866

Measurement

Female length: 5.5 mm; width: 1.4 mm.

Body Shape and Coloration

Elongated, flattened, dark olive green.

Head

Broad, longitudinally grooved in the middle, punctate; frons flat, wide, slightly depressed in the middle; eyes large; labrum concave; antennal cavities not widely separated; antennae 11 segmented, all segments longer than wide.

Pronotum

Pronotum wider than long, punctured, slightly convex, front angle not produce, lateral margin near to straight and tapering, hind angles spinose, basal margin lobulate in the middle; scutellum large, triangular, punctate. Elytra slightly convex, apex is equal to base of pronotum, closely granular, slightly depressed in the middle, deflect towards the apices, apices rounded, prosternal process angulated; tibiae flattened, tarsi 5 segmented.

Female Genitalia

Not available for study.

Comparative Note

Because of unavailable female genitalia and other specimens of this species, it is impossible to compare from other species.

Material Examined:

1 ♀, Pakistan, Islamabad, 05.iv.2006, leg; Mishkat.

Distribution

New record for Pakistan.

4. Discussion

In the present study newly recorded species *Agrilus zigzag* Mars, 1866 belonging to the family Buprestidae has been identified using the collected material from NARC Museum, Islamabad, Pakistan. This paper reports for the first time taxonomical attributes of a species of Buprestidae. Despite thorough literature search on Buprestidae of the area, we are unaware of any record of any of the newly recorded species of Buprestidae from Pakistan. Since this species has not been reported previously from Pakistan. It will be an important addition to the database on Buprestidae of the country and an addition to the biodiversity of Pakistan. It is suggested that further extensive surveys should be conducted in near future to get more comprehensive data on diversified species.

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