# Arctos: A Collaborative Collection Management Solution

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Arctos ([arctosdb.org](arctosdb.org)) is a **cost-effective, online collaborative collection management solution** employed by more than 180 collections to **manage and provide access** to >3.5 million **biodiversity and cultural records** and >775,000 media objects. It also forms the backbone of Harvard's MCZBase. Arctos leads in providing museums with **community-driven solutions** to **managing and improving collections data**, and developing workflows for data cleaning and publication. Arctos integrates **biological, earth science**, **cultural** and **emerging data types** such as **environmental DNA** and **microbiomes** to provide **a nexus for the full suite of object data, data derivatives and products, and their management**. Arctos is used by museum professionals, researchers, educators, students, government agencies, NGOs, and the public.

## The Arctos Ecosystem

Arctos strives for superior data quality through its highly-normalized model, controlled vocabularies, and authorities. Standardized data shared among institutions reduces redundancies, allows for precise data queries, and leads to innovative ways of relating objects within or between collections (e.g., predator-prey, host-parasite, same individual as), promoting data exploration and interdisciplinary research.
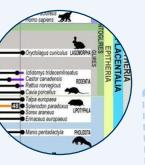
## PUBLICATIONS

Cited Specimens
Author Agents
Auto DOI/PMID

## LOCALITIES & EVENTS

Shared spatio-temporal stack · Multiple event handling · Map services & semi-automated georeferencing · Geochronology

Google APIs      BerkeleyMapper      GeoLocate

## The Arctos Community

Arctos is a dedicated community of museum professionals who collaborate to improve data richness, expand functionality, and develop best practices. Built and continuously refined by multiple perspectives from diverse disciplines, the Arctos Ecosystem is a synthesis of the Arctos community. Members can actively participate in system developments through the Arctos Working Group.

## OBJECT TRACKING

Location tracking · Document container type & environment

## PROJECTS

Organize & track specimen usage

Project Agents (PIs, Students, Sponsors)
Relevant Permits, Funding Sources
Resulting Publications · Cited Specimens
Specimens · Accessions · Loans
Associated Media

## AGENTS

Create bio profiles · Link agents to object & media records, publications, and one another

Images, Documents, SEM/EEM, CT Scans, Surface Scans · Ledger Entries, Field Notes & Event Photos ·

## TRANSACTIONS

ACCESSIONS · BORROWS · LOANS · PERMITS

## TAXONOMY

Shared local sources & remote authorities (WoRMs, GlobalNames) · Cultural terminology & non-Linnaean vocabularies

## MEDIA

Tag and relate to objects, agents, transactions, taxa, publications, localities & events

· External URLs ·      · Audio & Video Recordings ·

## RELATIONSHIPS

Reciprocally link related objects within and outside of Arctos

Predator-Prey      Host-Parasite      Cross-institutional holdings and External URLs

Arctos - GenBank - IsoBank autolinks · GenBank sequence discovery tool & data packaging

GenBank & IsoBank Data

## Arctos Features

- ➤ Both an **online data portal and comprehensive CMS**
- ➤ **100% cloud-based** with **secure storage** via TACC
- ➤ **Global editing** and update capabilities
- ➤ Data **quality control** and **error detection**
- ➤ **Automated data publishing** (IPT)
- ➤ **Autolinks to GBIF & iDigBio** occurrence records
- ➤ Collection **metrics** and **data improvement tools**
- ➤ **Report generation** - specimen tags, labels, forms
- ➤ *Extended Specimen* data handling
- ➤ Community **mentoring and support**
- ➤ Webinars, tutorials, how-to documentation

## Arctos Collaborations

Arctos leverages external web services to extend capabilities and generate reciprocal links. Partners include: Barcode of Life · BerkeleyMapper · Crossref · GBIF · GenBank · GeoLocate · Global Genome Biodiversity Network · Global Names Architecture · Google Maps · IsoBank · MorphoSource · NCBI · OpenCitations · ORCID · PubMed · VertNet · World Register of Marine Species

e.g., BHL, MorphoSource, Macaulay Library

**Arctos is powered by the Texas Advanced Computing Center**

TACC