



Notes on the Pollination of *Epiphyllum oxypetalum* (CACTACEAE) by the Moth *Agrius cingulata* (SPHINGIDAE)

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Editorial

Volume 1 Issue 1

Received Date: August 21, 2023

Published Date: August 28, 2023

DOI: 10.23880/oajbi-16000101

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Keywords: Cactaceae; Cactoideae and Tribe Hylocereeae

Editorial

Epiphyllum oxypetalum (DC) Haw (Figure 1A & 1B), is a species of epiphytic phanerogam belonging to the family Cactaceae, subfamily Cactoideae, tribe Hylocereeae, which is distinguished by the size of its flowers (up to 30 cm in

diameter in funnel shape), fragrant, for its showy flowering, with whitish or cream-colored flowers, which ensure visibility at night [1,2] which begin to open at dusk and close again for good when the first light of dawn appears [3]. Hence it is known as “queen of the night, lady of the night, bride of the night, sweetheart of the night, night-cock, night-blooming cereus, orchid cactus, jungle cactus, and dutchman’s-pipe cactus” [4,5].

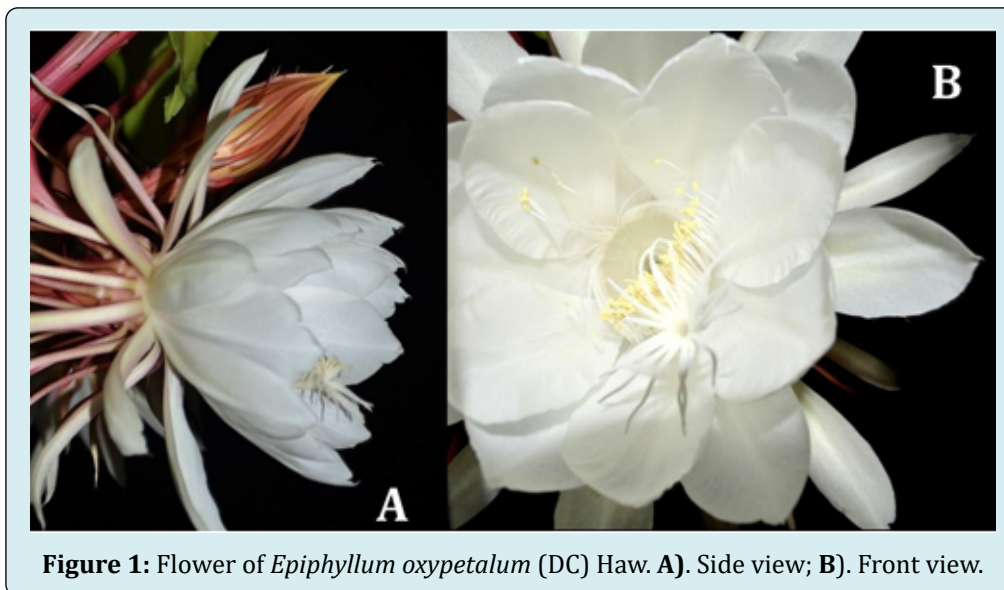


Figure 1: Flower of *Epiphyllum oxypetalum* (DC) Haw. A). Side view; B). Front view.

Epiphyllum oxypetalum is native to Mexico and Central America, the attractiveness of its flowers has made it a

plant of great ornamental interest, which has led to it being cultivated all over the world, including South America

(Colombia, Venezuela, Brazil), particularly in Asia (China, India, Malaysia, Vietnam), and Sri Lanka [6,7]. *E. oxypetalum*, in addition to its ornamental value, has nutritional, spiritual value and even possesses medicinal properties [8], namely: it relieves pain, serves as a cicatrizant, anticoagulant, antibacterial, antioxidant, anti-inflammatory [4,9] and even trials have been conducted to evaluate its anticancer activity [10]. Prajitha, et al. [5] pointed out that this species shows the presence of many chemical constituents (phenolic compound and its derivatives, flavonoids, terpenes, glycosides, saponins, among others), which confer the various pharmacological and medicinal properties mentioned above [10]. However, currently the plant is an underutilized resource as the medicinal activities are yet to be fully explored and results in this regard are expected in the future [5].

The morphological characteristics of leaves, stems, flowers and pollen have been reported by Taylor, et al. [1,2,11,12] who indicate that it is an epiphytic cactus with fibrous roots. It has flat, foliaceous and lance-shaped secondary stems, which grow on thin, cylindrical, freely branched primary stems, with the ability to grow up to 6 m tall in the wild, on small rocks or in trees. Its natural habitat is tropical rainforest and temperate rainforest.

The dama de noche, as it is commonly known in Venezuela, flowers mainly between May and October. Its flowers are pollinated by nocturnal butterflies or moths of the Sphingidae family [13], which are attracted to this plant due to the colouring of its flowers and the smell they emit, which has been associated with the presence of benzyl salicylate ($C_{14}H_{12}O_3$) [5]. Most sphingids have a very long proboscis and feed on nectar while hovering in front of the flower, similar to a hummingbird. Flowers adapted to this type of pollination are usually tubular, pale or white in colour, and open at night. This set of traits is a floral syndrome called sphingophily [3]. In addition, it has been observed that the flowers of *E. oxypetalum* can even attract bats (seed dispersers) and bees, the latter, although they pollinate diurnal flowers, arrive very early to feed on their pollen and nectar while the flower is still open, before it closes and perishes.

Although it has been indicated that *E. oxypetalum* is pollinated by a wide variety of organisms, as previously mentioned, mainly by moths, the information about which species pollinate it is scarce, that is why we decided to record and photograph in one of those nights where the flowering was exuberant the moth that visits it: *Agrius cingulata* of the family Sphingidae, which can be seen in Figure 2.

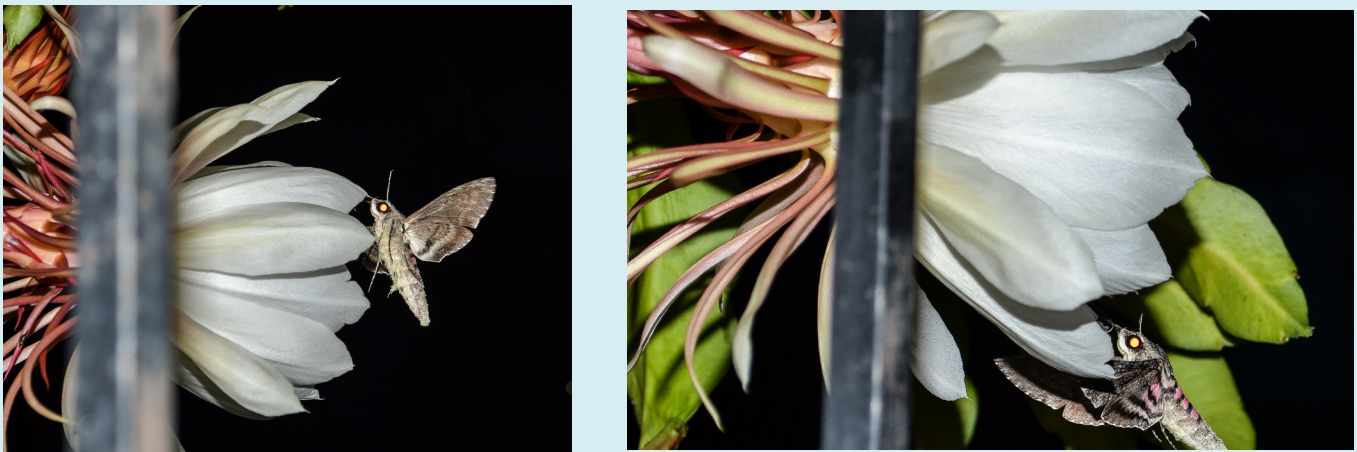


Figure 2: Two angles of the flower *Epiphyllum oxypetalum* (DC) Haw, with one of its pollinators, the moth *Agrius cingulata* (Fabricius, 1775). Location: Caracas, Venezuela.

Agrius cingulata is a sphingid known to have pink basal bands on the hind wings and A2 - A6 tergites (See Figure 3) [14]. This moth has a very wide latitudinal distribution in the American continent and altitudinal distribution is between 0 and 2800 m a.s.l. [14]. In Venezuela it is considered a crop pest, as its caterpillars feed on the sweet potato *Ipomoea batatas* (L.) Lam. [15] this tuber species is believed to be “the vector” that allowed *A. cingulata* to spread as an exotic and then as an invader on the African continent and into Europe. The adult's diet is very different from that of the caterpillar, they

feed exclusively on flower nectar, especially on large flowers with deep throats, such as flowers of the genera: *Ipomoea* L., *Convolvulus* L., *Lonicera* L., *Petunia* Juss., *Crinum* L., *Datura* L., *Nicotiana* L. [14], among others. Accurate descriptions of species on which *A. cingulata* feeds in the scientific literature are scarce and in many cases speculative, therefore, it is necessary to collect as much data as possible (photographs, species, altitude, dates, times, etc.) to increase knowledge of the species that this and other sphingids pollinate [16].



Figure 3: *Agrius cingulata* (Fabricius, 1775) ♂. **A)** dorsal view; **B)** ventral view; **C)** label data. Locality, collector and date of collection: Rancho Grande, Aragua state, Venezuela; Racenis; 22-VIII-1949. Wing expansion: 81.41 mm; body length: 43.49 mm. Specimen belonging to the Colección of the Museo de Biología de la Universidad Central de Venezuela (MBUCV).

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