A new species of the *Agriotes nuceus* species group from Turkey

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Abstract

A new Elateridae species, *Agriotes longipronotum* n. sp. (Coleoptera: Elateridae: Elaterinae: Agriotini), is described from Siirt province, Turkey. Photographs of the imago and the aedeagus, and drawings of the aedeagus of the new species, *A. sameki, A. bulgaricus*, and *A. rahmei* are given. A rearranged diagnostic key of all Turkish species of *nuceus*-group is given. The new species is discussed in relation with closely related species. The species of the *Agriotes nuceus*-group from Turkey are listed, and their distributions are given.

**Keywords:** Elateridae, Elaterinae

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Introduction

The genus *Agriotes* Eschscholtz (Coleoptera: Elateridae: Elaterinae) is one of the richest genus of the tribe Agriotini Champion. According to present literature (Mertlik and Platia 2008; Platia 2008, 2010, 2011, 2012; Kabalak and Sert 2009, 2011; Platia et al. 2009, 2011; Platia and Nemeth 2011), there are 82 species of this genus in Turkey. The new species belongs to the nuceus-group of the genus *Agriotes*. The nuceus-group, which is separated from other species of the genus *Agriotes* by having the supraantennal carina reaching to the anterior margin of the frons, has 42 species distributed in Greece, Iraq, Lebanon, Syria, and Turkey (Gurjeva 1972; Platia and Gudenzi 1997; Platia 2003, 2010, 2011, 2012; Cate 2007; Platia et al. 2009, 2011; Platia and Nemeth 2011). Twenty-nine species of the nuceus-group are present in Turkey (Table 1) (Cate 2007; Platia et al. 2009; Platia 2010, 2011; Platia and Nemeth 2011).

Materials and Methods

Specimens of the new species were collected from a pistachio (*Pistaciet vera* L.) field in Siirt province, Turkey, by using light traps. Morphological structures of the new species are described; photographs of the entire body of the male specimen, antennae, and aedeagus were taken using a Leica MZ 16A stereoscopic microscope system (www.leica-microsystems.com) and Leica DFC320 camera attachment. The male genital organ of *A. longipronotum n.sp.* was pulled out.

Body lengths of specimens were measured along the midline from the anterior margin of the frons to the apex of the elytra, and widths of specimens were measured across the broadest part of the elytra.

General morphology of the new species was compared with *A. sameki* Platia (Figure 1D), which is a closely related species based on its general appearance. Male genital organs of *A. longipronotum n. sp.* (Figure 2A), *A. sameki* and its closely related species (*A. bulgaricus* and *A. rahmei*) are given and are compared in Table 1. Male genital organ drawings of *A.

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**Table 1. Comparison of taxonomical characters, and list of collecting month and collecting locality of some species of the Agriotes nuceus-group.**

| Character                  | *A. longipronotum n. sp.* (Fig. 2A) | *A. bulgaricus* (Fig. 2B) | *A. rahmei* (Fig. 2C) | *A. sameki* (Fig. 2D) |
|----------------------------|----------------------------------|---------------------------|----------------------|----------------------|
| Basal piece                | Quadrangular                     | Quadrangular              | Quadrangular         | "T" shaped          |
| Median lobe                | Apically swollen                 | Almost parallel sided     | Almost parallel sided | Apically feebly swollen |
| Median lobe length         | Clearly longer than parameres    | Clearly longer than parameres | Clearly longer than parameres | Clearly longer than parameres |
| Apex of median lobe        | Short, thin, and crescent shaped | Short, thin, and almost crescent shaped, apex rounded | Long, almost short, straight and parallelly extending, apex slightly pointed | Long, almost short and straight, apex slightly pointed |
| Distal tooth of paramere   | Distinct, pointed and directed back wardly | Less distinct, feebly pointed and slightly directed back wardly | Not distinct, feebly pointed and directed laterally | Distinct, pointed and directed back wardly |
| Outer lateral sides of parameres | Very slightly sinuate          | Almost straight            | Straight              | Almost straight      |
| Apical part and apex of parameres | Small at apical and not diverted laterally, Apex angled | Large at apical and not diverted laterally, Apex rounded | Small at apical and not diverted laterally, Apex angled | Small at apical and not diverted laterally, Apex angled |
| Collecting month           | July                             | June, July                | May, June            | June, July          |
| Collecting locality         | Siirt – Turkey                  | Harran – Bulgaria         | Haleb – Syria        | Bursa – Turkey      |
The species of the Agriotes nuceus-group from Turkey and their currently known distribution.

| Species                  | Distributions                        |
|--------------------------|---------------------------------------|
| Agriotes adanensis Pic, 1910 | Turkey (Cate 2007)                    |
| Agriotes anatolicus Platia, 2003 | Turkey (Cate 2007)                    |
| Agriotes aquilus Platia, 2003 | Turkey (Cate 2007)                    |
| Agriotes barbicornis Cate & Platia, 1997 | Turkey (Cate 2007)                    |
| Agriotes borovicorum Platia, Schimmel & Tarnawski, 2009 | Turkey (Platia et al. 2009)         |
| Agriotes conspicus Schwarz, 1891 | Turkey (Cate 2007)                    |
| Agriotes constrictus Reitter, 1900 | Iran, Syria and Turkey (Cate 2007) |
| Agriotes defrenai Platia & Gudenzi, 1998 | Turkey (Cate 2007)                    |
| Agriotes doboszi Platia, Schimmel & Tarnawski, 2009 | Turkey (Platia et al. 2009)         |
| Agriotes dusanei Platia & Gudenzi, 1998 | Turkey (Cate 2007)                    |
| Agriotes furlani Platia, 2003 | Turkey (Cate 2007)                    |
| Agriotes gulfaricenis Platia, 2011 | Turkey (Platia et al. 2011)         |
| Agriotes hatayensis Platia, 2010 | Turkey (Platia 2010)                 |
| Agriotes heydeni Schwarz, 1891 | Turkey (Cate 2007)                    |
| Agriotes informis Schwarz, 1891 | Turkey (Cate 2007)                    |
| Agriotes izmirensis Cate & Platia, 1997 | Turkey (Cate 2007)                    |
| Agriotes kroaza Schwarz, 1891 | Turkey (Cate 2007)                    |
| Agriotes leinsfesi Platia & Gudenzi, 1998 | Turkey (Cate 2007)                    |
| Agriotes izleri Platia, 2003 | Turkey (Cate 2007)                    |
| Agriotes merilki Platia, 2003 | Turkey (Cate 2007)                    |
| Agriotes migror Platia, 2003 | Turkey (Cate 2007)                    |
| Agriotes micus Fairmaire, 1866 | Turkey (Cate 2007)                    |
| Agriotes podlussanyi Platia & Nemeth, 2011 | Turkey (Platia & Nemeth 2011)       |
| Agriotes samcki Platia, 2003 | Turkey (Cate 2007)                    |
| Agriotes schurmani Platia & Gudenzi, 1998 | Turkey (Cate 2007)                    |
| Agriotes subsulcatus Pic, 1913 | Turkey (Cate 2007)                    |
| Agriotes sylviae Cate & Platia, 1997 | Turkey (Cate 2007)                    |
| Agriotes syriacus Platia & Gudenzi, 1997 | Turkey (Cate 2007)                    |
| Agriotes wernerii Platia, 2003 | Turkey (Cate 2007)                    |

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Distribution map of *A. longipronotum* n. sp., *A. sameki*, *A. bulgaricus*, and *A. rahmei* was made on Carto Fauna-Flora (Barbier and Rasmont 1996, 2000; Figure 3). All species and their distributions of the *Agriotes nuceus*-group of Turkey are given in Table 2.

### Taxonomy

*Agriotes longipronotum* n. sp. (1A, B)

**Type Locality:** Holotype, 1 ♂, Siirt province, 01 July 2009, leg. İ. Özgen. Paratypes, 2 ♂♂, Siirt province, 01 July 2009, leg. İ. Özgen. The holotype and one of the paratype are deposited in Hacettepe University Zoology Museum at Hacettepe University Biology Department Ankara, and the other paratype is deposited in the collection of Dr. Giuseppe Platia in Gatteo, Italy.

**Holotype:** Male. Moderately shiny; body entirely ferruginous; covered with dense, yellow pubescence.

Frons flat, slightly impressed at anterior part, anterior margin straight, supr antennal carinae not reaching anterior part, punctures umbilicate, contiguous.

Tenth and last antennal segments broken off due to the length of ninth segment, the antennae look like they exceed the apices of the posterior angles of the pronotum by about one segment, serrate from fourth segment on. Second and third segments small, second subcylindrical 1.15 times longer than wide, third subconical 1.16 times longer than second, second with a fairly larger diameter; second and third, taken together, clearly shorter than fourth, fourth to ninth triangular, longer than wide, gradually tapering.

Pronotum 1.1 times longer than wide, widest at posterior angles, strongly convex, abruptly sloping at sides, sloping more gradually at base, with a short and distinct median longitudinal depression on basal declivity; sides briefly subparallel in middle, dilated in anterior third, sinuate before posterior angles, the latter rather acute, diverging, with a moderate, apparent, inwards oriented carina; lateral suture curved, directed to lowerside of eyes, briefly obsolete near middle, punctuation rather uniformly distributed, punctures on disc deep, simple to slightly umbilicate, with intervals longer than their own diameters, gradually denser towards sides, laterally contiguous to confluent.

Scutellum tongue-shaped, flat, densely punctured.

Elytra as wide as base of pronotum, elytra 2.5 times longer than pronotum, 2.8 times longer than wide, sides subparallel in the anterior 2/3 part than gradually tapering to apex, striae well marked and punctured, interstriae flat, with rough surface; prosternal sutures briefly furrowed in front. Female unknown.

**Holotype Size:** Length 10.28 mm; width 2.57 mm.

**Etymology:** The name is derived from the length of pronotum.

**Paratype:** 2 ♂♂, length 9.62–9.70 mm; width 2.42–2.43 mm, body color of paratypes same as holotype. Apex of arms of median lobe diverted laterally in one of paratypes.

**Structure of aedeagus (dorsal view) (Figure 1C, 2A) (length 1.29 mm):** Lateral of basal part widest at medial, posterior margin arately concave, anterior margin U-shapedly notched, sides of basal part strongly, rest part slightly chitinized; median lobe clearly longer.
than parameres, feebly chitinized except medially extending strongly chitinized line, median lobe bullate apically, apex of median lobe protruded, arms of median lobe short, thin, crescent shaped, and pointed at apex; outer lateral sides of parameres feebly sinuate, distal teeth distinct, pointed and directed laterally, parameres angled at apex.

In the present study, a new species belonging to the nuceus-group of the genus Agriotes is described. A. longipronotum n. sp. is easily separated from all known species of the A. nuceus-group from Turkey by the pronotum, which is 1.1 times longer than wide. According to the morphology of the antennae and the aedeagus, the new species is closely related to A. sameki. The new species can be separated by the following combination of features: the body length of A. longipronotum n. sp. is longer than A. sameki; the ratio of elytra/pronotum lengths of A. longipronotum n. sp. is smaller than A. sameki; the pronotum is longer than wide in the new species while it is as long as wide in A. sameki. A comparison of the taxonomical characters, and a list of the collecting month and locality, of A. longipronotum n. sp., A. sameki, A. bulgaricus, and A. rahmei are given in Table.1.

Agriotes rahmei can be easily separated from A. longipronotum n. sp., A. sameki, and A. bulgaricus by having a clearly rounded apex of the median lobe and by not having a distinct distal tooth of the paramere. The aedeagus of the new species have similarities with both A. bulgaricus and A. sameki. Agriotes longipronotum n. sp. is close to A. sameki by having small parameres apically, distinct, paramere with a pointed and directed backwardly distal tooth; it is also close to A. bulgaricus in having a quadrangular basal piece and protruding apex of the median lobe. Agriotes longipronotum n. sp. can be separated from A. bulgaricus and A. sameki by the presence of a distinctly swollen apical part of the median lobe, very slightly sinuate outer lateral margin, and small and laterally diverted apical part of parameres.

**Key to the known species of Agriotes of the nuceus group from Turkey (males)**

1. Pronotum (included apices of posterior angles) longer than wide........................................1

1’. Pronotum (included apices of posterior angles) as long as wide.................................2

1”. Pronotum (included apices of posterior angles) wider than long .................................6

2. Frons not impressed before the anterior margin.................................................................3

2’. Frons impressed before the anterior margin ...............................................................scurmanni Platia and Gudenzi 1998

3. Body size smaller (length 9–9.5 mm; width 2.5–2.8 mm).............................................4

3’. Body size larger (length 11.8–16 mm; width 3–4 mm)..................................................5

4. Second antennal segment longer than wide; pronotal disk convex.............................sameki Platia 2003

4’. Second antennal segment as long as wide; pronotal disk depressed.............................subslucatus Pic 1913

5. Longer antennae with second and third articles globose, as long as wide........................borowieciorum Platia, Schimmel, and Tarnawski 2009

5’. Shorter antennae with second and third articles slenderer, second subcylindrical, third subconical.................................furlani Platia 2003

6. Second and third antennal segments taken together shorter than fourth....................7

6’. Second and third antennal segments taken together as long as fourth........................13

6”. Second and third antennal segments taken together longer than fourth..................22

7. Longer antennae exceeding by more than 2.5 segments the apices of posterior angles of pronotum.........................................................8
7’. Shorter antennae exceeding at best by 2 segments the apices of posterior angles of pronotum ........................................... 9
8. Color yellowish; body smaller (length 11.2 mm; width 3 mm); longer antennae exceeding by 4 segments the apices of posterior angles of pronotum ................................................................. 10
8’. Color ferruginous; body larger (length 13–15 mm; width 3.5–4 mm); shorter antennae exceeding by 2.5–3 segments the apices of posterior angles of pronotum ...................................................... 11
9. Body on average narrower (width 3–3.7 mm) ............................................ 12
9’. Body on average wider (width 3.9–4.2 mm) ............................................. 13
10. Second antennal segment subcylindrical, third antennal segment subconical ........ 14
10’. Second and third antennal segments subcylindrical; color blackish .................. 15
10. Second antennal segment subcylindrical, third antennal segment subconical ......... 16
11. Elytra 3 times longer than pronotum; body color ferruginous ............... 17
11’. Elytra 2.9 times longer than pronotum; body color dark brown .................. 18
12. Pronotal sides concave in the median part ........................................... 19
12’. Pronotal sides subparallel in the median part ...................................... 20
13. Third antennal segment subconical, longer than wide ............................ 21
13’. Third antennal segment subtriangular, as long as wide ......................... 22
14. Body size larger (length 12.5–15.5 mm; width 3.37–4.5 mm) ....................... 23
14’. Body size smaller (length 9–10.7 mm; width 2.6–3.1 mm) .............. 24
15. Longer antennae exceeding by 2.5 segments the apices of posterior angles of pronotum ........................................... 25
15’. Shorter antennae exceeding by two segments the apices of posterior angles of pronotum ........................................... 26
15’. Shorter antennae exceeding by 1–1.5 segments the apices of posterior angles of pronotum ........................................... 27
16. Lateral margins of pronotum complete .............................................. 28
16’. Lateral margins of pronotum interrupted at middle .............................. 29
17. Body narrower (width 3.37–4.0 mm); color variable .............................. 30
17’. Body wider (width 4.4–4.6 mm); color blackish .................................. 31
18. Body color darker; second antennal segment less slender, normally as long as wide or just longer than wide ............. 32
18’. Body color lighter; second antennal segment cylindrical, slightly longer than wide ......................................................... 33
19. Color yellow ferruginous ................................................................. 34
19’. Color brown ferruginous ............................................................... 35
20. Longer antennae exceeding by about 3 segments the apices of posterior angles of pronotum ........................................... 36
20’. Shorter antennae exceeding by 1.5–2 segments the apices of posterior angles of pronotum ........................................... 37
21. Pronotum with short basal mid-longitudinal furrow; scutellum tongue-shaped; elytra 2.8–3.0 times longer than pronotum and elytra 2.3 times longer than wide ...................... 38
21’. Pronotum without short basal mid-longitudinal furrow; scutellum mirtiform; elytra 3.3 times longer than pronotum and elytra 2.7 times longer than wide .................. 39
22. Second antennal segment a little longer than third .............................. 40
22’. Second antennal segment a little shorter than third ............................... 41
Second and third antennal segments subequal. ..................aquilus Platia 2003
Larger species (length 14–16 mm; 4–4.8 mm). ..................informis Schwarz 1891
Smaller species (length 10.8–11 mm; 4–4.8 mm).............defreinai Platia and Gudenz 1998

Discussion

Collecting months, collecting localities, and distributions of the species of *Agriotes nuceus*-group are listed according to the literature (Platia 2003; Platia and Gudenz 2007; Platia and Nemeth 2011) (Table 1). Species are present in nature from May to July. Only *A. longipronotum n. sp.* has been collected in one month (July). *Agriotes sameki* (in Bursa) and *A. longipronotum n. sp.* (in Siirt) are present in Turkey. *A. bulgaricus* (Bulgaria-Harmanli) and *A. rahmei* (Syria-Haleb) are not recorded from Turkey.

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