

Rediscovery and Revalidation of *Encyclia hircina* (A. Richard) Acuña.

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Abstract

The rediscovery and validation of *Encyclia hircina* (A. Richard) Acuña from Isla de La Juventud (Isla de Pinos), Cuba, is reported. *Encyclia hircina* is compared to the species with which it has been considered a synonym, *Encyclia fucata* (Lindl.) Britt. and Millsp. *Encyclia hircina* is reestablished as another of Richard's distinct Cuban species. The pollinator, a deer fly, attracted to the unusual fragrance of the flower is reported.

Epidendrum hircinum was described by Achille Richard in 1850 based on live material but has been considered a synonym of *Encyclia fucata* (Lindl.) Britt. and Millsp. by several authors (Reichenbach, 1861; Grisebach, 1866; Ames, 1905; Urban, 1909; Schlechter, 1915; Leon, 1946; Withner, 1996; Nir, 2000; Llamacho & Larramendi, 2005; Vale, et al, 2014).

While working on the Flora of Cuba for Sagra's "Historia Física, Política y Natural de La Isla de Cuba", (Sagra, 1850) Richard received live material from Sagra's collaborators in Cuba. Several of these Cuban species were cultivated and flowered in the Paris greenhouses. Examining the live material, Richard understood the differences between the small, yellow flowered epidendrums that resembled Lindley's species: *Epidendrum fucatum* Lindl. and *Epidendrum oxypetalum* Lindl.

During the preparation for the Flora, Richard visited Kew and communicated with Lindley and Hooker (Stafleu and Cown, 1983). At KEW he compared his specimens of the yellow flowered epidendrums to the type of *E. fucatum*. He annotated his observations and added pieces of his own material of *E. hircina* on the type sheet of *E. fucatum*, for comparison. Lindley's type for *E. fucata* was also based on live material. It had been "imported from Havana in the Spring of 1835....and added to Sir Charles Lemon's collection at Carlew, where it flowered for the first time in July 1837...." (Lindley, 1838). *Epidendrum oxypetalum*, the other species of small yellow flowered Epidendrum, was described by Lindley based on dry material collected by Linden (Lindley, 1846). The availability of plants in the Paris greenhouses appears to be more common than in Kew based on the amount of specimen prepared by Richard from live material.

Sagra's correspondents in Cuba included priests and explorers from different Cuban localities. Sagra lists D. Alejo Helvecio Lanier, engineer who explored Isla de Pinos on 1831 as the collector of the plants from Isla de Pinos that were sent to Richard.

Britton (1916) also mentions Alejandro Lanier, but lists him as the French Consul of Trinidad, Cuba. Britton adds that Lanier visited the Isle of Pines in 1831 and made the first collections of plants there. He sent the collections to Europe where Richard studied them and in part used them during the preparation of Sagra's flora.

After comparing the live plants that flowered at Paris with the specimen at Kew, Richard described three new species considering them related but distinct from the two species of Lindley. The description for each species as well as the illustrations included are details that can only be observed by studying live material. The Cuban locality for the live specimen grown at Paris, which were used to describe these species, was not recorded. According to Sagra the live specimens at Paris were sent to Richard by Dr. Belot of Havana, but there is no explanation as to the exact locality of the live plants.

Lindley does not list any of Richard's epidendrums as synonyms of his species in any of his publications. In essence approving of Richard's names. Reichenbach (1861) reduced most of Richard epidendrums to synonymy under *E. fucatum* including *E. hircinum* based on the descriptions and dried material. Reichenbach was not able from dried material to notice one of the most distinctive features of *E. hircina*, the fragrance. This fragrance immediately distinguishes *E. hircina* from the other yellow-flowered epidendrums.

During the summer of 2016 and 2017, the first author, observed a population of *Encyclia* Hooker at Los Indios Ecological Reserve, Isla de la Juventud, Cuba that resembled *E. fucata*. The distinct differences between this species and *E. fucata* were originally disregarded due to the confusing wide spectrum of characters attributed to *E. fucata* in the literature. However, after carefully examining live material, many images and considering in the description the particular scent of the flower, it was clear that the population at Los Indios Ecological Reserve was what Richard had described as *Encyclia hircina*.

Encyclia hircina is found growing epiphytically in a scrub adjacent to the coastal mangrove forest. Host species include *Conocarpus erectus* L., *Bucida spinosa* Jenn. and *Malpighia coccigera* L. The population of *E. hircina* covers an area of about 5 km parallel to the shoreline where it is abundant. The dominant color form of *E. hircina* is concolor yellow sepals and petals with a cinnamon shade as described by Richard, but greenish forms have also been found. The labellum can be white to pale yellow with or without purple lines.

In addition to the Latin description, there is an additional reference to *E. hircinum* immediately after the description as part of a section called Observations, where Richard elaborates the reason to name this species *E. hircinum*. He explains that the flowers smell like a male goat.

Richard also states that this species appears to be closely related to *Epidendrum affine* (*Encyclia richardiana* Seijo, Esperon and Sauleda, replacement name) but distinct even though the pseudobulbs and leaves are identical to *Epidendrum affine*, the flowers of *Epidendrum hircinum* are larger and of a cinnamon-yellow color; the sepals are concolor without veins, the middle lobe is elliptic and the callus is like a raised fingernail.

Julian Acuña was the only author who recognized *E. hircina* as a distinct species after Reichenbach (1861) reduced most of Richard's epidendrums to synonyms. Acuña (1936) understood the nature of the species after observing live material in the field and transferred *E. hircinum* to *Encyclia*. He reported populations of this species at the following localities: Caibarien, La Magdalena and Cayenas at "Santa Clara" (Central Cuba), La Gloria at Camaguey and Loma de la Hermita and Sevilla Estate at "Oriente" (East Cuba). However, later authors continued considering *E. hircina* as a synonym of *E. fucata*.

EPIDENDRUM HIRCINUM. A. R. (Fig. 77).

E (Encyclium) pseudobulbis ovoideis apice attenuatis, 2 1/2-3 pollices longis, 1 pollicem latis, apice diphyllis; foliis coriaceis, oblongis, angustis, subacutis, dorso suberenatis aveniis, 5-7 lineas latis, 6-8 pollices longis; scapo terminali, foliis duplo longiori, nudo, basi simplici, apice ramoso-paniculato, floribus amplitudine mediis, pedicellatis, bractea minima suffultis; sepalis patentibus intensive luteis subcinnamomeis spathulato-oblongis acutis concoloribus; labello trilobo gynostemium obtegente libero; lobis lateralibus obliquis, oblongis, obtusis, lineis purpureis subsimplicibus facie interna notatis; terminali elliptico, oblongo, plano, integro, sessili in disco lineis violaceis approximatis notato, in ambitu albo; gynostemio brevi clavato purpurascente.

Crescit in sylvis insulae Cubae.

Observaciones. Este EPIDENDRUM, que denominamos *hircinum* á causa del olor de macho cabrio que exhalan sus flores, nos parece ser vecino pero distinto de nuestro *E. affine*. Los pseudobulbos y las hojas son idénticos, pero las flores son algo mayores y de color amarillo de canela; sus sépalos son unicolores y no venosos, y el lóbulo medio del labelo es elíptico, obtuso, sentado y no agudo y con uña.

Latin description of *Epidendrum hircinum* in Sagra's Historia Física, Política y Natural de la Isla de Cuba with additional observations in Spanish.

Encyclia hircina and *E. fucata* are sympatric along the boundary line between the white-sand savanna scrub and the mangroves and also sympatric in the canopy of the gallery forests along the streams that interrupt the white-sand savanna scrub. *Encyclia fucata* does not occur in the white-sand scrub where *E. hircina* is most abundant. The reproductive isolation of each species is due to the very different pollinators that each species has. *Encyclia hircina* has a pollinator not usually found in encyclias, a deer fly *Chrysops variegatus* (De Geer), which is attracted to the unusual fragrance. An unidentified bee has been observed visiting *E. fucata*. The deer fly appears to be attracted to the fragrance however; male deer flies are mainly pollen and nectar feeders (Squitier, 1998). Rodriguez Velazquez and Mestre Novoa (2002) report this deer fly for the Isle of Pines.

Encyclia hircina differs vegetatively and florally with *E. fucata*. *Encyclia hircina* always has two leaves, as does *E. richardiana* where *E. fucata* has one leaf. The midlobe of the labellum on *E. hircina* is ovoid to elliptic where in *E. fucata* the midlobe is obovate. *Encyclia hircina* has two long thin erect keels under the column which are raised and appear 'fingernail-like' as described by Richard; *E. fucata* has two thick broad keels or as Lindley describes them 'two oblong fleshy processes'. In addition, the column of *E. fucata* does not have any signs of auricles. Instead it has a thin edge on the bottom of the column. *Encyclia hircina* has small auricles towards the apex of the column. Finally, Richard describes the floral fragrance of *E. hircina* as the smell of a male goat. This fragrance attracts a deer fly pollinator, where *E. fucata* has a sweet smell which attracts a bee pollinator.

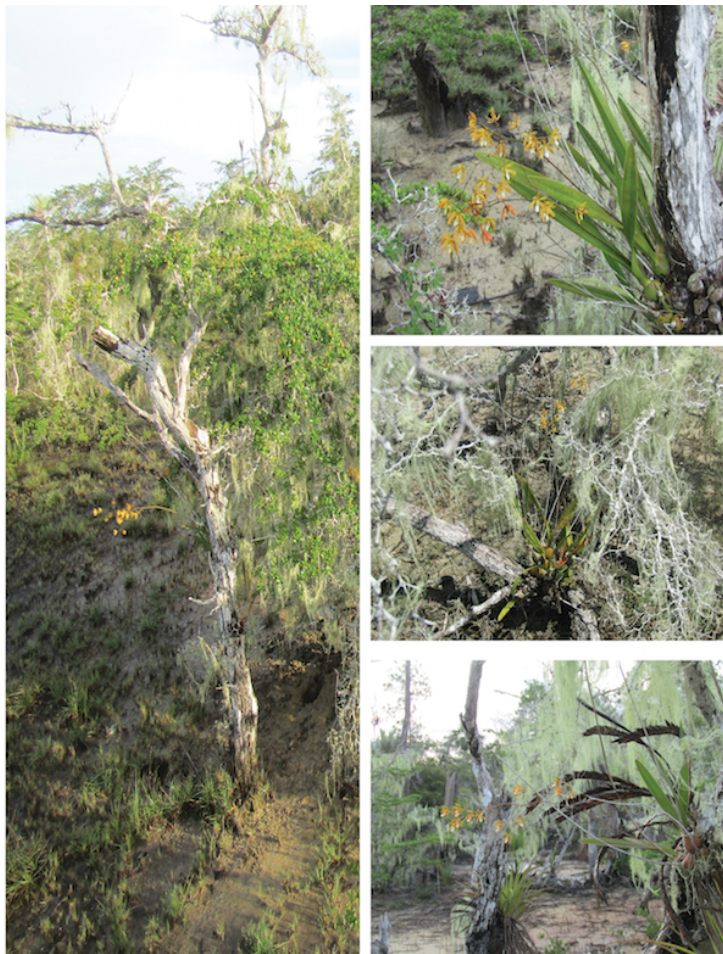


Plate of *Epidendrum hircinum* in Icones Plantarum in Flora Cubana, Historia Physica, Politica et Naturali, Plate 77.

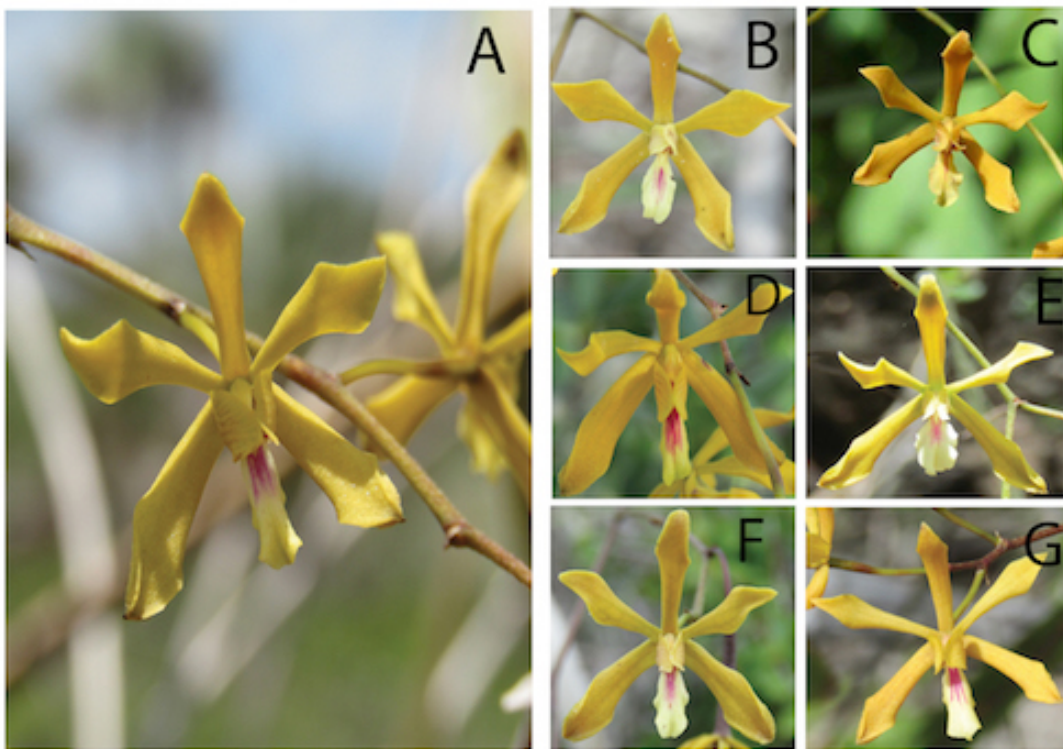
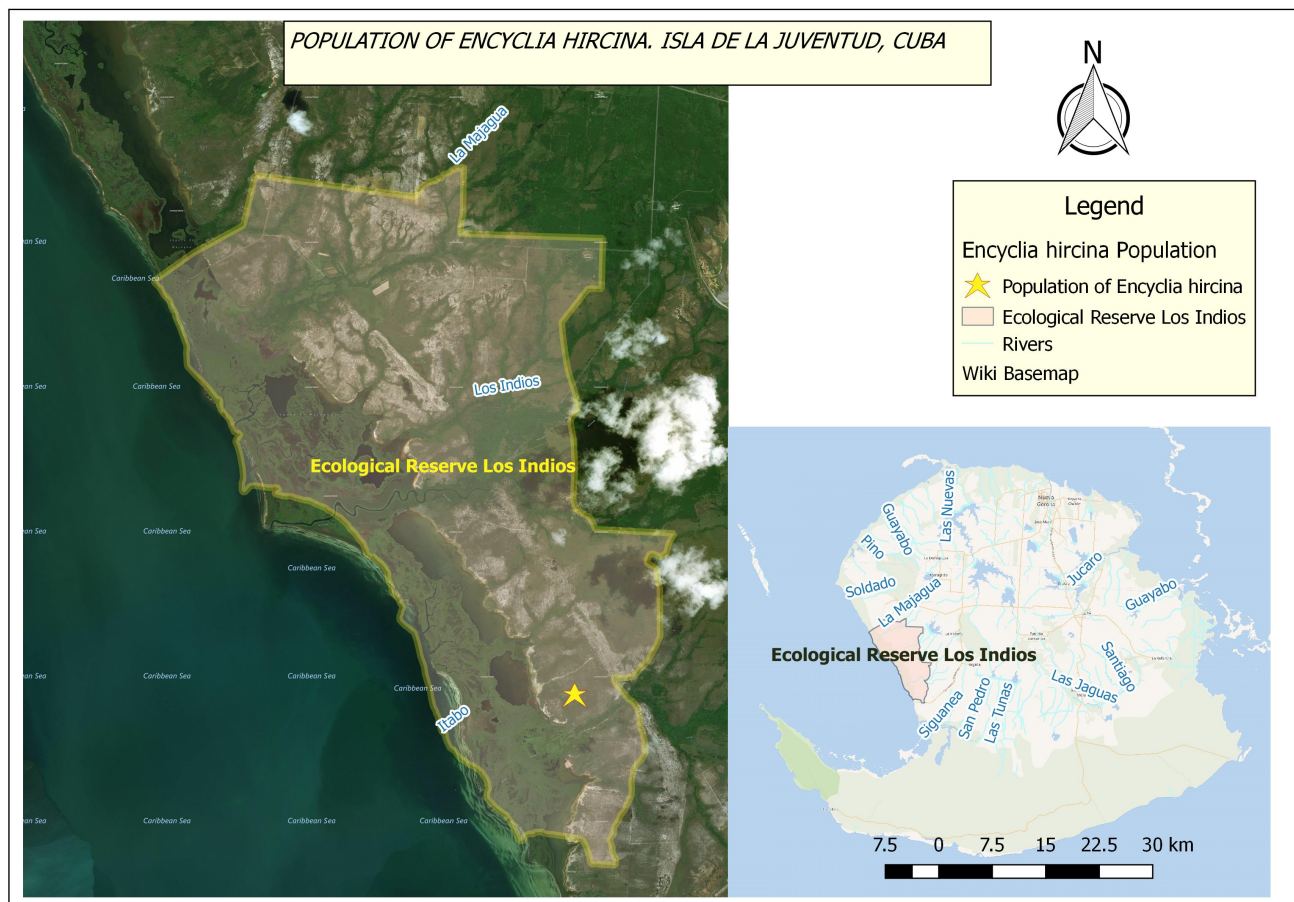




Encyclia hircina (A. Rich.) Acuña habitat at Los Indios Ecological Reserve.



Encyclia hircina (Rich.) Acuña at Los Indios Ecological Reserve.
Epiphytic on *Bucida spinosa* Jenn.



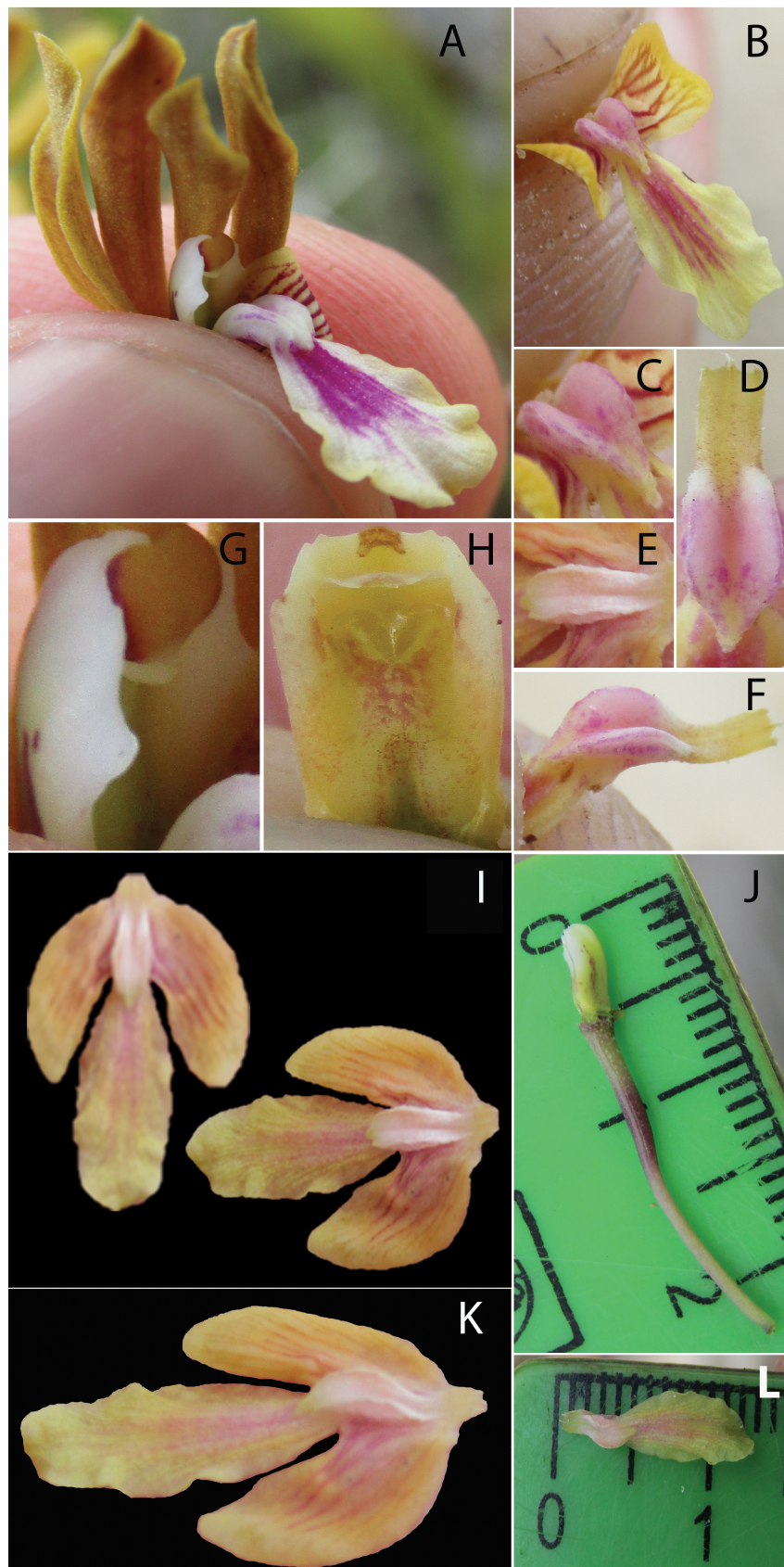
A-G. Variation in *Encyclia hircina* (Rich.) Acuña at Los Indios Ecological Reserve.



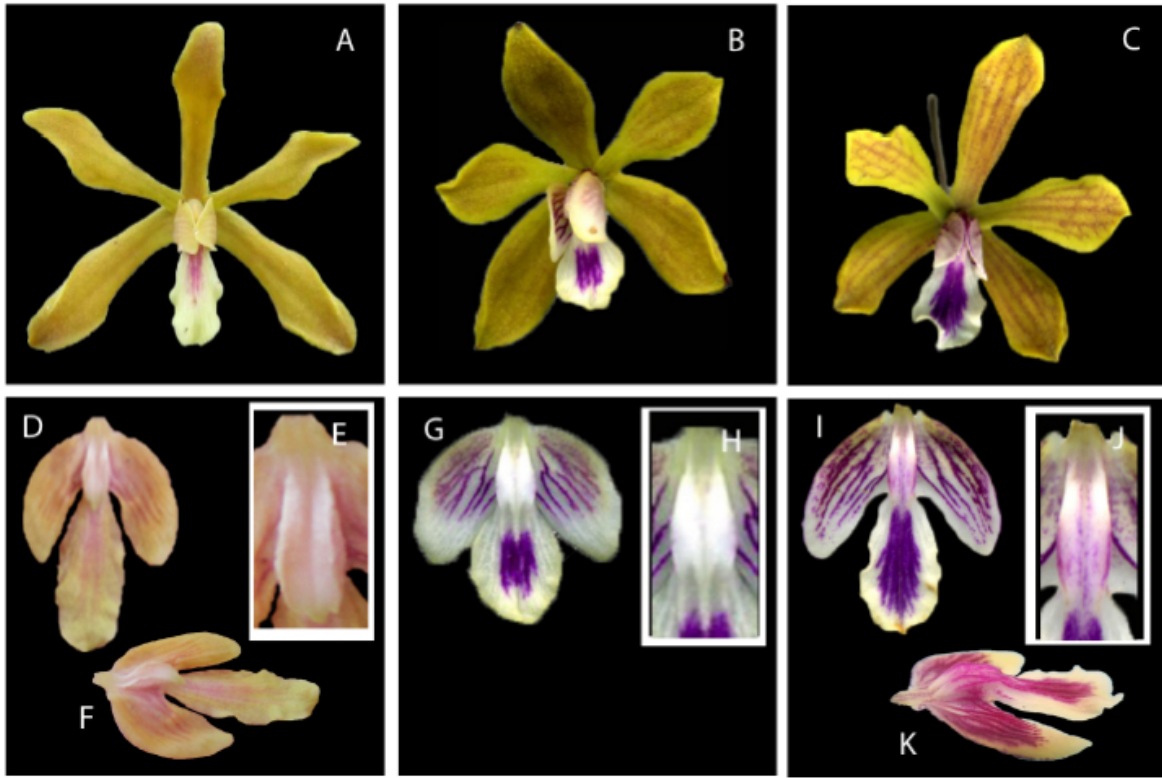
Encyclia hircina (A. Rich.) Acuña frontal view of raised ‘fingernail-like’ callus as described by Richard and column.



Pollinator, *Chrysops variegatus* (De Geer), of *Encyclia hircina* (A. Rich.) Acuña entering flower. The deer fly is attracted to the strong odor of an animal (male goat) described by Richard.



Encyclia hircina (Rich.) Acuña. A. Labellum and column. B-F. Raised 'fingernail-like keels'. G-H. Column with auricles and rostellum. I, K. Labellum with keels. J. Column with pedicel. L. Midlobe with keels.



A. *Encyclia hircina*, "sepals patentibus intensive luteis subcinnameis spathulato-oblongis acutis concoloribus" (Sagra, 1850).

B. *Encyclia fucata*, "sepals petalisque lineari-oblongis tessellatis aequalibus obtusis conniventibus" (Lindley, 1838).

C. *Encyclia richardiana*, "sepals and petals yellow, 5-nerved with reddish-brown and diffuse tessellation towards apex; sepals oblong-oblongate, obtuse" (Rodriguez *et. al.*, 2017).

D – F. *Encyclia hircina*, labellum, "... lobulo medio del labelo es eliptico, obtuso, sentado y no agudo y con una uña" (Sagra, 1850). F. Lateral view.

G. *Encyclia fucata*, labellum, "... labelli liberi tripartiti lobis lateralibus erectis linearibus apice rotundatis intermedio acuto ovali multo brevioribus" (Lindley, 1838).

H. *Encyclia fucata*, "... labellum... having two oblong fleshy processes at its base..." (Lindley, 1838).

I – K. *Encyclia richardiana*, "... labellum white... with a reddish-purple oblong spot in center of midlobe, sessile, without isthmus, oblong, margin undulate, slightly apiculate with the apex recurved appearing emarginate... two thin lateral erect keels originate at base of labellum and join at beginning of midlobe, suffused with purple, lateral lobes oblong, obtuse" (Rodriguez *et. al.*, 2017). K. Lateral view.



Encyclia fucata (Lindl.) Britt. and Millsp. demonstrating column without auricles and labellum with thick fleshy keels between lateral lobes as described by Lindley from Cuba.



Encyclia richardiana Rodriguez Seijo, Esperon & Saulea, from Clotilde, Najasa, Camaguey, Cuba, demonstrating column with auricles, labellum with ovoid midlobe and long thin keels.

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