



## Features

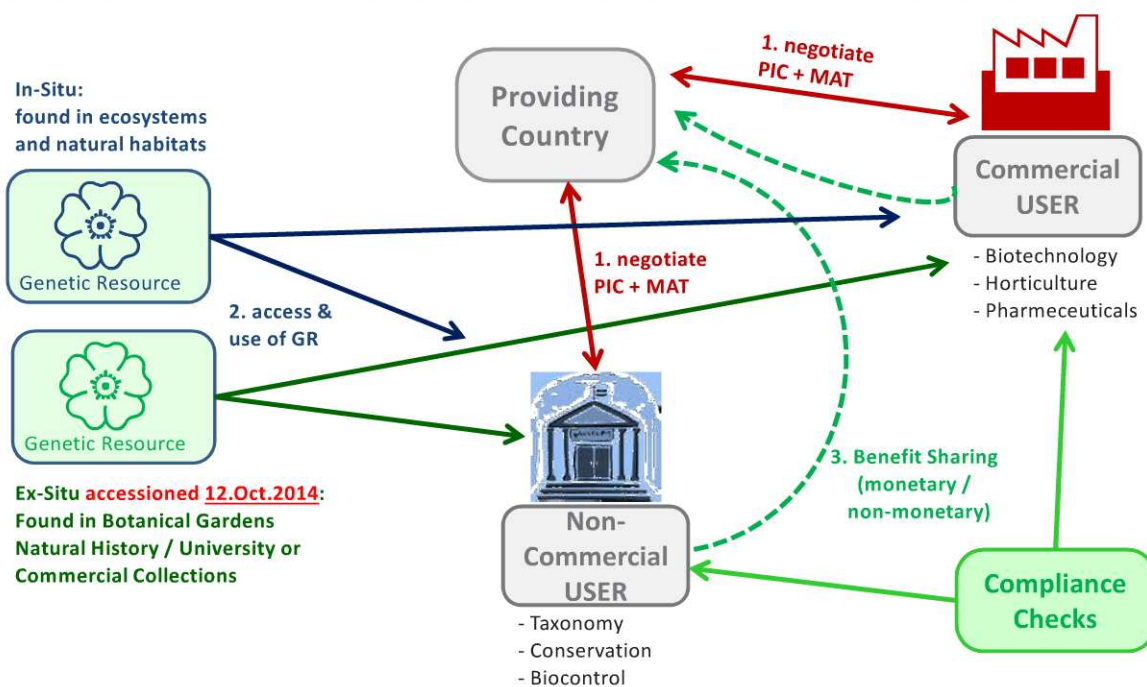
### Access and Benefit Sharing - Global Implications for Biodiversity Research, Collections and Collection Management Arising From the Nagoya Protocol

by Dirk Neumann, Christopher H. C. Lyal, Johan Bodegård, Cornelia Löhne, Ana Casino, Anne Nivart, China Williams and Peter Giere

In 1993, with the entering into force of the Convention on Biological Diversity (CBD), parties to the CBD agreed that the right to determine access and subsequent use of genetic resources falls within the sovereign rights of the respective countries where these resources originate. This theoretical framework on fair and equitable sharing of benefits arising out of the access to and utilization of genetic resources as integral part of the CBD was further elaborated in the Nagoya Protocol (NP) the last 20 years, and – after reaching the

necessary quorum of 50 signature states in July – enters into force on 12 October 2014. As well as ratification in many developing and newly industrialized countries, which harbor the vast majority of global biodiversity, the European Union (EU) and its Member States already have or will ratify the NP soon. Ratification of the NP by all CBD parties is anticipated in the near future, with the exception of the only three non-CBD states - Andorra, the Holy See and the United States of America. Countries that do not ratify the Protocol are still encouraged to adhere to it.

For implementation, the European Parliament and the European Council passed a regulation on compliance measures obligatory for users of Genetic Resources in the EU. The European regulation entered into force on 9 June, 2014, and will apply to all EU States on 12 October, 2014, irrespective of whether they have ratified the Protocol or not. Both, the NP and the EU regulation set out a strong legal framework on access to genetic resources (GR) and utilization of GR and derived information thereof within national borders. With entering into force of the Nagoya Protocol and the implementation of European legislation on Access and Benefit Sharing (ABS), illegal access and utilization can be prosecuted. Under



(1) PIC & Mat need to be negotiated before (2) accessing GR and subsequent use; GR can be collected in the wild (in-situ) or acquired from ex-situ collections either within or outside the Providing Country (e.g. botanical gardens, natural history collections)

(3) Monetary or non-monetary benefits as agreed in MAT are shared with the Providing country, (4) compliance will be checked based on international or national law.

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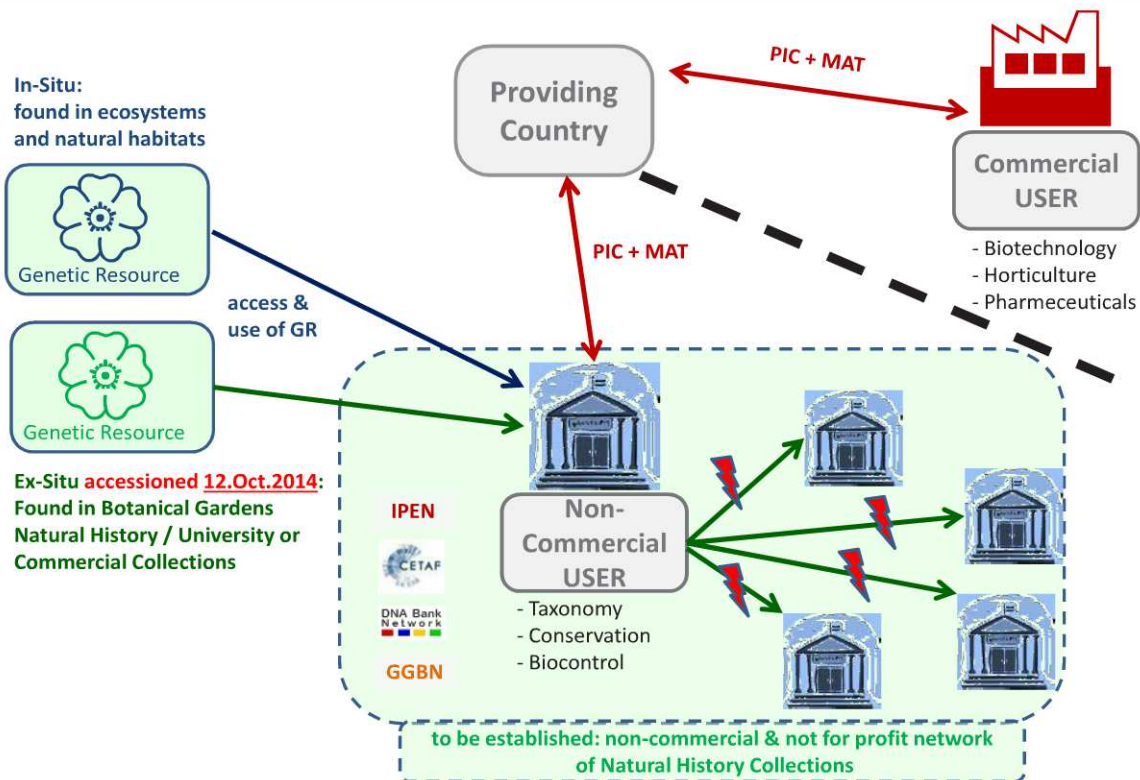
national implementation of the EU Regulation, Member States can require reports on utilization of Genetic Resources within their borders and can take whatever further action they deem necessary (e.g. confiscation of GR, banning of researchers / institutes from further utilization, etc.).

Regulation of access to and utilization of Genetic Resources will affect biodiversity research, from traditional morphological comparison to advanced evolutionary biology including publication of DNA-data, accession and exchange of specimens stored in natural history collections worldwide, and may affect specimen exchange with the US collections including traditional loans.

As detailed during our presentations on ABS at SPNHC in Cardiff and at the shipping workshop on legal aspects linked with specimen transfer, the NP will influence the way researchers and scientific institutions acquire and work with biological material. Because the NP governs genetic resources (GR) in general, it applies to any organismal research or

collection storing organismal life. Thus the ABS regime also affects research disciplines indirectly linked to biosciences, such as earth or climate science (GR in drill cores, water or soil samples) and archeological sciences (archaeobotany, archaeozoology and archaeology) with respect to ancient DNA.

The NP will also surely affect collections and researchers in non-signatory states through their interaction with signatory countries. Providing countries are entitled by CBD and NP to govern their own natural resources, i.e., the physical specimens and species occurring within their national borders, and to regulate access and stipulate terms of utilization outside their own national borders. In discussions after our ABS presentations at SPNHC in Cardiff, Linda S. Ford (MCZ, Harvard) and Carol Butler (Smithsonian) pointed out that the NP might also apply to US collections and researchers because of the Lacey Act, and illegal access and utilization could have legal ramifications. Therefore, it is crucial for all biodiversity researchers and holders of biological collections to become



Depending on MAT & PIC, subsamples, tissues or DNA of GR should not be shared with other Natural History Collections or researchers and there should be a clear distinction and separation between commercial and non-commercial use of GR. One solution for the sharing of samples between collections would be a CBD-compliant international biodiversity

network much like IPEN for exchange of living plants between Botanical Gardens. Establishment of other networks (e.g. using / by adapting existing data platforms such as DNA Bank or GGBN) as well as the sharing of standards (e.g. CETAF standards) should be considered.





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familiar with the concepts behind the new ABS system and to adhere to the ABS regime on a voluntary basis. For example, in advance of planned sampling events researchers will need to negotiate Prior Informed Consent (PIC – agreement of what is to be done with the final disposition and use of the specimens) and Mutually Agreed Terms (MAT – how any aspects products of the work are to be shared) from the National Focal Point or other designated official of the country where the sampling is proposed. Contacts of signatory states are provided on the CBD website. Any illegal collecting may be prosecuted and fines levied as the NP includes an internationally recognized right of action against biopiracy.

Besides provider country regulations for access to GR, the export, worldwide transfer and exchange of scientific samples that fall under the NP (collected after its entry into force) will be subject to national and international monitoring and reporting. This affects work flows in natural history collections (e.g., acquisition process, lab-routines, tissue and DNA-storage, loans and gifts), and collection management (documenting and reporting obligations, data management, data release / uploads to the web) in signatory and non-signatory countries alike. For example, GenBank sequence uploads should be considered carefully and avoided if original MAT and PIC do not permit publication of DNA sequence data. Documentation and management of specimens entering into collections after October 2014 without MAT and PIC require special attention and should be carefully considered. This may present particular risk to collections donated by amateurs (e.g. botany or entomology specimens) and to unsolicited samples sent for identification, e.g. in biocontrol or monitoring of invasive species. A lack of appropriate documentation may be cause for concern. Such samples should not be used for genetic analysis, as it may be illegal utilization of GR without MAT and PIC of the country in which samples have originally been collected. If in doubt, PIC and MAT should be re-negotiated with the respective providing country for third party specimen transfer to ex-situ collections.

Moreover, the measures laid down in the European ABS regulation include further and more specific reporting obligations that European Collections utilizing GR have to meet, whereas access to European GR will remain free in most Member States. Currently, the Consortium of European Taxonomic Facilities (CETAF), the major European network of taxonomic institutions, is developing model solutions as to how collections can meet the new requirements. The set of guidance documents developed so far include a common Code of Conduct, a Use Statement that should guide MAT and PIC negotiations and Best Practice (under development) for taxonomic collections. An early draft of this document package is published on the CBD website. The finalized ver-

sion is to be published soon. As most of the major European collections are also part of the Global Genome Biodiversity Network (GGBN), we aim to adopt similar CETAF standards on a voluntary basis for GGBN, regardless of whether partner institutions are within signatory or non-signatory states. Natural history collections and researchers worldwide are advised to revise processes and policies and to form networks of (taxonomic) institutions that have CBD-conforming procedures in place. It is high time to implement an ABS-compliant and functioning network comparable to the International Plant Exchange Network (IPEN) which is in place for living plants cultivated in botanical gardens. Non-commercial networks sharing common standards that are broadly accepted and CBD-compliant and thus may facilitate simplified data and specimen access and transfer within the scientific community would be a major step towards protecting basic biodiversity research as intended by the CBD and building up trust among providing countries.

The Regulations and Legislation Committee of SPNHC is currently exploring ideas for a ABS workshop / round table discussion at the forthcoming SPNHC meetings in Gainesville and Berlin, and practical input or ideas are welcome.

Internet based information and further reading:

Nagoya Protocol Homepage: <http://www.cbd.int/abs/>

Text Nagoya Protocol: <http://www.cbd.int/abs/doc/protocol/nagoya-protocol-en.pdf>

Concept of the NP: <https://portals.iucn.org/library/efiles/documents/EPLP-083.pdf>

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