

Opportunity Title:	National Leadership Grants for Libraries
Offering Agency:	Institute of Museum and Library Services
CFDA Number:	45.312
CFDA Description:	National Leadership Grants
Opportunity Number:	MLG-LIBRARIES-FY15-2
Competition ID:	MLG-LIBRARIES-FY15-2
Opportunity Open Date:	12/01/2014
Opportunity Close Date:	06/01/2015
Agency Contact:	Tim Carrigan Senior Library Program Officer 202-653-4639 tcarrigan@imls.gov Sandra Toro

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APPLICATION FOR FEDERAL DOMESTIC ASSISTANCE - Short Organizational*** 1. NAME OF FEDERAL AGENCY:**

Institute of Museum and Library Services

2. CATALOG OF FEDERAL DOMESTIC ASSISTANCE NUMBER:

45.312

CFDA TITLE:

National Leadership Grants

*** 3. DATE RECEIVED:**

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SYSTEM USE ONLY*** 4. FUNDING OPPORTUNITY NUMBER:**

NLG-LIBRARIES-FY15-2

*** TITLE:**

National Leadership Grants for Libraries

5. APPLICANT INFORMATION*** a. Legal Name:**

The New York Botanical Garden

b. Address:*** Street1:**

2900 Southern Boulevard

Street2:*** City:**

Bronx

County/Parish:*** State:**

NY: New York

Province:*** Country:**

USA: UNITED STATES

*** Zip/Postal Code:**

104585126

c. Web Address:

http:// www.nybg.org

*** d. Type of Applicant: Select Applicant Type Code(s):**

M: Nonprofit with 501C3 IRS Status (Other than Insti

Type of Applicant:**Type of Applicant:***** Other (specify):***** e. Employer/Taxpayer Identification Number (EIN/TIN):**

13-1693134

*** f. Organizational DUNS:**

0732509460000

*** g. Congressional District of Applicant:**

NY-014

6. PROJECT INFORMATION*** a. Project Title:**

BHL Expanding Access to Biodiversity Literature

*** b. Project Description:**

The New York Botanical Garden, Harvard Ernst Mayr Library of the Museum of Comparative Zoology, Missouri Botanical Garden, and Smithsonian Institution Libraries, as part of the Biodiversity Heritage Library (BHL), propose a two-year National Digital Platform project to position BHL as an on-ramp for biodiversity content providers that would like to contribute to the national digital library infrastructure through the Digital Public Library of America. This project will address challenges facing content providers--including, insufficient amounts of content, indexing of scientific names, and metadata creation--and make necessary digital enhancements to BHL by creating an innovative model for open access to data and to support collaboration among these institutions. Project activities will include training and quality control for content providers, national outreach to engage the community, and system enhancements to BHL's digital infrastructure.

c. Proposed Project: * Start Date: 10/01/2015 * End Date: 09/30/2017

APPLICATION FOR FEDERAL DOMESTIC ASSISTANCE - Short Organizational

7. PROJECT DIRECTOR

Prefix: Ms.	* First Name: Susan	Middle Name:
* Last Name: Fraser	Suffix:	
* Title: Director of the LuEsther T. Mertz Library	* Email: sfraser@nybg.org	
* Telephone Number: 718.817.8879	Fax Number:	
* Street1: 2900 Southern Boulevard	Street2:	
* City: Bronx	County/Parish:	
* State: NY: New York	Province:	
* Country: USA: UNITED STATES	* Zip/Postal Code: 104585126	

8. PRIMARY CONTACT/GRANTS ADMINISTRATOR

<input type="checkbox"/> Same as Project Director (skip to item 9):		
Prefix: Ms.	* First Name: Sarah	Middle Name:
* Last Name: Bolson	Suffix:	
* Title: AVP for Foundation Relations	* Email: sbolson@nybg.org	
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* City: Bronx	County/Parish:	
* State: NY: New York	Province:	
* Country: USA: UNITED STATES	* Zip/Postal Code: 104585126	

APPLICATION FOR FEDERAL DOMESTIC ASSISTANCE - Short Organizational

9. * By signing this application, I certify (1) to the statements contained in the list of certifications** and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances** and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties (U.S. Code, Title 218, Section 1001)

** I Agree

** The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

AUTHORIZED REPRESENTATIVE

Prefix: <input type="text" value="Ms."/>	* First Name: <input type="text" value="AnneMarie"/>	Middle Name: <input type="text"/>
* Last Name: <input type="text" value="Blancato"/>	Suffix: <input type="text"/>	
* Title: <input type="text" value="Chief Financial Officer"/>	* Email: <input type="text" value="ablancato@nybg.org"/>	
* Telephone Number: <input type="text" value="7188178730"/>	Fax Number: <input type="text"/>	
* Signature of Authorized Representative: <input type="text" value="Completed by Grants.gov upon submission."/>	* Date Signed: <input type="text" value="Completed by Grants.gov upon submission."/>	

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Important: Please attach your files in the proper sequence. See the appropriate Agency Guidelines for details.

1) Please attach Attachment 1	Abstract.pdf	Add Attachment	Delete Attachment	View Attachment
2) Please attach Attachment 2	Programinfo.pdf	Add Attachment	Delete Attachment	View Attachment
3) Please attach Attachment 3	Organizationalprofile.pdf	Add Attachment	Delete Attachment	View Attachment
4) Please attach Attachment 4	Narrative.pdf	Add Attachment	Delete Attachment	View Attachment
5) Please attach Attachment 5	Scheduleofcompletion.pdf	Add Attachment	Delete Attachment	View Attachment
6) Please attach Attachment 6	Budget.pdf	Add Attachment	Delete Attachment	View Attachment
7) Please attach Attachment 7	Budgetjustification.pdf	Add Attachment	Delete Attachment	View Attachment
8) Please attach Attachment 8	Projectstaff.pdf	Add Attachment	Delete Attachment	View Attachment
9) Please attach Attachment 9	Resumes.pdf	Add Attachment	Delete Attachment	View Attachment
10) Please attach Attachment 10	Proofnonprofit.pdf	Add Attachment	Delete Attachment	View Attachment
11) Please attach Attachment 11	Indirectcostrate.pdf	Add Attachment	Delete Attachment	View Attachment
12) Please attach Attachment 12	Digitalstewardship.pdf	Add Attachment	Delete Attachment	View Attachment
13) Please attach Attachment 13	Supportingdoc1.pdf	Add Attachment	Delete Attachment	View Attachment
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THE NEW YORK BOTANICAL GARDEN

ABSTRACT

The New York Botanical Garden (NYBG), Harvard Ernst Mayr Library of the Museum of Comparative Zoology (MCZ), Missouri Botanical Garden (MBG), and Smithsonian Institution Libraries (SIL), as part of the Biodiversity Heritage Library (BHL), propose a National Digital Platform project: ***BHL Expanding Access to Biodiversity Literature***. (NYBG is a founding member of BHL, and volunteered to be the Lead Organization on this project, in close collaboration with MCZ, MBG, and SIL, which are all heavily involved in BHL's operations.) This two-year project (October 1, 2015-September 30, 2017) will increase online access significantly to biodiversity material by positioning BHL as an on-ramp for biodiversity content providers that would like to contribute to the national digital library infrastructure through the Digital Public Library of America (DPLA). ***BHL Expanding Access to Biodiversity Literature*** proposes to address challenges facing content providers—including, insufficient amounts of content, indexing of scientific names, and metadata creation—and make necessary digital infrastructure enhancements by creating an innovative model for open access to data and to support collaboration among these institutions. The project would meet the goals of the IMLS National Leadership Grants for Libraries Program by increasing access to digital services, expanding the range and types of digital content available, improving discoverability, and supporting open access.

The Project Team will interact with content providers to improve metadata through training and quality control, engage the community through outreach on a national level, pursue copyright permissions, and improve BHL's digital infrastructure through system enhancements. This project will address the challenges that many libraries, archives, and museums face in sharing their content by developing partnerships and providing the tools and services needed for future and ongoing participation in a shared and sustainable national digital platform.

The goals of the project are to: 1) Expand BHL's role as a subject-specific content provider for life sciences; 2) Serve as an aggregator to allow small natural history collections to present their content in DPLA via BHL and expand the community of content providers by working with new partners; 3) Preserve and provide access to small natural history and botanical collections and publications through outreach, assistance with scanning, and software tools to format and normalize data for ingest; and 4) Increase the quality of partner metadata through use of DPLA metadata best practices.

The Project Team has four intended outcomes and a means towards measuring the success of these outcomes: 1) Expand public access to biodiversity literature; 2) Increase in the number of new and first time content providers to both BHL and DPLA, ideally with at least 100 added by the second year; 3) Serve as a model for "subject-based" hubs; and 4) Develop processes that will ensure long-term biodiversity contributions to DPLA.

Success will also be measured by the increase in the number of new metadata records to BHL and DPLA (~300,000 new records added by the second year), and by the increase in the amount of biodiversity and cultural heritage materials discoverable in BHL and DPLA, as indicated by an increase in the number of contributed items and pages. Another measure of success will be an increased utilization of BHL's self-service ingest tool (Macaw) by the content providers over the next several years. Additionally, the project will add up to 50 titles that are still in copyright to the BHL portal and thus make current content accessible through DPLA.

By removing obstacles that obstruct content providers' participation and by developing tools to support and facilitate contribution to DPLA, this project will strengthen the holdings of BHL and DPLA and will benefit those institutions that lack the resources to make their collections widely accessible. Participating libraries, museums, and natural history societies will benefit by exposing their content more broadly, and researchers and the public will benefit from the increased access to biodiversity content. These often hidden collections will be made available to the public at large on a shared national platform. BHL will provide a repository/delivery system that allows natural history institutions that don't have the capacity to purchase or host their own system to share their digital content.

THE NEW YORK BOTANICAL GARDEN
PROPOSAL TO THE IMLS NATIONAL LEADERSHIP GRANTS FOR LIBRARIES
FOR
BHL EXPANDING ACCESS TO BIODIVERSITY LITERATURE

NARRATIVE

1. Statement of Need

The New York Botanical Garden (NYBG), Harvard Ernst Mayr Library of the Museum of Comparative Zoology (MCZ), Missouri Botanical Garden (MBG), and Smithsonian Institution Libraries (SIL), as part of the Biodiversity Heritage Library (BHL), request \$846,073 for a National Digital Platform project: *BHL Expanding Access to Biodiversity Literature*. NYBG is a founding member of BHL, and volunteered to be the Lead Organization on this project, in close collaboration with MCZ, MBG, and SIL, which are all heavily involved in BHL's operations. This two-year project (October 1, 2015-September 30, 2017) will increase online access significantly to biodiversity material by positioning BHL as an on-ramp for biodiversity content providers that would like to contribute to the national digital library infrastructure through the Digital Public Library of America (DPLA). *BHL Expanding Access to Biodiversity Literature* proposes to address challenges facing biodiversity content providers wishing to contribute to DPLA—including, insufficient amounts of content, loss of indexing of scientific names, and metadata creation—and make necessary digital infrastructure enhancements by creating an innovative model for open access to data and to support collaboration among biodiversity content providers. The project would meet the goals of the IMLS National Leadership Grants for Libraries Program by increasing access to digital services, expanding the range and types of digital content available, improving discoverability, and supporting open access.

Over the two years, the Project Team will interact with content providers to improve metadata through training and quality control, engage the community through outreach on a national level, pursue copyright permissions, and improve BHL's digital infrastructure through system enhancements. **This project will address the challenges that many libraries, archives, and museums face currently in content sharing by developing partnerships and providing the tools and services needed for future and ongoing participation in a shared and sustainable national digital platform.**

The proposed project will expand BHL's role as a DPLA content hub and advance the collaborative network within the life sciences, allowing it to assist the many libraries, archives, museums, natural history societies, and cultural heritage institutions that do not have the resources to contribute content to DPLA on their own. BHL has been a DPLA content hub since 2013. As a result, its content now reaches a much wider audience and has a significant impact beyond the traditional research community in the biological sciences. By increasing its role as a content hub, BHL would serve as the primary discipline-based hub for life sciences in the areas of natural history, systematic biology, and taxonomy. This project aligns with DPLA's efforts to expand its own networks, for which DPLA received funding from the IMLS in 2014.

The DPLA is a primary destination for researchers and the public to search for digital content. However, many biodiversity organizations, particularly smaller institutions, cannot contribute to DPLA individually because they do not have the minimum amount of content that DPLA requires for contributions and/or they lack the technical knowledge to prepare their content for ingest. Their only options are to contribute to DPLA through BHL or through a geographically-based service hub. Unfortunately, only 17 such service hubs currently exist and many potential contributors are based in parts of the United States that are not served by these few service hubs. As an aggregator, BHL offers a solution that enables more collections to reach the minimum size required to contribute to DPLA.

Biodiversity content providers also have specific needs that are not well-met by broad, regional hubs—particularly the identification and indexing of binomial names, which are invaluable to researchers and students. Geographically based DPLA service hubs do not offer the ability to mine ingested text for scientific names,

meaning that this important information would be lost if biodiversity content were ingested through generalist, regional hubs.

Furthermore, the creation of complete, normalized metadata can be especially problematic for biodiversity content providers. Current and potential providers of content to BHL fall into three basic categories based on their metadata needs: 1) those with metadata in a standard bibliographic format (MARC or MODS); 2) those with metadata in other formats that could be mapped to standard bibliographic formats; and 3) those with no existing metadata but who could, if provided with guidance and a form, create the necessary metadata from scratch. Frequently, content providers either do not have metadata available in standardized formats (such as a MARC record), or any metadata they do have requires analysis and normalization before it can be brought into the portal to interoperate with existing metadata. However, DPLA does not have the resources to work intensively with content providers to address these needs.

The ability to upload data and images with relative ease is critical to increasing content contributions to DPLA. BHL also has, and will provide, the necessary technical experience to assist these content providers in preparing their items for ingestion. However, importing content from non-BHL members into BHL requires significantly more staff time because it cannot be ingested via standard workflows. Therefore, to address each of the content providers' metadata needs, part of this project will involve further developing the BHL open source ingest tool, Macaw (available via github; <https://github.com/cajunjoel>), which allows for the upload of content and metadata to BHL via the Internet Archive. Staff at smaller organizations can then upload their own content independently into BHL with little or no intervention from central staff, freeing their time to support project workflows.

There is also a need to improve the BHL feed to DPLA, which includes adding additional metadata elements to the feed in order to provide richer and more complete metadata within DPLA for items harvested from BHL. DPLA currently harvests metadata from BHL using an OAI-PMH feed. BHL's short term plans call for enhancements to that feed while its long-term plans call for enhancements to its API to allow optimal harvesting by DPLA. Article level metadata is also being discussed. Some BHL contributors provide article level metadata and that information can easily be ingested, displayed, and searched from within the BHL portal. Currently, DPLA does not have the means to ingest this information but the Project Team is working with them in the hopes of making it available via the DPLA portal in the future.

BHL also has strong knowledge of the many formats that may be ingested into the DPLA through the project. The ingestion of article-level descriptions, conference papers and proceedings, theses, newsletters, field notebooks, and other types of gray literature require complex workflows. As is, BHL currently supports materials that are specifically formatted as "book-like objects" (i.e., objects with a series of sequential "pages" that can be interacted with through the BHL website book-viewer). Throughout this proposed project, BHL will also develop its infrastructure to support non-standard metadata and content files which will greatly increase the types of biodiversity content available through DPLA.

Additionally, born digital materials are the norm for new content, including biodiversity collections yet, those materials are currently excluded from BHL. BHL has achieved the means to load born-digital content, but transforming locally produced content into a globally accessible format requires manual review, normalization, and ingest of available data and files, as well as digitization "from scratch," where locally produced content is missing or does not meet quality standards. In order to fully incorporate born-digital content into the BHL repository, *BHL Expanding Access to Biodiversity Literature* will refine its existing workflows and enhance its toolkit. Toolkit enhancements will be informed by the work being done by the DPLA service hubs including the Empire State Digital Network (ESDN), a service hub located in close proximity to NYBG.

BHL Expanding Access to Biodiversity Literature is similar in structure to the *Artstor: Museum Hub for Open Content* project recently funded by IMLS, which supports the contributions of the nations' art and image collections to the DPLA. Similarly, the proposed project will also lower barriers to small organization's contributions to an international digital platform. Providing tools and building capacity can address gaps in the national digital infrastructure. It, too, will improve the discoverability of otherwise isolated collections and support an efficient network for open-access discoverability of content on DPLA. However, where the Artstor project focuses on museum collections, the BHL project focuses on biodiversity content and biodiversity content providers, and responds to their unique needs.

BHL is ideal for this type of project because it is an international consortium of the world's leading natural history and botanical collections and related libraries, all of whom collaborate to digitize the literature (both public domain and in-copyright with permission) documenting the world's biological diversity. BHL's collaboration has resulted in the single largest, open-licensed source of biodiversity literature made available through both a customized portal at <http://www.biodiversitylibrary.org/> and the Internet Archive. BHL is also responsible to its community beyond basic requirements—for instance, expanding to include the role of repatriation of biodiversity literature to the countries and regions from which species have been collected and studied in other parts of the world. Further, the BHL libraries have experience in making biodiversity literature available for responsible use as a part of a global community—a “biodiversity commons.” BHL now has a large corpus of digitized works available to an international community of users, and a proven track record of success through collaboration and shared investment. More than 46 million pages of digitized literature are served through the BHL portal and are contributed to other digital platforms, including DPLA, Europeana, Global Biodiversity Information Facility (GBIF), and the Encyclopedia of Life (EOL). (*Please see Supporting Document 1 for an infographic on BHL.*)

BHL also has experience meeting the needs of partners and organizations of all sizes. In addition to the 16 dues paying members, BHL has an affiliate membership level, which is currently a non-dues paying level but includes institutions and organizations that have expressed a willingness to participate in BHL-related activities and contribute relevant content. As such, BHL provides services for its own affiliates that lack the infrastructure to make their content widely available.

BHL is also regularly contacted by individuals in small organizations who would like to have their content made available through the BHL portal but who may not even have the ability to contribute at an affiliate level or cannot meet BHL's and DPLA's ingestion requirements without assistance. For example, in January 2015, BHL received a request from a Board member of the Hawaii Botanical Society, which produced newsletters from 1962 until December 2001 (40 volumes). It has become less active in the past couple of years, but requests for copies of the newsletter arrive regularly indicating that the content is extremely useful to the botanical community. Because there are few entire sets of the newsletter—and even in Hawaii, it is difficult to access—the group has proposed placing scans of the newsletter on the Hawaii Botanical Society's website at: <http://hibotsoc.org/newsletter.html>. However, as the activities of the membership decline, they are looking for alternative, longer term mechanisms for making the publication freely available, before it becomes orphaned or lost. They hope that BHL will be the solution. Requests such as this have been put into a queue for future action because BHL does not have the staff resources nor advanced tools needed to ingest their content.

2. Impact

By removing obstacles that obstruct participation and by developing tools to support and facilitate contribution to DPLA, this project will strengthen the holdings of BHL and DPLA and will benefit those institutions that lack the resources to make their collections widely accessible. Participating libraries, museums, and natural history societies will benefit by exposing their content more broadly, and researchers and the public will benefit

from the increased access to biodiversity content. These often hidden collections will be made available to the public at large on a shared national platform. BHL will provide a repository/delivery system that allows natural history institutions that lack the capacity to purchase or host their own system to share their digital content.

Potential content providers can, and do come from across the nation, each with different needs and levels of resources. Organizations, such as the Denver Botanic Garden, the Natural History Museum of Los Angeles, Seed Savers Exchange in Decorah Iowa, The Wildlife Conservation Society, the Hunt Institute for Botanical Documentation, and the Pennsylvania Horticultural Society, all have content they wish to ingest into BHL and have expressed interest in participating in this project. Special collections like those at the University of Oklahoma History of Science Library and the Wangensteen Historical Library of Biology and Medicine at the University of Minnesota also do not have the capacity for getting their content into BHL and the DPLA. The project will work with these already identified partners to provide the support needed, and will also conduct outreach to ensure that all potential contributors are familiar with the project and are encouraged to participate. The outreach component will work specifically with members of various botanical and natural history societies such as the Council of Botanical and Horticultural Libraries (CBHL), SLA Natural History Caucus, International Association of Aquatic and Marine Science Libraries (IAMSLIC), and American Alliance of Museums (AAM), which have content that should be considered for inclusion in the DPLA. (Please see Supporting Document 2 for letters of support.)

Along with museums and societies, smaller publishers also have important content to add to the BHL collection but have little means to reconfigure their data and files to fit within BHL's established workflows. For example, Amphibian and Reptile Conservation (ARC) currently provides PDFs of species descriptions to the Ernst Mayr Library, and they are deposited in Harvard's preservation repository service. ARC staff members have expressed interest in providing their content to BHL but neither BHL nor ARC has the resources that are required to prepare the data for ingest. Other examples of society publications that might be ingested are the American Ornithologists Union's Check-list of North American Birds, the Journal of the American Mosquito Control Association, The Mantis Study Group Newsletter, and the Lepidopterists Society publications.

BHL enables scholarship of national significance that is otherwise impossible with printed materials alone. By pulling these digital materials together through an integrated portal, BHL presents an unparalleled open and expansive digital library for scholars that cannot be replicated in a physical setting. Planned improvements of the BHL portal include full-text searching of the content that will allow for deeper use of the content. The descriptive metadata for the digitized books are aggregated from library catalogs, with administrative and technical metadata added at the time of scanning and during post-production. The BHL portal then allows scholars to search across these metadata fields and retrieve works by a specific title, volume, or edition; browse works by author, subject or year; and through built-in taxonomic intelligence tools, even search for a scientific name such as "Zea mays" (corn) or "Loxodonta africana" (African Elephant) in order to return a list of all of the pages in BHL where that name occurs. Users can then view the digitized works in their entirety, or they can export the results to a variety of common reference management software formats including, EndNote and BibTeX, for inclusion in applications such as EndNote, Zotero, and Mendeley for their research purposes.

By increasing the opportunities for smaller institutions to contribute biodiversity content, BHL will also support DPLA's outreach activities for STEM (science, technology, engineering, and mathematics) education and provide support for secondary education in the areas of the environment, life sciences, and related fields. In addition to text, BHL provides access to millions of natural history illustrations with a broad appeal beyond the sciences. Scholars and educators who rely on visual resources will find a wealth of illustrations with which to make interdisciplinary connections between science, art, culture, and history. The content to be aggregated

would not otherwise be available to DPLA because the smaller organizations do not meet the minimum content levels for ingestion by DPLA.

The goals of the project are to:

- 1) Expand BHL's role as a subject-specific content provider for life sciences;
- 2) Serve as an aggregator to allow small natural history collections to present their content in DPLA via BHL and expand the community of content providers by working with new partners;
- 3) Preserve and provide access to small natural history and botanical collections and publications through outreach, assistance with scanning, and software tools to format and normalize data for ingest; and
- 4) Increase the quality of partner metadata through use of DPLA metadata best practices.

The Project Team has four intended outcomes and a means towards measuring the success of these outcomes:

- 1) Expand public access to biodiversity literature;
- 2) Increase in the number of new and first time content providers to both BHL and DPLA, ideally with at least 100 added by the second year
- 3) Serve as a model for "subject-based" hubs; and
- 4) Develop processes that will ensure long-term biodiversity contributions to DPLA.

Success will also first be measured by the increase in the number of new metadata records to BHL and DPLA with at least 300,000 new records added by the second year, and then in the amount of biodiversity and cultural heritage materials discoverable in BHL and DPLA, as indicated by an increase in the number of contributed items and pages, estimated to be in the tens of thousands. Another measure of success will be an increased utilization of the self-service ingest tool (Macaw) by the BHL content providers over the next several years. Additionally, we expect to add up to 50 titles that are still in copyright to the BHL portal and thus make current content accessible through DPLA. (BHL will only accept materials into its collection that fall under open access principles and thus encourages the digitization of public domain materials, materials free of any known copyright restriction and in-copyright content for which express permission to digitize has been received from the copyright holder. BHL copyright metadata conforms to standards that allow it to fulfill its responsibility to the licensors for which BHL signs agreements to include in-copyright content in its collection.)

Over the past eight years, BHL has demonstrated successfully that a large collaborative alliance of libraries, archives, and museums can mobilize to digitize collections and provide content through a single open access portal. Through an existing network of contacts, tools, and added resources that will ease content aggregation and metadata normalization for potential content providers, BHL will bring significant amounts of biodiversity content into a larger national and international platform via DPLA. This model of collaboration expands beyond BHL. By developing a community of content providers within the life sciences, the project can provide a model that can be replicated in other disciplines or groupings and provide an opportunity to present richer results than otherwise would be available to the DPLA community.

3. Project Design

The expertise and connections that BHL has already developed in working closely with its members, affiliates, and other organizations will be leveraged to help design the project to assist small biodiversity institutions, scholarly societies, and publishers with similar limitations and needs effectively. In order to provide the support needed to create workflows and tool-kits to facilitate content ingest for those content providers, the Project Team will provide outreach and consultation on content recommendation, selection criteria, quality control, and technical issues, such as data formatting and ingest. Interviews with a select group of partners will be

conducted at the end of the initial engagement with them and the results will inform the structure of a feedback form which will be created and used as an ongoing tool to measure how the project benefits the participating organization and how well the workflows put in place are operating.

The project will have three components:

- 1) Data Management, overseen by NYBG's LuEsther T. Mertz Library. NYBG will work with contributors who have already digitized content in order to develop a toolkit that will enable participants to ingest their resources to BHL, for harvest by the DPLA, in ways that respect the budgets, staff constraints, and technological capabilities of participants. A Data Manager (Susan Lynch, Systems Librarian) and a Metadata Specialist (to be hired with grant funds) will facilitate metadata improvement across all providers, coordinate activities, and will interface with new contributors and teach them about Macaw as well as improve content provider metadata through training and quality control. The Metadata Specialist will work with each contributor on a one-on-one basis to assure compliance with DPLA specifications and will provide guidance and instruction on using Macaw. The Data Manager and Metadata Specialist will work with those providers who do not have the expertise to create their own metadata and will conduct workshops and create screencasts to facilitate training and improve workflows. Training providers to create their own metadata is preferred to creating metadata for them, and that approach will be taken whenever possible. The staff at NYBG will take the lead on the ingestion of born-digital content into BHL and subsequently into DPLA with assistance from the other project partners. Don Wheeler, Collection Development Librarian, will assist in making recommendations for content, and Andrew Tschinkel, Digital Imaging Technician, will assist with scanning. The NYBG project staff will document opportunities to improve the usability and functionality of the Macaw ingest tool. This information will be shared with the application developer in order to ensure the continuous improvement of the tool.
- 2) Community Outreach, managed by Harvard's Museum of Comparative Zoology (MCZ). Constance Rinaldo, Community Coordinator, and the Community Manager (to be hired with grant funds) will coordinate communication and outreach to new contributors, manage institutional relationships, pursue copyright permissions, and coordinate with the BHL Collections Committee and Membership Committee. The Community Manager will perform due diligence to assure copyright compliance and identify and negotiate with interested publishers.
- 3) Data Analysis, Ingest, and Software Tool Development, managed by staff at the Missouri Botanical Garden (MBG) and BHL. Trish Rose-Sandler, Data Analyst, will write functional specifications for any enhancements needed to accommodate new types of content and metadata and will provide normalization and data clean up. She will also handle any issues related to the harvest of BHL data by DPLA. William Ulate, Technical Director, will implement new BHL system functionality and coordinate with BHL's Technical Committee and the Project Team on programming issues.

In order to achieve the projected number of newly ingested records, BHL needs to adopt best-of-breed tools for the assessment, scrubbing, cross-walking and transformation of metadata. These tools will be coupled with Macaw to create an integrated workflow. Because all DPLA hubs that serve as aggregators share similar challenges when it comes to ensuring metadata quality, the Project Team intends to actively engage in conversations with other DPLA hubs on how to re-use or collaborate on building open source tools that ensure metadata quality across collections and leverage BHL's work across the national digital platform.

The Project Team has invited several institutions to participate based on their expressed interest and support of this project. The Wildlife Conservation Society; The Natural History Museum, Los Angeles; The Denver

Botanic Garden; The Hawaiian Botanical Society; the Pennsylvania Horticultural Society; and Seed Savers Exchange will be the first participants in the project. Their input and content will be used to improve the project continuously as it progresses to an even wider audience. While full deployment is not anticipated until the end of the grant period, self-serve elements of the system will be ready to be utilized one year after the awarding of the grant, in response to growing museum interest in sharing their content via an open national platform.

4. Diversity Plan

Since large museums, libraries, and natural history organizations generally have stronger technical capacities than smaller museums with little or no capacity to make digital versions of their collections discoverable, this project proposes to offer free-of-charge service with some supporting tools to lower the barriers that inhibit contribution of content to national digital platforms. BHL will continue to serve a broad diversity of U.S. collecting institutions. As the project develops, we will work to ensure that the diversity of participating institutions represent ethnically and economically diverse communities as well and that this content is included in ongoing outreach activities.

5. Project Resources: Personnel, Time, Budget

The estimated total budget is \$1,840,464 over the two year period, of which \$846,073 will be requested from IMLS; a cost-share of \$994,391 will be provided by the institutions participating in the grant and other BHL Members.

The project will be managed by Susan Fraser, Director of the LuEsther T. Mertz Library. She will develop a communication strategy to keep participants, partners and stakeholders informed and engaged. She will work with key project staff from MCZ, MBG, and BHL as well as the Smithsonian Institution Libraries (SIL) to coordinate and determine system requirements, review specifications, monitor outreach efforts, and test the contribution ingest service. Quarterly conference calls will be convened to keep all project staff informed of the progress of the project and frequent ongoing chat sessions will keep all parties communicating throughout the project. Brief quarterly reports on project activities will be required of participating organizations. This project builds upon years of investment and is a top strategic initiative for BHL and for the specific member libraries participating in this project (NYBG, MCZ, MBG, and SIL). As such, each participating institution has agreed to dedicate significant amounts of staff time to all phases of the project.

Key personnel include:

The New York Botanical Garden

- *Susan Fraser, Director of the LuEsther T. Mertz Library*, will be the Project Director. Ms. Fraser will provide administrative oversight, organize and participate in team meetings, and manage the project budget. She holds an MLS from Columbia University. She is an active member of the Council of Botanical and Horticultural Libraries (CBHL), has served on the Council of the Torrey Botanical Society as the Society's Historian, is a founding member of the Biodiversity Heritage Library (BHL), served on the BHL Executive Committee as BHL Secretary from 2012-2015, and is a former chair of the BHL Membership Committee. Ms. Fraser has more than 25 years of experience in collaborative and digitization projects, and in managing private and federal grants, including several IMLS grants.
- *Susan Lynch, NYBG Systems Librarian at the Mertz Library*, will be the Data Manager for the project. Ms. Lynch worked as a software engineer at IBM for decades before entering librarianship as a second career. She holds a BA in Biology, an MS in Computer Science and an MLS. She has extensive practical experience with digitization and data management. She worked on the DSpace institutional

repository and the Omeka image repository at the American Museum of Natural History and a scrapbook digitization project for The Wildlife Conservation Society. In her current position as Systems Librarian at the Mertz Library, Ms. Lynch supervises the digital lab. She coordinates the digitization, metadata formatting, and uploading of book-like content into BHL and Internet Archive.

Ernst Mayr Library of the Museum of Comparative Zoology/Harvard University

- *Constance Rinaldo, Librarian of the Ernst Mayr Library of the MCZ/Harvard University*, will be the Community Coordinator for the project, overseeing the work of the Community Manager on collections and digitization support as well as participating in team meetings. With a BA in Biology and Anthropology, an MSc in Zoology, and an MLS, Ms. Rinaldo has been Librarian of the MCZ since 1999. She is a founding member (2005) and Vice-Chair of the BHL Members Executive group, coordinating global partners, and part of the Membership & Collection Committees working with organizations that are interested in contributing content to BHL. Ms. Rinaldo brings 25 years of experience in collection management, collaboration, and digital library projects.
- *Joe DeVeer, Project Manager and Museum Liaison for the Ernst Mayr Library of the MCZ/Harvard University*, has a BS in Biology, and an MLA in Museum Studies. He has worked in the Ernst Mayr Library since 2006, and previously in the MBLWHOI Library at the Marine Biological Laboratory in Woods Hole, MA. Mr. DeVeer has been involved with the design, implementation, and management of library and museum digitization projects since 2001. He currently manages library and museum digitization projects, including developing specifications, coordination, supervision, building online exhibits, and management of the Ernst Mayr Library's contributions to the Biodiversity Heritage Library. Mr. DeVeer will supervise digitization and outreach within the MCZ, collaborate on technical issues and solutions, develop exhibits for the project, and participate in team meetings.

Missouri Botanical Garden and Biodiversity Heritage Library

- *Trish Rose-Sandler, Digital Projects Coordinator, Center for Biodiversity Informatics, Missouri Botanical Garden and Data Analyst for BHL*, has an MA in Art History and an MLS. She has served as the data analyst for BHL since 2010 and as the principal investigator for several BHL-related projects, including most recently the IMLS-funded *Purposeful Gaming and BHL*. For this project, she will write functional specifications needed to accommodate new types of content, provide normalization, data clean up, and will identify improved workflows for moving content from BHL to DPLA.
- *William Ulate Rodriguez, Senior Project Coordinator, Center for Biodiversity Informatics, Missouri Botanical Garden and Technical Director for BHL*, has a BS in Computer Science and Informatics. Mr. Ulate is an integral part of BHL, helping coordinate project management activities across its partner institutions and funded initiatives and overseeing the technical development of the BHL portal. Mr. Ulate will strengthen the project through his domain knowledge of scientific data and his strong background in custom software development projects. For this project, Mr. Ulate will implement new BHL system functionality identified by the Data Analyst and coordinate all technical activities between BHL's Technical Advisory Group and the Project Team.
- *The Metadata Specialist* (to be hired by NYBG), will work closely with content providers—typically small museums, cultural heritage institutions, and publishers—to ensure that they understand project requirements, workflows, and the use of existing tools. S/he will work with new partners to normalize the metadata for new content and will train new content providers on the use of the Macaw ingest tool. S/he will work closely with the Data Manager to ensure conformity to set standards and best practices.

- *The Community Manager* (to be hired by MCZ), will be responsible for the identification of potential content providers and perform outreach services to potential content providers, such as society publishers and small natural history libraries. S/he will perform due diligence in determining copyright status of new content, will work with the BHL Collections Coordinator to process license agreements for copyright, and will solicit requests for permission to ingest in-copyright born digital material.

6. Communications Plan

The project's communication plan is aimed at reaching a diverse array of institutions, organizations, and individuals. The project will take advantage of the comprehensive BHL Outreach and Communications Plan that outlines BHL's communication objectives, audiences, platforms, strategies, and evaluation (please see *Supporting Document 3* for an excerpt). The resources contained within BHL's digital library currently serve a wide variety of audiences spanning multiple disciplines, including taxonomists, ecologists, artists, historians, biologists, illustrators, graphic designers/publishers, archivists, educators, students, environmentalists, and citizen scientists. The Project Team believes there is also a large untapped audience of potential or prospective users of the DPLA who may not consider science-based repositories as sources for historical documents and other humanities-based content, such as natural history illustrations, photographs, diaries, and correspondences. BHL uses a variety of publishing channels, including traditional print media, conference presentations, and emerging social media, to promote its content, services, and program activities, in conjunction with its portal for the delivery of digitized literature.

The project will be promoted through press releases that are published through BHL Member and Affiliate news outlets as needed, and are recorded at <http://biodivlib.wikispaces.com/Press+Releases>; Quarterly Reports, at <http://biodivlib.wikispaces.com/Reports>; and Newsletters, at <http://biodivlib.wikispaces.com/Newsletters>. The project will also be promoted at professional conferences and Annual Meetings, such as those of the American Library Association (ALA), American Association for the Advancement of Science (AAAS), American Alliance of Museums (AAM), Council of Botanical and Horticultural Libraries (CBHL), Special Library Association (SLA) Natural History Caucus, National Association of Biology Teachers, and the International Association of Aquatic and Marine Science Libraries (IAMSLIC). These existing and well-supported channels will be used to disseminate project results to the BHL community of enthusiasts, as well as the broader communities of humanities scholars and biodiversity scientists.

BHL has an active social media presence and uses the following technologies in support of promoting program deliverables and achievements:

- **BHL Blog** <http://blog.biodiversitylibrary.org>
The BHL Blog is used to report preliminary results from new initiatives, or historical background on a given book, author, illustrator, organism or theme. More than 2,200 visitors per month consult the BHL Blog.
- **Twitter** <http://twitter.com/BioDivLibrary>
BHL's Twitter feed is used to highlight interesting content within BHL; provide factoids about authors, publications, illustrations, or species featured within BHL; share biodiversity news stories; spotlight events and news at and contributions from BHL Member and Affiliate institutions; and keep users updated about BHL project developments. These tweets are shared with the over 6,300 people who follow BHL on Twitter, and on average BHL tweets reach over 2.9 million total people on Twitter each month.
- **Facebook** <https://www.facebook.com/BioDivLibrary>

BHL's Facebook page, which has been liked by more than 10,900 people, is used to highlight books in BHL's collection, providing information, factoids, and illustrations within each post; share biodiversity news stories; celebrate BHL Member and Affiliate contributions; and keep users informed about BHL news and developments. BHL Facebook posts reach an average of over 30,500 people each month.

BHL has created several online exhibitions at <http://www.biodiversityexhibition.com/> and proposes to do the same for the DPLA exhibitions' pages as a means for raising awareness of and providing information about the project.

7. Sustainability

This project will result in a set of guidelines and instructions for institutions to follow for future and ongoing participation in this program beyond the term of the grant. These products will be created and maintained within the same stringent standards of the BHL workflow. For scans, BHL follows *The Technical Guidelines for Digitizing Cultural Heritage Materials: Creation of Raster Image Master Files* established by FADGI in 2010. Metadata is encoded in appropriate standards for descriptive (MARCXML, MODS), technical (PREMIS), and structural data (METS). BHL maintains complete mirror copies of all scanned content at the Smithsonian Institution and the Bibliotheca Alexandrina. Additionally, a partial archive is maintained at the Natural History Museum (London). These mirrors serve as a redundant store of all the materials made available through BHL. In this way, BHL can benefit from the free storage and bandwidth provided by Internet Archive in delivering its content to users, while also maintaining a synchronized collection of that same content under BHL's own control and management.

To properly safeguard the digital files over time, consideration is made via the following means: metadata exists and is freely available about each book and all of the digital files representing that book at Internet Archive. These metadata can be used to build transfer manifests, critical for checking that all files have been successfully copied between systems (such as from Internet Archive to the BHL mirrors in Washington, Alexandria, and London). It is also important to mention when discussing sustainability of project results that all of the content within BHL is published freely online and can be viewed and downloaded by anyone without restriction or fee, thereby furthering BHL's strong commitment to public domain literature having broad, unfettered use. BHL already contributes its metadata records to OCLC in order to increase findability.

**THE NEW YORK BOTANICAL GARDEN
SCHEDULE OF COMPLETION**

Responsible Party	Description	2015			2016												2017										
		October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July	August	September		
D	Project team development - chat/onlinemeetings for project launch																										
A,C	Hiring new staff																										
D	Consultation with Collections Committee																										
A,C	Consultation with Membership Committee																										
A,C	Orientation and training of new staff																										
B	Analysis of BHL feed to DPLA																										
B	Write specifications for changes to BHL's feed to DPLA and review with stakeholders																										
B	Programming changes to implement changes to BHL's feed																										
B	Deployment of modified feed and QA																										
A, C	Work with the first group of content providers including training																										
D	Identification and correction of metadata problems in BHL																										
B	Solve problems identified by metadata specialist																										
C	Ongoing outreach to potential content providers																										
C	Ongoing work to license in-copyright material																										
A,B	Develop detailed workflow for born-digital content																										
A	Test data ingest model																										
A	Ingest first born-digital content into BHL and DPLA																										
A	QA of born-digital content in BHL and DPLA																										
A,B	Ongoing ingestion of born-digital content																										
D	Macaw usability feedback collected and sent to data analyst																										
B	Write functional specifications for changes to Macaw																										
B	Programming changes to implement the specified changes																										
A	Record screencasts , first iteration																										
A	Record screencasts, second iteration																										
A,C	Ongoing work with new content providers including training																										
A,C	Digitization of content as needed																										
D	Report preparation																										
D	Engage with service hubs to find appropriate tools																										
B	Integrate new tools into BHL workflows																										
D	New exhibits in DPLA & institutional websites to showcase BHL content																										
D	Ongoing outreach to current and potential users of BHL content including educators																										

Key
A- NYBG
B - MBG
C - Harvard MCZ
D - All

IMLS BUDGET FORM

- a. Legal name (5a from SF-424S):
- b. Requested Grant Period From: (MM/DD/YYYY) Through: (MM/DD/YYYY)
- c. If this is a revised budget, indicate application/grant number:

1. Salaries and Wages

Name/Title or Position	Year 1		Year 2		Year 3		Total		
	Grant Fund	Cost Share	Grant Fund	Cost Share	Grant Fund	Cost Share	Grant Fund	Cost Share	Grand Total
Susan Fraser/Director of the									
Susan Lynch/Systems Librarian									
Andrew Tschinkel/Scanning									
Donald Wheeler/Collection [
Metadata Specialist (to be hi									
Subtotal	\$71,769	\$40,844	\$73,922	\$42,069			\$145,691	\$82,913	\$228,604

2. Fringe Benefits

Description (% or item)	Year 1		Year 2		Year 3		Total		
	Grant Fund	Cost Share	Grant Fund	Cost Share	Grant Fund	Cost Share	Grant Fund	Cost Share	Grand Total
Full-Time Staff (41.5% in Year 1)	\$29,784	\$10,416	\$31,417	\$10,987	\$0	\$0	\$61,201	\$21,403	\$82,604
Part-Time Staff (10%)	\$0	\$1,575	\$0	\$1,622	\$0	\$0		\$3,197	\$3,197
Subtotal	\$29,784	\$11,991	\$31,417	\$12,609			\$61,201	\$24,600	\$85,801

IMLS BUDGET FORM

a. Legal name (5a from SF-424S):

3. Travel

From/To and Purpose	Year 1		Year 2		Year 3		Total		
	Grant Fund	Cost Share	Grant Fund	Cost Share	Grant Fund	Cost Share	Grant Fund	Cost Share	Grand Total
Subtotal									

4. Supplies, Materials, and Equipment

Item	Year 1		Year 2		Year 3		Total		
	Grant Fund	Cost Share	Grant Fund	Cost Share	Grant Fund	Cost Share	Grant Fund	Cost Share	Grand Total
Subtotal									

5. Contracts and Subawards

Item	Year 1		Year 2		Year 3		Total		
	Grant Fund	Cost Share	Grant Fund	Cost Share	Grant Fund	Cost Share	Grant Fund	Cost Share	Grand Total
Subtotal									

IMLS BUDGET FORM

a. Legal name (5a from SF-424S):

6. Student Support

Item	Year 1		Year 2		Year 3		Total		
	Grant Fund	Cost Share	Grant Fund	Cost Share	Grant Fund	Cost Share	Grant Fund	Cost Share	Grand Total
Subtotal									

7. Other Costs

Item	Year 1		Year 2		Year 3		Total		
	Grant Fund	Cost Share	Grant Fund	Cost Share	Grant Fund	Cost Share	Grant Fund	Cost Share	Grand Total
Subtotal									

8. Total Direct Costs

	Year 1		Year 2		Year 3		Total		
	Grant Fund	Cost Share	Grant Fund	Cost Share	Grant Fund	Cost Share	Grant Fund	Cost Share	Grand Total
Subtotals (Items 1-8)									

IMLS BUDGET FORM

a. Legal name (5a from SF-424S):

9. Indirect Costs (Read the instructions about Indirect Costs before completing this section.)

Current indirect cost rate(s) have been negotiated with a federal agency. Name of Agency: _____ Expiration Date: _____

Indirect cost proposal has been submitted to a federal agency but not yet negotiated. Name of Agency: _____ Proposal Date: _____

Applicant chooses a rate not to exceed 10% of modified total direct costs, and declares it is eligible for the 10% rate.

Applicant chooses not to include indirect costs.

Rate and Base	Year 1		Year 2		Year 3		Total		
	Grant Fund	Cost Share	Grant Fund	Cost Share	Grant Fund	Cost Share	Grant Fund	Cost Share	Grand Total
Indirect Costs Subtotal									

10. Total Project Costs

	Year 1		Year 2		Year 3		Total		
	Grant Fund	Cost Share	Grant Fund	Cost Share	Grant Fund	Cost Share	Grant Fund	Cost Share	Grand Total
Total Direct & Indirect Costs									
Total Costs (excluding student support)									

THE NEW YORK BOTANICAL GARDEN
BUDGET JUSTIFICATION

1. Salaries and Wages

To achieve the objectives set forth in year one and in year two of the project, The New York Botanical Garden (NYBG) will provide administrative and budgetary oversight and will coordinate the various components of the project. Staff include:

Susan Fraser, Director of the LuEsther T. Mertz Library, will have administrative and budgetary oversight of the project, and will coordinate the project activities. Ms. Fraser will also develop a communication strategy to keep participants, partners, and stakeholders informed and engaged. She will work with key project staff from the partner institutions to coordinate and determine system requirements, review specifications, monitor outreach efforts, and test the contribution ingest service. Ms. Fraser will contribute [REDACTED] of her time in both years.

Susan Lynch, Systems Librarian, will coordinate the digitization, metadata formatting, and uploading of book-like content into BHL and Internet Archive. In coordination with the Metadata Specialist—whom she will supervise—Ms. Lynch will facilitate metadata improvement across all providers, coordinate activities, and interface with new contributors and teach them about Macaw, as well as improve content provider metadata through training and quality control. Ms. Lynch will contribute [REDACTED] of her time in both years.

Andrew Tschinkel, Scanning Technician, will digitize new content and assist new content providers with technical requirements. Mr. Tschinkel's is a part-time position, and [REDACTED] of his time will be contributed to this project in both years. **Donald Wheeler, Collection Development Librarian**, will assist in making recommendations for new content. Mr. Wheeler is a member of the BHL Collection Development Committee, and his role will be advisory primarily. He will contribute [REDACTED] of his time in both years.

Metadata Specialist will be hired as a full-time position, grant-funded, two-year position. S/he will work closely with Ms. Lynch and content providers to ensure that they understand project requirements, workflows, and the use of existing tools. S/he will work with each contributor on a one-to-one basis to assure compliance with DPLA specifications and will provide guidance on using Macaw. Along with Ms. Lynch, s/he will assist providers who do not have expertise in metadata creation, conduct workshops, and create screencasts to facilitate training and improve workflows. S/he will be dedicated to this project 100% in both years.

Total salaries over the two-year grant period are \$228,604, of which \$145,691 is requested from IMLS. The Garden will contribute \$82,913 as cost-share.

2. Fringe Benefits

Fringe benefits are calculated at 41.5% in Year 1 and 42.5% in Year 2 for full-time staff. Fringe for part-time staff is 10% in both years. Total fringe costs over the two-year grant period are \$85,801, of which \$61,201 is requested from IMLS. The Garden will contribute \$24,600 as cost-share.

3. Travel

Travel funds are requested to support outreach travel for project staff to work with institutions to identify content, review content structure (if already digital) and scope out training needs. Additionally the project staff will have several face to face meetings during the course of this project. Staff will also participate in professional meetings and meetings within BHL and DPLA. Total travel is budgeted at \$30,000, of which \$20,000 is requested from IMLS. BHL, through the Garden, will contribute \$10,000 as cost-share to support collaborative meetings for its members, affiliates, and new contributors.

4. Supplies, Materials, and Equipment

BHL, through the Garden, will contribute a total of \$32,974 in cost-share (1/2 in each year) for server hosting.

5. Contracts and Subawards

Harvard University (Ernst Mayr Library of the Museum of Comparative Zoology) (MCZ)

MCZ's total subaward budget is \$589,206, of which \$237,297 is requested from IMLS and \$351,909 will be contributed as cost-share. Expenses are as follows:

- Salaries and Fringe
 - Joe DeVeer, Project Manager and Museum Liaison (■■■■ of time in both years), will provide collections support. Mr. DeVeer will coordinate and supervise in-house digitization for BHL, supervise and train the scanning technician, scope training needs for new contributors, and provide assistance to the Metadata Specialist and Ms. Lynch with training on the Macaw tool. Fringe benefits are calculated at 41.6% for each year.
 - Constance Rinaldo, Librarian, will serve as Community Coordinator (■■■■ of time in both years). She will oversee all grant activities at the Ernst Mayr Library, supervise and train the Community Manager, attend meetings, identify potential collaborators, and work with all the grant partners, along with the Collections and Membership Committees of BHL to ensure completion of the work. Fringe benefits for Ms. Rinaldo are calculated at 41.6% for each year.
 - Community Manager (100% of time in both years) will provide community coordination for the project. This position will be a two-year, full-time, grant-funded position. Fringe benefits are calculated at 55.3% for each year.
 - Library Assistant (■■■■ of time in each year) will digitize material selected by the Ms. Rinaldo and Mr. DeVeer, provide quality review, and write reports. Fringe benefits are calculated at 41.6% for each year.
 - Special Collections Assistant (■■■■ of time in each year) will provide support in handling material being prepared for scanning. Fringe benefits are calculated at 55.3% for each year.

Total MCZ salaries are \$205,471 over both years, of which \$107,590 is requested from IMLS, and \$97,881 is provided as cost-share. Total fringe benefits are \$84,235, of which \$59,497 is requested from IMLS and \$24,738 is provided as cost-share.

- Travel

MCZ will contribute to the overall costs of outreach travel. Total travel attributed to MCZ is \$20,000 over both years, of which \$10,000 is requested from IMLS, and \$10,000 is contributed as cost-share.
- Other Costs
 - MCZ will provide digitization support such as advice, quality review, scanning, and collections support to new partners that have content to contribute. MCZ has a Table Top Scanner that may be used for limited scanning activities for new providers that do not have appropriate equipment. Delivery is directly to the Internet Archive. Existing staff, already engaged in these activities, will supply these services. All material scanned by MCZ for BHL will be contributed to DPLA, thus the costs associated with scanning (in-house and through the Internet Archive) are being contributed as cost-share. Total scanning is budgeted at \$110,000 over both years, all of which is cost-share from MCZ.
 - MCZ pays annual dues of \$10,000 to be an active member with participation in governance of

BHL. These dues (\$20,000 over both years) are being contributed as cost-share.

- Indirect Costs

The University Facilities and Administrative Cost rate is calculated at the Other Sponsored Activity rate of 34% on Modified Total Direct Costs (MTDC) for all years of the project. Facilities and Administrative Cost rates are determined per agreement with the Department of Health and Human Services dated 3/13/15. Total indirect costs are \$149,500 over both years, of which \$60,210 is requested from IMLS, and \$89,290 is provided as cost-share.

Missouri Botanic Garden (MBG)

MBG's total subaward budget is \$512,453, of which \$212,776 is requested from IMLS and \$299,677 is provided as cost-share. Expenses are as follows:

- Salaries and Fringe

- Trish Rose-Sandler, Data Analyst (■■■■ of time in both years), will write functional specifications for any enhancements needed to accommodate new types of content and metadata, and will provide normalization and data clean-up.
- William Ulate Rodriguez, BHL Technical Director (■■■■ of time in both years), resides at MBG. He will help coordinate BHL's project management activities across the partner institutions, implement new BHL system functionality identified by Ms. Rose-Sandler, and coordinate all technical activities between BHL's Technical Advisory Group and the Project Team.

Fringe benefits for both positions are calculated at 24% of salary in both years.

Total MBG salaries are \$183,106 over both years, of which \$150,626 is requested from IMLS, and \$32,480 is provided as cost-share. Total fringe benefits are \$43,945 over both years, of which \$36,150 is requested from IMLS, and \$7,795 is provided as cost-share.

- Supplies, Materials, and Equipment

BHL, through MBG, will contribute a total of \$10,294 in cost-share (1/2 in each year) for its server administration.

- Contracts and Subawards

BHL contracts with Mike Lichtenberg, a Systems Programmer, to make improvements and modifications to BHL. Mr. Lichtenberg resides at MBG, but is paid by BHL. As a contractor, he does not receive fringe benefits. He will provide ongoing support for the project. The total costs for Mr. Lichtenberg's involvement are \$126,000 over two years, of which \$26,000 is requested from IMLS and \$100,000 will be contributed as cost-share.

- Other Costs

MBG pays annual dues of \$10,000 to be an active member with participation in governance of BHL. These dues (\$20,000 over both years) are being contributed as cost-share.

- Indirect Costs

MBG's indirect cost rate is calculated at 64.41% of MTDC. The rate is determined per agreement with the U.S. Department of the Interior dated 3/5/13. Total indirect costs are \$129,108 over both years, all of which is being provided as cost-share.

Biodiversity Heritage Library

BHL is contributing \$80,000 as cost-share over both years. Expenses are as follows:

- Supplies, Materials, and Equipment

\$20,000 has been allocated over both years for BHL's subscription to CrossRef, which supports Digital Object Identifiers for much of BHL's material in order to make it more discoverable.

- Other Costs

As with MCZ (above) and NYBG (below), digitization funds will be provided by BHL to its members to allow them to contribute content. \$60,000 has been allocated over both years for digitization.

6. Student Support

N/A

7. Other Costs

Digitization funds will be used to support the scanning of biodiversity content from those museums and libraries that have relevant content but do not have the resources to scan the materials. Funds will be administered by the NYBG. An account will be set up an Internet Archive scanning center to maximize the opportunity for low cost scanning. Recognizing that not all materials can be sent to an Internet Archive scan center, a portion of the funds will be allocated for more boutique-like scanning at individual institutions. A total of \$30,000 over both years has been allocated for digitization, all of which is requested from IMLS.

NYBG pays annual dues of \$10,000 to be an active member with participation in governance of BHL. These dues (\$20,000 over both years) are being contributed as cost-share.

8. Total Direct Costs

Total direct costs are \$1,609,038 over two years, of which \$706,965 is requested from IMLS. The Garden will provide the remainder as cost-share.

9. Indirect Costs

As per its agreement with the National Science Foundation, the Garden's federally negotiated indirect cost rate is 54.15% of MTDC. Total indirect costs are \$231,426, of which \$139,108 is requested from IMLS. The Garden will provide the remainder as cost-share.

10. Total Project Costs

The total project costs are \$1,840,464 over two years, of which \$846,073 is requested from IMLS. \$994,391 is being provided as cost-share.

THE NEW YORK BOTANICAL GARDEN

LIST OF KEY PROJECT STAFF AND CONSULTANTS

Ernst Mayr Library of the Museum of Comparative Zoology/Harvard University

- Joe DeVeer, Project Manager and Museum Liaison
- Constance Rinaldo, Librarian
- Community Manager (to be hired)

Missouri Botanical Garden

- Trish Rose-Sandler, Digital Projects Coordinator, Center for Biodiversity Informatics (MBG) and BHL Data Analyst
- William Ulate Rodriguez, Senior Project Coordinator, Center for Biodiversity Informatics (MBG) and BHL Technical Director

The New York Botanical Garden

- Susan Fraser, Director of the LuEsther T. Mertz Library
- Susan Lynch, Systems Librarian
- Metadata Specialist (to be hired)

DIGITAL STEWARDSHIP SUPPLEMENTARY INFORMATION FORM

Introduction:

IMLS is committed to expanding public access to IMLS-funded research, data and other digital products: the assets you create with IMLS funding require careful stewardship to protect and enhance their value. They should be freely and readily available for use and re-use by libraries, archives, museums and the public. Applying these principles to the development of digital products is not straightforward; because technology is dynamic and because we do not want to inhibit innovation, IMLS does not want to prescribe set standards and best practices that would certainly become quickly outdated. Instead, IMLS defines the outcomes your projects should achieve in a series of questions; your answers are used by IMLS staff and by expert peer reviewers to evaluate your proposal; and they will play a critical role in determining whether your grant will be funded. Together, your answers will comprise the basis for a work plan for your project, as they will address all the major components of the development process.

Instructions:

If you propose to create any type of digital product as part of your proposal, you must complete this form. IMLS defines digital products very broadly. If you are developing anything through the use of information technology – e.g., digital collections, web resources, metadata, software, data– you should assume that you need to complete this form.

Please indicate which of the following digital products you will create or collect during your project.

Check all that apply:

	Every proposal creating a digital product should complete ...	Part I
	If your project will create or collect ...	Then you should complete ...
<input type="checkbox"/>	Digital content	Part II
<input type="checkbox"/>	New software tools or applications	Part III
<input type="checkbox"/>	A digital research dataset	Part IV

PART I.

A. Copyright and Intellectual Property Rights

We expect applicants to make federally funded work products widely available and usable through strategies such as publishing in open-access journals, depositing works in institutional or discipline-based repositories, and using non-restrictive licenses such as a Creative Commons license.

A.1 What will be the copyright or intellectual property status of the content you intend to create? Will you assign a Creative Commons license to the content? If so, which license will it be? <http://us.creativecommons.org/>

A.2 What ownership rights will your organization assert over the new digital content, and what conditions will you impose on access and use? Explain any terms of access and conditions of use, why they are justifiable, and how you will notify potential users of the digital resources.

A.3 Will you create any content or products which may involve privacy concerns, require obtaining permissions or rights, or raise any cultural sensitivities? If so, please describe the issues and how you plan to address them.

Part II: Projects Creating Digital Content

A. Creating New Digital Content

A.1 Describe the digital content you will create and the quantities of each type and format you will use.

A.2 List the equipment and software that you will use to create the content or the name of the service provider who will perform the work.

A.3 List all the digital file formats (e.g., XML, TIFF, MPEG) you plan to create, along with the relevant information on the appropriate quality standards (e.g., resolution, sampling rate, pixel dimensions).

B. Digital Workflow and Asset Maintenance/Preservation

B.1 Describe your quality control plan (i.e., how you will monitor and evaluate your workflow and products).

B.2 Describe your plan for preserving and maintaining digital assets during and after the grant period (e.g., storage systems, shared repositories, technical documentation, migration planning, commitment of organizational funding for these purposes). Please note: Storage and publication after the end of the grant period may be an allowable cost.

C. Metadata

C.1 Describe how you will produce metadata (e.g., technical, descriptive, administrative, preservation). Specify which standards you will use for the metadata structure (e.g., MARC, Dublin Core, Encoded Archival Description, PBCore, PREMIS) and metadata content (e.g., thesauri).

C.2 Explain your strategy for preserving and maintaining metadata created and/or collected during your project and after the grant period.

C.3 Explain what metadata sharing and/or other strategies you will use to facilitate widespread discovery and use of the digital content created during your project (e.g., an Advanced Programming Interface, contributions to the DPLA or other support to allow batch queries and retrieval of metadata).

D. Access and Use

D.1 Describe how you will make the digital content available to the public. Include details such as the delivery strategy (e.g., openly available online, available to specified audiences) and underlying hardware/software platforms and infrastructure (e.g., specific digital repository software or leased services, accessibility via standard web browsers, requirements for special software tools in order to use the content).

D.2 Provide URL(s) for any examples of previous digital collections or content your organization has created.

Part III. Projects Creating New Software Tools or Applications

A. General Information

A.1 Describe the software tool or electronic system you intend to create, including a summary of the major functions it will perform and the intended primary audience(s) the system or tool will serve.

A.2 List other existing digital tools that wholly or partially perform the same functions, and explain how the tool or system you will create is different.

B. Technical Information

B.1 List the programming languages, platforms, software, or other applications you will use to create your new digital content.

B.2 Describe how the intended software or system will extend or interoperate with other existing software applications or systems.

B.3 Describe any underlying additional software or system dependencies necessary to run the new software or system you will create.

B.4 Describe the processes you will use for development documentation and for maintaining and updating technical documentation for users of the software or system.

B.5 Provide URL(s) for examples of any previous software tools or systems your organization has created.

C. Access and Use

C.1 We expect applicants seeking federal funds for software or system development to develop and release these products as open source software. What ownership rights will your organization assert over the new software or system, and what conditions will you impose on the access and use of this product? Explain any terms of access and conditions of use, why these terms or conditions are justifiable, and how you will notify potential users of the software or system.

C.2 Describe how you will make the software or system available to the public and/or its intended users.

Part IV. Projects Creating Research Data

1. Summarize the intended purpose of the research, the type of data to be collected or generated, the method for collection or generation, the approximate dates or frequency when the data will be generated or collected, and the intended use of the data collected.

2. Does the proposed research activity require approval by any internal review panel or institutional review board (IRB)? If so, has the proposed research activity already been approved? If not, what is your plan for securing approval?

3. Will you collect any personally identifiable information (PII) about individuals or proprietary information about organizations? If so, detail the specific steps you will take to protect such information while you prepare the research data files for public release (e.g. data anonymization, suppression of personally identifiable information, synthetic data).

4. If you will collect additional documentation such as consent agreements along with the data, describe plans for preserving the documentation and ensuring that its relationship to the collected data is maintained.

5. What will you use to collect or generate the data? Provide details about any technical requirements or dependencies that would be necessary for understanding, retrieving, displaying, or processing the dataset(s).

6. What documentation will you capture or create along with the dataset(s)? What standards or schema will you use? Where will the documentation be stored, and in what format(s)? How will you permanently associate and manage the documentation with the dataset(s) it describes?

7. What is the plan for archiving, managing, and disseminating data after the completion of research activity?

8. Identify where you will be publicly depositing dataset(s):

Name of repository: _____

URL: _____

9. When and how frequently will you review this data management plan? How will the implementation be monitored?

45 MILLION PAGES, 150 MILLION SPECIES NAMES, SCIENCE FOR THE DPLA: THE BIODIVERSITY HERITAGE LIBRARY

The BHL is a "Vast library of life" that enriches the DPLA by helping the DPLA community learn more about our non-human neighbors on planet Earth.

By Martin R. Kalfatovic & Grace Costantino



Contact w/ BHL on social media at <https://biodyrb.wikispaces.com/BHL+Community>

Free, Worldwide Access to Biodiversity Knowledge

The Biodiversity Heritage Library (BHL, www.biodiversitylibrary.org) is an open access digital library for biodiversity literature and archives. BHL operates as a consortium to digitize the library collections of natural history, botanical, and research institutions around the world. Since 2013, BHL has also served as a digital content hub within the Digital Public Library of America.

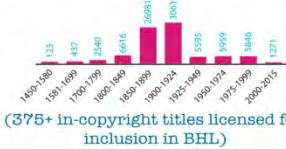
BHL has...
45.8+ Million
159.6K+ PAGES
volumes
157.3M+
taxonomic names

(approx. 17% total biodiversity literature)



Collections by Date...

Publication year breakdown of BHL's 93K+ Titles...

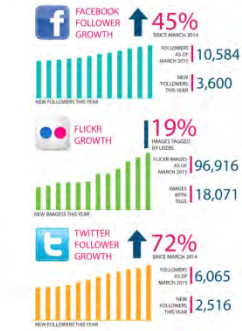


Collections in DPLA...



Social Media...

BHL has seen dramatic growth on social media...



Inspiring Discovery with Biodiversity Knowledge

We use social media, exhibitions, citizen science, and curated collections to highlight hidden gems in BHL, engage with our communities, tell the story behind our content, and illustrate the importance of historic literature to modern science. In 2014, we started collaborating with DPLA on social media to share this great information and generate posts about BHL content for DPLA.

We use Social Media to... Highlight Hidden Gems

Historically important...
1st published descriptions & illustrations...

We use Social Media to... Enhance Collections

Flickr Image Tagging...
18K+ tags have been tagged in the BHL Flickr & 17K+ tags have been added to EOL.

We use Social Media to... Tell Stories

Social Media Campaigns...
Each year, we produce several week-long social media campaigns around different topics. During the week of the campaign, all BHL social media posts highlight BHL content relevant to and educate our audience about that topic.

We use Social Media to... Show Scientific Importance

Through social media, we tell our audience how historic literature helps scientists identify new species, gather information about new extinct, and endangered species, evaluate ecosystem health, determine population declines, and inform habitat conservation strategies. We also provide BHL users on our blog, interviewing them about their use of BHL to support modern science.

Digital Exhibitions...

We also produce digital exhibitions around particular topics in order to tell the stories of our collections. In December 2014, we released two new exhibitions: one on *Early Home in Science*, another on *Latin Natural History*. Find them online at <http://www.biodiversitylibrary.org/exhibitions/>

We use Social Media to... Collaborate with DPLA

In 2014, we started partnering with DPLA on social media to generate posts highlighting BHL content in the *Digital Public Library of America*. Social media is an invaluable tool for demonstrating to both BHL and DPLA audiences the importance of the vast library of life available from the *Biodiversity Heritage Library*.

THE NEW YORK BOTANICAL GARDEN

LIST OF ENCLOSED LETTERS OF SUPPORT

- The Council on Botanical and Horticultural Libraries
- Digital Public Library of America
- Harvard University Library
- Natural History Museum of Los Angeles County
- Wildlife Conservation Society

BHL OUTREACH & COMMUNICATION PLAN

Version 2 (January 2015)

By Grace Costantino

Last Updated May 2015

A GUIDE TO FULFILLING THE BIODIVERSITY HERITAGE LIBRARY'S OUTREACH MISSION

BHL Program Goal 4: Outreach to Users

Increase global awareness about the BHL and biodiversity issues through outreach, learning and education, branding and collaboration with existing and new user communities

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Outreach Objective Two: Keep people informed about project developments, services, and how to use them.

Outreach Objective Three: Foster dialogue and Engagements among BHL audiences about biodiversity topics and corpus publications using BHL collections.

AUDIENCES

Scientists/Researchers

Topics and Content of Interest

Citizen Scientists/People Interested in Biodiversity

Topics and Content of Interest

Bibliophiles

Topics and Content of Interest

Artists

Topics and Content of Interest

Librarians

Topics and Content of Interest

Taxonomists

Topics and Content of Interest

Techies

Topics and Content of Interest

HISTORIANS

Topics and Content of Interest

Educators

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APPLE

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OBJECTIVES

This table presents the five objectives and associated tactics for BHL's outreach efforts. These objectives are derived from the BHL Objectives and Objectives document. This plan elaborates the tactics for each platform by highlighting the specific tasks associated with each.

Outreach Objective One: Increase awareness about BHL and grow our audience.

- Tactic One: Interface with identified audiences via social media outlets and listservs
- Tactic Two: Develop appropriate and tasteful marketing materials for BHL
- Tactic Three: Attend appropriate conferences and meetings to promote BHL
- Tactic Four: Develop BHL Awareness Program
- Tactic Five: Create Marketing and Branding Plan
- Tactic Six: Collaborate with and reach out to external partners and members for social media cross-promotion to increase reach of our content and gain new audiences
- Tactic Seven: Include popular hashtags and external handles in social media content to target large existing audiences
- Tactic Eight: Create content highlighting the importance of BHL in scientific, cultural, and other appropriate discipline applications

Outreach Objective Two: Keep people informed about project developments, services, and how to use them.

- Tactic One: Highlight major project news, developments and services via blog posts, press releases, and/or user tutorials and further publicize on additional social media platforms
- Tactic Two: Publish quarterly newsletters and program reports
- Tactic Three: Present major program updates at appropriate conferences
- Tactic Four: Maintain bibliography of publications, presentations, posters, articles, websites, and online content showcasing BHL
- Tactic Five: Maintain the public wiki as an informational environment about BHL

Outreach Objective Three: Foster dialogue and Engagements among BHL audiences about biodiversity topics and corpus publications using BHL collections.

- Tactic One: Feature species, author, and collections factoids, image highlights, hot biodiversity topics, and biodiversity news updates in social media content, especially highlighting BHL member and affiliates contributions, content, and events as appropriate
- Tactic Two: Repackage BHL content in user-friendly ways

- Tactic Three: Maintain BHL calendar to organize outreach events and identify social media topics
- Tactic Four: Feature publicity campaigns structured around specific biodiversity or appropriate cultural topics and/or project news or developments
- Tactic Five: Highlight Field Book Project content regularly on BHL social media outlets
- Tactic Six: Encourage crowdsourcing and citizen science activities that enhance BHL collections, partnering with external parties on projects as appropriate
- Tactic Seven: Implement tools on BHL website(s) to allow users to easily share and discuss BHL content via social media

Outreach Objective Four: Increase traffic back to BHL from Social Media

- Tactic One: Include links back to BHL website content in social media posts

Outreach Objective Five: Support BHL Financial Stability

- Tactic One: Work with SIL Development office to craft periodic fundraising campaigns that highlight the importance of BHL and corpus publications alongside requests for donations

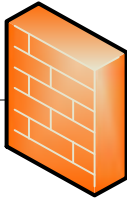


External User

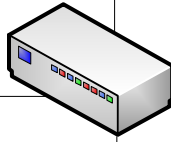
BHL Average
.2 Mbps - In
2.6 Mbps - Out



INTERNET



Firewall



Network
Infrastructure



Network Admin
Staff



Server Admin
Staff



Web Server
CBIWEBSERVER
biodiversitylibrary.org



Database Server
MBGSERV21
SQL 2012 Enterprise
BHL DB



File Server
MBGSERV14



BHL OCR
Text Files



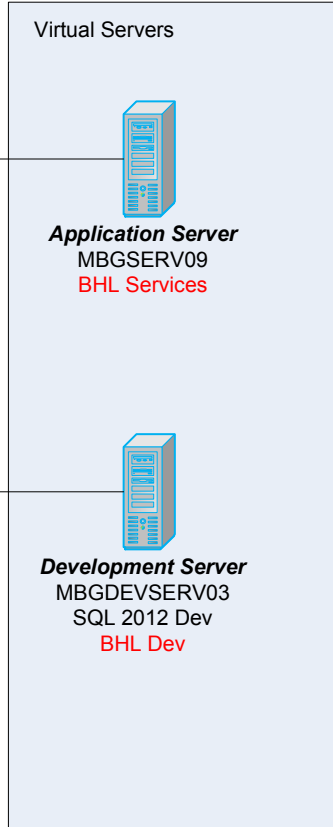
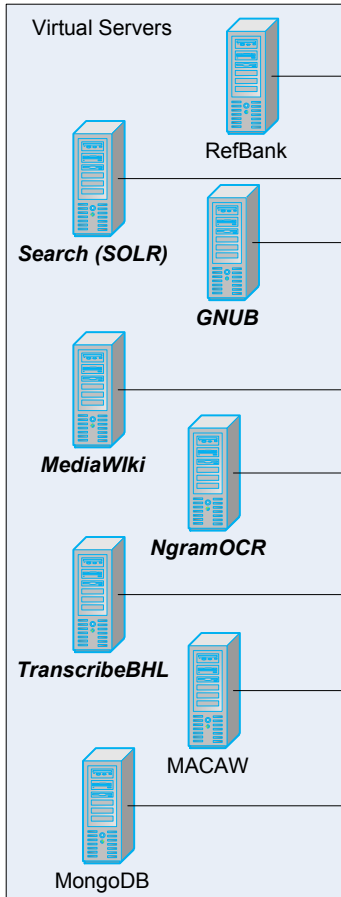
**INTERNET
ARCHIVE**
Image Files
PDFs



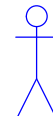
GITHUB
BHL Source



**VISUAL STUDIO
ONLINE**
BHL Source



Backup Server



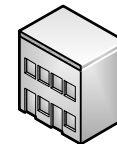
Backup Admin
Staff



Backup
Disks



Backup
Tapes



Offsite
Storage

BHL Backup

