

## Integrative taxonomy of the spleenwort fern (*Aspleniaceae*, leptosporangiate ferns) flora of Cuba

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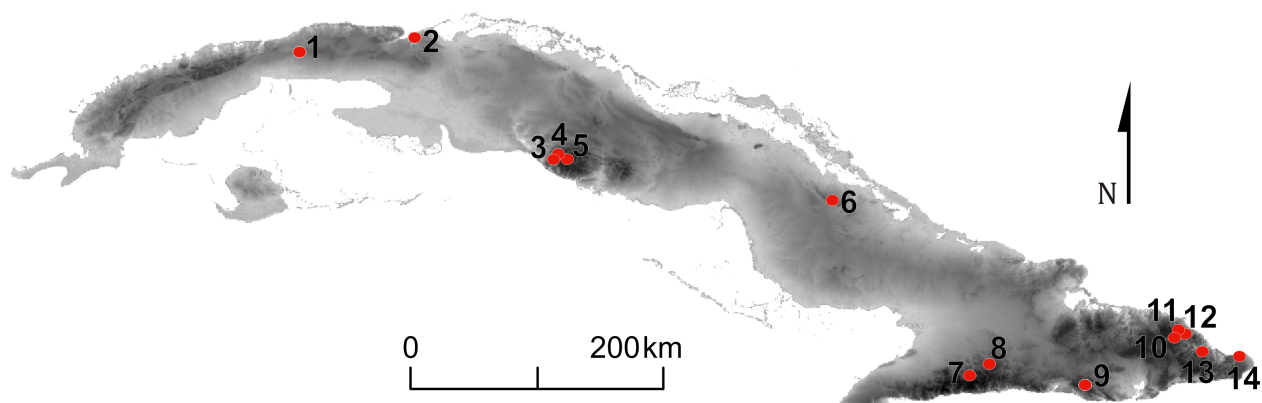
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I am conducting my PhD project on the evolution of the poorly known spleenwort ferns of the West Indies. I took advantage of the different taxonomic treatments published in the region, and ongoing morphological studies of Cuban species by Ledis Regalado (IES, Havana). In 2013, after the first spore counts and preliminary molecular phylogenetic analysis, I detected the existence of cryptic diversity in two species of *Asplenium* (*A. dentatum* and *A. heterochroum*) sampled in West-Central Cuba. This highlighted the need for genetic analysis in the group and suggested the need for an integrative taxonomic study of the family in Cuba. For this purpose I decided to extend the sampling to other localities on the island. To cover the transportation costs during field work, I applied for a Research Grant for Plant Systematics of the International Association for Plant Taxonomy (IAPT) in 2014.

### Report

Between June 2014 and January 2015 I visited 14 localities of the western, central and eastern Cuba (Fig 1). In total 290 individuals from 22 species were sampled (see list of species below, Fig.2). From each individual sterile leaf tissue fragments were preserved for DNA extraction, and fertile leaves for spore measurement and culture experiments. Specimens of two individuals per species were collected in each locality. In total 112 vouchers were collected and deposited in the Herbario de la Academia de Ciencias, La Habana (HAC) and the Botanische Staatssammlung München (M).

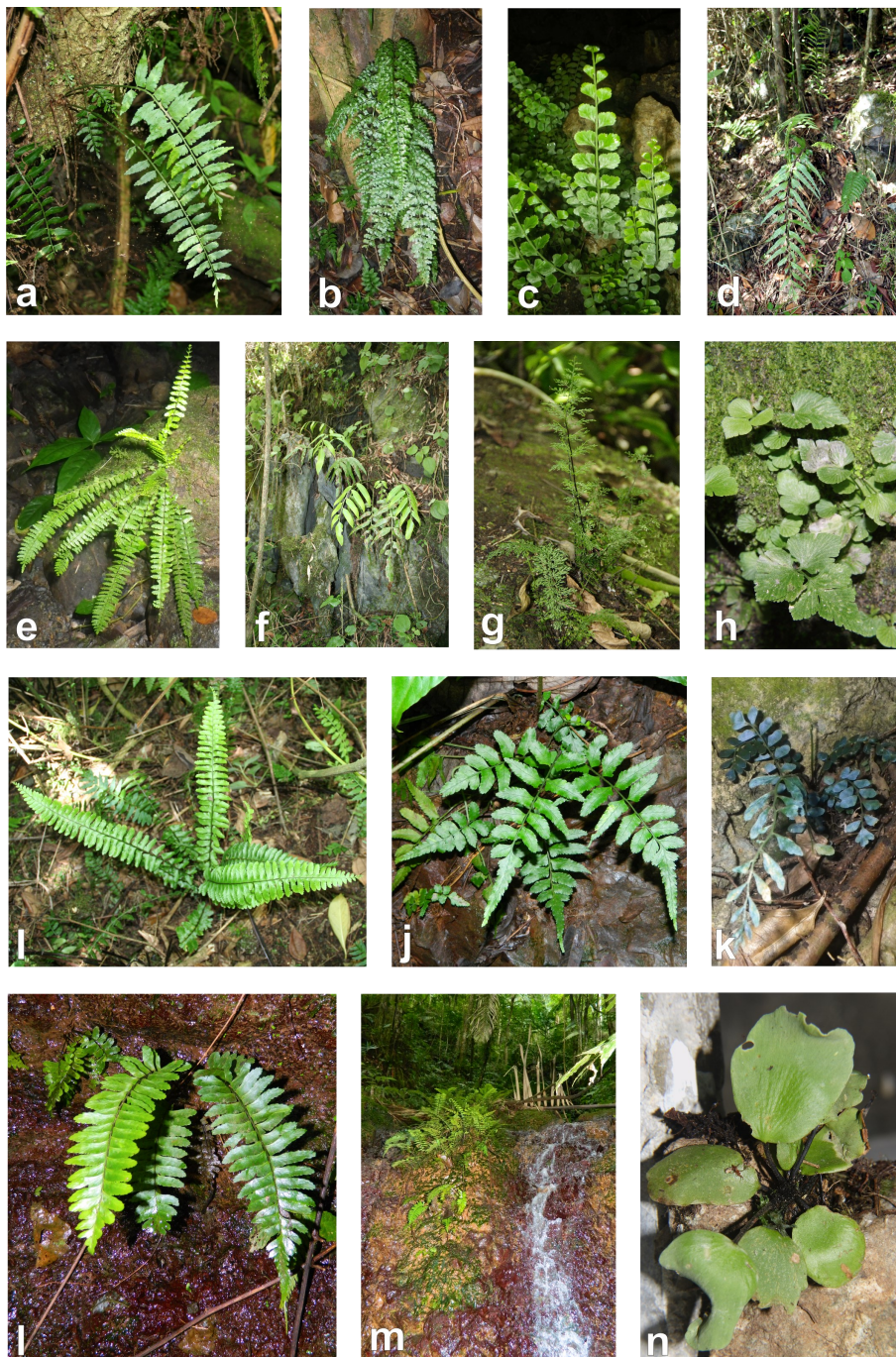


**Figure 1.** Geographic location of the localities of *Aspleniaceae* sampled between June 2014 and January 2015: (1) San Antonio de los Baños, (2) Mouth of Canima river, (3) San Blas, (4) Poza del Cura, (5) Pico San Juan, (6) Hoyo de Bonet, (7) La Bayamesa, (8) Mogotes del Caedizo, (9) Gran Piedra, (10) El Peñón, (11) Palmares river, (12) Arroyo Sucio, (13) Yunque de Baracoa, (14) Yumurí river.

List of species

*Asplenium abscissum* Willd.  
*Asplenium auriculatum* Sw.  
*Asplenium auritum* Sw.  
*Asplenium cristatum* Lam.  
*Asplenium cuneatum* Lam.  
*Asplenium dentatum* L.  
*Asplenium dimidiatum* Sw.  
*Asplenium erosum* L.  
*Asplenium feei* Kunze ex Fee  
*Asplenium formosum* Willd.  
*Asplenium juglandifolium* Lam.

*Asplenium monodon* Liebm.  
*Asplenium mortonii* Duek.  
*Asplenium pumilum* Sw.  
*Asplenium radicans* L.  
*Asplenium rhomboidale* Desv.  
*Asplenium salicifolium* L.  
*Asplenium serra* Langsd. & Fisch.  
*Asplenium serratum* L.  
*Asplenium veneticolor* L. Regalado & C. Sanchez  
*Hymenasplenium laetum* (Sw.) L. Regalado & C. Prada  
*Schaffneria nigripes* Fée



**Figure 2.** Selection of species of Aspleniaceae sampled between 2014 and 2015. (a) *Asplenium auriculatum*, (b) *A. cuneatum*, (c) *A. dentatum*, (d) *A. erosum*, (e) *A. formosum*, (f) *A. juglandifolium*, (g) *A. Mortonii*, (h) *A. pumilum*, (i) *A. rhomboidale*, (j) *A. salicifolium*, (k) *A. veneticolor*, (l, m) *Hymenasplenium laetum*, (n) *Schaffneria nigripes*

The sampling obtained during these field trips, together with previously collected material, will allow clarifying the taxonomy of several species complexes in Cuba and the Neotropics. I was able to collect 27 of the 35 species of spleenwort ferns recognized from Cuba. I produced DNA sequences of four chloroplast markers from the collected samples. In addition to that I compiled homologous DNA sequences stored in GenBank. I am currently analyzing all the gathered sequences to reconstruct the phylogenetic relationships of Neotropical spleenwort ferns using the most comprehensive global sampling available to date.



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