

THE NEW YORK BOTANICAL GARDEN

World Flora Online: Image Metadata Requirements

Kimberly Watson • Information Manager for Digitization

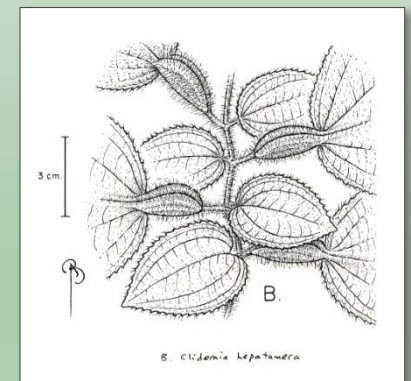
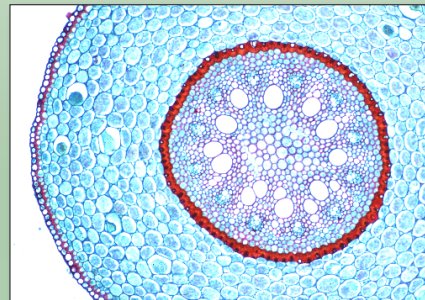
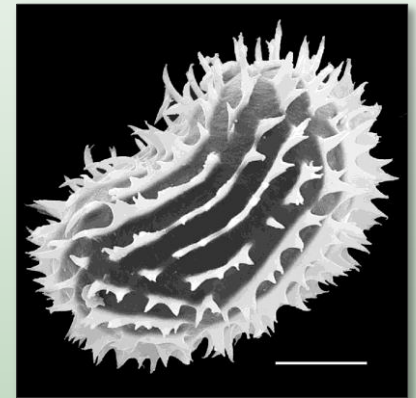
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The following presentation was produced to instruct New York Botanical Garden staff intending to digitize field photographs for inclusion in the World Flora Online project. The instructions, software, and examples are specific to NYBG.

Types of Multimedia

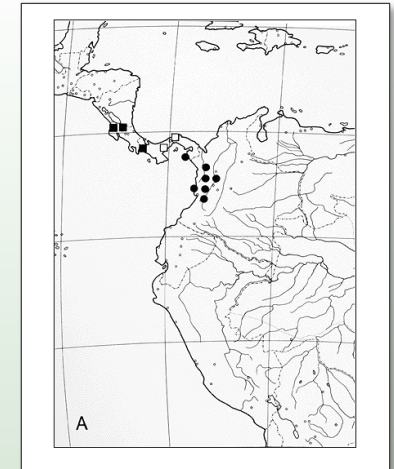
1. Still Images

- Field photos: habitat, habit, key features, etc.
- SEM and optical microscope micrographs
- Botanical line drawings
- Herbarium specimen images



Types of Multimedia

2. Moving Images: MPEG, WMV, AVI, ...
3. Sound files: MP3, AIFF, WAV, ...
4. Text files: .pdf, .doc, .txt, .csv, .xls, ...
5. Interactive Resource: URL for web page



A screenshot of a web browser window. The address bar shows 'www.nybg.org/bsci/res/hall/purpbrn.html'. The page title is 'Tylophilus bulbosus'. On the left is a photograph of several large, dark purple-brown mushrooms with pale, porous gills, growing on a forest floor. On the right, the text reads: 'Tylophilus bulbosus Halling & Mueller. Photograph by R. E. Halling ©, 2004. This is a massive dark purple brown Tylophilus somewhat reminiscent of T. rubrobrunneus from the NE USA. The purple tints in the basidiomata are characteristic of young material and those colors usually disappear with maturity. The pale purplish rose colored pores of young specimens appears diagnostic as is the mild taste. It is one of the most commonly encountered boletes near San Gerardo de Dota.' Below the text are three microscopic images labeled 2, 3, and 4, showing spores, hymenial cystidia, and caulocystidia respectively. A 'Back' button is visible at the bottom.

A screenshot of a PDF document in Adobe Reader. The title is 'A revision of the fern genus Oleandra (Oleandraceae) in Asia'. The authors are Peter H. Hovenkamp and Boon-Chuan Ho. The document is a monograph from PhytoKeys 11: 1-37 (2012). The abstract states: 'The Asiatic species of Oleandra (Oleandraceae) are revised. We reduce a large number of species to O. neriformis and O. sibboldii, we provide a revised circumscription of O. cumingii and O. undulata and we establish the identity of O. sulpina. In total, we recognize 9 species, with full synonymy, descriptions and'.

<http://www.nybg.org/bsci/res/hall/purpbrn.html>

Field Photos

File types for KE EMu:

- Highest quality JPEG with embedded metadata
- If not currently a JPEG, a JPEG copy will be generated with embedded metadata

File types for archiving:

- Highest quality original (may be the original JPEG)
- If original is camera raw or TIF (including layers), then
 - DNG copy will be generated for archive
 - Will include embedded metadata
- File name = the file name saved in EMu

Outline

- **What is metadata and why it is important**
- **What metadata is required for WFO**
- **What metadata is strongly recommended for WFO**
- **How to capture metadata for your images**
 - **Using an MS Excel template spreadsheet**
 - **Using Adobe Lightroom**

What is Metadata?

**“Structured information that describes, explains, locates, or otherwise makes it easier to retrieve, use, or manage an information resource”
(Radebaugh & Guenther 2001).**

“Data about Data”: 3 Types

- | | |
|-----------------------|---|
| Descriptive | describe for purposes of discovery and identification
(e.g. title, caption/description, keywords, author, etc.) |
| Structural | describe how compound objects are put together (e.g. how pages are ordered to form chapters) |
| Administrative | provide information for managing a resource <ul style="list-style-type: none">• Technical: when/how created, file type, size, color profile, etc.• Rights management: intellectual property rights, copyright, licensing• Preservation: information to archive and preserve |

Why is Metadata important?

Can be stored in the image wherever it goes

Can be stored in a catalog or other digital asset management system

- **Organize electronic resources**
- **Facilitate resource discovery**
 - Allow resources to be found by relevant criteria
 - Identifying resources
 - Bring similar resources together
 - Distinguish dissimilar resources
 - Provide location information
- **Provide digital identification**
- **Facilitate interoperability and legacy resource integration**
- **Support archiving and preservation**

Metadata Schemes:

- **IPTC:** International Press and Telecommunications Council
- **XMP:** Adobe Extensible Metadata Platform
- **EXIF:** Exchangeable Image File Format

- **DC: Dublin Core Metadata Initiative**, defines elements for use by authors to describe their Web-based resources.
(<http://dublincore.org/documents/dcmi-type-vocabulary/>)

- **AC: Audubon Core Multimedia Resources Metadata**, vocabularies designed to represent metadata for biodiversity multimedia resources and collections (http://terms.tdwg.org/wiki/Audubon_Core)
 - Management of the media and collections
 - Descriptions of their content
 - Taxonomic, geographic, and temporal coverage
 - Appropriate ways to retrieve, attribute, and reproduce them

Metadata **Required** for WFO

Term	Definition
File Name = Identifier	<p>An arbitrary code that is globally unique for the resource.</p> <ul style="list-style-type: none">= Unique among all multimedia resources= Lowercase letters a-z, 0-9, hyphen, or underscore= No spaces, punctuation, symbols, or accents <p>Examples:</p> <p>kwatson_37.jpg cavendishia_callista2.jpg Clidemia_octona_Ventura_12898_Mexico_CAS_04_Gilberto_Ocampo.jpg</p> <p>NOTE: Please discuss with Charlie Zimmerman how to proceed, if...</p> <ul style="list-style-type: none">• current file names do not meet these criteria• and/or they contain human-readable information that could be parsed into other metadata fields such as scientific name, creator, collector and number, etc. <p>Example:</p> <p>Dis stereophyllum Salinas-663 (Betancur)-0002, Chocó-Valle.jpg</p>

Metadata **Required** for WFO

Term	Definition
Scientific Name	<p>Full scientific name (genus species author) as it appears in IPNI or The Plant List (http://www.theplantlist.org/)</p> <p>Example: Acanthopale confertiflora (Lindau) C.B.Clarke</p>
Creator	<p>The full name of the person or organization responsible for creating the media resource (i.e. photographer).</p> <p>Name will be matched with an existing Parties record in KE EMu, or will be the basis for a new Parties record.</p>

Metadata **Required** for WFO

Term	Definition
Copyright Statement	<p>Information about rights held in and over the resource. A full-text, readable copyright statement, as required by the national legislation of the copyright holder.</p> <p>Common example: “Rights reside with creator, otherwise property of NYBG.”</p> <p>“Data (images and text) contained in the Herbarium Specimen Catalogs are copyrighted by The New York Botanical Garden. Use or reproduction of these data is authorized for educational or other non-commercial purposes without prior permission from the copyright holders, provided credit is given to The New York Botanical Garden. Use or reproduction of these data for commercial purposes is prohibited without prior written permission of The New York Botanical Garden.”</p> <p>Creative Commons Licensing: http://creativecommons.org/licenses/ CC BY NC SA</p> <p>Considerations for licensors and licensees: https://wiki.creativecommons.org/Considerations for licensors and licensees</p>

Metadata Recommended for WFO

Term	Definition
Title	<p>Concise title, name, or brief descriptive label of the individual resource. This facilitates interactions with humans, e.g. as display text of a hyperlink, or as a choice in a pick-list of images. Accents and punctuation are accepted. It is not recommended to include the scientific name, as this may change over time.</p> <p>Example: Field photo of Fabián Michelangeli 1587.</p>
Description	<p>(= Caption) An account or description of the content of the resource written as free-form text. Ideally this will include the Who, What, Where, When, Why of the resource. May include but is not limited to: an abstract, a table of contents, a graphical representation, or a free-text account of the resource. Accents and punctuation are accepted.</p> <p>Example: Photograph taken in the field of Michelangeli 1587 (NY 02103779), West Indies, Cuba, Holguín, Moa, Subida a Santa Teresita, 2 km E de Yamanigüey y de allí subida hacia el S-SW 3.5-5.5 km.</p>

Metadata Recommended for WFO


Term	Definition
Collector	<p>Full name of the primary collector who collected the specimen in the photograph, if known.</p> <p>Collector's name will be matched with an existing Parties record in KE EMu, or will be the basis for a new Parties record.</p>
Collection Number	<p>The number assigned to the collection by the collector, if known.</p>
Country	<p>The geographic location of the specific object(s) documented in the resource.</p> <p>For example, the country in which the plant was growing when photographed in the field.</p>
Keywords	<p>General keywords or tags.</p> <p>May be multi-worded phrases. No need to include scientific name, country, or other metadata elements captured in more specific fields.</p> <p>Examples:</p> <p>Plant parts photographed, habitat type, plant habit, life stage, plant family, etc.</p>

Sample Mini-Site

PBI: Miconieae website demonstrates how image metadata could be displayed online.

MICONIEAE planetary biodiversity inventory

HOME TAXONOMY SPECIMENS IMAGES COLLABORATORS LINKS

Title	Conostegia icosandra: Photo taken in the field.
Creator	F. A. Michelangeli
Copyright	Rights reside with the creator, otherwise property of NYBG.
Publisher	The New York Botanical Garden
Country	Venezuela
Description	Conostegia icosandra: Photo taken in the field (Michelangeli 612).
Media	 <p>Conostegia icosandra: Photo taken in the field.</p>

Download full-resolution image:

[Download Conostegia icosandra: Photo taken in the field.](#)

How to Capture Metadata for WFO

Option 1: Use the Excel template spreadsheet saved here:

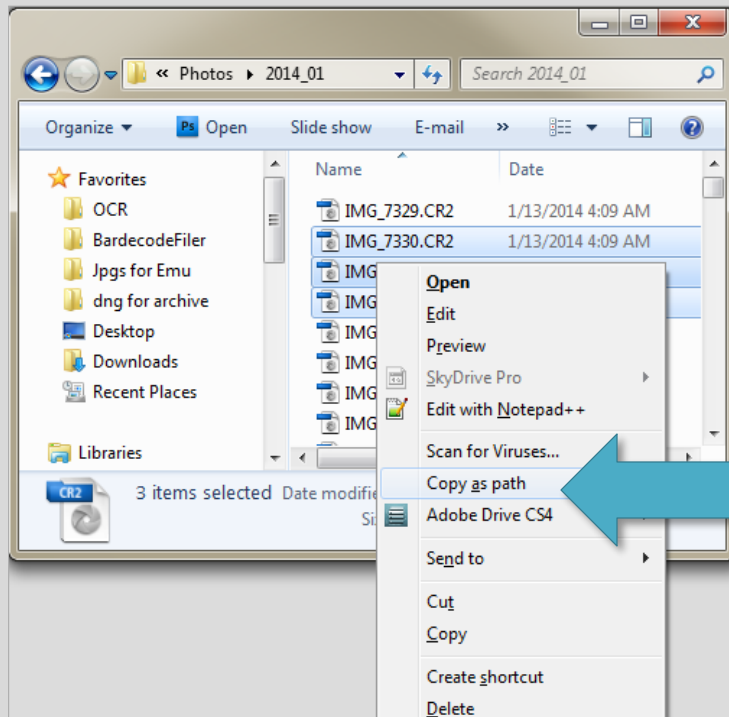
X:\Pub\World Flora Online\WFO_Image_Metadata_Template_Mar2015.xlsx

	A	B	C	D	E	F
2	Field	File Path	Filename = identifier	Creator	Scientific Name	Plant Family
	Format	REQUIRED. The full path to the resource	REQUIRED. Any multimedia file with extension: pdf, jpg, txt, doc, xls, etc.	REQUIRED. Text. Name of photographer or source of multimedia resource (preferably full name: first name, middle initial, last name. Could be name of an organization)	REQUIRED. Text. Scientific name of the plant captured in the image, including authors.	Text.
3	Example	C:\Field_Photos\EschAguilarii.jpg	EschAguilarii.jpg	Scott A. Mori	Eschweilera longirachis S.A.Mori	Lecythidaceae
4						
5	Start here →					
6						
7						

If choosing this option, additional image metadata is required, as defined on the following 2 slides.

Metadata **Required** for Excel Spreadsheet

Term	Definition
Full Path	<p>Specifies the root directory and all other subdirectories that contain the resource. Must be less than 250 characters in length</p> <p>Example: C:\Watson\Field_photos\2011-06-23\Ossaea_micrantha\kwatson_37.jpg</p>



How to “Copy as Path”:

Select images

Hold Shift and right-click mouse

Select “Copy as path”

Paste file path(s) into Excel spreadsheet

"H:\Photos\2014_01\IMG_7331.CR2"

"H:\Photos\2014_01\IMG_7332.CR2"

"H:\Photos\2014_01\IMG_7330.CR2"

Metadata **Required** for Excel Spreadsheet

Term	Definition	Controlled Vocabulary
Type	<p>Any type from the DCMI Type Vocabulary http://dublincore.org/documents/dcmi-type-vocabulary/#H7)</p> <p>Choose one option from the controlled list on the right.</p>	<p>StillImage Sound MovingImage InteractiveResource Text Collection</p>
Subtype	<p>Any subtype from this list.</p> <p>NOTE: If a resource cannot be classified as any of these subtypes, please contact Charlie Zimmerman for guidance.</p>	<p>Field photograph Handwriting sample Herbarium specimen Label image SEM Drawing</p>
Metadata Language	<p>Language of the metadata (title, description, etc.), not necessarily of the image. Represented as ISO639-2 three-letter code (http://id.loc.gov/vocabulary/iso639-2.html)</p>	<p>eng spa fre por</p>

How to Capture Metadata for WFO

Option 2: Use Adobe Lightroom to organize images and capture metadata

The screenshot displays the Adobe Lightroom 5 interface. The main workspace shows a grid of 16 botanical images, primarily of the genus *Anthopterus*. The top-left corner shows the 'Navigator' panel with a large preview of the selected image. The top-right corner features the 'Histogram' panel. The right-hand side contains the 'Compare' and 'Web' panels, with the 'Metadata' section expanded to show the 'EXIF and IPTC' tab. The 'Metadata' panel displays the following information for the selected image:

- File Name: Ant_cuneatus_pp1705 AZ2.JPG
- Copy Name: [empty]
- Folder: Anthopterus
- File Size: 1.43 MB
- File Type: JPEG
- Metadata Status: Up to date
- Metadata Date: 5/20/2010 4:03:37 PM
- Rating:
- Label: [empty]
- Title: Anthopterus cuneatus, Paola Pedraza-Penalosa 1705. Photo by: Alejandro Zuluaga.
- Caption: [empty]

The bottom of the interface shows the 'Grid' panel with a thumbnail strip of the library. The status bar at the bottom indicates 'Folder: Anthopterus', '11 photos / 1 selected', and the filename of the selected image: '/Ant_cuneatus_pp1705 AZ2.JPG'. The 'Filter' dropdown is set to 'Filters Off'.