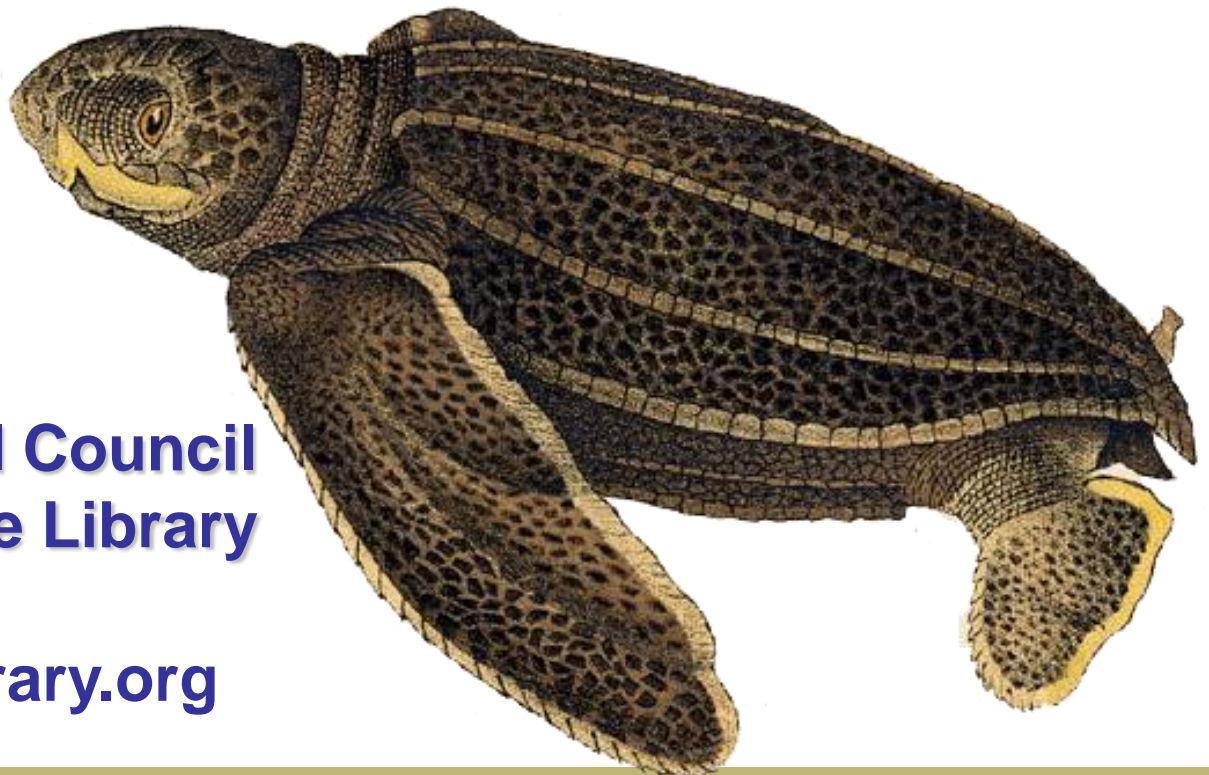


# A Global Cooperative Digital Library for Taxonomic Literature

**Graham Higley**  
**Chair of Institutional Council**  
**Biodiversity Heritage Library**

**[www.biodiversitylibrary.org](http://www.biodiversitylibrary.org)**

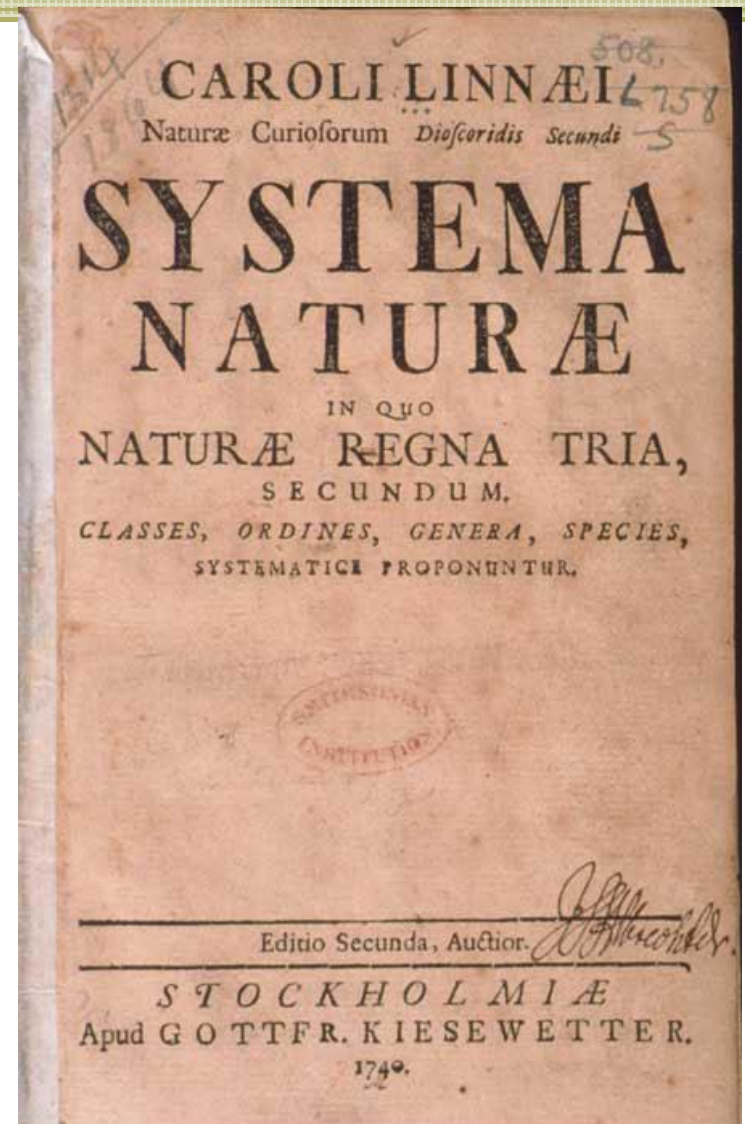


- BHL will digitise all the biodiversity literature and make freely available on the Web
- 150,000,000 pages plus .PDFs from partners
  - Constraints: copyright



# Taxonomic Literature

- Over 250 years of systematic description of life
- *Systema Naturae* (10<sup>th</sup> ed. 1758) by Carl von Linné



- Taxonomic descriptions must be published for the name to be valid
- Publications must be available to the public through trusted sources
- Libraries have been the traditional place

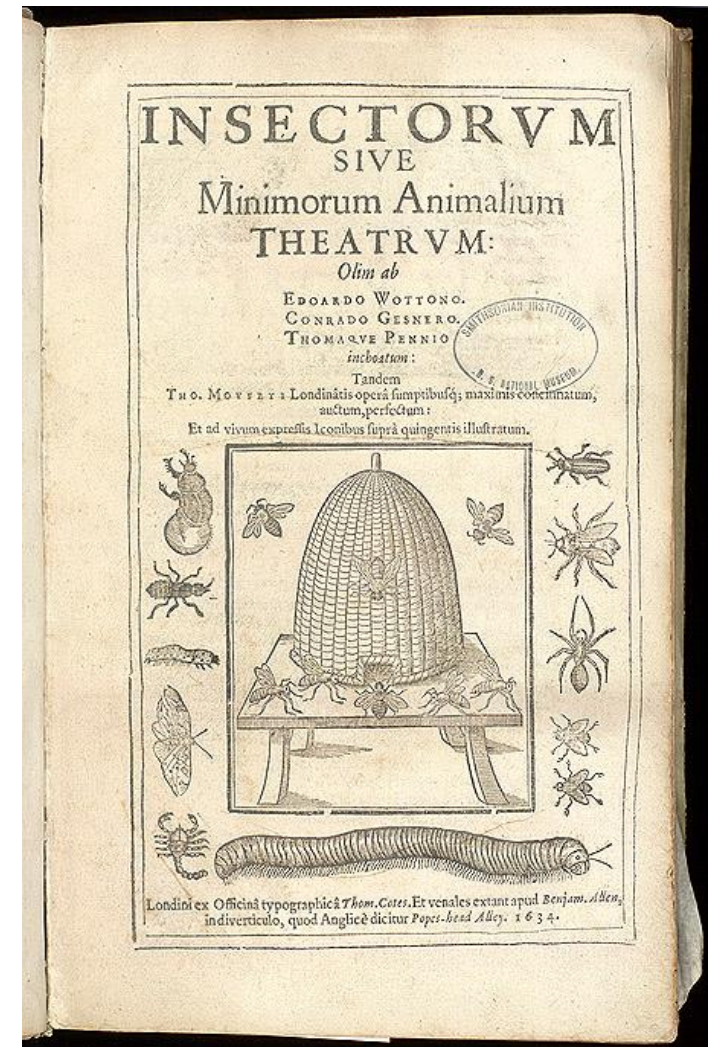


The cited half-life of publications in taxonomy is longer than in any other scientific discipline

\* \* \*

The decay rate is longer than in any scientific discipline

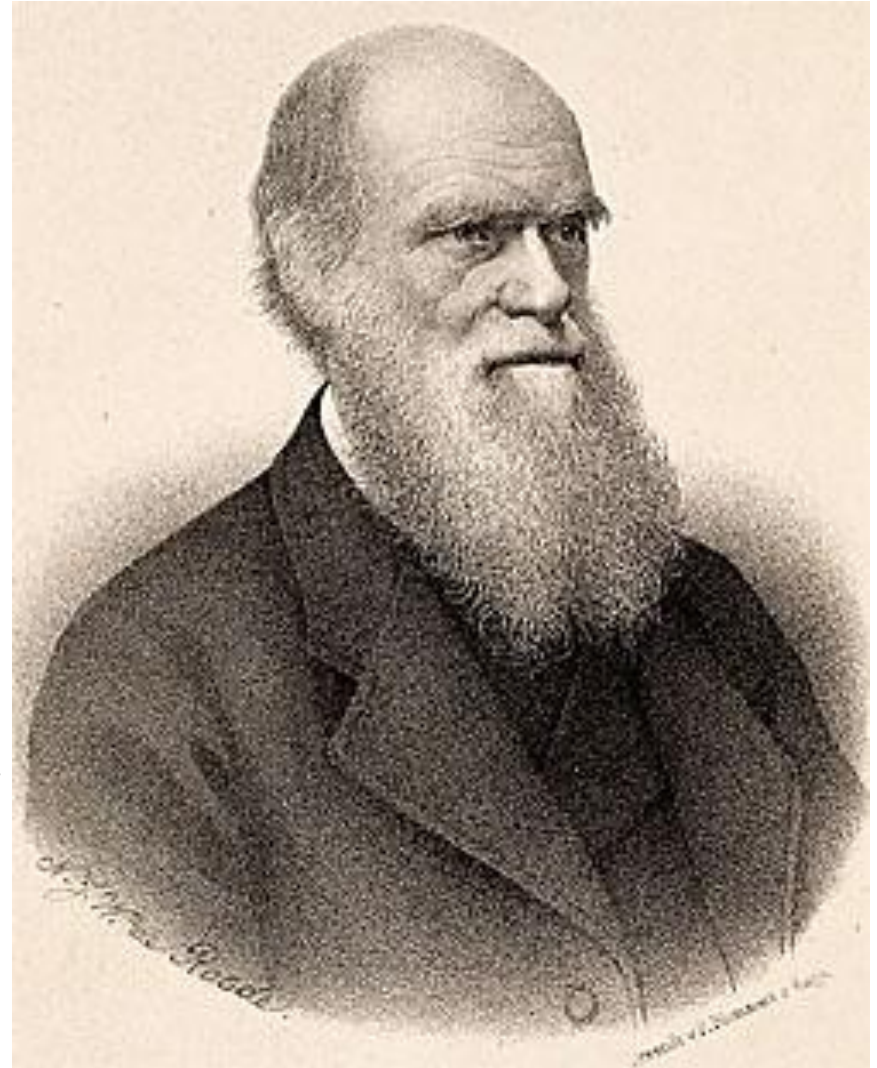
~ *Macro-economic case for open access*  
Tom Moritz



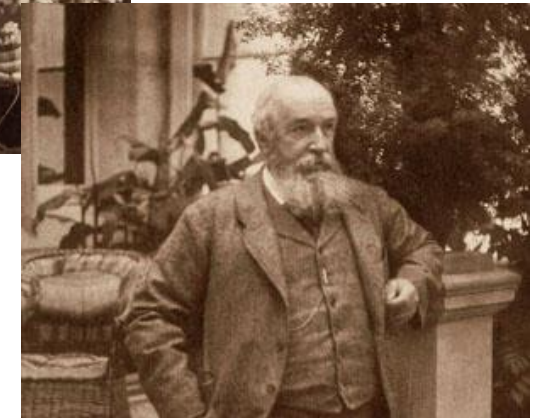
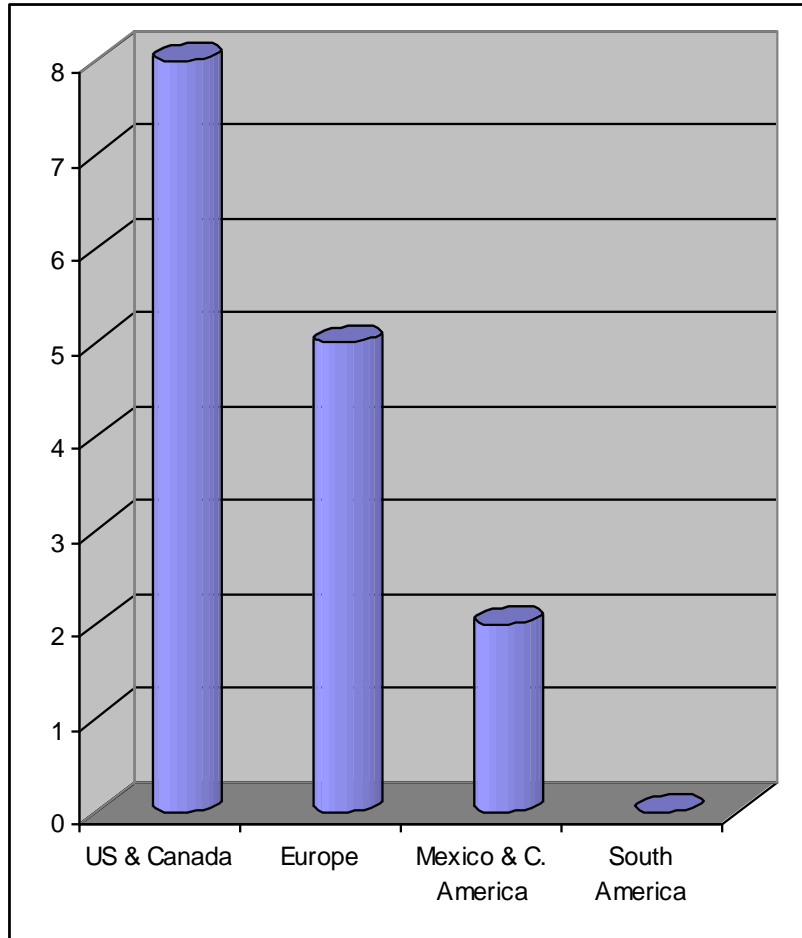
The cultivation of natural science cannot be efficiently carried on without reference to an extensive library

Charles Darwin, et al. (1847)

Darwin, C. R. et al. 1847. *Copy of Memorial to the First Lord of the Treasury [Lord John Russell], respecting the Management of the British Museum. Parliamentary Papers, Accounts and Papers 1847*, paper number (268), volume XXXIV.253 (13 April): 1-3. [Complete Works of Charles Darwin Online]



# Biologia Centrali-Americana



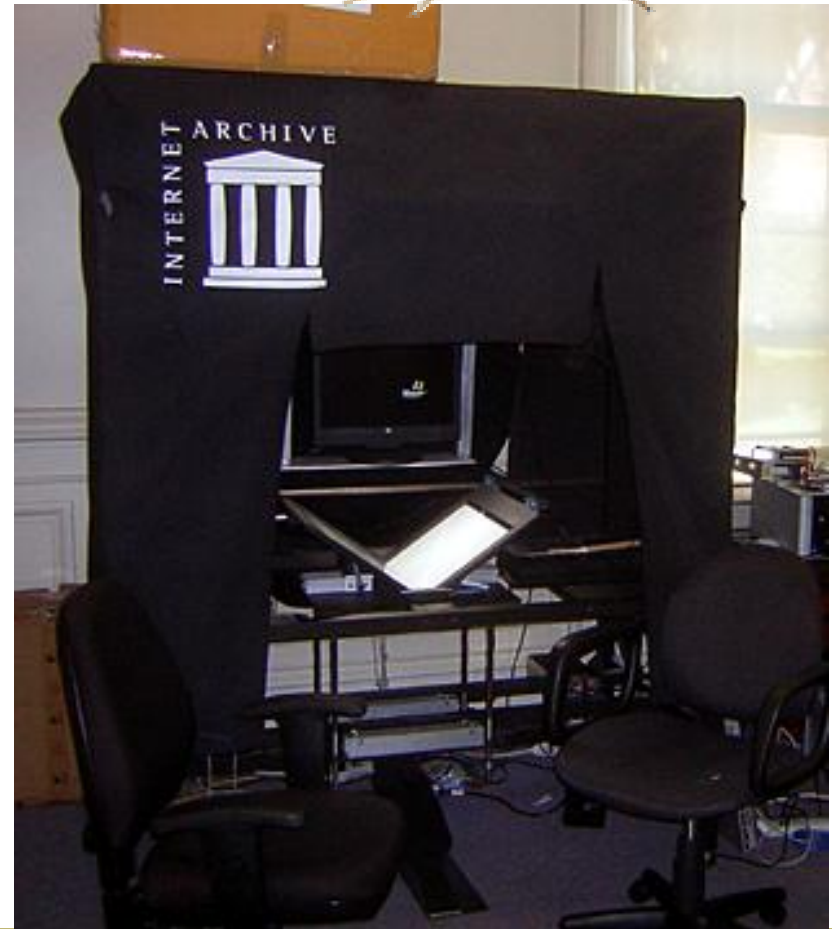
## *Biologia Centrali-Americana*

Edited by Frederick Ducane Godman and Osbert Salvin  
London : Pub. for the editors by R. H. Porter, 1879-1915

Chart showing distribution in public collections of the complete 63 volume sets held worldwide.

2 complete copies in Central America held at the Smithsonian Tropical Research Institute Library

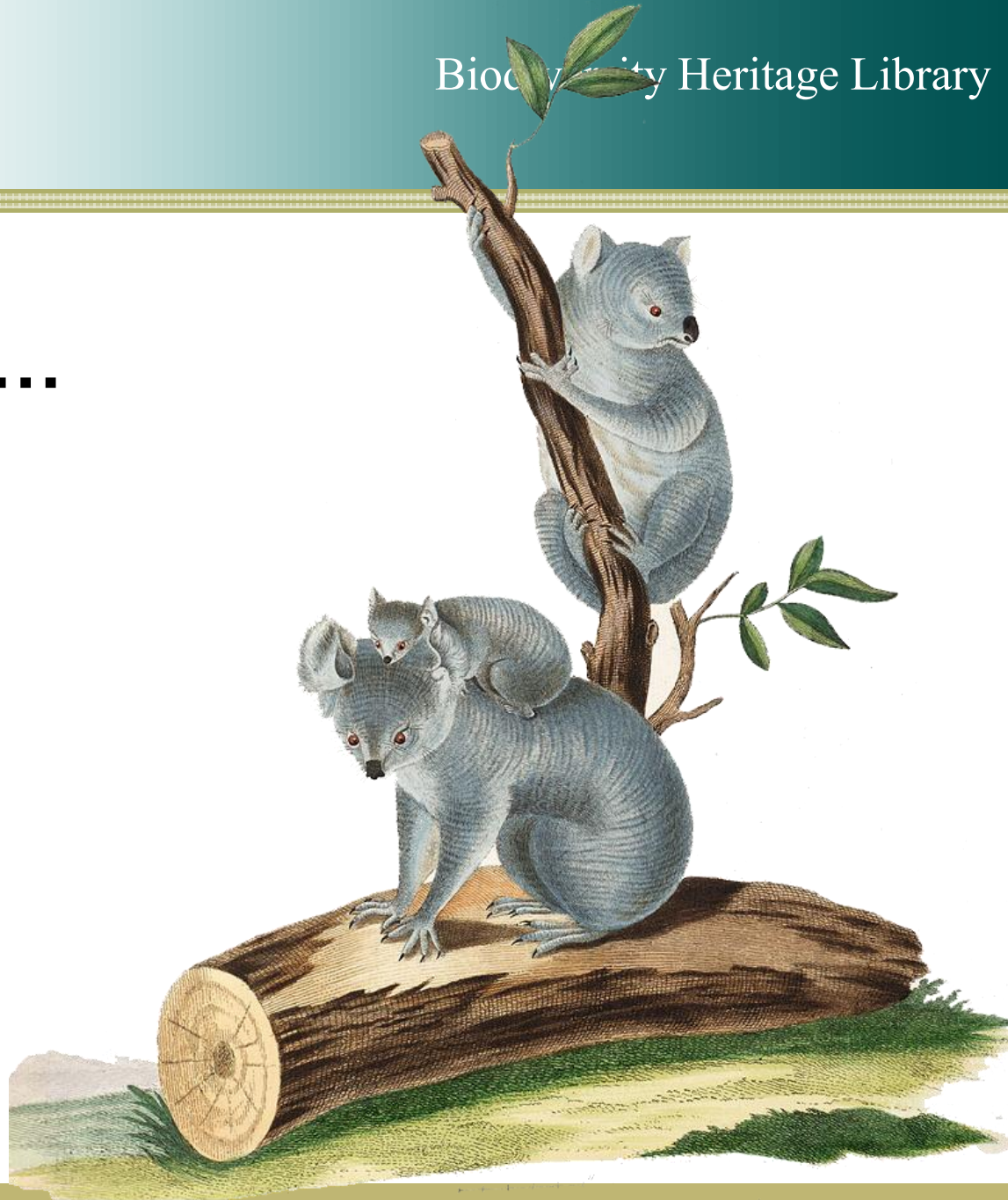
- Single Scribe Machine
  - Custom built by the Internet Archive
  - Human operated
  - 3,500 page per shift per day
  - Optical character recognition



## Scanned so far.....

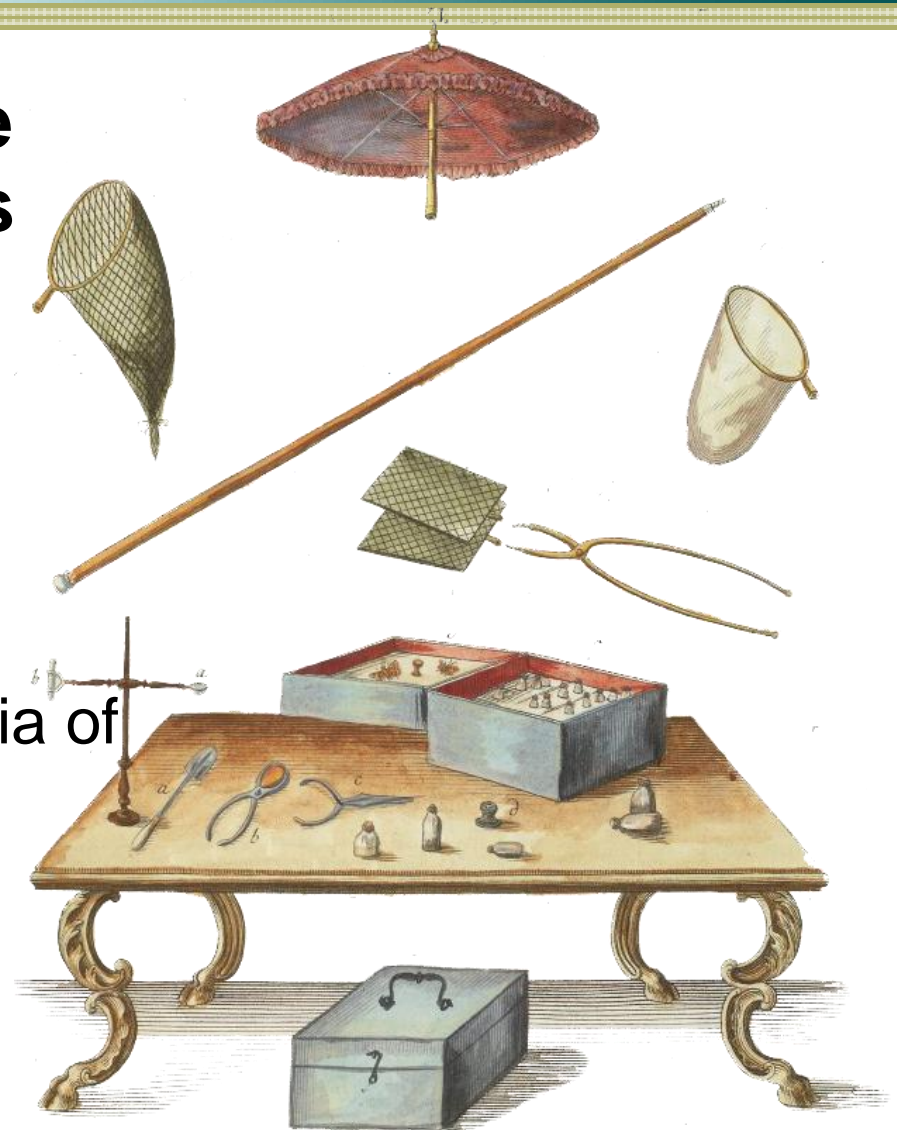
- **29,653,844** pages
- **79,187** volumes
- **41,491** titles

04 May 2010



# Taxonomic Intelligence and Major Partnerships

- 10.7 million name strings in NameBank
- 35 million links to Encyclopedia of Life



# Permissions

- Seek permissions from copyright holders
- Opt in Copyright Model: The BHL will actively work with professional societies and associations to integrate their publications into the BHL in a way that serves the societies' missions and goals
- BHL will digitize learned society backfiles and mount them through the BHL Portal at no cost.



## **BHL partners and collaborators**

### **BHL**

- Field Museum, Natural History Museum, Smithsonian Institution, American Museum of Natural History, Missouri Botanical Garden, New York Botanical Garden, Royal Botanic Gardens Kew, Harvard University Botany Libraries, & Ernst Mayr Library of the MCZ, Marine Biological Laboratory, National Academy of Science, California Academy of Science, Internet Archive

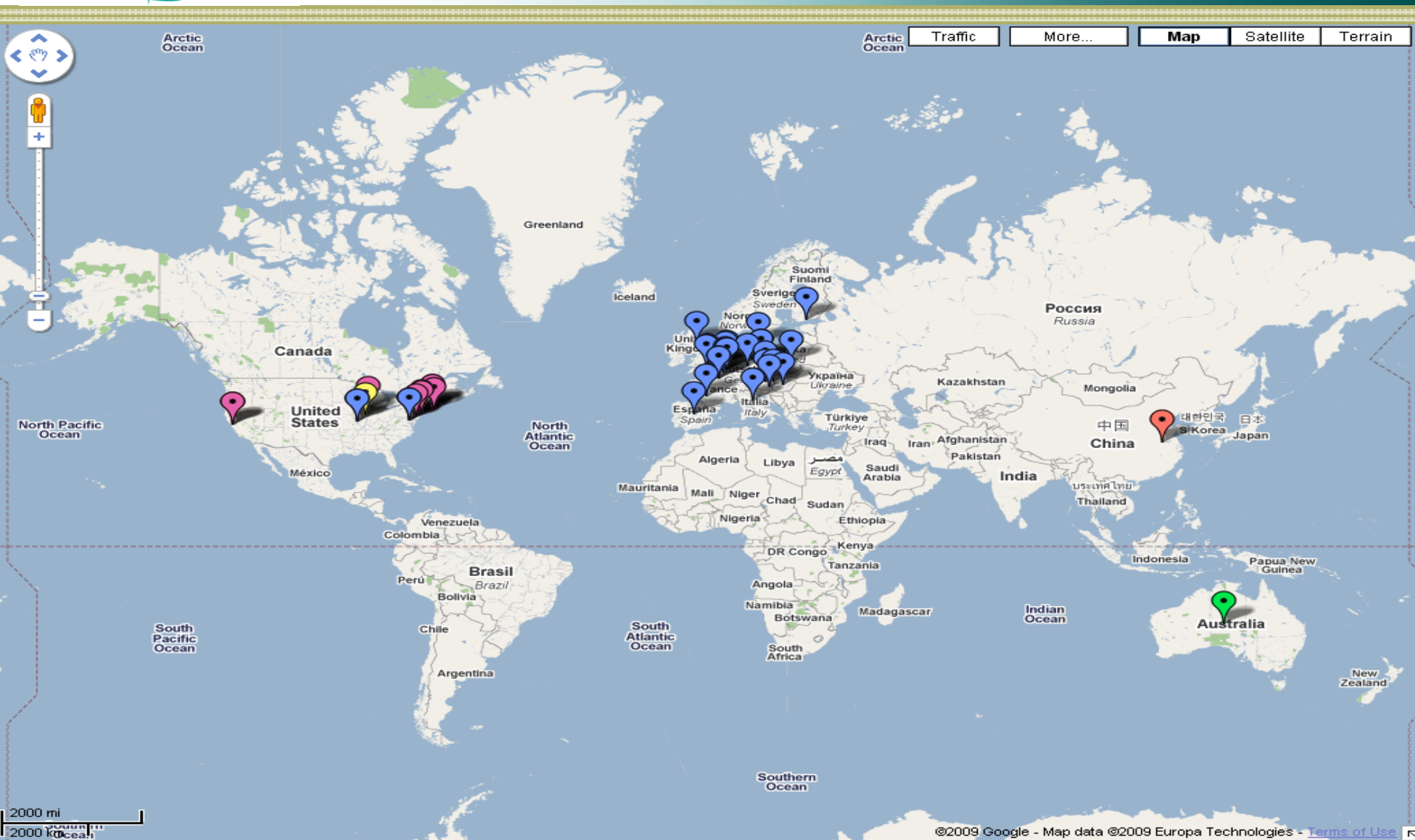
### **BHL-Europe**

- 28 natural history institutions across the EU

### **BHL-China**

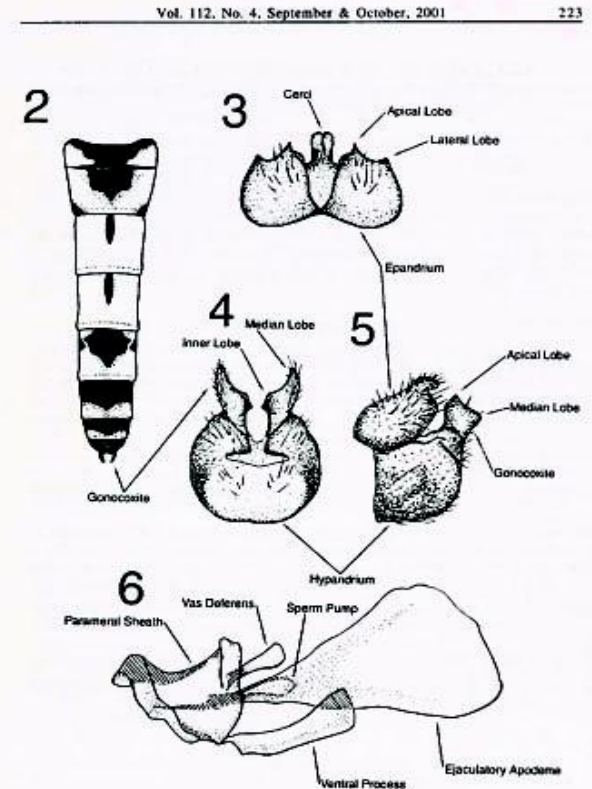
### **Atlas of Living Australia**

MoUs with other potential partners e.g. South Africa, Brazil, Egypt....



## BHL Portal [www.biodiversitylibrary.org](http://www.biodiversitylibrary.org)

- Library catalogue-like interface to BHL literature
- Enhanced structural analysis to provide volume/issue/article page access to the literature
- Development based on feedback from user community
- Provide access to two key audiences:
  - Humans
  - Machines



Figures 2-6. *Mitrodetus irwini*. 2. Abdomen, dorsal view, 3-5. Male genitalia, 3. dorsal

**Survey**

Help us improve the Biodiversity Heritage Library by [taking a brief survey](#).

**Now Online** [Details](#)

40,029 titles  
76,751 volumes  
28,785,279 pages

[Recent additions](#)

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[Book of the Week: Calling All Chocolate Lovers](#)

[Help Us Help You: Announcing the BHL Survey 2010!](#)

[Book of the Week: A Look at the Endangered Species List](#)

[2010 International Year of Biodiversity](#)

[In case you're wondering...](#)

[Book of the Week: The Sealers and Antarctica](#)

[Book of the Week: Botanical Illustrations](#)

[James D. Dana, meet Charles Darwin](#)

### 14 Titles tagged with "Beagle Expedition"

- [Journal of researches during the voyage of H.M.S. Beagle.](#)  
 Publication Info: London:Collins[1860]  
 Contributed By: Gerstein - University of Toronto (archive.org)  
 Tags: (1831-1836) Beagle Expedition Description and travel Natural history South America Voyages around the world
- [Journal of researches into the natural history and geology of the countries visited during the voyage of H.M.S. Beagle round the world under the command of Capt. Fitz Roy / by Charles Darwin.](#)  
 Publication Info: New York :Appleton,1873.  
 Contributed By: MBLWHOI Library  
 Tags: (1831-1836) Beagle Expedition Description and travel Geology Natural history South America Voyages around the world
- [Journal of researches into the natural history and geology of the countries visited during the voyage of H.M.S. Beagle round the world, under the command of Capt. Fitz Roy / by Charles Darwin.](#)  
 Publication Info: New York :Appleton,1878.  
 Contributed By: MBLWHOI Library  
 Tags: (1831-1836) Beagle Expedition Description and travel Geology Natural history South America Voyages around the world
- [Journal of researches into the natural history and geology of the countries visited during the voyage of H.M.S. Beagle round the world, under the command of Capt. Fitz Roy, R.N.](#)  
 Publication Info: New York :D. Appleton and company,1898.  
 Contributed By: University of California Libraries (archive.org)  
 Tags: (1831-1836) Beagle Expedition Description and travel Natural history South America
- [Journal of researches into the natural history and geology of the countries visited during the voyage of H. M. S. Beagle round the world, under the command of Capt. Fitz Roy / by Charles Darwin.](#)  
 Publication Info: London ;G. Routledge & Sons,1891.  
 Contributed By: University of California Libraries (archive.org)  
 Tags: (1831-1836) Beagle Expedition Description and travel Natural history South America
- [Journal of researches into the natural history and geology of the countries visited during the voyage of H.M.S. "Beagle" round the world, under the command of Captain Fitz Roy / by Charles Darwin.](#)  
 Publication Info: London :J. Murray,1889.  
 Contributed By: Gerstein - University of Toronto (archive.org)

## Storage Requirements

### Today

- About 30 million pages
- Approx. 50Tb

### In Public Domain

- About 130 million pages
- Approx. 200Tb

### Opt-in Publishers

- About 20 million pages
- Approx. 50Tb

## Ensuring Long-term Access

### LOCKSS

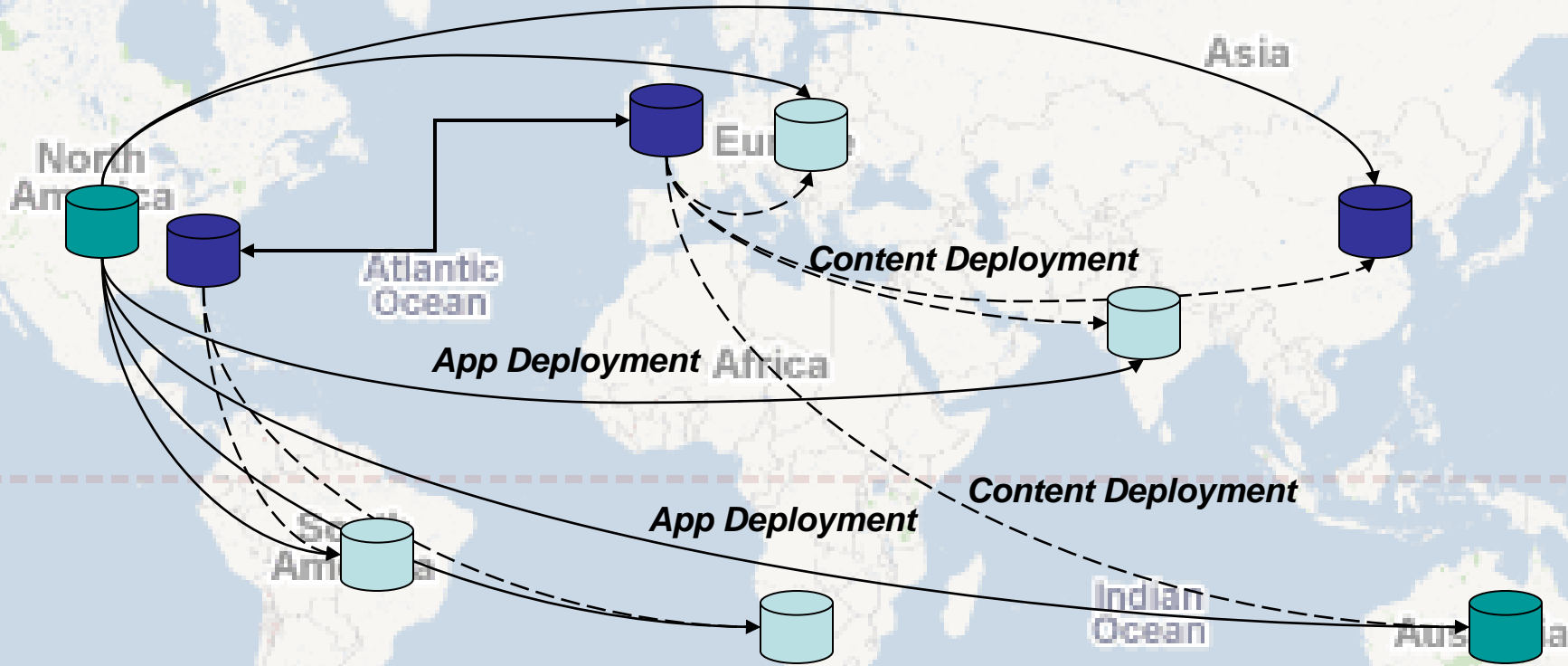
- BHL will have multiple copies of the complete set of data (scans, OCR, names) hosted and maintained in a number of places globally
- These partners will guarantee to keep the disks spinning even if the project stops
- Current locations include:
  - **NHM/Imperial College (BHL-Europe)**
  - **Beijing (BHL-China)**
  - **Marine Biological Laboratory (Woods Hole, USA)**
  - **Internet Archive (San Francisco, USA)**
  - **Atlas of Living Australia (Canberra, Australia)**

## BHL-Europe

- Hosted in the Imperial College data centres (as is the NHM's own storage)
- Funded by the eContent*plus* programme as part of the BHL-Europe project
- Hardware consists of:
  - 100Tb of spinning disks
  - Tier 3 Tape Library with up to 500Tb
- This is part of NHM's core business, so we will keep the disks spinning

# Institutional Roles and Repositories

-  Master Archival Repositories
-  BHL Primary
-  BHL Access



# Looking Forward

- Co-evolving bioinformatics resources produce a rich information ecology:
  - **BHL**
  - **EOL**
  - Consortium for the Barcoding of Life (**CBOL**) with gene sequences deposited in GenBank.
  - **GBIF's** Electronic Catalogue of Taxonomic Names
  - Herbaria and museum **specimen databases**

