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Cerambyx cerdo iranicus Heyrovský, 1951 and other subspecies of *Cerambyx cerdo* Linnaeus, 1758 (Coleoptera, Cerambycidae)

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Abstract: The validation of *Cerambyx cerdo iranicus* Heyrovský, 1951, nom. rest. is proposed as well as of: *C. c. klinzigi* Podaný, 1964, nom. rest., *C. c. acuminatus* Motschulsky, 1853, nom. rest., *C. c. pfisteri* (Stierlin, 1864), nom. rest. The species identity of *Cerambyx iranicus* Heyrovský, 1951 is supposed.

About all traditionally valid subspecies names of *Cerambyx cerdo* Linnaeus, 1758 were published (Löbl & Smetana, 2010) as synonymes of *C. c. cerdo* Linnaeus, 1758, excepting *C. c. mirbecki* (Lucas, 1842). Such synonymization does not look as convincing. This fact suggested me that I should pay more attention to the problem. It is to add that the frequently encountered opinions of certain entomologists, that a subspecies must be characterized by strict limits of its area, is quite erroneous. The occurrence of transient forms is quite normal, if there are no geographic limits hard to overcome. If so, there is only a question whether a geographically different population occurring in a certain area exerts sufficient differences justifying its description as a separate subspecies.

Cerambyx cerdo cerdo Linnaeus, 1758
Figs 1-4

The nominate form is the most distributed one and very numerous in collections. It is widely distributed in Europe and rather sparingly variable. The exceptional m. *laevicollis* Heyrovský, 1955 (Fig. 2) was described. It has still been known from South Bohemia only, surroundings of Třeboň. It occurs sparsely, together with the nominative form, and unfortunately is not a subspecies.

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Cerambyx cerdo iranicus Heyrovský, 1951, nom. rest.
Figs 5-7

The justification by Sama (2010: 50) concerning the synonymization of *Cerambyx cerdo iranicus* Heyrovský, 1951 surprised me very much. I knew L.Heyrovský personally; he was a very serious entomologist and, to a certain extent, also my teacher in entomology. I am in great doubts to the possibility that he could describe a new subspecies without having appropriate reasons for doing it.

Sama (2010: 50) wrote: "*Cerambyx iranicus* Heyrovský, 1951, **syn. nov**. of *Cerambyx cerdo* Linnaeus, 1758, based on the examination of types series of *Cerambyx iranicus* Heyrovský. It should be noted that the type locality of *C. iranicus* („Sud-ouest de l'Iran, Bushir dans le Golfe perse") is very likely wrong." The text is rather surprising, since L.Heyrovský explicitly described the taxon as a subspecies, *Cerambyx cerdo iranicus* n. ssp., and not as a species. He published his description in Czech and French languages. The doubts about the accuracy of the location are also very controversial. The adult specimens are quite real and easy to differentiate from the nominate taxon. In addition, there are more adult specimens bearing the same locality data, which should have been unknown to Heyrovský that time.

I studied specimens in the Heyrovský collection, deposited in National Museum Prague. I am obliged to Mgr. J.Hájek, who enabled me to examine the material. L.Heyrovský described the subspecies based on six specimens, which were preserved in the collection. I found four specimens there (2 males and 2 females). Holotype and allotype were missing in the type series. The imagines studied had black-framed locality labels hand-written with Chinese ink: male, "Irán mer. occ. Bushir III.", female, "Irán mer. occ. Bushir occ.". L.Heyrovský added a label "*Cerambyx cerdo* ssp. *iranicus* m., Dr. L. Heyrovský det." and a red label "COTYPUS". One label was subsequently added: "*Cerambyx cerdo* L. det. G. Sama 2009". There are also four specimens of the subspecies in the collection of the National Museum Prague in addition to the specimens described by L.Heyrovský: two specimens in the basic collection and two in the S.Kadlec collection; 2 males and 2 females with labels indicating the

same locality “Iran mer. occ., Buschir, März 38”; these four labels are printed.

I thoroughly studied these specimens, and it is unclear to me, why G.Sama synonymized the valid subspecies name, since all specimens are considerably different from the nominative form. The differences are summarized in the table below in the form of a differential diagnosis. The text should be compared with photographs attached.

	Cerambyx cerdo cerdo Linnaeus	*Cerambyx cerdo iranicus* Heyrovský
Head	Vertex is more coarsely punctate. Eyes are smaller. Ultimate palpomere is shorter and more dilated apically.	Vertex is more finely punctate. Eyes are larger, more widened on ventral and anterior sides. Ultimate palpomere is longer.
Antennae	Antennae are distinctly thicker in both males and females. Punctation of antennae is finer. Antennae of males usually longer exceeding body by about elytral length, sometimes even more, rarely a little shorter. Antennae of females are longer, reaching or slightly exceeding elytral apex.	Antennae are distinctly thinner in both males and females. Punctation of antennae is coarser. Antennae of males usually shorter, exceeding body by less than elytral length, rarely by about elytral length. Antennae of females are shorter reaching 4/5 to 9/10 of elytral length.
Pronotum	Lateral thorns are mostly blunter and shorter.	Lateral thorns are mostly sharper and longer.
Scutellum	Wider and blunter.	Narrower and sharper.

Elytra	Elytral sculpture is coarser. Apical elytral thorn is usually blunter and shorter. Elytra are more convergent backward from humeri, narrower in posterior half.	Elytral sculpture is finer. Apical elytral thorn is usually slim and sharp, sometimes considerably. Elytra are less convergent backward from humeri, wider in posterior half.
Body surface	Body on ventral side shortly and very sparsely setose with grey hairlike setae concentrated laterally; strongly shining.	Body on ventral side with longer grey hairlike setae, sparse medially, but dense laterally; matte.
Legs	Legs considerably longer compared to body size. Femora and tibiae are longer and thicker. Tibiae, particularly protibiae, are remarkably transversely wrinkled on underside. Protarsites are wider, more rounded.	Legs considerably shorter compared to body size. Femora and tibiae are shorter and narrower. Transverse wrinkles on underside present at base of protibiae only. Protarsites are narrower, more wedge-shaped.

Cerambyx iranicus Heyrovský, 1951 stat. n.?

The validity of the name *iranicus* Heyrovský should be accepted without any doubts. However, *Cerambyx cerdo acuminatus* was recently also reliably collected in Iran. It is close to the nominative form and very different from *iranicus*. Further individuals of *iranucus* have been also reportedly found there. These findings currently lead to important conclusion that *Cerambyx iranicus* is almost certainly a good species. It is completely supported by very different morphological characters summarized in

the table above, which demonstrates more remarkable differences of the taxon compared to other subspecies of *Cerambyx cerdo*.

Cerambyx cerdo klinzigi Podaný, 1964, nom. rest.
Fig 8

C. c. klinzigi Podaný, 1964 is also mentioned (Löbl & Smetana, 2010) as a synonym of the nominate form. It is obvious that the holotype is very different from the nominate form (not only after the original description, but also according to a photograph sent to me by RNDr. Vladimir Jansky from the National Museum Bratislava, The holotype is more robust, wider and shorter in general, the ratio of elytra width to elytra length is different from that in the nominate form, pronotal wrinkles are similar to that in the *C.c. pfisteri* Stierlin, 1864, which was neither recognized in the Catalogue (Löbl & Smetana, 2010), antennomeres are stronger and more dilated apically, ratios between lengths of antennomeres are different, legs are stronger and tibiae are arcuate. The holotype bears a locality label: "Caucasus". However, Caucasus is a very vast area, so the real type locality of the taxon is unknown. In my opinion, it is impossible to refuse the existence of the subspecies, and it is suitable to wait until new findings.

Cerambyx cerdo acuminatus Motschulsky, 1853, nom. rest.
Figs 9-11

C. c. acuminatus Motschulsky, 1853 was also considered in the Catalogue (Löbl & Smetana, 2010) as a synonym of *C.c.cerdo*; but in the literature and internet sources the name is usually accepted as valid and sometimes even as a species name. *C. c. acuminatus* is particularly different by its coarser sculpture, stouter body and more conspicuous apical elytral thorns. The subspecies inhabits eastern areas. Transitional specimens are already known for example from Bulgaria.

Cerambyx cerdo pfisteri (Stierlin, 1864), nom. rest.
Figs 12-14

C. c. pfisteri (Stierlin, 1864) is the most frequently non-recognized and problematic subspecies. I have seen remarkable specimens from Corsica and Sicily, quite corresponding to the original description. However, certain specimens with finer pronotal sculpture can also be found in other areas, for example in France and Greece. Due to this, the validity of the subspecies is often considered as doubtful.

Cerambyx cerdo mirbecki (Lucas, 1842)
Figs 15-16

A very conspicuous subspecies with more or less considerable setation. At first sight it seems to be a quite different species. The setation is not identical in all specimens, it is ofetn more or less considerable. *C. c. mirbecki* is distributed in North Africa, but transient specimens are also known from Spain, which is also sometimes considered doubtful. *C. c. mirbecki* is a single valid subspecies name in *Cerambyx cerdo* according to the Catalogue (Löbl & Smetana, 2010).

Summary

The work demonstrates a complete justification of the validity of *Cerambyx cerdo iranicus* Heyrovský, 1951, as well as of all other traditional subspecies names in *Cerambyx cerdo*. All subspecies of *Cerambyx cerdo* were not accepted in the Catalogue (Löbl & Smetana, 2010) with an exception of *C. c. mirbecki* (Lucas, 1842) occurring in North Africa. The present work includes a table, which comprises appropriate differential diagnosis of *C. c. iranicus* and *C. c.cerdo*. A further reason for this approach is that specimens of type series of *C. c iranicus* were equipped by G.Sama with determination labels: "*Cerambyx cerdo* L. det. G. Sama 2009". Holotype and allotype are missing in the type series. The present comparison is based on the remaining four paratypes from Heyrovský collection, two specimens from the basic collection of the National Museum Prague and two specimens from S.Kadlec

collection. All known specimens of *C. c iranicus* were collected in Bushir, Iran. *C. c iranicus* Heyrovský was described as a subspecies, but not as a species (according to Sama, 2010). Sama´s doubts concerning the type locality of *C. c iranicus* are also not substantiated. The most important peculiarity of *C. c iranicus* describes here are particularly in the body shape, width and length of antennae, and size of legs and tarsi.

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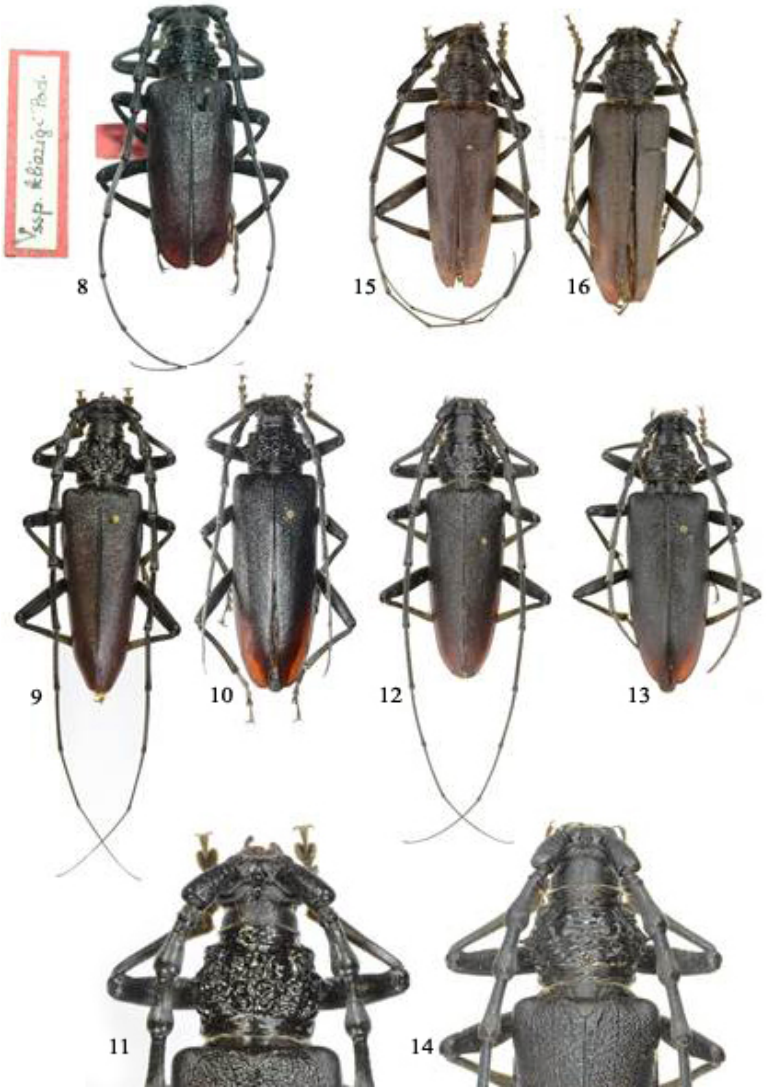
1 - *Cerambyx cerdo cerdo* Linnaeus, 1758; 2 - *C. c.* m. *laevicollis* Heyrovský, 1955; 3-4. *C. c. cerdo*, male and female: CZ, Moravia, Břeclav, VII. 88, M. Kybal lgt.; 5-7. *C. c. iranicus* Heyrovský, 1951, male and female: Iran, Buschir, März 38, 7 - apical elytral thorns.



8 - *C. c. klinzigi* (holotype): Caucasus (foto by V. Jansky, NM Bratislava, RNDr.); 9-11. *C. c. acuminatus*, male (9, 11), female (10): TR, Nemrud Dag,; 12-14. *C. c. pfisteri*, male (12, 14), female (13): Sicilia, Etna; 15-16. *C. c. mirbeckii*, male and female: TUN, Ain Draham.

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