

Are Svalbard plants prepared for Climatic Change?

Global warming because of Climatic Change is significant affecting wildlife in the High Arctic. But not just wildlife, also human activities are changing, as increases in the economic sector of tourism. It is known that enhancement of human activities is one of the most important factors driving biological invasions, what alter ecosystem processes and, thus, the services that those ecosystems offer to human societies.

In this sense, both climate change and human activities in the Arctic can potentially increase the establishment and/or expansion of alien plant species in areas such as Svalbard.

We were studying the productivity and stress tolerance responses of 8 alien plant species and their closer relatives native species (from the same family) founded in the villages and surroundings of Longyearbyen and Barentsburg (Spitsbergen). This information will help us to understand if global warming (that promotes benign weather conditions) will help alien species from southern latitudes to establish in the natural environments of Svalbard islands.

For this purpose in July 2017 we were measuring the photosynthetic performance and stress tolerance of their leaves, as well samples for later lab analysis of photosynthetic pigment profiling, nutrient status and leaf anatomical characterization between others analytical techniques.

The knowledge gained during the development of this project, provides valuable information about several alien and native species in terms of photosynthetic performance, nutrient investment, photoprotection mechanisms at the photosynthetic pigments and stress tolerance capacities. This information help to understand and characterize the unique and exclusive Flora of the Arctic, and as well can be useful for the precise design and specific development of the future conservation plans of the Svalbard ecosystems, preservation of endemisms and native plans as well the biodiversity in the framework of the Climatic Change.

Results of this project will be published through the conventional scientific channels as workshops, symposiums and congress as well as articles in scientific journals, but moreover, all along, we plan to broadcast them to the general public by using different mass media, as news and reports in newspapers and a short documentary in YouTube. In the list below you can get access to the already published information:

1. Four pages in the newspaper "La Voz de Galicia" on 16th July 2017. The newspaper is the seventh largest in Spain with several hundred thousand of readers:

https://www.lavozdegalicia.es/noticia/barbanza/2017/07/16/do-polo-sur-ao-polo-norte/0003_201707B16C6991.htm

2. Photo presentation in the newspaper "La Voz de Galicia" 17th July 2017:

<https://www.lavozdegalicia.es/album/barbanza/2017/07/17/mirada-artico/01101500285132353423389.htm>

3. Four pages in the newspaper La Voz de Galicia on 25th July 2017.

https://www.lavozdegalicia.es/noticia/barbanza/2017/07/25/span-langglbaixo-sol-da-media-noitespan/0003_201707B25C8994.htm

4. Presentation of the research group and the Svalbard work in the newspaper "Última Hora" 18th July 2017:

<https://ultimahora.es/noticias/local/2017/07/18/280187/antartida-artico.html>

5. Presentation of the research group on the University of Balearic Islands web-page:

<http://diari.uib.es/arxiu/De-la-Antartida-al-Artico-la-UIB-estudia-las.cid495208>



For divulgative purposes for a worldwide public we made a short documentary entitled "Alien plants looking for warmed poles" about the global warming in the arctic and how can affect native communities of plants and the entrance of new species (alien) from southern latitudes that a real threaten that can modify the native ecosystems. This is published publicly in YouTube to ensure a wide audience. As well, we will use it for divulgation through local spanish media in newspapers to discuss about the effects of the global warming in the Arctic. This divulgative effort is being performed in collaboration with AXENA (Asoc. Xuvenil para o Estudo da Natureza, <http://blogueiros.axena.org>) a youth-association focused in wildlife conservation with important expertise about multi-media Internet divulgation contents.

Please see here the link to the short-documentary:

<https://www.youtube.com/watch?v=kbw9smPhRIk>

Regarding scientific congresses, preliminary results from this project were included in the talk that the IP Xurxo Gago offered as a guest lecturer in the Interdisciplinary Polar Studies (IPSiP) Conference, in Poland in November 2017, for the 60th and 40th anniversary of Arctic and Antarctic Polish Polar Research Stations. Finally, from this project we planned to publish 2 different papers in specific scientific journals of Antarctic and Arctic research like *Polar Biology* or more generalist in ecology like *Biological Invasions*, *Scientific Reports* or *Global Change Biology*.





Family

Alien

Native

Asteraceae



Brassicaceae



Ranunculaceae



Rosaceae





