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New *Allecula* species (Coleoptera: Tenebrionidae: Alleculinae) from Turkey

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Systematics, taxonomy, new species, Coleoptera, Tenebrionidae, Alleculinae, *Allecula*, Turkey

Abstract. Old oaks (*Quercus* spp) are rare all over Europe and Turkey and members of the fauna living in these habitats are threatened. Nine stands with old hollow oaks, spread on five areas, were studied in Turkey over 2005-2009. In total 90 hollow oaks were studied. The studied oak species are *Quercus cerris*, *Q. infectoria, Q. trojana, Q. libanii*, *Q. pubescens*, Q. *ithaburensis* and *Q. vulcanica*. The same methods have been used for sampling the beetles: window traps on the tree trunk and pit fall traps in the wood mould inside the trunk cavities. The traps have been in field from middle of April to the end of September during one season per area from 2005 to 2009. The studied areas are all situated 50-150 km from the southern Mediterranean coast at altitudes between 1100-1500 m except one at a lower altitude.

In this study two new *Allecula* species were found: *Allecula janssoni* Novák sp. nov. and *Allecula turcica* Novák sp. nov. The species are presently described, illustrated and keyed with all the western Palaearctic species. Both species are probably saproxylic as the other species in the genus and for larval development, they use rotten wood in the trunk cavities.

INTRODUCTION

Old oaks are exceptionally species-rich in Europe, but the habitat in most countries has declined substantially. Saproxylic insects associated with old trees and dead wood is one of the most endangered invertebrate groups in Europe, as their habitat has severely decreased (McLean & Speight 1993). These insects are living in fungal fruit bodies, dead wood outside the tree (in branches, twigs or parts of the trunk) or inside the tree in hollows (Palm 1959; Speight 1989; Dajoz 2000). Many species dependent on large, old and hollow trees have survived in small remnant woodlands of ancient trees, often in the agricultural landscape (Speight 1989; Warren & Key, 1989). In general, knowledge of the Turkish beetle fauna is poor in comparison to other European countries.

Large parts of Turkey are intensively grazed since many centuries and old trees are very rare. But in some areas, at higher altitudes (>1000 m) patches with old oaks can still be found. Most of the old broad leaved deciduous trees near villages in Turkey are regularly pollarded (their branches are cut). This is a very old tradition, implemented by farmers for animal fodder and fire wood. The forest authorities have quite recently started to reforest the landscape. In this process, many of the last sites with old oaks are being transformed to pine (*Pinus brutia*) or cedar (*Cedrus libani*) plantations. The beetle fauna associated with old oaks in Turkey is virtually unknown but very threatened.

The Tenebrionid genus *Allecula* Fabricius, 1801 was described by Fabricius (1801) for one species *Allecula morio* (Fabricius, 1787) earlier described as *Cistela*. Species of this genus are widely distributed in throughout the world. Borchmann (1910) knew 151 species. Mader (1928) listed 29 species and Novák & Pettersson (2008) 65 species from the Palaearctic Region. In western part of the Palaearctic region, there are only *Allecula morio* (Fabricius, 1787), *Allecula rhenana* Bach, 1856 (both in many countries in Europe), *Allecula divisa* Reitter, 1883 known from Armenia, Caucasus, Turkmenistan and Uzbekistan, *Allecula estriata* Seidlitz, 1896 from Turkey and *Allecula oronthea* Baudi di Selve, 1881 from Lebanon and Turkey. Most *Allecula* species are saproxylic and often have their larval development in the rotten wood in old hollow trees.

The aim of this study is to describe the saproxylic beetle fauna living on old oaks (*Quercus* spp) and oak wood in Turkey. This article presents two new *Allecula* species found in the study - *Allecula janssoni* Novák sp. nov. and *Allecula turcica* Novák sp. nov., which are presently described, illustrated and keyed with all known species of western part of Palaearctic region.

MATERIAL AND METHODS

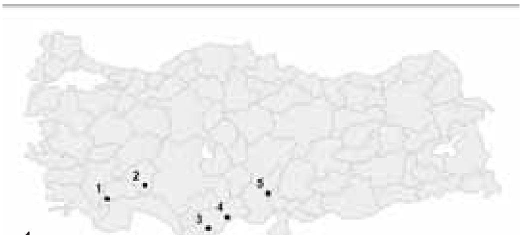
Nine stands with old hollow oaks, spread on five areas, have been studied in southern Turkey (Fig. 1). In total 90 hollow oaks have been surveyed. The studied oak species are *Quercus cerris*, *Q. infectoria, Q. trojana, Q. libanii*, *Q. pubescens*, Q. *ithaburensis* and *Q. vulcanica*. The same methods have been used for sampling the beetles: window traps on the tree trunk and pit fall traps in the wood mould inside the trunk cavities. The traps were in field from middle of April to mid September over one season per area from 2005 to 2009. The studied areas are all situated 50-150 km from the southern Mediterranean coast at altitudes between 1100-1500 m except one (Kozan) at 400 m.

At each site 10 trees were examined with two different trap types for sampling the beetle fauna. Individual trees used for trapping were randomly selected from the pool of oaks investigated in habitat modelling.

The window traps (W-trap) consisted of a 30x60 cm wide transparent plastic plate with a tray underneath (Jansson & Lundberg 2000). They were placed near the trunk (<1 m), beside or in front of the cavity entrance (Fig. 2a). Their positions were 1.5-5 m from the ground, depending on where the cavity entrance was situated on the studied tree.

The pitfall traps (P-trap) were plastic cups with a top diameter of 6.5 cm. They were placed in the wood mould at the bottom of the cavity, with their openings on level with the wood mould surface (Fig. 2b).

Two important morphometric characteristics used for the descriptions of the species of the subfamily Alleculinae, the 'ocular index' dorsally (Campbell & Marshall 1964), calculated by



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◀Fig. 1. The location of the studied areas in Turkey. 1. Gölhisar, 2. Isparta, 3. Gülnar, 4. Erdemli and 5. Kozan.

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▼Fig. 2. a) mounting a window trap, b) a pit-fall trap inside a hollow oak, c) working with the traps on an old oak.

measuring the minimum distance between the eyes and dividing this value by the maximum dorsal width across eyes, the quotient resulting from this division being converted into an index by multiplying by 100, and the 'pronotal index' (Campbell 1965) expressing the ratio of the length of the pronotum along the midline to the width at the basal angles, this ratio being multiplied by 100 for convenience in handling, are used in this paper as well.

The following codens are used in the paper:

ISIT Insect Museum at Suleyman Demirel University in Isparta, Turkey;
NMSS Natural Historical Museum in Stockholm, Sweden;
NJLS private collection of Nicklas Jansson, Linköping, Sweden;
VNPC private collection of Vladimír Novák, Prague, Czech Republic.

Measurements were made with Olympus SZ 40 stereoscopic microscope with continuous magnification and with soft imaging system Analysis. Measurements of body parts and corresponding abbreviations used in text are as follows:

AL total antennae length
BL maximum body length
EL maximum elytral length
EW maximum elytral width
HL maximum length of head (visible part)
HW maximum width of head
OI ocular index dorsally
PI pronotal index dorsally

PL maximum pronotal length
PW pronotal width at base
RLA ratios of relative lengths of antennomeres 1-11 from base to apex (3=1.00)
RL/WA ratios of length / maximum width of antennomeres 1-11 from base to apex
RLT ratios of relative lengths of tarsomeres 1-5 respectively 1-4 from base to apex (1=1.00)

Moreover, a slash (/) separates data in different rows on locality labels.

KEY TO THE EUROPEAN MALE SPECIES OF GENUS *ALLECULA* FABRICIUS, 1801

1(2) Antennomere 3 distinctly shorter than antennomere 4 3
2(1) Antennomere 3 approximately as long or distinctly longer as length of antennomere 4 9
3(4) Antennomere 4 more than twice as long as antennomere 3 5
4(3) Antennomere 4 less than twice as long as antennomere 3 .... *A. morio* (Fabricius, 1787)
5(6) Antennomere 4 distinctly longer than twice as long as antennomere 3, space between eyes narrower 7
6(5) Antennomere 4 slightly longer than twice as long as antennomere 3, space between eyes broader. Habitus of male as in Fig. 8; head, pronotum and antennomere 1-4 as in Fig. 9; aedeagus as in Figs 10 and 11. Europe. .... *A. rhenana* Bach, 1856
7(8) Elytra brown, antennae, tibiae, tarsi reddish-brown, elytral interspaces distinctly vaulted, pronotum broader (PI near 60) with fine microgranulation, rather dull. Habitus of male holotype as in Fig. 12; head, pronotum and antennomere 1-4 as in Fig. 13; aedeagus as in Figs 14 and 15. Turkey. .... *A. turcica* Novák sp. nov.
8(7) Elytra ochre yellow, antennae, tibiae, tarsi black, elytral interspaces more flat, pronotum narrower (PI near 70), micrgranulation indistinct, shiny. Habitus of male holotype as in Fig. 3; head, pronotum and antennomere 1-4 as in Fig. 4; aedeagus as in Figs 5 and 6. Turkey. .... *A. janssoni* Novák sp. nov.
9(10) Antennomere 3 slightly shorter than antennomere 4 long .... *A. divisa* Reitter, 1883
10(9) Antennomere 3 as long or distinctly longer than antennomere 4 long 11
11(12) Antennomere 3 distinctly longer than antennomere 4 long, antennomeres 5-10 narrower and longer than antennomere 4, ultimate palpomere dilated longitudinally .... *A. oronthea* Baudi di Selve, 1881
12(11) Antennomere 3 as long as length of antennomere 4, antennomeres 5-10 distinctly longer than antennomere 4, ultimate palpomere only slightly dilated .... *A. estriata* Seidlitz, 1896

DESCRIPTION

Allecula janssoni Novák sp. nov.
(Figs 3-6)

Type locality. Turkey, Gölhisar, N36°57´40´´; E29°27´53´´.

Type material. Holotype (♂): Turkey, Gölhisar, 120km W Antalya / N36°57´40´´; E 29°27´53´´ / 7km SW Altinyayla, W-trap 3 / Hollow Quercus 2009-08-30 / Nicklas Jansson/Mustafa Avci, (ISIT); Paratypes: (1 ♂): same data as holotype, (VNPC); (2 ♂♂): same data as holotype, but W-trap 1, (ISIT, NMSS); (1 ♀): same data as holotype, but W-trap 9, (NJLS); (6 ♂♂, 2 ♀♀): Turkey, Gölhisar, Altinyayla, / 120 km W Antalya, W-trap 22 / Hollow oak / 2009-08-30 / N.Jansson/M.Avci, (ISIT, NMSS, NJLS, VNPC); (1 ♀): same data as penultimate, but W-trap 1 and 2009-10-04, (ISIT); (1 ♀): same data as penultimate, but W-trap 6, (NMSS). The types are provided with a printed red label: Allecula janssoni sp. nov. HOLOTYPUS [resp. PARATYPUS] V. Novák det. 2010.

Description of holotype. Habitus as in Fig. 3, body elongate, from pale brown to black, slightly shiny, with dense pale brown setation, BL 7.49 mm. Widest near two thirds of elytra length; BL/EW 3.01.

Head (Fig. 4). Dark blackish-brown, with short and dense pale brown setation and dense punctation, shiny. Punctures medium-sized, interspaces between punctures narrow. Space between antennae with large, transverse, oblique impression near sides. HW 1.28 mm; HW/PW 0.80. HL (visible part) 1.07 mm. Eyes dark, large, transverse, deeply excised, space between eyes slightly broader than length of antennomere 3; OI equal to 32.60.

Antennae. Long, AL 6.07 mm, AL/BL 0.81. Antennomeres unicoloured black with microgranulation. Antennomeres 1-3 slightly shiny with sparse, reddish-brown setation, antennomeres 4-11 dull with short and dense, reddish-brown setation; antennomeres 4-10 distinctly serrate. Antennomeres 4-11 with dense punctation. Antennomere 2 shortest, antennomere 3 distinctly longer than antennomere 2. RLA (1-11): 0.93: 0.63: 1.00: 2.54: 2.79: 2.69: 2.71: 2.76: 2.79: 2.56: 2.44. RL/WA (1-11): 1.57: 1.24: 1.62: 2.72: 2.92: 3.03: 2.98: 3.04: 3.22: 3.17: 3.88.

Maxillary palpus. Dark brown with pale brown setation. Palpomere 2 narrow, penultimate palpomere shortest, with microgranulation, distinctly narrowest at base and broadest at apex. Ultimate palpomeres broadly triangular, with punctation, punctures dense and small, slightly shiny. RLP (2-4): 1.35: 1.00: 1.62. RL/WP (2-4): 2.12: 1.58: 0.60.

Pronotum (Fig. 4). Reddish-brown, with dark spot in middle, shiny, with dense and long pale brown setation and fine punctation. PL 1.02 mm; PW 1.61 mm. PI equal to 62.95. Border lines complete, only in middle of anterior margin and base indistinct. Base bisinuate, in ante-scutellar area straight. Posterior angles rounded, slightly obtuse, anterior angles rounded, indistinct.

Ventral side of body. Dark reddish-brown, shiny with sparse, short, pale brown setation and punctation. Punctation of prothorax indistinct. Abdomen dark brown with short and dense, pale brown setation and fine punctation and microgranulation, shiny.

Elytron. Long, pale brown, with short, pale brown setation, shiny. EL 5.40 mm. Broadest near elytral two thirds from base, EW 2.49 mm. EL/EW 2.17. Elytral suture reddish-brown. Elytral striae with distinct rows of medium-sized punctures, interspaces between punctures in rows very narrow, narrower than diameter of punctures. Elytral intervals with fine microgranulation, shiny.

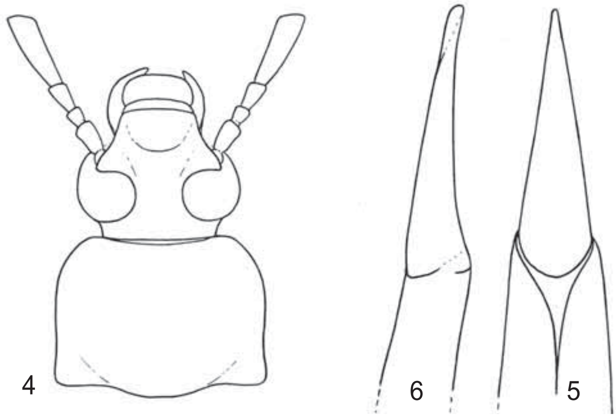
Scutellum. Pentagon with basal part brown and apical part reddish-brown with sides narrowly brown, shiny, with sparse pale brown setae.

Elytral epipleura. Well-developed, pale brown as elytron itself with reddish-brown row of large punctures, shiny, broadest near base, regularly narrowed to first abdominal sternite, then leads parallel.

Legs. Dark brown, with short pale brown setation. Tibia and tarsi narrow, tibia dilated anteriorly. Penultimate tarsomere of each tarsus distinctly broadened and lobed, tarsomeres 3 of each tarsus finely broadened and lobed. RLT: protarsus: 1.00: 045: 0.51: 0.61: 1.14; mesotarsus: 1.00: 0.40: 0.35: 0.29: 0.67; metatarsus: 1.00: 0.35: 0.25: 0.44.

Both anterior tarsal claws with 6 visible teeth.

Aedeagus (Figs 5, 6). Relatively short, pale brown, shiny, with fine microgranulation. Basal fourth of basal piece rounded laterally, then almost straight, very finely rounded laterally, dorsally parallel and at apical third regularly narrowing. Apical piece short, narrowly triangular dorsally and laterally, with finely rounded top laterally. Ratio of length of apical piece to length of basal piece 1: 3.90.



Figs 3-6: *Allecula jansonni* Novák sp. nov.: 3- Habitus of male holotype; 4- Head and pronotum of male holotype; 5- Aedeagus, dorsal view; 6- Aedeagus, lateral view.

Female. Space between eyes broad, distinctly broader than diameter of eye. Antennae distinctly shorter than in male, reaching only 0.55 of body length. Antennomere 4 only approximately 1.6 times longer than antennomere 3 long. Both anterior tarsal claws with 6 visible teeth.

RLA (1-11): 0.58: 0.48: 1.00: 1.64: 1.56: 1.59: 1.58: 1.59: 1.53: 1.44: 1.59. RL/WA (1-11): 1.13: 1.21: 2.59: 3.68: 3.70: 3.05: 2.99: 2.66: 2.89: 2.95: 3.64. RLT: protarsus: 1.00: 0.62: 0.62: 0.68: 1.30; mesotarsus: 1.00: 0.43: 0.38: 0.41: 0.66; metatarsus: 1.00: 0.37: 0.27: 0.45.

Variation. Measurements: mean (minimum - maximum). Males (n=10). BL 7.98 mm (7.27-8.14 mm); HL 1.06 mm (1.02-1.10 mm); HW 1.26 mm (1.21-1.33 mm); OI 29.79 (28.07-32.60), PL 1.12 mm (1.02-1.25 mm); PW 1.61 mm (1.51-1.71 mm); PI 68.11 (62.95-71.74); EL 5.57 mm (5.23-5.85 mm); EW 2.49 mm (2.35-2.61 mm); Females (n=5) BL 7.98 mm (7.27-8.14 mm); HL 1.06 mm (1.02-1.10 mm); HW 1.26 mm (1.21-1.33 mm); OI 29.79 (28.07-32.60), PL 1.12 mm (1.02-1.25 mm); PW 1.61 mm (1.51-1.71 mm); PI 68.11 (62.95-71.74); EL 5.57 mm (5.23-5.85 mm); EW 2.49 mm (2.35-2.61 mm).

Differential diagnoses. (for details see the key above). *Allecula janssoni* sp. nov. is clearly different from similar species *Allecula divisa* Reitter, 1883, *Allecula estriata* Seidlitz, 1896 and *Allecula oronthea* Baudi di Selve, 1881 mainly by antennomere 3 more than twice shorter than antennomere 4 long; while *A. divisa*, *A. estriata* and *A. oronthea* with antennomere 3 approximately as long as length of antennomere 4. *A. janssoni* clearly differs from similar species *Allecula morio* (Fabricius, 1787) and *Allecula rhenana* Bach, 1856 mainly by ochre yellow elytra and antennomere 4 distinctly more than 2.5 times longer than antennomere 3 long, while *A. morio* and *A. rhenana* have body dark brown and antennomere 4 slightly shorter respectively, slightly broader than twice the length of antennomere 3. *A. janssoni* is clearly different from similar species *Allecula turcica* sp. nov. mainly by ochre yellow elytra,

Fig. 7. Pictures from the type locality of *Allecula janssoni* near the village Altinyayla 120 km W Antalya in south western Turkey.

narrower pronotum and elytral interspaces more flat, while *A. turcica* has elytra brown, pronotum broader and elytral interspaces distinctly vaulted.

Bionomy. The area, where *A. janssoni* was found, consists of a large (1x5 km) mosaic landscape with grazed wooded pastures with oaks and bushes like *Crategus* spp and *Rosa* spp and cultivated fields (Fig. 7). The oak species are *Quercus cerris*, *Q. infectoria* and *Q. pubescens*. All the oaks with *A. janssoni* are old and hollow trees with a circumference of the trunk of more than 3.14 m. All the specimens were caught with window traps between 25 July and 4 October. The traps were situated near larger cavities on the tree trunks at a height of 2-4 m.

Name derivation. New species is dedicated to one of the project leaders and collectors – Nicklas Jansson (Linkoping, Sweden).

Distribution. Turkey.

Allecula rhenanna Bach, 1856
(Figs 8-11)

Allecula rhenana Bach, 1856: 228.
Allecula loevendali Reitter, 1886: 140.

Material examined. (♂): CZ-Boh.or. (5860) / Opatovice nad Lab. - / Polabiny, 9.vii.2009 / F. Pavel leg., (VNPC).

Remarks. Commonly known species, but rarer than *A. morio*. Habitus of male as in Fig. 8; head and pronotum of male as in Fig. 9; aedeagus as in Figs 10, 11. BL 7.25; HL 1.00; HW 1.24; OI 33.90; PL 1.09; PW 1.58; PI 69.08; EL 5.16; EW 2.29; RLA (1-11): 0.97: 0.73: 1.00: 2.03: 2.19: 2.19: 2.30: 2.11: 2.19: 2.05: 2.27.

Distribution. Austria, Bosnia and Herzegovina, Croatia, Czech Republic, Denmark, Finland, France, Germany, Georgia, Italy, Poland, Romania, Russia (including south European territory), Slovakia, Slovenia, Sweden, Switzerland, Ukraine, Serbia and Montenegro.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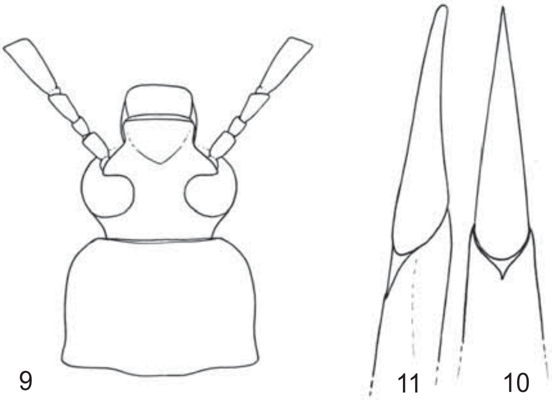
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▼Figs 8-11: *Allecula rhenanna* Bach: 8- Habitus of male; 9- Head and pronotum of male; 10- Aedeagus, dorsal view; 11- Aedeagus, lateral view.

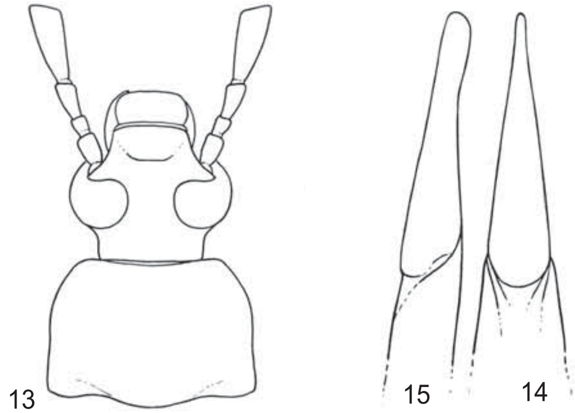
Allecula turcica Novák sp. nov.
(Figs 12-15)

Type locality. Turkey, Egirdir, Yukarigökdere, N 37°42 964, E 30°49 899, Kasnak forest.

Type material. Holotype (♂): Turkey, Egirdir, Yukarigökdere / N 37°42 964, E 30°49 899 / Kasnak forest Windowtrap 20 / Hollow Quercus 2007-08-07 / Nicklas Jansson/Mustafa Avci, (ISIT); Paratypes: (1 ♂, 1 ♀): same data as holotype, but Windowtrap 1, 2007-09-11 (ISIT); (1 ♂, 1 ♀): same data as holotype, but Windowtrap 16, 2007-09-11 (NJLS); (1 ♂): same data as holotype, but Pit-falltrap 29, 2007-09-11 (NMSS); (3 ♂♂, 1 ♀): Turkey, Egirdir 20 w / Yukarigökdere, Kasnak Forest NP / Hollow oak 2007-08-07 / N. Jansson/M. Avci, (ISIT, VNPC); (2 ♂♂): same data as penultimate, but W-trap 16, (ISIT, NJLS); (2 ♂♂): same data as penultimate, but W-trap 4, (ISIT); (1 ♂): same data as penultimate, but 2007-09-11 and W-trap 3, (NJLS); (1 ♂): same data as penultimate, but W-trap 8, (VNPC); (1 ♂): same data as penultimate, but W-trap 12, (NJLS); (13 ♂♂, 8 ♀♀): same data as penultimate, W-trap 16, (VNPC); (1 ♀): same data as penultimate, W-trap 17, (NJLS); (1 ♂, 1 ♀): same data as penultimate, W-trap 20, (NMSS, VNPC); (1 ♂ 1 ♀): same data as penultimate, W-trap 22, (NMSS); (1 ♂, 1 ♀): same data as penultimate, W-trap 24, (ISIT, VNPC); (1 ♂): same data as penultimate, W-trap 29, (NJLS); (2 ♀♀): same data as penultimate, but Pit-falltrap 16, (ISIT, NMSS); (1 ♀): same data as penultimate, but Pit-fall trap 27, (VNPC); (1 ♂): Turkey, Mersin, 30km NW Gülnar / N 36°30´22,5; E 33°07´43,3 / Köseçobanli/Tasdüstü, W-trap 1 / Hollow Quercus 2006-08-26 / Nicklas Jansson/Mustafa Avci, (NMSS); (1 ♂): same data as penultimate, but W-trap 9, (ISIT); (1 ♂, 1 ♀): Turkey, Gülnar, W-trap 13 / Hollow oak 2006-08-22 / N. Jansson /M.Coskun, (NMSS, VNPC); (6 ♂♂): same data as penultimate, but W-trap 12 and 2006-06-26, (NJLS, NMSS, VNPC); (3 ♂♂, 1 ♀): Turkey, 20km N Erdemli / Devrent / N 36°42 385, E 34°09 583, W-trap 15, 2005-08-11; N. Jansson, (NJLS, VNPC); (1 ♂): Turkey, 30km N Erdemli / Kizilen/ N 36°41 473, E 34°03 034, W-trap 7 w, 2005-08-11; N. Jansson, (VNPC). The types are provided with a printed red label: Allecula turcica sp. nov. HOLOTYPUS [resp. PARATYPUS] V. Novák det. 2010.

Description of holotype. Habitus as in Fig. 12, body elongate, reddish-brown, with short pale brown setation, slightly shiny, BL 7.44 mm. Widest near middle of elytra; BL/EW 2.95.

Head (Fig. 13). Reddish-brown, between eyes partly darker, with microgranulation, short, pale brown setation and dense punctation, slightly shiny. Punctures relatively small and shallow, punctation of clypeus indistinct. Space between antennae with deep, transverse



Figs 12-15: *Allecula turcica* Novák sp. nov.: 12- Habitus of male holotype; 13- Head and pronotum of male holotype; 14- Aedeagus, dorsal view; 15- Aedeagus, lateral view.

impression. HW 1.28 mm; HW/PW 0.77. HL (visible part) 1.15 mm. Eyes dark, large, transverse, deeply excised, space between eyes distinctly broader than antennomere 2 long; OI equal to 30.35.

Antennae. Long, AL 6.08 mm, AL/BL 0.82. Antennomeres unicoloured reddish-brown with microgranulation. Antennomeres 1-3 shiny with sparse and longer pale brown setation, antennomeres 4-11 dull with short and dense pale brown setation; antennomeres 4-10 distinctly serrate. Antennomeres 4-11 with dense punctation. Antennomere 2 shortest, antennomere 3 distinctly longer than antennomere 2. RLA (1-11): 0.99: 0.59: 1.00: 2.52: 2.53: 2.66: 2.61: 2.59: 2.53: 2.45: 2.59. RL/WA (1-11): 1.63: 1.13: 1.56: 2.83: 2.74: 2.66: 2.82: 2.80: 3.03: 3.21: 4.18.

Maxillary palpus. Reddish-brown, slightly shiny, with microgranulation and short, pale brown setation, apex of palpomeres 2 and 3 with a few long setae. Palpomeres 2-4 distinctly narrowest at base and broadest at apex. Ultimate palpomere broadly triangular. RLP (2-4): 1.73: 1.00: 1.23. RL/WP (2-4): 2.59: 1.07: 0.38.

Pronotum (Fig. 13). Reddish-brown, transverse, shiny, with microgranulation and short pale brown setation. PL 1.02 mm; PW 1.66 mm. PI equal to 61.30. Border lines complete, only in middle of anterior margin indistinct. Base finely excised, bisinuate, in ante-scutellar area straight. Posterior angles rounded, distinctly obtuse, anterior angles rounded, indistinct. Surface with dense medium-sized punctures, interspaces between punctures narrow.

Ventral side of body. Reddish-brown, with sparse, short, pale brown setation and punctation, punctures small. Abdomen reddish-brown with short, pale brown setation, microgranulation and punctation, punctures very small and shallow, slightly shiny. Ultimate abdominal sternite pale brown with brown setation.

Elytron. Long, elongate, reddish-brown, with short, pale brown setation, slightly shiny. EL 5.27 mm. Broadest near elytral two thirds, EW 2.52 mm. EL/EW 2.09. Elytral striae with distinct rows of large punctures, interspaces between punctures in rows very narrow, narrower than diameter of punctures. Punctures deep and coarse. Elytral intervals with small, shallow punctures, and microgranulation.

Scutellum. Triangular, reddish-brown, sides narrowly darker, shiny, with sparse, pale brown setae and fine microgranulation.

Elytral epipleura. Well-developed, reddish-brown, shiny, with sparse setae, regularly narrowing to abdominal sternite 1, then leads parallel. Anterior half with two rows and posterior half with one row of distinct punctures.

Legs. Reddish-brown, with short and dense pale brown setation. Tibia and tarsi narrow, tibia distinctly dilated anteriorly. Penultimate tarsomere of each tarsus and anterior and middle tarsomeres 3 distinctly broadened and lobed. RLT: protarsus: 1.00: 0.56: 0.59: 0.69: 1.21; mesotarsus: 1.00: 0.37: 0.31: 0.33: 0.65; metatarsus: 1.00: 0.29: 0.23: 0.45.

Both anterior tarsal claws with 5 visible teeth.

Aedeagus (Figs 14,15). Pale brown, with microgranulation, slightly shiny. Basal half of basal piece rounded laterally and parallel dorsally, then almost straight laterally and narrowing dorsally. Apical piece short, narrowly triangular dorsally, narrowing with rounded top laterally. Ratio of length of apical piece to length of basal piece 1: 4.74.

Female. More robust, space between eyes distinctly broader and antennomere 3 distinctly longer than those in male. Antennae distinctly shorter than in male, reaching only 0.66 of body length. Both anterior tarsal claws with 5 teeth. RLA (1-11): 0.79: 0.36: 1.00: 1.51: 1.50: 1.60: 1.49: 1.54: 1.30: 1.29: 1.40. RL/WA (1-11): 1.67: 0.96: 2.69: 3.36: 2.90: 2.56: 2.59: 2.48: 2.40: 2.65: 2.90. RLT: protarsus: 1.00: 0.46: 0.54: 0.66: 1.19; mesotarsus: 1.00: 0.43: 0.29: 0.38: 0.62; metatarsus: 1.00: 0.34: 0.27: 0.50.

Variation. Measurements: mean (minimum - maximum). Males (n=44) BL 7.67 mm (7.21-8.17 mm); HL 1.05 mm (0.95-1.15 mm); HW 1.30 mm (1.19-1.38 mm); OI 30.05 (27.56-33.39), PL 1.03 mm (0.99-1.10 mm); PW 1.72 mm (1.58-1.90 mm); PI 60.12 (55.15-63.69); EL 5.58 mm (5.10-6.10 mm); EW 2.57 mm (2.34-2.78 mm). Females (n=20) BL 9.09 mm (8.72-9.45 mm); HL 1.20 mm (1.13-1.26 mm); HW 1.47 mm (1.44-1.50 mm); OI 39.22 (38.95-39.49), PL 1.36 mm (1.24-1.48 mm); PW 2.17 mm (2.10-2.24 mm); PI 62.41 (58.90-65.92); EL 6.67 mm (6.62-6.71 mm); EW 3.10 mm (3.09-3.11 mm).

Bionomy. The four sites where *A. turcica* was found consist both of grazed wooded pastures with oaks and bushes like *Crategus* spp and *Rosa* spp and areas with old pollarded oaks but also more open forest like conditions with the oaks in mixture with *Cedrus* sp, *Fraxinus* spp, *Pinus* spp and *Acer* spp (Fig. 16). The oak species at the sites are *Quercus cerris*, *Q. infectoria*, *Q. ithaburensis, Q. trojana* and *Q. libanii*. All the oaks with *A. janssoni* are old and hollow trees with a circumference of the trunk of more than 3.14 m. All the specimens were caught with window traps between 26 June and 11 September. The traps were situated near cavities on the tree trunks at a height of 2-4 m.

Differential diagnoses. (for details see the key above). *Allecula turcica* sp. nov. is clearly different from similar species *Allecula divisa* Reitter, 1883, *Allecula estriata* Seidlitz, 1896 and *Allecula oronthea* Baudi di Selve, 1881 mainly by antennomere 3 more than twice shorter than antennomere 4 long, while *A. divisa*, *A. estriata* and *A. oronthea* have antennomere 3 approximately as long as length of antennomere 4. *A. turcica* clearly differs from similar species

◄Fig. 16. Pictures from the type localities for *Allecula turcica* in south Turkey. From left: Kizilen north of Erdemli, Kasnak National Park east of Isparta and Derbent north of Erdemli.

Allecula morio (Fabricius, 1787) and *Allecula rhenana* Bach, 1856 mainly by antennomere 4 distinctly more than 2.5 times as long as antennomere 3, while *A. morio* and *A. rhenana* have body dark brown and antennomere 4 slightly shorter respectively, slightly longer than twice as long as antennomere 3. *A. turcica* is clearly different from similar species *Allecula janssoni* sp. nov. mainly by brown elytra, broader pronotum and elytral interspaces distinctly vaulted, while *A. janssoni* has elytra ochre yellow, pronotum narrower and elytral interspaces more flat.

Name derivation. Toponymic, named after the country of its distribution.

Distribution. Turkey.

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REFERENCES

Bach M. 1856: *Käferfauna für Nord- und Mitteldeutschland mit besonderer Rücksicht auf die preussischen Rheinlande. Dritter Band.* Coblenz: J. Bölscher, 292 pp.

Baudi di Selve F. 1881: Heteromerum species ex Aegypto, Syria et Arabia. *Deutsche Entomologische Zeitschrift* 25: 273-296.

Borchmann F. 1910: Pars 3: *Alleculidae*. In: Junk W. & Schenkling S. (eds.): *Coleopterorum Catalogus*. W. Junk, Berlin, 80 pp.

Campbell J. M. 1965: A revision of the genus *Charisius* (Coleoptera: Alleculidae). *The Coleopterist´s Bulletin* 19: 41-56.

Campbell J. M. & Marshall J. D. 1964: The ocular index and its applications to the taxonomy of the Alleculidae (Coleoptera). *The Coleopterist´s Bulletin* 18: 42.

Dajoz R. 2000: *Insects and forest. The role and diversity of insects in the forests environment*. Technique and Documentation, Gauthier- Villars Intercept Ltd, London.

Fabricius J. C. 1787: *Mantissa insectorum sistens eorum species nuper detectas adiectis characteribus generis differentiis specificis, emendationibus observationibus. Tom II.* Hafniae: Christ. Gottl. Proft., 382 pp.

Fabricius J. C. 1801: *Systema eleutheratorum secundum, ordines, genera, species adiectis synonymis, locis, observationibus, descriptionibus. Tomus II*. Kiliae: Binliopolii Academici Novi, 687 pp.

Jansson N. & Lundberg S. 2000: Beetles in hollow broadleaved deciduous trees - Two species new to Sweden and the staphylinid beetles (Coleoptera: Staphylinidae) *Hypnogyra glabra* and *Meliceria tragardhi* found again in Sweden. *Entomologisk Tidskrift* 121: 93-97.

Mader L. 1928: *Alleculidae*. Columns 901-913. In: Winkler A. (ed.) 1924-1932: *Catalogus coleopterorum regionis palaearcticae.* Wien: Winkler & Wagner, Columns 881-1008.

Mc Lean I. F. G. & Speight M. C. D. 1993: *Saproxylic invertebrates - the European context*. Pp.: 21-32. In: Kirby K. J. & Drake K. J. (eds.): *Dead wood matters: the ecology and conservation of saproxylic invertebrates in Britain.* English Nature Science No. 7.

Novák V. & Pettersson R. 2008: *Alleculinae*. Pp. 319-339. In: Löbl I. & Smetana A. (eds.): *Catalogue of Palaearctic Coleoptera, Vol. 5. Tenebrionoidea*. Stenstrup: Apollo Books, 670 pp.

Palm T. 1959: Die Holz- und Rindkäfer der Süd- und Mittelschwedishen Laubbäume (The wood and bark living coleoptera of deciduous trees in southern and central Sweden. *Opuscula Entomologica Suppl.* 16: 1-374 (In German with English Summary).

Reitter E. 1883: Neue Coleopteren aus Russland und Bemerkungen über bekannte Arten. *Revue Mensuele d´Entomologie* 1: 111-118.

Reitter E. 1886: Ueber eine neue europäische Allecula. *Wiener Entomologische Zeitung* 5: 140.

Seidlitz G. C. M. von 1896: *Alleculidae*. Pp. 1-305. – In: Erichson W. F. et al. (eds.): *Naturgeschichte des Insecten Deutschlands. I. Abt., Bd. 5, 2. Hälfte.* Berlin: Nicolaische Verlags-Buchhandlung R. Stricker, 305 pp.

Speight M. C. D. 1989: *Saproxylic invertebrates and their conservation*. Strasbourg: Council of Europe, Publications and Documents Division. Nature and Environment Series 42: 1-79.

Warren M. S. & Key R. S. 1989: *Woodlands: past, present and potential for insects*. Pp.: 155-211. In: Collins N. M. & Thomson J. A. (eds.): *The conservation of insects and their habitats*. Academic Press, London, UK.

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