

To the knowledge of *Acronia* 'gloriosa' species complex (Coleoptera: Cerambycidae)

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This article presents new faunistic and phenological data for five species *Acronia* 'gloriosa' species complex: *A. gloriosa* (Schultze, 1922), *A. pulchella* (Schultze, 1922), *A. principalis* (Heller, 1924), *A. superba* (Breuning, 1947) and *A. teterevi* Barševskis, 2016. The habitus (including some type specimens) photographs, are provided.

Key words: Coleoptera, Cerambycidae, Lamiinae, Pteropliini, *Acronia*, fauna, distribution, Philippines,

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INTRODUCTION

The genus *Acronia* Westwood, 1863 belongs to the tribe Pteropliini Thomson, 1861 (Coleoptera: Cerambycidae: Lamiinae), 15 species of which are distributed in the Philippine Archipelago: 8 species are known from Luzon Island, 4 species – from Mindanao island, 2 species – from Samar Island and 1 species – from Siargao island.

Vives (2009) transferred four species of the genus *Callimetopus* Blanchard, 1853 to *Acronia*: *A. gloriosa* (Schultze, 1922), *A. pulchella* (Schultze, 1922), *A. principalis* (Heller, 1924), *A.*

superba (Breuning, 1947). These taxonomic changes were done reasonably, because these species differs from other species of the genus *Callimetopus* by thicker and much shorter antenna, by the metallic colour of body, by the moderately fine puncturation of the surface of body, etc. Moreover, three of these species (*A. gloriosa*, *A. pulchella*, *A. superba*) are endemics of the Greater Mindanao of the Philippine archipelago: *A. gloriosa*, *A. pulchella*, *A. superba* and one species (*A. principalis*) has been described from the Samar Island. Recently, Barševskis (2016) described *A. teterevi* Barševskis, 2016 from

Mindanao Island, which is similar with *A. superba*.

The present study includes the review of five species of *A. 'gloriosa'* species complex; we presented faunistic and phenological data for each species, including the providing of distribution maps and photographs of the habitus, including type specimens for four species.

MATERIAL AND METHODS

The material from the following collections has been examined:

DUBC - Beetles Collection of Coleopterological Research Center, Institute of Life Sciences and Technology, Daugavpils University (Ilgas, Daugavpils Distr., Latvia);

ACC - private collection of Analyn Cabras (Davao, Philippines);

SMTD - Schenkenberg Natural History Collections Dresden, Museum of Zoology (Dresden, Germany).

All specimens have been collected in the Philippines by local collectors.

The laboratory research and measurements have been performed using *Nikon AZ100*, *Nikon SMZ745T* and *Zeiss Stereo Lumar V12* digital stereomicroscopes, NIS-Elements 6D software, and *Canon 60D* and *Canon 1Ds Mark II* cameras. The map of the Philippine archipelago have been drawn using the software *ArcGis 10*.

RESULTS AND DISCUSSION

Catalogue of *Acronia 'gloriosa'* species complex

Acronia gloriosa (Schultze, 1922)

(Fig. 1)

Euclea gloriosa Schultze – The Philipp. Journ. Sc., 1922b, 21, 6: 571

Euclea opulenta Heller – Tijdschr. Ent., 1923, 66: 42

Callimetopus gloriosus; Breuning – Ent. Arb. Mus. Frey, 1962, 13, 2: 463, 451

Euclea gloriosa = *opulenta*; Breuning – Ent. Arb. Mus. Frey, 1962, 13, 2: 463

Acronia pretiosoides Breuning – Mitt. zool. Mus. Berlin, 1980, 56, 2: 163

Euclea gloriosa = *pretiosoides*; Hudepohl – Ent. Arb. Mus. Frey, 1983, 31, 32: 182

Callimetopus gloriosus; Hudepohl – Ent. Arb. Mus. Frey, 1983, 31, 32: 182

Acronia gloriosa; Vives – Les Cahiers Magellanes, 2009, 105: 12

Callimetopus gloriosus; Lingafelter & al. – Smithson. Inst. Schol. Press, 201: 70, 367

Online databases: www.cerambycidae.org [last access: 19.11.2016], www.lamiinae.org [last access: 23.11.2016], lully.snv.jussieu.fr/titan/ [last access: 20.09.2016], www.catalogueoflife.org [last access: 12.11.2016], <https://apps2.cdfa.ca.gov/publicApps/plant/bycidDB/wdefault.asp?w=0> [last access: 19.11.2016], www.biolib.cz [last access: 20.11.2016]

Material examined: Philippines. Mindanao Isl.: Bukidnon, 08.2013 (3), 09.2013 (3), 11.2013 (1); Bukidnon, Bulacao, 03.2014 (1), 06.2014 (5); Bukidnon, Cabanglasan, 02.2014 (4), 04.2014 (3), 05.2014 (2), 09.2014 (5), 11.2014 (2), 09.2015 (1), 10.2015 (1), 01.2016 (2), 03.2016 (2), 08.2016 (2), 09.2016 (1); Bukidnon, Intavas, 02.2013 (1), 04.2014 (1), 09.2014 (2), 01.2016 (1), 05.2016 (1); Bukidnon, Kalatungan, 09.2014 (2), 10.2014 (3); Bukidnon, Panamokan, 03.2014 (1); Bukidnon, Valencia, 04.2014 (2); Caraga, 07.2013 (1); Surigao del Sur, 04.2012 (2), 06.2013 (2), 07.2013 (5), 09.2013 (1), 05.2014 (2), 12.2015 (3); Surigao del Sur, Lanuza, 05.2014 (1), 07.2014 (2).

Specimens examined: 71 specimens.

Distribution: Mindanao Island (Fig. 8).

Phenology: Based on the specimens collected, this species is abundant all year round. It is the most abundant species of the *Acronia 'gloriosa'* species complex (Fig. 13 A).

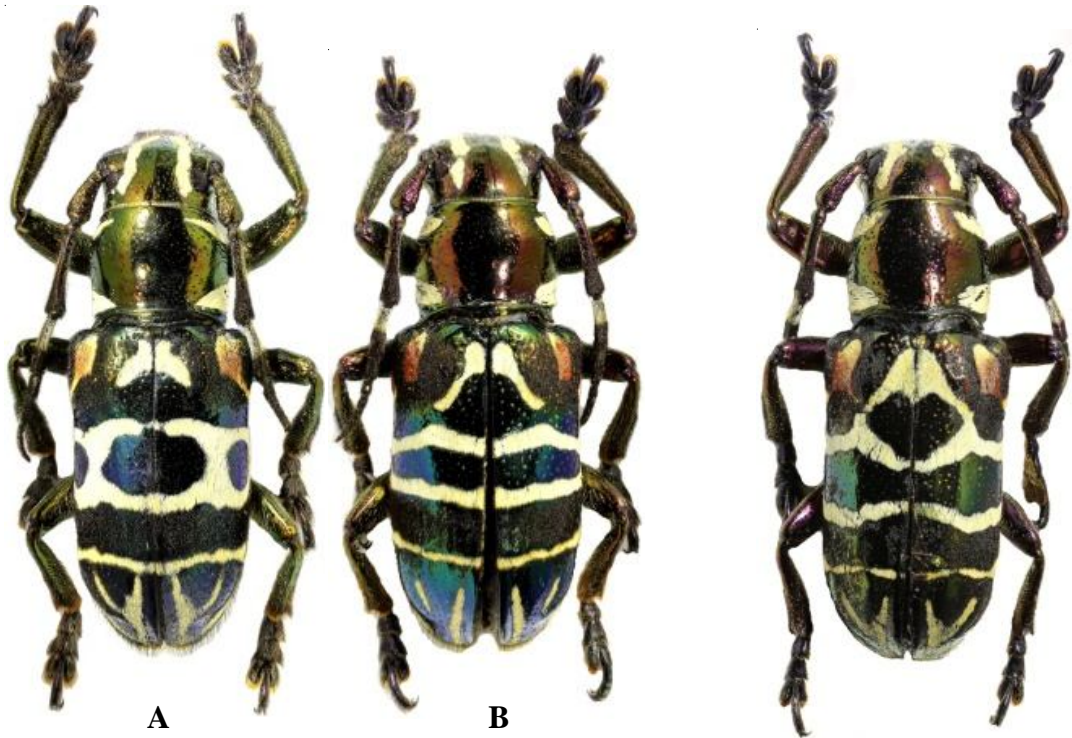


Fig. 1. Habitus of *A. gloriosa* (Schultze, 1922) (A, B – two different forms)

Fig. 2. Habitus of *A. principalis* (Heller, 1924)



Fig. 3. Habitus of *A. pulchella* (Schultze, 1922)

Fig. 4. Habitus of *A. superba* (Breuning, 1947)

Fig. 5. Habitus of *A. terevi* Barševskis, 2016 (holotype)

***Acronia principalis* (Heller, 1924)**

(Fig. 2)

Niphonoclea principalis Heller – Ent. Mitteil., 1924, 13, 4-5: 202

Callimetopus principalis; Breuning – Ent. Arb. Mus. Frey, 1962, 13, 2: 465, 451

Acronia principalis; Vives – Les Cahiers Magellanes, 2009, 105: 12

Online databases: www.cerambycidae.org [last access: 19.11.2016], www.lamiinae.org [last access: 23.11.2016], lully.snv.jussieu.fr/titan/ [last access: 20.09.2016], www.catalogueoflife.org [last access: 12.11.2016], <https://apps2.cdfa.ca.gov/publicApps/plant/bycidDB/wdefault.asp?w=o> [last access: 19.11.2016], www.biolib.cz [last access: 20.11.2016].

Material examined: Philippines. Samar Isl.: Hinabangan, 01.2015 (1).

Specimens examined: 1 specimen.

Distribution: Samar Island (Fig 9).

Phenology: No data about phenology of this species. Single specimen of this species presented in DUBC collected on January (Fig. 13B).

***Acronia pulchella* (Schultze, 1922)**

(Fig. 3)

Euclea pulchella Schultze – Deutsche Ent. Z., 1922a: 36

Callimetopus pulchellus; Breuning – Verl. Mus. G. Frey Tutz. München, 1961, 4: 236

Callimetopus pulchellus; Breuning – Ent. Arb. Mus. Frey, 1962, 13, 2: 465, 451

Acronia pulchella; Vives – Les Cahiers Magellanes, 2009, 105: 12

Online databases: www.cerambycidae.org [last access: 19.11.2016], www.lamiinae.org [last access: 23.11.2016], lully.snv.jussieu.fr/titan/ [last access: 20.09.2016], www.catalogueoflife.org [last access: 12.11.2016], <https://apps2.cdfa.ca.gov/publicApps/plant/bycidDB/wdefault.asp?w=o>

[last access: 19.11.2016], www.biolib.cz [last access: 20.11.2016].

Material examined: Philippines. Mindanao Isl.: Bukidnon, Cabanglasan, 05.2014 (1); Bukidnon, Intavas, 03.2014 (2), 01.2016 (1); Bukidnon, Mt. Kitanglad, 02.2014 (2), Bukidnon, Valencia, 04.2016 (1), 09.2016 (1), 10.2016 (2); Bukidnon, Maramag, 07.2013(1); Zamboanga, Mt. Timolan, 08.2015 (1).

Specimens examined: 11 specimens.

Distribution: Mindanao Island (Fig.10).

Phenology: Based on the specimens collected, *Acronia pulchella* species is abundant all year round (Fig. 13C)

***Acronia superba* (Breuning, 1947)**

(Fig. 4)

Callimetopus superbus Breuning – Ark. Zool., 1947, 39, A, 6: 30

Callimetopus superbus; Breuning – Ent. Arb. Mus. Frey, 1962, 13, 2: 464, 451

Acronia superba; Vives – Les Cahiers Magellanes, 2009, 105: 12

Acronia superba; Barsevskis – Baltic J. Coleopterol., 2015, 15, 1: 4

Online databases: www.cerambycidae.org [last access: 19.11.2016], www.lamiinae.org [last access: 23.11.2016], lully.snv.jussieu.fr/titan/ [last access: 20.09.2016], www.catalogueoflife.org [last access: 12.11.2016], <https://apps2.cdfa.ca.gov/publicApps/plant/bycidDB/wdefault.asp?w=o> [last access: 19.11.2016], www.biolib.cz [last access: 20.11.2016]

Material examined: Philippines. Mindanao isl.: Agusan del Norte, Jabonga, 02.2016 (1), 06.2016 (1); Agusan del Sur, Prosperidad, 02.2016 (4), 03.2016 (2); Bayugan 06.2016 (2); Nompustela Valey, New Albay, 08.2016 (1); Compostela Valley, Mt. Masara, 01.2014 (1), 03.2014 (1), 01.2015 (1); Compostela, New Bataan, 06.2016 (1); Davao del Sur, Kapatagan, 01.2016 (1); 03.2016. (1), 04.2016



Fig. 6. Examined type specimens of *Acronia* 'gloriosa' species complex, deposited in SMTD: A - Type of *A. gloriosa*; B – Type of *Euclea opulenta* Heller; C – Type of *A. principalis*; D – Type of *A. pulchella*

(1), 09.2016 (4); Davao del Sur, Mt. Apo, 07.2013 (2), 10.2013 (1), 11.2013 (6), 12.2013 (2), 01.2014 (2), 02.2014 (1), 04.2014 (2), 05.2015 (1), 09.2015 (5); Mt. Apo, Cotabato, 10.2013 (1); Mt. Apo. Kidapawan, 05.2014 (1), 09.2014 (1); Mt. Apo. Mandarangan trail, 11.2015 (1). Mt. Kitanglad, 08.2016 (7); Mt. Parker, 07.2013 (1); Sibagat, 06.2016 (1); Surigao del Sur, 03.2012 (5), 07.2013 (1); Sarangani, Kiamba, 01.2016 (1), 04.2016 (1); Surigao del Sur, Lanuza 05.2014 (1), 06.2014 (1).

Specimens examined: 61 specimens.

Distribution: Mindanao Island (Fig. 11).

Phenology: Based on the specimens collected, *Acronia superba* is abundant all year round with seemingly no seasonal preference (Fig. 13D).

***Acronia teterevi* Barševskis, 2016 (Fig. 5)**

Acronia teterevi Barševskis, 2016 – Acta Biol. Univ. Daugavp., 2016, 16(1): 71

Online databases: www.cerambycidae.org [last access: 19.11.2016], www.lamiinae.org [last access: 23.11.2016], lully.snv.jussieu.fr/titan/ [last access: 20.09.2016], www.catalogueoflife.org [last

access: 12.11.2016], <https://apps2.cdfa.ca.gov/publicApps/plant/bycidDB/wdefault.asp?w=0> [last access: 19.11.2016], www.biolib.cz [last access: 20.11.2016]

Type materials, deposited in DUBC: Holotype: Philippines, Mindanao Isl., Kabanglasan, Bukidnon, 10.2015 (1). **Paratypes:** Philippines, Mindanao Isl., Mt. Apo, 09.2013 (3); Philippines, Mindanao Isl., Mt. Apo, 07.2014 (1); Philippines, Mindanao, Mt. Apo, Cotabato, 06.2014 (1); Philippines, Mindanao, Mt. Apo, Cotabato, 07.2014 (1); Philippines, Mindanao Isl., Mt. Apo, Kidapawan, Cotabato, 09.2014 (4); Philippines, Mindanao Isl., Davao del Sur, Kapatagan, 12.2015 (2); Philippines, Mindanao Isl., Sarangani, Kiamba, 10.2015 (1); Philippines, Mindanao Isl., Sarangani, Kiamba, 12.2015 (2); Philippines, Mindanao Isl., Mt. Parker, S Cotabato, 07.2013 (1); Philippines, Mindanao Isl., Mt. Parker, S Cotabato, 12.2013 (2); Philippines, Mindanao Isl., Mt. Parker, S Cotabato, 05.2014 (1); Philippines, Mindanao Isl., Mt. Parker, 07.2013 (1).

Other material examined: Philippines. Mindanao Isl.: Agusan del Norte, Jabonga, 06.2016 (1); Nompustela Valey, New Albay, 10.2016 (1);

Sarangani, Kiamba, 01.2016(2), 03.2016(3), 04.2016 (1), 08.2016(1); Sarangani, Maitum, 08.2015 (1), 02.2016 (1), 06.2016 (1); South Cotabato, Malungon, 09.2016(1), 11.2016(1).

Specimens examined: 36 specimens.

Distribution: Mindanao Island (Fig. 12).

Phenology: Based on the studied material, *Acronia teterevi* occurs all year (Fig. 13E).

Bionomics

The specimens of the genus *Acronia* were collected in primary and in secondary forest. The most species were obtained along the trails of mountainous or forested habitats such as Mt. Apo Natural Park (Fig. 7), Mt. Parker, Mt. Kitangland, Impalutao in Bukidnon highlands. These beetles have a high association with forested habitats but seem to tolerate and still thrive in fragmented forested microhabitats, for example as *A. pulchella*, which was collected in the forested microhabitat in Musuan Town, Bukidnon. The representatives of this genus do



Fig. 7. Habitat of *A. superba* in Mt. Apo Natural Park

not seem to have elevational preference and can thrive in lowlands forested localities. As for *A. superba* some materials were obtained from the lowland dipterocarp forest to lower montane in Mt. Apo Natural Park between the elevation of 800-1200m a.s.l. It was obtained along the trail together with endemic *Pachyrhynchus* species. As for *A. pulchella* one specimen was obtained from the forested but lowland area in Musuan Town, Bukidnon. The specimens of *Acronia 'gloriosa' species complex* occurs in the forested habitats of Mindanao all year round with seemingly no seasonal preference (Fig. 9). Four species has been collected in the neighborhood of Mount Apo, Mindanao Island. Mindanao Island is a well known center of the biodiversity, and, perhaps, these area needs to expand the protected forest territories.

Faunistic and zoogeographic notes

Acronia 'gloriosa' species complex includes five species: *A. gloriosa*, *A. pulchella*, *A. principalis*, *A. superba* and *A. terevi*. All species are endemics of Philippines and, except *A. principalis*, are found in the Mindanao Island. *A. principalis* is known from Samar Island. *A. gloriosa*, *A. pulchella*, *A. superba* and *A. terevi* are more widely distributed in Mindanao. *A. pulchella* is more rare, it is known from six localities, but everywhere known only on a few specimens. *A. principalis* known from the locality Hinabangan in Samar Island by single specimen only.

The Philippines which is a product of various geological processes have biotic demarcations primarily based on the coalescence of neighboring islands separated by less than 200 meters shallow channels in the last Pleistocene epoch 2 million years ago (Heaney & Regalado 1986, Brown & Diesmos 2002). This is referred as Pleistocene Aggregate Island Complex (PAIC) which explains biotic demarcations in the country. One of the PAIC is the Greater Mindanao which comprises of Samar, Leyte, Bohol, Siargao, Bucas Grande, Dinagat, Basilan and mainland

Mindanao. The distribution of *Acronia 'gloriosa' species complex* ranges from Samar to mainland Mindanao follows the Greater Mindanao PAIC with no species of this group reaching nearby islands such as Luzon or Cebu. It can be inferred that this group has diversified only recently not more than one million year ago as evidenced by its exclusive distribution in Greater Mindanao since the extensive PAIC formation only took place in the late Pleistocene (Hall 1998, Su et al., 2014). *Acronia 'gloriosa' species complex* is widely distributed in different localities in mainland Mindanao although high number of species is found in Bukidnon which is considered as the center of the diversity of some



Fig. 8. Distribution of *Acronia gloriosa*



Fig. 9. Distribution of *Acronia principalis*



Fig. 10. Distribution of *Acronia pulchella*



Fig. 11. Distribution of *Acronia superba*



Fig. 12. Distribution of *Acronia teterevi*

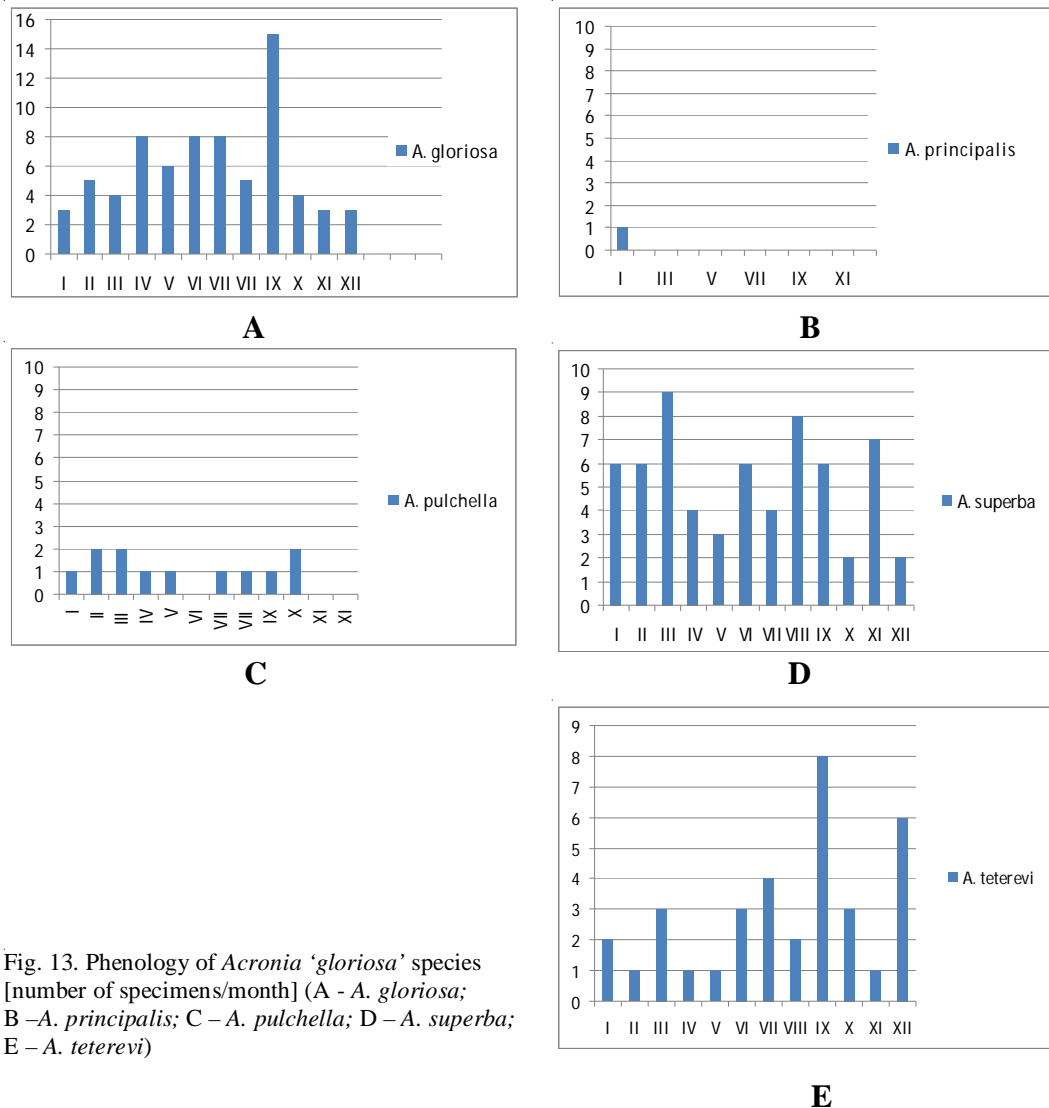


Fig. 13. Phenology of *Acronia* 'gloriosa' species [number of specimens/month] (A - *A. gloriosa*; B - *A. principalis*; C - *A. pulchella*; D - *A. superba*; E - *A. terevi*)

beetle groups such as Pachyrhynchini (Curculionidae), *Doliops* (Cerambycidae) etc.

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