



NOTE

Parasa viridimixta Janse, 1964 (Lepidoptera: Limacodidae): A lepidopteran pest of *Tetracarpidium conophorum* (Mull. Arg) Hutch. & Dalziel in eastern Nigeria

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INTRODUCTION

Pest infestation on forest plants has become a problem in the production and utilisation of some forest products. Many plants serve as hosts (food plants) to many species of insects during their developmental and/or adult stages. Insect species of the order Lepidoptera breed mostly on the leaves of wild or cultivated plants (Dixon *et al.*, 1978). The voraciousness of their larvae on tender foliage of the host plants tends to affect plant productivity as well as threaten survival in some instances (Srivastava & Singh 1976; Duke, 2002).

Tetracarpidium conophorum, known locally as African walnut ('Ukpa' in Igbo; 'Awusa' or 'Asala' in Yoruba and 'Ekporo' in Ibibio) (Meregini, 2005; Ayoola *et al.*, 2013) is a woody climber found in the lowland tropical rainforests of West Africa. It is not uncommon in the forests of south-eastern and south-western Nigeria (Egharevba *et al.*, 2005; Onawumi *et al.*, 2013). Famed for its nuts, which are widely consumed as snacks, this forest food-plant grows by climbing on the stems of forest trees, and spreading on their crowns, sometimes dominating the host plant due to its prodigious leaf production. The plant is classified as semi-wild, because it can be found in the wild, growing naturally, or in farmlands and home gardens (Egharevba *et al.*, 2005). According to Egharevba *et al.* (2005) its fruits are usually available within the months of June to September.

Studies have shown that the leaves of *T. conophorum* contain a lot of nutrients such as fats, fibre, protein and carbohydrates as well as phytochemicals, which could be extracted and used for ethno-medicinal purposes (Ayoola *et al.*, 2013; Onawumi *et al.*, 2013). Of specific note is the effectiveness of the leaf extracts of this plant species in the treatment of urinary tract infections due to its high antibiotic content (Enitan *et al.*, 2014). This implies that virtually all parts of the plant are considerably useful

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to humans. Meregini (2005) categorised *T. conophorum* as a threatened plant that produces edible fruits in south-eastern Nigeria. This study documents the observations made on the defoliating activity of a lepidopteran pest on a *T. conophorum* stand.

LOCATION AND OBSERVATIONS

Observations of a breeding moth species were made on an African walnut in a home garden at Ehimiri Housing Estate, Umuahia, Abia State, Nigeria (05° 31.200' N, 07° 31.504' E) between 2 July and 30 October 2016. The African walnut had climbed through a guava (*Psidium guajava*) tree of about 3–4 m in height, almost covering the canopy of the guava tree entirely with its numerous branches and leaves.



Figure 1 – Mating adults of *P. viridimixta* under a leaf of *T. conophorum*.

On 2 July, paired adults of a moth species earlier suggested by Goff (pers. comm.) to be *Parasa (Latoia) viridimixta* Janse, 1964 (Lepidoptera: Limacodidae), were found in a mating posture under the leaves of *T. conophorum* (Fig. 1). These paired adults retained this posture for close to 24 hours and only separated when they were disturbed. This suggested the commencement of breeding by the species.

Efforts made thereafter to locate eggs yielded no results until seven days after start of observations on the mating pair. Then, some egg-clusters (see black arrows, Fig. 2) and newly emerged larvae (see white arrows, Fig. 2) were sighted on the under-surface of some leaves of the African walnut. By 11 July, the

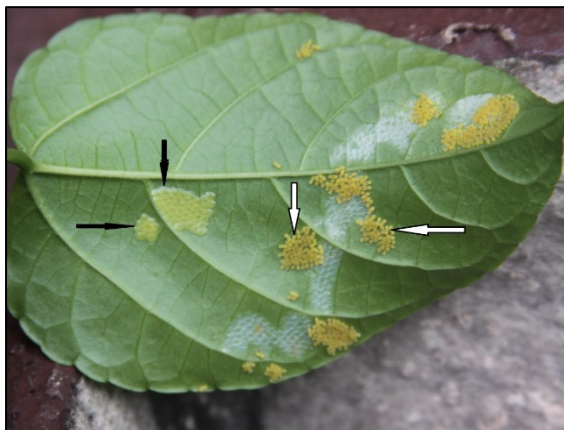


Figure 2 – Egg clusters (Black arrows) prior to hatching and the newly hatched larvae (white arrows)

clusters of larvae on the under-surfaces of leaves of *T. conophorum* had become larger in size (Fig. 3). The larvae measured 1–2 mm in length, with tiny hairs which caused irritation upon contact with human skin. Fourie & Hull (1980) noted that the larvae of *Parasa vivida* caused sharp pains and a clinical effect known as urticaria upon contact with human skin.



Figure 3 – One-day old larvae of *P. viridimixta* clustered underneath a leaf of *T. conophorum*. Each larva measured 1–2 mm in length.

The larvae appeared to be scraping the lower epidermis of *T. conophorum* leaves, leaving a somewhat translucent leaf. Within 10 days of their hatching, clusters of larvae had scraped almost half of each leaf on which they were found, and spread onto other leaves (Fig. 4).

Within 4 weeks of emergence, the larvae appeared to have developed fully (Fig. 5), measuring 25–28 mm and possessing well-developed black and yellow spiny tubercles on the body. The larvae also had caused almost 90% defoliation of the host plant within this period, after which they commenced descent from the upper leaves in preparation for pupation. Sites where the larvae pupated included some leaves of the host plant at the lower parts of the plant (Fig. 6), nearby brick walls, and hidden locations close to the host plant, where they formed cocoons (Fig. 7). Some adults emerged between 78–80 days after the forming cocoons. Emergence was mostly at night. Thus, newly emerged adults were hardly sighted before their disappearance, except in



Figure 4 – 10-day old larvae of *P. viridimixta* scraping the lower epidermis of a leaf of *T. conophorum*, leaving the leaf with a translucent waterproof-like upper epidermis and exposing the leaf's network of veins.



Figure 5 – Fully grown phytophagous larvae of *P. viridimixta* feeding voraciously on the leaves of *T. conophorum*, prior to dispersal for pupation



Figure 6 – A partly-eaten Leaf of *T. conophorum* holding a pupal cocoon. The leaf was partly consumed by the larvae and also used for pupation due to its position at the lower part of the plant.



Figure 7 – Pupal cocoons of *P. viridimixta* on a brick wall beside the host plant. Notice the opening on one of the cocoons (see arrow), from where an adult emerged

cases where some cocoons were enclosed as part of this study. Through the period of observation and after, no fruits were found on the *T. conophorum* plant, even though it had yielded its maiden fruits during the previous fruiting season. This suggests that the intense feeding by the larvae may have prevented the host plant from fruiting, due to the defoliation it was subjected to. The adults appeared to have spent almost all of their lives in the vicinity of the host plant, thereby attacking it repeatedly. It was observed that the larvae spent an average of 30 days on the host plant before dispersing for pupation. Within this time, they achieved near complete defoliation, making them a somewhat chronic pest of the plant. Attack of phytophagous pests on plants of agricultural, medicinal or other conservation importance is one of the problems that need to be addressed to ensure food security.

Worthy of note also, is the fact that attempts were made to fully ascertain the identity of this moth species. Photos of single adult individuals obtained from this study significantly matched with that of *P. viridimixta* found in the database of Afrotropical moth species (see De Prins & De Prins 2016). However, further taxonomic work is needed to be certain of the status of this species, which appears to be closely related to *P. vivida* (M. Epstein, pers. comm., 2017). *Parasa viridimixta* was originally described as a subspecies of *P. vivida*, but raised to a species by Vári *et al.*, (2002) in a checklist.

Literature on the life history of *L. viridimixta* appears to be scant or non-existent, but the accounts of the life history of *P. vivida* as noted by Hill (2008) and Fourie & Hull (1980) partially agrees with some of the observations made in this study but varies in terms of the size of the fully grown larvae, the duration of pupation and records of host plants. Nonetheless, this study documents this moth species as a chronic pest of *T. conophorum*, which serves as their host plant. Further work is also needed to document species of this family currently supported in various habitats as well as finding a conservation-friendly way of controlling the problem of defoliation caused by voracious lepidopteran pests on cherished forest food plants in Nigeria.

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