

Kotka Collection Management System

About Kotka

Kotka is a collection management system for Finnish natural history collections. It aims to

- Make collection work more efficient and streamlined
- Make collections and specimen data more accessible, and therefore increase their scientific and other use
- Increase the quality of collections and specimen data

Kotka includes browser-based tools to

- Enter, edit and view data about
 - collections - metadata about biological collections
 - specimens - diverse data about museum specimens
 - tags - used to tag specimens for different purposes
 - tissue samples - a very simple tool
 - living collection accessions and events - in construction (12/2015)
 - organizations - contact details for loan management
 - transactions - loans, donations and exchanges of museum specimens
- Import specimen data from Excel
- Validate data
- Search specimens, create statistics and reports
- Export data to Excel
- Print different kind of labels
- Help with loan management
- Share data to [FinBIF's](#) data warehouse (and further to GBIF etc.)

Principles

- Kotka stores primary data. The data recorded into Kotka is not updated anywhere else.
- All users of Kotka see all the data, but can edit only their own department's data.
- All data recorded to Kotka is stored permanently. Old versions of data can therefore be reverted to.
- The data structure of Kotka is flexible and stresses rapid development and usefulness in different kind of situations.
 - The format is based on ABCD standard, but uses many proprietary fields. Mapping the fields to Darwin Core is relatively simple.
 - Format is extended as needed. Only few fields are mandatory.
 - Format is hierarchical, allowing multiple organisms, identifications and type specimen information per one specimen (for example, a herbarium sheet with multiple plants, each with multiple identifications)
 - Most data is denormalized (for example, any kind of species name can be used)
 - Allows recording both specimens and observations
- Taxonomy management, user authentication and some validation services are outsourced to other FinBIF's services
- According to FinBIF's data policy, the data recorded to Kotka are available as open data, with few exceptions (e.g. sensitive species)
- All data identified by HTTP URI's (see examples below)
- Accessible to all Finnish natural history museums
- Based mostly on RESTful API's

Development principles

- Development using agile methods. New features are published every two weeks.
- Test-driven development and continuous integration to staging server ([kटकatest.luomus.fi](#))
- Modern browser based user interface ([kotka.luomus.fi](#))
- Flexible non-relational database with mostly denormalized data
- Data querying, sharing, publishing through search server (Elastic) containing secondary copy of the data in a format optimized for querying
- Scalable to national level
- Utilization of pre-existing tools; FinBIF's information systems, ontologies, Excel tools, open source front- & back-end libraries etc.
- Simplicity and flexibility
- Code published as open source with MIT license

Technology

- Backend with PHP and Zend Framework
- Frontend with Bootstrap, jQuery and multiple other open source libraries
- Primary data currently (12/2015) in an ontology database based on Oracle relational database. Migration to more efficient Oracle JSON document database is being planned.
- Search functionality based on Elastic
- Data published through FinBIF's data warehouse (Vertica)
- Code on Bitbucket: <https://bitbucket.org/luomus/kotka>

Examples of data

- Collections of Luomus: <http://id.luomus.fi/HR.128>
- Insect specimen: <http://id.luomus.fi/GL.3951>
- Lichen specimen: <http://id.luomus.fi/HA.H9506963>
- Type specimens at Luomus: <https://kotka.luomus.fi/types/by-collection?uri=http://id.luomus.fi/HR.128>

Kotka is being used at the following Finnish museums (1/2018):

- Finnish Museum of Natural History Luomus, University of Helsinki
- Zoological and Botanical Museum, University of Oulu
- Zoological and Botanical Museum, University of Turku
- Kuopio Natural History Museum
- Natural History Section, Jyväskylä University Museum, University of Jyväskylä
- Kieppi, Kokkola Museum of Natural History
- Natural Science Collections, Ostrobothnia museum
- Regional Museum of Lapland
- Satakunta Museum, City of Pori

Manual

- [Manual of Kotka](#)

Contact

Kotka is being built at Finnish Museum of Natural History [Luomus](#)

Product Owner:

Mikko Heikkinen
kotka@luomus.fi