

## Something imperceptible but sensible: Genetic sub-population of *Sanionia uncinata* within Antarctic Specially Protected Areas (ASPAs) and other ice free access areas in Antarctica and Southern Patagonia

Hebel Ingrid<sup>1</sup>, Luis R. Pertierra<sup>2</sup> and Ricardo Jaña<sup>3</sup>

<sup>1</sup> Plant Biotechnology Lab, School of Agriculture and Aquiculture, University of Magallanes, Avenida Bulnes 01890, 6213029 Punta Arenas, Chile  
E-mail: [ingrid.hebel@umag.cl](mailto:ingrid.hebel@umag.cl)

<sup>2</sup> National Museum of Natural Sciences. C/ José Gutiérrez Abascal 2, 28006 Madrid, Spain.

<sup>3</sup> Scientific Department, Chilean Antarctic Institute, Plaza Muñoz Gamero 1055, 6200965 Punta Arenas, Chile

Antarctic Specially Protected Areas (ASPAs) in Antarctica were created to establish areas with restricted access to protect outstanding environmental, scientific, historic, aesthetic or wilderness values. However, in practice the conservation network of terrestrial biodiversity from a continent-wide perspective has been pointed out to be as 'inadequate, unrepresentative and at risk' (Shaw et al. 2014), requiring an holistic reconsideration. Thus, genetic studies are getting a growing relevance in assisting policy and procedures for conservation work to address the relationship and dynamics of the biogeographic hierarchies and ecological zoning (Laikre 2010). In this context the work presented here is intended to determine the genetic structure of populations in the cosmopolitan moss *Sanionia uncinata* (Hedw.) Loeske, in several populations of its southernmost distribution (e.g. South Shetland Island, James Ross Island and South-Patagonia), focussing on the current ASPA boundaries versus nearby free access areas analyzing ancestry origin and presence of subpopulation. Results show presence of several sub-populations in and among ASPAs as well as in respect to other free access sites in Antarctica and South-Patagonia, all of them with different levels of polymorphism and heterozygosity. In cases such as Barton and Potter Peninsula, which are formed by ASPA (N°171 and 132, respectively) and free access areas, results show equivalent level of polymorphism inside and outside the ASPA forming two subpopulations. In such cases, from the point of view of the genetic analysis, the effort in conservation is been restricted to one subpopulation and not the complete range of the variants existing within these places. Other cases, such as Suffield Point or Bellingshausen Beach which are free access sites, showed high amount of polymorphism and ancestry in population far away, which are imperceptible for humans and it could give background for conservation plans. Because of the dynamism of the species in the different hierarchies, this work can be useful for decisions makers in the reviewing of management plans as to elaborate an strategic designation of new sites of protection that further reduce bias in conservation efforts.

### References

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- Shaw, J. D., A. Terauds, M. J. Riddle, H. P. Possingham & S. L. Chown. 2014. Antarctica's Protected Areas Are Inadequate, Unrepresentative, and at Risk. *Plos Biology* 12.5