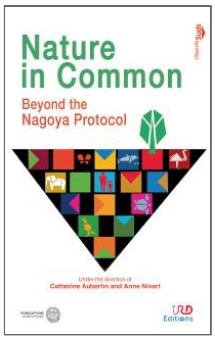

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Beyond the Nagoya Protocol

Chapter 4. The Nagoya Protocol: experience and feedback from a researcher

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Chapter 4

The Nagoya Protocol: experience and feedback from a researcher

Anthony HERREL

Many questions surrounding the Protocol

The Nagoya Protocol on access to genetic resources and the fair and equitable sharing of benefits arising from their utilisation (Secretariat of the Convention on Biological Diversity, 2011) caused general concern among the scientific community. Although each and every researcher undoubtedly agrees with the spirit of this convention aiming at the sharing of benefits arising from the utilisation of genetic resources in an equitable way, many feared it was going to be yet another obstacle hindering scientific research (Knauf et al., 2019). This was particularly felt given the strong uncertainty surrounding the exact nature of the Protocol and its legal impact. Many researchers, especially those working with genetic resources and collections feared that it would be impossible to continue their work, aimed at providing an inventory and understanding of the diversity of living organisms. Many others interested in associated fields such as comparative

anatomy, archaeology, and palaeontology were clearly also impacted by the new regulations but with a certain level of uncertainty pertaining the extent of these new regulations and the impact it would have on their work. What to do with anatomical specimens not dedicated to genetic analyses and deposited in natural history collections, but which could be used by other for future extractions of DNA? What to do with soil or water samples, microbiome samples, etc… (RYAN et al., 2019)? How would permitting work? Many of the samples collected by biologists contain unknown diversity so how fill out a form requesting species names; how to deal with these types of samples containing thousands or even millions of taxa? What if rapid access is needed as in case of emerging infectious diseases (KNAUF et al., 2019)? What about biological control (Smith et al., 2018)? What about online sequence data (BECK, 2019)? Who to contact and where to obtain the documents needed to be in-line with the new regulations? These are but a few of the questions that I was confronted with when talking to many of my colleagues in field or in the Muséum in Paris. So, how bad is the Nagoya Protocol really in terms of daily work for a scientist doing lots of fieldwork and collections world-wide. To provide some insights into the added burden of the new Nagoya regulations I believe it would be good to evaluate what researchers like me working in five different continents and requiring permits to do research from tens of countries a year had to do before the Nagoya Protocol.

Procedures in place before the Nagoya Protocol

Research and collecting permits

The first step of any research involving wildlife beyond the establishment of hypotheses, or research questions based on a thorough study of the existing literature is to obtain the required permits to 1) conduct the research and 2) collect the organisms of interest

for study. Obtaining permits can be quite daunting (PAUL & SIKES, 2013) and a single project can involve multiple permits at different legislative levels (national, regional, park etc…). For one project in Europe we were required to obtain national permits, regional permits and then permits from the national park where the field work was conducted. Consequently, it can sometimes take months or even years to obtain a research permit (I am still waiting for some over 15 years after I first requested them – I always imagine they must be lost somewhere on someone's desk in a dusty office). Especially when working in protected areas permitting may be difficult as the impact of the science will have to be evaluated relative to the local ecological context (SAARMAN et al., 2018). Whereas good relations between local collaborators and permitting agencies can definitely help speed along the process, one a few occasions I have decided to fly out and talk to the people in charge of delivering permits in person. This allowed me to explain the project in detail and to make sure both parties were on the same page. This was much appreciated and since then I have never had trouble getting permits.

Ethics clearance

Often, if not most times, obtaining a research permit is contingent upon having prior ethics clearance often both from the researcher's home institution and the country where the research is conducted. Any research involving animals needs prior consideration of its impact whether it be lab (FESTING & Wilkinson, 2007; PERRY, 2007) or field research (CURZER, 2013; LINDSJÖ et al., 2019). Irrespective of the context or the country, the guiding principle in ethics is that of the 3Rs (replace, reduce, refine) and this is essential to incorporate when conceiving a research proposal. The goal is to replace animal experiments whenever possible, to keep the number of animal experiments as low as possible, and to use the appropriate number of animals, not too few nor too many. This is often tricky and may require a priori evaluation of the statistical power of the sample size that is going to be targeted. Lastly, it is vital to ensure that the distress inflicted upon the animals is kept as low as possible. Ethics clearance often requires to contact the institutional ethics, or animal care and use committee,

to discuss the research proposal, and to obtain feedback on how to improve the proposal before final submission. This has been essential and obtaining prior feedback has helped me getting ethics approval much more quickly in many cases. For some Protocols (e.g. behavioural non-invasive research or simply the euthanasia of animals to obtain scientific specimens) and in some countries no official ethics approval may possible as this type of research does not fall under the official guidelines, but an institutional ethics or animal care and use committee may be able to provide a recommendation and validate the proposal from an ethics point of view. Once ethics clearance has been approved and research permits obtained, the transfer of the material to be collected needs to be negotiated under a material transfer agreement between the country of origin of the material and the host country of the researcher.

Material Transfer Agreement

The Material Transfer Agreement (MTA) is a legal agreement that governs the transfer of specimens or parts of specimens (e.g. organs, tissues, DNA, RNA) between the country or institution of origin and the researcher or his institution (STREITZ & BENNETT, 2003; BUBELA et al., 2015). Materials may include cell lines, plasmids, nucleotides, proteins, transgenic animals, plant varieties, bacteria, pharmaceuticals, and other chemicals extracted from plants or animals. These agreements are typically short and address issues such as the ownership of the transferred material and its derivatives. They may limit the use and further dissemination of the material by the researcher as has been the case recently where I was requested to destroy the biological material after the research project was completed. This implied that specimens could not be entered into our collections or given a collection number but still allowed us to gain access to amazing specimens for research. In other cases, I have been asked to simply return the material to the country of origin or in yet other cases material could be kept and integrated into a natural history collection. The MTA may also discuss publication co-authorship as well as rights to research results or the implications in patents, but this is rather rare in fundamental research. Material transfer

agreements have existed for quite some time and facilitate the exchange of materials and associated data between researchers or institutions and protect the interests of country or institution of origin of the material. However, the MTA does create additional administration and may slow down collaborations or the publication of research results (Streitz & Bennett, 2003; Bubela et al., 2015). In fundamental biological research a simple agreement often suffices and this is pretty straightforward in most cases where I have obtained these agreements.

Export and import permits including CITES

Once all the above steps have been taken the field work generally takes place and may involve the collection of specimens that need to be exported back to the country where the researcher works. Depending on whether this is live material or not, things can become complicated. For dead specimens of parts of specimens, the types of permits needed typically depend on the protection status thereof. In the 'worst-case scenario', if a specimen is CITES-listed, obtaining permits may take months or even longer to complete (Paul & Sikes, 2013). CITES refers to the convention on international trade in endangered species of wild fauna and flora. Although the primary goal of CITES is to regulate the commercial trade, the export of CITES listed specimens for non-commercial, fundamental scientific projects is regulated as well. Depending on the listing of the species in the different appendices, import and export permits may need to be obtained with the export being contingent on the obtention of the import permit. Some scientific institutions such as natural history museums typically are registered with CITES and can obtain a CITES scientific certificate facilitating the import and export of CITES specimens. This facilitates the loans of natural history specimens between researchers greatly and has made my life much easier. However, this is typically a minority of the research institutions, and as such permitting may be quite complicated (Paul & Sikes, 2013). When specimens are not CITES-listed most countries still require export permits. In most countries a visit to the relevant permitting body or institution will smoothen the process and

ensure the delivery of export permits in a reasonable time frame (from one day to a week). However, sometimes this process can take very long and many colleagues have had specimens stuck in the country of origin for months or even years. Finally, when exporting live animals, things get even more complicated as many countries will require a health certificate signed by a veterinarian from the country of origin, followed by an inspection of the health status upon arrival in the country of destination. Finding a veterinarian with knowledge on wildlife can be tricky, however, and many times I have had veterinarians ask me whether the animals were 'healthy'. Especially when dealing with less known animals like amphibians or reptiles or invertebrates this can be pretty common, even when going through the veterinary clearance in the USA or many European countries.

Changes induced by the Nagoya Protocol

So, what has the Nagoya Protocol really changed? Are things really that different from before? All the research, collecting, export and import permits one needed before still need to be obtained. Ethics clearance still needs to be obtained while paying attention to the 3Rs, with regulations getting stricter than ever before. The same material transfer agreement now goes hand-in-hand with a set of mutually agreed terms (MAT) which define, in agreement between providers and users, the conditions for the access and utilisation of genetic resources. This document further also establishes the sharing of benefits resulting from the utilisation of the specimens collected, thus in accordance with the Nagoya Protocol to the Convention on Biological Diversity (MORGERA et al., 2015). So, all in all the new Nagoya regulations do not make that much of a difference. Working with biological specimens collected in other countries is not always easy and the administrative load may seem unsurmountable or to say the least, frustrating, to some (PAUL & SIKES, 2013), but in the end the sharing of resources and the benefits occurring from these is important. As the Nagoya Protocol goes into its seventh year,

things have become much clearer and excellent websites and documents are available (e.g. https://www.cbd.int/abs/) for those who take the time to look for them. The number of national focal points and contact persons are increasing daily (174 identified so far on the ABSCH website) making it rather straightforward to find the right people. In the end, the key to making the life of a researcher easier is to take the principles of the Nagoya Protocol at heart, share! Collaborations with researchers in other countries allow to share not only the specimens, research and publications, make permitting way easier, but above all make science more interesting.

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