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# New and interesting weevil species (Coleoptera: Curculionoidea) from the Archipelago of Madeira

by

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with **13** figures

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M. M. Andrade & P.E. Stüben
(Excursion on Madeira)
Entomology is always teamwork
- even over generations.

**Abstract**. We present in this paper some interesting and new species of Curculionoidea recorded and collected from the archipelago of Madeira in addition to the illustrated catalogue by P. E. Stüben in 2017 (SNUDEBILLER 18). The following species: *Ischnopterapion virens* (Herbst, 1797), *Sibinia sodalis* (Germar, 1823), *Diaprepes abbreviatus* (Linnaeus, 1758), *Caenopsis fissirostris* (Walton, 1847) *Cathormiocerus attaphilus* (C. N. F. Brisout de Barneville, 1880) and *Brachyderes lusitanicus* (Fabricius, 1781) were recorded for the first time on Madeira Archipelago and some comments were made on other interesting weevil species.

**Keywords**. Curculionidae, Apionidae, morphology, molecular analyses, biology, ecology, host plant, endemism, faunistics, distribution, Portugal, Madeira, Ilhas Desertas, Porto Santo.

**APIONIDAE**
SUBFAMILY: **Apioninae**

***Ischnopterapion virens* (Herbst, 1797)** (Fig. 1) **– new for the Madeira Archipelago!**
SUBGENUS: *Chlorapion*

**1 Ex.:** W Porto Santo, Pico Ana Ferreira, 33º02'57.295''N 16º22'03.468''W, 120 m, leg. Andrade, coll. Andrade.

COMMENT: A single specimen was collected on Porto Santo by beating herbaceous vegetation. *I. virens* is a frequent Western Palaearctic species that was also introduced in the Nearctic region. This species develops on clover, such *as Trifolium pratense* and *T. repens* (Sprick in: Stüben et al. 2018b), both are very common on Madeira and Porto Santo. It can be assumed - in view of the ubiquitous host plants - that this species was spreading on the islands of Madeira just as rapidly as on the Azores in the recent past (Stüben & Borges 2019a).

**CURCULIONIDAE**
SUBFAMILY: **Curculioninae**

***Curculio glandium* (Marsham, 1802)** (Fig. 2) **– has reached the island with its host tree.**

**2 Ex.:** Madeira: Jardim da Serra, (32°41'16"N 16°59'31"W), 800 m, III.1997, leg. Báez [Erber & Aguiar 2001].
**1 Ex.:** Madeira: Funchal, São Gonçalo, Lombo da Quinta 32°39'34.2"N 16°52'33.8"W, 414 m, 29.08.2016, leg. Fátima Rocha, coll. ICLAM (Insect Collection Laboratorio Agricola da Madeira) (cFA1791).
**1 Ex.:** Madeira: 2.5 km NW Camacha, Ribeiro Serrão/Ponte de Pau 32°42'1"N 16°51'55"W, 970 m, 05.05.2019, leg. Stüben & Andrade.
**14 Ex.:** Madeira: 2.5 km NW Camacha, Ribeiro Serrão/Ponte de Pau 32°42'1"N 16°51'55"W, 970 m, 05.05.2019, leg. Stüben, coll. Andrade.


**Fig. 1**. *Ischnopterapion virens*.


**Fig. 2**. *Curculio glandium*.

COMMENT: *Curculio glandium* is apparently resident since it was collected in high numbers by the second author beating the branches of *Quercus robur* at the locality of Ribeiro Serrão/Ponte de Pau, 2.5 km NW of Camacha. The collecting locality has been detected by the first author during a visit of the entomological collection at the University of Madeira. Three specimens, collected in May 2003, are labeled with the above-mentioned locality.

The host plant observed on Madeira is *Quercus robur.* This long-lived tree, widespread throughout Europe, was planted more frequently in the 18th century while the native tree species around the villages and agricultural fields on Madeira's southern side became increasingly rare.
Together with *Pinus* sp., *Acacia* sp. and *Eucalyptus* sp., *Quercus robur* was planted around the settlements and agriculture fields as a way to obtain (fire-) wood and it became naturalized in the temperate zones between 300 - 1000 m on Madeira Island. The presence of oak woodlands and the plantation of new *Quercus* species contributed to the introduction of this long-nosed weevil and therefore for the spreading of this species through the island.
**References**: Erber& Aguiar (2001), Listagem (2008), Stüben (2017).

***Sibinia sodalis* (Germar, 1823)** (Fig. 3 and 4) **– new for the Madeira Archipelago!**
SUBGENUS: *Dichotychius*

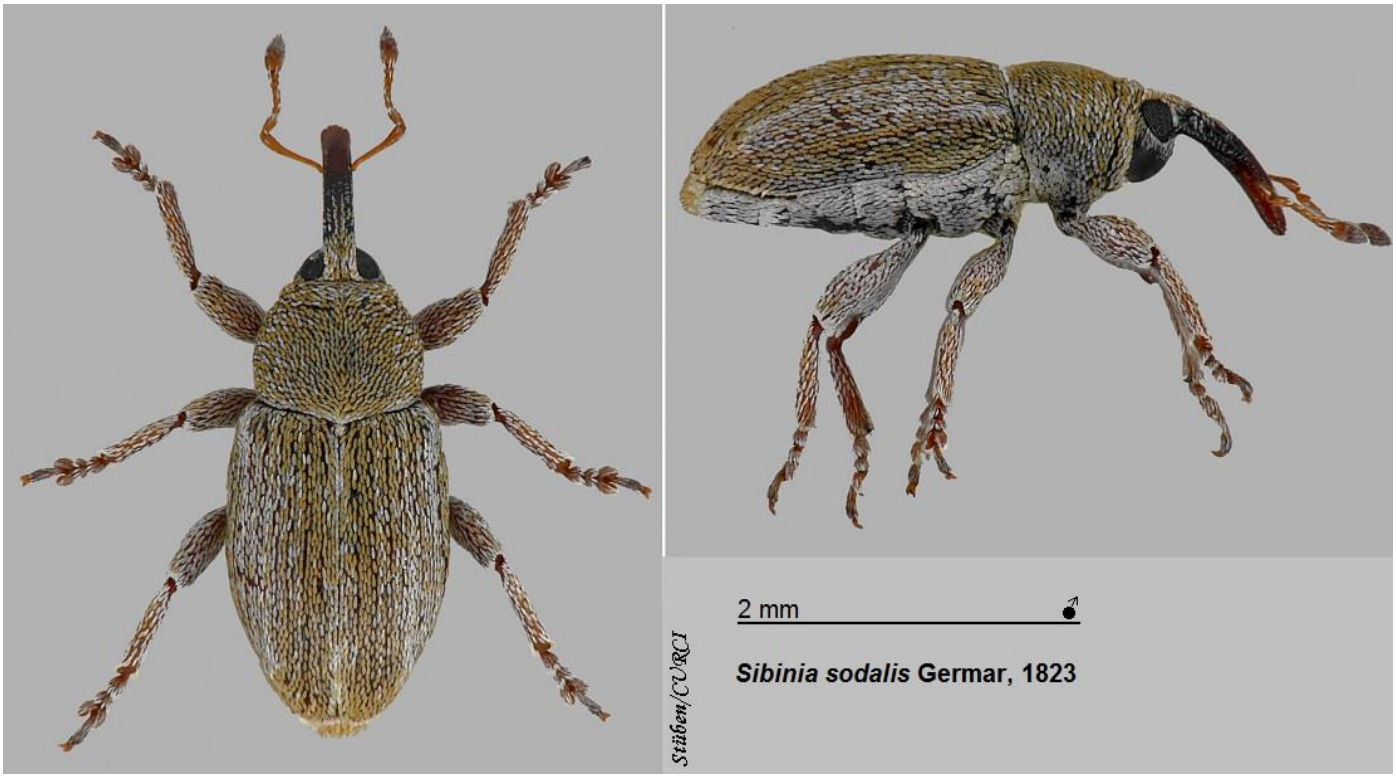


**Fig. 3**. *Sibinia sodalis*.

**1 Ex.:** Madeira, E Pico do Arieiro, N32°44'11" W16°55'33", 1800 m, 12.05.2018, *Armeria maderensis*, leg. M. Andrade, coll. M. Andrade.
**7 Ex.:** Madeira, E Pico do Arieiro, N32°44'11" W16°55'33", 1800 m, 17.07.2018, *Armeria maderensis*, leg. M. Andrade, coll. M. Andrade, Stüben.
**3 Ex.:** Madeira, Pico do Arieiro, N32°44'11" W16°55'33", 1800 m, 2019-05-05, *Armeria maderensis*, leg. Stüben & Andrade, coll. Stüben.

COMMENT: The only host plant of this species detected so far is the very rare and endemic Plumbaginaceae *Armeria maderensis*, which only occurs on the highest rocky peaks of Madeira Island with altitudes above 1700 m a.s.l. *Sibinia sodalis* is not an endemic species of Madeira; it occurs in many parts of Europe and Northwest Africa. In these regions different *Armeria* species are inhabited. However, if *A. maderensis* is the only host plant on Madeira, *S. sodalis* must have a very limited distribution in the eastern mountain range. The occurrence of regular forest fires, especially in recent years, and excessive grazing are possible threats to the survival of this species.

Like almost all Curculionoidea of Madeira, specimens of *S. sodalis* from Pico do Arieiro have already been sequenced by us. They belong to the same species, which we know from Spain, Poland and Czech Republic. The intraspecific p-distances of the mitochondrial CO1 (partial) genes are below 2% even over this large distribution area!
**Reference**: Caldara (1979).


**Fig. 4**. *Sibinia sodalis* on its Madeiran host plant *Armeria maderensis*.

**Fig. 5**. *Mecinus* cf. *pascuorum*.

***Mecinus* cf. *pascuorum* (Gyllenhal, 1813)** (Fig. 5) **– a new species, spreading rapidly on Madeira**!

**1 Ex:** Madeira, São Vicente, Loural, N32°46'10" W17°1'51", 428 m, 22.07.2015, multifunnel trap on *Pinus pinaster*, leg. N. Nunes, det. F. Aguiar 2016, coll. ICLAM (Insect Collection Laboratorio Agricola da Madeira).
**2 Ex.:** Madeira, S Cabeco da Lenha, NE Parque Ecológico do Funchal, N32°43'12" W16°54'21", 09.12.2017, inside dried stems of *Euphorbia mellifera*, leg. Andrade, coll. Andrade.
**1 Ex.:** Madeira, near Ribeira das Cales, Parque Ecológico do Funchal, N32°42'01" W16°54'9", 1158, 05.05.2019, *Plantago*, leg. Stüben & Andrade, coll. Stüben.
**2 Ex.:** Madeira, S Pico do Arieiro, 3 km SW Ribeiro Frio, N32°42'52" W16°54'05", 1381 m, 05.05.2019, *Plantago*, leg. Stüben & Andrade.
**21 Ex.:** Madeira, 2,5 km N Serra de Agua, N32°44'47" W17°01'32", 796 m, 11.05.2019, *Plantago*, leg. Stüben, coll. Stüben.

COMMENT: On Madeira the host plant of this weevil is apparently the same as in Central Europe, *Plantago lanceolata* L., supporting the opinion that this is a monophagous species over large areas. The species can now be found almost everywhere in Madeira. The fact that all these records are relatively recent may indicate a recent colonization event.

The barcoded specimens (CO1) all belong to *Mecinus pascuorum*-complex. *M. pascuorum* is common throughout the Western Palearctic region and has been introduced into the Afrotropical, Australian and Nearctic Regions.

***Tychius bicolor* (C. N. F. Brisout de Barneville, 1863)** (Fig. 6) **– so far a rare species on the Macaronesian Islands.**

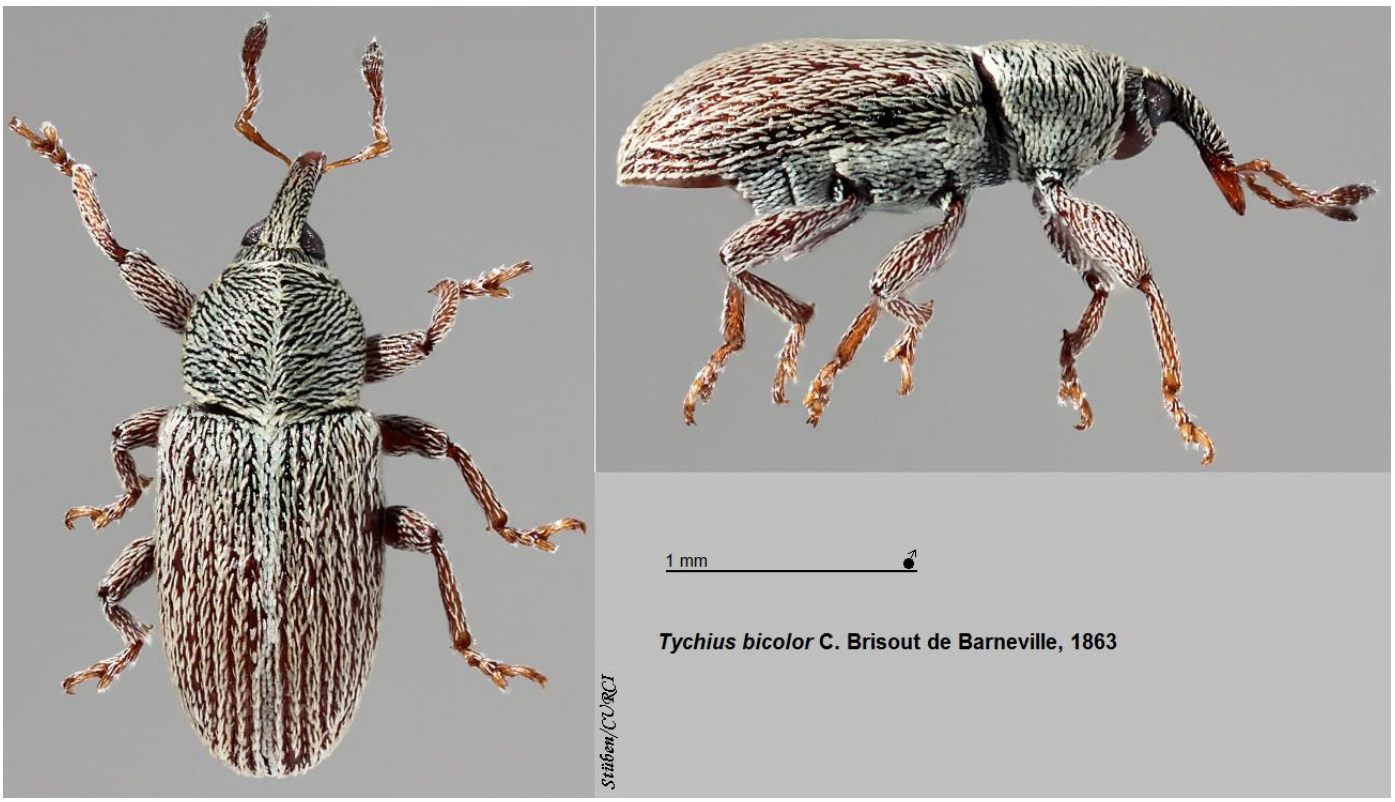


**Fig. 6**. *Tychius bicolor*.

**1 Ex.:** Madeira, Ajuda, Funchal, N32°38'19" W16°55'50", 50 m, 18.05.2003, leg. R.A. Reis, coll. University of Madeira [Caldara & Pombo 2008]
**10 (+X) Ex.:** Madeira, W Porto da Cruz, coast, N32°46'15" W16°49'32", 10 m, 17.05.2019, *Melilotus officinalis*, leg. Stüben (39), coll. Stüben; DNA: 3338-PST

COMMENT: So far only one single finding (male) from the south coast near Funchal (Ajuda) was known (Caldara & Pombo 2008). The second author found this species in great numbers (certainly several dozen specimens) at *Melilotus officinalis* also at the northern coast near Porto da Cruz on Madeira in 2019. This species has a large southern Palaearctic distribution, being known from the Iberian Peninsula and Morocco in the west to Afghanistan in the east.

The species could also be found, for the first time, on La Gomera by the second author near Arure on *Melilotus officinalis* and was molecularly analyzed (CO1) (Stüben 2013, 2019b).

SUBFAMILY: **Lixinae**

***Cyphocleonus armitagei* (Wollaston, 1864)** (Fig. 7) **– morphological and molecular studies on this species are being prepared.**


**Fig. 7**. *Cyphocleonus armitagei* on its host plant, *Argyranthemum pinnatifidum,* on Madeira – with feeding marks (left corner).

**1 Ex.:** Madeira: 2.5 km NW Camacha, Ribeiro Serrão/Ponte de Pau, 970 m, 31.05.2002, on *Argyranthemum pinnatifidum*, leg. D. E. Nunes, coll. University of Madeira.
**1 Ex.:** Madeira: 2.5 km NW Camacha, Ribeiro Serrão/Ponte de Pau, 970 m, 28.05.2002, on *Argyranthemum pinnatifidum*, leg. D. E. Nunes, coll. University of Madeira.
**2 Ex.:** Madeira: 2.5 km NW Camacha, Ribeiro Serrão/Ponte de Pau, 970 m, 03.10.2002, on *Argyranthemum pinnatifidum*, leg. D. E. Nunes, coll. University of Madeira.
**4 Ex.:** Madeira: Ribeira Seca, 32°42'01"N 16°51'55"W, 970 m, 17.03.2019, on *Argyranthemum pinnatifidum*, leg. Isamberto Silva, coll. I. Silva.
**2 Ex.:** Madeira: 2.5 km NW Camacha, Ribeiro Serrão/Ponte de Pau, 17.03.2019, on *Argyranthemum pinnatifidum*, leg. Andrade, coll. Andrade.
**7 Ex.:** Madeira: 2.5 km NW Camacha, Ribeiro Serrão/Ponte de Pau, 970 m, 17.03.2019, on *Argyranthemum pinnatifidum*, leg. Stüben & Andrade, coll. Stüben.

COMMENT: This large weevil is easily recognizable by its white longitudinal markings present on the dorsum of the elytra. Its distribution on Madeira Island seems to be very localized and sparse and occupies a very small area, however this population is apparently well established. We conclude it from continuous observations over a period of approximately 15 years.
Similar to their Canarian relatives, the host plant is a member of the genus *Argyranthemum,* on Madeira *Argyranthemum pinnatifidum* ssp. *pinnatifidum* (C. Linnaeus) Lowe. This endemic plant occurs on the clearings of the Laurel forest (see Fig. 8) and in the higher altitudes and it is widespread through the island.

In Madeira there are only two known well-established populations: one in the vicinity of Fajã da Nogueira near Ribeira Seca and the other in Ribeiro Serrão, near Camacha. The first locality seems to be a more intact habitat, still covered with native vegetation and with poor anthropogenic disturbance. But the population near Camacha inhabits what seems to be the remnants of a Laurisilva forest that covers the banks of a small water stream in the middle of an exotic *Eucalyptus* forest. This may indicate that in ancient times this species had a larger distribution, inhabiting (great parts of) the forests of the island's interior. Human activities have led to the separation of the now extremely isolated and fragile (relict) populations. The areas between should be researched carefully, and if any new population is found, it would of high importance to create a corridor to connect these populations and enlarge their habitats and their range on Madeira.

**Fig. 8**. Habitat of *Cyphocleonus armitagei* on Ribeira Seca near Fajã da Nogueira.

The feeding marks on the leaves are easy to spot and they are good clues to look for the species. The specimens of *Cyphocleonus armitagei* rest during the day on the leaves and stems of their host plant. However, the taxonomy, biology and ecology of this species is still in part unknown. In addition to molecular investigations, this species is currently in the focus of our interest.

SUBFAMILY: **Entiminae**

***Diaprepes abbreviatus* (Linnaeus, 1758)** (Fig. 9) **– another new 'alien' on the advance?**


**Fig. 9**. *Diaprepes abbreviatus.*

**1 Ex.:** Madeira: W Funchal, near Praia Formosa, N32°38'19" W16°56'57", 10 m, 27.09.2018, leg. Isamberto Silva (det. Miguel Andrade), coll. Isamberto Silva.

COMMENT*: Diaprepes abbreviatus* is a large, colourful weevil, with numerous forms or morphs, ranging from grey to yellow to orange and black. It is native to the Caribbean region. Habitat and ecological role in its region of origin are unknown. It is only reported to be a harmful pest of diverse agricultural cultures in several Caribbean countries. *D. abbreviatus* was introduced in the US state of Florida in 1964, where it is at present a major pest of citrus plantations as a result of an importation of ornamental plant shipment from Puerto Rico. In 2005, it has arrived in southern California where it is a pest of citrus, avocado, and nursery stock (Weissling et al. 2019). Common names for the insect include "Diaprepes root weevil", "Citrus root weevil" and "Sugarcane rootstock borer weevil".

This is the first record of this very polyphagous weevil on Madeira. This species is well documented to feed on a wide variety of plants (more than 270 species of plants from 59 plant families!). It has the potential to become a pest to agricultural crops on Madeira since this weevil feeds on *Citrus* plants, sugarcane (*Saccharum officinarum* L.), sweet potato (*Ipomoea batatas* (L.) Lam.), ornamental plants and many others and therefore it could lead to economic losses. Flora and ecosystems of islands are more susceptible to introduction of problematic species than those of the continent. *D. abbreviatus* could also pose a considerable threat to the native flora and fauna!

Hitherto only one specimen has been collected on Madeira Island, near Praia Formosa, west of Funchal sitting on a wall. The specimen is deposited in Isamberto Silva's private collection. Since there are no more records, it is uncertain, whether the species has established on the island.

It is possible that it has been introduced from the Canary Islands since its presence was firstly reported in 2014 (Spain, Gran Canaria, Moya, sobre Hortensia *(Hydrangea*), N28°06'35" W15°34'58", 14.07.2014, leg. Pilar Pérez, coll. Machado, Stüben (1 ex.)), through the same channels used by passengers and cargo between Madeira and this destination. The importation and introduction of potted plants and plant products might be the principal way of expansion and colonization of this weevil as well as many other Entiminae species.
**References**: Simpson et al. (1996), Weissling et al (2019).

***Caenopsis fissirostris* (Walton, 1847)** (Fig. 10) **– a blind passenger with plant seedlings from the continent?**

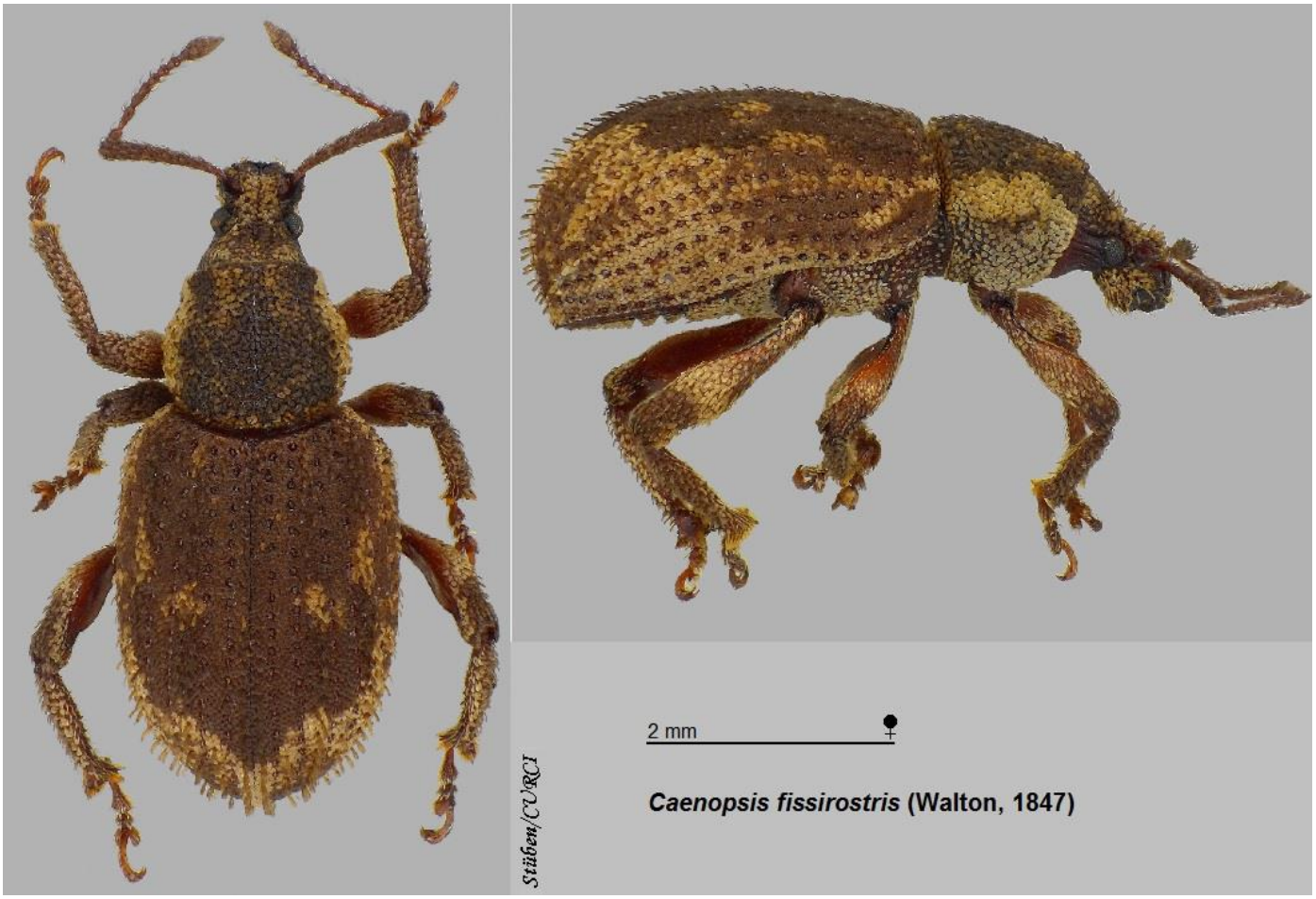


**Fig. 10**. *Caenopsis fissirostris.*

**7 Ex.:** Madeira, Levada do Blandy env., N32°41'45" W16°52'51", 1143 m, 21.03.2018, leg. Krásenský, coll. Krásenský, Stüben.

COMMENT: This species is mentioned in the Listagem (2008) for the main island of Madeira, but the report from Krásenský is the first reliable evidence for this island. Like *Caenopsis waltoni* (Boheman, 1843), this parthenogenetic species may also been a blind passenger with plant seedlings from the continent and reached the island with seedlings or potting soil.
**Reference**: Behne (2008).

***Cathormiocerus attaphilus* (C. N. F. Brisout de Barneville, 1880)** (Fig. 11) **– new for the Madeira Archipelago!**

**1 Ex.:** Madeira, Achada Grande, 4 km N of Prazeres, N32°47'06" W17°11'01", 1225 m, 19.11.2016, det. Borovec, leg. Krásenský, coll. Krásenský.

COMMENT: This species was previously known only from France and England, but was obviously recently introduced to Madeira with ornamental plants (?) (leg. Krásenský, det. Borovec). It probably arrived with potting soil from the continent.

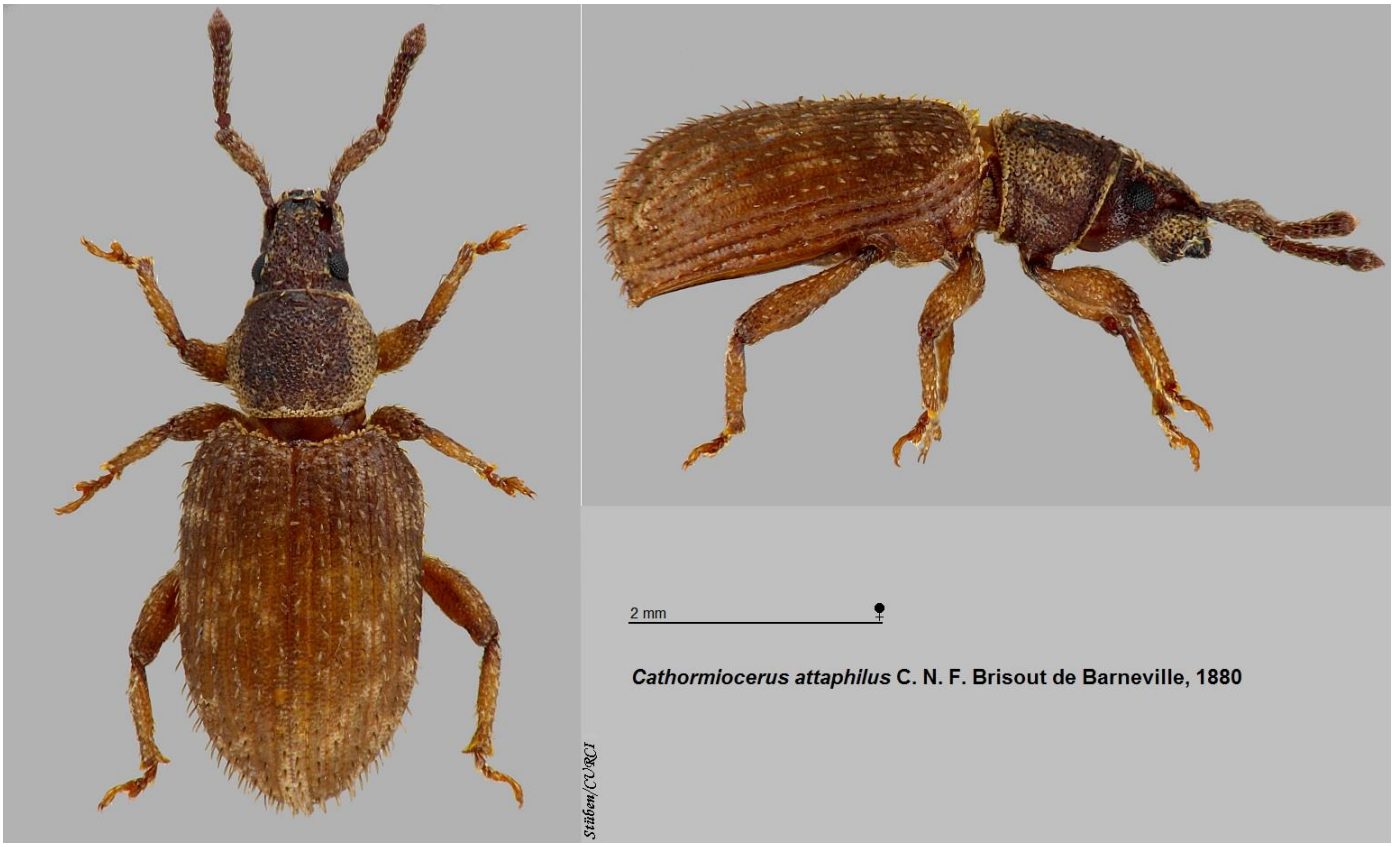


**Fig. 11**. *Cathormiocerus attaphilus.*

***Brachyderes lusitanicus* (Fabricius, 1781)** (Fig. 12 and 13) **– a forestry policy on the wrong wooden track.**

**1 Ex.:** Madeira, Paúl da Serra, 21.06.2019, *Pinus*, 32°44'42.36"N 17° 03'6.61"W, 1550 m, observed by: E. Teixeira.
**4 Ex.:** Madeira, Paúl da Serra, 10.09.2019, *Pinus*, 32°44'53.42"N 17°03'26.68"W, ca.1580 m, leg. O. Nolte/H. Haag.

COMMENT: And it's always the same question: Why are continental plant seedlings used for reforestation programs in Madeira and Porto Santo?
Since the 50ies of the past century the plateau of Paul da Serra has been target of innumerous reforestation projects in order to restore the vegetation and to prevent erosion caused by various centuries of excessive cattle grazing, wood extraction and forest fires. Because of the growing conditions, the most important plants for this reforestation were *Pinus* sp., as pines grow on rocky soil, grow fast and are of economic value. Even in the last few years, several entities/institutions have sowed and imported new *Pinus* species from Europe for planting in various points of this plateau: *Pinus pinaster, Pinus radiata* and *Pinus sylvestris*, the most probable species of which the weevils were collected, among others, are the principle species used for these reforestations. Because of these importations, many insect species are imported together in the root ball as on the plant itself. In the near future, if more reforestation is done with imported species, rather than made with native species adapted to this environment, the introduction of new insect species will be therefore more common and some of them could become potential economic pests. In addition, they pose a considerable threat to native flora and fauna!

**Fig. 12**. *Brachyderes lusitanicus* on its host tree, *Pinus* sp., from the continent on the plateau of Paul da Serra in Madeira (photos: O. Nolte).

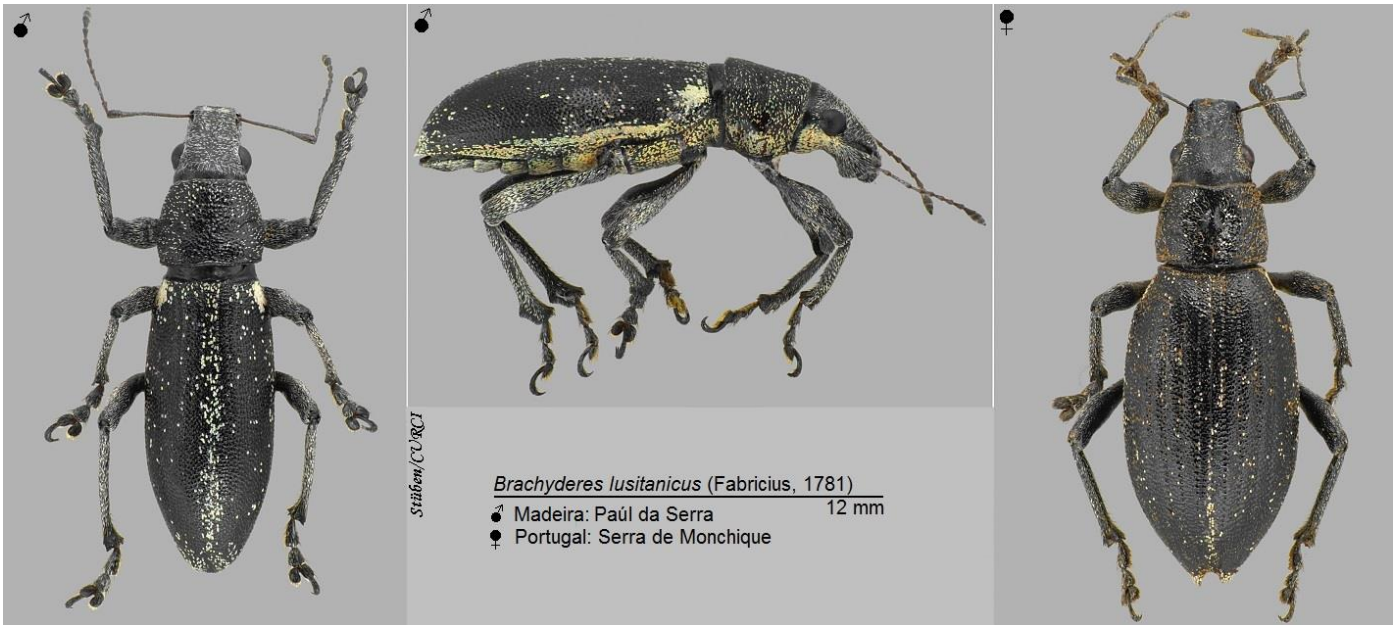


**Fig. 13**. *Brachyderes lusitanicus*.

**Acknowledgement**
We thank Oliver Nolte (Germany, Konstanz) for the proof of *Brachyderes lusitanicus* on the Paúl da Serra (Madeira). This is especially true for his ethanol samples, with which we will certainly be able to determine the origin of the conifer seedlings.

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