



Agenda Item:	ATCM 17
Presented by:	Belgium, Netherlands, Sweden
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## **Biological prospecting in Antarctica – the need for improved information**



## Biological prospecting in Antarctica – the need for improved information

### Working Paper submitted by Belgium, Netherlands, Sweden and UNU

This working paper demonstrates that there continues to be considerable and growing activity in patenting of uses and applications based on Antarctic genetic and living resources, and that discussions related to genetic resources, including access and benefit-sharing, are ongoing in international policy fora. Thus, the working paper shows that the topic of biological prospecting continues to be of importance to Parties to the Antarctic Treaty System. The paper further proposes that the informational basis relating to commercial uses of Antarctic genetic and living resources be improved, including through further development of databases and geographically referenced data, and that the exchange of information on this topic between Parties be improved and made easier accessible through the Annual Exchange of Information (in the EIES).

#### 1. Status and trends of biological prospecting in Antarctica

Antarctic species have become an increasing focus of commercial and policy interest. Patent data provides an important proxy indicator for commercial research and development involving Antarctic species. A comprehensive review of patent information, scientific literature and publicly available material relating to products led to the development, by the Government of Belgium, with assistance of United Nations University, of the Antarctic Biological Prospecting Database<sup>1</sup>, and a review of its contents was submitted to ATCM 32 in the form of Working Paper 11 (the Antarctic Biological Prospecting Database), with an update on findings submitted to ATCM 35 as Information Paper 63. While these papers mainly use patents filed as a proxy of commercial intent, it should be noted that not all patents become commercially viable products in the end, and that not all products on the market were patented first. Both of these papers found that there is significant commercial interest in Antarctic genetic resources.

Working paper 2 submitted by SCAR to ATCM 33 found that, based on a survey, a substantial proportion of SCAR members are involved in research in the Antarctic region that could be considered biological prospecting. The paper concluded that based on a conservative assessment of current published literature and from the survey of SCAR members, bioprospecting research in the Antarctic region and/or involving Antarctic organisms is extensive and widespread.

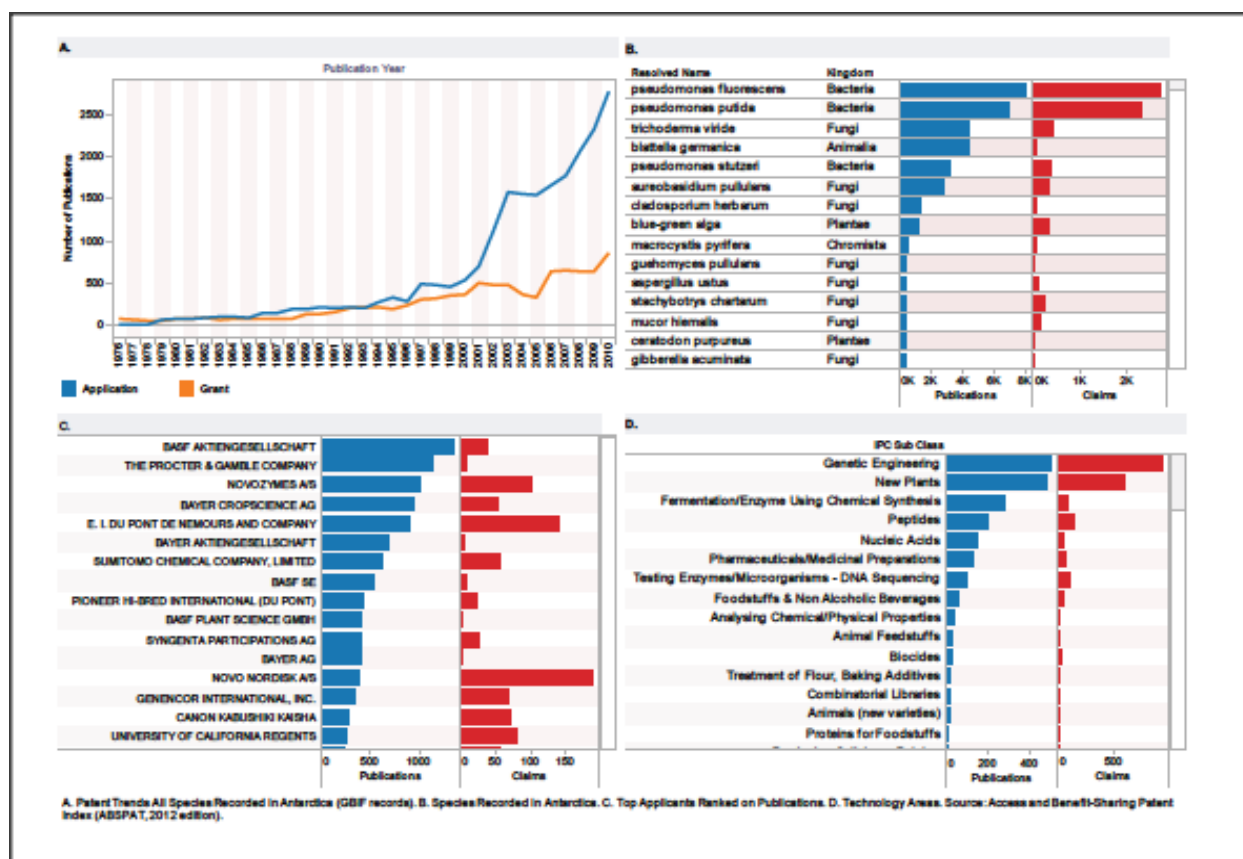
New work undertaken since the last ATCM has found that biological prospecting activities continue. A search of publicly-available patent databases found eighteen new patents and applications filed since the spring of 2012. While this search is not comprehensive, it provides an indication of the continuing commercial interest in Antarctic genetic and living resources.

Most of the new patents and applications relate to industrial uses and biotechnology, including cold-adapted enzymes. Others relate to the development of pharmaceuticals and nutraceuticals, as well as skin care products. A majority of the patents relate to Antarctic krill (*Euphausia superba*), highlighting that biological prospecting takes place both in the ocean and on land. Bacteria and other micro-organisms were also the basis of several patents, while the Antarctic plant *Deschampsia antarctica* and the lichen *Stereocaulon alpinum* were each the basis for one patent. Further information related to these patents is available in the Information Paper on this topic submitted by the Government of Belgium and partners.

A separate analysis of trends in the patenting concerning Antarctic species based on large scale text mining of 11 million patent documents for 6 million species names in the patent collections of the United States, the European Patent Convention and the Patent Cooperation Treaty for the period of 1976-2010 also demonstrates an upward trend. Figure 1 below shows trends in patent applications and patents granted, top applicants and areas of technology for the overall data involving species recorded in Antarctica. Species names were obtained from the Global Biodiversity Information Facility (GBIF).

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1 This database is available online at [www.bioprospector.org](http://www.bioprospector.org)



**Figure 1:** Trends in applications and grants, top applicants and areas of technology for the overall data involving species recorded in Antarctica. A. Patent Trends All Species Recorded in Antarctica (GBIF records). B. Species Recorded in Antarctica. C. Top Applicants Ranked on Publications. D. Technology Areas. Source: Access and Benefit-Sharing Patent Index (ABSPAT, 2012 edition).

As can be seen in Figure 1, an increasing trend is observable in patent applications. This is partly, but not wholly, explained by a change in US patent office practice in 2001 when they began to publish both patent applications and patent grants (prior to 2001 the US only published granted patents). However, even taking into account this reporting effect, the upward trend is marked. More details about this analysis are available in the Information Paper on this topic submitted by the Government of Belgium and partners.

Together, these analyses demonstrate a considerable and increasing patenting trend related to Antarctic organisms. Because available data is still incomplete, there is also a need for further research as well as improved and easier-to-access reporting that is specific to the situation in Antarctica.

## 2. The need for improved data and information, including through the Annual Exchange of Information (in the EIES)

As indicated above, the data related to biological prospecting in Antarctica is still incomplete and difficult to access. Additional research is required on this topic, including further development of linked databases and geographically referenced maps, which can serve to improve the informational basis for discussions at the ATCM. For example, one of the remaining research questions concerns the exact geographic locations where species used in patents have been recorded, and it is presently possible to begin creating preliminary maps of species used in patents using existing data. Georeferenced information could potentially include links to literature and the organization collecting the information, and it could also be interlinked with the Antarctic Biological Prospecting Database as well as existing species databases, such as the SCAR databases.

In the past, a number of Parties have submitted Information Papers to report on their biological prospecting activities. While these papers have been invaluable in providing detailed information about the types of

activities that are ongoing, they may not be the most time-efficient way for Parties to submit such information. Instead, it could be argued that an easier and less time consuming method would be to include this information in Parties' Annual Exchange of Information (in the EIES). At the present time, the format of these reports does not provide for specific reporting related to biological prospecting, and thus such information is difficult to find. Adding a separate field for this type of reporting will make it easier for Parties to provide the information, and for the information to be subsequently retrieved, referenced and used.

It should also be noted that international policy fora, such as the Convention on Biological Diversity and its Nagoya Protocol, as well as the United Nations Ad Hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction, continue to make progress in addressing genetic resources, including access and benefit-sharing issues. Thus, keeping biological prospecting on the agenda of future ATCMs ensures that Parties can discuss these developments, and where needed, find solutions that are specific to the situation in Antarctica. Further details about activities in other fora are provided in Information Paper on this topic submitted by the Government of Belgium and partners.

### **3. Proposal**

Taking into account what have been highlighted in this paper, and the work carried out so far, Parties are invited to:

- *Recommend* that their governments report on biological prospecting activities under their jurisdiction in their Annual Exchange of Information, and *requests* that the Secretariat facilitate this in the Electronic Information Exchange System;
- *Encourages* their governments to promote the exchange of views at the national level to inform the ongoing discussions related to access to genetic resources in other international fora, particularly in the context of Article 10 of the Nagoya Protocol and in the United Nations Ad Hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction, on bioprospecting activities in Antarctica.

### **4. Recommendation**

A draft Resolution is appended.

Draft resolution:

## Resolution XXX (2013)

### Biological Prospecting in Antarctica

The Representatives,

*Recalling* Resolutions 7(2005) and 9(2009) on Biological Prospecting in Antarctica;

*Noting* that biological prospecting continues to occur in the Antarctic, and that the number of patents relating to uses and applications of Antarctic genetic and living resources is increasing;

*Noting* that scientific research and biological prospecting provide important benefits for people;

*Noting* the need for a working definition of biological prospecting in the Antarctic context;

*Noting also* ongoing discussions in other international fora on biological prospecting and genetic resources, including access and benefit-sharing issues;

*Recalling* Article III(1)(c) of the Antarctic Treaty, which provides that scientific observations and results from Antarctica shall be exchanged and made freely available;

*Noting* also the need for further research and analysis to be undertaken related to the status and trends of biological prospecting in Antarctica, including, as relevant, through further development of databases and geographically referenced information, and that results be presented at future Antarctic Treaty Consultative Meetings.

***Recommend*** that their governments report on biological prospecting activities under their jurisdiction in their Annual Exchange of Information, and *requests* that the Secretariat facilitate this in the Electronic Information Exchange System; and

*Encourages* their governments to promote the exchange of views at the national level to inform the ongoing discussions related to access to genetic resources in other international fora, particularly in the context of Article 10 of the Nagoya Protocol and in the United Nations Ad Hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction, on bioprospecting activities in Antarctica.