

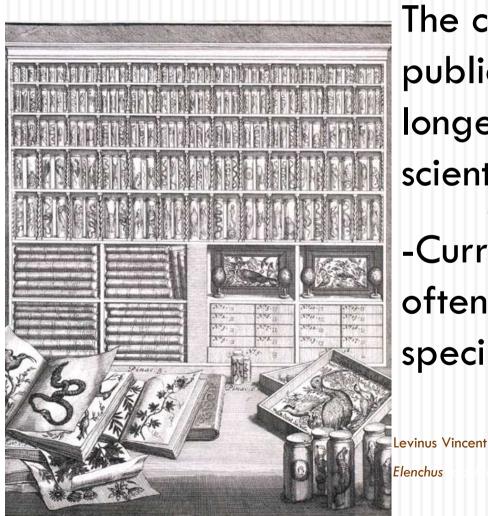
GLOBAL VISION

Thomas Garnett

BHL Brazil Workshop February, 2010

BHL- Why?





The cited half-life of publications in taxonomy is longer than in any other scientific discipline -Macro-economic case for open access, Tom Moritz

-Current taxonomic literature often relies on texts and specimens > 100 years old.

BHL – Why?

The Taxonomic Impediment

The taxonomic impediment is a term that describes the gaps of knowledge in our taxonomic system"

- Darwin Declaration, 1998

Georges Louis Leclerc, comte de Buffon Histoire naturelle : générale et particulière (Oiseaux), 1799-1808



diversity

BHL – Why?



The Brown Bear. (Urass arctas.)—The Orisly Bear. (U. Marribilia) —The Byrian Bear. (U. nywiens.)—The Inshelline Bear. U. inshellinsz.)—The Himalayan Hear. (U. instants.)—The Malayan Bear. (U. malayanus.)—The Bloth Bear. (Meturan fabiatus.)

Isolatus.) The Society's sories of Bears is very complete, and usually contains examples of most of the known species. The BROWN BEAR is an animal of wide range, extending all over Europe and Northern and Central Asia. In Western North America is in replaced by the Grantz Bean, of the fercoity of which many astomating stories are told by the American hunters. The STRIAN BEAR takes the piace of the common Brown Bear in Western Asia, having been first described as a different species by Hemprich and Ehrenberg. It is, doubties, the animal referred to in the Second Book of Kings (chap. It v. 24), being the only Bear known to eccur in the mountain ranges of Syria-The Shorts BEAR is found in the jungles of India, and subsists mainly on fruit and honey, though it is also said to derour black anta, termites, and the larves of beetles.



The Polar Bear. (Urms maritimus.)—The Polan Bean, or it's Bran, attains probably to the largest size of all this group, for Captain Lyon records the capture of one which measured eight feet seven and a half inches in extreme length, and weighed 1600 pounds. To capture as a namel of these dimensions, and incorrectly have been been been been is a feat which for more would secomplish but the intropid purmues of the Whale, by whom Polar Bears are generally brought home as a suppleumental venture on their return from the Northern Seas to Poterlead. Our present specimens of the Polar Bear are a very fine shult male, probably the largest example over kept in captivity, and a younger, not hally grown, female.

Thylacine from Philip Lutley Sclater, Guide to the Gardens of the Zoological Society of London, 1891

The essential requirements for accessing and utilizing this global information are:

- that there is access to information held in national/regional/global collections
- that electronic data is efficiently captured and provided in useable form
- that existing information held in literature and by current experts is made available electronically
- that stability of scientific names of organisms, used to access this information, is promoted

⁻ Darwin Declaration, 1998

BHL –Why?



Convention on Biological Diversity: Article 17 ... exchange of information shall include exchange of results of technical, scientific and socioeconomic research ... It shall also, where feasible, include repatriation of information.



BHL -http://www.bicdiversitylibrary.org

Henry Bates Insecta. Coleoptera, 1881-1884



Biodiversity Heritage Library

Embedding Content in the Knowledge Ecology

Species names, taxon concepts, and the classification of living organisms are the basis for linking multiple disciplines such as evolutionary biology, taxonomy, genomics, agriculture, conservation, etc.

Taxonomic intelligence algorithms are being developed to mine the BHL content to link species names with other biological resources.

BHL Members





BHL Members: US/UK



BHL -http://www.biodiversitylibrary.or

- Academy of Natural Science (Philadelphia, PA)
- American Museum of Natural History (New York, NY)
- California Academy of Science (San Francisco, CA)
- □ The Field Museum (Chicago, IL)
- Harvard University Botany Libraries (Cambridge, MA)
- Harvard University, Ernst Mayr Library of the Museum of Comparative Zoology (Cambridge, MA)
- Marine Biological Laboratory / Woods Hole Oceanographic Institution (Woods Hole, MA)
- Missouri Botanical Garden (St. Louis, MO)
- Natural History Museum (London, UK)
- □ The New York Botanical Garden (New York, NY)
- Royal Botanic Gardens, Kew (Richmond, UK)
- Smithsonian Institution Libraries (Washington, DC)



BHL Members: BHL-Europe

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- Museum f
 ür Naturkunde Leibniz-Institut f
 ür Evolutions- und Biodiversit
 ätsforschung an der Humboldt-Universit
 ät zu Berlin
- Natural History Museum, UK
- Narodni muzeum NMP CZ
- Angewandte Informationstechnik Forschungsgesellschaft mbH
- □ Freie Universität Berlin FUBBGBM
- Georg-August-Universität Göttingen Stiftung Öffentlichen Rechts
- Naturhistorisches Museum Wien
- Hungarian Natural History Museum
- Museum and Institute of Zoology, Polish Academy of Sciences
- University of Copenhagen

- Stichting Nationaal Natuurhistorisch Museum, Naturalis
- National Botanic Garden of Belgium
- Royal Museum for Central Africa,
- Royal Belgian Institute of Natural Sciences
- □ Bibliothèque nationale de France
- □ Museum national d'histoire naturelle
- Consejo Superior de Investigaciones Cientificas
- Università degli Studi di Firenze
- **Royal Botanic Garden, Edinburgh**

BHL -http://www.biodiversitylibrary.org

- □ Species 2000
- □ John Wiley & Sons limited
- Helsingin yliopisto UH-Viikki

Bio diversi Heritag Library

BHL Members: BHL-China

- Chinese Academy of Science Institute of Botany
- Chinese Academy of Science Institute of Zoology
- Chinese Academy of Science Institute of Microbiology
- Chinese Academy Science Institute of Oceanography

Bio diversity Heritage Library

BHL is a Focused Program

Though BHL has is composed of libraries it has been a domain-specific program, not just a digital library project. It arose from and is responsive to the biodiversity community composed of the disciplines of taxonomy, systematics, evolutionary biology, ecology, conservation, and wildlife management. These are the primary audience.

Biodiversity Literature



BHL -http://www.biodiversitylibrary.or

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- Identification and description of living organisms
- Zoology
- Botany
- Marine Biology
- Mycology
- Alpha-taxonomy
- Systematics

	Biome	chanics		Core
	Biochemistry	Biomagnetisr	n	
	Bioelectronics	Zoos	Radioecology	Supporting
Bioacoustics Petrology Agricultural ecology Sedimentation				
Palaentalagy Biogeomorphology Orogeny				
Geophysic	s Bioclimatology		Restoration Micr	oscopy
Geochemistry		entific drawing		Taxidermy
Stratigraphy	Natural sciences & il		Soil science	Vivariums,
Geomicrobiology	Animal biochemistry Natural History – Animal o		al botany / zoology	terrariums, aquariums
Geomorphology	Terminology, Abbrv. Specimen catalogs		Cyanobacteria Natural History –	Immunology
Toponymy	Ecophysiology		Dictionaries & Encyclope	adias Wile animal
Physical geography	Collection & preservation		Natural History –	trade Virology
Mineralogy	Continental drift	,	Biographies	Environmental
Socio-cultural	Plate tectonics		Natural History – Directories	Policy
Anthropology	Oceanography		Economic botany	Environmental
	Plant Culture	Microbial ecolog	ay	Management
Ethnology	History of discoveries,	Seismology	Geobiology	
		Bioluminescence	Hydrology	Biophysics
Plant lore		Atlases & Ga	zeteers Cyt	ology
Melioration Wildlife conservation Genetics Coral Islands, Reefs & Atolls Fluid dynamics				
Topical terms	Crops and climate	Prehistorio	: archaeology	
derived from LC	CSH Agricultu	ural meteorolog	У	

Core Literature

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Botany Plant conservation Phytogeography Plant anatomy Plant physiology Plant ecology Spermatophyta, Phanerogams Cryptogams Biological diversity Evolution Phylogenetic relationships Evolutionary genetics Scientific voyages and expeditions Pre-Linnaean works Linnaean works Biodiversity conservation Conservation biology Ecosystem management Endangered species & ecosystems Extinction Classification, Nomenclature Biogeography Zoology/Botany--Morphology Zoology/Botany--Anatomy Zoology/Botany--Embryology Zoology/Botany--Reproduction Zoology/Botany--Geographical distribution Classification, systematics and taxonomy Zoology Invertebrates Chordates Vertebrates **Animal Behavior**

BHL -<u>http://www.biodiversitylibrary.org</u>

BHL Stakeholders



- Botanists, zoologists, mycologists; marine biologists
- Biodiversity informatics
- Conservationist, forestry managers; fishery managers; agronomists
- Biodiversity Institutions and their libraries
- Open Access Publishers
- Teachers, educators
- Artists, collectors, hobbyists
- Anyone with an interest in the living world

Stats: Now Online



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70,630 volumes26.4 million pages

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BHL -http://www.biodiversitylibrary.org

Oldest book: Schöffer's <u>Herbarius</u>, 1484.



What is the plan?

<u>Digitize</u> the core literature of biodiversity. Full works, not bits & pieces.

Open Access: all content can be repurposed, reused,

reformatted.

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<u>Congruent</u>: must fit in to a dynamic knowledge ecology. Scan public domain biodiversity literature.

Negotiate rights to digitize copyrighted materials.

Ingest content digitized by others.

Provide interfaces & APIs for repository.

GUIs

Services for data mining & citation resolution



BHL Digital Preservation

- Committed to long-term storage, curation, and preservation of digital text assets for the world-wide biodiversity community
- BHL is a steward for this literature.
- To keep this content available and open for the future requires careful organizational planning.
- Preservation is both a technical and political/social process.

Classes of Texts



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Each class presents a unique set of issues to resolve: Public Domain – pre-1923 Post-1923 monographs some with copyright renewals some without copyright renewals Non-profit learned society journals with permissions Commercial journals Gray literature Archival

BHL -<u>http://www.biodiversitylibrary.org</u>

Biodiversity Heritage Library BHL & JOURNAL PUBLISHERS

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BHL Relationship with Non-Profit Guiversity Journal Publishers

- Opt in Copyright Model: The BHL works with professional societies and associations to integrate their publications into the BHL in a way that serves the societies' missions and goals
- BHL indexes the articles using Taxonomic Intelligence, thereby vastly increasing their usability.
- Publishers' content is embedded in the emerging knowledge ecology that is sweeping biology in this century.
- 73 Permission Agreements to date. More under negotiation.
- Integration with gray literature in later phases of project.

BHL Seeks Permission from Publishers

- Opt in Copyright Model: The BHL works with professional societies and associations to integrate their publications into the BHL in a way that serves the societies' missions and goals
- BHL digitizes learned society backfiles and mount them through the BHL Portal at no cost.
- BHL provides a set of files to the publishers for reuse as they see fit.
- The BHL agreement is *non-exclusive*. This means publishers can make other uses of their content.
- BHL indexes the articles using Taxonomic Intelligence, thereby vastly increasing their usability.

What Does BHL Offer to Biodiversity Publishers?

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Use of the articles will increase as evidenced by citation upsurge.

- Long-term management of the digital assets is provided by the BHL at no cost so it's "SEP," Someone Else's Problem.
- Publishers' content is embedded in the emerging knowledge ecology that is sweeping biology in this century .
- Structural markup of backfiles into conformance with NLM DTD (working on it).
- 74 Permission Agreements to date. More under negotiation.
- Integration with gray literature in later phases of project.

BHL Strategy with Science Publishers

- Make it too useful not to support.
- Embed it current and developing workflows for the identification, tracking, documenting, and researching the biota. BHL is building on many documented use cases.
- Network with many professional societies.
- Cheap Markup how?