

**Two new species of *Agapanthia* (*Smaragdula*) Pesarini & Sabbadini, 2004
from Turkey (Coleoptera: Cerambycidae: Lamiinae)**

Karel HODEK¹, Tomáš TICHÝ²

¹ Havlenova 29, CZ-63900, Brno - Štýřice, Czech Republic
e-mail: hkarlos@seznam.cz

² Sokolská třída 33, VSB-TUO, CZ-70121 Ostrava 1, Czech Republic
e-mail: tomas.tichy@vsb.cz

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Abstract. Two new species of *Agapanthia* Audinet-Serville, 1835 are described within the subgenus *Smaragdula* Pesarini & Sabbadini, 2004 from eastern Turkey, including descriptive figures and comparative analysis concerning similar species. The first species, *A. (S.) posti* sp. nov. fits the subgenus quite well and first of all it resembles *A. (S.) persicola* Reitter, 1894. By contrary, the second species, *A. (S.) rapuzzii* sp. nov., seems to be isolated within the subgenus because of its unique body shape, with possible relation only to *A. (S.) petranyi* Kotán, 2014.

INTRODUCTION

Agapanthiini Mulsant, 1839 constitute a relatively diverse tribe with almost 100 (sub) genera and more than 700 (sub)species (Tavakilian & Chevillotte, 2020), well represented especially in Southeastern Asia. However, the genus *Agapanthia* Audinet-Serville, 1835, with more than 100 species and subspecies is predominantly distributed in steppe and forest-steppe areas of the Palaearctic Region and particular species occur in Northern Africa, Western Europe, Japan and Eastern China, though the centre of the distribution lies between Eastern Mediterranean and Central Asia. This heterogeneous group of species was reconsidered by Pesarini & Sabbadini (2004), who restored *Epoptes* Gistel, 1857 (currently regarded as a subgenus of *Agapanthia*) and newly erected 9 genera and subgenera of various validity; see also Pesarini & Sabbadini (2007), Sama (2008), Löbl & Smetana (2010) and Kasatkin (2020). Among them, *Smaragdula* Pesarini & Sabbadini, 2004 is generally accepted by most of the recent authors without doubts as a subgenus, partly because of unique and rather consistent appearance of its representatives (all species are shining, metallic blue to green, without any stripes of pubescence on elytra, etc.).

Currently, the subgenus consists of 18 species (*A. (S.) petranyi* Kotán, 2014 is still missing in Tavakilian & Chevillotte, 2020) and about a half of them occur in Eastern Turkey, Transcaucasia, and Northwestern Iran. In this contribution we take the opportunity to study abundant material collected during recent expeditions to Eastern Anatolia (Turkey) and describe two new species, *A. (S.) posti* sp. nov. from Tunceli province and *A. (S.) rapuzzii* sp. nov. from Tunceli and Muş provinces, respectively. The area of Eastern Turkey and especially Tunceli province is rich in Cerambycidae, including *Agapanthia* species, as recently documented especially by Rapuzzi & Sama (2012) and Kasatkin (2020).

We proceed as follows. After a brief description of the methods and statement of the acronyms for collections, in which the studied material is deposited, we focus on particular species in the order as stated above. We also discuss some related species.

MATERIAL AND METHODS

The material examined during the study of the new species described below is deposited especially in authors' collections. For comparison purposes, many type specimens of *Smaragdula* representatives were studied as well.

Type and additional materials are deposited in the collections as follows:

- CDN collection of David Navrátil, Litomyšl, Czech Republic;
CKH collection of Karel Hodek, Brno, Czech Republic;
CPR collection of Pierpaolo Rapuzzi, Ciala, Italy;
CTT collection of Tomáš Tichý, Opava, Czech Republic.

The length of each specimen was measured from the apical margin of clypeus to the apex of elytra.

TAXONOMY

Tribe Agapanthiini Mulsant, 1839

Genus *Agapanthia* Audinet-Serville, 1835

Subgenus *Smaragdula* Pesarini & Sabbadini, 2004

Type species. *Saperda violacea* Fabricius, 1775.

Agapanthia (Smaragdula) posti sp. nov.

(Figs. 1-2, 5, 10, 19-20)

Type locality. Turkey, Tunceli prov., Munzur Valley.

Type material. Holotype (♂): Turkey, Tunceli, Munzur Valley, 23-30 km of Tunceli, 1000-1700 m, 21.-22. V. 2013 (CTT). Paratypes: (1 ♂, 2 ♀♀): Turkey, Tunceli, Munzur Valley, 15-20 km of Tunceli, 1000-1100 m, 18. V. 2012; (6 ♂♂, 5 ♀♀): Turkey, Tunceli, Munzur Valley, 23-30 km of Tunceli, 1000-1700 m, 21.-22. V. 2013; (2 ♂♂, 1 ♀): Turkey, Tunceli, Munzur, 23 km of Tunceli, 1050-1060 m, 6. V. 2014, (CKH, CPR, CTT).

Description. Body length in males 9-12 mm, width 2.6-3.3 mm; females in general rather longer, up to 13 mm, and wider, about 2.1-3.4 mm. Colour deep blue with metallic lustre, sometimes with violet (elytra) or greenish (tibiae) tint. Appendages not so metallic, scutellum and antennae from the third segment almost black.

Head short, narrower than pronotum, with fine and dense puncturation and with distinct line at frons; covered with moderately long black erect setae. At lateral part of frons, clypeus, and mandibles with whitish pubescence; showing two narrow stripes at cheeks, the one from eyes margin to clypeus more distinct. The last segment of palpi evenly pointed out.

Antennae long, filiform; exceeding elytral apices in males by one fifth, in females just a little longer than body. Scapus with apparent granulation; second segment slightly longer than broad; third segment the longest, about 1.4 times as long as the first, fourth segment shorter than the first. Punctuation very dense, covered by very fine pubescence, blackish at outer side, but whitish on inner side and apically; segments 3-7 also with sparse black setae on inner side, long at basal part of antennae, getting shorter apically.

Pronotum slightly transverse, apically almost as broad as basally, widest near middle, with simple surface without any apparent depression on disc, dense punctures (as on head), but interspaces apparently larger than these punctures; almost evenly rounded at sides, apparent constrictions basally and preapically; laterally with long erect setae.

Scutellum transverse, widely rounded apically; less metallic than elytra and pronotum, with silver pubescence apically.

Elytra long and broader than pronotum, about 2.6-2.7 times as long as broad basally; almost parallel, a little convex postbasally, in females preapically widened; with rounded apices. Punctuation dense and rough, finer apically; in lateral view, it could appear as fine wrinkles. Covered with fine erect black setae, apically shorter and sparser than basally, at shoulders very long. Suture indistinct basally, more prominent apically.

Legs long, not distinctly different from other species of the subgenus, including the relative lengths; covered with dense whitish pubescence.

Underside with sparse whitish pubescence.

Male genitalia. Lateral lobes of tegmen long and thin, basally well separated and apically narrowing, with few apical setae. Tegminal strut rather rounded. Penis apically prolonged.

Variability. Small variation in metallic lustre of body. Apical third with more or less apparent whitish hairs.

Differential diagnosis. The new species can be easily distinguished from all related species of *Smaragdula* by its deep blue colour with metallic tint. The body structure is mostly similar to *A. (S.) persicola* Reitter, 1894 - besides greenish colour it differs clearly due to different punctuation on the disc of pronotum, which is evenly very dense, with smaller interspaces and thus not so shining. In the new species, the interspaces are apparently larger than these punctures and show clear metallic lustre. Male genitalia show some differences as well, such as the width of lateral lobes of tegmen. *A. (S.) ozdikmeni* Rapuzzi & Sama, 2012, which was collected in about the same area, is of similar deep blue colour, but does not have so parallel elytra (apparently narrowing apically), and is distinct due to apparent whitish pubescence in apical third of elytra and broad whitish rings at antennal segments.

In about the same area, *A. (S.) frivaldszkyi* Ganglbauer, 1884 and *A. (S.) naciyaee* Rapuzzi & Sama, 2012 can occur as well. While the former can be easily distinguished by generally narrower pronotum with rough punctures and very sparse, deep punctures on otherwise glabrous scapus, the latter differs due to apparently shorter and broader body with rather greenish tint and different punctuation.

Biology. All specimens were collected on stems, leaves or flowers of *Valeriana* sp. or in its vicinity in Munzur Canyon (Munzur Vadisi Milli Parki), not far from the river (Figs. 19-20).

Etymology. Named after Thierry Post, professor of Finance, for his support of the second author.

Distribution. Turkey (Tunceli).

Agapanthia (Smaragdula) rapuzzii sp. nov.
(Figs. 3-4, 6, 11, 21)

Type locality. Turkey, Tunceli prov., Munzur Valley.

Type material. Holotype (♂): Turkey, Tunceli, Munzur valley, 23 km of Tunceli, 1050-1060 m, 6. V. 2014 (CTT). Paratypes: (2 ♂♂, 3 ♀♀): Turkey, Tunceli, Munzur valley, 23 km of Tunceli, 1050-1060 m, 6. V. 2014; (1 ♀): Turkey, Tunceli, 15 km W of Ovacik, 5 km NW Ziyaret, 1400-1600 m, 6. V. 2014; (2 ♂♂, 3 ♀♀): Turkey, Muş, 35 km Muş-Kulp Yolu, Yörecik, 1400-1900 m, 11. V. 2014, (CTT, CPR, CKH).

Description. Body length in males 6.9-9.0 mm, width 1.8-2.8 mm; in females the length is 7.8-12 mm while width is 2.1-3.9 mm. Colour light blue to green with metallic lustre; appendages rather with greenish tint, though mostly missing metallic lustre because of short dense hairs and therefore appearing much darker or almost black, such as in tarsi and antennae except basal segments.

Head short, almost as broad as pronotum, with fine and dense puncturation (however, the puncturation is slightly coarser and sparser than in *A. (S.) posti* sp. nov.) and with distinct line at frons; covered with very long erect black setae. At lateral part of frons, clypeus, and mandibles with whitish pubescence; showing two narrow stripes at cheeks, the one from eyes margin to clypeus more distinct. The last segment of palpi very short, axe like.

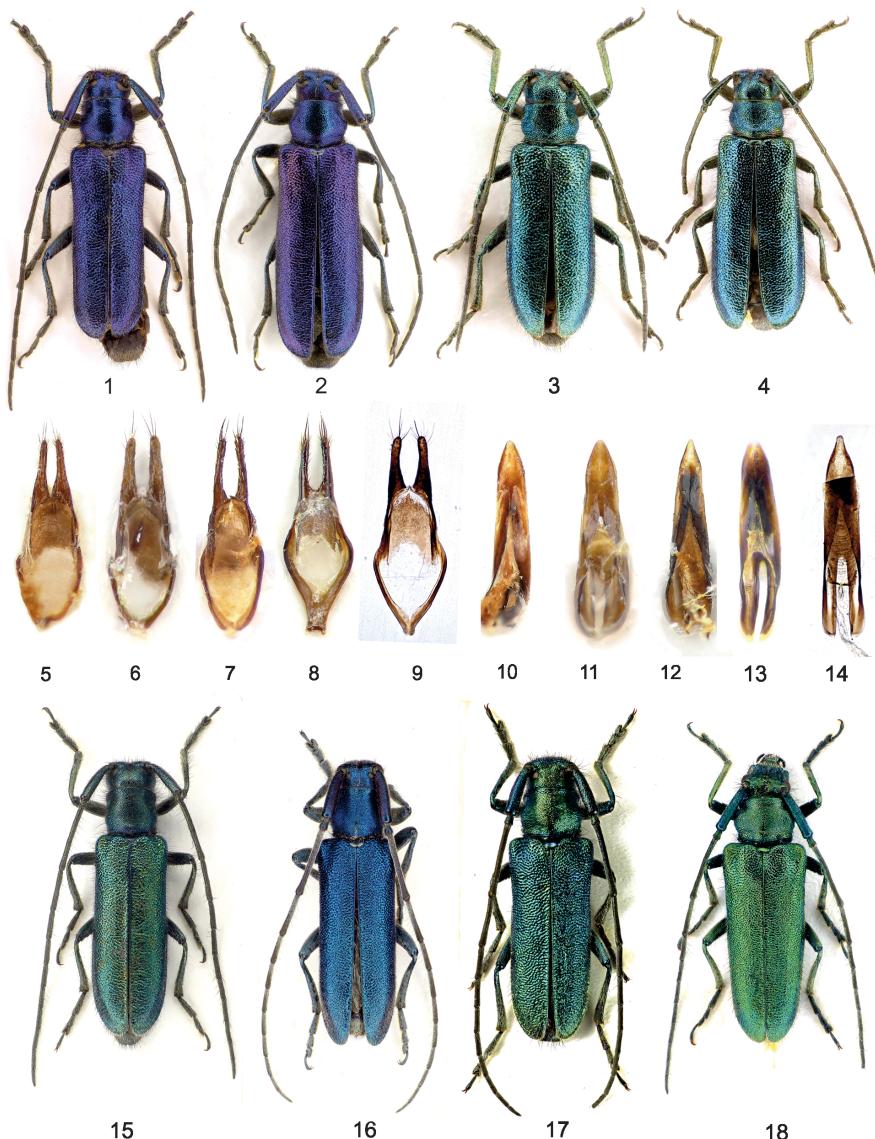
Antennae long, filiform with fine puncturation; exceed elytral apices in males by one fifth, while in females reach about four fifths of the body. Second segment slightly longer than broad, third segment is the longest one, the fourth shorter than the first. Scapus granulated, basally flattened and with few erect black setae; segments 3-7 also with sparse black setae at inner side, long at basal part of antennae, getting shorter apically; from third segment covered by very fine whitish pubescence.

Pronotum strongly transverse, apically almost as broad as basally, widest near middle, with simple surface without any apparent depression on disc, dense punctures (as on head, but sometimes appearing as small wrinkles) and almost evenly rounded at sides, apparent constrictions basally and preapically; scutellum strongly transverse, very short; shining with some puncturation, with silver pubescence apically.

Elytra relatively short, broader than pronotum, about 2.3-2.6 times as long as broad basally, slightly wider in females than in males; little convex postbasally, widest at apical third; with rounded apices. Puncturation dense and rough, finer apically; covered with fine erect black setae, apically longer and sparser than basally. Suture rather indistinct basally, more prominent apically. Depression at shoulders indistinct.

Legs long, not distinctly different from other species of the subgenus, including the relative lengths; covered with dense recumbent whitish pubescence and long erect black setae.

Underside with sparse whitish pubescence.



Smaragdula posti sp. n.: 1 – HT ♂, 2 – PT ♀; 5 – paramers, 10 – penis; 19 – type locality

Smaragdula rapuzzi sp. n.: 3 – HT ♂, 4 – PT ♀, 6 – paramers, 11 – penis; 20 – type locality

Smaragdula odzikmeni (Turkey): 7 – paramers, 12 – penis, 15 – PT ♂

Smaragdula persicola (Iran): 8 – paramers; 13 – penis, 16 – ♂

Smaragdula petranyi (Iran): 9 – paramers, 14 – penis; 17 – ♂, 18 – ♀, 21, 22, 23 – biotope with host plant

Photos by K. Hodek, except photos 9, 14, 17 (L. Dembický) and 19-24 (T. Tichý)



19



20



21



22



23



24

Male genitalia. Lateral lobes of tegmen long, basally very broad, with few apical setae. Tegminal strut rather rounded. Penis apically broad, prolonged and well rounded, its dorsal struts rather broad.

Variability. Small variation in metallic lustre of body.

Differential diagnosis. The new species can be easily distinguished from other species of subgenus *Smaragdula*, including *A. (S.) frivaldszkyi* Ganglbauer, 1884, *A. (S.) naciyaee* Rapuzzi & Sama, 2012, *A. (S.) ozdikmeni* Rapuzzi & Sama, 2012, as well as *A. (S.) posti* sp. nov., all known from about the same area, due to relatively short and broad body, which is not oval as in other species, but rather flattened, and remarkably transverse pronotum and short antennae in both sexes.

The only other species of *Smaragdula* with relatively short and broad pronotum and elytra are *A. (S.) gemella* Holzschuh, 1989 and *A. (S.) petranyi* Kotán, 2014. Both species, however, have quite different genitalia; moreover, both are generally larger, less shining, with antennae apparently longer than body, while *A. (S.) rapuzzii* is generally smaller, with shorter antennae, not so glabrous scutellum and transverse pronotum with denser puncturation.

Biology. Most specimens were collected on *Prangos* sp. in forest-steppe areas of eastern Turkey (Fig. 21).

Etymology. Named after Pierpaolo Rapuzzi (Ciala, Italy) who significantly contributed to the knowledge of the genus.

Distribution. Turkey (Tunceli, Muş).

***Agapanthia (Smaragdula) ozdikmeni* Rapuzzi & Sama, 2012**
(Figs. 7, 12, 15)

Type material examined. Paratypes (19 ♂♂, 21 ♀♀): Turkey, Tunceli prov., 2-7 km NW of Pülümür, 1550-2100m, 26-27. VI. 2009, (CKH, CTT).

Additional material: (16 spec.): Turkey, Tunceli, 2km NW of Pülümür, 1550m, 18. VI. 2014, (CKH, CTT).

Remark. This species has been described from about the same area as *A. (S.) posti* sp. nov. and *A. (S.) rapuzzii* sp. nov., but it is easily distinguished from both of them (see above).

***Agapanthia (Smaragdula) persicola* Reitter, 1894**
(Figs. 8, 13, 16)

Additional material: 2 spec.: Iran, Kordestan prov., 36 km S Saqqez, 27.05.2017, (CDN); 6 spec.: Iran, Gilan prov., 12 km W Rostamabad, 1550 m, 6.VI.2017, (CKH); 6 spec.: Iran, Golestan prov., 4 km N of Dasht, Golestan Valley 900 m, 17.V.2017, (CKH); 1 spec.: Iran, Gilan prov., 6 km of Majara, 2200 m, 3.VI.2017, (CKH); 1 spec.: Iran, W. Azerbaijan, 14 km S Kaleybar, 1430 m, 1.VI.2017, (CKH); 1 spec.: Iran, Mazandaran prov., Alamdar Mahaleh, 5 m, 17.V.2017, (CKH).

***Agapanthia (Smaragdula) petranyi* Kotán, 2014**
(Figs. 9, 14, 17-18, 22-24)

Type material (according to the description). Holotype (♂): Iran, Kordestan Province, Askaran, swept & singled, 35° 05' 04.13" N, 46° 52' 58.56" E, 1350 m, 18-19.IV.2010, leg. K. Székely, (Hungarian National History Museum).

Additional material: 1 ♂, 1 ♀: Iran, prov. Kermanshah, 28. IV. 2019, (CTT, CKH).

Remark. This species from Western Iran has not been reported since its description. It has relatively short and wide pronotum as well as elytra and is similar in appearance to *A. (S.) gemella* Holzschuh, 1989. According to the description it feeds on *Astragalus* (Fabaceae), which was confirmed by the second author in Kermanshah province in April 2019 (Figs. 22-24). Although it has some similarity to *A. (S.) rapuzzii*, it can be easily distinguished by longer antennae, pronotum and elytra.

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