

**International Association for Plant Taxonomy**  
**Research Improvement Grants for Plant Systematics 2017**  
**Final Report**

TAXONOMY, PHYLOGENETIC RELATIONSHIPS AND EVOLUTION  
OF *ATRIPLEX* LINEAGES (AMARANTHACEAE, CHENOPODIOIDEAE,  
ATRIPLICEAE) IN SOUTH AMERICA

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The long-term goal of my research is to contribute to the taxonomy and evolution of the genus *Atriplex* in America, through the study of the origin and evolution of the South American lineages, by reconstructing their phylogenetic relationships on molecular data, and developing hypothesis of evolution for a selection of morphological characters traditionally used for *Atriplex* taxonomy, including some vegetative and reproductive characters usually related to the adaptation to semiarid environments.

The 2017 IAPT Research Improvement Grants for Plant Systematics allowed me to perform a field trip in Chile, from January 16<sup>th</sup> to 27<sup>th</sup>, 2018. Small Northern Chile (Atacama and Coquimbo regions) and Northern Central Core (Valparaíso and Metropolitana regions) have many *Atriplex* species in the country (12 out of 18). That is the reason why I chose those sites for field work.

During the collection trip, I examined different species of *Atriplex* in the field. I collected herbarium material which was stored at SI with duplicates in CONC. Leaves, flowers and fruits were stored in FAA, and leaves in silica-gel to perform morphological and molecular studies, respectively. A total of 24 specimens belonging to 11 species of *Atriplex* were collected: *Atriplex clivicola*, *A. coquimbana*, *A. costellata*, *A. deserticola*, *A. glaucescens*, *A. hystrix*, *A. leuca*, *A. oreophila*, *A. philippii*, *A. repanda* and *A. vallenarensis*.

Back at the Darwinion Botany Institute, three molecular markers (*atpB-rbcL* spacer, ITS and ETS) are being sequenced and they will be analysed individually and combined by Maximum Parsimony and Bayesian inference approaches. Also, morphological and anatomical

studies are being performed. These results, together with the sampling of *Atriplex* from Argentina, Bolivia, Ecuador, Paraguay, Peru and Uruguay, and with geographical distribution data, will help me identify the lineages of *Atriplex* in South America and their phylogenetic relationships with other lineages of this genus, define natural sections for South American *Atriplex* species, and identify morphological and anatomical synapomorphies (Brignone *et al.* in prep).



*Atriplex hystrix*



*Atriplex repanda*



*Atriplex deserticola*



*Atriplex clivicola*