

Palynological study of the Galapagos endemic genus *Darwiniothamnus* (Asteraceae)

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Darwiniothamnus (Asteraceae, Astereae) is one of the seven vascular plant genera endemic to the Galapagos Islands. The genus, as currently defined, comprises three species of suffrutescent (*D. alternifolius*) to woody (*D. tenuifolius* and *D. lancifolius*) perennials. The genus ranges from coastal beach strands to mesic or humid scrub and forestlands, through lava and scoria fields and up to high elevation fern and sedge zones. Historically the genus has been known to inhabit the four largest islands of the Galápagos (Fernandina, Isabela, Santiago, and Santa Cruz), and to occur on three of the smaller islands, namely Pinta, Pinzón, and Floreana. The geographical range of the three species overlap in only one small region on the southern slopes of volcano Sierra Negra, located on the southeast tip of the island of Isabela.

Morphologically, these taxa are considered to be divergent from their continental and Caribbean relatives and have been suggested to be most closely related to woody members of the genus *Erigeron* (Harling 1962, Nesom 1989). Recent studies based upon DNA sequences pin-point to a polyphyletic origin of the genus, stemming from two separate introductions into the Galapagos islands, with both groups nested within the genus *Erigeron*, but with *D. alternifolius* being clustered far from the other taxa of *Darwiniothamnus* (Andrus 2002).

In this work, the pollen morphology of the three species of *Darwiniothamnus* was examined. Material obtained from plant specimens deposited in the Charles Darwin Research Station Herbarium (CDS), Galapagos, Ecuador, was used. The pollen grains were acetolysed following the method of Erdtman (1960) and mounted in glycerine jelly for observation by light microscope (L.M.). For the scanning electron microscope the pollen was mounted on cover slips previously attached to aluminium stubs with silver paint and coated with evaporated gold with the aid of an ion sputter device. The microphotographs were mainly obtained using digital technology. Measurements were made with the light microscope on a minimum of 25 pollen grains per sample. The terminology used for descriptions follows Punt *et al.* (1994).

Darwiniothamnus is a stenopalynous genus with trizonocolporate pollen grains that are isopolar and radiosymmetric. They are small, circular in polar view, and from circular to slightly elliptic in equatorial view, from spheroidal to prolate-spheroidal. The exine is about 3 µm thick, with conical, acute, straight echinulae as supratectal elements. Tectum perforated, especially on the bases of the echinulae.

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Morfología polínica y su implicación en la taxonomía de las especies endémicas del complejo *Gonospermum* Less., *Lugoa* D.C. y *Tanacetum* L. (Asteraceae: Anthemideae) en las Islas Canarias, España

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Gonospermum Less. descrito en 1832 y *Lugoa* D.C. en 1837 son géneros exclusivos del Archipiélago Canario. Para el primero se han reconocido 4 especies: *G. canariense* Less. para La Palma; *G. fruticosum* (Buch) Less. para Tenerife, La Gomera y El Hierro; *G. elegans* (Cass.) D.C. para El Hierro y *G. gomerae* Bolle endémico de La Gomera. No obstante, hay autores (Bramwell & Bramwell 2001) que consideran a *G. elegans* como un taxon infraespecífico de *G. canariense*: *G. canariense* ssp. *elegans* (Cass.) Febles. En lo que a *Lugoa* se refiere, es un género monotípico (*L. revoluta* D.C.) presente solo en Tenerife. Por otra parte, para el género *Tanacetum* L., integrado aproximadamente por unas 150 especies ampliamente distribuidas, se han descrito 4 taxones endémicos para Gran Canaria: *T. ferulaceum* (Webb) Sch. Bip.; *T. ferulaceum* (Webb) Sch. Bip. var. *latipinnum* (Svent.) Kunkel; *T. ptarmiciflorum* (Webb) Sch. Bip. y *T. oshanahanii* Marrero Rodr., Febles & Suárez.

En base a estudios citogenéticos, Febles (1996) propone la inclusión de todas las especies endémicas del complejo *Gonospermum*, *Lugoa* y *Tanacetum* en las Islas Canarias, en un solo género, (*Gonospermum*); criterio que ha sido apoyado por algunos autores (Bramwell & Bramwell 2001) y no por otros (Acebes *et al.* 2004).

Según la bibliografía consultada, los estudios palinológicos en este grupo de taxones, al parecer, son escasos. Si numerosas son las publicaciones sobre la morfología polínica del género *Tanacetum* para diversas regiones, no ocurre lo mismo en lo que a los taxones