



# Access and benefit sharing of Antarctica's Biological Material



Roser Puig-Marcó

Faculty of Law, University of Barcelona, Avda. Diagonal 684, 08034 Barcelona, Spain

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## ABSTRACT

Searching and sampling of Antarctic Biological Material (ABM) is happening with no explicit regulation on access and benefit sharing requirements. Patents already exist on inventions stemming from Antarctic living organisms. The Antarctic Treaty System (ATS) provides mechanisms to ensure that scientific knowledge and data generated from the collection and use of ABM are shared, although commercialization might be a threat to this free exchange of scientific knowledge. Some of the underlying problems regarding the access and benefit sharing of ABM are that under the ATS there are gaps concerning definitions, access to specimens, benefit sharing, commercialization and reporting issues. The Antarctic Treaty Consultative Parties (ATCPs) have decided that the Antarctic Treaty Consultative Meeting (ATCM) is the competent body to discuss the matter, and the ATS is the appropriate framework for managing the collection of biological material in the Antarctic Treaty area and for considering its use. Nevertheless, opinions diverge as to the need for more specific rules on access and benefit sharing other than that already resulting from the obligation to give prior notification and share scientific results.

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## 1. Introduction

There is an increasing growth of search and sampling of biological material in Antarctica, but the regulatory framework for this activity remains unclear. The main purpose of this work is to provide a legal overview of the regime for access to and benefit sharing of Antarctic Biological Material (ABM) under the framework of the Antarctic Treaty System (ATS), by taking into account the discussions on this matter held during the Antarctic Treaty Consultative Meetings (ATCM).

Terrestrial and marine biological material from Antarctica can be accessed either by collecting specimens from Antarctica or from *ex situ* collections of ABM held in various institutions around the world. While access to *in situ* biological material in the Antarctic Treaty area has to comply with various requirements under the ATS, access to *ex situ* collections seems to be not covered by the ATS provisions. Commercial benefit sharing derived from ABM is not addressed by the ATS, but the ATS allows for the sharing of non-monetary benefits, in particular the results from scientific research. One of the main concerns of the Antarctic Treaty Consultative Parties (ATCPs) is that commercialization may limit the free exchange of information and so adversely affect the access to scientific knowledge from Antarctica.

While observing the principle of freedom of scientific investigation in Antarctica, some form of regulation should be agreed for the government of the commercial use of biological material and derived data and knowledge.

## 2. Antarctic governance

Antarctica is governed by its own regional regime, the Antarctic Treaty System. Essential to the ATS is the 1959 Antarctic Treaty, which applies to the area south of 60° South latitude. As a multilateral agreement, the Antarctic Treaty is given high marks for its success in mandating demilitarization and denuclearization of the region, as well as promoting the freedom of scientific research, international cooperation, and its use for exclusively peaceful purposes (Joyner, 1998). The Antarctic Treaty also lays considerable emphasis on the free exchange of scientific information and on the rights of its Parties to establish research programmes throughout the continent (Dodds, 2010).

Seven countries: Argentina, Australia, Chile, France, New Zealand, Norway and the United Kingdom, claim parts of Antarctica as their sovereign territory, and Russia and the United States have reserved the right to make their own claims to any part or all of it. In order to secure scientific and political cooperation, Article IV of the Antarctic Treaty freezes all claims and potential territorial claims in Antarctica. It also provides a unique framework where 'States can agree to disagree'; anyhow, these unresolved sovereignty questions haunt all discussions on resource issues in the region (Dodds, 2011; Leary 2012; Leary and Walton, 2010).

The other agreements making up the system are: the 1972 Convention for the Conservation of Antarctic Seals (CCAS), the 1980 Convention on the Conservation of Antarctic Marine Living Resources (CAMLR Convention), the 1988 Convention on the Regulation of Antarctic Mineral Resource Activities (CRAMRA) – not in force –, and the 1991 Protocol on Environmental Protection to the Antarctic Treaty (Protocol).

E-mail address: rpuigmar@ub.edu.

Representatives of Antarctic Treaty Consultative Parties' (ATCPs) governments meet annually at the ATCM "for the purpose of exchanging information, consulting together on matters of common interest pertaining to Antarctica, and formulating and considering and recommending... measures in furtherance of the principles and objectives of the Treaty" (Article IX Antarctic Treaty). Positions agreed by consensus are codified in various binding and non-binding rules, and it is where the policies for ATCPs' nationals to observe in Antarctica are settled. This regular practice of the ATCM has produced a considerable body of rules that contribute to the co-administration of Antarctica within the scope of the Antarctic Treaty objectives.

The territorial status of Antarctica and jurisdictional scope of the ATS are complex and with many differing viewpoints; and in addition to the regional legal framework of the ATS, there are other international treaties that are potentially applicable to Antarctica.

With respect to the marine environment, one must, first of all, mention the 1982 United Nations Convention on the Law of the Sea (UNCLOS), adopted in order to establish a legal order for the seas and oceans. The UNCLOS regime is mainly based on the principle of State sovereignty – except in the high seas and the Area –, but this principle is not easily applicable to Antarctica (Vigni, 2006). As the status of maritime zones depends on the legal status of its adjacent land, the unresolved situation concerning territorial claims on Antarctica creates a complicated jurisdictional situation for its marine environment (Rogan-Finnemore, 2005). It is of particular relevance the extent to which States claiming territory in Antarctica may be regarded as coastal States. Some argue that in the absence of sovereignty in the continent, recognized coastal States are absent, and as a consequence, the high seas extend up to the coastline of Antarctica (Rothwell, 2009; Rogan-Finnemore, 2005).

Likewise, applying the Convention on Biological Diversity (CBD) in Antarctica is no simple matter. The jurisdictional scope of the CBD is outlined in Article 4 which provides that its provisions apply, in relation to each Contracting Party: '(a) in the case of components of biological diversity, in areas within the limits of its national jurisdiction; and (b) in the case of processes and activities...carried out under its jurisdictional control, within the area of its national jurisdiction or beyond the limits of national jurisdiction'.

### 3. Commercial interest in Antarctic Biological Material

There are no specific definitions in the ATS for terms such as 'biological material', 'genetic resources', 'bioprospecting' or 'benefit sharing'. As a consequence, the divergence on how these terms are interpreted influences what it is reported by ATCPs when complying with their information exchange requirements under the ATS. The lack of consensus on working definitions for these and other concepts in the Antarctic context has also blocked more substantive discussions at the ATCMs.

In an attempt to overcome this obstacle, the paper uses a more broad term: Antarctic Biological Material, meaning any terrestrial or marine Antarctic specimen, which can be a plant, an animal, parts thereof, but also a microorganism, and which includes also genetic resources. This approach is in line with Resolution 6 (2013) (ATCM, 2013a), which "reaffirms that the ATS is the appropriate framework for managing the collection of biological material in the Antarctic Treaty".

There is a considerable and growing activity in patenting the uses and applications based on Antarctic genetic and living resources (Lohan and Johnston, 2005; ATCM, 2013c). The use of compounds from Antarctica is likely to continue to increase due to the growing size of the biotechnology sector and the breakthroughs in current technologies that promote the commercial use of genetic resources and biochemical processes from Antarctic organisms (Leary et al., 2009).

An important proxy indicator for commercial research and development involving Antarctic species is the industrial applications being developed and existing patents on inventions stemming from ABM (ATCM, 2013c; Oldham et al., 2013). A search of publicly available

patent databases, albeit being no comprehensive, provides an indication of it, with about 236 records of patents granted and patent applications filed up to mid-2013. Notwithstanding patents exist, 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 (ATCM, 2013b).

Patents that have been taken out on biological material from Antarctica are an indication of the use of the patent system for establishing exclusive rights for biochemical and genetic resources from the region (ATCM, 2007). As regards patent law, it seems that biological resources in the Antarctic are open and available for appropriation by those who find them and include them in a patent invention. Meaning that biochemical processes, genes, proteins and micro-organisms found in Antarctica are patentable, provided that the invention in question meets the general patent criteria of novelty, inventiveness and industrial application (Tvedt, 2010). Today, there exists no one single coherent world patent system, but a number of national and regional specific systems. The most comprehensive global harmonisation of international patent law is the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS).

Antarctic species have become a focus of increasing commercial and policy interest (ATCM, 2013b,c). The Antarctic Biological Prospecting Database<sup>1</sup> provides details of research and commercialised products arising from ABM. However, the real extent of the searching and sampling of ABM is not known and available data is still incomplete. There is a need for further research as well of an improved and easier-to-access reporting that is specific to the situation in Antarctica (ATCM, 2013b).

### 4. Access to Antarctic Biological Material

Antarctic Biological Material can be collected or accessed either *in situ* or *ex situ*. The common ways through which ABM has been made available is through the screening and utilization of previous material, collected in earlier scientific projects undertaken in Antarctica, and through commercial partnerships with particular scientific projects (Hughes and Bridge, 2010).

Under the ATS, access to *in situ* biological material in the Antarctic Treaty area has to comply with various requirements.

#### 4.1. Freedom of scientific investigation, free exchange of information and prior notification requirements

In general, any access to ABM has to respect the principle of freedom of scientific investigation. If scientific investigation on ABM can be of high value for mankind, there is no ground to restrict it, provided that this research is non-destructive, and its commercial dimension doesn't threaten the peaceful purpose objective of the Antarctic Treaty (Hemmings and Rogan-Finnemore, 2008).

As stated in Article III(1)(c) of the Antarctic Treaty, in order to promote international cooperation in scientific investigation in Antarctica, the Contracting Parties agree that, to the greatest extent feasible and practicable, scientific observations and results from Antarctica shall be exchanged and made freely available. In practice, scientific observations and results from research on ABM should be exchanged and made freely available in a timely manner. Nonetheless, commercialization may limit the free exchange of information and so adversely affect the exchange of and access to scientific knowledge under the ATS.

A specific concern of the Scientific Committee on Antarctic Research (SCAR, <http://www.scar.org/>) and some ATCPs is whether commercialization, including the acquisition of intellectual property rights, is

<sup>1</sup> A joint initiative of the Belgian Ministry of Environment and the United Nations Environment Programme, the database has been developed by the United Nations University Institute of Advanced Studies, and it is available online at <http://www.bioprospector.org/bioprospector/antarctica/home.action>.

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