Building the BHL-Africa

A Smithsonian Libraries Report to the JRS Foundation

***Smithsonian Libraries***

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# Introduction

In 2011, and again in 2012, the JRS Foundation awarded funds to the Biodiversity Heritage Library (BHL) to facilitate the development of a BHL program node in Africa. The BHL is a global consortium of natural history and botanical institutions that cooperate to digitize and make available the biodiversity literature in their collections for open access and responsible use. BHL has program nodes on every continent in the world except Antarctica and hopes to expand project efforts in Africa, which are currently limited to Egypt. JRS funds were awarded to the Field Museum, one of BHL’s consortium members, for distribution to the appropriate parties.

Funds from the first grant supported an initial meeting in November, 2011, which brought nine librarians and information technologists from the African continent to Chicago for a one-day workshop dedicated to outlining preliminary requirements for the BHL-Africa. In April, 2012, the Field Museum, on behalf of the Biodiversity Heritage Library, received a second grant, in the amount of $25,430, to support an organizational meeting in Cape Town, South Africa, to further define the BHL-Africa initiative. This award funded the attendance of twenty-two African colleagues and six US staff members.

 The Smithsonian Libraries was awarded $12,518.15 from this second award, which was applied towards meeting-associated travel costs for three Smithsonian Libraries staff members working on the BHL project and printing costs associated with BHL-Africa promotional materials. These staff members included BHL Executive Committee Chair, Nancy Gwinn; BHL Program Director, Martin Kalfatovic; and BHL Program Manager, Grace Costantino. The Smithsonian Libraries will also produce a publication about the meetings in the coming months.

This report will outline the Field Museum’s relationship with African initiatives, thus supporting the decision to award funds for BHL to this institution; provide a summary of the Smithsonian Libraries’ budget for the funds received from the JRS Foundation through the Field Museum; and give a summary of the BHL-Africa meetings funded by the JRS Foundation.

# Africa and the Field Museum

The Field Museum has a longstanding research and collaborative relationship with the African continent, and as such, was an obvious recipient of the JRS funds which benefited the development of BHL-Africa.

The Field Museum's relationship with the African continent dates back to the late 19th century and is one devoted to exploring, communicating and preserving Africa's spectacular natural and cultural legacy. Some of the first expeditions undertaken by the Museum include [D.G. Elliot's 1895 Zoological Expedition to Somali-Land](http://www.biodiversitylibrary.org/item/30755) as well as the Carl E. Akeley 1905 Zoological Expedition to British East Africa. Since that time, the relationship has grown, deepened, and enhanced scientific knowledge on both continents. Over 20 Field Museum scientists, collection managers, resident students and educators have active research collaborations and outreach activities across the continent, including: Malawi, Democratic Republic of Congo, South Africa and Madagascar.

The Museum's Council on Africa (COA) plays an important role in continuing to foster the Museum's longstanding relationship with Africa. The COA is an important collaborator with Field Museum scientists, directly funding research and capacity building projects that make a significant contribution to scientific knowledge as well as having a positive impact in Africa. Their generous support has had a impact across all of the scientific departments of the Museum: Anthropology, Botany, Geology and Zoology.

Some recently funded projects include:

* Scientist Training - Two Malawian museum professionals came to The Field Museum to be trained in specimen preparation, museum interpretation, and exhibit production techniques. This training was the first step leading to the development of a planned new natural history museum in Malawi.
* Biodiversity/Conservation - A Field Museum postdoctoral fellow explored if trees change sex in order to counter barriers against reproduction due to deforestation in the East Usambara Mountains in Tanzania.
* Expanding Scientific Knowledge - Several Field Museum Scientists conducted inventories of small mammals and birds of [Gorongosa National Park](http://fieldmuseum.org/explore/multimedia/film-discovering-mount-gorongosa), an exciting extension of ongoing long-term survey work across montane Africa.

While the COA has historically supported the work of the scientific divisions, the Library submitted its first-ever proposal to the council in mid-2011. The COA generously funded the Library's proposal to support digitization efforts for the Biodiversity Heritage Library. This funding allowed the Library to digitize over 60 titles specifically related to African biodiversity. The Library was able to digitize several titles from the rare book collection as well as titles specifically requested from users of the BHL. In November 2011, Museum Librarian Christine Giannoni presented at the COA Annual Meeting about the BHL and the Library's efforts in increasing access to the literature related to African biodiversity.

The Biodiversity Synthesis Center (BioSynC) at The Field Museum is dedicated to advancing biodiversity science through scientific research programs, synthesis meetings and digital learning initiatives. While BioSynC scientists, educators and collaborators work all over the world, some recent initiatives related to Africa include:

* Digital Learning - [I Dig Science](http://synthesis.eol.org/projects/i-dig-science) is a virtual learning experience that connects local students to learn science, conservation and culture directly from scientists and local people. Since 2008, *I Dig Science* programs have been created for both Zambia (2009) and Tanzania (2008 and 2012). Students are engaged in a 3D environment that allows them to collaborate from disparate locations, conducting activities that mimic those of scientists and local community groups. Students learn about research techniques, interpretation of discoveries, local flora and fauna as well as a deeper understanding of the "real work" of scientists in the field.
* Synthesis Meeting - Synthesis meetings hosted by BioSynC focus on a variety of topics, including: biodiversity, evolution and conservation. They strive to support the gathering of multiple perspectives and novel collaborations with international participation. The first meeting of BHL representatives with African librarians and scientists to discuss the formation of a BHL Africa was held in November 2011 in conjunction with the Life and Literature Conference.

 As Field Museum researchers, staff and supporters continue to engage in scientific pursuits with African colleagues, they continue to embrace new avenues with which to disseminate research findings, news and images to individuals all over the world. New micro-websites and video series produced by The Field Museum are engaging, informative and impactful.

* [Video: Bat calls from Kenya](http://fieldmuseum.org/explore/multimedia/video-bat-calls-kenya) - MacArthur Curator of Mammals Bruce Patterson and research associate Paul Webala (Moi University, Kenya) are working together to get a better understanding of Kenya's bat diversity. As part of their study, they are recording bat calls, gathering fecal samples and collecting tissues to do genetic studies.
* [Video: Meet Kipunji](http://fieldmuseum.org/explore/multimedia/video-meet-kipunji) - Negaunee Collection Manager highlights Kipunji, an enigmatic primate that was discovered by scientists in 2005. Its discovery not only meant a new species to science but the new description of a new genus of African monkey.
* [Website: African Birds](http://africanbirds.fieldmuseum.org/) - An informative resource for all individuals interested in the African research, education, collaborations and outreach of The Field Museum's Bird Division.
* [Website: Mammals of Tanzania](http://archive.fieldmuseum.org/tanzania/index.html) - A bilingual (English and Kiswahili) website designed to both introduce the interested novice to the mammals of Tanzania, as well as serve as an aid to biologists focused on the study and conservation of these special mammals.

The Field Museum's history of research and collaboration with the African continent is one that will continue with enthusiasm and strength into the future. From scientists conducting field work on the continent to African researchers visiting Chicago to study and utilize collections, there are certainly endless opportunities ahead.

# Smithsonian Libraries Grant Budget

Presented below is the budget for the funds awarded to the Smithsonian Libraries for travel costs associated with the second BHL-Africa meeting in Cape Town, South Africa, as well as printing costs for BHL-Africa promotional materials. Please refer to the detailed financial documents accompanying this report for specific spending information.

|  |  |  |
| --- | --- | --- |
| **Funding Categories** | **Budget** | **Expenditures** |
| Travel Expenses Outside the United States | $10,425 | $10,481.60 |
| Printing and Reproduction | $955 | $897.73 |
| Indirect Costs | $1,138 | $1,137.86 |
| **Total** | **$12,518** | **$12,517.19** |

# Meeting Summaries

Below is a summary of the two meetings funded by the JRS Foundation.

## November, 2011, JRS African Workshop Summary

Location: Field Museum of Natural History, Chicago, Illinois

When: November 16, 2011

### Meeting Participants

1. **Tom Garnett**, USA, BHL Exec Director
2. **William Ulate**, Costa Rica, Missouri Botanical Garden & Global BHL Project Manager
3. **Brian Heidorn**, USA, JRS Foundation
4. **Lucy Waruingi**, Kenya, African Conservation Center, Head of Programs
5. **Lawrence Monda**, Kenya, ICT Manager and promoting Biodiversity Informatics
6. **Graham Higley**, NHM, London. BHL /BHL-Europe Chair
7. **Cathy Norton**, USA, Woods Hole Oceanographic Institution, MBL, Library Scholar and Chair of BHL Exec Committee
8. **Robert Miller** USA, Global Director of Books for IA
9. **Gracian Chimwaza**, South Africa, Info Training & Outreach Center for Africa (ITOCA).
10. **Alex Asase**, Ghana, Ghana’s GBIF Node Manager.
11. **Chris Freeland**, USA, Technical Director BHL
12. **Ashah Owano**, National Museums Kenya, Librarian, Data Manager
13. **Erick Mata**, Costa Rica, EOL Director
14. **Wanja Dorothy Nyingi**, National Museums, Kenya, Ichtyologist and coordinator new Kenya Wetlands Biodiversity Research Team.
15. **Boris Jacob**, Germany, RCMA, Brussels
16. **Margaret Koopman**, Percy FitzPatrick Institute of African Ornithology, Niven Library
17. **Anne-Lise Fourie**, Mary Gunn Library, South African National Biodiversity Institute in Pretoria.
18. **Willem Coetzer**, South African Inst. Aquatic, B.I. Management
19. **Rob Guralnick**, USA. Prof. & Curator Univ. Colorado.  Board Member of JRS.

### Meeting Summary and Action Items

#### Introduction and Attendee Presentations

On Wednesday, November 16th, 2011, the JRS African Biodiversity Literature Digitization Workshop occurred at the Field Museum of Natural History in Chicago, Illinois, Nine African representatives from different fields (librarians, biologists, computer scientists, publishers and students) met with colleagues from the Global Biodiversity Heritage Library project. The meeting followed the Life and Literature conference, November 14-15, 2011, which brought together parties interested in discussing the future of biodiversity literature digitization.

Following opening statement by then-BHL Program Director Tom Garnett (who has since retired, with Martin Kalfatovic, Smithsonian Libraries, taking his place), a brief introductory presentation to the Biodiversity Heritage Library was given, followed by presentations from each African attendee. These presentations outlined the status and capacity for literature digitization at each represented institution, the requirements for biodiversity literature digitization in Africa, and how each participant could contribute to a BHL-Africa initiative.

#### Open Discussion

Following the presentations, the floor was open to discussions. The key points of these discussions are outlined below:

Delivery Infrastructure:

* BHL content is being copied onto servers at global BHL nodes, including Egypt at the Bibliotheca Alexandrina and in London on behalf of the BHL-Europe project. This will provide additional nodes of access to the content, resilience to a certain degree of failure, security, and proper replication.
* In order to further mobilize the content already digitized to partners within the African continent, it may be best to sort out African-related digitized material and integrate the metadata into African library catalogs to increase access to and awareness of this content. Sites could also be set up dedicated to providing access to this material with links to supplemental websites. There are only about 300 books on African biodiversity currently in BHL. Furthermore, discussions must occur in order to identify the best ways to share content with our African colleagues (i.e. through thumb drives, CD ROMs, etc?)

Digitization Workflow and Metadata Issues:

* Some countries, like South Africa, do not have the same issue with Internet connectivity that other African countries have, so they can focus on further digitization rather than access issues. However, they need guidance on the type of material they should digitize.
* The African colleagues will collaborate regarding all workflow issues before scanning begins, including quality, metadata, resolution, format and candidates for digitization.
* As the BHL-Egypt initiative largely covers digitization in North Africa, this program will concentrate on West, South, and East African regions.
* The distance between where desired content is housed and where a scanning facility is located may be significant. Thus, BHL-Africa must overcome the problem of how to get content from the institution that holds it to a scanning center, which often requires shipping books across country borders. Many African colleagues were hesitant to ship content for digitization. However, it was recommended that existing exchange programs between libraries be utilized to move materials for digitization. The Mary Gunn Library in Pretoria specializes in metadata and scanning, thus it may be a good option for a digitization hub.
* It was recognized that capturing the page image is the easiest task. The metadata, including pagination and article descriptions, are more difficult and will require more people resources, which will probably be fulfilled through volunteers. OCR will be applied at a later date, probably through the Internet Archive. BHL-Africa will utilize the metadata standards established by BHL-US/UK.

Content Selection:

* The selection of materials should be managed by the African colleagues themselves.  South Africa, for example, is in contact with colleagues from Zimbabwe and Malawi and could work with them for content digitization. It was also suggested that colleagues start with a prioritized list of books to scan.
* An infrastructure to ensure minimal duplication of scanning and requesting scanning among African partners must be established.
* In South Africa, everything that is published before 1962 can be digitized.  BHL does not buy rights. Content is either in the public domain (out of copyright) or permissions have been granted (currently, 240 publishers have granted permission to BHL for digitizing and making available their content).  BHL has a standard permission form that the African colleagues could use with Societies that would allow for digitization of their material.  Gray literature would be a great contribution to BHL.

Communication Issues:

* African colleagues must determine the best method for communication within the group. South African representatives will discuss options with some of their colleagues.  The South Africa Biodiversity Information Forum could be a good place to gather for a future BHL-Africa meeting.  A group will be started in Mendeley and an African Section will be defined in the BHL wiki for further communication.

Future Funding:

* Brian Heidorn, representative from the JRS Foundation, indicated that JRS will keep their primary interest in Africa, but will look to projects that will have conservation results.  BHL-Africa would be an obvious contender in this field, and he thus encouraged the group to apply for the next round of JRS funding. The proposals, which allow for up to three years of funding but can be of a shorter duration, can be submitted by separate institutions or as a collaborative effort. There is a total of $1.5M to be divided among 5-10 grants. JRS also accepts proposals, amounting to $10,000-$30,000, for planning efforts.

#### Meeting Action Items

The following were identified as action items from the meeting:

* **Action Item**: It should be determined how to integrate BHL content with other biodiversity literature that African colleagues have digitized.
* **Action Item**: The African colleagues will be granted access to the internal wiki as a place to start sharing as a group.
* **Action Item**: The current exchange programs between libraries will be used as the mechanism to move materials to and from the scanning stations.
* **Action Item:** The minimum metadata standards that BHL requires will be shared with the African colleagues.
* **Action Item:** The African participants will come up with a Pan-African list of the most frequently used books to scan, preferably, a list accepted by a majority of scientists. A group in Mendeley would be set as a repository of such a list.
* **Action Item**: The BHL partners will determine what has been published and can be scanned.
* **Action Item**: The BHL-US/UK standard permission form will be made available to the African colleagues.
* **Action Item**: Investigate how to make BHL data interoperable with all other biodiversity information platforms and initiatives, like Mendeley, BiSciCol, BRAHMS, KE Emu Software, Specify, interlinking with RDF, etc.
* **Action Item:** Have a list of the most important 1,000 titles that Africa is interested in having scanned.
* **Action Item:** Communications will be done within the group by email, Skype and the Wiki.
* **Action Item:** Determine an appropriate time for a Face-to-Face Meeting in South Africa with the South Africa Biodiversity Information Forum.
* **Action Item:** Apply for funds for the next JRS RfP.

## June, 2012, BHL-Africa Organizational Meeting

Location: Kirstenbosch National Botanical Garden, Cape Town, South Africa

When: June 14-15, 2012

### Meeting Participants

1. **Alex Asase**, Ghana, Lecturer, University of Ghana
2. **Ashah Owano**, Kenya, Resource Centre Manager, National Museums of Kenya
3. **Dr. Geoffrey Mwachala**, Kenya, Director, Research and Collections, National Museums of Kenya
4. **Esther Obachi**, Kenya, Librarian, College of Biological and Physical Sciences, University of Nairobi, Kenya
5. **Lawrence Monda**, Kenya, ITC Manager, National Museums of Kenya
6. **Jackson Muhirwe**, Kenya, Information Technology officer, Lake Victoria Basin Commission, East African Community
7. **Mary Waruguru Mwangi**, Kenya, Librarian and Management Information Systems Officer, Lake Victoria Basin Commission, East African Community
8. **Dr. Gikungu Mary Wanjiku**, Kenya, Senior Research Scientist II, Invertebrate Zoology, National Museums of Kenya
9. **Baba Ainina Ould Moulaye M’Hamed**, Mauritanie, Chef Ser Vice Informatique Internet, Ecole Normale Superieure de Nouakchott
10. **Anne-Lise Fourie**, South Africa, Assistance Director, SANBI Libraries
11. **Gracian Chimwaza**, South Africa, Executive Director, ITOCA (Information Training and Outreach Centre for Africa)
12. **Margaret Koopman**, South Africa, Librarian, University of Cape Town
13. **Ria Groenewald**, South Africa, Digitization Coordinator, Department of Library Services, Information Resource Center Director, University of Pretoria
14. **Sally Schramm**, South Africa, Librarian, South African Institute for Aquatic Biodiversity
15. **Susan A. Dymond**, South Africa, Information Resource Center Director, U.S Embassy, Cape Town, South Africa
16. **Susan Veldsman**, South Africa, Director, Scholarly Publishing Unit, Academy of Science of South Africa
17. **Hamish Robertson**, South Africa, Director, Natural History Collections, Iziko Museums of Cape Town
18. **Grace Emmanuel Msoffe**, Tanzania, Librarian, Sokoine University of Agriculture
19. **Deborah Kasule**, Uganda, Head S&T Outreach and Information Management, Uganda National Council for Science and Technology
20. **Eva Mutongole Wamala**, Uganda, Librarian, National Environment Management Authority
21. **Patience Agabirwe**, Uganda, Assistant Librarian, Kyambogo University
22. **Peace Nagawa**, Uganda, Knowledge Management Specialist, EPRC, Economic Research Policy
23. **Christine Giannoni**, USA, Library Director, Field Museum
24. **Grace Costantino**, USA, Program Manager, Biodiversity Heritage Library, Smithsonian Libraries
25. **Martin Kalfatovic**, USA, Program Director, Biodiversity Heritage Library, Smithsonian Libraries
26. **Nancy Gwinn**, USA, Executive Committee Chair, Biodiversity Heritage Library, Director, Smithsonian Libraries
27. **William Ulate**, USA, Technical Director, Biodiversity Heritage Library, Missouri Botanical Garden

### Meeting Summary

Following the BHL-Africa workshop in Chicago in November, 2011, BHL, through the Field Museum, received a second planning grant from the JRS Foundation to host an organizational meeting for BHL-Africa in Cape Town. The meetings followed the Biodiversity Information Management Forum, June 12-13, 2012, hosted by SANBI at the Kirstenbosch National Botanical Garden.

#### Introduction to BHL

The meeting began with a thorough introduction to BHL, which outlined:

* Project Formation: BHL can be traced back to 2003 with the Encyclopedia of Life project, from which BHL ultimately (in 2007) received funding and provides digitized literature references for. The first official BHL meeting occurred in 2005 at the Libraries and Laboratories meeting in London, during which the nuts and bolts of how to form the BHL project were discussed.
* Governance: BHL is a consortium of natural history and botanical institutions. Membership is now divided into Steering Committee (those that provide $10,000 in annual dues to support project development) and Institutional Council levels. BHL also has an Executive Committee, dedicated pan-BHL staff, and staff that work on BHL on behalf of each member library.
* Funding: BHL is a largely grant-funded project, though the Smithsonian Libraries receives a federal allocation, Steering Committee members contribute annual dues, BHL collects online donations, and member institutions contribute in-kind support.
* Accomplishments: The website has evolved since its inception, with now over 57,000 titles, 109,000 volumes, and nearly 40 million pages online. BHL also participates in a variety of outreach activities, including Flickr, iTunes U, and social media, while also producing a quarterly electronic newsletter and report.
* Digitization Workflow: BHL partners with the Internet Archive for a majority of its scanning, although institutions also operate their own scanning equipment. Many use software, called Macaw, developed by Joel Richard at the Smithsonian Libraries, to ingest material into BHL scanned outside the IA workflow. BHL uses de-duplication tools to ensure minimal scanning duplication. Digitization machines are human-operated, as this resulted in higher quality scans. BHL can scan anything published before 1923 and secures permission to scan material published after this date.
* Access: During the questions portion of the BHL introduction, many raised concerns about not being able to access content in BHL at the article level. While this is something that BHL is now working on, African colleagues agreed that it should be a priority for the development of their project.
* Data Storage: Currently, BHL stores all of its material in the Internet Archive, though there are partial copies on servers worldwide. BHL will also work to copy a complete set of its content to servers at the Smithsonian by the end of CY2013. Anne-Lise of SANBI in South Africa announced that her director gave her permission to buy a server to which African colleagues can upload their digitized material and which may eventually serve as another complete copy of the BHL corpus.

#### Attendee Presentations

This introductory presentation was followed by presentations from each African attendee. These presentations outlined the status and capacity for literature digitization at each represented institution, the requirements for biodiversity literature digitization in Africa, and how each participant could contribute to a BHL-Africa initiative.

The following issues were raised during attendee presentations:

* Some institutions have completed limited scanning, while others want to begin scanning. The University of Pretoria is engaged in extensive scanning and may be able to serve as a hub for digitization and provide workflow guidance and training. Many institutions have also already digitized their own publications, which they would be willing to provide freely within BHL. Many are interested in using student volunteer labor to staff BHL-Africa digitization work. A central place to collect BHL-African scanned material must be identified, and this may be on the servers that SANBI will soon purchase. Partners must also agree on a standard process for deciding what to scan and who will scan it, identifying first those publications of high importance.
* Institutions can also contribute to BHL by promoting it within their own institutions. Gracian Chimwaza from ITOCA (Information Training and Outreach Centre for Africa) can help with training institutions on how to digitize and raising awareness of BHL within the African public.
* Open access is critical for BHL-Africa.
* Connectivity may be an issue for some locations in Africa. We must explore BHL-in-a-Box, or offline BHL options. Also, developing a mobile presence for BHL may be critical for its success in Africa, as many Africans have limited access to computers but can access the Internet via their cell phones.
* Standard metadata formats for the BHL-Africa project, which correspond to other BHL standards, must be established from the beginning.
* The African group must decide which model they want to pursue for building a BHL-Africa. There are global nodes around the world that have formed in different ways. The group must assess which procedure will work best for them.
* The group must also determine the most appropriate communication mechanisms for the project. Frequent face-to-face meetings are unrealistic, so how do we utilize virtual options, like Skype and conference calls, to communicate. Establishing a forum may also be a solution.

#### The Global BHL Environment

William Ulate gave an overview of global BHL, outlining the various models other partners have enacted to develop their own nodes. BHL-Africa may choose to replicate one of these methods to develop their own project, or may establish a new model that works better for their needs.

Global Summary:

* BHL started in the US and the UK but has now spread to Europe, Australia, China, and Brazil. It is a cooperative network of autonomous members who work together to digitize literature. Content among partner nodes is shared through the Internet Archive, though it was initially done by sending disks of content to various nodes for copying and serving.
* Currently each node has their own website and interface, though the US/UK and Australian nodes are now being merged into one. BHL would like to discourage the continued development of distinct portals and move towards a single BHL environment.
* BHL-Global must still address how to manage scan requests globally, coordinate user feedback among nodes, and reduce scanning duplication.
* Communication among nodes occurs mostly virtually, through Skype and conference calls. There is a single global meeting each year, and sometimes a second annual global technical meeting.

#### Global BHL By-Laws

Global BHL has established by-laws that dictate the requirements for BHL participation. Nancy Gwinn, of the Smithsonian Libraries and Chair of the Executive Committee for BHL, outlined these by-laws. She also shared the BHL-US/UK MOU with the group. Highlights include:

* As membership in BHL is institutional, the US/UK requires each member to sign an MOU, just as each global node must also sign a global MOU. This ensure institutional backing for the BHL project and outlines role and responsibilities. BHL-Africa should also establish an MOU for partners to sign.
* BHL is not a legal entity, but rather a consortium.
* You need dedicated staff to run BHL and committees to govern. By-laws outline those staff and how those committees will operate.
* BHL-Africa will want to be part of the Global-BHL, so they should agree to the global MOU.
* These documents are offered as an example to BHL-Africa, but Africa should draft their own MOU that addresses the needs and organizational requirements of their program.

#### Break-Out Sessions

Day two of the meeting consisted of four break-out groups, organized according to the themes of Scanning, Infrastructure, Collaboration, and Governance. Below are the highlights from each session:

##### Scanning

Session Lead: Martin Kalfatovic | Notes: Ashah Owano

* Some institutions already have digitized content that can be contributed to BHL-Africa.
* BHL participants can be used as points of contact for additional scanning materials and partners at other institutions.
* BHL can participate in existing initiatives like EIFL.
* Internet Archive already has infrastructure for scanning and they’re willing to provide equipment and training for digitization.
* There are lots of students available as interns for digitization work.
* BHL already has workflow tools that can be used by BHL-Africa, such as those that limit scanning duplication.
* BHL-Africa must establish a list of those materials with the highest impact to begin scanning, and must coordinate amongst African partners to accomplish scanning.

##### Infrastructure

Session Lead: William Ulate | Session Notes: Christine Giannoni

* BHL-Africa needs more server storage and IT support.
* Opportunities exist for the BHL-Africa project in the realms of networking in rural areas, using mobile technology, building an offline BHL, or BHL-in-a-Box, utilizing existing regional relationships to share equipment (which may result in expanded funding opportunities), and leveraging regional digitization training.
* Strengths of the BHL-Africa project include the fact that initial and potential users are already connected and embracing technology, strong institutional repository systems are already being put into place at BHL-African institutions, and BHL-Africa can leverage the prior experience of other digitization projects.
* BHL-Africa aspires to lend equipment among institutions to build capacity and infrastructure and to establish strong documentation of workflow procedures. Lending equipment does present challenges, however. Participants were concerned with who would take responsibility if machines malfunction once they are lent, and many were wary of lending equipment. However, the previous meeting established that lending the books themselves across country boundaries might not be possible, so sharing of equipment was more likely. This equipment would be insured, and would most likely be the responsibility of the institution that owns it, not the institution that borrows it. Quality Assurance on scanned materials, however, would be the responsibility of the scanning institution.
* Bandwidth: One point to consider is that, while there is steady bandwidth improvement throughout Africa, this may still be an issue for many countries. These issues might be similar to those faced in South America, so perhaps BHL-Africa could partner with our Brazilian colleagues in this area.

##### Collaboration

Session Lead: Anne-Lise Fourie | Notes: Doug Holland

* In regards to collaboration, BHL-Africa aspires to establish representatives from each country that people can consult for questions and issues, develop an offline BHL solution (BHL-in-a-Box), and compile a master list of potential participants in BHL-Africa.
* Collaboration strengths for the project include an existing strong wiki presence that Africa can utilize, existing repositories that can be utilized, and existing strong environmental education programs that could be exposed to BHL.
* BHL-Africa must have a balanced mix of both library and IT collaboration, drawing on expertise from both fields. SANBI will work on developing roadshows to promote BHL around South African, and Lawrence Monda, of the National Museums of Kenya, will serve as the BHL-Africa IT spokesperson.
* Collaboration success can be initially measured through the submission of a joint-BHL-Africa funding proposal.

##### Governance

Session Lead: Nancy Gwinn | Notes: Grace Costantino

The governance session was devoted to developing a concept document for BHL-Africa, which could be presented to the various African institutions to secure buy-in for the BHL-Africa project. This document will also eventually inform the BHL-Africa MOU. Gracian Chimwaza of ITOCA was charged with gathering MOUs from potential BHL-Africa partners to draft a single BHL-Africa MOU that will be officially recognized by Spring, 2013. The BHL-Africa concept document is presented below.

###### BHL-Africa Concept Document

Introduction to BHL:

The Biodiversity Heritage Library (BHL) is a consortium of 14 natural history and botanical libraries that collaborate to digitize past and present biodiversity literature, all of which is made freely available online at www.biodiversitylibrary.org. BHL contains over 38.7 million pages of digitized literature (representing over 55,000 titles and 105,000 volumes), which can be freely downloaded as PDFs or high resolution images.

BHL is a global initiative, with project nodes in Europe, China, Brazil, Australia, and Egypt. In June, 2012, the BHL, in collaboration with the South African National Biodiversity Institute (SANBI), will host a meeting in Cape Town, South Africa, attended by representatives from across Africa to discuss the creation of a BHL for sub-Saharan Africa.

BHL-Africa supports conventions such as the Convention on Biological Diversity. BHL-Africa partners with the Internet Archive, which provides free storage and access to all BHL digitized materials.

Mission Statement (for African participation)

BHL-Africa is a consortium of natural history, botanical, research and other biodiversity-related organizations that aim to improve access to biodiversity literature through digitization and open access principles as part of a global biodiversity commons.

Guiding Principles and Values

1. The BHL-Africa consortium works with the international taxonomic community, rights holders, and other interested parties to ensure that this biodiversity heritage is made available to a global audience through open access principles
2. Open Access: This digital content served by the BHL is available without cost, can be reused by other projects and users, and is either in the public domain or subject to the Creative Commons CCBY license.
3. Collaboration: BHL-Africa participants will actively collaborate to achieve shared project objectives
4. Interoperability: BHL systems will interoperate with major biodiversity project systems.
5. Transparency: The processes and administration of the BHL will be clear and documented.

Proposed Organizational structure

Initially, BHL-Africa will be organized according to western and central, eastern, and southern African regions. Others may be added later. Within each region, there will be BHL-Africa nodes comprised of one or more scanning institutions. Membership within nodes will be at the institutional level.

The Steering Committee will be composed of one member from each node.

The Steering Committee will oversee BHL-Africa activities.

The Steering Committee will be responsible for electing Executive Council members that will be overseeing day-to-day activities of BHL Africa.

Funding

BHL Africa will be comprised of a 3 level funding structure:

1. Committing resources at your institution
2. Pulling together resources among BHL partners
3. Proposal writing and fund raising

Expected Outcomes

BHL-Africa will provide a body of digital biodiversity information openly available to users such as conservationists, researchers, students, and the larger community.

Benefits

The benefits of participating within BHL-Africa include easy access to biodiversity literature, improved visibility of member institutions, capacity building within partner institutions (developing staff skills, sharing experiences and building digitization infrastructure), sharing information among

partner institutions and the world, archiving material, and reaching new audiences.

Timeframes

 Interim regional leadership should be assigned now. Over the next three months these regional leaders will collect feedback about the Concept Document. In 3 months this group will reconvene to review feedback and present a coordinated MOU created from institutional MOUs. Gracian Chimwaza of ITOCA will organize MOU development. SANBI will serve as the lead institution while BHL-Africa is being organized.

# Conclusion

The funding provided by the JRS Foundation has allowed the framework for a BHL-Africa to be established. A draft Concept Document, which will inform a BHL-Africa MOU, was completed as a result of the Cape Town meeting, and African colleagues are now cooperating to secure institutional support and establish a formal MOU for the project. South Africa and Kenya will likely take leadership roles in the project, though at least six countries in sub-Saharan Africa will participate.

African colleagues are busy identifying the best ways to communicate, collaborate, and digitize and share content amongst themselves and BHL’s global partners. Africa will not develop a new website, but will instead contribute material to BHL through Internet Archive. African partners will utilize workflow tools developed by BHL-US/UK to facilitate digitization work.

BHL-Africa will be officially announced in Spring, 2013. This initiative would not have been possible without the generous support of the JRS Foundation. Smithsonian Libraries staff provided key guidance during the developmental stages of the project, offering their expertise and lessons learned to an eager and receptive audience. This guidance would have been severely less effective if staff were not able to attend the meeting in Cape Town.

The Biodiversity Heritage Library is dedicated to repatriating biodiversity knowledge to all parts of the world, and prior to the African initiative, BHL was not able to effectively reach African audiences. Through this program, we can ensure that information about the flora and fauna living in Africa can be accessed by those best in a position to study and protect it, and the research produced by these scientists can be shared with the rest of the world.