

Contribution to knowledge of the genus *Agrilus* Curtis, 1825 (Coleoptera Buprestidae) of Taiwan. Part I

Gianfranco Curletti¹ & Uitsiann Ong²

¹c/o Museo Civico di Storia Naturale di Carmagnola, Italy. ORCID: 0000-0002-8881-646.

²Ministry of Beetles, Baihe District, Tainan City, Taiwan; e-mail: weichangwang@gmail.com

ABSTRACT

Years of research carried out by one of the Authors on the Taiwanese Buprestidae fauna, led to the discovery several taxa unknown to science. In this first contribution, seven new species belonging to the genus *Agrilus* Curtis, 1825 are described and illustrated: *A. coccinellus* n. sp., *A. fongmuorum* n. sp., *A. pylades* n. sp., *A. convexivertex* n. sp., *A. clavulatus* n. sp., *A. rhusphagus* n. sp., *A. firmianae* n. sp.

KEY WORDS

Oriental Region; Agrilini tribe; taxonomy; new species; host plants; ecological records.

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INTRODUCTION

The genus *Agrilus* Curtis, 1825 is one of the most species-rich genera in the entire animal kingdom and occurs on all the continents around the world except Antarctica. The number of taxa currently known is estimated at just over 4,000 (Curletti, 2020: “*What is most surprising in the study of this vast genus is that its taxonomic knowledge and its numerical consistency are still far from exhausted. In fact, any field research carried out in tropical or subtropical areas or even simply the study of historical museum collections inevitably leads to the discovery of many undescribed species*”).

Despite important progress made in recent years on the knowledge of Oriental *Agrilus*, and which can be summarized mainly in some monographs and contributions (Jendek, in press; Jendek & Grebennikov 2011, 2018, 2019; Ohmomo & Fukutomi, 2013), it is common opinion that current knowledge is still insufficient.

Among the islands located to the West of the

Wallace line, Taiwan is currently the subject of in-depth research on Buprestidae by some local naturalists.

The early published papers on Taiwanese *Agrilus* species were often described only based on females, some without descriptions or illustrations of males or even aedeagus. If it is a species with obvious sexual dimorphism, it will be easy to cause confusion as to whether it is a new species, or just the male of a known species. Some species even have cryptic species, which makes them more difficult to identify.

After one of the authors and his friends has collected intensively in different parts of Taiwan for many years, we have mastered many species of their habitats and adult host plants and added them to the judgments of species identification. We gradually understand those species that were previously difficult to distinguish, and further pieced together their other half to confirm their aedeagus. Based on this, many unknown species were found. The results obtained so far are illustrated in this contribution.

MATERIAL AND METHODS

The material object of the study is the result of years of research carried out mainly by one of the AAs. (Ong) assisted by several colleagues.

The specimens were prepared, dried and glued on cards by using common syndetic (Ong) or clear nail polish (Curletti) for further study, description and conservation. The use of nail polish was preferred to the entomological glue since this last may melt due to high temperatures and humidity of Taiwan, leading to the detachment of the specimens and the growth of moulds, which would render their identification and conservation more difficult.

For the pictures (Ong) for the macro photography of specimens, a Canon 80D with MP-E 65 mm macro lens combination has been used. The Cognisys Stackshot automated macro rail is used for taking photos of different depths and then importing them into Helicon Focus software for focus stacking. For even smaller objects like aedeagus, a combination of Mitutoyo 10x M Plan APO objective with extension tubes connecting with the camera body has been used. The stacked photos were finally edited in Adobe Photoshop v.23.3.2.

The species descriptions follow the procedure proposed by Curletti (2010), which allows, with the help of photography, to identify an appropriate habitus of the taxa, omitting most of the unnecessary, unimportant and subjective repetitive morphological descriptions, and to dwell in more detail on distinctive characters that cannot be assessed through the images.

With regard to the subgenera employed, the classification proposed by Cobos (1986) based on the characters of female ovipositors has been partially adopted, re-evaluating the subgenus *Anambus* Thomson. To these is added the subgenus *Uragrilus* Semenov-Tian-Shankij characterized by the presence of an apophysis at the apex of the last visible urotergum.

Figures bodies scale 1 mm; aedeagi and Fig. 16 scale 0.5 mm.

ACRONYMS. NMNST: National Museum of Natural Science, Taichung, Taiwan; UOTT: Uitsiann Ong, Tainan, Taiwan; GCCI: Curletti collection, Museo Civico di Storia Naturale, Carmagnola, Italy; EJBS: Jendek collection, Bratislava, Slovakia.

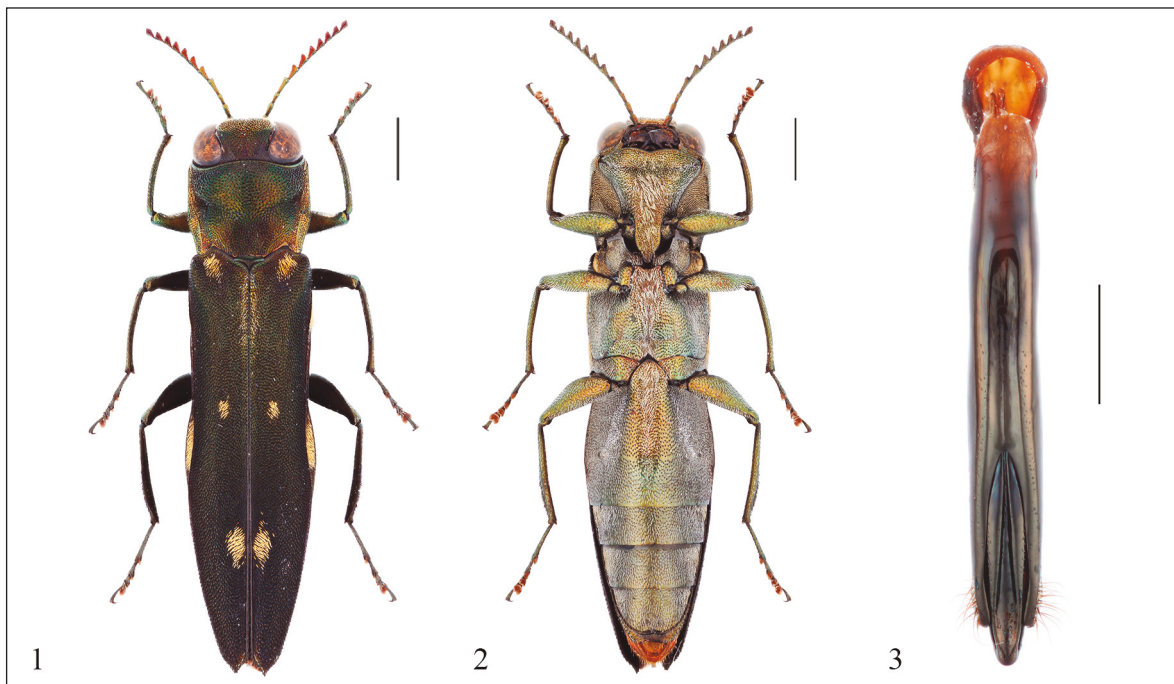
RESULTS

Systematics

Agrilus (Uragrilus) coccinellus n. sp. (Figs. 1–3)
<https://zoobank.org/act:FDE83CD5-0A4E-40B9-B87F-320246F3DFF3>

MATERIAL EXAMINED. Holotype male: Taiwan, Kaohsiung City, Baiyunshan, 21.V.2012, Uitsiann Ong leg. (NMNST). Paratypes: 1 male, idem, U. Ong leg.; 3 males, Taiwan, Tainan City, Meiling, 17.VI.2010, U. Ong leg.; 1 male, idem, 6.IV.2015, Uika Ong leg.; 1 male 1 female, Taiwan, Kaohsiung City, Baolai, 4.VI.2011, U. Ong leg.; 1 male, idem, 18.VI.2011, U. Ong leg.; 2 females, idem, 23.V.2017, U. Ong leg.; 1 female, idem, 6.VI.2017, U. Ong leg.; 1 female, idem, 12.IV.2018, Chiamu Chen leg.; 3 males 1 female, idem, 22.IV.2018, Chiamu Chen leg.; 2 males 1 female, idem, 30.IV.2018, Chiamu Chen leg.; 1 female, idem, 26.VII.2018, U. Ong leg.; 2 females, idem, 15.V.2019, U. Ong leg.; 1 female, idem, 27.V.2019, U. Ong leg.; 1 male, idem, 18.VIII.2020, U. Ong leg.; 2 males 1 female, idem, 20.V.2022, U. Ong leg.; 1 male, Taiwan, Nantou County, Chientai Trail, 5.VI.2018, U. Ong leg.; 1 male, Taiwan, Taitung County, Kinchenshan, 20.VI.2019, Chiamu Chen leg.; 1 male, idem, 27.VI.2020, Chiamu Chen leg.; 1 male, idem, 4.VI.2020, Chiamu Chen leg.; 5 males 2 females, Taiwan, Taichung City, Lilang Trail, 6.VIII.2019, U. Ong leg. (NMNST, UOTT, GCCI)

HOLOTYPE DESCRIPTION. Length 9.3 mm. Dorsal color dark bronze. Head: vertex 1/3 wide of anterior margin of pronotum. Frons glabrous, green. Clypeus transverse, carinate. Antennae serrate from IV antennomere. Pronotum: lateral margins slightly curved, posterior angles obtuse. Disc convex; two weak median depression, obsolete sculpture; pubescence along the sides. Prehumeral carinulae entire. Marginal carinae joined posteriorly. Gular lobe with margin arcuately emarginate. Prosternal process subparallel. Scutellum: transverse, carinate. Elytra: apices subacuminate. Pubescence with three couples of pubescent spots near humeral callus, before the middle of length, at 3/4; other less dense pubescence at apex and along the suture behind the scutellum. Abdomen: ventrites with pubescence denser at the sides. Legs: bronzed; metatibia as long as the tarsus;



Figures 1–3. *Agrilus coccinellus* n. sp. Fig. 1: male, dorsal view. Fig. 2: male ventral view. Fig. 3: aedeagus in dorsal view, 2.6 mm.

metatarsal formula 1>2+3+4. Claws: anterior and median bifid, posterior dentate. Aedeagus: elongate, parallel; apex of median lobe rounded (Fig. 3)

PARATYPES DESCRIPTIONS. Length from 7.1 to 9.6 mm. The spots on elytra and pronotum varied from white to yellow. There are no other appreciable differences. Ovipositor elongates.

SEXUAL DIMORPHISM. Male body more slender posteriorly, frons greenish, prosternum with long hairs, anterior claws bifid. Female with frons copper; anterior and median claws with inner spur shorter.

ETYMOLOGY. Name derived from the conversion to masculine of the genus *Coccinella* Linnaeus, 1758 characterized by elytral spots.

HOST PLANT. The adult will gather on the cut branches or collapsed trees of *Acer serrulatum* Hayata (Aceraceae) and *Castanopsis formosana* (Skan) Hayata (Fagaceae).

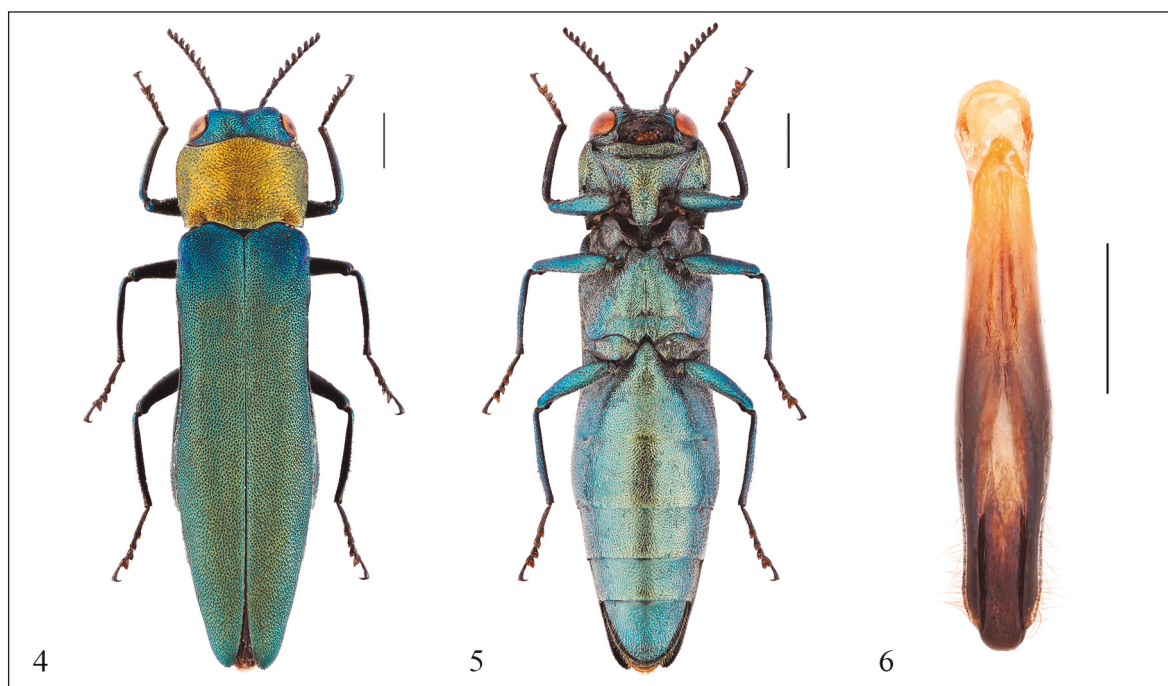
DIAGNOSIS. Homomorphic species: *A. jaminiae* Baudon 1968 and *A. madeci* Baudon, 1968 (= *A. rokuyai* Kurosawa, 1976). Both differ mainly in the aedeagus less parallel with the apex of median lobe

acute. *Agrilus madeci*, present in Taiwan, has most developed apical pubescence.

Agrilus (Anambus) fongmuorum n. sp. (Figs. 4–6)
<https://zoobank.org/act:2BED1D38-70A9-4090-9061-27A0FB48E56B>

MATERIAL EXAMINED. Holotype male: Taiwan, Chiayi County, Shihzihlu, 25.VI.2019, U. Ong leg. (NMNST). Paratypes: 1 female, idem, U. Ong leg.; 1 female, idem, 28.V.2019, U. Ong leg.; 1 male 1 female, idem 16.VI.2020, U. Ong leg.; 1 male 1 female, idem, 18.VI.2020, U. Ong leg.; 1 male 2 females, Taiwan, Tainan City, Meiling, 19.IV.2011, Jiafong Chen leg.; 2 males, Taiwan, Taitung County, Kinchenshan, 30.VI.2020, Chiamu & Jiafong Chen leg. (NMNST, UOTT, GCCCI).

HOLOTYPE DESCRIPTION. Length 8.7 mm. Robust, vertex blue, pronotum gold, elytra green. Head: vertex, in dorsal view, half of anterior edge of pronotum, largely depressed. Frons dark blue, almost hairless, but with basal sparse white pubescence. Clypeus thin, carinate above. Antennae black, serrate from IV antennomere. Pronotum: transverse, glabrous, wider anteriorly, lateral sides



Figures 4–6. *Agrilus fongmuorum* n. sp. Fig. 4: female, dorsal view. Fig. 5: female, ventral view. Fig. 6: aedeagus in dorsal view, 1.9 mm.

rounded, posterior angles obtuse. Sculpture with numerous transverse regular thin wrinkles. Pre-humeral carinula absent. Lateral carinae curved down, joined before the rear. Prosternal process parallel. Gular lobe arcuately emarginate. Scutellum: small, without transverse carina. Elytra: glabrous, apex separately rounded, margin microdenticulate. Abdomen: dark blue, almost glabrous, with regular short pubescence. Apex of last visible ventrite rounded. Legs: blue; metatibia longer than metatarsus. Metatarsal formula 1=2+3+4. All claws dentate but with anterior external spur longer than the interne. Aedeagus: symmetric, parallel; median lobe with apex rounded (Fig. 6).

PARATYPES DESCRIPTIONS. Length from 8.3 to 10.2 mm. The color is constant. Ovipositor elongate, membranous.

SEXUAL DIMORPHISM. Male body is more slender posteriorly. Last abdominal ventrite is broadly rounded in male, tapered in female; the inner spurs of the claws are shorter and equal in females.

ETYMOLOGY. The species is dedicated to the twin brothers Jiafong Chen and Chiamu Chen in Tainan city, Taiwan, who first collected and discovered the

host plant of the adults. The species name is a combination of their first names “fong + mu”.

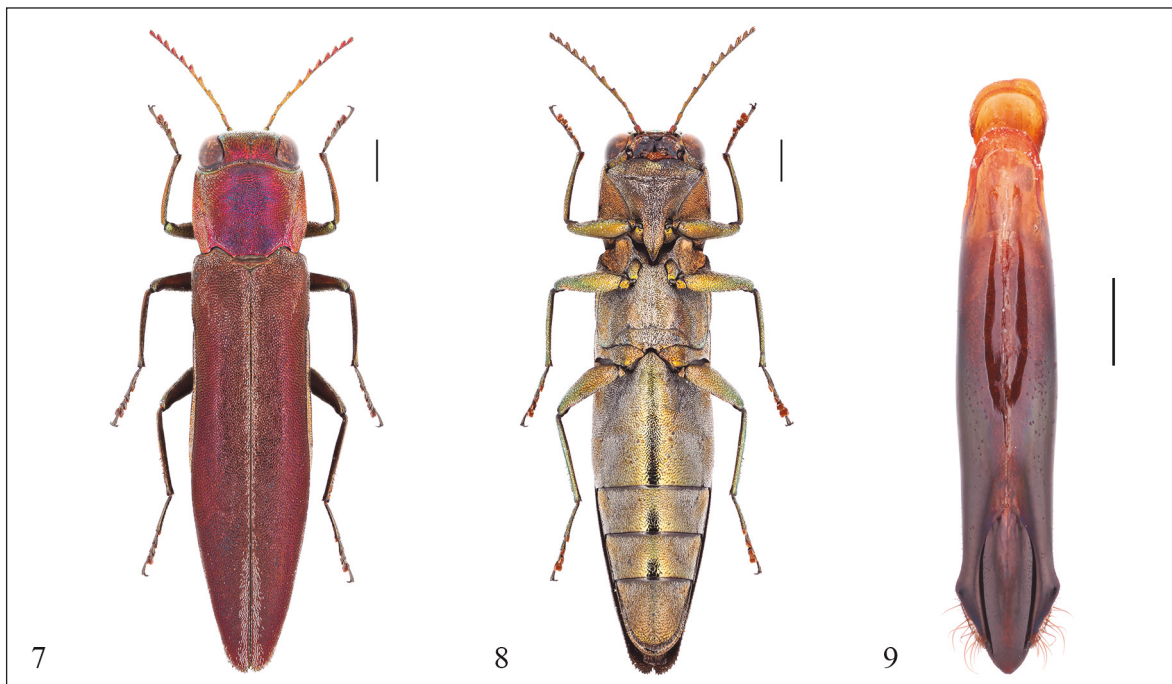
HOST PLANT. The adults were found on the leaves of *Elaeagnus thunbergi* Serv. which presumably is the larval host plant.

DIAGNOSIS. Homomorphic species: *Agrilus sinensis splendidicollis* Fairmaire 1889. Principal differential characters: *A. fongmuorum* n. sp. differs for pronotum more transverse, wider anteriorly, head blue, metatarsus longer, aedeagus with apex of median lobe rounded.

NOTE. The shape of the strongly sclerified aedeagus and that of the elongated ovipositor place *A. fongmuorum* n. sp. in the subgenus *Anambus* Thomson *sensu* Cobos (1986).

***Agrilus (Anambus) pylades* n. sp.** (Figs. 7–9)
<https://zoobank.org/act:B0833128-5CF5-4131-9D52-2266C86251F3>

MATERIAL EXAMINED. Holotype male: Taiwan, Kaohsiung City, Baolai, 6.VI.2017, U. Ong leg. (NMNST). Paratypes: 1 female, idem, 3.VIII.2016, U. Ong leg.; 1 male 1 female, idem, 23.V.2017, U.



Figures 7–9. *Agrilus pylades* n. sp. Fig. 7: male, dorsal view. Fig. 8: male, ventral view. Fig. 9: aedeagus in dorsal view. 3.4 mm.

Ong leg.; 2 males, idem, 6.VI.2017, U. Ong leg.; 4 males, idem, 24.V.2019, U. Ong leg.; 1 male, idem, 25.V.2019, U. Ong leg.; 1 female, idem, 27.V.2019, U. Ong leg.; 3 males 1 female, idem, 5.VI.2020, U. Ong leg.; 1 female, idem, 24.VI.2020, U. Ong leg.; 1 female, Taiwan, Kaohsiung City, Ergituan, 16.V.2015, U. Ong leg.; 1 male 1 female, Taiwan, Nantou County, Huisun Experimental Forest Station, 27.VII.2016. U. Ong leg.; 1 male, Taiwan, Nantou County, Chientai Trail, 24.VI.2017, U. Ong leg. (NMNST, UOTT, GCCI).

HOLOTYPE DESCRIPTION. Length 12.9 mm. Entirely bronze/amaranth, with pronotum brighter and reddish. Head: vertex flat, 1/3 wide of anterior margin of pronotum. Frons almost green, with thin and short pubescence visible in profile only. Clypeus transverse, covered of white pubescence. Antennae metallic bronze, serrate from antennomere IV, longer than the others. Pronotum: glabrous, wider than long; lateral sides slightly curved, posterior angles obtuse. Prehumeral carinula curved, not entire. Disc flat, with thin and numerous transverse striae. Lateral carinae joined posteriorly. Gular lobe arcuately emarginate. Prosternal process parallel. Scutellum: large, transverse, carinate. Elytra: apices

separately rounded, microdenticulate. Disc with thin line of white pubescence along the suture, not in depression. Abdomen: white pubescent spots thickened on the sides of the ventrites. Apex of the last ventrite rounded. Legs: metatibia as long as the metatarsus. Metatarsal formula 1>2+3+4. Anterior claws bifid. Aedeagus: symmetric, subparallel; median lobe weakly sharp (Fig. 9).

PARATYPES DESCRIPTIONS. Size: from 9.4 to 12.9 mm. There are no appreciable differences. Ovipositor elongate, flexible.

SEXUAL DIMORPHISM. Male body more slender posteriorly, antennae longer and thinner. Females entirely red-wine, claws simply dentate.

ETYMOLOGY. From Greek mythology: Pylades was the childhood friend of Orestes, the name of the closest species.

HOST PLANT. The adult will gather on the leaves of *Aphananthe aspera* (Thunb.) Planch. (Ulmaceae).

DIAGNOSIS. Homomorphic species: *A. orestes orestes* Kerremans, 1913 with which it shares dimensions and host plants. Main differential charac-

ters in *A. orestes*: prehumeral carina entire, absence of pubescent line on elytra, metatarsus shorter than metatibia, different shape of aedeagus.

Agrilus (Anambus) convexivertex n. sp. (Figs. 10–12) - <https://zoobank.org/act:6FE70D68-B0F8-4210-A12D-4D4645E0802C>

MATERIAL EXAMINED. Holotype male: Taiwan, Chiayi County, Shihzihlu, 16.IV.2020, Uitsiann Ong leg. (NMNST). Paratypes: 2 females, Taiwan, Nantou County, Chientai Trail, 5.VI.2018, U. Ong leg.; 6 males 7 females, idem as Holotype, 16–18.VI.2020, U. Ong leg.; 1 female, Taiwan, Taichung City, Guguan, 16.VII.2021, U. Ong leg.; 2 males 1 female, idem, 20–21.VII.2021, U. Ong leg.; 3 males 2 females Taiwan, Chiayi County, Shihzihlu, 25.VI.2010. U. Ong leg. (NMNST, UOTT, GCCI).

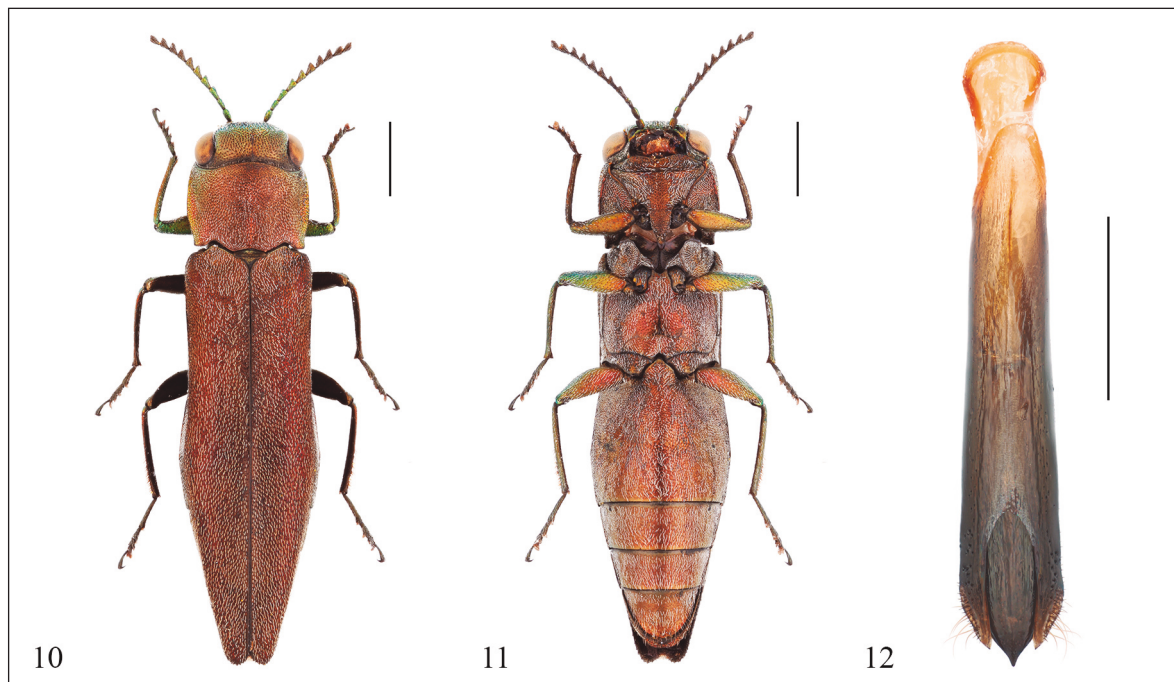
HOLOTYPE DESCRIPTION. Length 6.5 mm. Entirely bronzed. Head: vertex large, more than half the anterior margin of pronotum, slightly convex. Eyes protruding, set back from the front line. Frons flat, emerald green, glabrous. Clypeus wider than long, without carina. Antennae metallic bronze,

serrate from the IV antennomer. Pronotum: transverse, wider in the mid-posterior part, with posterior angles right. Sculpture composed of transverse irregular wrinkles. Prehumeral carinula absent. Marginal carinae joined posteriorly. Gular lobe small, anterior margin widely sinuous. Prosternal process subacute. Scutellum: concave, carinate. Elytra: apices separately rounded and denticulated. Disc regularly and thickly pubescent of white as the entire ventral side. Legs: anterior claws bifid, median with external bifid and internal dentate, posterior both dentate. Metatarsus as long as the metatibia. Metatarsal formula $1 > 2+3+4$. Aedeagus: symmetric, subparallel, sclerified, with apex of median lobe acute (Fig. 12).

PARATYPES DESCRIPTIONS. Length from 5.9 to 8 mm. There are no appreciable differences. Ovipositor elongated, membranous, flexible.

SEXUAL DIMORPHISM. Males with body more slender posteriorly. Females with frons bronze and shorter metatarsus, maintaining the proportions of the male.

ETYMOLOGY. The species name is derived from the prominently convex vertex of head.



Figures 10–12. *Agrilus convexivertex* n. sp. Fig. 10: male, dorsal view. Fig. 11: male, ventral view. Fig. 12: aedeagus in dorsal view. 1.7 mm.

HOST PLANT. The adult will gather on the leaves of *Carpinus kawakamii* Hayata.

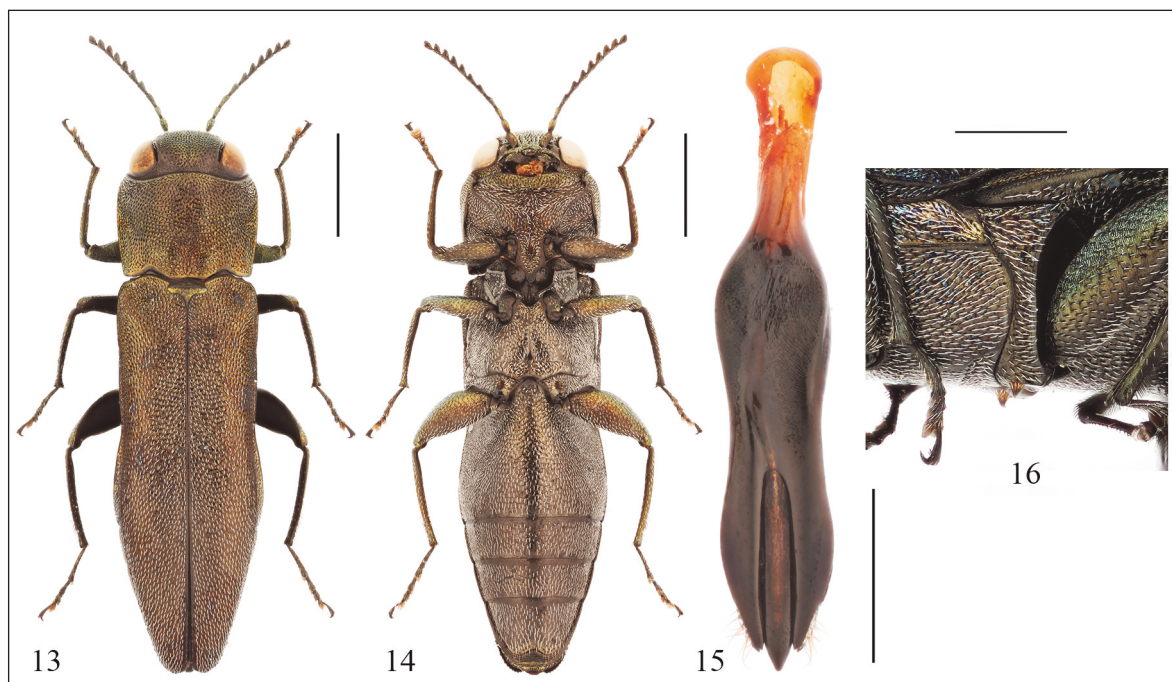
DIAGNOSIS. The shape of the head recalls some African species belonging to subgenus *Robertius* Théry. No other Taiwanese species has this feature.

Agrilus (Anambus) clavulatus n. sp. (Figs. 13–16)
<https://zoobank.org/act:3A7B5E35-1F5E-4588-BCCB-870CD6E6F38F>

MATERIAL EXAMINED. Holotype male: Taiwan, Nantou County, Gaofong, 18.V.2016, U. Ong leg. (NMNST). Paratypes: 1 female, Taiwan, Kaohsiung City, Ergituan, 25.V.2016, U. Ong leg.; 2 males 1 female, idem, 2.VII.2017, U. Ong leg.; 1 male, Taiwan, Kaohsiung City, Baolai, 9.V.2017, U. Ong leg.; 1 male, idem, 23.V.2017, U. Ong leg.; 1 female, idem, 29.V.2018, U. Ong leg.; 1 female, idem, 12.VI.2018, U. Ong leg.; 1 female, idem, 15.V.2019, U. Ong leg.; 3 females, idem, 25.V.2019, U. Ong leg.; 5 males 2 females, Taiwan, Taichung City, Lishan, 25.VI.2021, U. Ong leg.; 1 female, Taiwan, Taichung City, Lilang Trail, 6.VIII.2019, U. Ong leg.; 2 males, Taiwan, Taichung City, Guguan, 16.VII.2021, U. Ong leg.; 2 males 2 females, idem,

20~21.VII.2021, U. Ong leg.; 4 males 4 females, Taiwan, Taichung City, Derfland, 2.VI.2021, U. Ong leg.; 1 male, idem, 12.VIII.2021, U. Ong leg.; 2 males, Taiwan, Nantou County, Meiyuan, 8.IV.2020, U. Ong leg.; 1 female, Taiwan, Nantou County, Nanshanxi, 22.VII.2021, U. Ong leg.; 1 female, Taiwan, Nantou County, Chientai Trail, 5.VI.2018, U. Ong leg.; 1 female, Taiwan, Taitung County, Kinchen-shan, 27.VI.2019, Chiamu Chen leg.; 1 male, Taiwan, Tainan City, Meiling, 28.V.2017, U. Ong leg. (NMNST, UOTT, GCCI, EJBS).

HOLOTYPE DESCRIPTION. Length 5.1 mm. Entirely bronze. Short and stocky; elytra covered by white uniform pubescence. Head: Vertex less than a third of the anterior margin of pronotum. Almost hairless concolour frons. Epistome quadrangular, vaguely pubescent, carinate. Antennae serrate from V antennomere. Pronotum: wider than long, slightly depressed in the middle. Lateral margins regularly and slightly arched. Posterior angles obtuse. Transversal regular sculpture. Posterior angles obtuse. Prehumeral carinula not entire. Marginal carinae joined posteriorly. Anterior margin of gular lobe just sinuous. Prosternal process subparallel with a shiny bump in the middle, covered of long hairs. Scutel-



Figures 13–16. *Agrilus clavulatus* n. sp. Fig. 13: male, dorsal view. Fig. 14: male, ventral view. Fig. 15: aedeagus in dorsal view, 0.5 mm. Fig. 16: male, detail of the metacoxa with the two protuberances.

lum: transverse, carinate. Elytra: apices separately rounded and microdenticulate. Ventral side: pubescence brief and regular. Metacoxa with two protuberances at the sides (Fig. 16). Legs: metatarsus long as metatibia. Metatarsal formula 1=2+3+4. Anterior claws bifid, median and posterior dentate. Aedeagus: flat, sclerotized, asymmetric; apex of median lobe acute (Fig. 15).

PARATYPES DESCRIPTION. Length from 4.6 to 5.5 mm. No significant differences are observed between the paratypes. Ovipositor elongated, membranous, flexible.

SEXUAL DIMORPHISM. Important: the females have the prosternal process flat without median bump and the protuberances on the metacoxa are missing. All claws simply dentate. Male frons of head greenish.

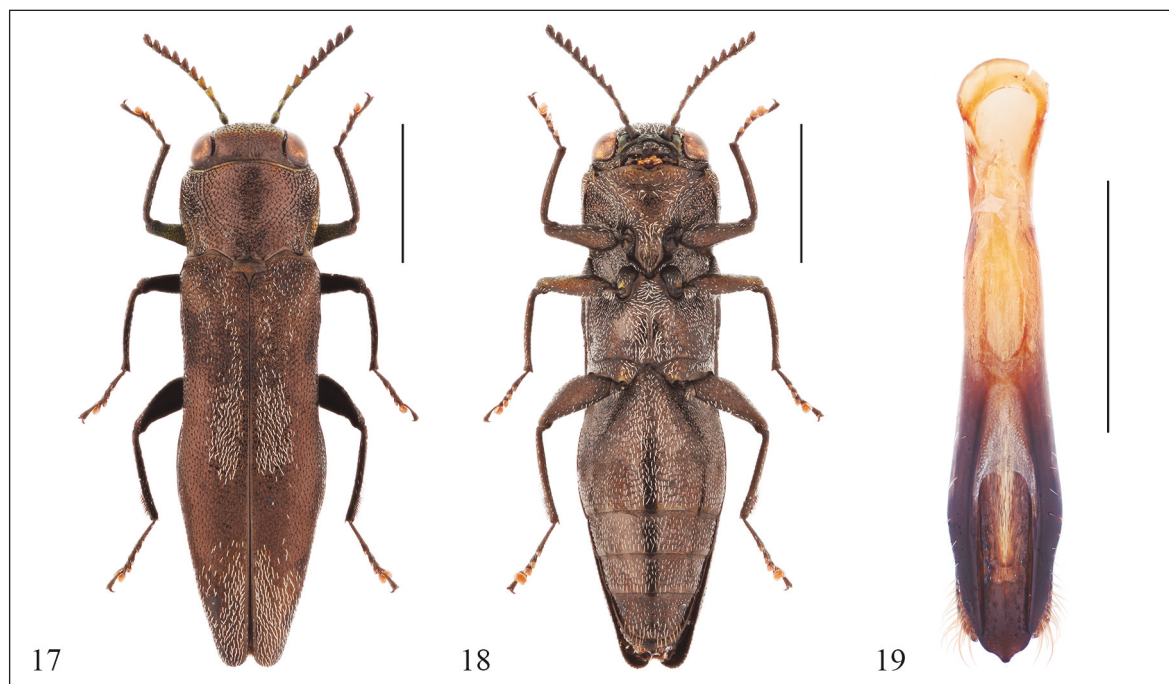
ETYMOLOGY. From Latin *clavulatus*: provided with small nails. For the two protuberances present on the males metacoxa.

HOST PLANT. The adults can be found in various Fagaceae trees: we can confirm *Quercus glauca* Thunberg, 1784 and *Quercus variabilis* Blume.

DIAGNOSIS. Homomorphic species: *A. takahashii*. The characters mentioned on the metacoxa and on the prosternal process make the difference.

Agrilus (Anambus) rhusphagus n. sp. (Figs. 17–19) - <https://zoobank.org:act:E1BBBEF3-4BF7-44B7-B6AC-CBBEF471240E>

MATERIAL EXAMINED. Holotype male: Taiwan, Taichung City, Guguan, 13.V.2021, U. Ong leg. (NMNST). Paratypes: 4 males 5 females, idem, 2.VII.2020, U. Ong leg.; 1 female, Taiwan, Taichung City, Kayo, 10.VI.2020, U. Ong leg.; 2 males 7 females, Taiwan, Pingtung County, Dahanshan, 8.VIII.2021, Chiamu Chen leg.; 1 male 1 female, Taiwan, Chiayi County, Shihzihlu, 23.VIII.2016, U. Ong leg.; 1 female, idem, 27.VI.2018, U. Ong leg.; 1 female, idem, 11.IX.2018, U. Ong leg.; 11 exx. males and females, idem, 25.VI.2019, U. Ong leg.; 3 males 2 females, idem, 16~18.VI.2020, U. Ong leg.; 2 males 1 female, idem, 18.VI.2021, U. Ong leg.; 1 female, Taiwan, Nantou County, Changxing Trail, 1.VII.2020, U. Ong leg.; 1 female, Taiwan, Nantou County, Chientai Trail, 5.VI.2018, U. Ong leg.; 19 males 26 females, Taiwan, Taichung City, Dapan,



Figures 17–19. *Agrilus rhusphagus* n. sp. Fig. 17: male, dorsal view. Fig. 18: male, ventral view. Fig. 19: aedeagus in dorsal view.

26~27.V.2021, U. Ong leg.; 18 exx. males and females, idem, 24.VI.2021, U. Ong leg. (NMNST, UOTT, GCCI, EJBS).

HOLOTYPE DESCRIPTION. Length 3.9 mm. Uniformly dark bronze dorsally. Partially pubescent. Head: vertex 1/3 of anterior margin of pronotum wide. Frons brilliant, golden/green reflections, white brief pubescence visible in profile only. Clypeus more pubescent, slightly transverse, strongly carinate. Antennae serrate from IV antennomere. Pronotum: gibbous, wider than long, depressed posteriorly and to the sides. Anterior margin broadly rounded and advanced between the eyes. Lateral margins wider anteriorly, posterior angles obtuse. Sculpture oblique, composed of striae converging downwards. Prehumeral carinula entire, very evident, anteriorly joined before the anterior angle. Marginal carinae subparallel in the anterior half, joined posteriorly. Gular lobe with anterior margin sinuate. Prosternal process concave, parallel, acuminate. Scutellum: squared anteriorly, strongly carinated. Elytra: apices separately rounded, obsolete denticulation. Disc with a broad stripe of white pubescence along the suture reaching 2/3 of the length and same pubescence but uniformly diffused before the apex; the two pubescent areas separated by a hairless transverse stripe. Abdomen: covered by brief uniform, white pubescence. Apical margin of last visible ventrite entire. Legs: metatarsus longer than metatibia. Metatarsal formula 1=2+3+4. Anterior claws bifid, median and posterior simply dentate. Aedeagus: symmetric, slightly fusiform profile. Apex of median lobe rounded, but ending by a small protuberance (Fig. 19).

PARATYPES DESCRIPTION. Length from 3.4 to 3.6 mm. In some specimens the anterior pubescence is not very evident or has disappeared. The aedeagus can be more or less fusiform. Ovipositor elongated, membranous, flexible.

SEXUAL DIMORPHISM. Male frons with a greenish tinge, prosternal process with longer hairs, body more slender posteriorly. Anterior claws are simply dentate in the females.

ETYMOLOGY. Name derived from the union of two terms: *Rhus*, genus of the probable host plant and *phāgus*, Latin term meaning eater.

HOST PLANT. The adult can be easily found on the leaves of *Rhus succedanea* L. (Anacardiaceae), probable larval host plant.

DIAGNOSIS. Homomorphic species: no similar species has been found that has all morphological characters listed in this description.

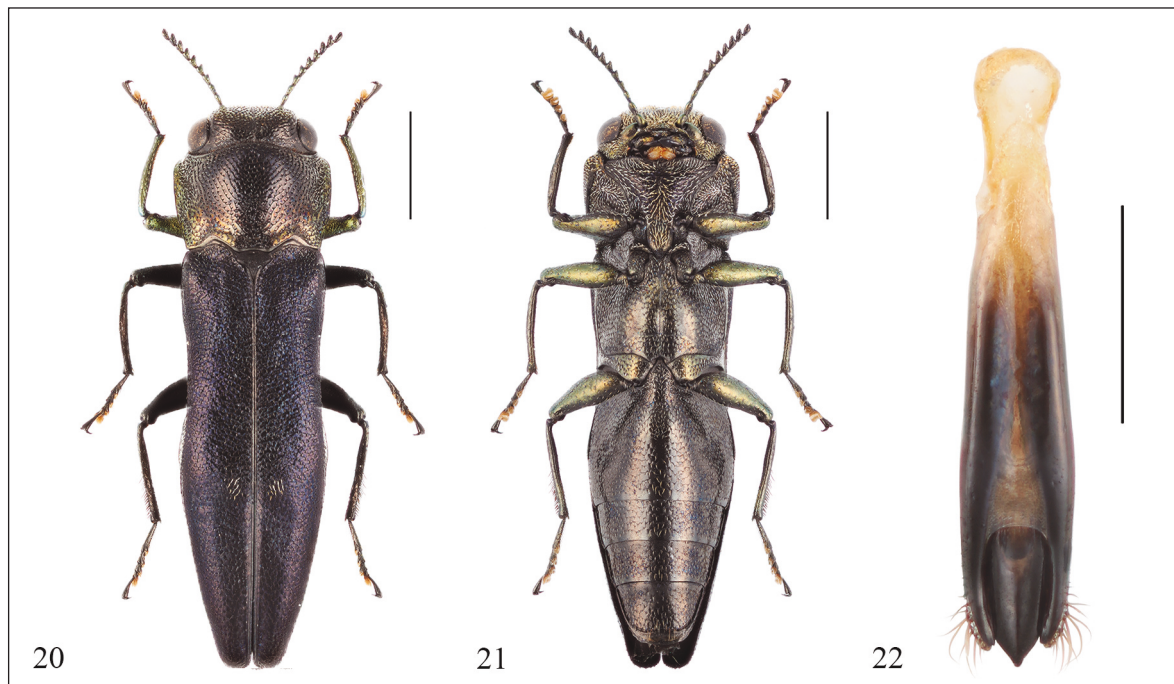
Agrilus (Agrilus) firmianae n. sp. (Figs. 20–22)
<https://zoobank.org/act:550ECD44-283E-478E-9535-DED6B4264D01>

MATERIAL EXAMINED. Holotype male: Taiwan, Kaohsiung City, Baolai, 28.IV.2020, U. Ong leg. (NMNST). Paratypes: 1 male, idem, 30.IV.2015, U. Ong leg.; 1 female, idem, 7.VIII.2016, U. Ong leg.; 1 male, idem, 12.VI.2018, U. Ong leg.; 1 female, idem, 24.VI.2020, U. Ong leg.; 4 males 2 females, idem, 5.VI.2020 U. Ong leg.; 7 males 6 females, Taiwan, Pingtung County, Mudan, 7.VI.2019, Uika Ong leg.; 1 male, idem, 2.IV.2020, Chiamu Chen leg.; 4 females 2 males, idem, 3.IV.2020, Chiamu Chen leg. (NMNST, UOTT, GCCI, EJBS).

HOLOTYPE DESCRIPTION. Length 5.2 mm. Entirely black. Head: broad vertex, more than half as wide as the anterior margin of pronotum, widely sinuate. Frons bronze brilliant, with white pubescence visible only in profile. Clypeus transverse, without carina. Eyes bulging. Antennae serrate from IV antennomere. Pronotum transverse, convex, wider anteriorly. Lateral margins right; basal angles obtuse. Sculpture obsolete, flat, composed of oblique meshes. Prehumeral carinula not very evident but entire. Marginal carinae joined posteriorly. Gular lobe small, anterior margin slightly sinuous. Prosternal process concave, parallel. Scutellum: triangular with transverse carina obsolete. Elytra: short, stubby, apices thick, separately rounded. A couple of white pubescent spots in the second half of length. Abdomen: ventrites almost glabrous. Apex of last visible ventrite rounded. A faint central relief on basal ventrite. Legs: Metatibia longer than metatarsus. Metatarsal formula 1=2+3+4. Claws with interne spur thick and short. Aedeagus: sclerotized, symmetric; apex of median lobe acute (Fig. 22).

PARATYPES DESCRIPTIONS. Length from 5.2 to 5.7 mm. Some specimens have elytral spots worn and not very visible. In some specimens the scutellar carina is missing and the scutellum is strongly concave. Ovipositor square, uritiform.

SEXUAL DIMORPHISM. Frons of head and lateral margin of pronotum with greenish in male, while



Figures 20–22. *Agrilus firmianae* n. sp. Fig. 20: male, dorsal view. Fig. 21: male, ventral view. Fig. 22: aedeagus in dorsal view. 1.43 mm.

they are black in female. The females also lack of relief on basal ventrite.

ETYMOLOGY. After *Firmiana*, the genus of probable host plant.

HOST PLANT. This species was found on *Firmiana simplex* (Malvaceae), commonly known as the Chinese parasol tree.

DIAGNOSIS. Homomorphic species: *A. muongoides* Jendek, 2011. *Agrilus firmianae* n. sp. differs easily for having shorter, stumpy body and for the presence of the couple of elytral spots.

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