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Metapocyrtus (*Sclerocyrtus*) *dinagatensis* sp. nov. from Dinagat Islands, Philippines, with biogeographical and ecological notes, and a checklist of subgenus *Sclerocyrtus* in the Philippines (Coleoptera, Curculionidae, Entiminae, Pachyrhynchini)

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A new species of the genus *Metapocyrtus* Heller, 1912, subgenus *Sclerocyrtus* Heller, 1912 from Dinagat Islands, Philippines, is described and illustrated: *M*. (*S*.) *dinagatensis* sp. nov. This is the eighth species of the subgenus *Sclerocyrtus* in the Philippines and the third record of *Metapocyrtus* on the island. This paper provides a short ecological and biogeographical note of the new species and a checklist of the subgenus *Sclerocyrtus* in the Philippines. The discovery of this flightless weevil highlights the rich, and understudied fauna of Dinagat and calls for its conservation as the island, considered a mining reserve, faces an environmental catastrophe.

Keywords: beetles, Coleoptera, endemic, Oriental region, weevils

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INTRODUCTION

The subgenus *Sclerocyrtus* Heller, 1912 is the least speciose among the genus *Metapocyrtus* Heller, 1912 represented only by seven species distributed in the Greater Mindanao Pleistocene Aggregate Island Complex. Three species, namely *Metapocyrtus* (*Sclerocyrtus*) *celestinoi* Schultze, 1925, *Metapocyrtus* (*Sclerocyrtus*) *herrei*

Schultze, 1934, and *Metapocyrtus* (*Sclerocyrtus*) *chamissoi* Schultze, 1925 are known from Samar Island, two species *Metapocyrtus* (*Sclerocyrtus*) *asper* Heller, 1912, and *Metapocyrtus* (*Sclerocyrtus*) *dabaw* Cabras & Mainda, 2023 are reported from Mindanao, one species *Metapocyrtus* (*Sclerocyrtus*) *latinasus* Heller, 1925 from Bucas Grande and one species *Metapocyrtus* (*Sclerocyrtus*) *rolandmuelleri* Cabras & Mainda, 2023 has recently been described from Homonhon Island (Schultze, 1925; Cabras & Mainda, 2023). Schultze (1925) distinguished the subgenus with the following characteristics: "*Rostrum relatively short, slightly longer than broad, the sides set off at right angles from the dorsal surface, the latter longitudinally more or less strongly arched and separated from the front by a very prominent transverse groove. Prothorax subcylindrical, slightly more narrowly truncate apically than basally, coarsely, and irregularly granulate or subrugose. Anterior margin ventrally with or without emargination. Elytra short and stout subovate, relatively coarsely subgranulate in longitudinal rows.*"

Dinagat is one of the largest islands in the northeastern part of Mindanao. It is characterized by distinct karst forest types and landscapes home to several Vulnerable and restricted-range species (Lillo *et al*., 2019). The Department of Environment and Natural Resources (DENR) and non-government conservation groups designated two areas of the islands, Mt. Kambinlio and Mt. Redondo, as critical conservation priorities in 2001 (Mallari *et al*., 2001). However, due to their mineral-rich soil, small and large-scale and open-pit mining is becoming increasingly common. Other human-induced activities that seriously threaten the islands' rare flora and fauna include illegal logging and anthropization.

In the last few years, several species of flora and fauna have been discovered in Dinagat Islands, including a new species of blueberry (Tamayo *et al*., 2023), tarantula (Salamanes *et al*., 2022), and a tree from the family Myrtaceae (Fernando & Wilson, 2021). To date, only two *Metapocyrtus* species are known from Dinagat Islands: *Metapocyrtus* (*Orthocyrtus*) *ornatus* Schultze, 1919 and *Metapocyrtus* (*Artapocyrtus*) *mysticus* Bollino, Sandel, & Yoshitake, 2019 (Bollino et al., 2019; Schultze, 2915). In this paper, the third species of *Metapocyrtus* from Dinagat Islands and the eight species of subgenus *Sclerocyrtus* are described and illustrated from Paragua forest, Libjo, Dinagat Islands, with short ecologic and biogeographic notes. A checklist of the subgenus *Sclerocyrtus* in the Philippines is also provided.

MATERIAL AND METHODS

The collection of the specimen was done following Wildlife Gratuitous Permit No. R13-2023-51. Belt transect and opportunistic sampling were combined with hand picking and beating sheet techniques from July 17 to July 19, 2023 in Paragua Forest, Libjo, Dinagat Islands. Opportunistic sampling was done by thoroughly examining all nearby microhabitats, including trees, tree barks, branches, leaves, and shrubs. Morphological characters were observed under Luxeo 4D and Nikon SMZ745T stereomicroscopes. The treatment of the genitalia follows Yoshitake (2011). Images of the habitus were taken using a Nikon D5300 digital camera with a Sigma 18–250 macro lens. Images were stacked and processed using a licensed version of Helicon Focus 6.7.0 and then contrast adjusted in Photoshop CS6 Portable. Label data are indicated verbatim.

Abbreviations and symbols mentioned in this paper are abbreviated as follows:

/ different lines;
// different labels;
LB body length, from the apical margin of pronotum to the apex of elytra;
LR length of rostrum;
LP pronotal length, from the base to apex along the midline;
LE elytral length, from the level of the basal margins to the apex of elytra;
WR maximum width across the rostrum;
WP maximum width across the pronotum;
WE maximum width across the elytra.

Comparative materials and specimens used in the study are deposited in the following institutional collections:

PNM Philippine National Museum of Natural History, Manila, Philippines;
SMTD Senckenberg Natural History Collections, Dresden, Germany;
TIRL Terrestrial Invertebrate Research Laboratory, City of Mati, Philippines.
DUBC Daugavpils University Beetle Collection, Daugavpils, Latvia

RESULTS

***Metapocyrtus* (*Sclerocyrtus*) *dinagatensis* Cabras & Rukmane-Bārbale sp. nov. (Figs 1 A–D)**

Type locality. Philippines, Dinagat Islands, Libjo

Type specimens. Holotype ♀ (Figs 1 A–D), labeled: "Philippines: Dinagat Islands: Libjo, Paragua, 5-100 m, May 13-31, 1988, leg. K.C. Iligan, A.M. Samarca, C.T. Temon, and J.T. Cuadrado (typed on white card) // HOLOTYPE female / *Metapocyrtus* (*Sclerocyrtus*) *dinagatensis*/ CABRAS & RUKMANE-BĀRBALE, 2023 (typed on red card)" (Presently at TIRL, to be deposited at PNM). PARATYPE female: same data as the holotype (Presently at TIRL, to be deposited at SMTD) // PHILIPPINES / Mindanao, Dinagat Isl., Dinagat / II. 2019 / local collector leg. (2♀) (DUBC) // PARATYPE female / *Metapocyrtus (Sclerocyrtus) dinagatensis* / CABRAS & RUKMANE-BĀRBALE, 2023 (typed on red card).

Description. Female. Holotype. Dimensions. LB: 8.5mm, LR: 1.6 mm, WR: 1.5 mm, LP: 2.5 mm, WP: 2.8 mm, LE: 6.0 mm, WE: 4.9 mm.
Coloration: Integument black; head and rostrum lustrous, underside, legs, pronotum, and body surface weakly lustrous. **Head:** dorsal surface between eye with sparse minute pubescence and punctures; posterior side with metallic pale-yellow and turquoise appressed and slightly imbricate round scales; lateroventral side below eyes with a patch of metallic pale-yellow and turquoise appressed and imbricate elliptical scales and sparse white piliform scales; forehead between eyes very weakly depressed medially with distinct median furrow; eyes medium-sized, moderately convex, and slightly protruding on the outline of head. **Rostrum:** finely punctate with fine pubescence, slightly longer than wide (LR/WR: 1.6mm / 1.5mm); transverse basal groove deep extending towards the lateral edge, dorsum with a distinct median furrow reaching middle; dorsum strongly convex dorsally and lateral sides with slightly widened apical. Antennal scape slightly longer than funicle, scape reaching beyond hind margin of eyes, sparsely covered with appressed whitish setae, funicle with suberect brownish setae. Funicular segments I as long as II, segments III-VII as wide; club sub-ellipsoidal.

Prothorax subcylindrical and widened basally, slightly wider than long (LP/WP: 2.5 mm / 2.8 mm), coarsely rugose with sparse minute brown pubescence, weakly convex on dorsal surface, dorsal contour highest point near base. Prothorax with the following scaly markings composed of metallic,

pale yellow, pink, and turquoise imbricate appressed round scales: a) thin transverse stripe along anterior margin, b) thin transverse postmedial stripe, and c) thin stripe on lateral sides at posterior margin. All three are confluent at the lateral margin before coxa.

Figure 1. A–D. *Metapocyrtus* (*Sclerocyrtus*) *dinagatensis* sp. nov. A – f# holotype, dorsal view; B – idem, lateral view; C –holotype rostrum, dorsal view; D –idem, lateral view.

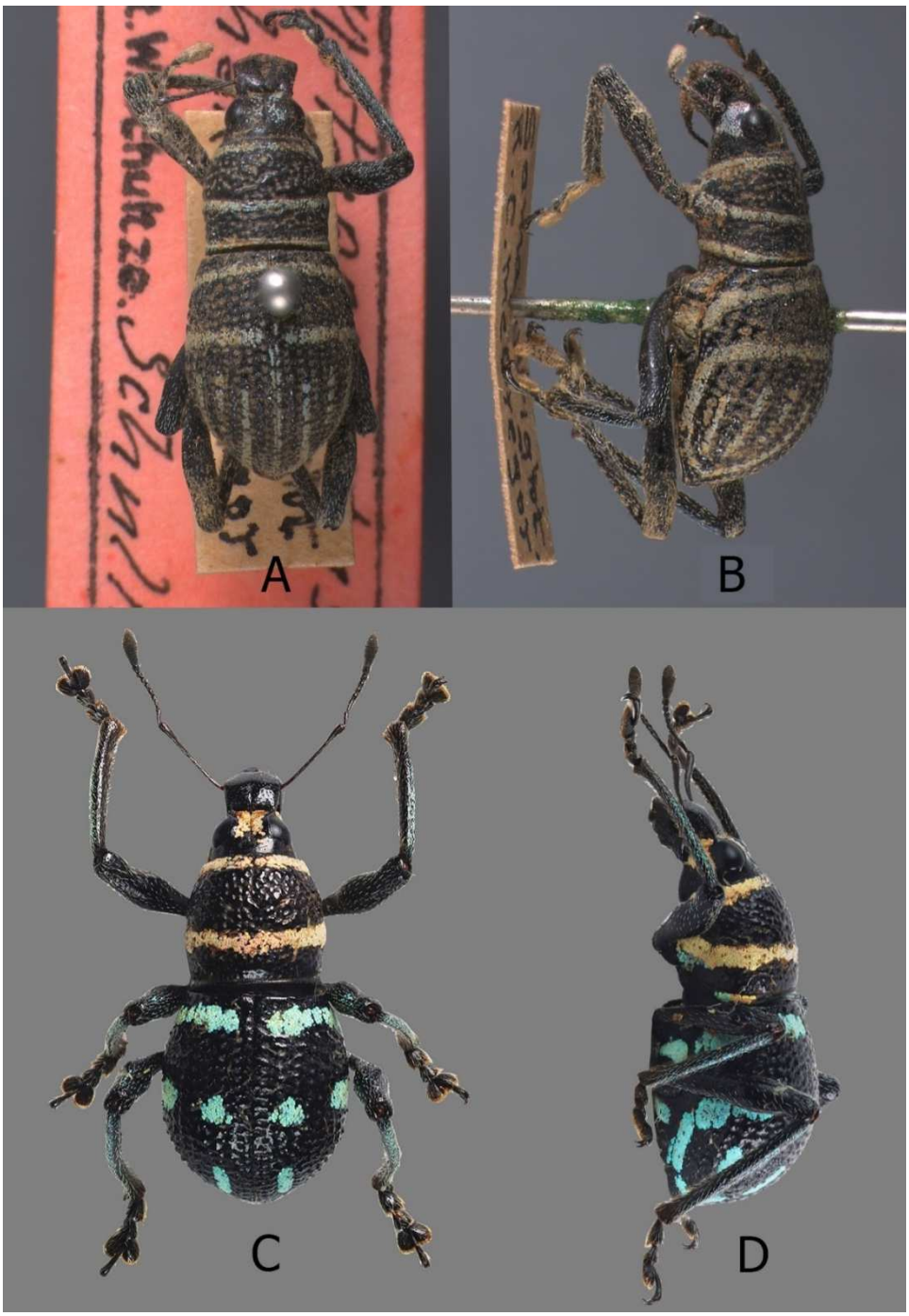

Figure 2. A–B. *Metapocyrtus* (*Sclerocyrtus*) *chamissoi* sp. nov. A–m# type, dorsal view; B-idem, lateral view; C–D *Metapocyrtus* (*Sclerocyrtus*) *rolandmuelleri* –m# type, dorsal view; B–idem, lateral view

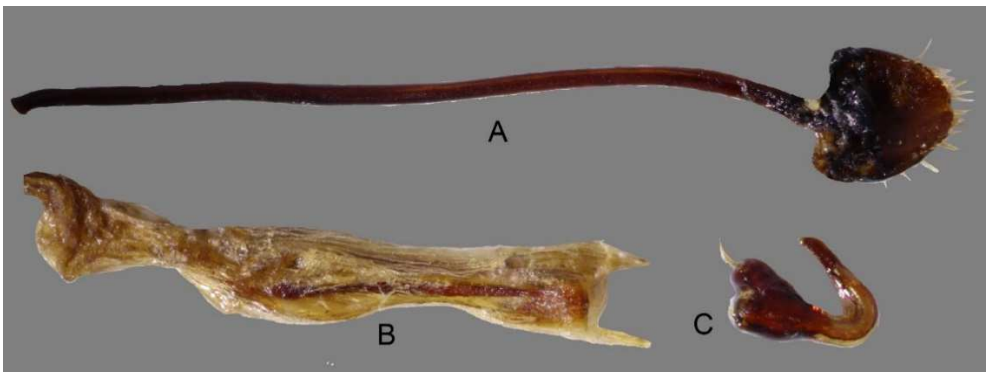

Figure 3. A–B. Female genitalia of *Metapocyrtus* (*Sclerocyrtus*) *dinagatensis*: A – Sternite VIII in dorsal view; B – ovipositor; C – spermatheca.

Elytra strongly ovate, longer than wide (LE/WE: 6.0 mm / 4.9 mm), and twice longer and moderately wider than prothorax (WE/WP: 4.9 mm / 2.8 mm, LE/LP: 6.0 mm / 2.5 mm), coarsely rugose with very minute adpressed pubescence, dorsal surface strongly convex, dorsal contour highest at middle, lateral contour arcuate, constricted at base then gradually and uniformly widened towards middle and tapered towards apex; widest at middle; apical declivity with white setae along suture. Each elytron has the following scaly markings of mostly metallic turquoise and with sparse golden yellow appressed and imbricate round scales: a) a basal transverse stripe from suture towards lateral margin, b) a premedial transverse stripe from suture to lateral margin, and c) three defined postmedial longitudinal stripes, one near suture, one at dorsolateral, and one at lateral margin; all three stripes confluent with the postmedial transverse stripe and converges at apex of elytra. Legs with moderately clavate femora. Femora black and covered with metallic-colored piliform scales. Foretibia covered with metallic colored piliform scales and suberect brown setae on inner margins, weakly serrate along the inner edge, outer margin covered with dense turquoise, and pale yellow and pink lanceolate appressed scales. Middle and hind tibiae covered with metallic-colored piliform scales, suberect brown setae on inner margins, dense turquoise, and pale yellow and pink lanceolate appressed scales. Front and middle tibiae with mucro at the apex. Tarsomeres pubescent. Coxae are covered with setae. Mesoventrite covered with erect white piliform scales. Metaventrite rugose with sub appressed metallic piliform scales and pale yellow and turquoise round scales on distal ends. Ventrite I with sparse pubescence and turquoise and pale-yellow round scales mostly towards distal ends. Ventrites II to V with sparse pubescence. Ventrite V flattened and rugose with minute setae.

Male. Unknown

Differential diagnosis. *Metapocyrtus* (*Sclerocyrtus*) *dinagatensis* shares a superficial resemblance to *Metapocyrtus* (*Sclerocyrtus*) *chamissoi* known from Samar Island and *M.* (*S.*) *rolandmuelleri* from Homonhon Island (Fig. 2). The new species differs from *M.* (*S.*) *chamissoi* for the following: a) rostrum more convex dorsally with rounded edges near apex, b) pronotum less rugose, and c) elytra with three postmedial longitudinal stripes confluent with a medial transverse stripe while *M.* (*S.*) *chamissoi* has 5 longitudinal stripes; the three in the middle are not

confluent with the medial transverse stripe. The new species differs from *M*. (*S*.) *rolandmuelleri* for the following: a) narrower rostrum and elytra, b) more tapered apex of elytra, c) finer rugae on pronotum and elytra, d) more convex elytra dorsally with thin transverse medial stripe, and three longitudinal postmedial stripes on elytra compared with *M*. (*S*.) *rolandmuelleri* with thick basal and subapical turquoise stripes and medial spots near suture.

Etymology. The specific epithet is a toponym of the type locality Dinagat Islands, Philippines.

Distribution. *Metapocyrtus* (*Sclerocyrtus*) *dinagatensis* is known only by the type material from Dinagat Islands.

Checklist of subgenus *Sclerocyrtus* Heller in the Philippines

1. *Metapocyrtus* (*Sclerocyrtus*) *asper* Heller, 1912
   Type locality: "Philippines – Mindanao, Surigao Province, Surigao"; type depository: SMTD.
2. *Metapocyrtus* (*Sclerocyrtus*) *chamissoi* Schultze, 1925
   Type locality: "Philippines –Samar, Wright, Loquilocon"; type depository: SMTD.
3. *Metapocyrtus* (*Sclerocyrtus*) *celestinoi* Schultze, 1925
   Type locality: "Philippines –Samar, Wright, Loquilocon"; type depository: SMTD.
4. *Metapocyrtus* (*Sclerocyrtus*) *latinasus* Heller, 1925
   Type locality. Philippines: Socorro (Bucas Grande Island). Type depository. SMTD.
5. *Metapocyrtus* (*Sclerocyrtus*) *herrei* Schultze,1934
   Type locality: "Philippines –Samar, Burgos"; type depository: SMTD.
6. *Metapocyrtus* (*Sclerocyrtus*) *rolandmuelleri* Cabras & Mainda, 2023
   Type locality: "Philippines – Homonhon Island, Pagbabangnan"; type depository: PNM, Naturalis Biodiversity Center, Leiden, The Netherlands (coll. Roland A. Müller).
7. *Metapocyrtus* (*Sclerocyrtus*) *dabaw* Cabras & Mainda, 2023
   Type locality. Philippines, Mindanao Island, Prov. Davao de Oro, Maragusan and Davao Oriental, Lamiawan, Caraga; type depository: PNM.
8. *Metapocyrtus* (*Sclerocyrtus*) *dinagatensis* Cabras & Rukmane-Barbale, 2023
   Type locality. Philippines, Dinagat Island, Paragua forest, Libjo; type depository: PNM.

Biogeographic Notes

Dinagat Island forms part of the Greater Mindanao Pleistocene Aggregate Island Complex, which is a group of islands such as Mindanao, Siargao, Dinagat, Bohol, Samar, Leyte, and Basilan that were connected during the last glacial maxima (Vallejo, 2019). The subgenus *Sclerocyrtus* has its distribution limited so far in the eastern portion of Mindanao and neighboring islands in Greater Mindanao PAIC, such as Bucas Grande and Samar (Fig. 4). For nearly a century, the only known distribution of *Sclerocyrtus* are in Mindanao, Bucas Grande, and Samar. Yet, the recent discoveries of new species in Homonhon and this new species from Dinagat (Cabras, Mainda, 2023) suggest that there may still be new species in understudied islands in Greater Mindanao PAIC. The presence of very limited type specimens in the collection of SMTD and PNM suggests this taxon is rare and is less abundant in the wild compared to the other members of the genus *Metapocyrtus*. Only two specimens of the new species were collected during the collection despite the abundance of other *Meta-*

pocyrtus and *Pachyrhynchus* species on the island. Based on the extensive work and collection done by the first author on the weevils of Mindanao, *Sclerocyrtus* has not been documented in the central and western portions of the island. This further reiterates the regional micro-endemism of flightless weevils, such as members of the Pachyrhynchini tribe. This regional micro-endemism was also observed in the low flier or flightless taxa such as amphibians and Odonata in Mindanao (Sanguila et al., 2016; R.J. Villanueva, pers comm) which seem to conform with the theories of how Mindanao was created by recent accretion events of paleo island precursors along identified suture zones as well as subduction events leading to the uplift of previously submerged crustal platforms (Yumul, 2009; Brown, Diesmos 2009).

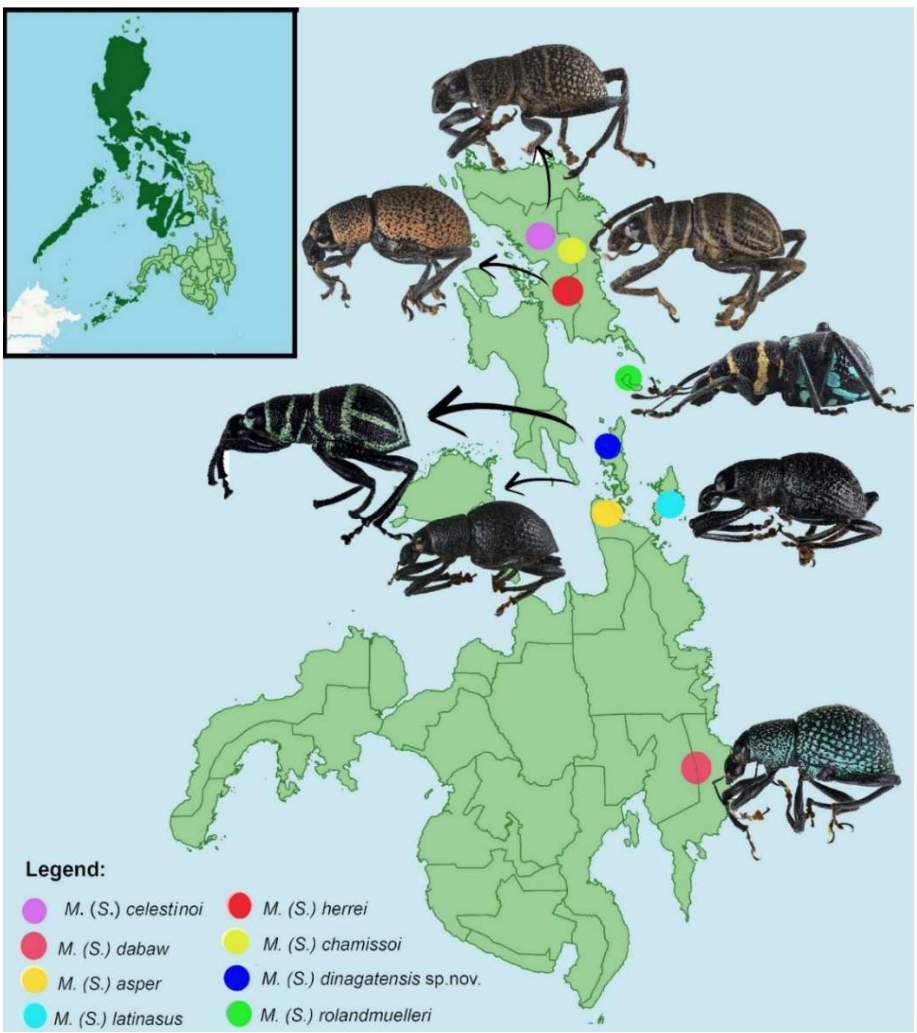

Figure 4. Map of Greater Mindanao PAIC showing the geographic distribution of known *Sclerocyrtus* spp.

Figure 5. A–B Habitats of *Metapocyrtus* (*Sclerocyrtus*) *dinagatensis* sp. nov.; C – Collection method; D – Shrub (*Premna sp.*) where *M.* (*S.*) *dinagatensis*was collected.

Short Ecologic Notes

Metapocyrtus (*Sclerocyrtus*) *dinagatensis* was collected in the watershed of Barangay San Antonio situated between 10º13′19.4″ N and 125º33′.05″ E at an elevation of 124 masl (Fig. 5). The watershed is part of the Paragua forest in Libjo, Dinagat Islands, Philippines. The area where the specimen was collected is a secondary-growth forest dominated by shrubs and saplings. In particular, the specimen was collected on the leaves of *Premna* sp. (Lamiaceae) in an open canopy area of the trail leading to the water system of the watershed. We observed the specimen perching and feeding on the tender shoots of the host plant during a diurnal survey. While trying to collect, it rapidly dropped off and tried to take refuge under the leaf litter of the host plant. The first author has made a similar observation on the habits of other *Sclerocyrtus* species in Mindanao.

The Province of Dinagat Islands is known for its diverse and unique habitats. The presence of the pygmy forest and mystique aquatic and mountain ecosystems inhabited by unique and threatened flora and fauna make it more renowned and interesting for scientific expeditions. However, with the ongoing anthropogenic threats in the area, including the unabated mining of minerals, logging, and anthropization, these are significantly threatened to the point that these might vanish even before being documented by the researchers. Thus, the call for protecting the Dinagat Islands is essential to safeguard not just its rich biodiversity but also the inhabitants of the entire island.

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