

Research Note

FIRST RECORD OF THE DYNASTID BEETLE, *Xylotrupes gideon* L., ON FIELD CORN

**Kristine O. Abenis¹, Ireneo L. Lit, Jr.^{1,2,*}, Merdelyn T. Caasi-Lit³,
and Jeremy Carlo B. Naredo²**

¹Environmental Biology Division, Institute of Biological Sciences, College of Arts and Sciences, University of the Philippines Los Baños (UPLB), College, 4031 Laguna

²Entomology Laboratory, Institute of Plant Breeding, College of Agriculture and Food Science, UPLB, College, 4031 Laguna

³Entomology Section, Museum of Natural History, UPLB, College, 4031 Laguna

*Corresponding author: illit@up.edu.ph

ABSTRACT

The occurrence of the dynastid beetle, *Xylotrupes gideon* L, on corn (*Zea mays* L.) in the field is reported for the first time based on specimens collected from Laoac, Pangasinan, and Bay, Laguna during a series of sampling of corn-associated insects. This species, more commonly known in the Philippines as the elephant beetle, is better known as a minor pest of coconut and other palms. The adult males and females were observed feeding on nodes of corn plants in the late vegetative and early reproductive stages, regardless of cultivar and whether they are conventional or Bt hybrids. There were no coconut trees in the surrounding fields in the regulated field trial site in Pangasinan and Laguna. Scrutiny of literature revealed that corn is not yet included in the host range of the said species, as well as in lists or compendia of documented destructive insects on corn. The nature of damage included chewed portions of the nodes and some broken tassels and/or panicles of the inflorescences.

Key words: corn, dynastid beetle, new host record, *Xylotrupes gideon*, *Zea mays*

INTRODUCTION

Corn, *Zea mays* L., is the second most important crop in the Philippines. It serves as staple food, animal feed, and raw material for industry (Gerpacio et al. 2004). Reports on major pests of corn include several lepidopteran larvae like the Asian corn borer *Ostrinia furnacalis* (Guenée) and corn earworm *Helicoverpa armigera* (Hübner). Other pests attacking corn include semi-looper *Chrysodeixis*

eriosoma (Doubleday), armyworm *Mythimna separata* (Walker), cutworm *Spodoptera litura* (Fabricius), corn leaf aphid *Rhopalosiphum maidis* (Fitch) and corn planthoppers *Stenocranus pacificus* Kirkaldy and *Peregrinus maidis* (Ashmead). Beetle pests of corn include *Adoretus* sp., *Anomala* spp., common white grubs (*Holotrichia* spp.) and the June beetle (*Leucopholis irrorata* Chevrolat) which attack the roots, and the corn silk beetle [*Monolepta bifasciata* (Hornstedt)] and corn weevil [*Sitophilus zeamais* (Motschulsky)] which damage the ears, silk and tassel (Gabriel 1971; Gabriel 1997; Kalshoven 1981). Recent fieldwork, however, drew the researchers' attention to observe the feeding behavior of adult dynastid beetles on corn. Hence, this paper aims to report corn as a new host plant and describe the observed damage caused by elephant beetles on corn.

MATERIALS AND METHODS

A series of fieldwork to assess arthropods associated with corn was conducted in field trial sites in Laoac, Pangasinan from August 2011 to January 2012, and from August to December 2012 and in Bay, Laguna from September to November 2018. Two male elephant beetles collected from Laoac, Pangasinan were preserved as voucher specimens. These were deposited at the UPLB Museum of Natural History (UPLB-MNH). The beetles and their damages to corn as observed in the trial sites were documented and photographed.

RESULTS AND DISCUSSION

During assessments of arthropods associated with corn, first in Laoac, Pangasinan, several large, mainly black, beetles were observed feeding on stalks of Bt and non-Bt corn hybrids. The said beetle species was also observed later in some corn fields in Tranca, Bay, Laguna. Initial identification of this familiar species was confirmed in the laboratory to be the elephant or unicorn beetle, *Xylotrupes gideon* L. (Coleoptera: Scarabaeidae: Dynastinae). *X. gideon* is distributed in Sri Lanka, the lower Himalayan region, Southeast Asia mainly the Malay Archipelago, and the Philippines, China, Australia, Papua New Guinea, and Melanesia as far as Vanuatu. It is known to feed on a variety of host plants (Table 1).

Elephant beetles have not been documented yet as destructive to corn. However, this beetle species was observed to chew on corn stalks and the male inflorescence (tassel) (Figure 1). The fibrous appearance of damaged tassels was noted to have probably resulted from the beetles selectively feeding on the glumes and pollen-rich stamens, leaving the branchlets of the rachis and tassel branches. It was also observed that a single beetle can destroy several stalks.

The occurrence of *X. gideon* on corn constitutes a new host record and may not be automatically attributed to possible presence of its acknowledged main host, coconuts. There were no coconuts nor other palms in the immediate vicinities of the corn fields, especially in Laoac, Pangasinan, although in Bay,

Laguna, there were visible coconut stands from a distance, the nearest ca. 500 m from the corn plots. Nonetheless, dynastid beetles are known to fly long distances toward new food sources. Most importantly, the actual observations of their feeding on corn plants attest to their potential as pests of this crop.

Table 1. List of plants previously recorded as hosts of *Xylotrupes gideon* L.

Family	Scientific Name	Common Name
Liliopsida		
Arecaceae (=Palmae)	<i>Cocos nucifera</i> L.	Coconut
	<i>Corypha utan</i> Lam.	Buri
	<i>Elaeis guineensis</i> Jacq.	African oil palm
Musaceae	<i>Musa x paradisiaca</i> L.	Banana
Poaceae (=Gramineae)	<i>Bambusa vulgaris</i> Schrad. ex Wendl.	Common bamboo
	<i>Saccharum officinarum</i> L.	Sugarcane
Magnoliopsida		
Euphorbiaceae	<i>Hevea brasiliensis</i> Müll.-Arg.	Rubber tree
Sapindaceae	<i>Dimocarpus longan</i> Lour.	Longan
	<i>Litchi chinensis</i> Sonn.	Lychee
Solanaceae	<i>Solanum tuberosum</i> L.	Potato

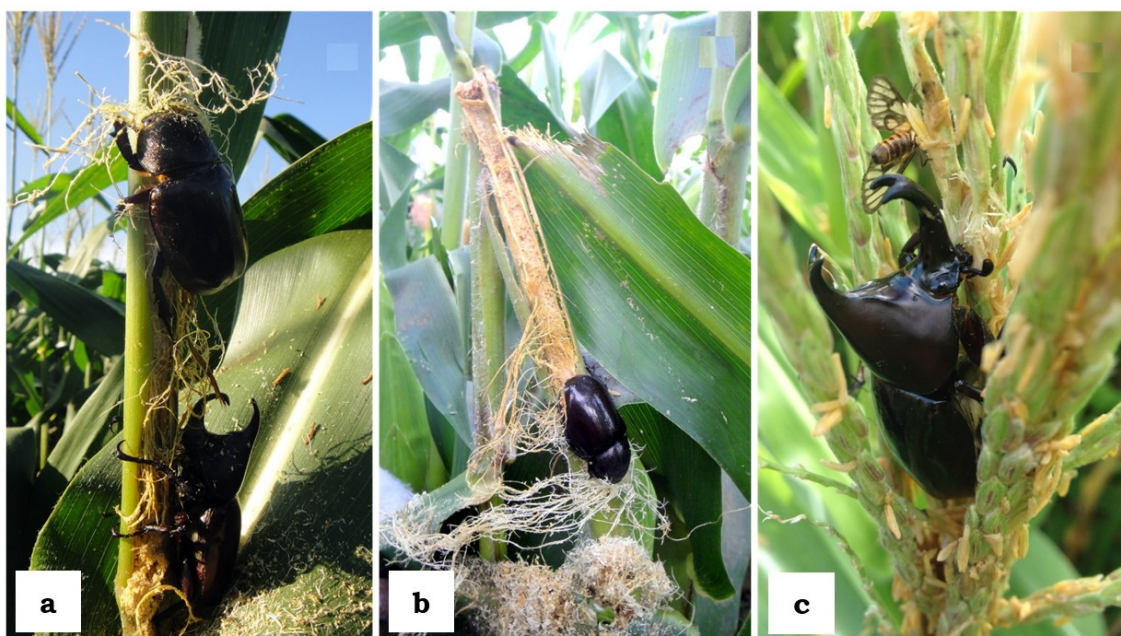


Figure 1. Elephant beetles, *Xylotrupes gideon* L. (Coleoptera: Scarabaeidae), observed on field corn. **a.** male (lower) and female (upper) elephant beetles feeding on corn stalks, and **b.** broken stalks due to elephant beetle's feeding, in Laoac, Pangasinan. **c.** tassels becoming fibrous in Bay, Laguna, due to damage during the early stage, caused by elephant beetle's feeding selectively on pollen-rich parts.

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