

# General Collections Policy of the Finnish Museum of Natural History

Marko-Tapio Hyvärinen<sup>‡</sup>, Risto Väinölä<sup>§</sup>, Henry Väre<sup>‡</sup>, Gunilla Ståhls-Mäkelä<sup>§</sup>, Pasi Sihvonen<sup>§</sup>,  
Anniina Kuusijärvi<sup>||</sup>, Leena Myllys<sup>‡</sup>, Björn Kröger<sup>||</sup>, Mikko Heikkinen<sup>||</sup>, Aino Juslén<sup>§</sup>,  
Markku Oinonen<sup>||</sup>, Leif Schulman<sup>#</sup>

<sup>‡</sup> Botany Unit, Finnish Museum of Natural History, P.O. Box 7, FI-00014 University of Helsinki, Helsinki, Finland  
<sup>§</sup> Zoology Unit, Finnish Museum of Natural History, P.O. Box 17, FI-00014 University of Helsinki, Helsinki, Finland  
<sup>||</sup> Biodiversity Informatics Unit, Finnish Museum of Natural History, P.O. Box 17, FI-00014 University of Helsinki, Helsinki, Finland

<sup>||</sup> Natural Sciences Unit, Finnish Museum of Natural History, P.O. Box 44, FI-00014 University of Helsinki, Helsinki, Finland

<sup>#</sup> Finnish Museum of Natural History, P.O. Box 17, FI-00014 University of Helsinki, Helsinki, Finland

Corresponding author: Marko-Tapio Hyvärinen ([marko.hyvarinen@helsinki.fi](mailto:marko.hyvarinen@helsinki.fi))

Reviewable v1

Received: 31 Aug 2020 | Published: 03 Sep 2020

Citation: Hyvärinen M-T, Väinölä R, Väre H, Ståhls-Mäkelä G, Sihvonen P, Kuusijärvi A, Myllys L, Kröger B, Heikkinen M, Juslén A, Oinonen M, Schulman L (2020) General Collections Policy of the Finnish Museum of Natural History. Research Ideas and Outcomes 6: e58167. <https://doi.org/10.3897/rio.6.e58167>

## Abstract

As part of its quality management and goal-driven strategic development, the Finnish Museum of Natural History Luomus drafts policy documents to guide its operational sectors. The purpose of such policies is to define the content and procedures of the Museum's activities. They answer the questions "what", "why", "who" and "for whom" about the activities they discuss, which is to say that they define and delimit the scope of the operational sector, provide the operations with a purpose and determine their content, describe the allocation of responsibilities in the sector under the Luomus organisation and identify the target groups. The policies provide general objectives and thus form the basis for target programmes and any action plans which in turn answer the question "How can we reach the designated goals?". Policies are not tied to a schedule, unlike target programmes, even though they must be dynamic and updated periodically to better serve the organisation. The core activities at Luomus are: (1) maintenance of the scientific collections, (2) research and (3) expert services. The General Collections Policy sets guidelines for the maintenance of the scientific collections based on the mission of the University of Helsinki and Luomus.

## Keywords

Natural history collections, policy, collection management, implementation, accessioning, deaccessioning, regulations, ethics, biodiversity

## 1. Drafting the General Collections Policy as part of the Luomus target programme

One of the strategic objectives in the target programme for 2013–2016 was “Luomus supports and conducts top research and academic teaching”. The first development target under this objective is “A national research and teaching infrastructure”. The scientific collections are the most important research and teaching infrastructure of Luomus, and many of the concrete measures stated in the target programme relate in some way to the collections. The development target “Cost-effective collections management of a high academic standard” explicitly states that a comprehensive collections policy should be drafted:

*A collections policy to cover all collections is to be drafted. This policy will be followed whenever inventory is taken of the collections, redundant material is removed, the collections are systematically expanded and the collected material added as well as to make the use of storage facilities more efficient.*

## 2. Scientific collections of Luomus

A natural history collection is a compilation of systematically organised scientific specimens and their metadata from which the specimens can be retrieved either based on the associated collection data files or on the physical placement of the specimens. The specimens may be alive or prepared by various methods. The official figures describing the scientific collections of Luomus (e.g., the size of the herbarium collections) always refer to specimen collections as defined above (Table 1). Specimens which have not been incorporated into the collection are not considered to be part of a natural history collection.

Table 1.

The collections of the Finnish Museum of Natural History in 2020.\* Number of accessions\*\* Available in collection management systems (not necessarily imaged).

Collection type linked to associated Kotka CMS metadata	No of specimens (or accessions*)	Location in Helsinki, Finland	Digitized** (%)	Associated sub-collection policy (language versions)
<a href="#">Insects</a>	9 000 000	Pohjoinen Rautatiekatu 13	8	Invertebrate collections policy (en, fi),
<a href="#">Invertebrates other than insects</a>	400 000	Pohjoinen Rautatiekatu 13	47	as above

Collection type linked to associated Kotka CMS metadata	No of specimens (or accessions*)	Location in Helsinki, Finland	Digitized** (%)	Associated sub-collection policy (language versions)
<a href="#">Vertebrates</a>	140 000	Pohjoinen Rautatiekatu 13	95	Vertebrate collections policy (fi, in preparation)
<b>Herbarium, algae</b> ( <a href="http://tun.fi/HR.129">http://tun.fi/HR.129</a> & <a href="http://tun.fi/HR.88">http://tun.fi/HR.88</a> )	20 000	Unioninkatu 44	0	Herbarium collections policy (en, fi)
<a href="#">Herbarium, vascular plants</a>	1 770 000	Unioninkatu 44 / 38	70	as above
<a href="#">Herbarium, fungi</a>	920 000	Unioninkatu 44	18	as above
<a href="#">Herbarium, bryophytes</a>	700 000	Unioninkatu 44	7	as above
<a href="#">Living collections, botanic gardens</a>	6 636*	Unioninkatu 44 / Jyrängöntie 2	100	Living collections policy (en, fi)
<a href="#">Seed bank</a>	485*	Unioninkatu 44	100	as above
<a href="#">Genomic resources (DNA and frozen tissue)</a>	5 500	Pohjoinen Rautatiekatu 13	80	Genomic resources collection policy (en)
<a href="#">Rocks and minerals</a>	50 000	Jyrängöntie 2	0	Geology collection policy (fi, in preparation)
<a href="#">Fossils</a>	30 000	Jyrängöntie 2	44	Palaeontology Collections Policy (en)

The most significant scientific collections at Luomus are the geological collections (rocks, minerals and fossils), insects and other invertebrates, vertebrates, herbarium collections (fungi, mosses, vascular plants), the collections of the botanic gardens, the seed bank for endangered plants as well as the DNA and tissue sample collections.

Many different types of information can be associated with a specimen in a natural history collection, and they are thus associated with extensive information and observation databases. Databases may also include observations which are not associated with a particular collection. Principles pertaining to such databases will be discussed in the Monitoring and mapping policy. Guidelines relating to all digital data are outlined in the Luomus Digital Data Policy (unpubl.).

The extensive collections of natural history literature in Luomus are also excluded from the General Collections Policy, and the principles relating to their accumulation and maintenance are included into research and teaching policies.

### 3. Laws, principles and strategic guidelines guiding the General Collections Policy

According to section 72 of the Universities Act (2009), “the Finnish Museum of Natural History is responsible for the preservation, accumulation and exhibition of the national natural history collections and for research and education relating to them.” While national natural history collections are not defined in the Act, they can be thought to include all of

the natural history collections under Luomus. The purpose and quality of the national natural history collections are discussed in [Chapter 5](#).

The Nature Conservation Act (1996) states that if a protected animal is found dead, it may be submitted to the Finnish Museum of Natural History (section 40). It also assigns the role of scientific authority under the EC decree on the international trade of protected animals (the CITES 1973 convention) to the Finnish Museum of Natural History. The Ministry of the Environment can designate expert duties to the Museum as they pertain to the EC decree.

In addition to legislation, the Collections Policy is also based on the status of Luomus as a part of an international network of natural history collections and a centuries-long tradition of basic research. The Luomus collections are an infrastructure for documenting and investigating bio- and geodiversity and as such, a resource shared by the international and national academic community.

The General Collections Policy of Luomus is based on the values of the University of Helsinki and carries out the University's mission. Truth, knowledge and critical thinking are the University's values that are particularly important for the Collections Policy. The University's mission as the most comprehensive research institution of higher education, edification and intellectual regeneration in Finland as well as a pioneer and a builder of the future is essentially linked to the value and significance of scientific collections in many different fields of science. The mission of Luomus derives directly from the Universities Act, and the scientific collections are at the core of this mission.

## 4. The context of the General Collections Policy

The primary mission and content of the natural history collections of Luomus is to accumulate and preserve scientific specimens representing bio- and geodiversity for the purposes of basic research and academic teaching in these fields. The natural history collections also serve other purposes in society. The collections displayed in public exhibitions or botanic gardens support the needs for disseminating information and for learning of the general public and of educational institutions, and serve as sources of inspiration. The collections help to improve and maintain understanding of living organisms and physical natural environments in Finland and the world and promote appreciation for biodiversity.

The majority of the collections is research material, indispensable for many branches of science. The Luomus collections are utilised in the fields of archaeology, biology, pharmacology, physics, geology, medicine, landscape architecture, horticultural and environmental sciences as well as in multidisciplinary research projects that also deal with issues from behavioural and social sciences, jurisprudence and the arts. The research fields that most actively make use of the collections address issues related to the diversity, evolutionary history and future of the Earth's organic and inorganic nature.

The detailed principles and practices relating to specific collections will be documented in collection-specific policies (Fig. 1). The General Collections Policy is hierarchically above

the collection-specific policies, and thus an individual collection policy or a practice described within it cannot be in conflict with the principles expressed in the General Collections Policy. The General Collections Policy does not define the national division of duties between Luomus and other natural history collection units, but that division is described in the specific collections policies, and drafted together with the other organisations.

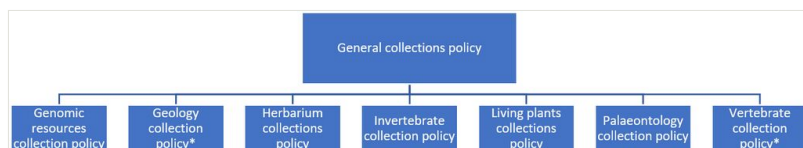


Figure 1. [doi](#)

The collection policies of the Finnish Museum of Natural History.

\* Not yet published

## 5. Goal of the General Collections Policy

The goal of the Luomus General Collections Policy is to ensure the high scientific quality of the national collections and the related data as well as to provide optimal access for scientific research purposes. The General Collections Policy serves this goal by determining the key guidelines, such as quality criteria, for the collection-specific policies (Fig. 1).

The Luomus collections constitute an archive of biological and geological diversity that extends from the present day to the deep past, and of the history of natural and human-induced environmental changes as well as of the relationships between them. Above all, the purpose of the collections is to offer reliable, high-standard research material for the future needs of humanity. The increasing social significance of the natural sciences represented by Luomus as well as the strides in technology and content in these fields place high demands for the collections in terms of preservation, content and accessibility.

The preservation of the national collections as a reliable, high-quality research resource is one of the duties set for Luomus in the Universities Act. Fulfilling this duty requires high-standard, cost-effective storage facilities and techniques for the collections as well as expert and responsible care and research. The collection-specific policies describe each collection's current status of curation and specify the measures required for their development and preservation. Guidelines concerning the targeting and practices of amassment, destructive research, loans and deaccessioning are central for ensuring the preservation of the collection.

Enhancing the content of the collections seeks to increase their scientific value in a way that is financially sustainable. The goals for enhancing the content of the biological and geological collections are described in the collection-specific policies (Fig. 1). In the policy,

the main overall criteria for enhancing the content are that the efforts are target-oriented, ethical and of a high scientific quality.

The target-oriented enhancement of content builds on recognising the strengths and on determining focus areas of the collections. The strengths of the collections are made up of or developed into systematic entities, which, as a rule, are related to active, high-standard research. The strengths of the biological and geological collections are separately defined in collection-specific policies.

The content of the collections is enhanced through quality criteria which guide accumulation and deaccessioning and pertain to specimens and their metadata. Quality criteria common to all collections include the authenticity and technical quality of the specimens, the reliability and accuracy of the collection data (locality and date), the association of the collections with a broader research or other framework, or an exceptional historical value (see [Chapter 8](#)). All quality criteria are described in detail in the relevant collection-specific policies.

The emphasis in the amassment of the collections shall be on specimens that support designated areas of strength, as well as on endangered or rare organisms and minerals, and type specimens. The scientific value of the strengths is enhanced by expanding, supplementing and by replacing imperfect materials. The primary means of collection growth [method of amassing collections] is active, high-quality collection-based research.

The scientific and perceived value of the Luomus collections is ultimately dependent on their accessibility. The primary purpose of the collections is their use for high-level scientific research in the international academic community, but they also serve higher education and the general public. For the collections to be accessible, the specimens and their metadata must be catalogued in a collection management system, the database of which must be broadly advertised and it must be easily available to both the research community and the public. In addition, there must be efficient practices for loans and on-site visits. Principles relating to digitisation and digital resources are separately specified in the Digital Data Policy (unpubl.).

## 6. Responsibilities: Who implements the Collections Policy?

1. The Collections Steering Group drafts the General Collections Policy together with the management group and is in charge of its development.
2. Collection-specific policies (see [Chapter 4](#)) are prepared at the units which coordinate the respective collections, according to the instruction of the Collections Steering Group and the management group, and they must comply with the principles of the Luomus General Collections Policy.
3. Staff will be provided with an opportunity to comment on the General Collections Policy.
4. The Board will confirm the General Collections Policy at the presentation of the head of Luomus or the chair of the Collections Steering Group.

5. The management group monitors the implementation of the General Collections Policy throughout Luomus.
6. The units coordinating the collections and the relevant teams are in charge of implementing the collections policies.
7. Each Luomus employee and each visiting researcher working at Luomus is responsible for implementing the collections policies whenever they work under the auspices of Luomus or with the Luomus collections.

## 7. Impact assessment of the General Collections Policy

The impact of the Collections Policy is assessed comprehensively. The most important indicator of impact is scope. This means the extent to which the collection-specific policies guide the work on collection maintenance. A separate policy will not be drafted for each individual subcollection (e.g., all herbarium collections will be covered by one policy, cf. Fig. 1 and Table 1), but the goal is for all collections to be maintained and accumulated according to the principles and practices outlined in the policy documents.

Another key impact criterion is implementation. Unit-specific data on how the Collections Policy influences the work on each collection will be used to assess this criterion. The primary issue is that the employees working on the collections are aware of the goals and practices of the Collections Policy. This impact is measured as part of operations management in development discussions and as part of the development process of career skills, and the assessment is the responsibility of the supervisors.

International impact is assessed both as part of the Luomus research profile and through an international peer review process. For example, the evaluation of the collections conducted as part of the cooperation on the SYNTHESYS infrastructure will be used when necessary amendments to the Collections Policy are considered.

## 8. Principles for the amassment of collections

The collections grow a result of collecting by Luomus staff or donations by other researchers, students, public authorities and private individuals. In addition, specimens may be acquired by exchange between organisations or through purchase. As a rule, all material relating to research and theses/dissertations done at Luomus must be documented and submitted to the relevant collection.

The collections are amassed systematically according to the goals specified in the collection and research policies, not haphazardly. In general, specimens to be added to the collections can be prioritised as follows:

1. Scientifically valuable specimens of a high technical quality which support the strengths of Luomus and are important for current or future research

2. Specimens which complement existing scientifically valuable collections and increase their scope (e.g., represent missing developmental stages, add to time series or increase the geographical or taxonomic scope of the collection)
3. Specimens with no immediate research value, but which may serve other social interests such as environmental education or the exhibition of biodiversity

Specimens may also be added to the collections if they together with other collections form a geographically coherent entity. In such cases, the accession can be justified by synergy between collections, and collecting will be opportunistic in nature (e.g., excursions).

All specimens added to a collection must be accompanied by sufficient and reliable documentation as defined in the collection-specific policy.

The accumulation of the Luomus scientific collections must comply with principles and practices that protect and promote biodiversity. Specimens and collections collected in ways which violate the laws and decrees of Finland or other states or flout international agreements ratified by Finland (e.g., CITES 1973 and the Nagoya Protocol 2010) will not be accepted into the collections of Luomus. Luomus may require certification of the legal origin of samples intended for its collections. However, exceptions may be made to this rule at the specific documented request of national authorities (e.g., accepting specimens confiscated by customs).

Luomus staff may collect specimens in Finland and abroad only when possessing the necessary permits. Luomus staff and researchers and students working in Luomus must not threaten the viability of the populations when collecting specimens, and they must always be aware of the potential impacts their collection methods may have on rare or endangered organisms.

## 9. Human specimens

Luomus is in possession of human remains in its bone and skull collection, with separately agreed principles of preservation.

Human specimens must be handled respectfully, honouring human dignity, and they are to be stored separately from other natural history collections. As an exception to the open data principle of the collections policies, any identifying data associated with human specimens is confidential. Human specimens will not be exhibited, but copies of them may be used for education or an exhibition.

The deaccessioning, repatriation, releasing to a third party, or the destruction of human specimens are handled differently from other scientific specimens. The decisions will be made by the ethical committee set by the rector of the University of Helsinki and chaired by the director of Luomus.



## 10. Accepting specimens and incorporating them into collections

Every decision to add a specimen to a collection will be made by the person or unit in charge of the respective collection, and the decision must comply with the principles laid down in the General Collections Policy and the relevant collection-specific policy. Decisions are, as a rule, made in the relevant teams according to the agreed division of work in the team and the guidelines of the unit. In the case of extensive collections, the decision will be made by the director of Luomus on the proposition of the director of the collection unit.

All accumulation of collections must consider:

- What is the number of specimens, and how much space do they require?
- Do the specimens have scientific significance or historical value?
- Do the specimens genuinely add to the content of the collection, or do they duplicate existing materials?
- How do the specimens promote Luomus' strengths and the goals laid down in its collection and research policies?
- Are the data associated with the specimens reliable and sufficient as defined in the collection-specific policies?
- Were the specimens collected in an ethical and legal manner?

In addition, the following aspects must be considered before deciding to accept large entities:

- To what extent will these collections be stored in Luomus?
- How will the specimens be preserved before incorporation to the collection?
- How much time and resources will be needed to curate the new collection?
- What are the long-term overall costs of the collection's maintenance, curation, storage and metadata management?
- What is the logistics required to receive the collection, what are the costs, and how will it be funded?

An individual specimen is not considered a part of a Luomus collection until it has been appropriately incorporated into one. When the specimen is incorporated into a collection, its data are entered into a collection management system.

As a rule, Luomus will not accept specimens and collections which are released conditionally. This is to ensure that the collections can be used freely for research, teaching and environmental education. However, agreements pertaining to the management and release of the specimens and material exchange of the Botanic Garden collections will be accepted according to internationally established conventions. If the submitted material is exceptionally valuable, Luomus may agree with the submitter to respect a waiting period of a maximum of two years before incorporation into the collection and making the material openly available. Such an agreement must be approved by the director of Luomus or the head of the unit in charge of the collection.

## 11. Collections maintenance

Collections maintenance must adhere to the highest possible scientific standard and ensure the preservation of the specimens so that they can be used by the academic community for centuries. This requires specialised methods for storage, pest control, specimen handling as well as the security of the collection's facilities. All collections facilities must have a safety plan and a designated head of security.

Constant scientific evaluation of the collections by the staff as well as supporting work of visiting researchers by providing work spaces and facilities available are an important part of collections maintenance.

The heads of the collection units have the primary responsibility for the preservation of the collections, as specified in the Luomus rules of procedure. The responsibility for the appropriate operations of specific collections is typically delegated to the leader of the team in charge of the collection (usually a curator or senior curator). The responsibilities for DNA and tissue samples are separately defined in the Genomic Resources Collection Policy (Ståhls-Mäkelä et al. 2020).

## 12. Use of the collections

The collections are primarily used for scientific research and university teaching, and secondarily for other types of education and environmental education. Collections are used for research in Luomus facilities, and collection material may be loaned out free of charge according to international museum practices.

Access to the collections requires authorisation (access control). As a rule, the authorisation to access a collection is provided by the head of the collection team, unless the unit has agreed otherwise. Researchers may either be granted permission to work independently in the collection facilities or to examine the specimens under the supervision of the collection staff. Luomus may charge a bench fee for the use of its facilities.

Specimens from the collections may be loaned to other museums and research institutes according to practices outlined in the collection-specific policies. A written print or digital agreement must always be drawn up of the loan and its conditions between the relevant organisations (the loanee that signs the agreement must be an authorised permanent employee of the organisation requesting the loan, not a student or similar). As a rule, the decision on the loan will be made by the team leader or another person with scientific responsibility for the relevant subcollection, who will evaluate the competence of the loanee and relevance of the loan as well as the risks involved. Loans to and from private individuals are decided on a case-by-case basis and require approval from the collection team leader.

Data on all incoming and outgoing loans is permanently stored in a collection management system. Loaned specimens must be handled as carefully as collection specimens in

general. The duration of the loan must be specified according to the recommendations in the collection-specific policies.

Before lending out Luomus collection specimens, the person responsible for the loan must determine that the loanee represents a scientific institution or is otherwise undeniably qualified to handle the specimens and to use them for scientific purposes. Restrictions may be set particularly for the lending of type specimens or other exceptionally valuable specimens, and digitised material may be offered in their stead, or Luomus may offer to digitise the material for this purpose. Exceptionally valuable material must always be digitised before releasing it on loan in any case.

Lending specimens for destructive analysis always requires a separate agreement and the approval of the head of the collection unit at the proposal of the collection team leader. Destructive analyses of type specimens are not allowed except on extremely exceptional grounds. Procedures for such analyses which destroy or damage the specimen, if permitted due to exceptional circumstances, are outlined in the collection-specific policies. As a general rule, damage to the specimens must be minimised. The tissue and DNA sample collections are intended specifically for consumptive research use and are consequently an exception to this rule, as are live plants in the collections. However, any material from such collections which is released for research is formally processed as a loan, meaning that the right to ownership and use of the material remains with Luomus.

Using the collections for exhibitions is governed by the same principles as general collection maintenance. Exhibitions must not make damage to the scientific value of the specimens or present the work or content of the Luomus collections in a negative light. Specimens may also be rented or loaned to organisations other than scientific collections units, if their use is an exhibition that complies with the Luomus environmental education policy.

### **13. Deaccessioning specimens**

The long-term goal of the Luomus General Collections Policy is to attain such high quality in the collections that the only reason for removing, or deaccessioning, a specimen from the collection is that it has become worn or approved for destruction in the course of research. Exchanging, donating or selling a specimen to another collection unit may be considered as options for deaccessioning.

The purpose of deaccessioning is to remove poor-quality material from the collections and thus streamline collections maintenance and the use of space without compromising the scientific value of the collection. Before deaccessioning, it should be considered whether the specimen could be substituted by imaging it and storing its metadata. Deaccessioning may also seek to reduce duplicates, in which case the deaccessioned specimens can be used for exchange.

Deaccessioning is always based on the guidelines in the General Collections Policy and approved by the director of the collection unit, and decisions on deaccessioning individual

specimens are made by the person in charge of the collection (usually the team leader). Any restrictions which may apply to the specimens must be considered in deaccessioning (e.g. the management agreements governing material in the Botanic Garden). The collection-specific policies feature detailed instructions for destroying specimens.

## Acknowledgements

We would like to express our very great appreciation to Dr Laurence Livermore for his invaluable help in the publication process.

## References

- CITES (1973) Convention on International Trade in Endangered Species of Wild Fauna and Flora. CITES URL: <https://cites.org/sites/default/files/eng/disc/CITES-Convention-EN.pdf>
- Nagoya Protocol (2010) Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity. Secretariat of the Convention on Biological Diversity URL: <https://www.cbd.int/abs/doc/protocol/nagoya-protocol-en.pdf>
- Nature Conservation Act (1996) <https://finlex.fi/fi/laki/kaannokset/1996/en19961096.pdf>
- Ståhls-Mäkelä G, Väinölä R, Alexio A, Kuusijärvi A, Myllys L, Väre H, Sihvonen P, Luttinen A, Kröger B, Oinonen M, Hyvärinen M,, Schulman L, Juslen A (2020) The Genomic Resources Collection Policy of the Finnish Museum of Natural History. RIO (submitted).
- Universities Act (2009) [https://finlex.fi/fi/laki/kaannokset/2009/en20090558\\_20160644.pdf](https://finlex.fi/fi/laki/kaannokset/2009/en20090558_20160644.pdf)