

Conference Abstract

Tools for Fulfilling Legal Requirements of Biodiversity Specimens: Permit/Contract & Term Typologies

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Abstract

The multitude of legal requirements for working with biodiversity specimens is challenging and time consuming for researchers and biodiversity research institutions, including universities, museums, governmental and private institutions managing natural science collections (e.g., biobanks, preserved and living collections). This challenge significantly increased with the adoption of national laws and processes on access to genetic resources and benefit-sharing developed by provider countries in response to the [Convention on Biological Diversity](#), [Nagoya Protocol](#), and other concerns. Legal requirements often include a complex sequence of requests to different national authorities, response times and fees. However, obtaining the necessary documents is

only the first step. Legal documentation must be managed for the full life-cycle of biodiversity specimens.

In 2016, the Global Genome Biodiversity Network ([GGBN](#)) released a [data standard and controlled vocabularies for permits and loans](#). From 2019 to 2023, GGBN led a [SYNTHESYS+ project](#) task group to review and expand them. The main outcomes are two typologies contributing to some of the core elements from the GGBN vocabularies for permits and loans. Other elements of the GGBN metadata are not addressed. The Biodiversity Permit/Contract Typology and the Typology of Legal/Contractual Terms for Biodiversity Specimens (see Schiller et al. 2024b) can serve as internationally standardised classification systems for managing permit and contract documents, and promote an internationally understandable exchange of information on terms within such documents. Their application should enable people from various backgrounds to quickly recognise what documents and legal conditions (i.e., permissions, prohibitions, restrictions, obligations) apply to a given biodiversity specimen. Details were presented at the [2024 SPNHC-TDWG](#) joint conference (Suppl. material 1).

The Biodiversity Permit and Contract Typology classifies legal and contractual documents based on their purpose. It consists of seven document categories and 38 document types (Fig. 1). We realised that documents with similar purposes, issued by different countries, may contain different terms (Fig. 2), hence document types alone fail to give sufficient information on what is allowed.

Therefore, a second typology (Terms Typology), with a set of 87 catchphrases was created (Schiller et al. 2024a). These short phrases describe the essence of a specific term in a document, indicating what is allowed, required or forbidden. Both typologies are very flexible: users can choose whether they use only document categories, only document types, only catchphrases, or a mixture of them.

Harvard University's Museum of Comparative Zoology ([MCZ](#)) was the first institution to implement the typologies in its collection management digital infrastructure, [MCZbase](#) (Fig. 3). It is linking legal and contractual documents to collection objects via transactions and categorizing them using the Permit and Contract Typology. This allows rapid assessments of their applicability to accessions and loan shipments. Permissions and Rights records also include text fields to allow the addition of information on use restrictions, negotiated benefits, and any benefits provided.

The Terms Typology will pave the way for the automation of collection transactions (i.e., machine-actionability) for swift decisions on a large scale. Rights management modules integrated into collections management systems or GGBN could automatically compute and arrive at decision proposals (Fig. 4). The need for repeatedly going through documents to understand stated policies and their practical consequences in the case at hand will become a situation of the past. Such automatically computed proposals can support collection staff in efficiently evaluating associated rights and drawing conclusions. The proposals will always require the review by collection staff, who carry the responsibility for the final decision and action. Our proof-of-concept exemplar

developed for the future [DiSSCo Loans module](#), employing the [Open Digital Rights Language ontology](#), illustrates that the typology allows machine-actionability.

Document Categories	Corresponding Document Types
1) Access and Benefit-Sharing Document (ABS)	1-1 Mutually Agreed Terms (MAT) 1-2 Internationally Recognized Certificate of Compliance (IRCC) 1-3 Prior Informed Consent (PIC) 1-4 Specialised standard ABS terms - SMTA 1-5 Other ABS document (e.g. biomedical, BBNJ) 1-6 Exemption evidence
2) High level arrangements	2-1 Contract (legally binding) 2-2 Memorandum of Cooperation (MoC) 2-3 Memorandum of Understanding (MoU)
3) Permits for collecting & related/taking/possessing	3-1 Authorisation to enter site 3-2 Collecting permit 3-3 Taking: "incidental take" permit 3-4 Taking: Migratory Bird Treaty Act (MBTA) Special Purpose, Salvage Permit 3-5 Taking: Salvage Permit (e.g., Non-US, US federal, state, local) 3-6 Possessing: Receiving permit 3-7 Exemption evidence
4) Permits for special purposes (excluding ABS)	4-1 Permit to reintroduce/translocate organism into the wild 4-2 Data use agreement 4-3 Bioprospecting permit
5) Permits for Research	5-1 Research Permit 5-2 Ethical oversight document 5-3 Exemption evidence
6) Material Transfer Agreements, stewardships & ownership-related information (excluding ABS)	6-1 Public law MTA (e.g. acquiring customs' seizures, stewardship agreement) 6-2 Institutional MTA (e.g. loans) 6-3 Individual deeds of transfer (e.g. private gifts) 6-4 Provenance evidence
7) Transport Documents	7-1 (Phyto-)Sanitary/Veterinary Certificate 7-2 Permit to move across boundaries 7-3 CITES export permits & re-export certificates 7-4 CITES import permits 7-5 CITES certificates of scientific exchange (COSE) 7-6 other CITES documents 7-7 Original Export Permit 7-8 Export Permit 7-9 Original Import Permit 7-10 Import Permit 7-11 Exemption evidence 7-12 Other transport documents

For details see Schiller & al. (2024) Permits, contracts and their terms for biodiversity specimens <https://doi.org/10.3897/rio.10.e114366>

Figure 1.
The Biodiversity Permit/Contract Typology for sorting legal documents. Coloured version of [Table 3](#) in Schiller et al. 2024b, posted by [@RIOJournal on X.com 15 January 2024](#).

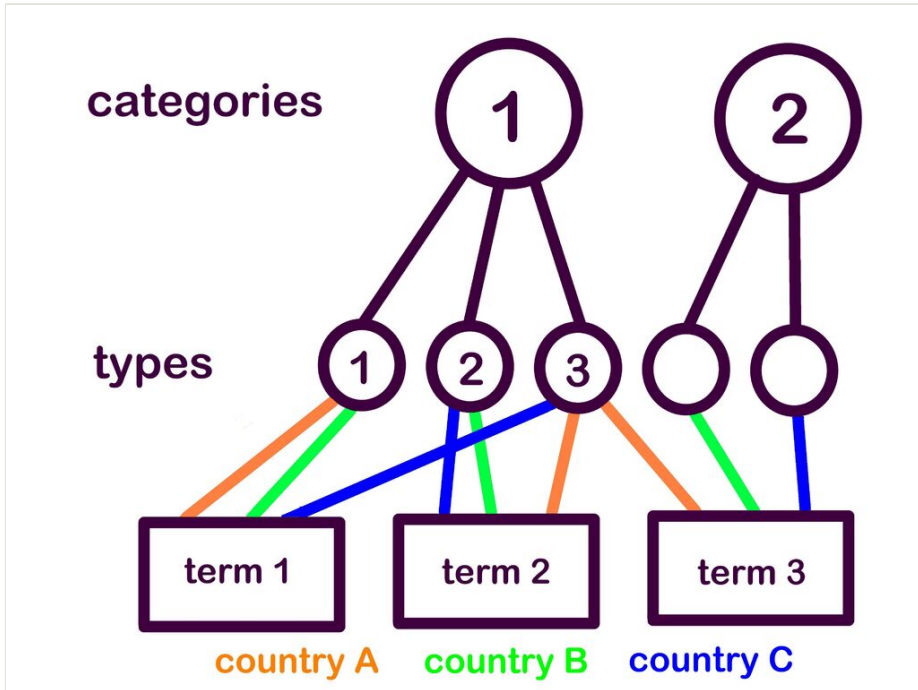


Figure 2.

Countries use the same or at least similar terms, but they do not necessarily place them in the same type of document.

Case Study: Implementation/Operation

Museum of Comparative Zoology, Harvard University



- Ability to create digital records of permits, agreements, etc.
 - Specific Document Type assigned using drop-down list
 - Specific Document Type automatically assigned to a Document Category
 - Media (e.g., PDF) can be uploaded and associated with Permissions & Rights document
- Permissions & Rights records can be associated with transactions (e.g., accession, loans)
 - When records are added to an accession, it allows automatic association with all specimens
 - Any loans that the specimens are added to will automatically include the documents
 - Records can also be added to a loan shipment

Figure 3.

The Museum of Comparative Zoology at Harvard University operationalizing the typologies in MCZbase.

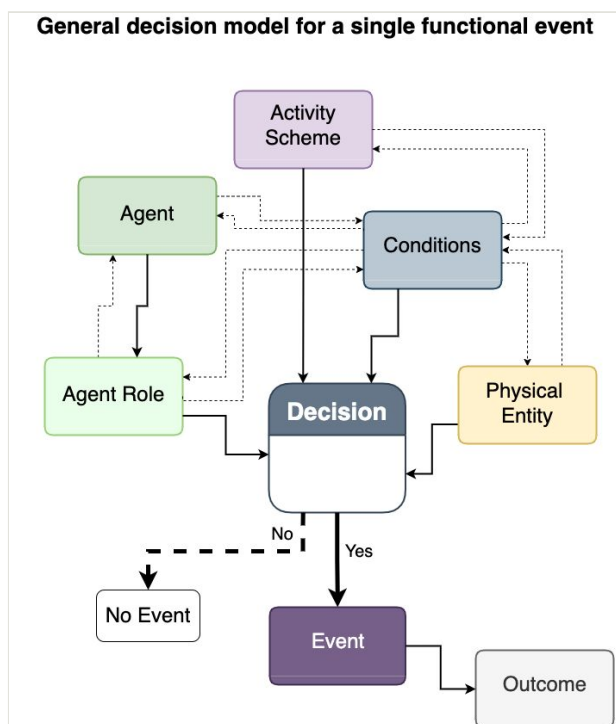


Figure 4.

General decision model for a single event, including our proposal to integrate conditions into the functional processes of the World Wide Web Consortium (W3C) [Provenance ontology](#).

Moving forward, one of our aims is to develop an internationally recognised standard within Biodiversity Information Standards ([TDWG](#)), based on the typologies and prepare it for ratification.

Keywords

Access and Benefit Sharing, collection management system, Convention on Biological Diversity (CBD), data governance, Nagoya Protocol, open digital rights language, Global Genome Biodiversity Network (GGBN), Biodiversity Information Standards (TDWG)

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Conflicts of interest

The authors have declared that no competing interests exist.

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Supplementary material

Suppl. material 1: Tools for Fulfilling Legal Requirements of Biodiversity Specimens

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Data type: pdf

Brief description: Slides: Tools for Fulfilling Legal Requirements of Biodiversity Specimens - Permit/Contract and Term Typologies.

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