
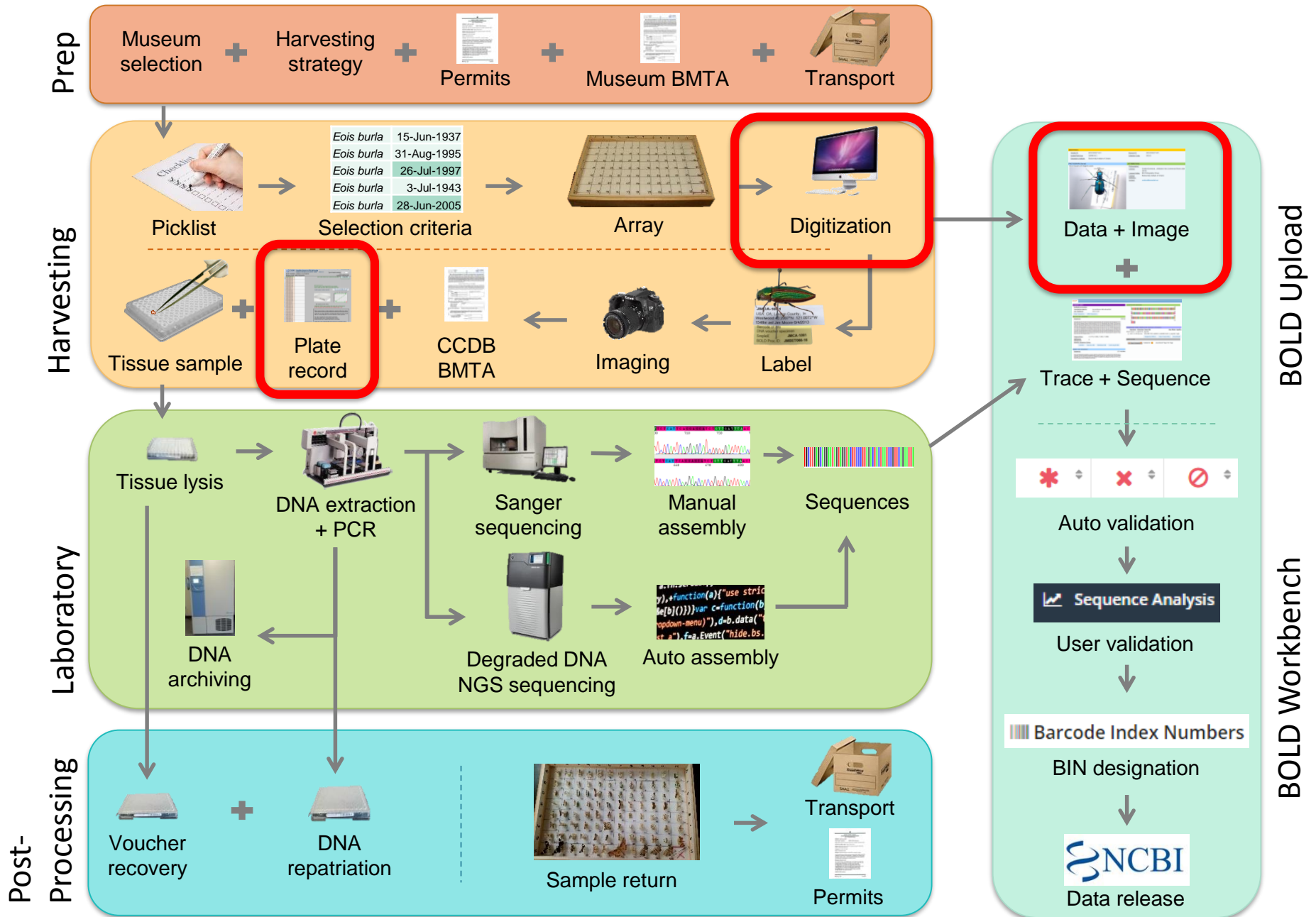




**11:00 - 11:45 – Jayme Sones**  
**Specimen Digitization**

 Centre for  
**Biodiversity**  
Genomics

**DNA Barcoding Natural History Collections**

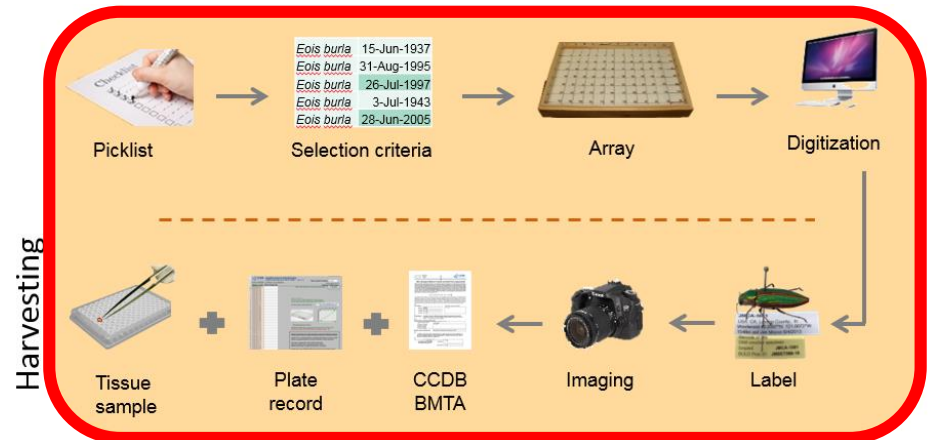




# Recap

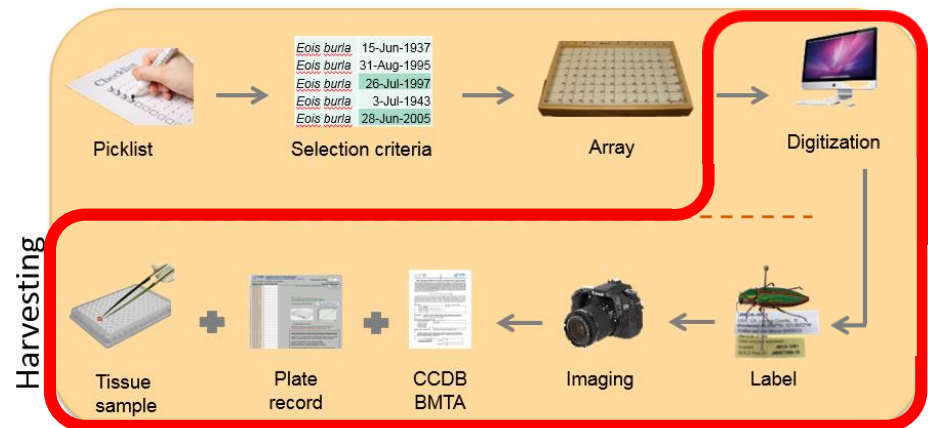
- **Sampling on site**

- Usually plants and vertebrates
- Completed at the museum



- **Borrowing specimens**

- Depends on collection, usually for invertebrates
- First 3 steps completed at the museum
- Digitization and pre-lab processing completed at home institution



# Specimen Digitization

BOLD Specimen Data & Spreadsheets

Interpreting Museum Data Labels

Museum Data Protocols & Formatting

Accessioning & CIMS

BOLD Projects & Uploads


Creating Plate Records & Plate Maps



# BOLD Specimen Data & Spreadsheets

- Stores voucher details, taxonomy, specimen details, collection data and photographs

BIOUG02936-D07 - Point Pelee National Park Malaise Trap 01 [CNPPA]



CBG Photography Group  
Creative Commons Attribution NonCommercial  
ShareAlike (2013)  
Centre for Biodiversity Genomics  
ccdc@uoguelph.ca

Tags  
Comments

Annotations

Process ID: CNPPA019-12  
Identified by: lythea spiloti (Curtis, 1832)  
Collected in: Canada, Ontario  
by: Heidi Brown  
Institution Storing: University of Guelph, Centre for Biodiversity Genomics

### Specimen Details

Sample ID:	BIOUG02936-D07	Voucher Status:	Vouchered/Registered
Process ID:	CNPPA019-12	Tissue Description:	Collection Whole Voucher
Project:	CNPPA	Sex:	S
Institution Storing:	University of Guelph, Centre for Biodiversity Genomics	Reproduction:	A
Field ID:	GMP#00167	Life Stage:	Point Pelee NP
Museum ID:	BIOUG02936-D07	Extra Info:	
Collection Code:	BIOUG	Associated Taxa:	
Reference Link:		Associated Specimens:	
Note:			

### Taxonomy

Phylum:	Arthropoda	Identification:	lythea spiloti (Curtis, 1832)
Class:	Insecta	Rank:	Species
Order:	Diptera	Identifier:	
Family:	Ephydriidae	Identification Method:	
Subfamily:	lytheinae	Identifier Institution:	
Genus:	lythea	Identifier Email:	
Species:	lythea spiloti	Taxonomy Note:	

### Barcode Index Numbers

BIN:	BOLD:ABV8156	Phylum:	Arthropoda [8]
Type:	Member	Class:	Insecta [8]
Max Divergence in BIN:	2.04% (p-dist)	Order:	Diptera [8]
Distance to NN:	3.89% (p-dist)	Family:	Ephydriidae [8]
		Subfamily:	lytheinae [8]
		Genus:	lythea [8]
		Species:	lythea spiloti [8]

- Each record is assigned a BOLD Process ID when uploaded, linked to sequence data page
- Can upload manually through BOLD project console or through batch excel submissions



# BOLD Specimen Data & Spreadsheets

## Template Locations

- 1 Within project console on BOLD  
Uploads → Specimen data → Batch Submission
  - 2 BOLD Handbook – Specimen Data submission  
<http://v4.boldsystems.org/index.php/Resources>
  - 3 CCDB website – <http://ccdb.ca/resources/>
  - 4 CCDB submission package received via Email
- \* BOLD requires 4 tab format
  - \* BOLD will only accept .xls file format

# BOLD Specimen Data & Spreadsheets

## Considerations Prior to Databasing

- Is there any digital data available?
- Does the museum have specific data formats or requirements?
- Will you have multiple persons entering data?
- Will the data be released to another database with specific data requirements in the future?
- Imaging labels for later digitization may be preferable

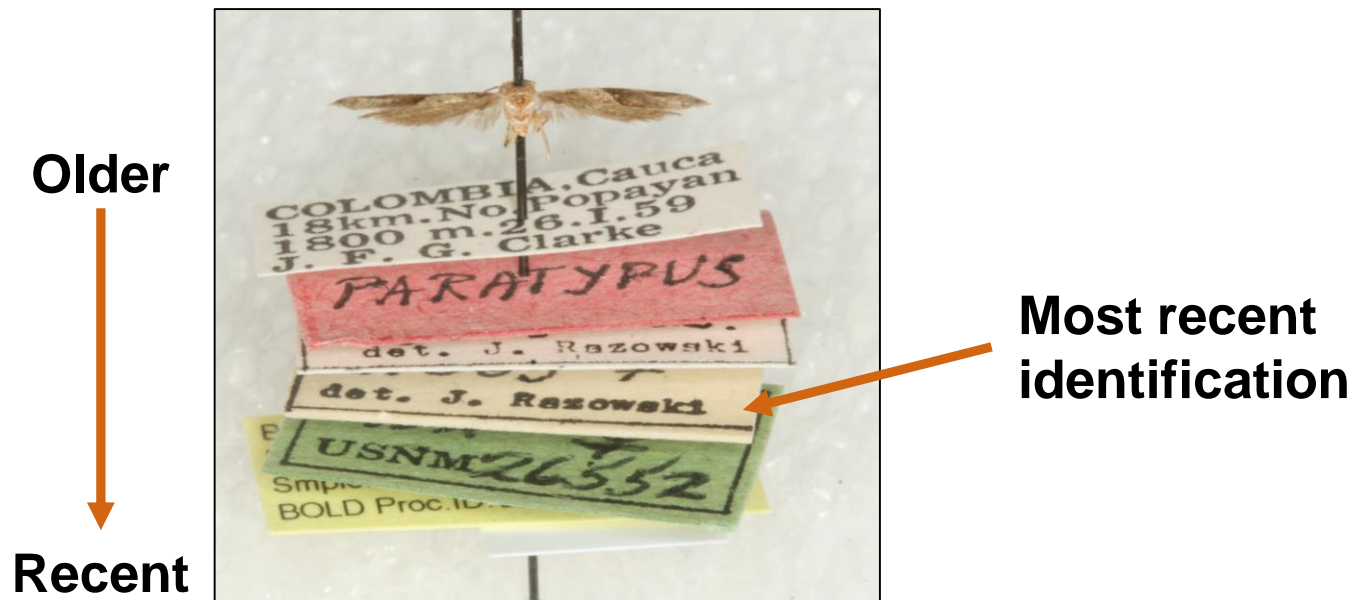


**Establish Databasing Protocol**



# Interpreting Museum Data Labels

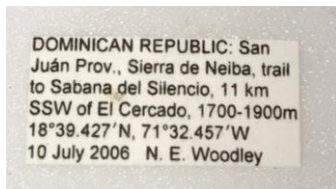
- **Order of labels on pin are very important!**
- Indicates chronological history of specimen  
e.g Multiple taxonomy labels
- Removing labels for imaging etc. must be done with care.
- Labels must be re-attached in **exactly** the same order



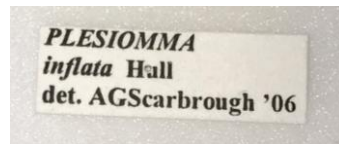
# Interpreting Museum Data Labels

## Types of Labels - Examples

Data Label



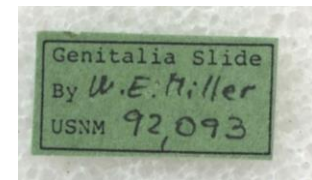
Det. Label



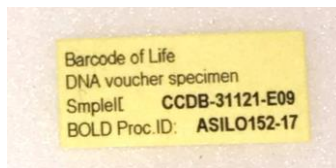
Type Label



Genitalia Slide



Barcode Label



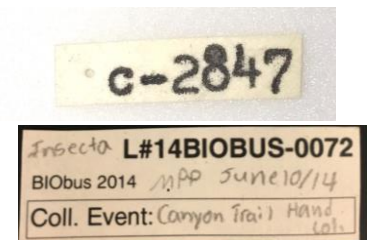
Museum Label



Collection Label



Other Labels



# Museum Data Protocols

## Suggested Template Setup

- Merge 4 tabs into linear flat file →
- Create one data file per array/plate
- **OR** Add plate and well locator columns to datasheet →
- Name each file with the corresponding plate barcode(s)
- Pre-fill and reduce columns when possible

1	2	3	4

		Specimen Info Metadata				
Plate	Well	Sample ID	Field ID	Museum	Collection	Institution
12345	A01	Sample 1				
12345	A02	Sample 2				
12345	A03	Sample 3				
12345	A04	Sample 4				

Specimen Info Metadata												
Sample ID	Field ID	Museum ID	Collection	Institution Storing	Phylum	Class	Order	Family	Subfamily	Tribe	Genus	Species
Sample 1			USNM	Smithsonian Institute	Arthropoda	Insecta	Lepidoptera					
Sample 2			USNM	Smithsonian Institute	Arthropoda	Insecta	Lepidoptera					
Sample 3			USNM	Smithsonian Institute	Arthropoda	Insecta	Lepidoptera					
Sample 4			USNM	Smithsonian Institute	Arthropoda	Insecta	Lepidoptera					

# Museum Data Protocols

## Minimum Requirements for Bold Upload

- 1 Sample ID
- 2 Field ID **OR** Museum ID
- 3 Institution Storing
- 4 Phylum
- 5 Country



\* **NOTE** character limitations for **1** and **2** 0-9, A-Z, ^ . : - \_ ( ) #

# Museum Data Protocols

## **IDEAL** Requirements for Bold Upload

- 1 BOLD requirements
- 2 Taxonomy to Order
- 3 Collection date
- 4 Collection locality
- 5 Collection coordinates



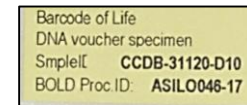


# Museum Data Protocols

## Sample ID

Specimen Info Metadata				
Sample ID	Field ID	Museum ID	Collection Code	Institution Storing
CCDB-29469-A01		USNM ENT 01343316	USNM	Smithsonian Institution National Museum of Natural History
CCDB-29469-A02		USNM ENT 01343317	USNM	Smithsonian Institution National Museum of Natural History
CCDB-29469-A03		USNM ENT 01343318	USNM	Smithsonian Institution National Museum of Natural History
CCDB-29469-A04		USNM ENT 01343319	USNM	Smithsonian Institution National Museum of Natural History

- Associated with sample being sequenced
- Must be unique identifier, suggest using plate and well however use of museum code may be required
- Case sensitivity critical, considered unique on BOLD



CCDB-05839-**A**01 vs. CCDB-05839-**a**01

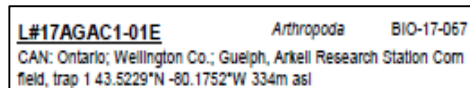
**\*NOTE** only Sample ID/Process ID can be searched on BOLD

# Museum Data Protocols

## Field ID & Museum ID

Specimen Info Metadata				
Sample ID	Field ID	Museum ID	Collection Code	Institution Storing
CCDB-29469-A01		USNM ENT 01343316	USNM	Smithsonian Institution National Museum of Natural History
CCDB-29469-A02		USNM ENT 01343317	USNM	Smithsonian Institution National Museum of Natural History
CCDB-29469-A03		USNM ENT 01343318	USNM	Smithsonian Institution National Museum of Natural History
CCDB-29469-A04		USNM ENT 01343319	USNM	Smithsonian Institution National Museum of Natural History

### Field ID:



- Associated with field sample or collection event

e.g L#17AGAC1-01E

### Museum ID:



- Assigned by formal collection, format and case important  
e.g USNM ENT 00037465
- Can be identical to Sample ID
- Museum may ask you to assign during digitization

# Museum Data Protocols

## Collection Code, Institution Storing

Specimen Info Metadata				
Sample ID	Field ID	Museum ID	Collection Code	Institution Storing
CCDB-29469-A01		USNM ENT 01343316	USNM	Smithsonian Institution National Museum of Natural History
CCDB-29469-A02		USNM ENT 01343317	USNM	Smithsonian Institution National Museum of Natural History
CCDB-29469-A03		USNM ENT 01343318	USNM	Smithsonian Institution National Museum of Natural History
CCDB-29469-A04		USNM ENT 01343319	USNM	Smithsonian Institution National Museum of Natural History

### Collection Code:

- Associated with given collection e.g USNM
- Required with use of Museum ID Field

### Institution Storing:

- Institution where the specimen, tissue or DNA is held
- Must be registered on BOLD and follow syntax

# Museum Data Protocols

## Taxonomy Guidelines

- **Digital ID** may be most current if available
- **If not use Det. Label.** Most recent Det. label is located lower on the pin than other Det. Labels.
- When no Identifier specified, list as collection curators
- Provisional IDs should aim to be unique. Recommended use of identifier initials



# Museum Data Protocols

## Taxonomic Fields

Taxonomy Metadata									
Phylum	Class	Order	Family	Subfamily	Genus	Species	Identifier	Identifier Email	Identifier Institution
Arthropoda	Insecta	Lepidoptera	Erebidae	Arctiinae	Cisthene	Cisthene kentuckiensis	USNM Curators		
Arthropoda	Insecta	Lepidoptera	Erebidae	Arctiinae	Cisthene	Cisthene kentuckiensis	USNM Curators		
Arthropoda	Insecta	Lepidoptera	Erebidae	Arctiinae	Cisthene	Cisthene kentuckiensis	USNM Curators		
Arthropoda	Insecta	Lepidoptera	Erebidae	Arctiinae	Cisthene	Cisthene liberomacula	C.B.Knowlton		

- Limited to fields on datasheet, i.e. no subclass or suborder
- **Species:** full binomial name: *Glossina morsitans*
- **Subspecies:** full trinomial name: *Glossina morsitans morsitans*
- In cases of hybrids use 'x'
  - e.g *Sorbus* × *splendida* = *Sorbus aucuparia* × *Sorbus americana*
  - e.g × *Sorbopyrus auricularis* = *Sorbus aria* × *Pyrus communis*
- In cases of varieties use 'var'
  - *Escobaria vivipara* var. *arizonica*



# Museum Data Protocols

## Taxonomic Fields

Taxonomy Metadata							Extended Fields (BOLD 3.1)	
Family	Subfamily	Genus	Species	Identifier	Identifier Email	Identifier Institution	Identification Method	Taxonomy Notes
Erebidae	Arctiinae	Cisthene	Cisthene kentuckiensis	N.Jacobson			Det Label (1995)	
Erebidae	Arctiinae	Cisthene	Cisthene kentuckiensis	J.D.Holloway			Det Label (1979)	
Erebidae	Arctiinae	Cisthene	Cisthene kentuckiensis	USNM Curators			Det Label (No Year)	
Erebidae	Arctiinae	Cisthene	Cisthene liberomacula	C.B.Knowlton			Det Label (No Year)	

- **Tax Notes:** any notes relating to the ID, e.g colouration, wing span
- Provisional IDs: preferred in Taxonomy Notes or Extra Info  
Should contain non-Linnean characters such as numbers or capitals  
e.g Morpho sp. 1KHR

# Museum Data Protocols

## Taxonomic Hierarchy

- Upper hierarchy required except subfamily and tribe

Taxonomy Metadata								
Sample ID	Phylum	Class	Order	Family	Subfamily	Tribe	Genus	Species
Sample 1	Arthropoda	Insecta	Lepidoptera	Geometridae			Eois	Eois tertulia
Sample 2	Arthropoda	Insecta	Lepidoptera	Geometridae			Eois	
Sample 3	Arthropoda	Insecta	Lepidoptera	Geometridae				
Sample 4	Arthropoda	Insecta	Lepidoptera					

- BOLD does validation check during upload. Hierarchy must agree with BOLD checklists
- BOLD will automatically fill subfamily and tribe if part of registered hierarchy

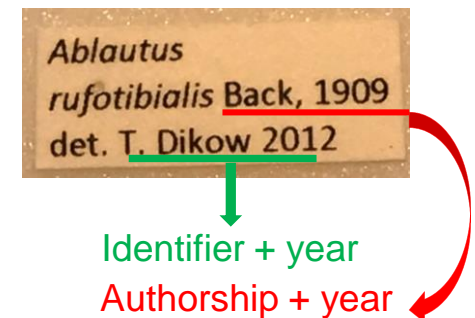
Taxonomy Metadata								
Sample ID	Phylum	Class	Order	Family	Subfamily	Tribe	Genus	Species
Sample 1	Arthropoda	Insecta	Lepidoptera	Geometridae			Eois	Eois tertulia
Sample 2	Arthropoda	Insecta	Lepidoptera	Geometridae			Eois	
Sample 3	Arthropoda	Insecta	Lepidoptera	Geometridae				
Sample 4	Arthropoda	Insecta	Lepidoptera					

# Museum Data Protocols

## Identifier & Associated Info

Taxonomy Metadata							Extended Fields (BOLD 3.1)	
Family	Subfamily	Genus	Species	Identifier	Identifier Email	Identifier Institution	Identification Method	Taxonomy Notes
Erebidae	Arctiinae	Cisthene	Cisthene kentuckiensis	N.Jacobson			Det Label (1995)	J.D.Holloway
Erebidae	Arctiinae	Cisthene	Cisthene kentuckiensis	J.D.Holloway			Det Label (1979)	
Erebidae	Arctiinae	Cisthene	Cisthene kentuckiensis	USNM Curators				
Erebidae	Arctiinae	Cisthene	Cisthene liberomacula	C.B.Knowlton			Det Label (No Year)	

- Only **one identifier** and email allowed
- If more than one present, put **primary or most recent identifier** in Identifier column and add other identifiers in Taxonomy Notes
- Write **exactly as shown** on the label (e.g J.E.Sones), avoid extra spaces



# Museum Data Protocols

## Identification Method

Taxonomy Metadata							Extended Fields (BOLD 3.1)
Family	Subfamily	Genus	Species	Identifier	Identifier Email	Identifier Institution	Identification Method
Erebidae	Arctiinae	Cisthene	Cisthene kentuckiensis	N.Jacobson			Det Label (Jan 1995)
Erebidae	Arctiinae	Cisthene	Cisthene kentuckiensis	J.D.Holloway			Det Label (1979)
Erebidae	Arctiinae	Cisthene	Cisthene kentuckiensis	USNM Curators			Det Label (No Year)
Erebidae	Arctiinae	Cisthene	Cisthene liberomacula	J.E.Sones			BIN Taxonomy Match (Nov 2017)

- Use when Det. label is present on specimen
- **Format:** Det. Label (MMM YYYY) **OR** Det. Label (YYYY) **OR** Det. Label (No Year)
- Update Identifier and ID Method with future taxonomy changes  
e.g Tree-Based Identification (Nov 2017)  
BIN Taxonomy Match (Nov 2017)

# Museum Data Protocols

## Sex, Reproduction & Life Stage

Specimen Details Metadata				
Sex	Reproduction	Life Stage	Extra Info	Notes
F	S	A	Paratype	Becker Collection Number 2D339
M	S	A		Kenya National Museum Exchange
M	A	A	Holotype	Genitalia Slide USNM 113,706 by M.A.Metz
M	S	I		Genitalia Slide USNM 36 C.B. Knowlton Genitalia Slide USNM 120,785 by C.B.Knowlton

- Controlled vocabulary, use abbreviations

### Sex

**M** - male 

**F** - female 

**H** - Hermaphrodite

### Reproduction

**S** - sexual

**A** - asexual

**CP** - cyclic parthenogen

### Life Stage

\*at the time of collection

**A** - adult

**I** – immature

**P** - pupae



# Museum Data Protocols

## Extra Info

Specimen Details Metadata				
Sex	Reproduction	Life Stage	Extra Info	Notes
F	S	A	Paratype	Becker Collection Number 2D339
M	S	A		Kenya National Museum Exchange
M	A	A	Holotype	Genitalia Slide USNM 113,706 by M.A.Metz
M	S	I		Genitalia Slide USNM 36 C.B. Knowlton Genitalia Slide USNM 120,785 by C.B.Knowlton

- Can be used for info that will be easily viewable on BOLD workbench for quick evaluation
- e.g type information or host/parasite association

100 records per page

Select

Identification

Specimen Page

Sequence Page

Extra Info

IN

Record Flags

Legend

Bases [Ambig]

Tags

<input type="checkbox"/>	Stigmella braunella	CCDB-29482-D02	LNAUV988-17	Lectoparatype		1	0				0	
<input type="checkbox"/>	Stigmella braunella	CCDB-29482-D03	LNAUV989-17	Lectoparatype		1	0				0	
<input type="checkbox"/>	Paectes asper	CCDB-29060-C01	LNAUV025-16	Paratype		1	4				0	
<input type="checkbox"/>	Paectes asper	CCDB-29060-C02	LNAUV026-16	Paratype		1	4				0	

Search: paratype

# Museum Data Protocols

## Notes

Specimen Details Metadata				
Sex	Reproduction	Life Stage	Extra Info	Notes
F	S	A	Paratype	Becker Collection Number 2D339
M	S	A		Kenya National Museum Exchange
M	A	A	Holotype	Genitalia Slide USNM 113,706 by M.A.Metz
M	S	I		Genitalia Slide by D.R.D. USNM 91,805 Photograph on file USNM No. 3934 Becker Collection

- Free Text Field
- Use of delineator between separate pieces of information

Recommend using **pipe** “|”

- e.g Genitalia Slide by D.R.D. USNM 91,805|Photograph on file USNM|No. 3934 Becker Collection

# Museum Data Protocols

## Voucher Status & Tissue Descriptor

Specimen Details Metadata Extended Fields (BOLD 3.1)				
Voucher Status	Tissue Descriptor	Associated Taxa	Associated Specimens	External URLs
Vouchered:Registered Collection	Tissue			
Vouchered:Registered Collection	Tissue			
Vouchered:Registered Collection	Tissue			
Vouchered:Registered Collection	Tissue			

- Controlled vocabulary

### Voucher Status:

Museum Vouchered:Type  
Museum Vouchered:Type Series  
Vouchered:Registered Collection  
To Be Vouchered:Holdup/Private  
E-Vouchered:DNA/Tissue+Photo  
DNA/Tissue Vouchered Only  
No Specimen

### Tissue Descriptor:

Leg  
Abdomen  
Whole voucher  
Muscle  
Blood

# Museum Data Protocols

## Associated Taxa & Associated Specimens

Specimen Details Metadata Extended Fields (BOLD 3.1)				
Voucher Status	Tissue Descriptor	Associated Taxa	Associated Specimens	External URLs
Vouchered:Registered Collection	Tissue	Host: <i>Lonicera japonica</i>		
Vouchered:Registered Collection	Tissue		Host:PLANT23452	
Vouchered:Registered Collection	Tissue			
Vouchered:Registered Collection	Tissue			

- Association with specimen at time of collection
- Should be preceded by relationship, comma delimited

### **Associated Taxa** (Common or Latin name)

- e.g plant host, prey, parasite/host

### **Associated Specimens**

- Use when there is an associated cataloged specimen
- Can be used to associate duplicate records if sequenced twice

# Museum Data Protocols

## External URLs

Specimen Details Metadata Extended Fields (BOLD 3.1)				
Voucher Status	Tissue Descriptor	Associated Taxa	Associated Specimens	External URLs
Vouchered:Registered Collection	Tissue	Host: <i>Lonicera japonica</i>		<a href="http://www.gigapan.org/viewGigapan.php?id=29271">http://www.gigapan.org/viewGigapan.php?id=29271</a>
Vouchered:Registered Collection	Tissue		Host:PLANT23452	
Vouchered:Registered Collection	Tissue			
Vouchered:Registered Collection	Tissue			

- Web accessible links that provide additional information about the specimen
- e.g gigapan image of collecting site



# Museum Data Protocols

## Collectors

Collection Info Metadata						
Collectors	Collection Date	Country/Ocean	State/Province	Region	Sector	Exact Site
S.E.Miller, P.M.Miller	29-Jun-1970	United States	Arizona	Cochise County		Huachuca Mountains, Ash Canyon Road
R.A.Alexander	5-May-1981	United States	Georgia			Swamp near Stephen Foster State Park
D.C.Ferguson	25-Sep-1969	United States	South Carolina			Wedge Plantation McClellanville
D.Meadows	2-Jul-1952	Mexico	Nuevo Leon			3 miles East Galeana

- **Format:** First initial.Last name, e.g J.Sones (no spaces)
- For multiple collectors separate with comma

# Museum Data Protocols

## Collection Date

Collection Info Metadata						
Collectors	Collection Date	Country/Ocean	State/Province	Region	Sector	Exact Site
S.E.Miller, P.M.Miller	29-Jun-1970	United States	Arizona	Cochise County		Huachuca Mountains, Ash Canyon Road
R.A.Alexander	5-May-1981	United States	Georgia			Swamp near Stephen Foster State Park
D.C.Ferguson	25-Sep-1969	United States	South Carolina			Wedge Plantation McClellanville
D.Meadows	2-Jul-1952	Mexico	Nuevo Leon			3 miles East Galeana

- **Format:** dd-mmm-yyyy
- Always use 4 digits for year, e.g“09” can be interpreted as 2009 or 1909
- Be cautious of date formats on labels
  - Roman numerals indicate month e.g 4-VI-89 is 4-Jul-89
  - Day and month may be interchangeable e.g 2/7/1952 can be interpreted as Jan 7<sup>th</sup> or Jul 2<sup>nd</sup>

# Museum Data Protocols

## Collection Date Accuracy

Collectors	Collection Date
S.E.Miller, P.M.Miller	29-Jun-1970
R.A.Alexander	31-May-1981
D.C.Ferguson	31-Dec-1969
D.Meadows	

Event Time	Collection Date Accuracy
12:30	-4
13:40	-31
09:50	-365
22:50	

Collection Notes
Reared from larvae
No day specified
No day or month specified
No date

- **Date Ranges:** e.g 25 to 29-Jun-1970
  - Enter end date in Collection Date field and negative (-) # of days in Collection Date Accuracy
- **Incomplete Dates:**
  - Label only contains month and/or year, e.g May 1981 or 1969
  - Enter as date range and make note in Collection Notes  
e.g “no day specified”
- **No Date:** Write “No date” in Notes

# Museum Data Protocols

## Countries & States

Collection Info Metadata						
Collectors	Collection Date	Country/Ocean	State/Province	Region	Sector	Exact Site
S.E.Miller, P.M.Miller	29-Jun-1970	United States	Arizona	Cochise County		Huachuca Mountains, Ash Canyon Road
R.A.Alexander	5-May-1981	United States	Georgia			Swamp near Stephen Foster State Park
D.C.Ferguson	25-Sep-1969	United States	South Carolina			Wedge Plantation McClellanville
D.Meadows	2-Jul-1952	Mexico	Nuevo Leon			3 miles East Galeana

- Enter **full unabbreviated name**
- List of accepted countries in BOLD drop down menu
- Be cautious of interpreting abbreviations on labels  
e.g the state MN could be mistaken as Montana instead of Minnesota

# Museum Data Protocols

## Region & Sector

Collection Info Metadata						
Collectors	Collection Date	Country/Ocean	State/Province	Region	Sector	Exact Site
S.E.Miller, P.M.Miller	29-Jun-1970	United States	Arizona	Cochise County		Huachuca Mountains, Ash Canyon Road
R.A.Alexander	5-May-1981	United States	Georgia			Swamp near Stephen Foster State Park
D.C.Ferguson	25-Sep-1969	United States	South Carolina			Wedge Plantation McClellanville
D.Meadows	2-Jul-1952	Mexico	Nuevo Leon			3 miles East Galeana

### Region:

- Secondary administrative divisions e.g Counties, Districts, Municipalities
- Parks, e.g Banff National Park

### Sector:

- Smaller divisions, e.g within parks or cities

**\*NOTE:** Be consistent according to databasing protocol, consider museum preferences

# Museum Data Protocols

## Exact Site

Collection Info Metadata						
Collectors	Collection Date	Country/Ocean	State/Province	Region	Sector	Exact Site
S.E.Miller, P.M.Miller	29-Jun-1970	United States	Arizona	Cochise County		Huachuca Mountains, Ash Canyon Road
R.A.Alexander	5-May-1981	United States	Georgia			Swamp near Stephen Foster State Park
D.C.Ferguson	25-Sep-1969	United States	South Carolina			Wedge Plantation McClellanville
D.Meadows	2-Jul-1952	Mexico	Nuevo Leon			3 miles East Galeana

- **All other locality information, excluding habitat**
- Be cautious of expanding abbreviations  
e.g R. = Road, River or Ravine?
- Be aware of name changes over historical time
- For illegible labels – write “Illegible locality label” in Notes, take photo for upload if possible



# Museum Data Protocols

## Latitude, Longitude & Accuracy

Collection Info Metadata Extended Fields (BOLD 3.1)									
Latitude	Longitude	Elevation	Depth	Elevation Precision	Depth Precision	GPS Source	Coordinate Accuracy	Event Time	Collection Date Accuracy
10.260	84.010	250				GPS	1	12:30	-4
45 056	-74.789	1500		-500		Google Earth		13:40	-31
45.850	-74 279		65		-15	GPS	10	09:50	-365
-29.650	-56.070	180	10			GPS		22:50	

- **Accepted format:**

- Decimal Degrees: 45.039500 -74.462167 (-/+ very important)

**Other label formats:**

- Degrees/Minutes/Seconds: 45°02'22.2"N 74°27'43.8"W
- Degree Decimal Minutes: 45°02.37'N 74°27.73'W
- UTM:17T 630084 4833438
- **GPS Source:** Source of Lat & Long measurements, e.g Google Earth
- **Coordinate Accuracy:** Decimal representation of precision of coordinates in metres

# Museum Data Protocols

## Elevation, Depth & Precision

		Collection Info Metadata Extended Fields (BOLD 3.1)							
Latitude	Longitude	Elevation	Depth	Elevation Precision	Depth Precision	GPS Source	Coordinate Accuracy	Event Time	Collection Date Accuracy
10.260	84.010	1500		-500				12:30	-4
45.056	-74.789	-7						13:40	-31
45.850	-74.279	180	10					11:10-12:10	-365
-29.650	-56.070		65		-15			Morning	

### Elevation:

- Relative to sea level, accepted format in metres
- Negative values indicate below sea level (not underwater)
- For an elevation range, e.g 1000-1500m, enter highest elevation in field and write negative (-) value in Elevation Precision to represent range

### Depth:

- Collected beneath the surface of water, accepted format in metres
- For inland waters, it is possible to have an elevation AND a depth
- For a depth range, e.g 50-65m, enter lowest depth in field and write negative (-) value in Depth Precision to represent range

# Museum Data Protocols

## Event Time

			Collection Info Metadata Extended Fields (BOLD 3.1)						
Latitude	Longitude	Elevation	Depth	Elevation Precision	Depth Precision	GPS Source	Coordinate Accuracy	Event Time	Collection Date Accuracy
10.260	84.010	1500		-500				12:30	4
45 056	-74.789	-7						13:40	-31
45.850	-74 279	180	10					11:10-12:10	365
-29.650	-56.070		65		-15			Morning	

### Event Time:

- Time when sample was collected
  - Use 24 hour format, e.g 13:10, 11:10-12:10
- Or time of day when sample was collected
  - e.g Morning

# Museum Data Protocols

## Habitat & Sampling Protocol

Collection Info Metadata Extended Fields (BOLD 3.1)				
Habitat	Sampling Protocol	Collection Notes	Site Code	Collection Event ID
Dry Tundra	UV Light Trap	Collected as egg	BIOUG:Churchill	
Swamp	Sweep Net	Collected as larva		
Primary Rainforest	Malaise Trap	Reared T/25 R/W S 33 NE		
Grassland	Free Hand	Stem of yucca		

### Habitat:

- Environmental information that is not related to locality or associated taxa, e.g Forest, Sandy Shore, Dunes

### Sampling Protocol:

- Method used to collect sample, e.g Malaise trap, berlese funnel
- Be aware of abbreviations on labels, e.g FIT, MVL, PFT

# Museum Data Protocols

## Collection Notes, Site Code & Collection Event

Collection Info Metadata Extended Fields (BOLD 3.1)				
Habitat	Sampling Protocol	Collection Notes	Site Code	Collection Event ID
Dry Tundra	UV Light Trap	Collected as egg	BIOUG:Churchill	
Swamp	Sweep Net	Collected as larva		
Primary Rainforest	Malaise Trap	Reared T/25 R/W S 33 NE		
Grassland	Free Hand	Stem of yucca		

- **Collection Notes:** Any notes related to collection of specimen
- **Site Code:** Name of Sampling Location
- **Collection Event ID:** Optional event ID

# Museum Data Protocols

## Custom Fields

- Option to add additional custom fields on BOLD  
e.g body or weather measurements, genitalia slide #
- **3 supported data types:**
  - decimal
  - integer
  - text
- **Field labels must be at least 3 characters**

<b>Process ID:</b>	CUSFD001-17
<b>Identification:</b>	Enoplognatha ovata ((Clerck, 1757))
<b>Identified by</b>	<a href="#">Gergin A. Blagoev</a>
<b>♀ Collected in</b>	Canada, Ontario
<b>by</b>	MA Smith, C. Warne, S. McCubbin, C. Vandermeer
<b>Institution Storing:</b>	University of Guelph
<b>Field ID:</b>	BOLD2613-B07
<b>Museum ID:</b>	

[Edit Specimen](#)[Show Delta View](#)

★ Custom Fields

<b>Mass:</b>	3.8 (Total body wet mass (mg))
<b>Age:</b>	3 (Disturbance age (year))
<b>Guild assemblage:</b>	Ambush hunter (Guild (Active hunter, ambush hunter, sheet weaver))












# Museum Data Protocols

## Custom Fields

- 1 Must add custom field at the container project level

**Custom Fields**

Please optionally enter details regarding any custom data fields you would like to appear on the projects added to this container. Supported data types are integer, decimal and text. Field labels must be at least 3 characters.

Label	Description	Data Type	Actions
Mass	Total body wet mass (mg)	Decimal	 
Age	Disturbance age (year)	Integer	 
Guild assemblage	Guild(Hunter, web weaver, ambush)	Text	 
<input type="text"/>	<input type="text"/>	Integer 	 

- \* Option to move records into project with existing fields

# Museum Data Protocols

## Custom Fields

- 2 Upload standard specimen data using 4 tab spreadsheet
- 3 Once online, download new specimen data sheet with Custom Field tab to obtain machine readable headers

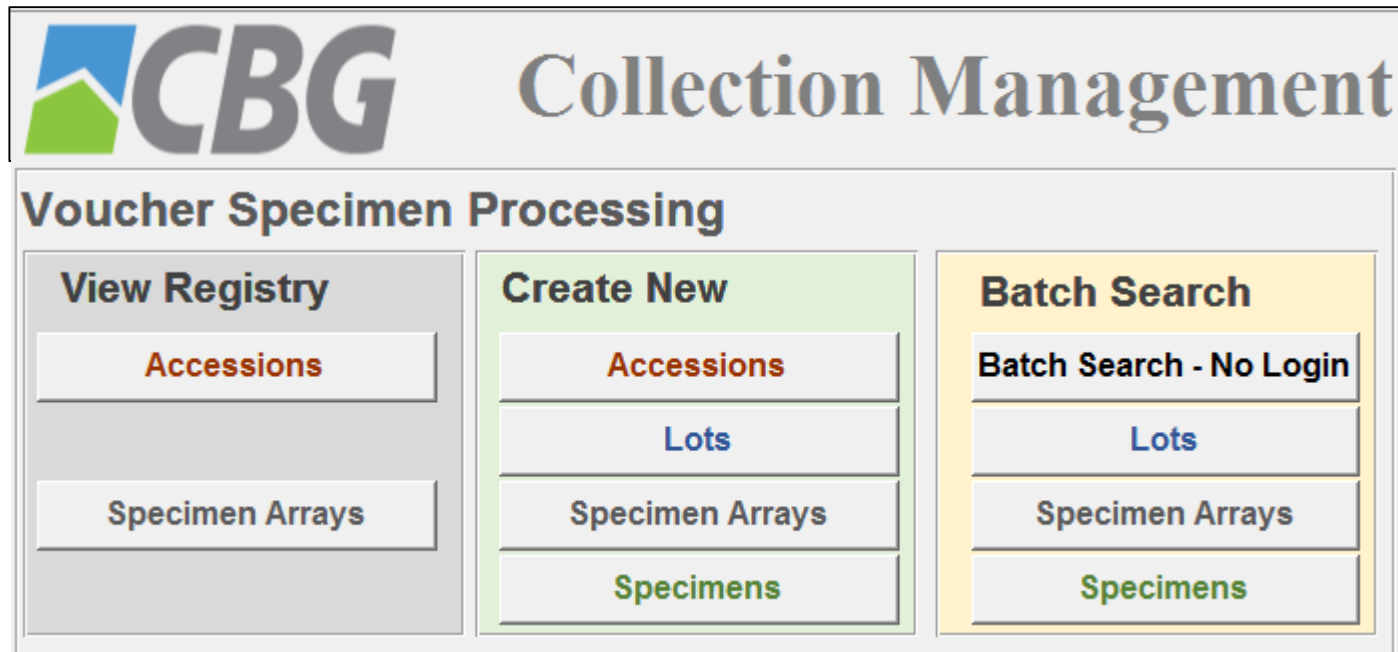
Project:	CUSFD		
Created:	06-Nov-2017		
Machine readable	51212c1d-f7f6-4ec4-eb8a-008d6ab3c435	496fa246-0860-4062-aa89-4eedc95c60fa	55054f71-7f2f-418c-d0f1-19d9e220b876
SampleID	Mass	Age	Guild assemblage
BOLD2613-B07		3.8	3 Ambush hunter
BOLD2613-B06		5.3	25 Active hunter
BOLD2607-H11		1.7	4 Sheet web weaver
BOLD2613-B01		2.3	5 Orb web weaver
BOLD1027-F02		0.2	6 Other
BOLD2613-A09		9.3	7 Space web weaver

- 4 Upload Custom Field tab to BOLD

\* Once online, can be manually edited on specimen page

# Accessioning and CIMS

- For large scale projects consider using a **Collections Information Management Systems (CIMS)**
- Log donor info, loan conditions, and BMTAs



The screenshot displays the 'CBG Collection Management' web interface. At the top, the 'CBG' logo is on the left, and the title 'Collection Management' is on the right. Below this is a section titled 'Voucher Specimen Processing'. This section contains three main panels: 'View Registry' (grey), 'Create New' (green), and 'Batch Search' (yellow). Each panel has a list of buttons: 'View Registry' has 'Accessions' (red text) and 'Specimen Arrays' (black text); 'Create New' has 'Accessions' (red text), 'Lots' (blue text), 'Specimen Arrays' (black text), and 'Specimens' (green text); 'Batch Search' has 'Batch Search - No Login' (black text), 'Lots' (blue text), 'Specimen Arrays' (black text), and 'Specimens' (green text).

View Registry	Create New	Batch Search
Accessions	Accessions	Batch Search - No Login
	Lots	Lots
Specimen Arrays	Specimen Arrays	Specimen Arrays
	Specimens	Specimens

# Accessioning and CIMS

- All specimens are registered and linked to their corresponding container arrays
- Archival locations and all loan transactions are recorded

**CBG Specimen Data**  
Review HLC numbers quota   Reserve specimen numbers

ADMIN - Check Table ID Errors

Loan history

Specimen Data Entry Template

Retrieve specimen records from BOLD (Not updating, new records only)

**Sample ID** CCDB-29068-E02  
Lot CCDB-29068-E02  
Container CCDB-29068  
Field ID  
Museum ID USNM ENT 01237868  
Institution Key 542  
Accession BIO-16-160  
Process ID LNAUV1855-17  
BIN  
Sex   Life Stage   Repr  
Specimen CBG Status Permanent Loan  
Tissue Form Tissue  
Collection Medium Unknown  
Voucher Preparation whole specimen - pinned  
Extra Info  
Notes  
BOLD Voucher Status Vouchered:Registered Colle

**Identification** *Pseudocoarica caledonica*  
Identifier USNM curators  
Taxonomy Notes  
Associated Taxa  
Associated Specimen  
Collector(s) M.Pogue, M.Epstein  
Coll. Start Date 27-Feb-84   Coll. End Date 28-Feb-84  
Country New Caledonia   Collection Time

**Centre for Biodiversity Genomics, University of Guelph**  
50 Stone Rd. East, Guelph, Ontario, Canada N1G 2W1  
Tel+1 519 824-4120 ext. 53600; Fax +1 519 824-5703  
www.biodiversitygenomics.net

**COLLECTION SHIPPING INVOICE**  
**TRANSACTION** 2017-068  
**Loan conditions:** Return of Material  
**Recipient Information:** Scott Miller  
National Museum of Natural History  
Smithsonian Institution  
Entomology  
10th & Constitution NW  
Washington, DC 20560-0105  
**Purpose of loan:** Permanent Storage  
**Initiated by:** Valerie Levesque-Beaudin  
**Arranged by:** Suresh Naik  
**Approved by:** Evgeny Zakharov  
**Smithsonian Institution**  
**Hand-carried by:** Valerie Levesque-B  
**18-May-17**  
**Complete List)**

**Specimen array containers**  
Reserve new BIOUG numbers (will display in dropdown)  
Check out BIOUG numbers (will disappear from dropdown)

Output plate map to CCDB Lab database and LIMS  
**CBG Imaging array details**

Specimen Array printout  
Print 10X10 imaging array  
LOT 10X10 array map

☐ **Labels print queue**  
Container large labels  

Single labels	Wide labels
Double labels	Tray labels

Filter unfinished arrays only  
Output image array data for BOLD  
Review BIOUG numbers quota

**Container Name:** CCDB-29068  
Date created: Thursday, January 05, 2017  
Record created by: Renee Miskie  
Description: Schmidt insect box  
Destination: Specimen array  
CBG Accession: BIO-16-160   BOLD project: LNAUV  
CBG Imaging queue number:

Organism type: Lepidoptera  
Curator/contact: Jeremy deWaard  
Storage locator:  
Storage unit:  
Status: DISASSEMBLED  
Comments: USNM Lepidoptera 2016 Sanger

☒ **Specimen array**  
☐ **Specimen archive** [List specimens](#)  
☐ **Lot archive** [List lots](#)  
[List associated archives](#)  
[Print Matrix Box Labels by Container](#)

☐ **Processing complete**

**ROUTINE processing tasks performed**   \*Processed by: Crystal Sobel   (add name for auto task logging)   [Review routine task log](#)

Processing	Processing Stage	Priority	# sp.	Processed by	Time, h	Equipment used	Completed	Comments
Done	02 - databasing	normal	95	Crystal Sobel			18-Jan-17	✓ Routine
Done	04 - BOLD submission	normal	95	Crystal Sobel			09-Feb-17	✓ Routine
Done	05 - BOLD labels	normal	95	Crystal Sobel			10-Jan-17	✓ Routine
Done	06 - submission to Photograp	normal	95	Crystal Sobel			10-Jan-17	✓ Routine
Done	10 - tissue sampling	normal	95	Crystal Sobel			17-Jan-17	✓ Routine
Done		normal	95	Crystal Sobel			06-Nov-17	✓ Routine

# BOLD Projects & Upload

- Registered users have ability to see public projects, projects shared with them and create new projects.
- Projects can be created or searched from the BOLD workbench

The screenshot displays the BOLD Systems Main Console. The sidebar on the left contains navigation links: Main Console, Projects (highlighted with a red box), Checklists, Primers, and BOLD Main Menu. The main content area features a 'Project & Dataset Search' bar at the top. Below this, a 'Welcome to BOLD Systems' message is followed by a 'Projects' card showing 491 Projects with access and a 'New Project' button (highlighted in red). Other cards include 'Specimens' (1112389 Records with access) and 'Uploads' (Sequences, Traces, Images, Primers, Publication, Checklist). The 'Your Datasets: 47' section lists datasets like 'BIN Ref Library 2.0 Test' and 'Crystal Ernst - Coleoptera and Araneae of LEM'. The 'Recently Accessed' section shows a list of accessed datasets with details like 'NEUIT Neuroptera of Italy - Agostino Letardi'.

\* The creator becomes the project manager

# BOLD Projects & Upload

## Two types of BOLD projects:

- 1 Container projects – contains other projects
- 2 Data project – contains specimen and sequence records

**Container project**

**Data project**



<input type="checkbox"/>	CNCH	CNC Hemiptera 2012
<input type="checkbox"/>	CNCH-1	CNC Hemiptera 2012 - 1
<input type="checkbox"/>	CNCH-2	CNC Hemiptera 2012 - 2
<input type="checkbox"/>	CNCH	CNC Hemiptera 2011
<input type="checkbox"/>	CNCH-1	CNC Hemiptera 2011 - 1
<input type="checkbox"/>	CNCH-2	CNC Hemiptera 2011 - 2
<input type="checkbox"/>	CNCH-3	CNC Hemiptera 2011 - 3
<input type="checkbox"/>	CNCH-4	CNC Hemiptera 2011 - 4

# BOLD Projects & Upload

## Creating a New Project

Required fields for submission are marked in red.

**Project Code:**  (A unique 3-5 letter code)

**Project Type:** ☒ Data Project (contains specimen & sequence records)  
☐ Container Project (contains other projects)

**Project Title:**

**Primary Marker:**  ▼  
(COI is the only marker that holds BARCODE status in GenBank at this time)

**Supporting Marker(s):**  ▼  
(For additional markers, please contact BOLD Support Team at [support@boldsystems.org](mailto:support@boldsystems.org))

**Campaign:**  ▼  
\* Records contained are withheld from ID Engine and BINs

**Container:**  ▼

**Tags:** Enter annotations that you would like to appear as project tags. If a predefined tag does not suit your needs, enter a new brief tag below (one at a time) and press 'Add Tag'. Edit or remove tags at any time by using the Project Properties page. To include additional predefined tags, please contact BOLD Support Team at [support@boldsystems.org](mailto:support@boldsystems.org)

▼

**Project Description:**   
(Minimum 15 characters)

feedback



# BOLD Projects & Upload

# Creating a New Project

Bounding Box Top Left:

Latitude

Longitude

Bounding Box Lower Right:

Latitude

Longitude

Project Access:

☐ Make this project **publicly visible**  
(All BOLD users will be allowed to view, analyze, and download sequence data)

Project Manager:

Jayne E. Sones

Assign Users:

To assign a new user, begin to type either the first or last name of the desired user. BOLD will return matches in a drop-down box, and clicking on the name will select it. To remove a user, simply delete their name from the field.

<input type="text"/>	<input type="checkbox"/> Analyze Seq	<input type="checkbox"/> View&Download Seq	<input type="checkbox"/> Edit Seq	<input type="checkbox"/> Edit Specimens	<input type="checkbox"/> Add to Dataset
<input type="text"/>	<input type="checkbox"/> Analyze Seq	<input type="checkbox"/> View&Download Seq	<input type="checkbox"/> Edit Seq	<input type="checkbox"/> Edit Specimens	<input type="checkbox"/> Add to Dataset
<input type="text"/>	<input type="checkbox"/> Analyze Seq	<input type="checkbox"/> View&Download Seq	<input type="checkbox"/> Edit Seq	<input type="checkbox"/> Edit Specimens	<input type="checkbox"/> Add to Dataset
<input type="text"/>	<input type="checkbox"/> Analyze Seq	<input type="checkbox"/> View&Download Seq	<input type="checkbox"/> Edit Seq	<input type="checkbox"/> Edit Specimens	<input type="checkbox"/> Add to Dataset
<input type="text"/>	<input type="checkbox"/> Analyze Seq	<input type="checkbox"/> View&Download Seq	<input type="checkbox"/> Edit Seq	<input type="checkbox"/> Edit Specimens	<input type="checkbox"/> Add to Dataset

Add Users

Save

Cancel

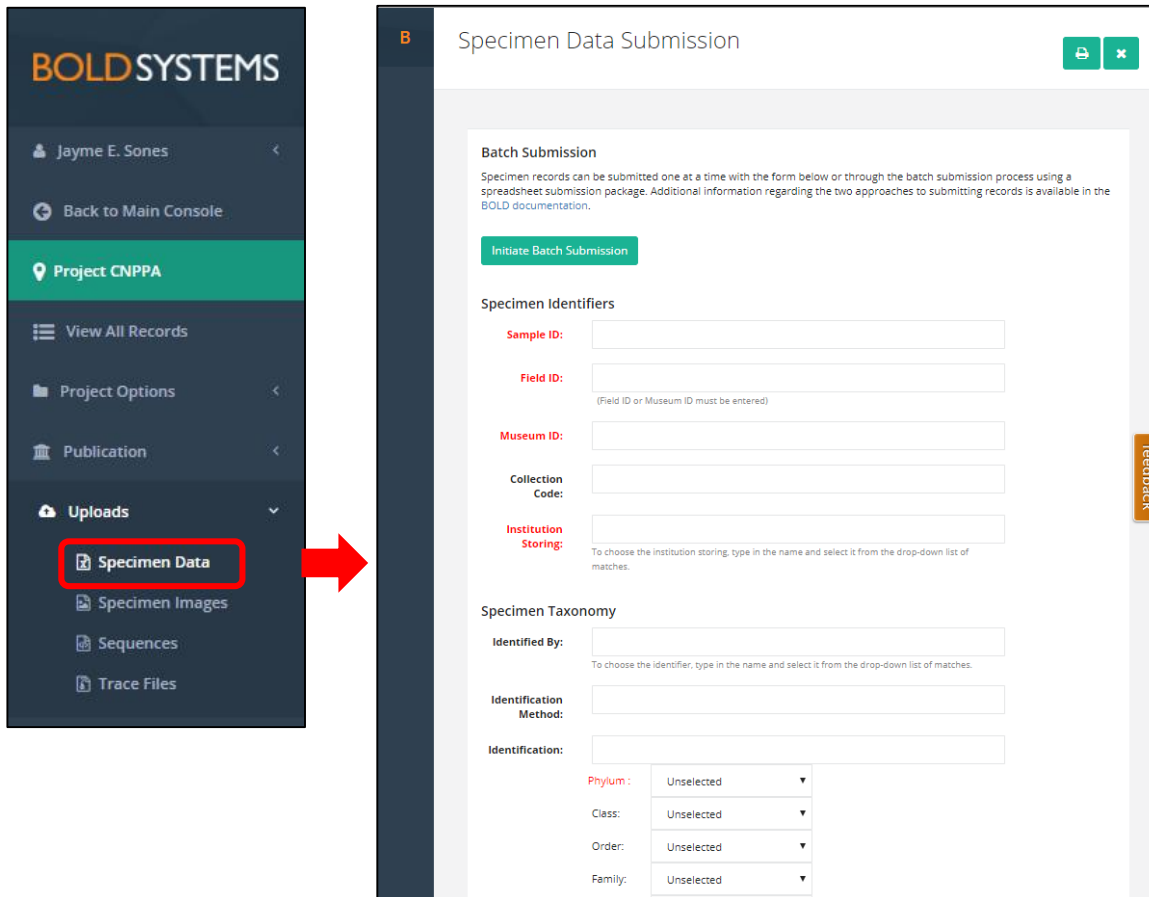
# BOLD Projects & Upload

## Creating a New Project

- The person who creates the projects is automatically assigned as the **project manager**
- **Project manager** can be updated by contacting BOLD support ([support@boldsystems.org](mailto:support@boldsystems.org))
- **Project parameters and user access** can be updated at any time by the project manager
- Data projects are limited to **10,000 specimen records**
- **Consider separating by marker** e.g plant and animals
- Any user with editing permissions can upload or modify data

# BOLD Projects & Upload

## Manually Uploading Specimen Data



**BOLDSYSTEMS**

Jayne E. Sones <

Back to Main Console

Project CNPPA

View All Records

Project Options <

Publication <

Uploads ▾

- Specimen Data**
- Specimen Images
- Sequences
- Trace Files

**Specimen Data Submission**

**Batch Submission**

Specimen records can be submitted one at a time with the form below or through the batch submission process using a spreadsheet submission package. Additional information regarding the two approaches to submitting records is available in the [BOLD documentation](#).

**Initiate Batch Submission**

**Specimen Identifiers**

**Sample ID:**

**Field ID:**   
(Field ID or Museum ID must be entered)

**Museum ID:**

**Collection Code:**

**Institution Storing:**   
To choose the institution storing, type in the name and select it from the drop-down list of matches.

**Specimen Taxonomy**

**Identified By:**   
To choose the identifier, type in the name and select it from the drop-down list of matches.

**Identification Method:**

**Identification:**

<b>Phylum:</b>	Unselected ▾
<b>Class:</b>	Unselected ▾
<b>Order:</b>	Unselected ▾
<b>Family:</b>	Unselected ▾

- On BOLD project console select

**Uploads→  
Specimen Data**

- Enter data in relevant fields

# BOLD Projects & Upload

## Uploading Batch Specimen Data

The screenshot displays the BOLD SYSTEMS user console. On the left sidebar, the 'Uploads' section is expanded, and 'Specimen Data' is highlighted with a red box. A red arrow points from this box to the 'Initiate Batch Submission' button on the main page, which is also highlighted with a red box. The main page shows the 'Specimen Data Submission' form with fields for Sample ID, Field ID, Museum ID, and Collection Code.

- Upload batch specimen data within the project console

# BOLD Projects & Upload

## Uploading Batch Specimen Data

Specimen Data Batch Submission | BOLDSYSTEMS - Google Chrome

v4.boldsystems.org/index.php/MAS\_DataCollection\_FileSub?subtype=specimendatafile&pcode=CNPPA

**B** Specimen Data Batch Submission

Please select the type of submission you would like to complete from one of the following:

- ☒ **ADD NEW Records:** Submit new records to a project.
- ☐ **UPDATE Existing Records:** Update some or all fields on records that have been previously submitted to BOLD.

Note: To update current records and submit new records, you must submit two independent submissions. For more information, please visit our [Resources](#) section.

**Next** Cancel

# BOLD Projects & Upload

## Uploading Batch Specimen Data

Specimen Data Batch Submission | BOLDSYSTEMS - Google Chrome

v4.boldsystems.org/index.php/MAS\_DataCollection\_FileSub?subtype=specimendatafile&pcode=CNPPA

### Specimen Data Batch Submission

**Instructions for New Submissions**

BOLD supports the upload of multiple specimen records in a spreadsheet format. Our Version 3.1 spreadsheet can be downloaded below:

**Version 3.1 Spreadsheet**

A spreadsheet submission template containing all the the fields supported by BOLD 2.5 and new fields added in BOLD 3.1. This spreadsheet is reverse-compatible with the 2.5 version, to the effect that all the BOLD 2.5 fields remain in their original columns. New fields have been appended at the end of each worksheet.

**Pre-Submission Data Verification:** Upon submission of new records, BOLD performs a brief check of the submission for common data errors. If there are no issues with the provided data, a confirmation of the successful first pass of validation will be provided. If any issues are detected, a detailed list of the problematic cells within the specimen data spreadsheet will be provided. Further details can be found in the documentation in the [Resources](#) section.

After successfully submitting your data to BOLD, our data submission staff will be in contact if there are any apparent errors or queries regarding the submitted data or when the data has been successfully processed.

**File Submission**

**Excel Spreadsheet:** Choose file No file chosen

**Priority Level:** ☐ High Priority

Reserved for when immediate processing is required (i.e. publication pending). High priority submissions usually take 1-3 business days to process, depending on the length of the high priority queue.

[feedback](#)

**\*NOTE** each upload can ONLY contain records for one given project at a time

# BOLD Projects & Upload

## Submission Queue

- 1 After submission you will receive a confirmation email with ticket number
- 2 BOLD will run a series of validation checks, any issues are sent back to submitter
- 3 If no issues, data is uploaded and a BOLD team member will notify you when it is online

**\*NOTE** you are unable to search new records until the following day




# BOLD Projects & Upload

## Updates & Corrections

- Minor updates can be made directly on the specimen page

BIOUG02936-E06



CBG Photography Group  
cdbccl@uoguelph.ca

Creative Commons Attribution NonCommercial  
ShareAlike (2013)  
Centre for Biodiversity Genomics

Tags

Comments

Annotate

Lateral

Process ID: CNPPA030-12  
Identification: Megaselia  
Identified by: Kate Perez  
Collected in by: Heidi Brown  
Institution Storing: University of Guelph, Centre for Biodiversity Genomics  
Field ID: GMP#00167  
Museum ID: BIOUG02936-E06

Edit Specimen

Show Delta View

Specimen Identifiers

Sample ID: BIOUG02936-E06

Field ID: GMP#00167  
(Field ID or Museum ID must be entered)

Museum ID: BIOUG02936-E06

Collection Code: BIOUG

Institution Storing: University of Guelph, Centre for Biodiversity Genomics  
To choose the institution storing, type in the name and select it from the drop-down list of matches.

Specimen Taxonomy

Identified By: Kate Perez  
To choose the identifier, type in the name and select it from the drop-down list of matches.

Identification Method: BIN Taxonomy Match

Identification: Megaselia

Phylum: Arthropoda

Class: Insecta

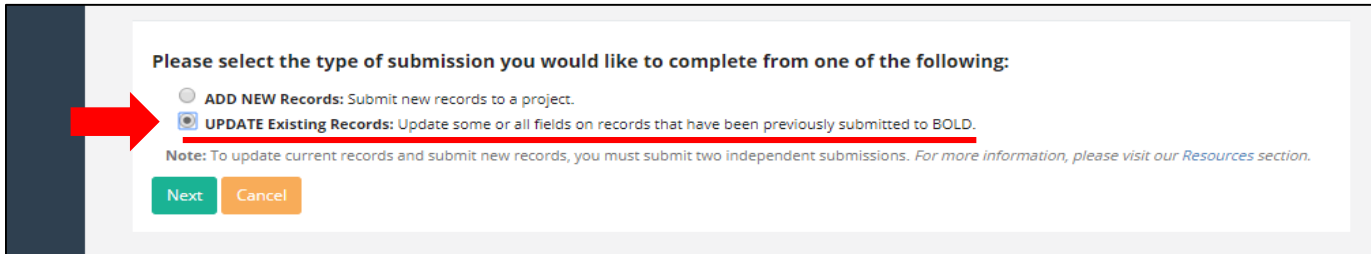
Order: Diptera

Family: Phoridae

# BOLD Projects & Upload

## Updates & Corrections

- **OR** larger updates can be done using the same batch submission method and selecting for updates instead of new records



Please select the type of submission you would like to complete from one of the following:

☐ ADD NEW Records: Submit new records to a project.

☒ UPDATE Existing Records: Update some or all fields on records that have been previously submitted to BOLD.

Note: To update current records and submit new records, you must submit two independent submissions. For more information, please visit our [Resources](#) section.

- Ensure you have downloaded the most up to date specimen data from BOLD (post validation) and then proceed to make necessary updates
- You can update one **or** all metadata tabs at a time

# BOLD Projects & Upload

## Updates & Corrections

- Updates to Sample IDs require a special request
- Send list of current and revised Samples IDs to BOLD Support ([support@boldsystems.org](mailto:support@boldsystems.org))

e.g

Current Sample ID	Revised Sample ID
CCDB-14573-A1	CCDB-14573-A01
CCDB-14573-A2	CCDB-14573-A02
CCDB-14573-A3	CCDB-14573-A03
CCDB-14573-A4	CCDB-14573-A04
CCDB-14573-A5	CCDB-14573-A05
CCDB-14573-A6	CCDB-14573-A06
CCDB-14573-A7	CCDB-14573-A07
CCDB-14573-A8	CCDB-14573-A08

**\*NOTE** Process IDs can not be updated

# Plate Records & Plate Maps

- A plate record provides the linkage between voucher and its tissue/DNA. (well location)
- Best practice is to generate a plate record as soon as samples are arrayed and sample IDs assigned

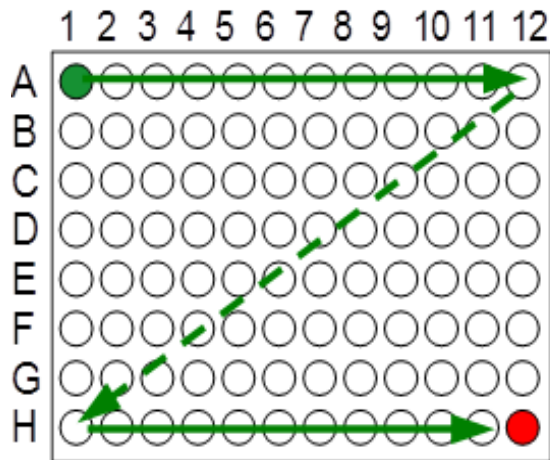


Plate	Well	Sample ID
CCDB-14573	A01	USNM ENT 00078676
CCDB-14573	A02	USNM ENT 00078663
CCDB-14573	A03	USNM ENT 00085459

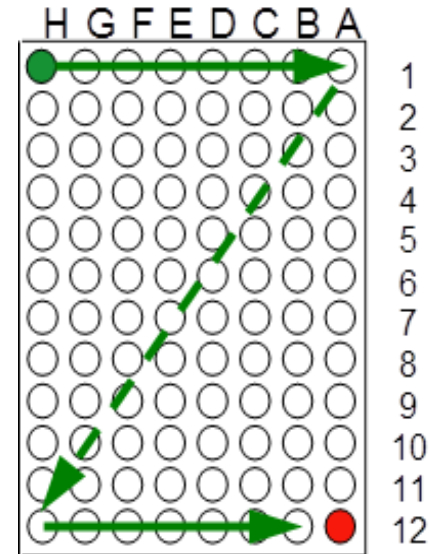
# Plate Records & Plate Maps

- Most plates are arrayed in 12 column format - A01 through to A12, however occasionally they are arrayed in 8 column format - H01 to A01 (used for plants)

12 Column Format



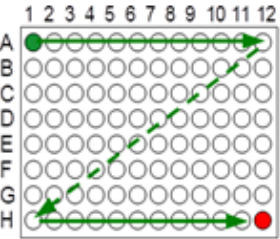
8 Column Format




**\*NOTE** difference in control location

# Plate Records & Plate Maps

- Use plate maps for verification checks during labelling, imaging and tissue sampling





*Microplate (animal tissue)*

[Print layout map](#)

**CCDB array number:** CCDB-13457

**Sample container:** *microplate*

**Overall samples submitted:** **95** out of 95

**Map of Sample Locations**

*SAMPLING ORDER: Begin sampling with position A01 and finish at H11*

*	01	02	03	04	05	06	07	08	09	10	11	12
<b>A</b>	USNMMENT 00565484	USNMMENT 00565485	USNMMENT 00565486	USNMMENT 00565487	USNMMENT 00565488	USNMMENT 00565489	USNMMENT 00565490	USNMMENT 00565491	USNMMENT 00565492	USNMMENT 00565493	USNMMENT 00565494	USNMMENT 00565495
<b>B</b>	USNMMENT 00565496	USNMMENT 00565497	USNMMENT 00565498	USNMMENT 00565499	USNMMENT 00565500	USNMMENT 00565501	USNMMENT 00565502	USNMMENT 00565503	USNMMENT 00565504	USNMMENT 00565505	USNMMENT 00565506	USNMMENT 00565507
<b>C</b>	USNMMENT 00565508	USNMMENT 00565509	USNMMENT 00565510	USNMMENT 00565511	USNMMENT 00565512	USNMMENT 00565513	USNMMENT 00565514	USNMMENT 00565515	USNMMENT 00565516	USNMMENT 00565517	USNMMENT 00565518	USNMMENT 00565519
<b>D</b>	USNMMENT 00565520	USNMMENT 00565521	USNMMENT 00565522	USNMMENT 00565523	USNMMENT 00565524	USNMMENT 00565525	USNMMENT 00565526	USNMMENT 00565527	USNMMENT 00565528	USNMMENT 00565529	USNMMENT 00565530	USNMMENT 00565531
<b>E</b>	USNMMENT 00565532	USNMMENT 00565533	USNMMENT 00565534	USNMMENT 00565535	USNMMENT 00565536	USNMMENT 00565537	USNMMENT 00565538	USNMMENT 00565539	USNMMENT 00565540	USNMMENT 00565541	USNMMENT 00565542	USNMMENT 00565543
<b>F</b>	USNMMENT 00565544	USNMMENT 00565545	USNMMENT 00565546	USNMMENT 00565547	USNMMENT 00565548	USNMMENT 00565549	USNMMENT 00565550	USNMMENT 00565551	USNMMENT 00565552	USNMMENT 00565553	USNMMENT 00565554	USNMMENT 00565555
<b>G</b>	USNMMENT 00565556	USNMMENT 00565557	USNMMENT 00565558	USNMMENT 00565559	USNMMENT 00565560	USNMMENT 00565561	USNMMENT 00565562	USNMMENT 00565563	USNMMENT 00565564	USNMMENT 00565565	USNMMENT 00565566	USNMMENT 00565567
<b>H</b>	USNMMENT 00565568	USNMMENT 00565569	USNMMENT 00565570	USNMMENT 00565571	USNMMENT 00565572	USNMMENT 00565573	USNMMENT 00565574	USNMMENT 00565575	USNMMENT 00565576	USNMMENT 00565577	USNMMENT 00565578	CONTROL