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Range Extension and Revalidation of *Encyclia havanensis* Bello, Esperon and Sauleda (Orchidaceae).

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Abstract

The discovery of additional populations in Cuba of *Encyclia havanensis* Bello, Esperon and Sauleda on the Isle of Pines (Isla de la Juventud) is reported and revalidates its status as a distinct species and not a synonym of *Encyclia phoenicea* (Lindl.) Neumann as Mújica and González (2015), Valle et al. (2014) and Greuter and Rodriguez (2017) suggest.

In several checklists and floras of Cuba, names of *Encyclia* Hook. species are placed in synonymy arbitrarily without an explanation although there is abundant literature to the contrary. A prime example of arbitrarily listing well documented species as synonyms without an explanation as to why they are synonyms is Mújica and González (2015). In their checklist they reduce *Encyclia oblongata* (Rich.) Acuña, *Encyclia havanense* Bello, Esperon & Sauleda and *Encyclia hamiltonii* Sauleda & Esperón to synonyms of *Encyclia phoenicea* (Lindl.) Neumann, all three clearly distinct species. In addition Mújica and González (2015) state: "In Cuba it (*E. phoenicea*) is reported for almost the whole island. However, we have seen differences in the morphology, color and fragrance of their flowers, so it would not be wrong to think that, under the epithet "*phoenicea*", several taxa are hiding". Greuter and Rodriguez (2017) also reduce *E. havanense* and *E. hamiltonii* to synonyms of *E. phoenicea.* Ackerman (2014) makes an interesting comment about *E. phoenicea*: "*Encyclia phoenicea* is a relatively common and highly variable species with considerable ecological amplitude much like populations of *Tolumnia variegata*. It is tempting to describe some of the extreme forms as distinct and there is a current trend to do so. Variation tends to be continuous when examining herbarium specimens across Cuba, but populations in different regions can be distinct both ecologically and morphologically". Ackermann and Mújica & González all clearly understand the possibility that there are populations of distinct species being lumped under *E. phoenicea*.

Bello et al. (2013) realized based on field studies that a distinct reproductively isolated population of *Encyclia* existed and named one of the "populations that are distinct both ecologically and morphologically" and being referred to *E. phoenicea* as a new species; *Encyclia havanensis* Bello, Esperon & Sauleda. Valle et al. (2014) list *E. hamiltonii* as a synonym of *E. oblongata* and also list *E. havanensis* as a synonym of *E. phoenicea* without an explanation. Most of the species lumped by Mújica & González and Valle et al. under *E. phoenicea* have been clearly defined and differentiated from *E. phoenicea* based primarily on field observations. When studying the Cuban encyclias field studies are absolutely necessary and cannot be over emphasized. *Encyclia oblongata* and *E. hamiltonii* are not even closely related to *E. phoenicea.* Reducing these species

to synonymy clearly demonstrates a lack of understanding of the elements defining each of the species.

Encyclia havanensis had a very restricted distribution in Western Cuba. Only the Quesnel collection was known until its rediscovery by Bello (2013). Bello (2013) originally found *E. havanensis* on isolated tree islands surrounded by mangroves (*Rhizophora mangle* L.) about 4 miles from the serpentinitic area of Cajalbanas. The San Marcos River is on the southwest boundary. At this location, *E. havanensis* was found growing mainly on the trunk of *Copernicia glabrescens* H. Wendl. ex Becc. It is sympatric with *Encyclia grisebachiana* (Cogn.) Acuna, which grows in the crown of the palms while *E. havanensis* grows on the trunk. *Tolumnia guibertiana* (A. Rich.) Braem also occurs on the tree islands.

Recently the junior author discovered additional populations of *E. havanensis* while exploring the Isle of Pines. Finding these populations far from the original population adds to the proof that *E. havanensis* is a distinct species and not a synonym of *E. phoenicea*. Given the distance between the populations of *E. havanensis* on the Isle of Pines and the population of Pinar del Rio, future explorations in Cuba may lead to the discovery of additional populations of *E. havanensis*.

The populations on the Isle of Pines are always associated with the vegetation at the mouth of rivers. On the west coast of the Isle of Pines populations were found at the mouth of the Los Indios, Itabo and La Majagua rivers. Populations were also found on the north coast at the mouth of Rio Las Nuevas and on the east coast at the mouth of the Rio Jucaro river.

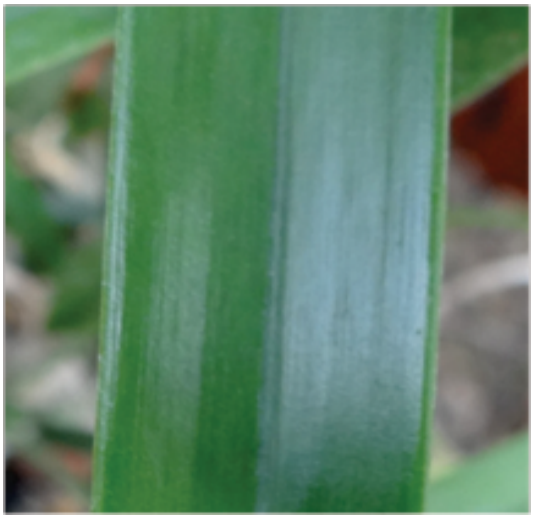
While in Pinar del Rio only one population of this species was found, the number of populations found on Isle of Pines allowed observing a habitat preference that differentiates this species ecologically. As in Pinar del Rio all populations were found on tree islands formed by the deposition of sediment carried by rivers to the mouth of the rivers and surrounded by mangroves (*Rhizophora mangle* L.). The abundance of populations of *E. havanensis* on Isle of Pines can be explained due to the conservation of the vegetation at the mouth of the rivers. In Pinar del Rio due to habitat destruction mainly secondary vegetation is found. The fact that in Pinar del Rio the principle host of *E. havanensis* is *Copernicia glabrescens* H. Wendl. ex Becc. may be due to the fact that usually palms survive habitat destruction better than the rest of the vegetation.

Encyclia havanensis Bello, Esperon and Sauleda from Isle of Pines, Cuba.

Variation in *Encyclia havanensis* Bello, Esperon and Sauleda from population originally discovered on the north coast of Cuba.

Encyclia havanensis Bello, Esperon and Sauleda in its habitat at the mouth of Rio Las Nuevas on Isle of Pines, Cuba.

Encyclia phoenicea (Lindl.) Neumann has has dull streaked leaf surface.



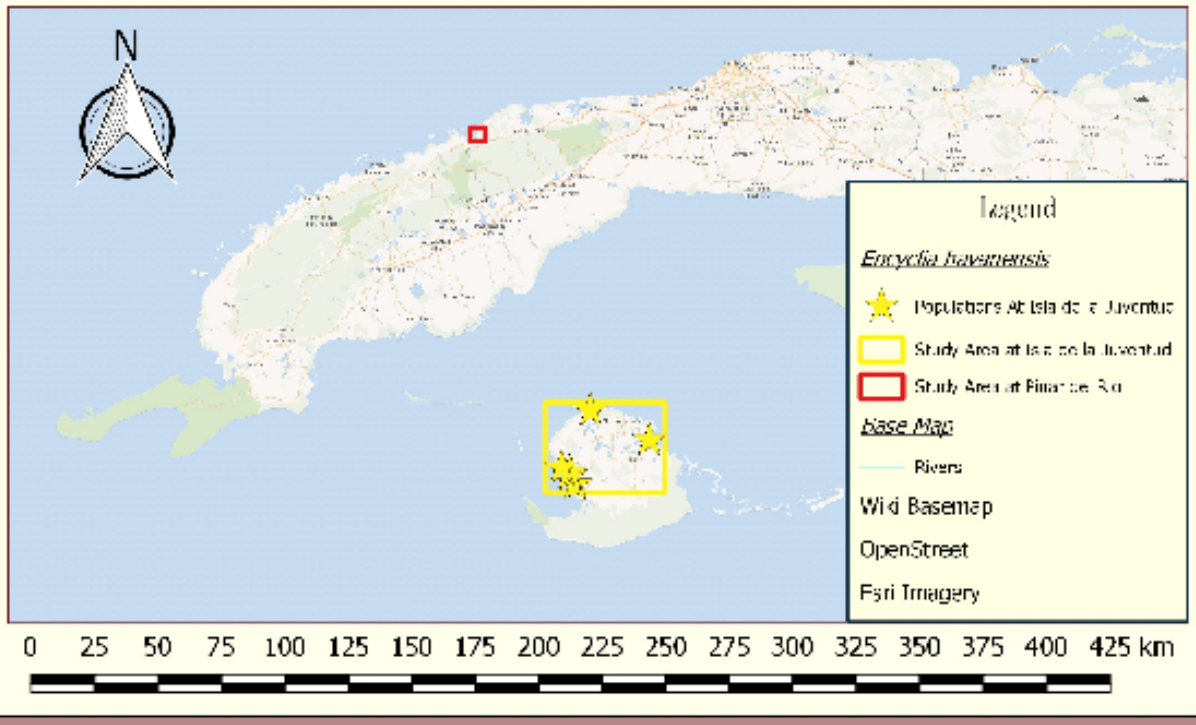
Encyclia havanensis Bello, Esperon and Sauleda has a shinny smooth leaf surface.

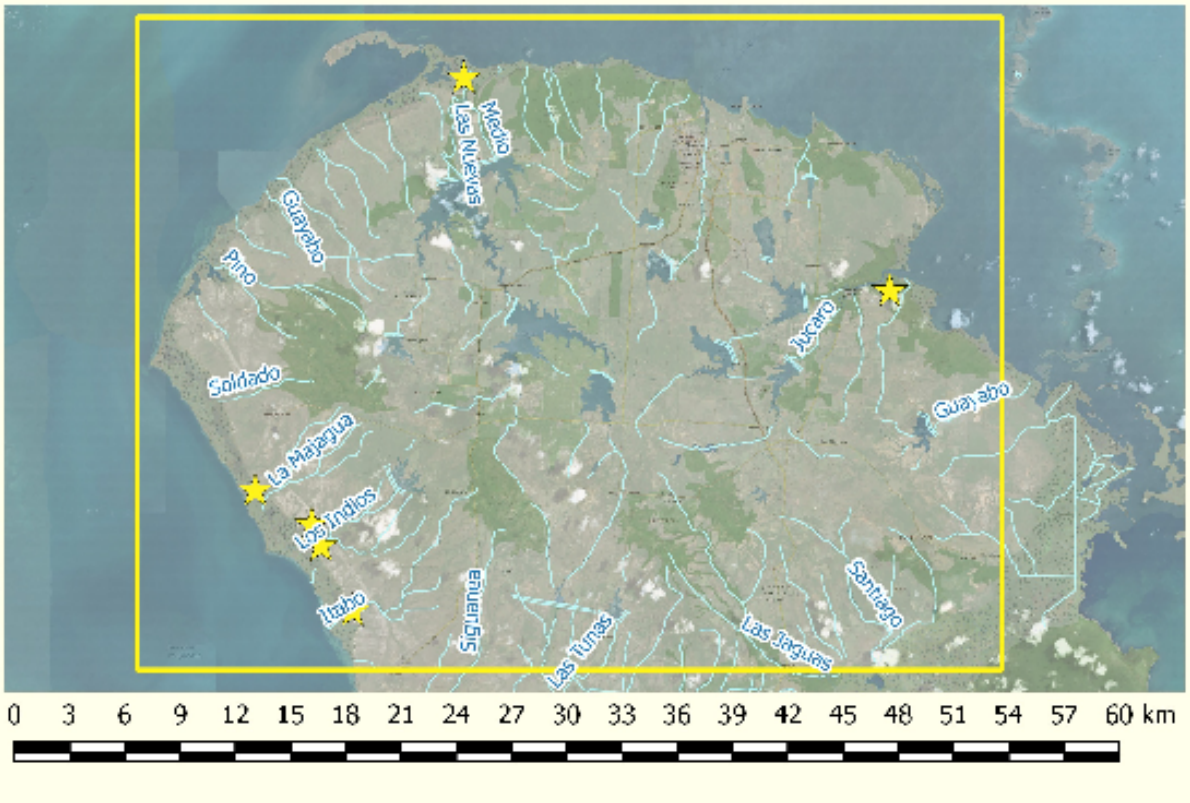
Encyclia havanensis Bello, Esperon and Sauleda. Lamellae extends beyond the column.

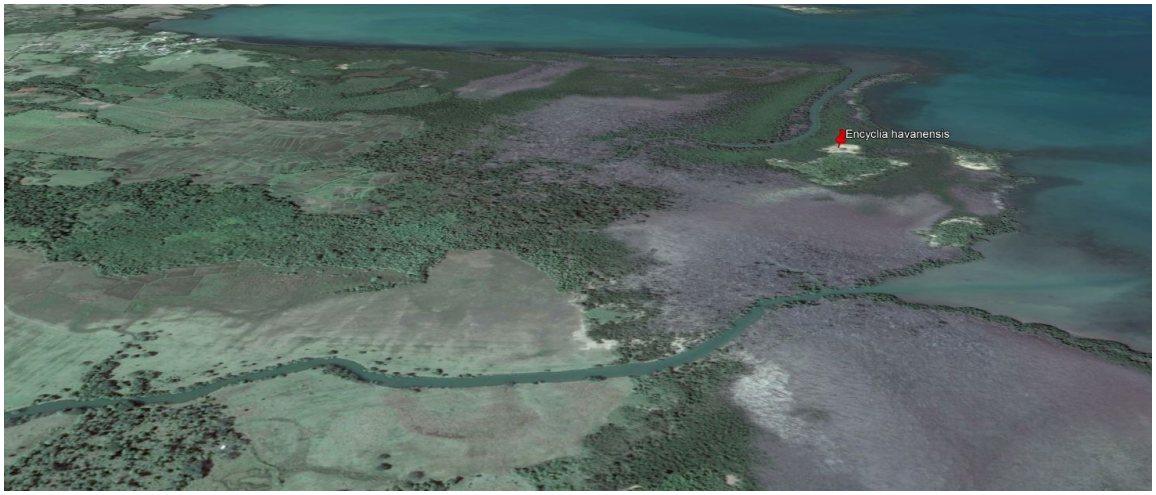
Encyclia phoenicea (Lindl.) Neumann. Lamellae ends at apex of column.

Encyclia havanensis Bello, Esperon and Sauleda in its habitat by a river bank on the Isle of Pines, Cuba.

POPULATIONS OF *ENCYCLIA HAVANENSIS* ISLA DE LA JUVENTUD, CUBA

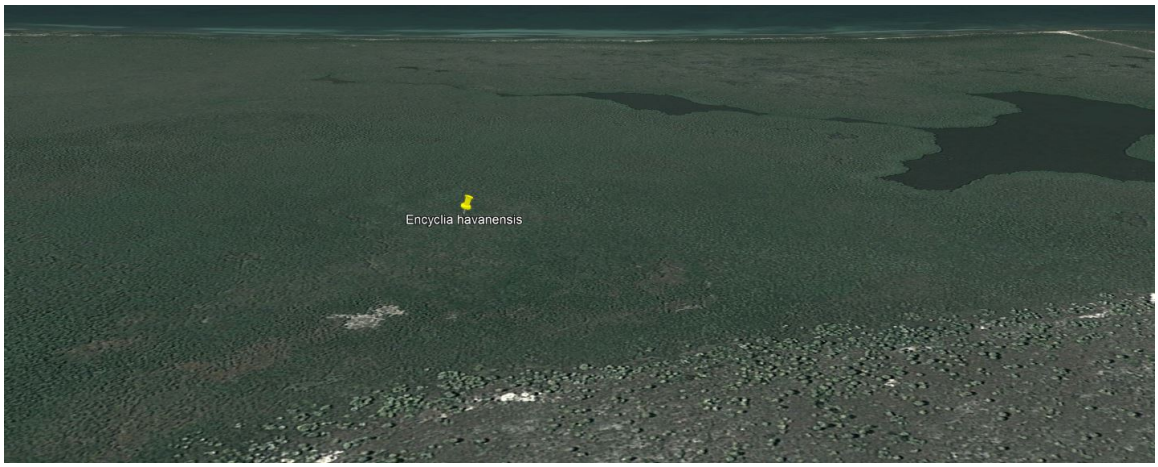






Mouth of San Marco river, Pinar del Rio. Locality where *Encyclia havanensis* Bello, Esperon and Sauleda was first discovered by Bello demonstrating habitat destruction.

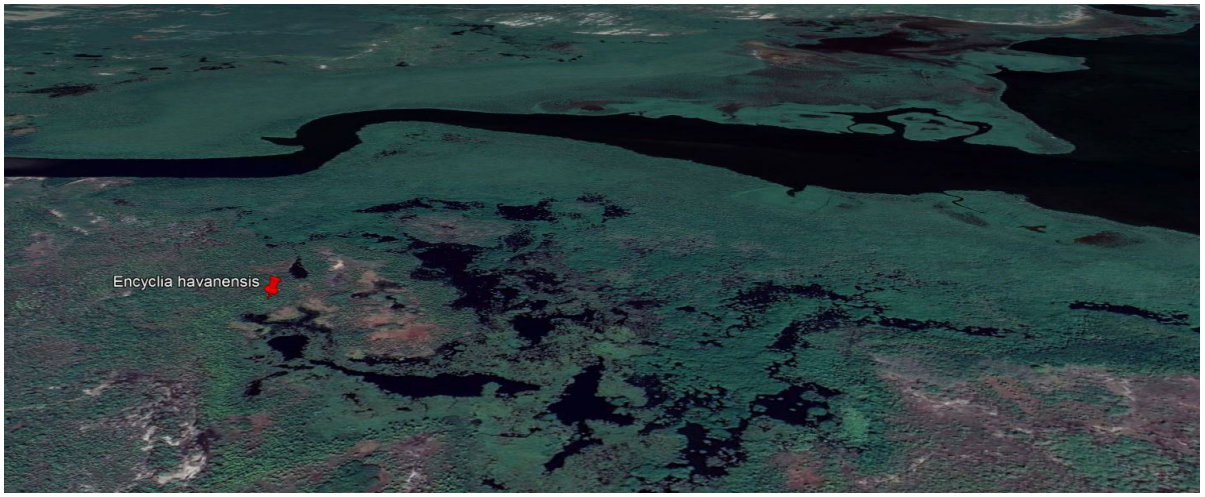
West coast of Isle of Pines population of *Encyclia havanensis* Bello, Esperon and Sauleda near the mouth of Los Indios river.



West coast of Isle of Pines population of *Encyclia havanensis* Bello, Esperon and Sauleda found near the mouth of La Majagua river.

North coast of Isle of Pines population of *Encyclia havanensis* Bello, Esperon and Sauleda near the mouth of Las Nuevas river.

West coast of Isle of Pines population of *Encyclia havanensis* Bello, Esperon and Sauleda near the mouth of Itabo river.



East coast of Isle of Pines population of *Encyclia havanensis* Bello, Esperon and Sauleda near the mouth of Jucaro river.

Acknowledgements

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