

Review of the subgenus *Smaragdula* Pesarini & Sabbadini, 2004, and two new species from Turkey (Coleoptera: Cerambycidae: Lamiinae, Agapanthiini)

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HODEK, K.: *Review of the subgenus Smaragdula Pesarini & Sabbadini, 2004, and two new species from Turkey (Coleoptera: Cerambycidae: Lamiinae, Agapanthiini).*

Abstract: In the present contribution, the author summarizes his knowledge concerning the subgenus *Smaragdula* supplemented by a key to species and two new species of the subgenus *Smaragdula* Pesarini & Sabbadini, 2004, *Agapanthiini* Audinet-Serville, 1835. The two new species come from Turkey. Both of them, *Agapanthia (Smaragdula) grosseri* **sp. nov.** and *Agapanthia (Smaragdula) kadleci* **sp. nov.** perfectly fall into the homogeneous subgenus *Smaragdula* as to their habitus. *Agapanthia (Smaragdula) grosseri* **sp. nov.** is similar to the species *Agapanthia (Smaragdula) chylybaea*. *Agapanthia (Smaragdula) kadleci* **sp. nov.** resembles the species *Agapanthia (Smaragdula) lais*. The comparative analysis presented below describes the differentiation of the two new species from other species of the subgenus. The text of the contribution is supplemented by appropriate photographs.

Keywords: Taxonomy, description, new species, key, Coleoptera, Cerambycidae, Lamiinae, Agapanthia, *Smaragdula*, Turkey

Introduction

Within the framework of the tribe Agapanthiini, 96 genera comprising 740 species (TAVAKILIAN & CHEVILLOTTE 2020) are currently known. The Palaearctic Region is inhabited by 80 genera (DANILEVSKY 2021), the most numerous genus being *Agapanthia* Audinet-Serville, 1835 including 10 subgenera. One of them is the subgenus *Smaragdula* established by PESARINI & SABBADINI (2004). This subgenus currently comprises 20 species, the westernmost occurrence is known from Spain and Portugal and the furthermore occurrence continues over the whole south and central Europe eastward to the Central Asian Kyrgyzstan and a part of Siberia. In the southward direction, representatives of the group reach Israel and Jordan. The area of Turkey appears to be the centre of the occurrence, from which the highest number of species have still been described (DANILEVSKY 2021).

The subgenus *Smaragdula* is a considerably homogeneous group including more or less similar species sharing the peculiar metallic bright colour of the whole body, i. e. of both dorsal and ventral sides including legs and antennae. The body is elongate, cylindrical, only in *A. (S.) rapuzzii* Hodek & Tichý, 2021 it is rather short and flat. The head scapus, pronotum and elytra exert characteristic punctation. The punctation density and system, particularly those on the pronotum, are characters important for particular taxa.

A further distinct feature of the group is the body pubescence consisting of rather long, erect setae and short decumbent ones. The longer setae are black or dark brown, sparse and more or less erect. Two types of the decumbent pubescence are present – dark and light. The light (white, greyish white or yellowish) pubescence is usually distinct on the frons, genae, and on pronotum typically arranged in two or three longitudinal stripes (central stripe runs through the middle, two lateral stripes are present on sides). The stripes – particularly the central one – may be more or less reduced. The elytra are mostly covered with light and dark pubescence, the light one being usually more distinct in the apical half. In almost all taxa in this group, the elytral punctation indicates two, more or less distinct longitudinal ribs on each side. All three pairs of legs including tarsi and the body underside are usually equipped with yellow pubescence. However, antennae with a dark decumbent pubescence and with longer setae on the inner side, have rather more frequently white to pale grey pubescence from antennomere 3, typically arranged in pale circles.

Given the fact that in terms of phylogeny the group is young, the orientation in the group *Smaragdula* can be rather complicated since most identification characters have not yet been stabilized. This particularly concerns the shape variability of male genitals, where even individuals from one location can exert considerable differences in the shape of parameres (stronger/weaker curvature angle), and/or in the aedeagus – sides straight in the apical third with more or less distinct situation (Fig. 10). A similar problem is also known in certain taxa of the group *Phytoecia*. Due to this, in my opinion, the shape of copulatory organs can be considered as an auxiliary rather than primary identification character. The problem is similar in the shape of the pronotum, which is considerably variable in most taxa of the group in the dorsal view. Larger and well developed individuals have usually the pronotum conspicuously widened on sides, (the pronotum is transversal or square-shaped, with moderately coarser sculpture) and smaller individuals of the same taxon have the pronotum slightly widened only on sides (the pronotum is longitudinal). Representatives of two different taxa can be seemingly considered in the case of these limit parameters (Fig. 9). But even in case of these limit parameters, the pronotum punctation remains the same and typical for the taxon. As already mentioned above, there is a variable body pubescence, which can be very dense in some individuals and missing in some others. This is particularly the case of the pale pubescence of the head, pronotum and antennae, but also of legs, thorax and abdomen. In contrast, the variability of the elytral pubescence is usually not so distinct. The sexual dimorphism is not very differentiated in the group. There are differences in the length of antennae, which are longer in males compared to females; the elytra width at humeri are sometimes wider in females compared to males.

As to the bionomics, the species of the group *Smaragdula* are monophagous to oligophagous, seldom polyphagous. The species can be divided according to host plants into three basic groups as follows. In the first group, the development depends on different species of the family Fabacea (*Astragalus* sp., *Psoralea bitumonosa*, *Onobrychis*, *Erophaca baetica orientalis*); the group includes the following taxa: *A. (S.) pesarini* Sama & Rapuzzi 2010, *A. (S.) amitina* Holzschuh, 1989, *A. (S.) psoraleae* Sama & Rapuzzi, 2010, *A. (S.) izzilloi* Rapuzzi, Sama & Kotán, 2013, *A. (S.) nacyiae* Rapuzzi & Sama, 2012, and *A. (S.) petranysi* Kotán, 2014. In the second group, the development is associated with species of the family Dipsacaceae, particularly with the genera *Knautia*, *Cephalaria*, and *Dipsacus*; it includes the following taxa: *A. (S.) frivaldszkyi* Ganglbauer, 1884, *A. (S.) intermedia* Ganglbauer, 1884, *A. (S.) osmanlis* Reiche & Sauley, 1858, and *A. (S.) ozdikmeni* Rapuzzi & Sama, 2012. The third group is associated with plants of

the family Asteraceae. It includes the following species: *A. (S.) lais* Reiche & Saulcy, 1858, *A. (S.) viti* Rapuzzi & Sama, 2012, and *A. (S.) chalybaea* Faldermann 1837. The species, *A. (S.) rapuzzii* Hodek & Tichý, 2021 whose imagines were found on a plant from the genus *Prangos* (Apiaceae) and *A. (S.) posti* Hodek & Tichý, 2021, which was found on a plant from the genus *Valeriana* (Caprifoliaceae) seem to be exceptional. Polyphagous species are contrastingly *A. (S.) violacea* Fabricius, 1775 and obviously also *A. (S.) persicola* Reitter, 1894.

Mature imagines of the subgenus *Smaragdula* search for host plants, on which they are also dwelling. Larvae are developed in above-ground parts of plant stalks. The development typically takes a period of one year.

Material and methods

During the study of the subgenus *Smaragdula*, more than 2500 specimens from private and institutional collections were examined. A proportion of this material is specified in the text. In some material, it was impossible to present all the data; this particularly concerns the extensive material from the National Museum in Prague.

In the compilation of the key, I attempted to avoid too variable characters, which could be rather misleading in the identification. The key is supplemented by photographs of pronota of certain taxa. It is furthermore supplemented by photographs of imagine habitus and details of body parts (head and male copulatory organs). The work presented here cannot include all cases of the variability, which is also beyond its scope, but the key below should facilitate the identification work.

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

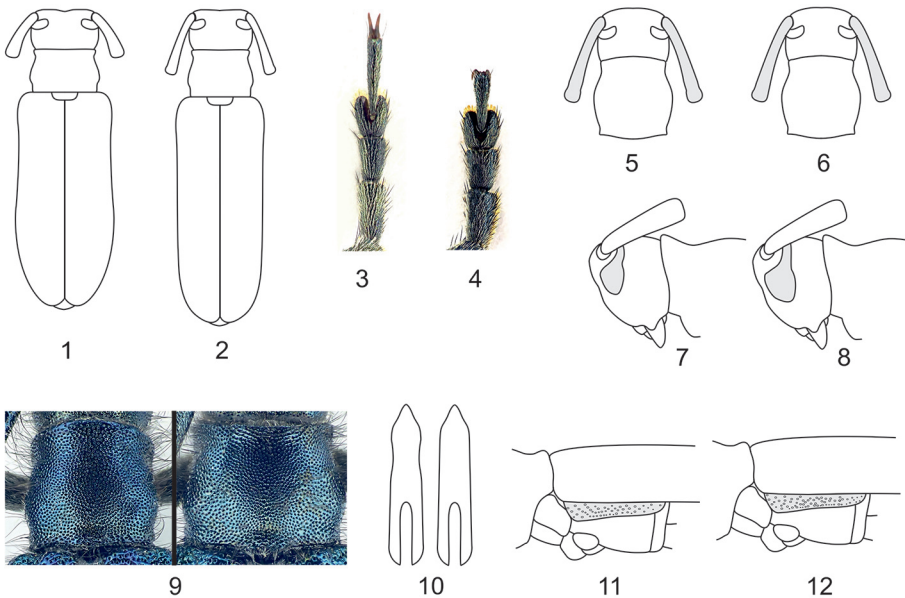
- NMP – collection of Národní Museum Praha, Czech Republic
- NMW – collection of Naturhistorisches Museum Wien, Austria
- TAU – collection of Tel Aviv University, Israel
- DN – private collection of David Navrátil, Litomyšl, Czech Republic
- JCH – private collection of Jiří Chvalkovský, Bořetín, Czech Republic
- JK – private collection of Josef Kadlec, Varnsdorf, Czech Republic
- KH – private collection of Karel Hodek, Brno, Czech Republic
- LH – private collection of Lubomír Havlík, Polička, Czech Republic
- LK – private collection of Ladislav Klapka, Česká Lípa, Czech Republic
- LS – private collection of Lukáš Skořepa, Dačice, Czech Republic
- MČ – private collection of Matěj Čermák, Praha, Czech Republic
- MD – private collection of Mikhail Danilevsky, Moscow, Russia
- OK – private collection of Ondřej Konvička, Vsetín, Czech Republic
- OS – private collection of Ondřej Sabol, Ostrava-Nová Bělá, Czech Republic
- PJ – private collection of Pavel Jelínek, Brno, Czech Republic
- PK – private collection of Petr Kabátek, Praha, Czech Republic
- PR – private collection of Pierpaolo Rapuzzi, Prepotto, Italy
- PŠ – private collection of Pavel Štěpánek, Kladno, Czech Republic
- TL – private collection of Tomáš Lengál, Olomouc, Czech Republic
- TP – private collection of Tomáš Peterka, Veselí nad Lužnicí, Czech Republic
- TT – private collection of Tomáš Tichý, Ostrava, Czech Republic
- VS – private collection of Vladimír Skoupý, Kamenné Žehrovice, Czech Republic
- WG – private collection of Walter Grosser, Opava, Czech Republic
- ZK – private collection of Zdeněk Košťál, Pardubice, Czech Republic

List of geographical abbreviations:

AB – Azerbaijan, AL – Albania, AR – Armenia, AU – Austria, BE – Belgium, BU – Bulgaria, CT – Russia: Central European Territory, CR – Croatia, CY – Cyprus, CZ – Czech, ES – Spain, FR – France, GE – Germany, GG – Georgia, GR – Greece, HU – Hungary, IN – Iran, IQ – Iraq, IS – Israel, IT – Italy, JO – Jordan, KI – Kyrgyzstan, KZ – Kazakhstan, LA – Latvia, LE – Lebanon, LU – Luxembourg, MC – Macedonia, MD – Moldavia, NT – Russia: North European Territory, PL – Poland, PT – Portugal, RO – Romania, SB – Serbia, SK – Slovakia, SL – Slovenia, SP – Spain, ST – Russia: South European Territory, SY – Syria, SZ – Switzerland, TD – Tajikistan, TR – Turkey, UK – Ukraine, TM – Turkmenistan, UZ – Uzbekistan.

List of other abbreviations used:

HT – holotype; PT – paratype; ST – syntype



Figs 1-12: Details for the determination key

Key *Smaragdula*

- 1 – Elytra only with black pubescence, without pale tomentum 2
 – Elytra with distinct pale as well as black pubescence 9
- 2 – Body short and flat (Fig. 1) *A. (S.) rapuzzii*
 – Body not flat, more or less uniformly elongate (Fig. 2) 3
- 3 – Elytra with sparse, more or less erect and long black setae *A. (S.) frivaldszkyi*
 – Elytra with both decumbent pubescence and erect setae 4
- 4 – Whole body conspicuously unicolour – rich jacinth blue *A. (S.) posti*
 – Body usually with various metallic tinges, sometimes only more or less black..... 5

- 5 – Pronotal punctures fine and unifom, without forming wrinkles 6
 – Pronotal punctures coarser, with more or less distinct wrinkles in some places 7
- 6 – Antennae from 3rd antennomere white ringed, antennae in males exceeding elytra by 6 antennomeres; taxon known only from Peloponnesus (GR)..... *A. (S.) izzilloi*
 – Antennal segments from antennomere 3 onwards entirely with light pubescence or only dark, rarely lightly ringed, antennae in males exceeding elytra 5 antennomeres *A. (S.) violacea*
- 7 – Antennomeres 3-10 without metallic lustre, only antennomere 3 with weakly indicated metallic lustre..... *A. (S.) grosseri* sp. nov.
 – Antennae from antennomere 3 with distinct metallic lustre 8
- 8 – Whole elytra equipped with rather long, erect, black se..... *A. (S.) gemela*
 – Elytra with rather long setae only in anterior half..... *A. (S.) kadleci* sp. nov.
- 9 – Pronotal punctation fine and unifom, without forming wrinkles 10
 – Pronotal punctures coarser, with more or less distinct wrinkles in some places 11
- 10 – Elytra with white pubescence only in posterior third *A. (S.) persicola*
 – Elytra with dense white pubescence almost throughout *A. (S.) intermedia*
- 11 – Pronotum with more or less distinct stripes of pale tomentum on sides and disc 12
 – Pronotum without stripes of pale tomentum 15
- 12 – Elytra with dense yellowish pubescence, antennae from antennomere 3 with narrow circles of pale tomentum only at base *A. (S.) vittii*
 – Antennae from antennomere 3 with wide circles of pale tomentum 13
- 13 – Body unicolour bright blue, elytra with very fine white pubescence only in posterior half..... *A. (S.) ozdikmeni*
 – Body typically with various metallic shades, white pubescence also present in anterior half of elytra..... 14
- 14 – Basal half of elytra with rather long erect setae, male pronotum with coarse punctures forming fin wrinkle in some places..... *A. (S.) chalybaea*
 – Basal third of elytra with rather long erect setae, pronotum with uniform punctures not forming wrinkles *A. (S.) osmanlis*
- 15 – Scutellum smooth throughout, distinctly bright, impunctate, glabrous ... *A. (S.) nacyiae*
 – Scutellum with more or less distinct punctation and pubescence, sometimes with very fine punctures and thin setae on sides, with shining and smooth central area 16
- 16 – Scutellum with fine punctures and setae only on sides, smooth and shining in central area; in dorsal view, protarsomere 4 longer than protarsomeres 2 and 3 combined (Fig. 3)..... *A. (S.) petranyi*
 – Scutellum with more or less distinct punctation, if scutellum is prevalently shining, then protarsomere 4 is shorter than or as long as protarsomeres 2 and 3 combined in dorsal view (Fig. 4) 17
- 17 – Whole body with distinct, long, erect, black setae *A. (S.) amitina*
 – Elytra in posterior third without long, erect, black setae 18
- 18 – Antennae with pale circles from antennomere 4 *A. (S.) lais*
 – Antennae free of pale circles produced by pubescence 19

- 19 – Species from areas of Near East to Transcaucasia 20
 – Species from areas of Central Asia (KZ KG UZ) 21
- 20 – Scapus typically throttled before end, body relatively more robust and more shining, species known from LE IS (Fig. 5) *A. (S.) psoraleae*
 – Scapus typically only slightly throttled on outer side, body narrower and more elongate, species known from TR AR GG (Fig. 6) *A. (S.) pesarini*
- 21 – Eyes larger, inferior eye lobe as long as or only slightly longer than tempora; antennae sometime brown from antennomere 3 (Fig. 7) *A. (S.) incerta*
 – Eyes smaller, inferior eye lobe shorter than tempora, antennae black from antennomere 3 (Fig. 8)..... *A. (S.) talassica*

Taxonomy

Tribe *Agapanthiini* Mulsant, 1839

Genus *Agapanthia* Audinet-Serville, 1835

Subgenus *Smaragdula* Pesarini et Sabbadini, 2004

Type species: *Saperda violacea* Fabricius, 1775

Agapanthia (Smaragdula) amitina Holzschuh, 1989

(Figs.: 11, 13, 35, 57, 79)

amitina Holzschuh, 1989: 174, Type locality: Iran, Zentralprovinz, 35 km NW Ghazvin, 1500 m, 19.-21.V. 1976.

Geographic distribution: IR.

Material examined: 1 ex. PT – Iran, Zentralprovinz, 35 km NW Ghazvin, 19.- 21.V.1976 (ZK); 4 ex. – Iran, 64 km NE Minudasht, 1006 m, p. Khorásán, 19-20.V.2003 (PK); 7 ex. – Iran, Qazvin prov., 4 km W Kouhin, 1500 m, 24.5.2018, type locality (KH); 15 ex. – Iran, West Azerbaijan prov., 11 km SE of Serow, 1950 m, 27.-28.5.2019 (KH); 9 ex. – Iran, West Azerbaijan prov., 11 km SE of Serow, 1950 m, 30.-31.5.2018 (KH); 17 ex. – Iran, Qazvin prov., 4 km W Kouhin, 1500 m, 31.5.2012, type locality (KH).

A smaller species (6-11 mm), colour variable, yellowish green, green, blue to blackish brown, very similar to *A. (S.) pesarini*. Pronotum with dense punctures, sometimes forming indicated wrinkles at basal and apical margins. White stripes sometimes indicated on pronotum. Antennae with very weak pale pubescence without forming rings or only apical ends of dark antennomeres. Scutellum with more or less dense white pubescence. Elytra parallel, with rounded apex, densely punctate, without wrinkles, apically with weak white pubescence, with long, erect, black setae throughly.

Remarks: From a similar species *A. (S.) pesarini*, it can be well differentiated, particularly based on the presence of long, erect, black setae covering the whole body but being sparser than in the apical half of the elytra. In *A. (S.) pesarini*, the long erect setae in the posterior third of elytra are absent. A further differentiating character is the appearance of the episternum punctation. It is nearly regular in *A. (S.) amitina* (Fig. 11) whereas in *A. (S.) pesarini*, it is rather chaotically (irregularly) arranged (Fig. 12).

Bionomics: Imagines can be found on *Astragalus* sp. (Fabaceae), which is also likely to be its host plant.

Agapanthia (Smaragdula) chalybaea Faldermann, 1837

(Figs.: 14, 36, 58, 80, 81)

chalybaea Villiers, 1967: 303, Type locality: Transcaucasia.

Geographic distribution: AB, AR, GG, IN, TR.

Material examined: 1 ex. – Armenia, Martuni 2 km W, 1520 m 5.VI.2016 (LK); 18 ex. – Armenia, 1,5 km OR Lichk, 31.V.2015 (KH); 11 ex. – SV Armenia, N. Tasthun, 19.-22.6.2012 (PJ); 2 ex. – Armenia, Martuni, 13.6.2014 (TL); 1 ex. – Armenia, N Schvanidzor, 3.6.2013 (TL); 2 ex. – Armenia, N Tashtun, 18.6.2014 (TL); 3 ex. – Armenia, Lichk env., 31.5.2013 (TL).

Body length 10-17.5 mm. Colours variable, rather dark metallic green to greenish-blue, rarely even black with bronze lustre (Fig. 80). On pronotum with three stripes of pale pubescence, which can be more or less reduced or even quite missing. Pronotum with dense and moderately coarse punctation, which sparser at disc, at basal and apical margins forming wrinkles in males. Antennae with white pubescence from antennomere 3, antennomeres usually dark apically. Scutellum with dense, white pubescence. Elytra moderately narrowed towards apex, apex rounded. Elytra with dense punctation not forming wrinkles, but sometimes forming two indicated longitudinal ribs on each side. Elytra densely pubescent, in basal half with long, erect, dark setae, whole area with moderately erect, white and black setae, white pubescence being denser than black one.

Remarks: Similar to *A. (S.) osmanlis*. Based on longer setae on elytra it can be recognised: in *A. (S.) osmanlis*, their length reaches about the end of basal third; that of *A. (S.) chalybaea* is about the end of basal half of elytra. In *A. (S.) chalybaea*, protarsomeres 2 and 3 combined are usually as long as or slightly longer than protarsomere 1; in *A. (S.) osmanlis* protarsomeres 2 and 3 combined are distinctly longer than basal protarsomere.

Bionomics: On *Cephalaria procera* (Asteraceae).

Agapanthia (Smaragdula) frivaldszkyi Ganglbauer, 1884

(Figs.: 15, 37, 59, 82, 83)

frivaldszkyi Ganglbauer, 1884: 546, Type locality: Kleinasien [Turkey].

Geographic distribution: BU, RO, IS, IN, IQ, JO, SY, TR.

Material examined: 4 ex. ST – serie (NMW); 1 ex. – Turkey, Elazig p., 4,5 km NE of Elazig, 23.5.2011 (LS); 1 ex. – Turkey, Mus p., 10 km E of Solhan, 30.5.2011 (LS); 1 ex. – Israel, Shoham, 30.III.2012 (TAU); 1 ex. – Israel, Qedumin 2-3 km N Nahal Te'anim, 300-400 m, 1.IV.2016 (TAU); 1 ex. – Israel, Hare Gilboa', Har Avinadav, 15.IV.2012 (TAU); 1 ex. – Israel, Lyyon, Nature Reserve, 1.V.2006 (TAU); 1 ex. – Israel, Qedumim, 1 km NNE Immam Ali Cenpotaph, 388-399 m, 25.III.2016 (TAU); 1 ex. – Israel, N Keziv, 6. IV.2001 (TAU); 1 ex. – Israel, Nave, Salom, 19.IV.1997 (TAU); 1 ex. – Turkey, Antakaya, 10.V.2000 (TAU); 1 ex. – Syria, Qala' at al-Hosn, E of Tartus, 450m, 19.IV.2007 (TT); 8 ex. – Turkey, Buglan gecidi, E of Solhan, Mus, 1600-1800m, 23.-24.VI.2009 (TT); 10 ex. – Iran, Kordestan prov., 3,5km E of Dezili, 1332 m, 26.V.2017 (DN); 28 ex. – Turkey, Mus, Buglan Gecidi pass, 23.06.2014 (WG); 4 ex. – Turkey, Mus, Buglan Gecidi pass, 24.06.2010 (WG); 8 ex. – Iran, Kurdistan p., 1 km E Dezli, 12.6.2016 (LS); 25 ex. – Iran, Kordestan prov.,

Dezli env.. 5.6.2018; 7 ex. – Iran, West Azerbaijan prov., 11 km SE of Serow, 1950 m, 27.-28.5.2019 (KH); 2 ex. – Turkey, Antalya pr., Alanya Boztepe, 11.-21.5.2005 (PJ); 23 ex. – Iran, Kordestan prov., Dezli env. 1300 m. 22.5.2019 (PJ); 1 ex. – Turkey, prov. Mus., 60 km NW Mus, 1629 m, Buglan Gec. 22.-42.6.2002 (TL); 38 ex. – Iran, Kordestan prov., 3.5 km E of Dezli, 26.5.2017 (TL).

Body length 6.5-13 mm. Imagines mostly dark blue, sometimes rather green to black, with violet tint. Some individuals with distinctly dark anterior half of body. Head very coarsely and deeply punctate. Scapus also with coarse to wrinkled punctation. Pronotum with coarse wrinkled punctation, which is sometimes sparser and without wrinkles in anterior half of body. Antennae with more or less white pubescence, without rings. Elytra with strong punctation, which is usually rather sparser at base, throughout pronotum and elytra area only with long, erect, black pubescence.

Remarks: For the species *A. (S.) frivaldszkyi*, the pubescence formed by long, erect, black setae without decumbent setae is typical. A further typical feature is in the distinctly coarse punctation of the head, pronotum and scapus. I know only individuals from a location in eastern Turkey having the pronotal punctation distinctly sparser. More numerous material will be necessary for further studies.

Bionomics: Imagines occur on *Cephalaria speciosa*, *Cephalaria microcephala* (*Dipsacus*) but probably also on further species of *Cephalaria*.

***Agapanthia (Smaragdula) gemella* Holzschuh, 1989**

(Figs.: 16, 38, 60, 84)

gemella Holzschuh, 1989: 175, Type locality: Cyprus, Prov. Limassol, Mandria, 1000 m, 20.IV.1980.

Geographic distribution: CY.

Material examined: 7 ex. – Cyprus, 15 km SSE Pamos, 26.3.2007 (LS); 1 ex. – Cyprus, Lemesos, Melini env, III.2012 (KH); 1 ex. – Cyprus, Pano Panagia (Pafos), 1.IV.2017 (KH); 11 ex. – Cyprus, Alona env., 25 km N Lemesos, 3.4.2006 (WG); 11 ex. – Cyprus, Alona env. 25 km N Limassol, 1.-3.IV.2006 (PJ).

Body length 9-12 mm, colour most frequently yellowish green with bronze tint, sometimes blueish green. Pronotum with dense punctation forming weak wrinkles in basal half. Antennae with weak greyish white pubescence, first three antennomeres with metallic lustre. Scutellum with punctation and white pubescence, sometimes almost entirely smooth and shining, only with individual thin hairlike setae present laterally. Elytra parallel, rounded on apex, with strong punctation, sometimes forming weak transversal wrinkles in basal part, with dark, erect setae reduced in length from basal third towards apex.

Remarks: An endemic species known only from Cyprus.

Bionomics: Imagines are found on *Erophaca baetica orientalis* (Fabaceae).

***Agapanthia (Smaragdula) grosseri* sp. nov.**

(Figs.: 17, 39, 61, 85, 86, 87, 88).

Type material: Holotype ♂ - Turkey, Erzurum p., 50 km W Ispir, 1420 m (KH); paratypes 8 ex. (4♂♂ 4♀♀) - Turkey, Erzurum p., 50 km W Ispir, 1420 (WG).

Description: Body length 8.1-12.2 mm in males, 9.2-12.9 in females. Mostly bicolour, with metallic lustre, anterior half of body darker to matte black (without metallic lustre in the last case).

Head slightly narrower than, or as wide as pronotum with dense punctuation forming more or distinct central line on vertex. Head surface covered with sparse, long, erect black setae. Frons above labium with white tomentum forming two parallel stripes: the first, more distinct one runs from inferior side of eye to labium, second, less distinct one runs over genae. Palpi continuously pointed, black, sometimes with fine metallic lustre, distinctly paler only on apex. Antennae long, exceeding body by 25-30%, only in males moderately longer compared to females. From third antennomere, antennae covered with very fine whitish tomentum giving impression of pale rings in first third or narrowly only at base. Scapus wrinkled-granulate, with very sparse, erect setae, antennomeres 3-5 also with rather long, erect setae on inner side. Antennae dark, first four antennomeres sometimes with metallic lustre. Scapus slightly throttled before end, its length corresponds to 4/5 third antennomere length.

Pronotum moderately longitudinal, throttled between anterior and posterior margins, distinctly convex behind anterior and posterior margins, but sometimes almost parallel, moderately widened only on sides. Pronotum as well as head surfaces very densely punctate, punctures mostly forming short and fine wrinkles at anterior as well as posterior margins (Fig. 17). Pronotum with sparse, long, erect, black setae. Scutellum rectangular, with unique, fine punctuation, more or less metallic, covered with fine, white tomentum.

Elytra moderately narrowing backwards, but sometimes rather parallel, finely convex behind humeri, rounded at end or with indicated obtuse angle. Elytral punctation very dense, rather coarse, particularly in anterior third, becoming considerably finer backwards. Punctation on elytra surface area leading to impression of rather indistinct transversal wrinkles. Elytral suture distinct throughout with exception of first 1/5. Elytra equipped with very sparse, erect, black setae, which shorter compared to pronotum. Longest setae present in first 1/3. Elytral area without whitish pubescence, but on elytral apex, exceeding whitish pubescence observed from ventral side. Elytral width at humeri corresponds to 1/4-1/3 total elytral length. Ventral side, particularly abdominal ventrites, sparsely equipped with rather long, dark setae and rather fine, which absent at knees and on tibiae, whitish tomentum.

Legs (anterior, intermediate as well as posterior ones) including tarsi, covered with fine and dense whitish tomentum, which absent at knees and on tibiae. All femora and tibiae also equipped with individual dark, long and erect setae. Colour dark, more or less metallic.

Genitals: Parameres rather coarse, quite variable in shape. Equipped with few setae on apices. Aedeagus variable similarly as parameres, moderately narrowed backwards and with blunt apex (Fig. 38).

Variability: *Agapanthia (Smaragdula) grosseri* is a species relatively variable in colour. But basic colour is metallic blue-green, sometimes blue or green. Anterior half of body mostly considerably darker, sometimes even black and without distinct lustre. Further variability is found in male genitals: differences in both parameres and aedeagi.

Differential diagnosis: Contrastingly to *Agapanthia (Smaragdula) chylybaea*, *Agapanthia (Smaragdula) grosseri* **sp. nov.** does not have white tomentum stripes on sides of the pronotum, the pronotum is also longitudinal in contrast to transversal pronotum of *A. (S.) chalybaea*. In *A. (S.) grosseri* **sp. nov.**, the white pubescence of elytra is also distinctively absent compared to *A. (S.) chalybaea*, whose elytra are

covered with considerable whitish hairs. *A. (S.) grosseri* **sp. nov.** can also be differentiated based on the absence of whitish pubescence on elytra from a further similar species *Agapanthia (Smaragdula) persicola* in which the whitish pubescence is distinct in posterior third of elytra. A further differentiating character is the pronotum punctuation, which is definitely uniform in *Agapanthia (Smaragdula) persicola* without forming wrinkles. *Agapanthia (Smaragdula) grosseri* **sp. nov.** can also be differentiated from the two above mentioned species by its shorter and stronger parameres even in spite of the general variability in male genitals within the whole subgenus *Smaragdula* (*Agapanthiini*).

Distribution and biology: The new species is known from Turkey, Erzurum province, Ispir surroundings (Fig. 84, Type locality). The host plant is unknown.

Etymology: The taxon was named after its collector, Walter Grosser.

Agapanthia (Smaragdula) incerta Plavilstshikov, 1930

(Figs.: 1, 18, 40, 62, 89)

incerta Plavilstshikov, 1930: 12, Type locality: Buchará mer., Garm, 15.6.

Geographic distribution: KI, TD, UZ.

Material examined: 1 ex. – Turkmenia, Kara-Kala, Gerkez, 18.5.1993 (PK); 1 ex. – Kyrgyzstan, Talas Mt., Manas MTS., 21.5.1999 (KH); 2 ex. – Uzbekistan, Samarkand, Aman-Kutan, 8.5.1987 (PJ).

Body length 7-12 mm, colour mostly green or blue-green. Pronotum with uniformly distributed punctuation not forming wrinkles, rather sparser before apical edge. Antennae black or less frequently brown from antennomere 3, with weak greyish white pubescence not forming rings. Scutellum with pale pubescence. Elytra parallel, rounded on apex, with coarse punctuation forming on surface area weak transversal wrinkles, with black pubescence, in apical part also with white pubescence, erect long setae present throughout elytra length.

Remarks: It is very similar to the species *A. (S.) talassica*, from which can be differentiated based on ratio of inferior eye lobe and tempora: in *A. (S.) incerta*, tempora as wide as length of inferior eye lobe (Fig. 7); in *A. (S.) talassica*, tempora are wider (about 1.2-1.4 x) than length of inferior eye lobe (Fig. 8), (Danilevsky, personal communication).

Bionomics: Imagines occur on *Astragalus sewertzowii*, *Melilotus* sp. and on *Prangos* sp.

Agapanthia (Smaragdula) intermedia Ganglbauer, 1883

(Figs.: 19, 41, 63, 90)

intermedia Ganglbauer, 1883: 543, Type locality: Central and South Europe.

Geographic distribution: AU, CT, CZ, FR, GE, GR, HU, IT, LU, MD, NL, NT, PL, SK, SP, ST, SZ, UK, RO, GG, KZ.

Material examined: 1 ex. – Czechia, Lipný, 1974 (LK); 2 ex. – Czechia, Stebno, 3.5.2007 (KH); 5 ex. – Czechia, Stan, ex larva, 12.2013 (KH); 1 ex. – Czechia, Břeclav - Pohansko, 18.5.2000 (KH); 1 ex. – Czechia, Černolice, 28.5.1983 (KH); 1 ex. – Czechia, Moravia S, Lužice env., 28.5.2012 (KH); 1 ex. – Czechia, Bohemia or., Janovice env., 25.5.2003 (PJ); 2 ex. – Czechia, Moravia, Uherský Brod, 27.5.2018 (TL).

Body length 7-13 mm, colour variable, metallic, with prevalence of blueish green tints. Pronotum with dense, uniform punctation, sometimes with indicated stripes of white pubescence. Antennae usually with narrow circles of greyish white pubescence. Scutellum usually with dense, white pubescence. Elytra parallel, narrowed or rounded before apex, apex with dense punctation not forming wrinkles. Elytra densely pubescent, only in basal third with sparse, erect setae. The typical character of the taxa dense, decumbent, white pubescence of elytra, particularly in their apical half.

Bionomics: The species is probably developed only in *Knautia* sp. (Dipsacaceae).

Agapanthia (Smaragdula) izzilloi Rapuzzi, Sama & Kotán, 2013
(Figs.: 20, 42, 64, 91)

izzilloi Rapuzzi, Sama & Kotán, 2013: 582, Type locality: Greece, Arkadia, S of Scortsinos, 450 m, 2.V.2012.

Geographic distribution: GR.

Material examined: 1 ex. PT – Greece, Ahaia, Trapeza, 2.V.2012 (PR).

A smaller species – 7-13 mm, still known only from the Peloponnese (GR), basic colour goldenish green, seldom blue, blueish green to bronze green, some specimens bicolour. Dense short white hairs on apical edge of elytra. Antennae from antennomere 5 black, long, extending beyond apex of elytra by 6 articles. Scutellar punctures along suture forming wrinkles. Pronotum longer than broader, with denser punctation on disc in middle, covered with long black hairs. Pronotum longer than wide, with dense punctation, which rather finer on the disc. Basal half of antennae usually with considerable rings of pale pubescence. Scutellum with dense white pubescence. Elytra parallel, with rounded apex, with dense and deep punctation forming wrinkles along suture, covered with semierect sparse pubescence which stepwise reduced in length from base to half elytra length.

Remarks: The examined type specimen of *A. (S.) izzilloi* is relatively well distinguishable from the similar taxon, *A. (S.) violacea* by the lightly ringed antennae, sparser pronotal punctation, very sparse punctation of the mesoepisternum, antennae in males exceeding the elytra by six articles. I examined additional material from the type locality *A. (S.) izzilloi* and vicinity. For this material I was not able to determine unequivocally whether it was *A. (S.) izzilloi* or *A. (S.) violacea*. The above-mentioned complex of characters was never uniform, only a few specimens had sparse punctation of the mesoepisternum, and the light ringing of the antennae was almost always absent. On the contrary, the same features - ringed antennae and sparser punctation of the pronotum - can be found in many specimens of *A. (S.) violacea* from central Europe. However, I found the sparse punctation of the mesoepisternum in specimens only from the Peloponnese. The parameres show a difference in curvature, the curvature of the examined specimen of *A. (S.) izzilloi* being bigger than that of the specimens of *A. (S.) violacea* in which parameres are rather straight. The shape of the aedeagus is the same as in some specimens of *A. (S.) violacea* from central Europe. In males *A. (S.) violacea* the antennae extend beyond the elytra by five segments.

Bionomics: Imagines were found on *Psoralea bituminosa* (Fabaceae).

Agapanthia (Smaragdula) kadleci sp. nov.
(Figs.: 21, 43, 65, 92, 93)

Type material: *Holotype* ♂ - Turkey, Anatolia or., Buglan Gecidi 1640 m, Murat Daglari, 13.06.1991 (NMP); *paratypes* 11 ex. (4♂♂ 7♀♀) - 5 ex.: Turkey, Anatolia or., Buglan Gecidi, 1640 m, Murat Daglari 13.06.1991; 4 ex.: Turkey, Anatolia or., Buglan Gecidi, Mus, 1600 m, 14.06.1992; 1 ex.: Turkey, Anatolia or., Karakurt env. (Arax riv.), 09.06.1992; 1 ex.: Turkey, vill. Mus, Mus Ovasi, 1520 m, 18.06.1986 (NMP, KH).

Description: Body length 8.1-12.2 mm in males, 9.2-12.9 in females, bright blueish green to green with metallic lustre throughout, anterior part of body (head, thorax and anterior one third of elytra) additionally with slight blue to moderate blueish violet tint.

Head with dense punctation, which most distinct on frons and vertex, and with long, erect, black setae, which densest and longest on frons. Anterior and posterior sides of genae with considerable white stripe merging in bordering of eye inferior half. In frontal view, genae distinctly throttled on sides (Fig. 64). Head, including outer edge of mandibles, labrum and less frequently also body underside with dense, yellowish white pubescence. All white pubescence considerably reduced. Palpi continuously pointed, black, sometimes with fine metallic tint, distinctly paler only on apex. Antennae long, exceeding body length by 4-5 antennomeres in males and by 3 antennomeres in females. Scapus finely but distinctly wrinkled-punctate, antennomeres 1 and 2 distinctly metallic, remaining antennomeres black, only antennomeres 3 and 4 usually with very weak metallic effect. All antennomeres with very fine, more or less distinct, whitish tomentum, antennomeres 3-6 having inner side with long, erect setae, remaining antennomeres only with one or two setae. Scapus distinctly throttled before end, as long as about three quarters of antennomere 3 length.

Pronotum transversal, moderately widening backwards, throttled at anterior as well as posterior margins (more distinctly anteriorly). Pronotal punctation dense, indicating fine wrinkles in anterior half of pronotum and at basal pronotal margin (Fig. 21). Prothorax on front edge with more or less dense white hairs. Scutellum rectangular, smooth and shining, with metallic effect, exceptionally with whitish hairs.

Elytra parallel in first third, slightly sinuate behind humeri, with dense uniform punctation suggesting presence of fine transversal wrinkling on elytral disc area. Elytra only with sparse, long, erect setae, which longest on disc, in first third. Suture very distinct throughout, except for first quarter behind scutellum, where it is confluent with elytral surface. Elytral width at humeri equals to 2.3-2.5 times total elytra length. Ventral side as green, metallic, shining as dorsal side, with white hairs being densest on metepisternum. White pubescence also reduced considerably.

Legs metallic, similarly as remaining body, covered with white, sometimes rather yellowish pubescence, which densest and most distinct in terminal halves of tibiae and partially also on inner sides of femora; tibiae and femora sometimes with individual long, erect, black setae.

Genitals: Parameres rather narrow, parallel, sometimes moderately bent inwards. Aedeagus parallel, with blunt and moderately sinuate apex at end (Fig. 42).

Variability: The examined specimens form a compact group, which is only variable as to fine differences in the basic, green, metallic colour and larger or smaller reduction in the white pubescence on the head, body underside and legs.

Differential diagnosis: *Agapanthia (Smaragdula) kadleci* sp. nov. can be differentiated from a similar species *Agapanthia (Smaragdula) lais* based on the pronotum punctate sculpture: in *A. (S.) kadleci* sp. nov. the punctation forms distinct thin wrinkles, whereas

in *(S.) lais* the punctuation is loosened. A further distinct differentiating character is the ratio of eye length to gena length in frontal view: in *A. (S.) kadleci* **sp. nov.**, eye as long as or moderately shorter than gena, whereas in *A. (S.) lais*, gena is about 1.5 longer than eye. A further character is the episternum shape, which is on lower side of first third more sinuate in *A. (S.) kadleci* **sp. nov.** compared to *A. (S.) lais*. A further species resembling *A. (S.) kadleci* **sp. nov.** is *Agapanthia (Smaragdula) naciaye*, from which it can be differentiated by the absence of white rings of antennomeres and subtler body shape in general. *A. (S.) naciaye* has distinctly shorter elytra, more robust antennae and legs, antennae also being shorter compared to *A. (S.) kadleci* **sp. nov.**. *A. (S.) naciaye* has also more uniformly and more sparsely punctate pronotum, the punctuation not forming wrinkles as distinct as in *A. (S.) kadleci* **sp. nov.**.

Distribution and biology: The new species is known only from Turkey. The host plant is unknown.

Etymology: The taxon is named after its collector, MUDr. Stanislav Kadlec († 2008), who deposited all the type specimens and his collection in the National Museum Praha.

Agapanthia (Smaragdula) lais Reiche & Saulcy, 1858

(Figs.: 4, 22, 44, 66, 94)

lais Reiche & Saulcy, 1858: 21, Type locality: Du Péloponèse [an incorrect locality].

Geographic distribution: IS, JO, LE, SY, TR.

Material examined: 7 ex. – Turkey, Adana p., 5 km E of Hasanbeyli, 22.5.2011 (LS); 3 ex. – Israel, Hare Gilboa', Merav Har Avinadav, 420 m, 11.IV.2011 (TAU); 1 ex. – Israel, Har Karmila (TAU); 1 ex. – Israel, Har Tayyasim, 740 m, 27.III.2011 (TAU); 1 ex. – Israel, Har Dov, 17.III.1995 (TAU); 1 ex. – Israel, Qazzin, 2.V.1998(TAU); 1 ex. – Israel, Nahal Barkan, 7.V.1997(TAU); 1 ex. – Israel, En Zeitim, 13.V.1998 (TAU); 1 ex. – Israel, Nkziv, 1.V.1999 (TAU); 1 ex. – Israel, Nahal Qazrin, 9.V.2006 (TAU); 1 ex. – Israel, Shemurat Pura, 27.III.2000 (TAU); 1 ex. – Israel, 'En Zetim, 8.V.2013 (TAU); 1 ex. – Israel, Shoham, 15.III.2013 (TAU); 1 ex. – Israel, 'Emeq HaEla, 27.III.2013(TAU); 1 ex. – Israel, Tel Aviv Dunes, 12.III.2002 (TAU); 1 ex. Israel, 'Emeq HaEla, 20.IV.2005 (TAU); 1 ex. – Israel, Natah Orev, 6.V.2000 (TAU); 1 ex. – Israel, Lehavim Junction, 7.IV.1998 (TAU); 1 ex. – Israel, Shoham, 17.III.2006 (TAU); 1 ex. – Israel, Ha Yarden, moat of castle, 26.III.2001 (TAU); 2 ex. – Israel, Kokhav, ha Yarden, 26.III.2001 (TAU); 2 ex. – Israel, Qedumin, 2.IV.1999 (TAU); 1 ex. – Israel, Qedumin Park Znirim, 370 m, 22.III.2016 (TAU); 2 ex. – Israel, HaKefar HaYarog, Zomet Gelilot, 22.IV.2011 (TAU); 1 ex. – Israel, Mahseya S., Deir Aban ruins, 265-300 9.III.2016(TAU); 1 ex. – Israel, Ma'agar Bental, 11.V.2016 (TAU); 1 ex. – Israel, Qedumin, Park Znirim, 370 m, 22.III.2016 (TAU); 1 ex. – Israel, Nahshom, 21.III.1998 (TAU); 1 ex. – Israel, Qedumin cemetery, 370 m, 30.XII.2014 (TAU); 1 ex. – Israel, Nahal, Oren, 27.III.2000 (TAU); 1 ex. – Israel, Umm EiGhanam, 9.IV.2012 (TAU); 1 ex. – Israel, Zomet Rantis, 28.II.2001 (TAU); 1 ex. – Israel, Ramot – Naftaly, 15.III.1998 (TAU); 1 ex. – Israel, 'Emeq HaEla, 10.IV.2006 (TAU); 1 ex. – Israel, Zomet Lehavim, 263 m, 22.III.2006 (TAU); 1 ex. – Israel, Zomet Pelugot, 93 m, 24.III.2006 (TAU); 1 ex. – Israel, Hare Gilboa', Har Avinadav, 15.IV.2012 (TAU); 2 ex. – Israel, Kokhav Ya 'Ir, Ya'ar Sapir, 160 m, 16.II.2010 (TAU); 1 ex. – Israel, Nahal Qazrin, 9.V.2006 (TAU); 1 ex. – Ilanot, S Hadera, 22.III.1994 (TAU); 2 ex. – Israel, Matta, 9.XI.2006 (TAU); 9 ex. – Syria, Mashtal Helu E of Safita, 30.IV.2008 (VS); 12 ex. – Syria, Crac de Chevaliers, 18.IV.2008 (PŠ).

Body length 11-16 mm, colour usually yellow green, green or blueish green. Pronotum with very dense punctuation, which very moderately loosened at the middle, with small bright, glabrous area, frequently with small bump in apical part, before edge. On pronotum sides frequently with few hairs forming more or less distinct narrow row from apical edge forward. Antennae usually with fine, pale pubescence not forming rings or

only with small rings at antennomere bases. Scutellum with punctuation and white pubescence, sometimes almost entirely smooth and bright, with individual thin hairs on sides. Elytra more or less converging towards apex, but sometimes almost parallel, with punctuation sometimes forming weak wrinkles, but sometimes forming indications of two longitudinal ribs on each side. Elytra with moderate, short, erect pubescence, pubescence longer and more erect in basal third, with pale hairs in apical half.

Remarks: Some individuals have scutellum entirely glabrous and smooth, only with few small punctures and few thin hairs. These individuals can be confused with *A. (S.) petranyi*, but it can be safely differentiated based on lengths of tarsomeres: in dorsal view, *A. (S.) lais* has tarsomere 4 as long as or shorter than tarsomeres 2 and 3 combined (Fig 4). *A. (S.) petranyi* has tarsomere 4 longer than tarsomeres 2 and 3 combined in dorsal view (Fig 3).

Bionomics: Imagines occur on *Onopordum macrocephalum* (Asteraceae) and *Silybum marianum* (Asteraceae).

***Agapanthia (Smaragdula) nacyiae* Rapuzzi & Sama, 2012**

(Figs.: 23, 45, 67, 95, 96)

nacyiae Rapuzzi & Sama, 2012: 676, Type locality: Turkey, Erzincan prov., 12 Km W Refahiye, 1589 m., 9.V.2011, ex larva *Astragalus* sp., emerged 1.VI.2011.

Geographic distribution: TR.

Material examined: 1 ex. – Turkey, Erzincan, 12 km West Refahiye, 9.5.2011 (KH); 1 ex. – Turkey, Erzincan prov., Refahiye/Tokat cross, 13 km N Rafahiye, 13.VI.2012 (TT); 1 ex. PT – Turkey, Erzincan prov., Refahiye/Tokat cross, 13 km N Rafahiye, 9.VI.2012 (KH).

Body length 8-11 mm, rather pale yellowish green, sometimes greenish blue. Head and pronotum with dense, erect, long, black setae. Pronotum with dense punctuation, forming fine wrinkles at apical and basal edges. Pale, greyish brown, antennal pubescence not forming rings. Elytra parallel, with rounded apex, with dense punctuation, which distinctly wrinkled at humeri, wrinkles becoming less distinct towards apex, entirely covered with long, erect setae and in apical part additionally with decumbent, brownish pubescence. Pronotum as well as elytra without pale pubescence.

Remarks: The conspicuously, entirely shining and smooth scutellum is a feature typical of the taxon and can be used for the differentiation from other taxa of the group. The bright, light green or light blueish green colour is a further character.

Bionomics: The species develops in *Astragalus* sp. (Fabaceae).

***Agapanthia (Smaragdula) osmanlis* Reiche & Saulcy, 1858**

(Figs.: 24, 46, 68, 97, 98)

osmanlis Reiche & Saulcy, 1858: 19, Type locality: De Constantinople [Istanbul, Turkey]

Geographic distribution: BU, GR, HU, ME, RO, SB, SK, RO, TR.

Material examined: 2 ex. – Turkey, Kacakar-Yusufeli, 17.VI.2005 (KH); 1 ex. – Bulgaria, Jasna Polana u Primorie, 23.VI.2003 (KH); 1 ex. – Bulgaria, Jasná Polanka u Primor, 23.VI.2008 (LK); 1 ex. – Turkey,

Kacakar-Yusufeli, 17.VI.2005 (KH); 3 ex. – Turkey, Erzurum prov, 85 km S Ispir, 1900 m, 23.VI.2014 (WG); 4 ex. – Bulgaria, Fassanovo, env. Lozenec, 28.VI.2004 (WG); 2 ex. – Bulgaria, Izgrev env, 26.VI.2004 (WG); 7 ex. – Bulgaria, Primorsko env., 27.VI.2004 (WG); 1 ex. – Bulgaria, Klokotnica, 25.VI.2010 (WG); 1 ex. – Turkey, Samanta, 21.IV.1992 (WG); 19 - Bulgaria, Primorsko env., 25.-27.VI.2004 (PJ); 9 ex. – Turkey, Erzurum Kop Gecidi, 2200 m.n.m., 20.7.2008 (DN).

Body length 10-16 mm. Typical colours green, blue or blueish green. Antennae with greyish white pubescence, usually forming pale rings in basal half of antennomeres. Pronotum with not very coarse punctation, on each side and along midline with stripes of white hairlike setae. These stripes variously reduced or quite missing. Scutellum usually with dense, white pubescence. Elytra parallel, moderately narrowed before apex, apex rounded, with rather long, erect setae in basal third, remaining pubescence mostly fine and decumbent, black and white, white pubescence being denser than black ones. Elytral punctation sometimes forming two indicated longitudinal ribs on each side. Dense, white or greyish white elytral pubescence typical of taxon, which rarely reduced.

Remarks: Populations from different locations can differ in the elytral punctation and pubescence.

Bionomics: Imagines are found on *Cephalaria procera* (Dipsacaceae).

***Agapanthia (Smaragdula) ozdikmeni* Rapuzzi & Sama, 2012**

(Figs.: 25, 47, 69, 99, 100)

ozdikmeni Rapuzzi & Sama, 2012: 673, Type locality: Turkey, Tunceli prov., 46 km N Tunceli, 1086 m., 11-18.V.2011, ex larva *Cephalaria* sp., emerged 28-30.V.2011.

Geographic distribution: TR.

Material examined: 1 ex. PT – Turkey, Pulumur, 2-7 km NW Pulumur, 26.-27.VI.2009 (KH); 1 ex. PT – Turkey, Pulumur, 2-7 km NW Pulumur, 26.-27.VI.2009 (ZK); 2 ex. – Turkey, Pulumur, 2 km N of Tunceli, 18.6.2014 (KH); 2 ex. – E Turkey, (2 km N of) Yukan Ulupinar 30 km SE Darende, 38°25N 37°33E, 27.5.2001 (NMP).

Body length 12-15 mm. Whole body conspicuously clear blue, with minimum colour variability, only rarely greenish (particularly on pronotum). Pronotum with dense punctation forming few narrow transversal wrinkles at apical margin. Antennae with white pubescence from antennomere 3, apical third of antennomeres usually dark. Scutellum usually with dense, pale pubescence in apical part. Elytra narrowing towards apex, apex round, punctation producing wrinkles distinct already from base. Pale pubescence of elytra only in apical half and short, black pubescence on distal half and sparser and higher with few sparser and longer setae. Elytral punctation sometimes slightly indicating longitudinal ribs. Pale pubescence of antennae forming rings already from antennomere 3.

Remarks: RAPUZZI & SAMA (2012) mentioned the species as probably endemic to a valley between Pülümür and Tunceli in the Tunceli prov. (TR). But in the S. Kadlec collection (NMP), there are two specimens from Darende, Malatya prov.. From the very similarly coloured taxon *A. (S.) posti*, it can be particularly differentiated based on whitish pubescence in the apical third of elytra, which is quite missing in *A. (S.) posti*. In contrast to this, a population of *A. (S.) osmanlis* from Bulgaria (for example from the

Primorsk area) is almost identical with specimens of *A. (S.) ozdikmeni*. In specimens compared, there is identical colour, pronotal and elytral punctation, length of tarsomeres, some specimens also having identical areas of the elytral pubescence. The difference is only in the elytral pubescence, which is finer and sparser than that of *A. (S.) ozdikmeni*, but certain specimens of *A. (S.) osmanlis* are also very similar in this character.

Bionomics: The whole type of material comes from stalks of *Cephalaria procera* (Dipsacaceae).

***Agapanthia (Smaragdula) persicola* Reitter, 1894**

(Figs.: 9, 26, 48, 70, 101, 102, 103)

persicola Reitter, 1894d: 146, Type locality: Astrabad, Araxesthal (Iran, Gorgan).

Agapanthia violaceipennis Pic, 1904: 9.

Geographic distribution: AB, AR, GG, IN, TM, TR.

Material examined: 3 ex. – Turkey, Kesecik 19 km S Ilgaz, 30.05.1994 (PK); 3 ex. Iran, Khorásán, Minudasht 64 km NE, 19.-20.V.2003 (PK); 2 ex. – Armenia, Sevan Lake, Sogar, 26.5.1985 (PK); 1 ex. – Iran, Mazandaran, Kalardasht, 5.5.2006 (PK); 1 ex. – Gruzia, Dzhvari, 28.5.-5.6.1985 (PK); 2 ex. – Armenia, Tashtun, 19.-22.6.2012 (TP); 1 ex. – Armenia, Aragats, Alpine Park, 11.6.2012 (TP); 1 ex. – Armenia, Arailer, Saghosavan env., 9.6.2012 (TP); 2 ex. – Armenia, Geghard Monastery road, 10.6.201 (TP); 2 ex. – Turkey, Elazig p., 4,5 km Ne of Elazig, 23.5.2011 (LS); 1 ex. – Armenia, Teghut 2,5 km SSE, 1500 m, 3.-4.6.2016 (JK); 9 ex. – Armenia, S Mts.Zangezur, Lichk 2 km, 01.06.2016 (JK); 3 ex. – Armenia, Geghard Monastery,Road, 2.-3.6. (JK); 1 ex. – Armenia, Gndevaz 6 km SW, 28.05.2016 (JK); 1 ex. – Iran, prov. Azerbaijan, 11 km SE Serov, 30.-31.V.2017 (DN); 2 ex. – Iran, Mazandaran prov., 2 km E Keris,20.05.2017(DN); 2 ex. – Iran, Kordestan prov., 36 km S Saqqez, 27.05.2017 (DN); 6 ex. – Iran, Gilán prov., 12 km W Rostamabad, 1550m, 6.VI.2017 (KH); 6 ex. – Iran, Golestan prov., 4 km N of Dasht, Golestan Valley 900m, 17.V.2017 (KH); 1 ex. – Iran, Gilán prov., 6 km of Majara, 2200 m, 3.VI.2017 (KH); 1 ex. – Iran, W. Azerbaijan, 14 km S Kaleybar, 1430 m, 1.VI.2017 (KH); 1 ex. – Iran, Mazandaran prov., Alamdar Mahaleh, 5m, 17.V.2017 (KH); 2 ex. – Georgia, E of Dedoplistskaro, Vashlovani NP 700m, 1.-2.V.2017 (VS); 2 ex. – Iran, 2 km E Kenis, 20.05.2017 (LH); 1 ex. – Georgia, E of Dedoplistskaro, Vashlovani NP 700m, 1.-2.V.2017 (VS); 1 ex. – Armenia, Shurnhuk3 km N, 9.VI.2014 (JK); 2 ex. – Iran, Dasht - i – Naz, 12.V.1972 (TAU); 13 ex. – Georgia, Dedoplistskalo env. JV, 19.-21.5.2018 (JCH); 5 ex. – Georgia, Gori env. Sever, 22.-25.5.2018 (JCH); 1 ex. – Georgia, Saguramo, 22.5.2018 (JCH); 1 ex. – Georgia, Zekari, 25.5.2018 (JCH); 3 ex. – Armenia, Teghut 2,5 km SSE – Lake Parz, 28.5./3.6.2015 (JCH); 17 ex. – Iran, Golestan prov., 6 km SW Razi 1970 m 19.5.2018 (KH); 8 ex. – Iran, Gilán prov., 8 km W Rostamabad, 1150 m, 2.-25.5.2018 (KH);3 ex. – Iran, Gilan prov., Rostamabad env., 1650 m, 1.-2.6.2019 (KH); 1 ex. – Armenia, Geghard Monastery Road, SE Goght, 10.6.2012 (PJ); 4 ex. –SV Armenia, N. Tashthun,19.-22.6.2012 (PJ); 13 ex. – Georgia, NP Vashlovani, 11.-15.5.2016 (PJ); 1 ex. – Turkey, Samanta, 21.4.1992 (PJ); 3 ex. – Armenia, Geghard Monastery env., 27.5.2013 (TL); 1 ex. – Armenia, Yerevan env., 26.5.2013 (TL); 4 ex. – Armenia, Martuni, 28.5.2013 (TL); 7 ex. – Armenia, Lichk env., 1.6.2013 (TL); 5 ex. – Iran, Mazandaran pr., 1 km NW of Kinj, 20.5.2017 (TL); 5 ex. – Armenia, Khosrov Forest,23.-24.5.1990 (MD); 3 ex. – Armenia, Megri, 10.5.1983 (MD); 3 ex. – Armenia, Shvanidzor, 1420 m, 38°59'14"N 46° 22'07"E, 9.5.2005 (MD); 1 ex. – Armenia, Idzhevan Kiranz, 30.4.-2.5.1989 (MD).

Body length 7-15 mm, colour mostly metallic greenish blue, sometimes only green, blue or elytra blue and pronotum green, or anterior part black, remaining body blue or violet. Colour variability similar to *A. (S.) violacea*. Head with dense, fine and regular punctation. Pronotum with typical very dense, regular and fine punctation not forming wrinkles. Pronotum transversal in larger specimens (in these cases, punctation sometimes coarser with indicated wrinkles), in smaller specimens usually longitudinal, more or less convex laterally, widening usually shifted backward from middle. Antennae long, in males exceeding body by almost one third body length, only in females moderately

shorter, antennomeres 1 and 2 being distinctly metallic. Antennae with rather long, erect setae on inner side, sometimes entirely with whitish pubescence or this pale pubescence forms only weak circles at bases of antennomeres. Scutellum transversal, with very fine punctuation and usually with pale pubescence. Elytra 2.5 times longer than wide at humeri, entirely with coarse punctuation forming weak transversal wrinkles at suture. Head, prothorax and basal half of elytra with erect, rather long, black setae, apical half of elytra with decumbent black and pale pubescence, without erect setae. Head sometimes with dense, white pubescence.

Remarks: The uniform punctuation of the pronotum and white pubescence in the posterior elytral third are typical of the taxa. According to these characters, *A. (S.) persicola* is easy to be differentiated from a similar taxon, *A. (S.) violacea*. From southern Georgia, I know individuals with reduced white elytral pubescence, which is very sparse or even missing. These specimens were collected at their location together with usually pubescent ones. The pronotum of the most specimens from Georgia has a moderately coarser punctuation compared to specimens from Armenia or Iran.

Bionomics: Imagines are usually found on *Carduum* sp. (Asteraceae) or *Sonchus* sp. (Asteraceae). In the eastern part of the mountain range Elborz (Iran), I caught rather numerous imagines on *Urtica* sp. These imagines have a moderately wider head, similarly as *A. (S.) violacea*.

***Agapanthia (Smaragdula) pesarinii* Sama & Rapuzzi 2010**

(Figs.: 6, 12, 27, 49, 71, 104, 105)

pesarinii Sama & Rapuzzi, 2010: 177, Type locality: Turquie mér., Icel: Çamalan, 5.VI.1981.

Geographic distribution: TR, SY.

Material examined: 2 ex. – Turkey, Elazığ p., 4,5 km NE of Elazığ, 23.5.2011 (LS); 3 ex. PT – Turkey, Toros mts., Sarıkavak, 18.V.2005 (WG); 8 ex. – Turkey, near Amas, 810 m, 26.V.2010 (WG); 1 ex. – Turkey, Hasanbeyli env., Nurdagi gecidi 1050-1350m, 17.05.2011 (MÇ); 1 ex. – Turkey, TR mer., Pozanti, 20-29.VI.1992 (TP); 1 ex. PT – Turkey, Camliyayla, 20.5.1997 (KH); 7 ex. – Turkey – S, (İçel), Karahidirli vill., h=870-940 m, 7.6.2011 (MD).

Smaller species (8-12 mm), similar to *A. (S.) amitina*. Larger specimens usually with distinctly elongate body. Colour mostly blue, sometimes greenish blue to green. Pronotal and elytral punctuation not forming wrinkles. Scutellum bearing white pubescence. Pronotum longer than wide. Antennae bearing weak, pale pubescence not forming rings. Elytra parallel, elongate, rounded on the apex, without white pubescence, covered with semierect setae, which stepwise shortened backwards from base. Apical part of elytra with white pubescence. Tarsi conspicuously extended, third tarsomere usually shorter than second one, larger specimens of *A. (S.) pesarini* slimmer body, distinctly relatively longer compared to other taxa of the group, smaller species that have usual body length.

Remarks: SAMA & RAPUZZI (2010) also mentioned a population from southern Turkey, which could be considered after a future study as a subspecies of the taxon with respect to a difference in the ventral pubescence. Larger material should be studied to provide more accurate diagnosis.

Bionomics: Imagines of *A. (S.) pesarini* were found on *Psoralea bituminosa* – all of them the family Fabaceae.

***Agapanthia (Smaragdula) petranyi* Kotán, 2014**

(Figs.: 3, 28, 50, 72, 106, 107)

petranyi Kotán, 2014: 64, Type locality: Iran, Kordestan Province, 35°05'04.13"N, 46°52'58.56" E, 1350 m, 18-19.IV.2010.*Geographic distribution:* IN.*Material examined:* 8 ex. – Iran, Kordestan prov. Soarian env., 28.4. 2019 (type locality) (TT).

Body length 10-16 mm, colour very variable, most frequently pale yellowish green or greenish blue, sometimes with red tint, or pale yellowish with purple tint. Pronotum with strong punctation forming weak wrinkles in basal third and at apical margin. Antennae with greyish white hairlike setae forming no rings. Scutellum smooth, only with few fine punctures and few fine hairs laterally, bent at middle, with finely pierced posterior margin at middle. Elytra moderately converging towards apex in males, more distinctly converging in females. Elytra with strong punctation, forming only individual punctures at base around scutellum, and fine wrinkles on remaining area of elytra. Elytra with dark, erect setae throughout, which longest in basal third and moderately stepwise reduced in length towards apex. In apical third, elytra with fine, white pubescence.

Remarks: This taxon is relatively variable in colours.*Bionomics:* Imagines on *Astragalus* sp. (Fabaceae)***Agapanthia (Smaragdula) postii* Hodek & Tichý, 2021**

(Figs.: 29, 51, 73, 108, 109)

postii Hodek & Tichý, 2021: Type locality: TR, Tunceli, Munzur Valley, 23-30 km of Tunceli, 1000-1700 m, 21.-22.V.2013.*Geographic distribution:* TR.

Material examined: 1 ex. HT – Turkey, Tunceli, Munzur Valley, 23-30 km of Tunceli, 1000-1700 m, 21.-22. V. 2013 (TT); 3 ex. PT – Turkey, Tunceli, Munzur Valley, 15-20 km of Tunceli, 1000-1100 m, 18. V. 2012; 11 ex. – Turkey, Tunceli, Munzur Valley, 23-30 km of Tunceli, 1000-1700 m, 21.-22. V. 2013; 3 ex. – Turkey, Tunceli, Munzur, 23 km of Tunceli, 1050-1060 m, 6. V. 2014, (KH, PR, TT).

Body length 9-13 mm, colour typically considerably dark brown, sometimes with violet or greenish tint. Pronotum with fine, dense and regular punctation without wrinkles, punctures moderately denser in apical half. Antennae with sparse, whitish hairs on inner side and just only at base, scapus granulate-wrinkled. Scutellum with sparse, white pubescence. Elytra parallel, with rounded apex, punctation simple in basal half, moderately wrinkled only at base, in apical half finer and finely, transversally wrinkled. Apical half of elytra with sparse, longer, erect, dark setae, in basal half with shorter and decumbent pubescence together with dense, white pubescence.

Remarks: Remarkably deep blue, similarly as *A. (S.) ozdikmeni* coming from about the same area. *A. (S.) postii* has elytra more parallel, without white pubescence. The species *A. (S.) friwaldszkyi* is also similar, but its elytra bears only erect, sparse setae, without the presence of decumbent pubescence and its colour is rather green. This species can be differentiated from *A. (S.) persicola* by a different punctation of the pronotum.

Bionomics: All the species included in the type series were collected on *Valeriana* sp. (Valerianaceae).

***Agapanthia (Smaragdula) psoraleae* Sama & Rapuzzi, 2010**

(Figs.: 5, 30, 52, 74, 110)

psoraleae Sama & Rapuzzi, 2010: 176, Type locality: Liban, Jbail: Qartaba, 1000-1300 m, 15.V.2000.

Geographic distribution: LE, IS.

Material examined: 3 ex. PT – Lebanon, Jbail 1400 m, Qartaba, Mazraat el Syad, 10.V.2000 (WG); 1 ex. PT – Lebanon, Qartaba, 1400 m, Mazraat el Syad, 11.05.2000 (OK); 2 ex. – Iran, Dasht-i-Naz, 12.V.1972 (TAU); 2 ex. – Israel, Qame Shomeron, 18.III.2016 (TAU); 1 ex. – Israel, Park ha Yarden, 210 m, 4. IV. 2011 (TAU); 1 ex. PT – Lebanon, Jbail 1400 m, Qartaba, Mazraat el Syad, 10.V.2000 (KH).

Body length 7-12 mm, malachite blue, green or bicolour, without any microsculpture and thus shining. Scutellum mostly with white pubescence not forming rings on antennae. Scapus mostly distinctly throttled before it's end (Fig. 5). Pronotum longer than wide, with dense punctation forming weak wrinkles. Elytra parallel, with rounded apex, and dense punctation in apical half, covered with sparse, semierect pubescence, which longer and more distinct in basal half. Elytral apex covered with white pubescence.

Remarks: A new record for Israel.

Bionomics: All type specimens were collected on *Psoralea bituminosa* (Fabaceae).

***Agapanthia (Smaragdula) rapuzzii* Hodek & Tichý, 2021**

(Figs.: 1, 31, 53, 75, 111, 112)

rapuzzii Hodek & Tichý, 2021: Type locality: TR, Tunceli, Munzur Valley, 23 km of Tunceli, 1050-1060 m, 6. V. 2014.

Geographic distribution: TR.

Material examined: 1 ex. HT – Turkey, Tunceli, Munzur valley, 23 km of Tunceli, 1050-1060 m, 6. V. 2014 (TT); 5 ex. PT – 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, (TT, PR, KH).

Body length 6.9-12 mm, body rather flat, green or greenish blue. Pronotum rather transversal, with dense punctation forming wrinkles particularly in basal half. Antennae short, exceeding body by length of one antennomere, with very fine, whitish pubescence not forming rings. Scutellum with sparse, fine punctures and sparse, fine, pale pubescence. Elytra short, parallel, or moderately convex post-basally, vertex rounded, punctation rather finer compared to other taxa of group, in basal half moderately loosened, in apical half moderately denser, but less coarse and forming fine wrinkles. Elytra only with sparse, erect, dark setae, which longer in basal half and decrease in length towards apex.

Remarks: The species is easy to differentiate from other taxa of the subgenus *Smaragdula* based on its short and wide body. Antennae are also shorter compared to other taxa of the group.

Bionomics: The type material was collected on *Prangos* sp. (Apiceae).

***Agapanthia (Smaragdula) talassica* Kostin, 1973**

(Figs.: 8, 32, 54, 76, 113, 114)

violacea talassica Kostin, 1973: 223, Type locality: Западный Тянь-Шань (Western Tian-Shan).

Geographic distribution: KI, KZ.

Material examined: 1 ex. – Kyrgyzstan, Kyz Kiya, Kyz Kuyo env., 19.V.-3.VI.2017 (KH); 1 ex. – Kyrgyzstan, Chandalash Mt., Chakmak-Suu riv., 31.05.2010 (WG); 1 ex. – Kyrgyzstan, Kyz Kia, Kyz Kuyo env., 19.5.2017 (KH); 2 ex. – Kazakhstan, 16 km N Kentau, Bayaldyr riv., 6.-8.5.2014 (KH).

Body length 7-11 mm, colour mostly, blue, green or blueish green. Pronotum with dense punctation not forming wrinkles, rather loosened before basal edge. Antennae with white, fine pubescence not forming rings. Antennomeres sometimes darkened only on apical end. Scutellum with white pubescence. Elytra parallel moderately converging backwards, with strong, moderately wrinkled punctation, with longer, erect, black setae, which only moderately reduced in length to apical end, in apical half also with white pubescence, long, erect, black setae present throughout elytra length.

Remarks: It is very similar to *A. (S.) incerta*, from which it can be differentiated based on ratio of inferior eye lobe and tempora: in *A. (S.) incerta*, tempora as wide as length of inferior eye lobe (Fig. 7); in *A. (S.) talassica*, tempora is wider (about 1.2-1.4 x) than the length of inferior eye lobe (Fig. 8).

Bionomics: Imagines occur on *Astragalus sieversiana*.

***Agapanthia (Smaragdula) violacea* Fabricius, 1775**

(Figs.: 33, 55, 77, 115, 116)

Saperda violacea Fabricius, 1775: 187 (*Saperda*), Type locality: Regio Pedemontana (Italy: Piedmont)

Cerambyx micans Fuessly, 1775: 13

Saperda cyanea Herbst, 1784: 95

Cerambyx janthina Gmelin, 1790: 1842

Saperda caerulea Schönherr, 1817: 437

Saperda smaragdina Krynicky, 1832: 161

Agapanthia coerulea var. *chalybaea* Mulsant, 1839: 177 (HN)

Geographic distribution: AL, AU, BE, BU, CT, CR, CZ, FR, GE, GR, HU, IT, LA, LU, MC, MD, NT, PL, PT, SK, SL, SP, ST, TR, UK, RO, AB, AR, ES, GG, KZ.

Material examined: 1 ex. – Slovakia, Štúrovo, V.1968 (VS); 1 ex. – Greece, Kastraki 3 km NE, 2-3.V.2017 (LK); 1 ex. – Bulgaria, Asenovgrad-Topolovo, 23.-25.V.1986 (VS); 1 ex. – Slovakia, Štúrovo, V.1968 (VS); 1 ex. – Romania, Crucea, 3.V.2015 (VS); 1 ex. – Bulgaria, Harmani, Lyubimets env. 59 m, 14.05.2011 (MČ); 1 ex. – Turkey, Sultan Dag, 14.7.1991 (PŠ); 21 ex. – Bulgaria, Pirin Mts., Rožen near Melnik, 4.7.2004 (WG); 3 ex. – Bulgaria, Primorsko env., 27.6.2004 (WG); 3 ex. – Bulgaria, Liubinec, 25.5.2010 (WG); 4 ex. – Bulgaria, Lozenec env., 28.6.2004 (WG); 3 ex. – Greece, Preveza, 10.6.1992 (WG); 1 ex. – Serbia, 10 km E Pirot, 7.6.2012 (WG); 4 ex. – Bulgaria, Kiten, 24.-29.6.2004 (WG); 1 ex. – Greece, Peloponnesos, Arcadia, Paradiseia, 4.6.2011 (WG); 2 ex. – Czechia, Kurdějov, 2.6.2009 (KH); 2 ex. – Czechia, Mikulov, Turolď, 14.5.2011 (KH); 1 ex. – Czechia, Pouzďřany, 2.5.2009 (KH); 1 ex. – Czechia, Brno-Slatina, 2.5.1992 (KH); 1 ex. – Czechia, Pouzďřany, 28.6.1999 (KH); 3 ex. – Greece, Agii Theodoroi, 1.6.2010 (KH); 1 ex. – Macedonia, 2 km N of Zavoj, 30.5.2010 (KH); 1 ex. – Greece, Trikala, Kastraki, 1.-4.6.2010 (KH); 12 ex. – Romania, Ravensca, 7.-10.5.2010 (KH); 2 ex. – Greece, Karperovo env., 11.-12.6.2012 (KH); 1 ex. – Czechia,

Brno-Kohoutovice, 5.6.1993 (KH); 3 ex. – Kazakhstan, Putinsevo env., 30.5.2016 (KH); 2 ex. – Kazakhstan, Samsonovka, 31.5.2019 (KH); 1 ex. – Kazakhstan, Kaznakovka, 1.6.2016 (KH); 1 ex. – Greece, Thesalia, Pindos Mts., Nereida, 4.-8.6.2012 (KH); 1 ex. – Bulgaria, Sandanski env., 31.5.2008 (KH); 2 ex. – RSFSR, Soči, 16.6.1990 (JCH); 1 ex. – Greece, Peloponnese, Lakonia nomos, Kelefa env., 26.-27.5.2003 (PJ); 5 ex. – Greece, Agio Theodori, 8.- 14.5.2013 (PJ); 2 ex. – Greece, Kalampaka, 8.-15.5.2013 (PJ); 5 ex. – Bulgaria, kemp YUG (5 km S Kiten), 24.6.2004 (PJ); 9 ex. – Russia, Orenburg reg., 16 km W Jasnyj, 330 m, 51°04'N 59°40'E, 19.5.2005 (MD); 10 ex. – Greece, Peloponnese; Lakonia, 1 km N Souli; 37°17'31''N 22°3'20''E; 21.5.2018, 570 m (DN); 1 ex. – Greece, Peloponnese, Melissa bor., 8.- 20.4.1995 (PJ); 8 ex. – Greece Peloponnisis; Lakonia Fanaiti 1,5 km W; 31°18'03" N 22°02'23"E; 21.5.2018 (TL).

Body long, 6-13 mm, with metallic colour throughout, usually bluish green, blue to violet, rarely black, anterior part sometimes having metallic tint different from posterior part. Head with regular punctation, with interspaces larger than puncture diameter. Pronotum square-shaped or moderately longitudinal, moderately convex laterally, anteriorly somewhat more throttled than posteriorly, punctation denser than that on head, on disc moderately loosened anteriorly and moderately thickened posteriorly. Punctation not forming wrinkles. Male antennomeres exceeding body length by about one third, female antennomeres only slightly exceeding body, first antennomeres usually with distinct metallic tint, remaining ones only with moderate metallic tint. Antennae from the third article with distinct black eyebrows on inner side, sometimes whole antennae densely shortly white-haired, in some cases this light hair forms rings at base of antennomeres. In some cases antennae only entirely dark. Scutellum longitudinal, with very fine punctation, usually with pale pubescence. Elytra parallel, about 2.5 times longer than wide, with coarse punctation weakening towards apical part. Head, prothorax and basal half of elytra with erect, rather long, black setae. Apical half of elytra with decumbent, black pubescence, without erect setae. Head sometimes with dense white pubescence. Legs with short, white pubescence. Body underside also metallic, covered with sparse, pale pubescence. Colour mostly greenish blue, sometimes only green, bright blue or elytra blue and pronotum green or anterior part black, remaining body area blue or violet.

Remarks: The most widely distributed species of the group *Smaragdula*. I do not exclude the occurrence of *A. (S.) violacea* in Armenia and Georgia, but in the material examined, I have not seen any specimens, which could be reliably identified as *A. (S.) violacea*. Only from Georgia, I know few specimens of *A. (S.) persicola* with completely or nearly reduced white pubescence of elytra, (see the next chapter). These specimens can resemble to *A. (S.) violacea*.

Due to the broad polyphagy of specimens identified as *A. (S.) violacea*, in the otherwise narrowly foraging-specialized group *Smaragdula*, and the wider variation in characters, it is possible that this is a complex of cryptic taxa. For a detailed study of the taxon *A. (S.) violacea*, it would be necessary to collect a larger number of samples from across its range and possibly subject these samples to genetic analysis.

Bionomics: Imagines were found on *Carduus*, *Centhranus*, *Medicago*, *Onobrychis*, *Psoralea*, *Phlomis*, *Salvia*, *Scabiosa*, etc.

Agapanthia (Smaragdula) viti Rapuzzi & Sama, 2012

(Figs.: 34, 56, 78, 117, 118)

viti Rapuzzi & Sama, 2012: 675, Type locality: Hungary, Baks, 17.V.2003.

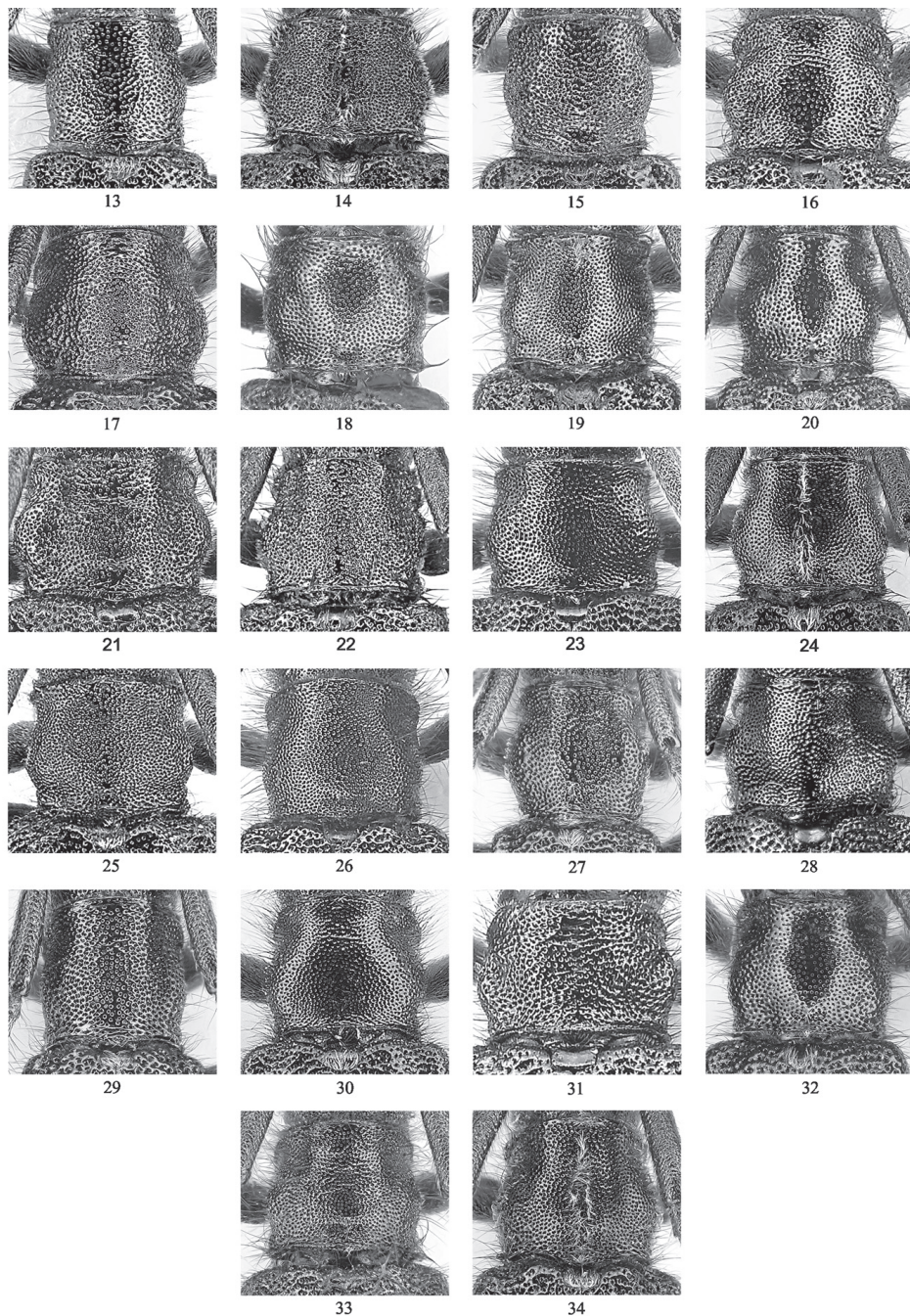
Geographic distribution: CR, HU, RO, SB, SK.

Material examined: 21 ex. – Hungary, Vintyéd, ex larva, 15.III.2009 (KH); 1 ex. – Hungary, Vintyéd, 25.IV.2009 (VS); 1 ex. – Slovakia, Kamenín, Kenínské slanisko NPR, 27.V.2012 (LK); 11 ex. – Hungary, Vintyéd, 12.6.2006 (PJ); 2 ex. PT – Slovakia mer. (8177), Kamenin; NPR Kam. Slanis., 20.5.2009 (OS).

Body length 12-15 mm. Species not very variable in colour, rather dark, obsoletely metallic blue green or with combination of these colours. Pronotum usually with three longitudinal stripes of pale pubescence. Pronotal punctation not forming wrinkles. With greyish white punctation of antennae usually forming narrow circles at bases of antennomeres. Scutellum usually with dense, yellowish pubescence. Elytra moderately narrowed towards apex, with dense punctation forming moderate wrinkles. Elytral punctation sometimes with slight indication of longitudinal ribs. Rather long, erect setae only at base, in first third, elytra otherwise with dense, yellowish pubescence. Body with yellowish pubescence also on ventral side. Presence of yellowish pubescence on elytra typical.

Remarks: It is a species similar to *A. (S.) osmanlis*, which can be differentiated based on the elytral pubescence colour: yellowish in *A. (S.) vittii* and white to greyish white in *A. (S.) osmanlis*. According to certain discussions belong the two taxa *A. (S.) intermedia* and *A. (S.) vittii* to be conspecific with each other. This could correspond to the absence of differences between larvae (Švácha, personal communication). However, in my opinions, these are unambiguously two different species, which corresponds not only to narrow nutritional preferences - *Knautia* in *A. (S.) intermedia* and *Dipsacus laciniatus* in *A. (S.) vittii*, but also to differences in male genitals.

Bionomics: The development occurs in *Dipsacus laciniatus* (Dipsacaceae).



13 - *A. amitina*; 14 - *A. (S.) chalybaea*; 15 - *A. (S.) frivaldszkyi*; 16 - *A. (S.) gemella*; 17 - *A. (S.) grosseri* sp. nov.; 18 - *A. (S.) incerta*; 19 - *A. (S.) intermedia*; 20 - *A. (S.) izzilloii*; 21 - *A. (S.) kadleci* sp. nov.; 22 - *A. (S.) lais*; 23 - *A. (S.) naciya*; 24 - *A. (S.) osmanlis*; 25 - *A. (S.) ozdikmeni*; 26 - *A. (S.) persicola*; 27 - *A. (S.) pesarinii*; 28 - *A. (S.) petranyi*; 29 - *A. (S.) psoralae*; 30 - *A. (S.) posti*; 31 - *A. (S.) rapuzzii*; 32 - *A. (S.) talassica*; 33 - *A. (S.) violacea*; 34 - *A. (S.) vittii*



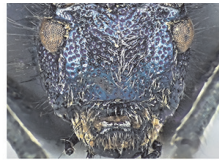
35 - *A. (S.) amitina*; 36 - *A. (S.) chalybaea*; 37 - *A. (S.) frivaldszkyi*; 38 - *A. (S.) gemella*; 39 - *A. (S.) grosseri* sp. nov.; 40 - *A. (S.) incerta*; 41 - *A. (S.) intermedia*;
 42 - *A. (S.) izzilloii*; 43 - *A. (S.) kadleci* sp. nov.; 44 - *A. (S.) lais*; 45 - *A. (S.) nacyiae*; 46 - *A. (S.) osmanlis*; 47 - *A. (S.) ozdikmeni*; 48 - *A. (S.) persicola*;
 49 - *A. (S.) pesarinii*; 50 - *A. (S.) petrunyi*; 51 - *A. (S.) posti*; 52 - *A. (S.) psoralaeae*; 53 - *A. (S.) rapuzii*; 54 - *A. (S.) talassica*; 55 - *A. (S.) violacea*; 56 - *A. (S.) vitti*



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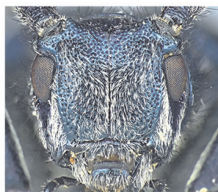
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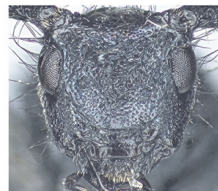
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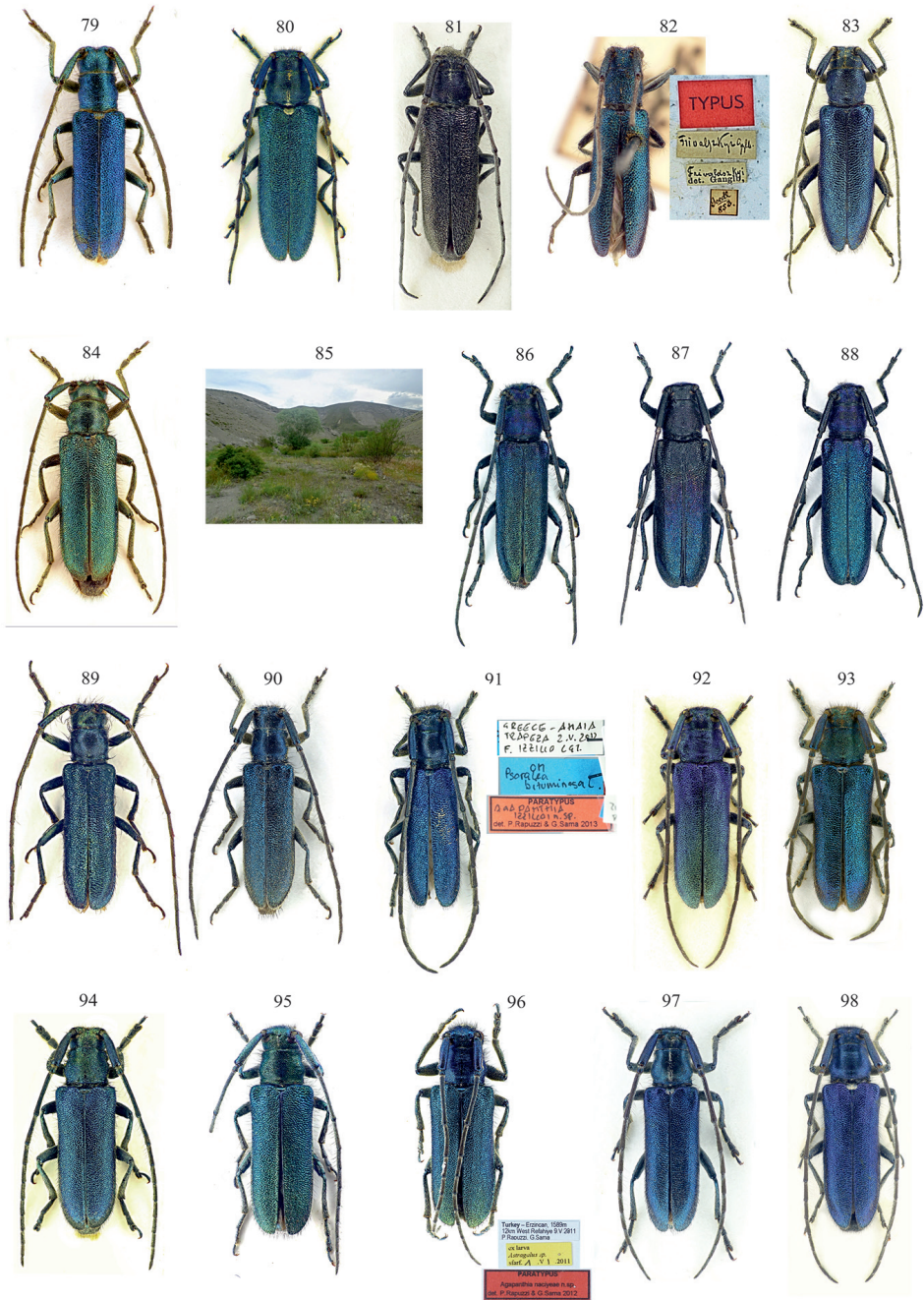


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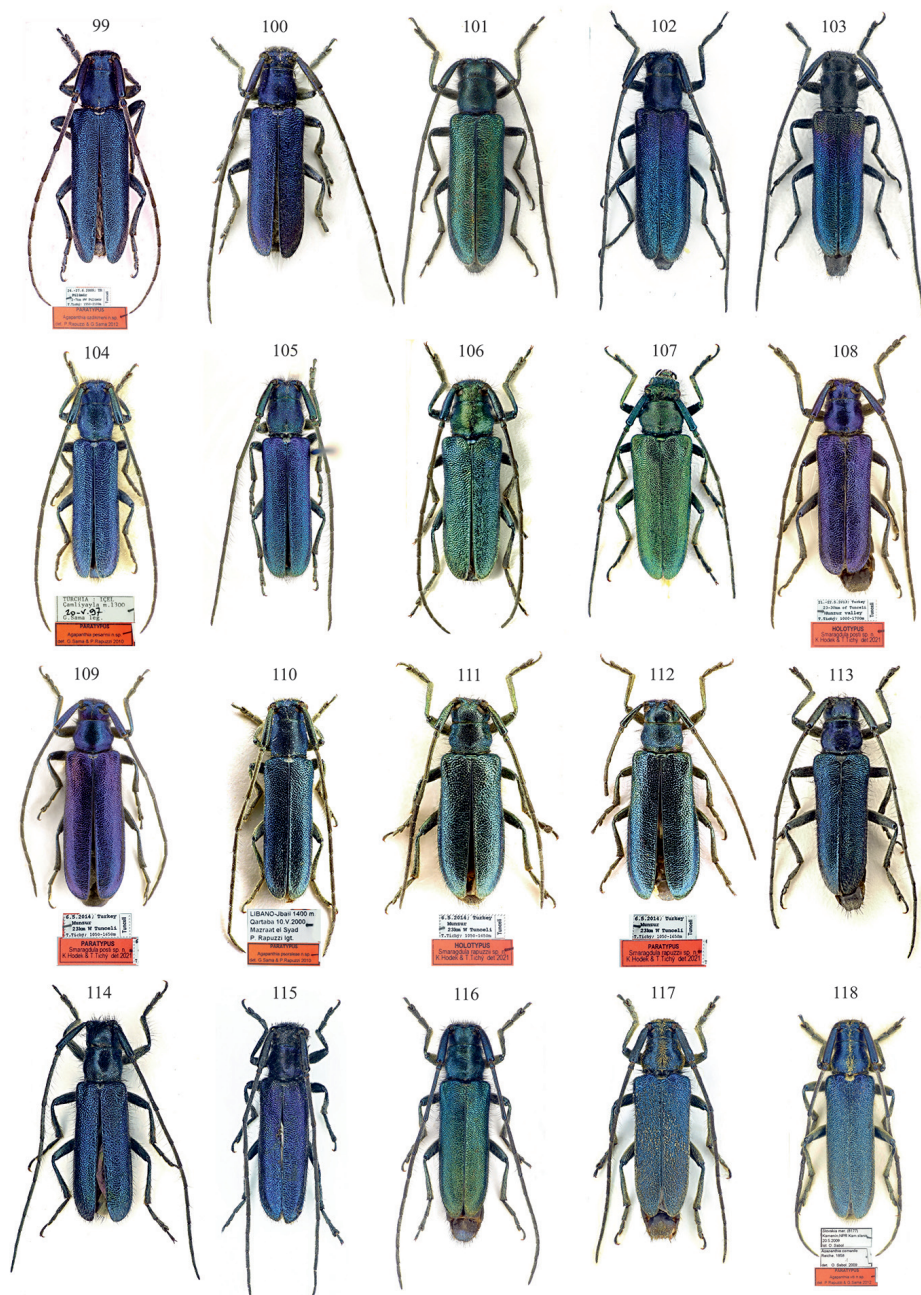


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57 - *A. (S.) amitina*; 58 - *A. (S.) chalybaea*; 59 - *A. (S.) frivaldszkyi*; 60 - *A. (S.) gemella*; 61 - *A. (S.) grosseri* sp. nov.; 62 - *A. (S.) incerta*; 63 - *A. (S.) intermedia*; 64 - *A. (S.) izzilloii*; 65 - *A. (S.) kadleci* sp. nov.; 66 - *A. (S.) lais*; 67 - *A. (S.) nacyiae*; 68 - *A. (S.) osmanlis*; 69 - *A. (S.) ozdikmeni*; 70 - *A. (S.) persicola*; 71 - *A. (S.) pesarinii*; 72 - *A. (S.) petranyi*; 73 - *A. (S.) psoraleae*; 74 - *A. (S.) posti*; 75 - *A. (S.) rapuzzii*; 76 - *A. (S.) talassica*; 77 - *A. (S.) violacea*; 78 - *A. (S.) viti*



79 ♂ (PT) - *A. (S.) amitina*; 80 ♀, 81 ♂ - *A. (S.) chalybaea*; 82 ♂ (ST), 83 ♀ - *A. (S.) frivaldszkyi*; 84 ♀ - *A. (S.) gemella*; 85 (type locality), 86 ♂ (HT), 87 ♀ (PT), 88 ♀ (PT) - *A. (S.) grosseri* sp. nov.; 89 ♂ - *A. (S.) incerta*; 90 ♀ - *A. (S.) intermedia*; 91 ♂ - *A. (S.) izzilloi*; 92 ♂ (HT), 93 ♀ (PT) - *A. (S.) kadleei* sp. nov.; 94 ♂ - *A. (S.) lais*; 95 ♀, 96 ♀ (PT) - *A. (S.) nacyiae*; 97 ♂, 98 ♂ - *A. (S.) osmanlis*



99 ♂ (PT), 100 ♂ - *A. (S.) ozdikmeni*; 101 ♀, 102 ♂, 103 ♂ - *A. (S.) persicola*; 104 ♂ (PT), 105 ♀ - *A. (S.) pesarinii*; 106 ♂, 107 ♀ - *A. (S.) petransyi*; 108 ♂ (HT), 109 ♀ (PT) - *A. (S.) posti*;
 109 ♂ (PT) - *A. (S.) psoralcae*; 111 ♂ (HT), 112 ♀ (PT) - *A. (S.) rapuzzi*; 113 ♂, 114 ♂ - *A. (S.) talassica*; 115 ♂, 116 ♂ - *A. (S.) violacea*; 117 ♀, 118 ♂ (PT) - *A. (S.) vitti*

Acknowledgements

The author are very grateful to Národnímu Muzeu Praha represented by Lukáš Sekera, Tel Aviv University represented by Laibale Friedmann, Naturhistorisches Museum Wien represented by Harald Schilhammer, Mikhail Danilevsky (Moscow, Russia), David Navrátil (Litomyšl, Czech Republic), Josef Kadlec (Varnsdorf, Czech Republic), Lubomír Havlík (Polička, Czech Republic), Lukáš Skořepa (Dačice, Czech Republic), Matěj Čermák (Praha, Czech Republic), Petr Kabátek (Praha, Czech Republic), Pavel Štěpánek (Kladno, Czech Republic), Tomáš Peterka (Veselí nad Lužnicí, Czech Republic), Tomáš Tichý (Ostrava, Czech Republic), Pierpaolo Rapuzzi (Prepotto, Italy), Vladimír Skoupý (Kamenné Žehrovice, Czech Republic), Walter Grosser (Opava, Czech Republic), Ladislav Klapka (Česká Lípa, Czech Republic), Ondřej Konvička (Vsetín, Czech Republic), Zdeněk Košťál (Pardubice, Czech Republic), Pavel Jelínek (Brno, Czech Republic), Tomáš Lengál (Olomouc, Czech Republic), Ondřej Sabol (Ostrava-Nová Bělá, Czech Republic) for the loan of comparative material.

The author also thanks for comments on the Vítězslav Kubáň (Brno, Czech Republic) and Lukáš Bureš (Brno, Czech Republic), for information on Central Asian species (*A. (S.) talassica/incerta*) Michail Danilevsky (Moscow, Russia), for help in the realization of this article Petr Záborský (Vienna, Austria), for additional photos Luboš Dembický (Brno, Czech Republic) and for the translating Prof. Miloslav Rakovič DrSc. (Dobřichovice, Czech Republic).

Authors of photos: 85 - Walter Grosser (Opava, Czech Republic); 50, 107 - Luboš Dembický (Brno, Czech Republic); all the other photos – Karel Hodek (Brno, Czech Republic)

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