


# The Art of Life schema: describing and providing access to natural history illustrations from the Biodiversity Heritage Library (BHL)

by William Ulate<sup>1</sup>, Trish Rose-Sandler<sup>1</sup>, Gaurav Vaidya<sup>2</sup>, Robert Guralnick<sup>2</sup>



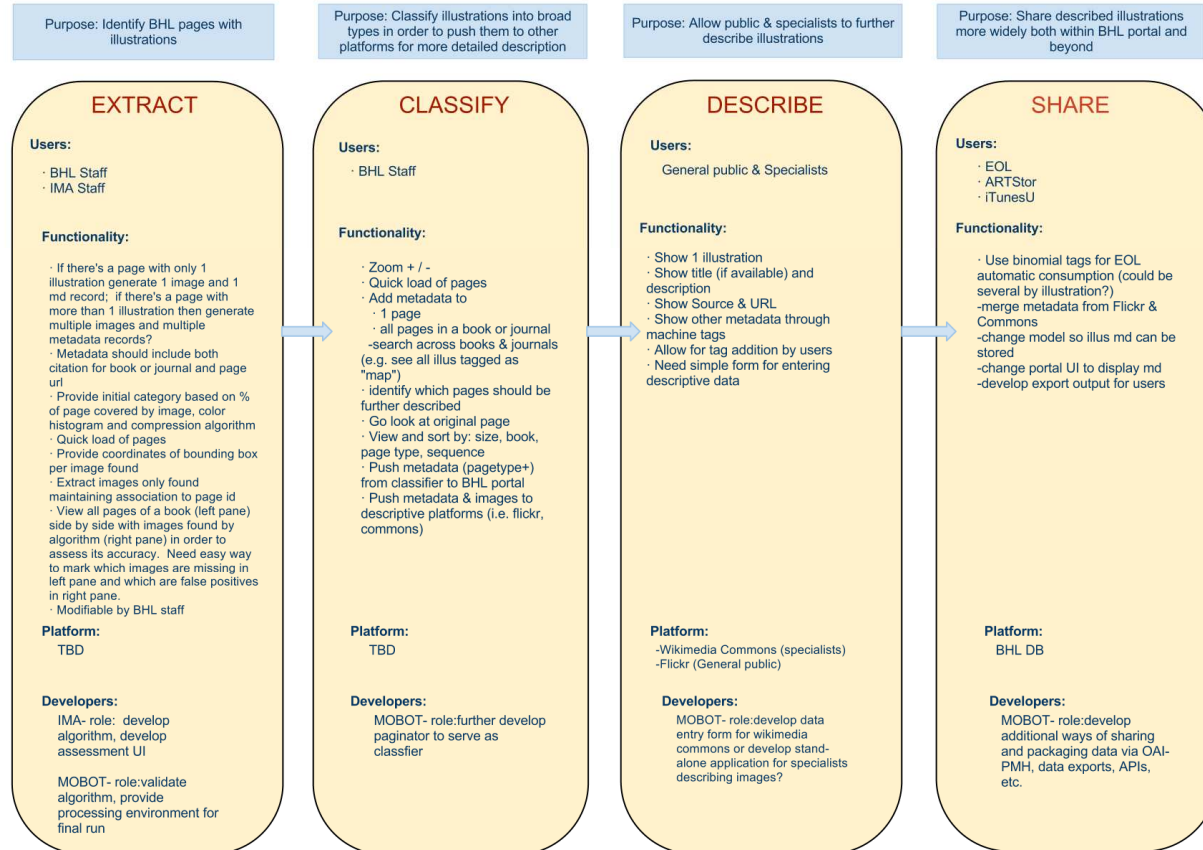
Example of illustration described using Art of Life schema



<b>Title</b>	Stictospiza formosa
<b>Type</b>	Illustrations
<b>Date</b>	Publication: 1898
<b>Agent</b>	Author: Arthur G. Butler (1844-1925) Illustrator: F. W. Frohawk (1861-1946)
<b>Description</b>	A pair of finches with green and yellow bodies resting on reeds
<b>Subjects</b>	Scientific name: <i>Amandava formosa</i> (Latham, 1790) Vernacular Name: Green Avadavat or Green Munia Accepted Name: <i>Amandava formosa</i> (Latham, 1790) Birds, finches
<b>Inscriptions</b>	bottom center: Green Amaduade Waxbill ( <i>Stictospiza formosa</i> )
<b>Source</b>	Butler, Arthur Gardiner. Foreign finches in captivity. Hull and London: Brumby and Clarke, limited, 1889 (2nd edition). This image comes from the <a href="http://biodiversitylibrary.org/page/17195895">Biodiversity Heritage Library</a> , and is available online at <a href="http://biodiversitylibrary.org/page/17195895">biodiversitylibrary.org/page/17195895</a>
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<sup>1</sup> Missouri Botanical Garden; <sup>2</sup> University of Colorado

## ART OF LIFE workflow diagram



## Art of Life schema elements required in Rd

Element	Definition	Examples	Repeat
Agents	person or corporate entity involved in the creation, design, production, or publication of a visual resource.	<code>&lt;vra:agent&gt;</code> <code>&lt;vra:name type="personal" vocab="LCNAF" refid="89015596"&gt;Curtis,John&lt;/vra:name&gt;</code> <code>&lt;vra:dates type="life"&gt;</code> <code>&lt;vra:earliestDate&gt;1791&lt;/vra:earliestDate&gt;</code> <code>&lt;vra:latestDate&gt;1862&lt;/vra:latestDate&gt;</code> <code>&lt;/vra:dates&gt;</code> <code>&lt;vra:role vocab="AAT" refid="300025574"&gt;publisher&lt;/vra:role&gt;</code> <code>&lt;/vra:agent&gt;</code>	Y
Copyright	The copyright status of the visual resource.	<code>&lt;vra:rights refid="http://creativecommons.org/licenses/by-nc/2.0/deed.en"&gt;Creative Commons Attribution-NonCommercial 2.0 Generic (CC BY-NC 2.0)&lt;/vra:rights&gt;</code>	N
Date	Date or range of dates associated with the creation or publication of the visual resource.	<code>&lt;vra:date type="creation"&gt;</code> <code>&lt;vra:earliestDate&gt;1945&lt;/vra:earliestDate&gt;</code> <code>&lt;vra:latestDate&gt;1955&lt;/vra:latestDate&gt;</code> <code>&lt;/vra:date&gt;</code>	Y
Description	A free-text note about content of the image, including comments, description, or interpretation, that gives additional information not recorded in other categories.	<code>&lt;vra:description&gt;</code> This illustration shows a scale, coloured illustration of <i>Sepsis annulipes</i> (now known as <i>Encita annulipes</i> ) beside the <i>Trifolium ochroleucum</i> plant. Several dissections from <i>Sepsis cylindrica</i> Fab. (all these details are provided on the next page of this book and the subsequent page). <code>&lt;/vra:description&gt;</code>	Y
Inscriptions	All marks, caption, or written words added to the object at the time of production or in its subsequent history, including signatures, dates, dedications, texts, and colophons, as well as marks, such as the stamps of silversmiths, publishers, or printers.	<code>&lt;vra:inscription&gt;</code> <code>&lt;vra:position-bottom&lt;/vra:position&gt;</code> <code>&lt;vra:text&gt;</code> <i>Basidia of L. sauleyitanum on a more reduced scale&lt;/vra:text&gt; <code>&lt;/vra:inscription&gt;</code></i>	Y
Source	A citation for the book, journal or resource that hosts the visual resource	<code>&lt;vra:source&gt;</code> <code>&lt;vra:name type="book"&gt;</code> Butler, Arthur Gardiner. <i>Foreign finches in captivity</i> . Hull/Brumby and Clarke, limited, 1889 (2nd edition). <code>&lt;/vra:name&gt;</code> <code>&lt;vra:refid type="URI"&gt;</code> <a href="http://biodiversitylibrary.org/page/17195895">http://biodiversitylibrary.org/page/17195895</a> <code>&lt;/vra:refid&gt;</code> <code>&lt;/vra:source&gt;</code>	N
Subject	Terms or phrases that describe, identify, or interpret the visual resource.	<code>&lt;vra:subject&gt;</code> <code>&lt;vra:term type="personalName"&gt;</code> Carl Linnaeus <code>&lt;/vra:term&gt;</code> <code>&lt;/vra:subject&gt;</code>  <code>&lt;dc:scientificName&gt;</code> Plant: <i>Picea abies</i> <code>&lt;/dc:scientificName&gt;</code> <code>&lt;dc:acceptedName&gt;</code> Plant: <i>Picea abies</i> <code>&lt;/dc:acceptedName&gt;</code> <code>&lt;dc:vernacularName&gt;</code> Plant: Norway spruce <code>&lt;/dc:vernacularName&gt;</code>	Y
Title	The title or identifying phrase given to an Image	<code>&lt;vra:title xml:lang="la"&gt;</code> <i>Sepsis annulipes</i> <code>&lt;/vra:title&gt;</code> <code>&lt;vra:title type="alternate"&gt;</code> Orangutan <code>&lt;/vra:title&gt;</code>	Y
Type	Identifies a general category for the visual resource	<code>&lt;vra:type&gt;</code> maps <code>&lt;/vra:type&gt;</code> <code>&lt;vra:type&gt;</code> forestry maps <code>&lt;/vra:type&gt;</code>	Y

We welcome your feedback on the schema! <http://tinyurl.com/9hm7nsb>



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# ART OF LIFE workflow diagram

Purpose: Identify BHL pages with illustrations

Purpose: Classify illustrations into broad types in order to push them to other platforms for more detailed description

Purpose: Allow public & specialists to further describe illustrations

Purpose: Share described illustrations more widely both within BHL portal and beyond

## EXTRACT

## CLASSIFY

## DESCRIBE

## SHARE

### Users:

- BHL Staff
- IMA Staff

### Functionality:

- If there's a page with only 1 illustration generate 1 image and 1 md record; if there's a page with more than 1 illustration then generate multiple images and multiple metadata records?
- Metadata should include both citation for book or journal and page url
- Provide initial category based on % of page covered by image, color histogram and compression algorithm
- Quick load of pages
- Provide coordinates of bounding box per image found
- Extract images only found maintaining association to page id
- View all pages of a book (left pane) side by side with images found by algorithm (right pane) in order to assess its accuracy. Need easy way to mark which images are missing in left pane and which are false positives in right pane.
- Modifiable by BHL staff

### Platform:

TBD

### Developers:

IMA- role: develop algorithm, develop assessment UI

MOBOT- role: validate algorithm, provide processing environment for final run

### Users:

- BHL Staff

### Functionality:

- Zoom + / -
- Quick load of pages
- Add metadata to
  - 1 page
  - all pages in a book or journal
- search across books & journals (e.g. see all illus tagged as "map")
- identify which pages should be further described
- Go look at original page
- View and sort by: size, book, page type, sequence
- Push metadata (pagetype+) from classifier to BHL portal
- Push metadata & images to descriptive platforms (i.e. flickr, commons)

### Platform:

TBD

### Developers:

MOBOT- role: further develop paginator to serve as classifier

### Users:

General public & Specialists

### Functionality:

- Show 1 illustration
- Show title (if available) and description
- Show Source & URL
- Show other metadata through machine tags
- Allow for tag addition by users
- Need simple form for entering descriptive data

### Platform:

- Wikimedia Commons (specialists)
- Flickr (General public)

### Developers:

MOBOT- role: develop data entry form for wikimedia commons or develop stand-alone application for specialists describing images?

### Users:

- EOL
- ARTStor
- iTunesU

### Functionality:

- Use binomial tags for EOL automatic consumption (could be several by illustration?)
- merge metadata from Flickr & Commons
- change model so illus md can be stored
- change portal UI to display md
- develop export output for users

### Platform:

BHL DB

### Developers:

MOBOT- role: develop additional ways of sharing and packaging data via OAI-PMH, data exports, APIs, etc.



Biodiversity  
Heritage  
Library

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Copyright	The copyright status of the visual resource.	<pre>&lt;vra:rights refid="http://creativecommons.org/licenses/by-nc/2.0/deed.en"&gt;Creative Commons Attribution-NonCommercial 2.0 Generic (CC BY-NC 2.0) &lt;/vra:rights&gt;</pre>	N
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# Art of Life

Trish Rose-Sandler

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**We welcome your feedback on the schema!**

<http://tinyurl.com/9hm7nsb>