Humanity space *International almanac* VOL. 4, No 5, 2015: 1120-1133

Descriptions of new taxa from Europe and Southwest Asia (Coleoptera: Cerambycidae)

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Key words: Taxonomy, Coleoptera, Cerambycidae, Syria, Turkey, Finland, Macedonia.*Cerambyx*, *Tetropium*, *Agapanthia.*
Abstract: The text presented below comprises descriptions of new taxa of longhorn beetles from Syria, Turkey, Finland and Macedonia: *Cerambyx nodulosus hermoniacus* **ssp. n.**, *Cerambyx kodymi* **sp. n.**, *Tetropium fuscum lapponicum* **ssp. n.** and *Agapanthia kirbyi valandovensis* **ssp. n.** There is also a brief treatise on *Cerambyx dux* (Faldermann, 1837), and a discussion of possible description of further subspecies (or species) is suggested.

Introduction

In 1994, we (my wife and me) made a tour to Syria and found a number of *Cerambyx* individuals particularly in the southwest part of the country, in the Mount Hermon mountain system. Further *Cerambyx* imagines from Latakia were preserved in my collection. Several series demonstrate considerable differences, but I was unsure about their identity for years. Even 20 years of consultations and Internet discussions were not helpful and thus, now I decided to solve partially the situation by describing of two new taxa: *Cerambyx nodulosus hermoniacus* **ssp. n.**, *Cerambyx kodymi* **sp. n.** In the course of our tour to Scandinavia in 1992 we found a new subspecies of *Tetropium fuscum* (Fabricius, 1787). I also decided to describe a new taxon based on numerous extraordinarily large and different specimens of *Agapanthia kirbyi* (Gyllenhal, 1817) collected by my wife and me in Macedonia.

Material and Methods

The material of longhorn beetles studied here came from collections of the Staatliche Museum für Naturkunde in Karlsruhe (SMNK) and of the National Museum in Prague, from the collection of Zdeněk Černý and from my collection. The observations were first

performed with the naked eye or by using a magnifying glass. The Wild microscope with circular and spot illumination was used for more detailed examinations. An ocular grid was employed for accurate measurements, for example of antennomeres. Photographs were taken with the help of the Nikon 7000 camera with objectives 35, 40 and 105 mm. The following literature was used for the consideration of the genus *Cerambyx*: Demelt (1976), Löbl & Smetana (2010), Özdikmen & Turgut (2009), Plavilstshikov (1940), Rapuzzi & Sama (2012).

Cerambyx nodulosus hermoniacus ssp. n.
Figs 1-2

I hesitated about describing the subspecies. The imagines were considerably different as well as their body size and shape. It was obviously a new, still undescribed taxon, but there was a possibility that it is either a new subspecies or a new species closely related to *Cerambyx nodulosus* Germar, 1817 (Figs 3-4). I describe the taxon as a subspecies *C. n. hermoniacus* **ssp. n.**, but there is a possibility that in the future it will be established as a valid species. *C. nodulosus* was described from Europe. Thus, for comparison, I used material collected in Croatia, Greece and Bulgaria.

C. n. hermoniacus **ssp. n.** is markedly different from the nominotypical form. The imagines are considerably larger and stouter. In males antennae are considerably longer than the body; they exceed elytral apex by 2/3 to 3/4 elytral length. In the nominotypical form antennae exceed body by 1/5 to 1/2. There is a considerable difference in antennomere width-to-length ratios, particularly in antennomeres 3, 4 and 5. The difference is quite obvious in antennomere 5, which is distinctly slimmer and longer. In the new subspecies antennomere 3 is 1.19-1.36x longer than wide, antennomere 4 is 1,50-1,53x, antennomere 5 is 2,64-2,92x, antennomere 6 is 4,18-4,57x, antennomere 7 is 5,68-6,11x, antennomere 8 is 6,23-8,08x, antennomere 9 is7,26-9,63x. In the nominotypical form the ratio is different: antennomere 3 is 1.00-1.08x longer than wide, , antennomere 4 is1,12-1,20x, antennomere 55 is1,85-1,88x, antennomere 6 is 3,79-3,80x, antennomere 7 is 5,24-5,38x, antennomere 8 is 6,14-6,43x, antennomere 9 is 7,51-8,51x. In

males the width of antennomere 5 is of 34-38% of its length; in the nominotypical form it is 52-53 %. In females of the new taxon antennomere 3 is 1.61-1.77x longer than wide, antennomere 4 is 1,76-1,77x**,** antennomere 5 is 2,32-2,45x, antennomere 6 is 2,88-3,04x, antennomere 7 is 3,40-3,43x, antennomere 8 is 3,19-3,20x, antennomere 9 is 3,21-3,50x. In the nominotypical subspecies antennomere 3 is 1.07-1.42 times longer than wide, antennomere 4 is 1,36-1,45x, antennomere 5 is 1,50-1,76x, antennomere 6 is 2,31-2,60x, antennomere 7 is 3,00-3,09x, antennomere 8 is 3,00-3,12x, antennomere 9 is 3,19-4,09x. In females the thickness of antennomere 5 makes 40-43 % of its length; in the nominotypical form it is 57-67 %. There is an irregular shining, smooth central area on the pronotum surface of nominotypical form. In the new subspecies central shining area of pronotum is mostly coarsely wrinkled. The sculpture of male and female elytra is distinctly coarser. In both subspecies, the granulation becomes stepwise finer toward the elytral apex. In the nominotypical form the surface of elytral apex is considerably finer and brighter. In the new subspecies elytra are very dark, piceous-black at base; dark colour continues almost to the elytral apex and only in about posterior fifth it is stepwise brown, but still dark; elytra are matter. In the nominotypical subspecies elytra are brighter, also dark from their base to about two fifths, but their colour then turns paler brown. The change in the colour from dark to brown is rather abrupt. Sixteen specimens from Croatia, Greece and Bulgaria were used for comparison. Body length: ♂♂ 37-42 mm, ♀♀ 40-48 mm, length of antennae: ♂♂ 49-65 mm, ♀♀ 32-36 mm.

Material. Holotype (♂) and 7 paratypes (3 ♂♂ and 4 ♀♀) - Syria, Mount Hermon, Jandal, 29.6.1994. J. & M. Sláma lgt.; all types are preserved in SMNK.

Cerambyx kodymi sp. n.
Figs 5-6

The new species was found in Syria, in the surroundings of the city Latakia. We also found an individual north of this location, in Turkey, at Iskenderun. *C. kodymi* **sp. n.** is probably closest to *Cerambyx carinatus* (Küster, 1845) (Figs 7-8), from which it is,

however, different in a number of characters.

Eyes are smaller compared to *C. carinatus*, the interval between them is larger on the dorsal and ventral sides. When measuring external dimensions of the head together with eyes (=100 %), then the interval between eyes on the dorsal side is of 20-22% in ♂♂ and 24% in ♀♀ (In *C. carinatus* it is of 16% and 11%, respectively). On the underside, the interval between eyes is of 21-22% in ♂♂ and 23-24% in ♀♀ (in *C. carinatus* it is of 9% and 10%, respectively). The interval on the dorsal side is about 1.5-2 times larger than the eye width (in *C. carinatus* it is about as large as the eye width). The frons - a split area between antennae with an elevated arcuate ridge ending by a point on its outer posterior side. In *C. carinatus* the split area is rather straight and points on the outer posterior side are obtusely rounded. Male antennae are moderately longer than the body and female antennae reach about middle of the elytra. Antennomeres, particularly antennomeres 3-5 in both males and females are, in relation to the body, stronger compared to *C. carinatus*. The difference can be seen on the common photograph of males and females. In males, antennomere 6 is 1.65 longer than antennomere 5 (in *C. carinatus* it is 1.37 times longer); the difference is not very distinct in females. Antennomeres 3-5 are considerably dilated compared to other ones. In males the ratio of antennomere 3 length to width is 1.31; antennomere 4 is 1,28-1,37x, antennomere 5 is 1,61-1,76x, antennomere 6 is 3,10-3,30x, antennomere 7 is 4,40-4,62x. In females the ratio of antennomere 3 length to width is 1.67-1.78, antennomere 4 is 1,28-1,37x, antennomere 5 is 1,61-1,76x, antennomere 6 is 3,10-3,30x, antennomere 7 is 4,40-4,62x. In males of *C. carinatus* antennomere 3 is 1.26-1.45x, antennomere 4 is 1,29-1,56x, antennomere 5 is 1,50-1,63x, antennomere 6 is 2,73-2,78x, antennomere 7 is 3,92-3,90x longer than wide, in females antennomere 3 is 2.22, antennomere 4 is 1,93x, antennomere 5 is 2,10x, antennomere 6 is 2,50x, antennomere 7 is 2,80x longer than wide. Antennomere 1 is very densely, coarsely punctated, the other antennomeres being also very densely, but much more finely punctated. There are also deeper pits on all the antennomeres, coarser on antennomere 1 and stepwise finer on next antennomeres. All antennomeres bear short, decumbent, grey setae, sparse on antennomeres 1 and 2, but very dense on the other antennomeres.

Male antennae have a ridge on antennomere 6, which is widened backward; the ridge is widest in its apex**.** The apex of antennomere 7 is very round, and it can be terminated by a rather sharp denticle in antennomere 10. In the new species the dilation is more distinct just from the base of antennomeres. The pronotum is irregularly wrinkled throughout its surface. There is an elevated, narrow, smooth longitudinal ridge in the middle part. Anteriorly pronotum is wider than posteriorly. Shorter body shape occurs less frequently in other *Cerambyx*. The ratio of forebody (head and pronotum) length to elytra length is 1.80-1.84 in males and 1.80-1.87 in females, the posterior part of the body is shorter. In *C. carinatus* the ratio of forebody (head and pronotum) length to elytra length is 2.12 in males and 2.38 in females, the posterior part of the body is longer. End of elytra at the suture is terminated by a distinct tooth or obtuse or finely rounded angle. Elytral sculpture (granulation) is relatively fine at the base, finer backward and very fine on the elytral apex. Elytra from the middle backward, including posterior fifth, with very fine, grey setae. The whole body is evenly dark brown. Protarsites 2 and 3 are wider than long. Metatarsi are also wider compared to *C. carinatus*. The basimetatarsite is 1.46-1.60x times longer than wide at its end. On the underside, the basimetatarsite is divided by a fine furrow extending from its base to its middle. Body length: ♂♂ 36-39 mm, ♀♀ 35-40 mm.

Material. Holotype (♂) and 5 paratypes; 1 ♂ and 3 ♀♀, Syria, Latakia, 18.-29.6.1987, lgt. Odolen Kodym; 1 ♀, Turkey, Iskenderun, 24.6.1993, J. & M. Sláma lgt. All types are preserved in SMNK.

Cerambyx prope *dux* (Faldermann, 1837) [sp. n., ssp. n. ?]
Figs 9-10

Cerambyx dux was described without exact locality (from Transcaucasia to Iran). I collected imagines, usually identified as *Cerambyx dux,* in southern Europe as well as in Turkey and Syria. I accumulated relatively numerous material, but I was unable to provide their exact identification, since there were certain differences among the imagines and it was thus impossible to accumulate more complex and more numerous material. We found relatively different

individuals in the Mount Hermon mountain system. I kept them for years in my collection, separately from other species. The colour of their whole body is dark piceous-reddish brown, and they also exert a coarser sculpture on elytra. In *Cerambyx dux* (Figs 11-12) colour of elytra is usually dark brown, and from the half or from the posterior fourth, it is usually stepwise paler. Body shape is different, the imagines are shorter and less slim. Elytra are shorter, more finely granulate, almost smooth in about posterior third. In male of *C. dux* antennomere 5 more or less exceeds beyond the elytral base. In a male from Jandal antennomere 5 does not reach elytral base and antennomeres 1-5 are shorter. In male the ratio of antennomere 3 length to antennomere 4 length is of 1:1.03, to antennomere 5 is 1,38x, to antennomere 6 is 1,65x, to antennomere 7 is 2,20x, to antennomere 8 is 2,10x, to antennomere 9 is 2,00x, to antennomere 10 is 1,95x, to antennomere 11 is 2,95x. In females the ratio of the antennomere 3 length to antennomere 4 length is 0.85, to antennomere 5 is 0,90x, to antennomere 6 is 1,05x, to antennomere 7 is 1,20x, to antennomere 8 is 1,15x, to antennomere 9 is 1,10x, to antennomere 10 is 0,95x, to antennomere 11 is 1,10. Male antennomeres are moderately flat axe-like dilated outward and are ending only in their last part by a distinct sharp, backward directed process (tooth). This ending is different from common *C. dux*. Certain differences can be seen in photos. Body length: ♂♂ 33-47 mm, ♀♀ 43-49 mm.

Materials. 1 ♂ and 3 ♀♀, Syria, Mount Hermon, Jandal, 29. 6. 1994, J. & M. Sláma lgt. - SMNK.

Trichoferus prope *griseus* (Fabricius, 1793)
Figs 13-14

I reared this species from a branch of *Ficus* from Andalusia, Spain. I was unable to identify exactly the imagines and thus, I addressed to S. Kadlec, who stated that they are actually surprising, but they can belong to *Tr. griseus* (Fabricius, 1792) only because of erect setae of elytra. In my opinion, they are considerably different, and I transferred them to Rapuzzi, who equipped them with his identification label *Tr. griseus*. I am presenting a number of photos, including two of *Trichoferus griseus* from North Africa (Figs 15-16),

where the species was described from. I believe that the imagines from Spain are distinctly different. I also reared *Trichoferus holosericeus* Rossi, 1790 from same locality also from *Ficus*. I have certain problems with the identification of species within the genus *Trichoferus* and thus, I would prefer to find somebody, who is able to examine the specimens and possibly to present the appropriate descriptions. In my opinion, this is an undescribed taxon (species or subspecies).

The larvae developed under the bark and in the wood of a quite dead *Ficus* plant. The branch was 4-7 cm thick.

Studied specimens were collected by J. & M. Sláma in Espaňa, Andalusia, Nerja, 1991; material is preserved in SMNK.

Tetropium fuscum lapponicum ssp. n.
Figs 17-18

I collected imagines with my wife Jarmila in Finland far north from the Arctic Circle in the light of the night sun being low above the horizon one hour before midnight. They occurred on the bottom part of a dead spruce tree (*Picea*). Some imagines were running on the bark and some others still resided under the bark. There were also several larvae under and inside very thick bark. We stripped the bark from a part of the trunk and transferred it home. A number of imagines hatched from this bark next year. The larvae were fairly large, but I do not know their age and the length of their development period. I do not know whether the eggs were deposited in the preceding year (1991) or earlier, but the total duration of the *Tetropium fuscum* development should have been at least two years under these cold northern conditions. We also found *Tetropium aquilonium* Plavilsthikov, 1940 and *Tetropium castaneum* (Linnaeus, 1758) together with *Tetropium fuscum* (Fabricius, 1787) on the same tree.

A new subspecies differs markedly from the nominal subspecies (Figs 19-20) especially by the bodily structure, shorter and wider elytrae. On average, elytrae are 2,17 - 2,4 times longer with respect to males than at the wide base, exceptionally 2,44. Regarding females, elytrae are 2,16 - 2,36x longer than at the base wide, exceptionally 2,38. With respect to the nominotypical form it

is 2,43 -3,14, for males and 2,3 - 2,6 times longer than at the base wide for females. In comparison with the nominotypical subspecies, the 5th link of antenna of females is longer, especially the front tarses of males is thinner, the 1st link of rear tarses is longer in comparison with the 2nd link. These differences are not significant, but they are visible. The colour of elytrae is darker, dark brown, villosity of the front part of elytrae is very significant, the difference is very distinctive as opposed to the nominotypical.
Materials. Holotype (♂ - SMNK) and 46 paratypes (♂♂ and♀♀), Finnland, Ivallo, 15.7.1992, J. & M. Sláma lgt. - SMNK (31 paratypes) and coll. M. Sláma (15 paratypes). Several imagos rose from *Picea* at home.

Agapanthia kirbyi valandovensis ssp. n.
Figs 21-22

In 1981, together with my wife, we found a very small location in Macedonia, closely covered with mullei plants *Verbascum* sp., and on them, there were numerous individuals of *Agapanthia kirbyi*. Several imagines were present on each plant and all the plants were damaged by females feeding on them and laying eggs. We collected several tens of individuals, but their total number was enormous. They evenly exerted differences in the body size and colour compared to those we collected anywhere else in the Balkans, even in a not very distant (about 80 km) location near the city Veles (that time Titov Veles). After I made public a photography of the box from my former collection containing *Agapanthia kirbyi* via the Internet, a number of specialists were surprised at different characteristics of the imagines. Due to this, I decided to describe these remarkable imagines.

The new subspecies is striking at the first sight as to its body size and colour, which is less green and has an ochre tinge. The body is stouter, wider and shorter. The elytra are shorter in average by 12-16% as compared to the nominotypical form (Figs 23-24). The first antennomere has on its outer side a stripe not all 2 mm wide of yellow setae extending from base to ½-⅔. This stripe is absent in the nominotypical subspecies. On the elytra, there are shallow and sparse punctures (pits), intervals between them being larger than the

puncture diameter. In the nominotypical species, there are coarse punctures (pits), intervals between them being smaller than the puncture diameter or absent, the elytra are sometimes rather coarsely wrinkled. Eyes are also different. Most imagines have eyes vertically more elongate (1.18x) compared to the nominotypical ssp. (1.04x), but this does not hold in general.

Agapanthia kirbyi was described from Portugal. I had no imagine from there for comparison and thus, I compared the specimens concerned with imagines from Southwest France (Hérault, 12 specimens); I had 49 specimens from Valandovo. In the future, it is to expect descriptions of further subspecies, for example from Turkey (see the first row on the left side in the photo). Body length: 20-24 mm.

Materials. Holotype (♂) and 29 paratypes (11 ♂♂ and 18 ♀♀), Macedonia, Valandovo, 28.5.1981, J. & M. Sláma lgt. - SMNK.

Derivatio nominis

Cerambyx nodulosus hermoniacus **ssp. n.** refers to the mountain system Mount Hermon in Syria. *Cerambyx kodymi* **sp. n.** was named in honor of its collector Odolen Kodym, a known Czech geologist - a son of the geologist and entomologist Odolen Kodym. *Tetropium fuscum lapponicum* **ssp. n.** was named after the name of its native land - Scandinavian part of Lapland. *Agapanthia kirbyi valandovensis* **ssp. n.** was also named after the name of its locality - village Valandovo in Macedonia.

Discussion

Taxonomy of the genus *Cerambyx* is rather complex and frequently unclear. Imagines of the genus *Cerambyx* (subg. *Cerambyx*) are collected by all entomologists, but frequently pose problems in the course of their identification. According to different quotations, a number of authors dealt with the genus. The main problem results from the fact that most imagines are scattered in many private as well as institutional collections and it is impossible to accumulate large, complete material. With the good will and less fragmented opinions concerning subspecies, it would be certainly

possible to clarify the situation in most species. This is mostly no problem for Europe, but unclear facts are particularly encountered in the area of Southwest Asia. I have seen a number of *Cerambyx* individuals (including specimens from Armenia), which were difficult to identify, particularly those similar to *C. apiceplicatus*, *C. dux* (Faldermann), *C. heinzianus* Demelt, 1976 and *C. nodulosus* Germar, 1817, and I believe that their descriptions as new subspecies will be likely and justified in the future. For example, females of cf. *C. apiceplicatus* Pic, 1941 (?, sp.?) from Syria with a thorn at the elytral apex exerted a sculpture of elytra quite different from the published photo of a male (Rapuzzi, Sama 2012). In the same work, the female depicted together with the male, obviously does not belong to *C. apiceplicatus* based on antennomere 2, but it rather belongs to *cerdo - velensii* group. In Cyprus, I found an elytron of *Cerambyx* sp. having a thorn at the end of the elytral suture. In Turkey, at the Lake Van, I found a female of *C. heinzianus* (?), which was, however, very different by its wider body and longer antennae length. I have seen a male specimen and a female specimen of *C. nodulosus* from Bulgaria; they were both wide and short and obviously belonged to a local geographic form. The biggest problem is probably with *Cerambyx dux*, which occurs in a large area particularly on orchard trees and exerts more or less different forms. The situation will obviously be complicated and confusing due to the fact that in many cases, the species was formerly locally introduced by the transfer of the wood, particularly of the firewood via the ship transportation. In the Mediterranean, this way of the propagation was frequent for example in species of the genera *Trichoferus, Plagionotus, Phymatodes*, etc. Mixing of introduced species will be confused with the species variability. In the present work, in the paragraph entitled *Cerambyx* prope *dux,* I mentioned characters of imagines from the mountain system Mount Hermon, which were considerably different from the European ones. However, I also considered differences from European specimens in imagines we collected in Turkey (Nemrut Dag and Halfeti), in which all males have moderately longer antennomere 3. Turkish entomologists having larger materials will certainly have more appropriate chance to perform entomological studies in this respect. The last taxon described here is *Agapanthia kirbyi valandovensis* **ssp. n.** More new

species and subspecies have been recently described within the genus.

Large species of the genus *Cerambyx* (subg. *Cerambyx*) occurring in Europe and Southwest Asia can be divided into several groups particularly differing by simple and frequently mentioned characters as follows:

A) - According to longer antennomere 2. The antennomere is almost as long as wide. In other species, the length equals to about half the width. (*C. cerdo* Linnaeus, 1758 and *C. wellensii* (Küster, 1845))

B) - According to the shape of male antennomeres 3-5. These antennomeres are strongly widened. The elytra end by a more or less distinct thorn or callus. (*C. carinatus* (Küster, 1845), *C. apiceplicatus* Pic, 1941, *C. kodymi* **sp. n.**)

C) - According to the shape of male antennomeres 3-5. These antennomeres are strongly widened. The elytra do not end by a thorn, but are more or less rounded. Metatarsomere 1 is about twice longer than wide at apex. (*C. miles* (Bonelli, 1812), *C. nodulosus nodulosus* Germar, 1817)

D) - According to the shape of male antennomeres 3-5. These antennomeres are also strongly widened. Metatarsomere 1 is very short. The elytra do not end by a thorn, but are more or less rounded. (*C. dux* (Faldermann, 1837))

E) - According to the shape of widened male antennomeres 3-4, and shape of longer, attenuated antennomere 5. Metatarsomere 1, measured from the tibia apex, is twice as long as wide. The elytra do not end by a thorn, but are more or less rounded. (*C. nodulosus hermoniacus* **ssp. n.**)

F) - According to the shape of male antennomeres 3-5; the antennomeres are not as widened as in preceding 3 groups. Antennomere 3 is twice longer than wide at apex. Metatarsomere 1, measured from the metatibia apex, is twice as long as wide. The elytra do not end by a thorn, but are more or less rounded. (*C. heinzianus* Demelt, 1976)

Acknowledgements. I am indebted to Dr. Riedel from the Museum in Karlsruhe and to Mgr. Hájek and Z. Černý from Prague for loans of material.

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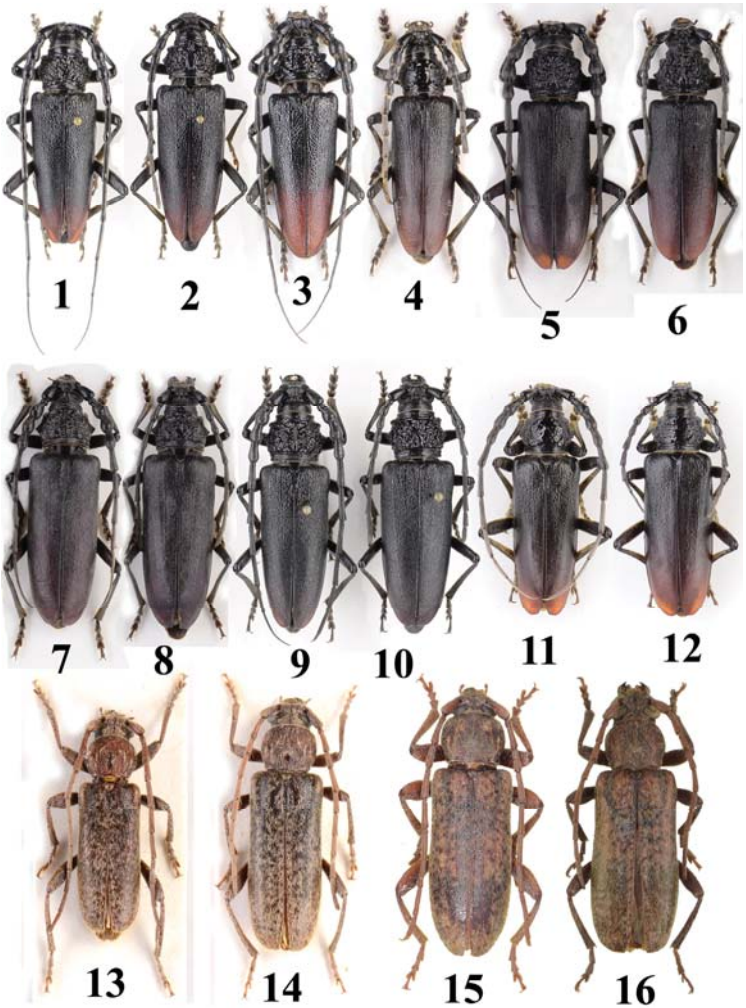
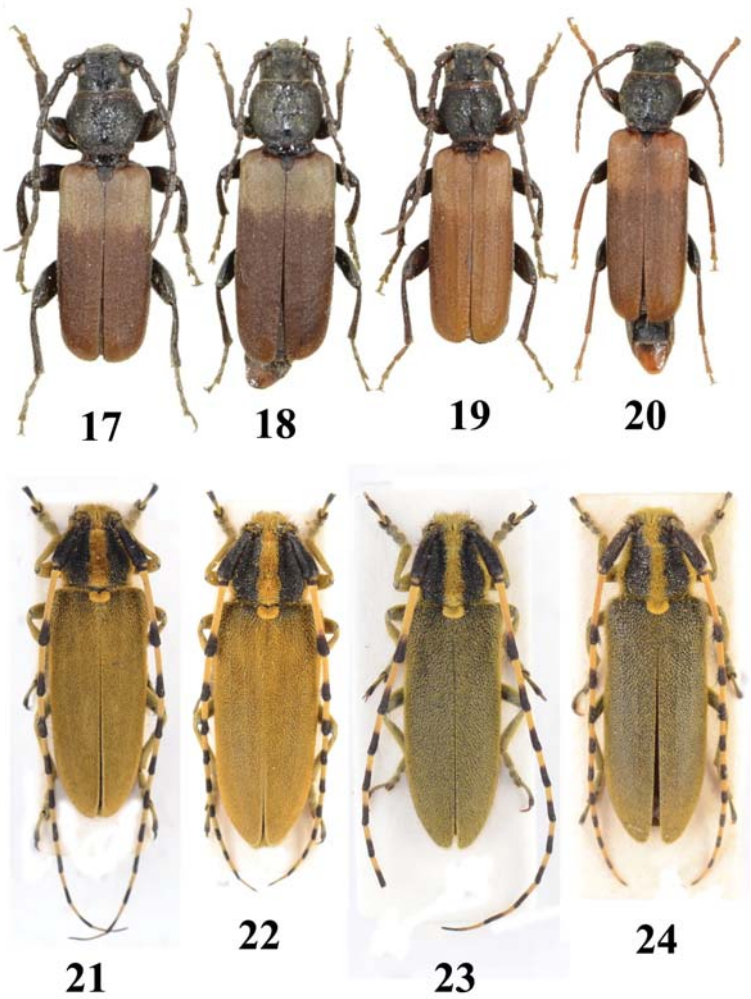


Figs 1-2.*Cerambyx nodulosus hermoniacus* **ssp. n**.: 1 - male, holotype; 2 - female, paratype. **Figs 3-4.** *Cerambyx nodulosus nodulosus* Germar, 1817 - Bulgaria, Slančev Brjag: 2 - male; 3 - female. **Figs 5-6.** *Cerambyx kodymi* **ssp. n**.: 5 - male, holotype; 6- female, paratype. **Figs 7-8.** *Cerambyx carinatus* Küster, 1846: 7 - male, Monte Negro, Bar; 8 - female, Croatia, Senj. **Figs 9-10**. *Cerambyx* prope *dux* (Faldermann, 1837) **[sp. n., ssp. n. ?]** - Syria, Mount Hermon, Jandal: 9 - male; 10 - female. **Figs 11-12.** *Cerambyx dux* (Faldermann, 1837) - Dalmatia: 11 - male; 12 - female. **Figs 13-14.** *Trichoferus* prope *griseus* **(**Fabricius, 1793) - Espaňa, Andalusia, Nerja: 13 - male; 14 - female. **Figs 15-16.** *Trichoferus griseus* (Fabricius, 1793): 15 - male, Tunisia; 16 - female - Algeria.



Figs 17-18. *Tetropium fuscum lapponicum* **ssp. n.:** 17 - male, holotype; 18 - female, paratype. **Figs 19-20.** *Tetropium fuscum fuscum* (Fabricius, 1787)**:** 19 - male, Czechia, Protivín; 20 - female. Czechia, Slapy nad Vltavou. **Figs 21-22.** *Agapanthia kirbyi valandovensis* **ssp. n.:** 21 - male, holotype; 22- female, paratype. **Figs. 23-24.** *Agapanthia kirbyi kirbyi* (Gyllenhal, 1817): 23 - male, France, Hérault, Martin Londre; 24 - female, France, Hérault, Argeliers.

Received: 24.10.2015
Accepted: 27.10.2015