

BARCODE OF LIFE DATA SYSTEM ^{v4}

Advancing biodiversity science through DNA-based species identification.

EXPLORE THE DATA

DESIGNED TO SUPPORT THE GENERATION & APPLICATION OF DNA BARCODE DATA

14:15 - 15:00 - Chris Ho

Getting maximum value out of BOLD for natural history collections:

(Data management, validation, and publication)



DNA Barcoding Natural History Collections

Overview

Chris Ho
Data Manager

BOLDSYSTEMS

- 5+ years with Biodiversity Institute of Ontario/Centre for Biodiversity Genomics, part of the University of Guelph
- MSc Dr. M. A. Smith Lab, University of Guelph

 Centre for
Biodiversity Genomics

 UNIVERSITY
of GUELPH

Overview

- Intro and Overview of a Digital Specimen Record (5 mins)
Review of BOLD and review of Custom Fields
- Validation of Barcode Data Integrity (15 mins)
Automated reports and flagging, tagging
Tools to validate: BINs/OTUs, Taxon ID Trees, ID Engine, Barcode Gap
- Visualization and Analysis Tools (15 mins)
Trees for publication
Checklist System
- Publication (10 mins)
Datasets and Sharing
Submit to GenBank
Publication Association

BOLD SYSTEMS: System Highlights



Simplified Data Uploads



Data Management tools



Cloud-based database



Publishing tools



Built for Collaborations

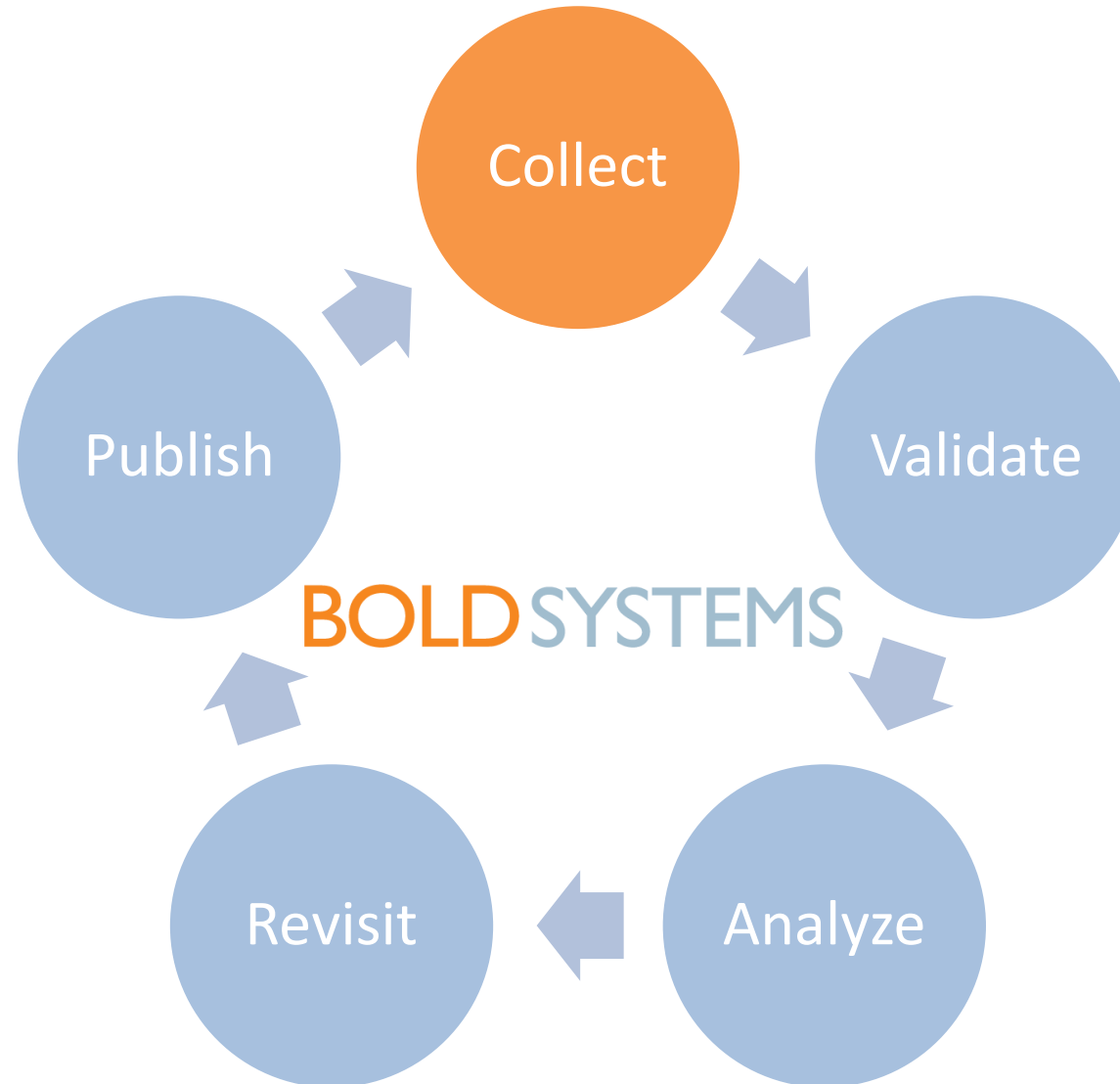


Data Standards

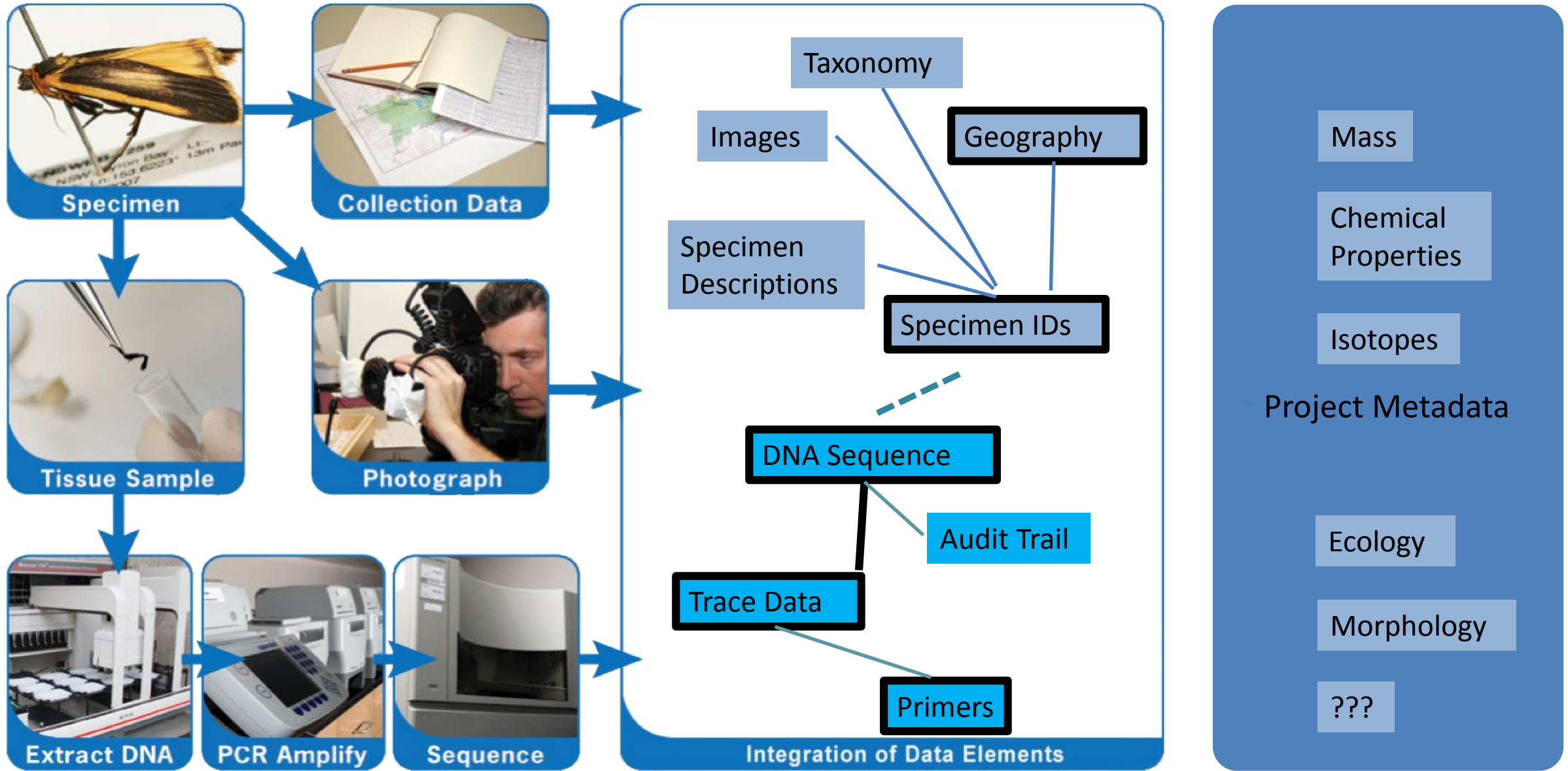


Identification and Analysis

Data Life Cycle




Metadata



Custom fields

Specimen - Birds of Argentina - Phase I [BARG]

MACN-Or-ct 3064



Ariel Aptekmann
ptubar@gmail.com

Copyright (2012)
Museo Argentino de Ciencias Naturales
"Bernardino Rivadavia"

Process ID: KAARG356-07
Identified by: Brotoeris chiriri (Vieillot, 1818)
Collected in by: Argentina, Buenos Aires
Institution Storing: Museo Argentino de Ciencias Naturales, Bernardino Rivadavia
Field ID: MACN-Or-ct 3064
Museum ID: MACN-Or-ct 3064

Show Delta View

Specimen Details

Sample ID: MACN-Or-ct 3064	Voucher Status:
Process ID: KAARG356-07	Tissue Descriptor:
Project: BARG	Sex: M
Institution Storing: Museo Argentino de Ciencias Naturales, Bernardino Rivadavia	Reproduction: Yellow-chevroned Parakeet
Field ID: MACN-Or-ct 3064	Associated Taxa:
Museum ID: MACN	Associated Specimens:
Reference Link:	
Note:	

Taxonomy

Phylum: Chordata	Identification: Brotoeris chiriri (Vieillot, 1818)
Class: Aves	Rank: Species
Order: Psittaciformes	
Family: Psittacidae	
Subfamily: Brotoeris	
Genus: Brotoeris	
Species: Brotoeris chiriri	

Collection Data

Country: Argentina	Collector: 08-Feb-2007
Province/State: Buenos Aires	Date Collected: 08-Feb-2007
Region/County: Ciudad de Buenos Aires	Date Accuracy:
Sector:	Time Collected:
Exact Site: Parque Centenario	Site Code:
Lat/Lon: -34.6043, -58.4362	Habitat:
Elevation:	Sampling Protocol:
Elevation Accuracy:	Coord. Source:
Depth:	Coord. Accuracy:
Depth Accuracy:	
Collection Event ID:	
Collection Notes:	

Recent Activities

25 records per page Search:

Timestamp	Who	Action
Jun-25, 2012 12:31	Cecilia Kopuchian	New-Image(s)
Jun-25, 2012 12:31	Cecilia Kopuchian	New-Image(s)


Showing 1 to 2 of 2 entries

Download History: Last Week Last Month Last 6 Months

Comments

New Comment

Map



- Monitoring metadata, such as temperature, rainfall from trap day
- FAO region or other controlled data
- Morpho-Metrics

★ Custom Fields

Culmen: 1.17 (Length in cm)
Tarsus: 2.25 (Length in cm)
Tail: 8.46 (Length in cm)
Wing: 12.38 (Length in cm)
Wingspan: 26.98 (Length in cm)

Tagging

Barcoding Fish (FishBOL) 748 Projects, 208831 Specimens

Code	Title	Public	Specimens	Species	Species with Sequences Markers [stats]	Sequences
<input type="checkbox"/> AAFI	Argentinean Antarctic Fishes phase I		275	35	COI-5P[35]	COI-5P[35]
<input type="checkbox"/> ABTGM	Atlantic Bluefin Tuna Larval ID 2017		190	4	COI-5P[3]	COI-5P[3]
<input type="checkbox"/> ACAM	Southern African Amphilius and other		140	16	COI-5P[16]	COI-5P[16]
<input type="checkbox"/> ACAN	Acanthurus n. sp. from Philippines		0	0	COI-5P[0]	COI-5P[0]
<input type="checkbox"/> ACMB	Atlantic Canada Mesopelagic and Upper Bathypelagic Fishes of the Gully MPA		247	106	COI-5P[106]	COI-5P[106]
<input type="checkbox"/> ACMBR	Atlantic Canada Mesopelagic and Upper Bathypelagic Fishes		0	0	COI-5P[0]	COI-5P[0]
<input type="checkbox"/> ACMF	Atlantic Canada Mesopelagic Fishes		119	45	COI-5P[45]	COI-5P[45]
<input type="checkbox"/> ACMM	Atlantic Canada Mesopelagic Fishes Miscellaneous		191	70	COI-5P[70]	COI-5P[70]
<input type="checkbox"/> ACMT	Barcoding Achiridae and related		18	8	COI-5P[8]	COI-5P[8]
<input type="checkbox"/> ADSF	Argentinean Deep Sea Fishes		87	22	COI-5P[16]	COI-5P[16]
<input type="checkbox"/> AETO	Aetobatus ocellatus identification		6	1	COI-5P[1]	COI-5P[1]
<input type="checkbox"/> AFCD	AFCD SHARK FIN		0	0	COI-5P[0], COI-3P[0]	COI-5P[0], COI-3P[0]
<input type="checkbox"/> AFF	Australasian Freshwater Fishes		0	0	COI-5P[0], ND4[0]	COI-5P[0], ND4[0]
<input type="checkbox"/> AFGHA	DNA Barcoding of Commercially Important Marine Fishes in Malaysia based on Cytochrome Oxidase I (COI) gene		59	16	COI-5P[16]	COI-5P[16]
<input type="checkbox"/> AFT	FDA Catfish		842	2	COI-5P[2]	COI-5P[2]
<input type="checkbox"/> AMCC	Fish DNA samples from AMCC		104	64	COI-5P[62]	COI-5P[62]
<input type="checkbox"/> AMFSH	Fishes of Amazonia		1	1	COI-5P[1], D-loop[0], RAG1[0]	COI-5P[1], D-loop[0], RAG1[0]
<input type="checkbox"/> AMS	Australian Museum Fishes Part 1		951	458	COI-5P[274]	COI-5P[274]

BOLD SYSTEMS

Chris Ho

Back to Main Console

Project BDORA

View All Records

Project Options

Publication

Uploads

Downloads

Sequence Analysis

Aggregate Data

Primers

BOLD Main Menu

Project & Dataset Search

Code

Project - BDORA Barcoding Drosophila in Oriental Region A

Specimens

80

GPS: 80 / 80

Country: 80 / 80

Images: 79 / 80

Barcode Compliant: 69 / 80

Sequences

80

Sequences 80/80

COI-5P: 80/80

Descriptors

Codes: BDORA

Markers: COI-5P

Title: Barcoding Drosophila in Oriental Region A

Description: Barcoding Drosophila in Oriental Region A: The genus Leucophenga (Diptera, Drosophilidae) the ornata species group from East Asia

Container: BDOR

Campaign: Biodiversity of Diptera

Bounding Box: N/A

Coordinates:

Data Summary

BINS 33

Countries (Top 5)

• China (75)
• Japan (5)

Taxonomy



Issues

Seqs lacking successful traces

• 0

Seqs with stop codons

User Access

Manager

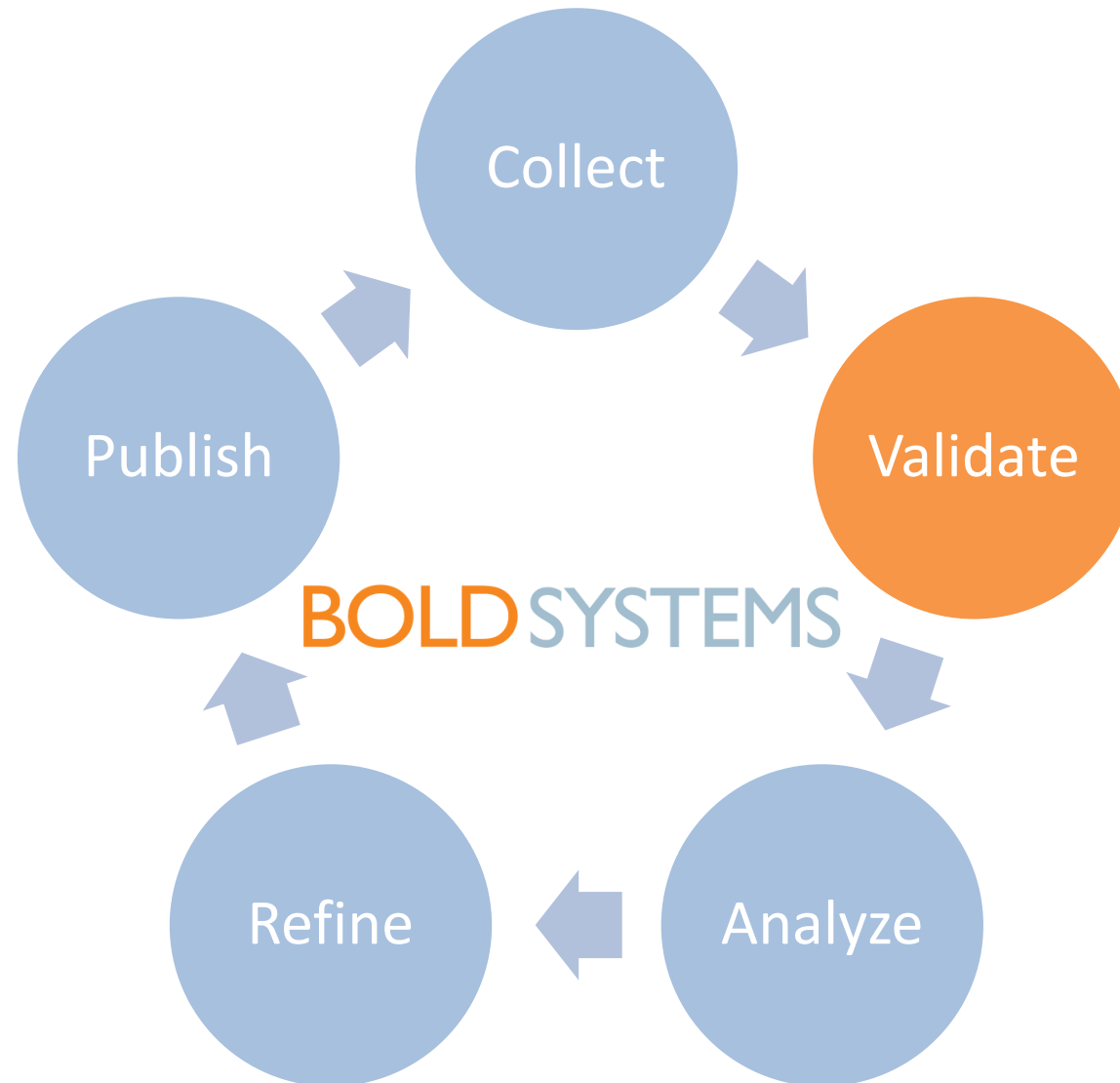
• Wenzhi Wang
wangwz@mail.kiz.ac.cn

Users



Activity Report

Data Life Cycle



Validation with BOLD

Automated Validation

1086

Specimens



GPS: 1064 / 1086



Country: 1085 / 1086



Images: 1034 / 1086



Barcode Compliant: 998 / 1086

Seqs lacking successful traces

- COI-5P [16]

Seqs with stop codons

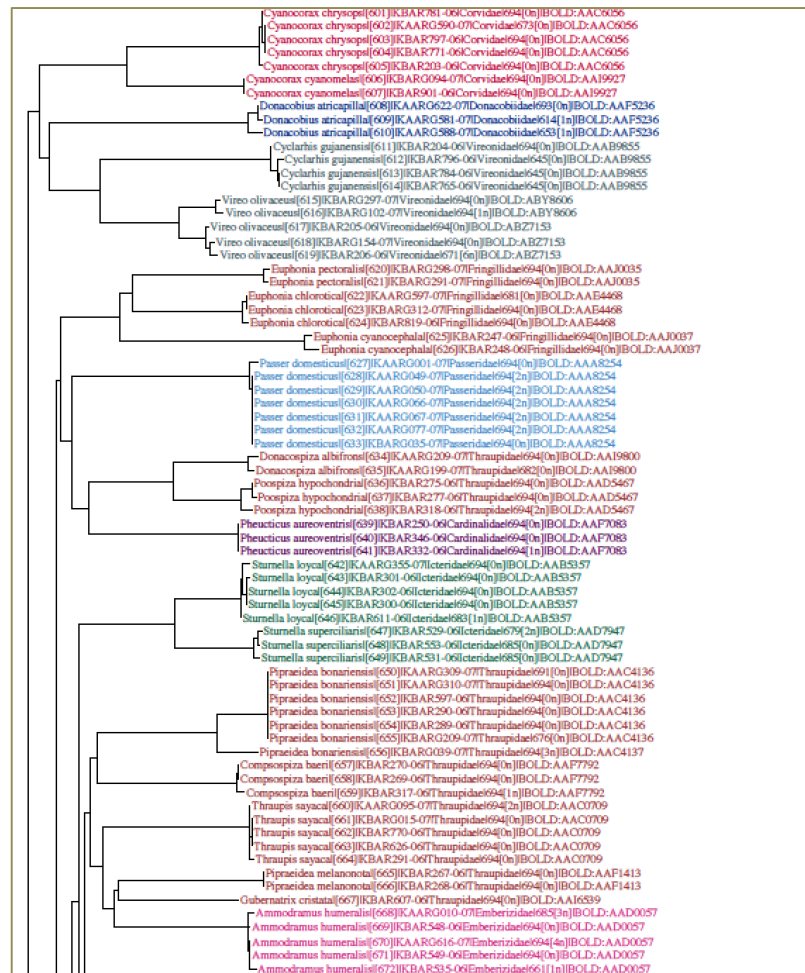
- 0

Contaminated seqs

- 0

Problematic records flagged

User Invoked



External

Sample ID	Phylum	Class
12-SRNP-31136	Arthropoda	Insecta
12-SRNP-33197	Arthropoda	Insecta
16-SRNP-226	Arthropoda	Insecta
12-SRNP-29082	Arthropoda	Insecta
12-SRNP-30241	Arthropoda	Insecta
12-SRNP-31493	Arthropoda	Insecta
12-SRNP-31739	Arthropoda	Insecta
12-SRNP-31738	Arthropoda	Insecta
12-SRNP-29798	Arthropoda	Insecta
12-SRNP-29799	Arthropoda	Insecta
12-SRNP-33016	Arthropoda	Insecta
11-SRNP-1413	Arthropoda	Insecta
14-SRNP-9389	Arthropoda	Insecta
12-SRNP-29054	Arthropoda	Insecta
12-SRNP-31377	Arthropoda	Insecta
12-SRNP-29083	Arthropoda	Insecta
12-SRNP-33002	Arthropoda	Insecta
12-SRNP-31741	Arthropoda	Insecta
17-SRNP-9604	Arthropoda	Insecta
19-SRNP-5312	Arthropoda	Insecta
12-SRNP-31745	Arthropoda	Insecta
16-SRNP-227	Arthropoda	Insecta
12-SRNP-29080	Arthropoda	Insecta

Common Problems & Symptoms

Lab Problems

Record mix-ups , plate flips, failed traces (no amplification)

Sample Corruption

Contamination, low quality DNA (ambiguous bases, short sequences)

Data Entry Problems

GPS coordinates discordant, lack of data integrity, stop codons, frameshifts

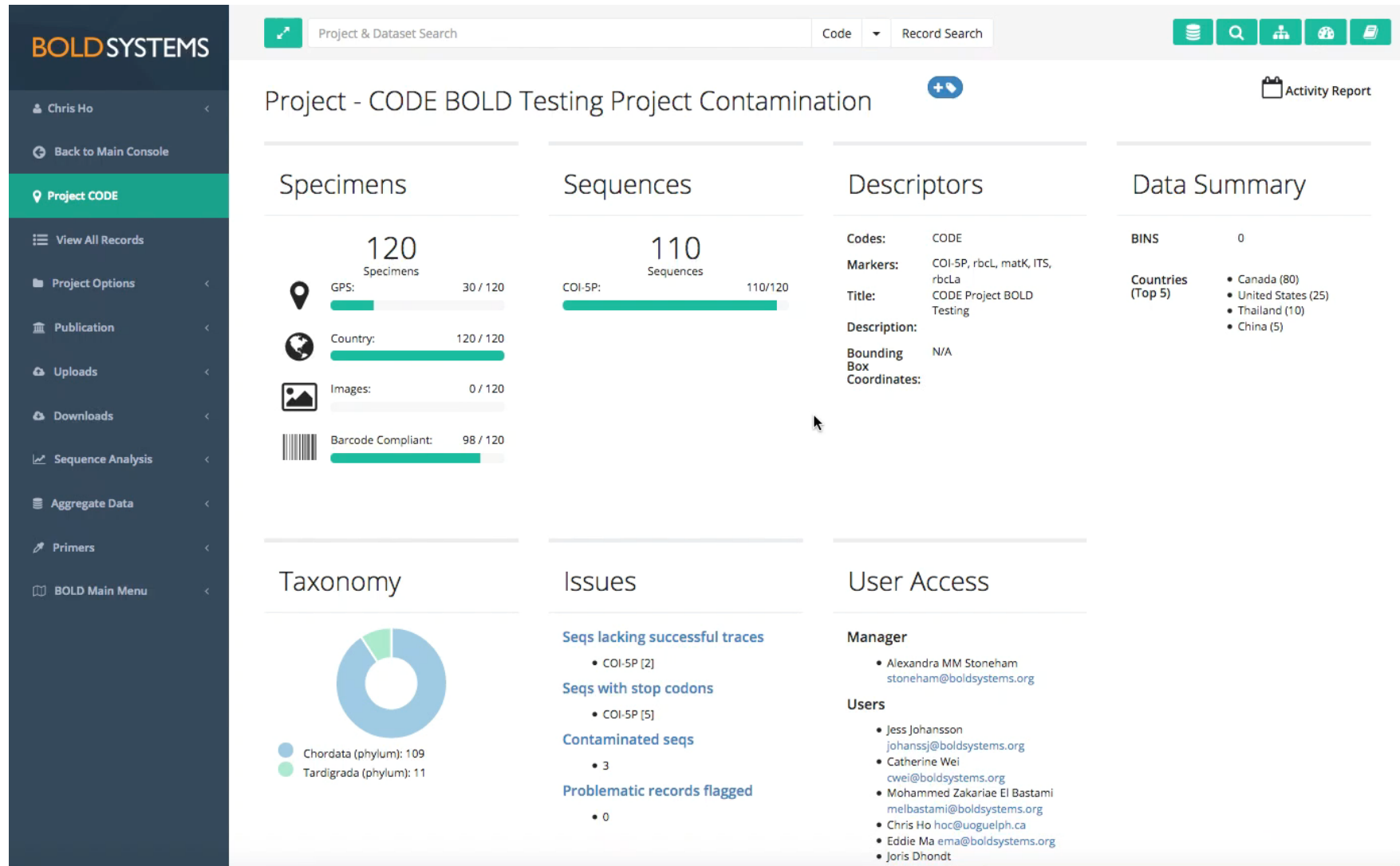
Taxonomy Problems

Misidentification

Data Completeness

Barcode non-compliance

Automated Validation



Integrated Validation: With BOLD ID Engine

B

Identification Engine - DS-SU13BW

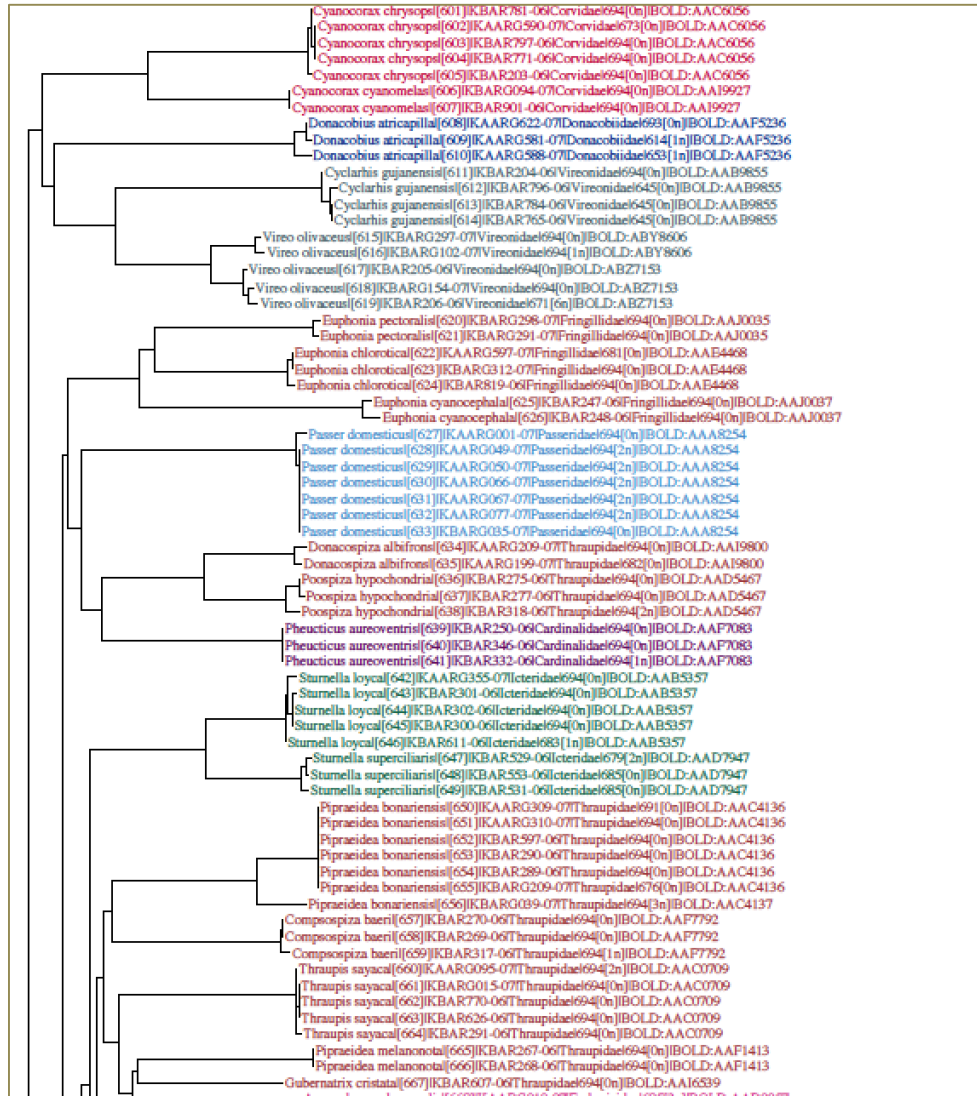


Analysis Results



500 records per page		Search:								
Processid	Sampleid	Current Order	Current ID	% Match	Overlap (bp)	Match Order	Match Family	Match Species	Match Subspecies	Match Processid
SDP100044-13	Su13BW40	Spionida	Scoelepis acuta	99.81	498	Spionida	Spionidae	Scoelepis acuta		SBE270-15
SDP100044-13	Su13BW40	Spionida	Scoelepis acuta	99.81	498	Spionida	Spionidae	Scoelepis acuta		SBE232-15
SDP100044-13	Su13BW40	Spionida	Scoelepis acuta	99.63	498	Spionida	Spionidae	Scoelepis acuta		SBE219-15
SDP100044-13	Su13BW40	Spionida	Scoelepis acuta	99.63	498	Spionida	Spionidae	Scoelepis acuta		SBE218-15
SDP100044-13	Su13BW40	Spionida	Scoelepis acuta	99.63	498	Spionida	Spionidae	Scoelepis acuta		SBE212-15
SDP100044-13	Su13BW40	Spionida	Scoelepis acuta	99.63	498	Spionida	Spionidae	Scoelepis acuta		SBE196-15
SDP100044-13	Su13BW40	Spionida	Scoelepis acuta	99.63	498	Spionida	Spionidae	Scoelepis acuta		SBE174-15
SDP100044-13	Su13BW40	Spionida	Scoelepis acuta	99.63	498	Spionida	Spionidae	Scoelepis acuta		SBE173-15
SDP100044-13	Su13BW40	Spionida	Scoelepis acuta	99.63	498	Spionida	Spionidae	Scoelepis acuta		SBE168-15
SDP100044-13	Su13BW40	Spionida	Scoelepis acuta	99.63	498	Spionida	Spionidae	Scoelepis acuta		SBE160-15
SDP100044-13	Su13BW40	Spionida	Scoelepis acuta	99.63	498	Spionida	Spionidae	Scoelepis acuta		SBE153-15

User invoked Validation: Trees and Image Library



11/15/2017

Image Library Browser | BOLDSYSTEMS

Image Library Browser

Parameters

Records included: All records
Filter image by orientation: None
Aspect ratio: Skew
Sort by: None

Results Summary

Total records: 264

Re-render: 4 per row
images:

300 Records Per Page - Pages.1



[1] BIOUG07490-H06 [Dorsal]
Tetragnatha shoshone



[2] BIOUG01027-F05 [Dorsal]
Tetragnatha shoshone



[3] BIOUG07490-E02 [Dorsal]
Tetragnatha shoshone



[4] BIOUG07490-G12 [Dorsal]
Tetragnatha shoshone



[5] BIOUG02613-C06 [Dorsal]
Tetragnatha shoshone



[6] BIOUG02680-C10 [Dorsal]
Agroeca ornata



[7] BIOUG02680-C08 [Dorsal]
Agroeca ornata

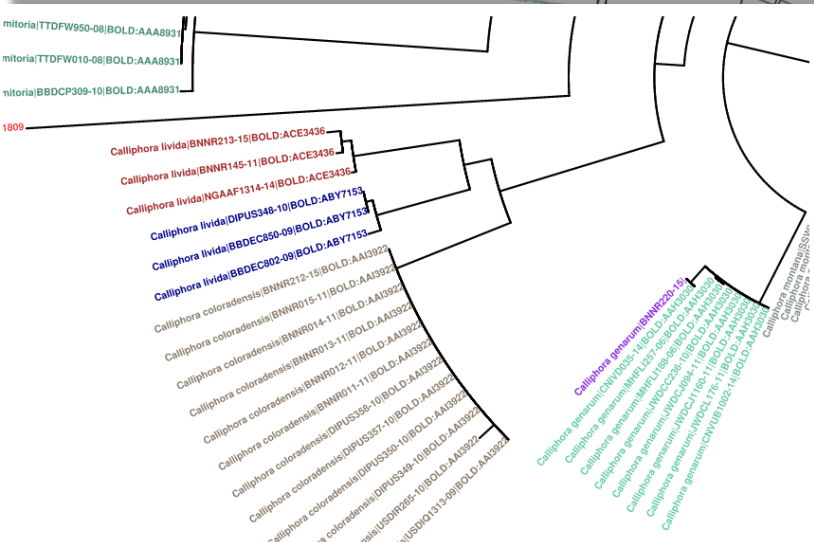


[8] BIOUG09324-E10 [Dorsal]
Agroeca ornata

Taxon ID Tree

PDF file

Newick file EPS file SVG file

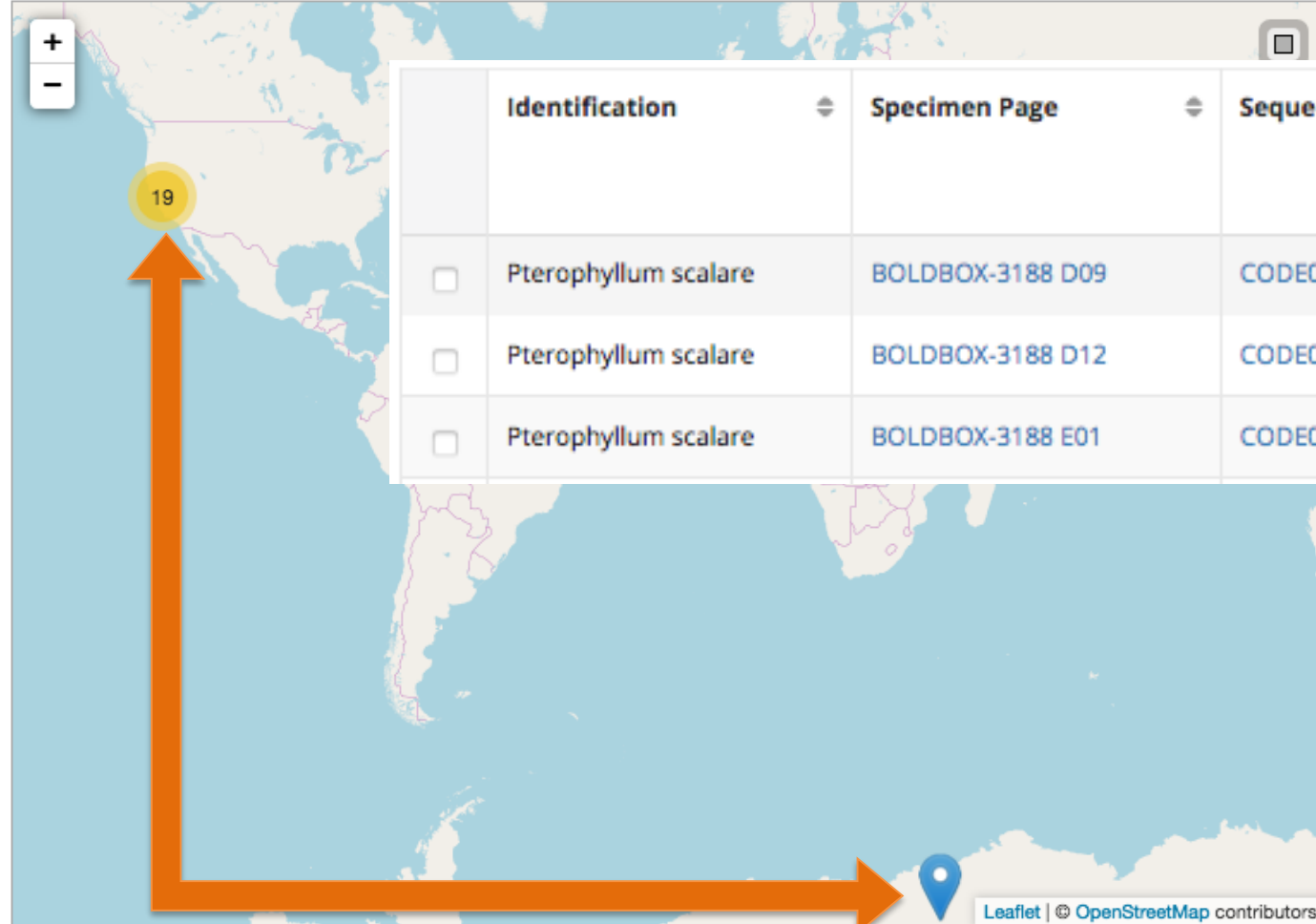


- More power to run bigger trees and provide faster results
- More Label options for the branches
- Add any field, extra info, custom fields etc...
- Colourize to visualize problems
- New Types: Classic, Cladogram, Phylogram, Unrooted
- Publication Ready: EPS, SVG

Distribution Maps

Records can be selected using the rectangle selection tool (top right on map)

[Open In Google Earth](#)



Mouse over a cluster to see the bounds of its children and click a cluster to zoom to those bounds

Records can be selected using the rectangle selection tool (top right on map)

[Open In Google Earth](#)




Mouse over a cluster to see the bounds of its children and click a cluster to zoom to those bounds

External Validation: Data deletion/replacement

UPD10 - Barcoding of Philippine Birds [BPB]

UPD10



Copyright (2010)
Unspecified

Tags

Comments

New Comment

Annotate

Lateral

Dorsal

Ventral

Process ID:

BPB001-10

Identification:

Todiramphus chloris (Boddaert, 1783)

Identified by

Adrian U. Luczon

Collected in

Philippines, National Capital Region

by

Adrian U. Luczon

Institution Storing:

University of the Philippines

Field ID:

UPD10

Museum ID:

Edit Specimen

Show Delta View

Specimen Details

Sample ID:

UPD10

Process ID:

BPB001-10

Project:

BPB

Institution Storing:

University of the Philippines

Field ID:

UPD10

Museum ID:

Collection Code:

UPD10

Reference Link:

Note:

Voucher Status:

Tissue Descriptor:

Sex:

Reproduction:

S

Life Stage:

A

Extra Info:

sexes monomorphic

Associated Taxa:

Associated Specimens:

Taxonomy

Phylum:

Chordata

Class:

Aves

Order:

Coraciiformes

Family:

Alcedinidae

Subfamily:

Genus:

Todiramphus

Species:

Todiramphus chloris

Identification:

Todiramphus chloris (Boddaert, 1783)

Rank:

Species

Identifier:

Adrian U. Luczon

Identification Method:

Identifier Institution:

University of the Philippines

Identifier Email:

auluczon@up.edu.ph

Taxonomy Note:

Barcode Index Numbers

BIN:

BOLD:ACE4325

Type:

Member

Max Divergence in BIN:

0.31% (p-dist)

Distance to NN:

1.38% (p-dist)

Phylum:

Chordata [5]

Class:

Aves [5]

Order:

Coraciiformes [5]

Family:

Alcedinidae [5]

Subfamily:

Genus:

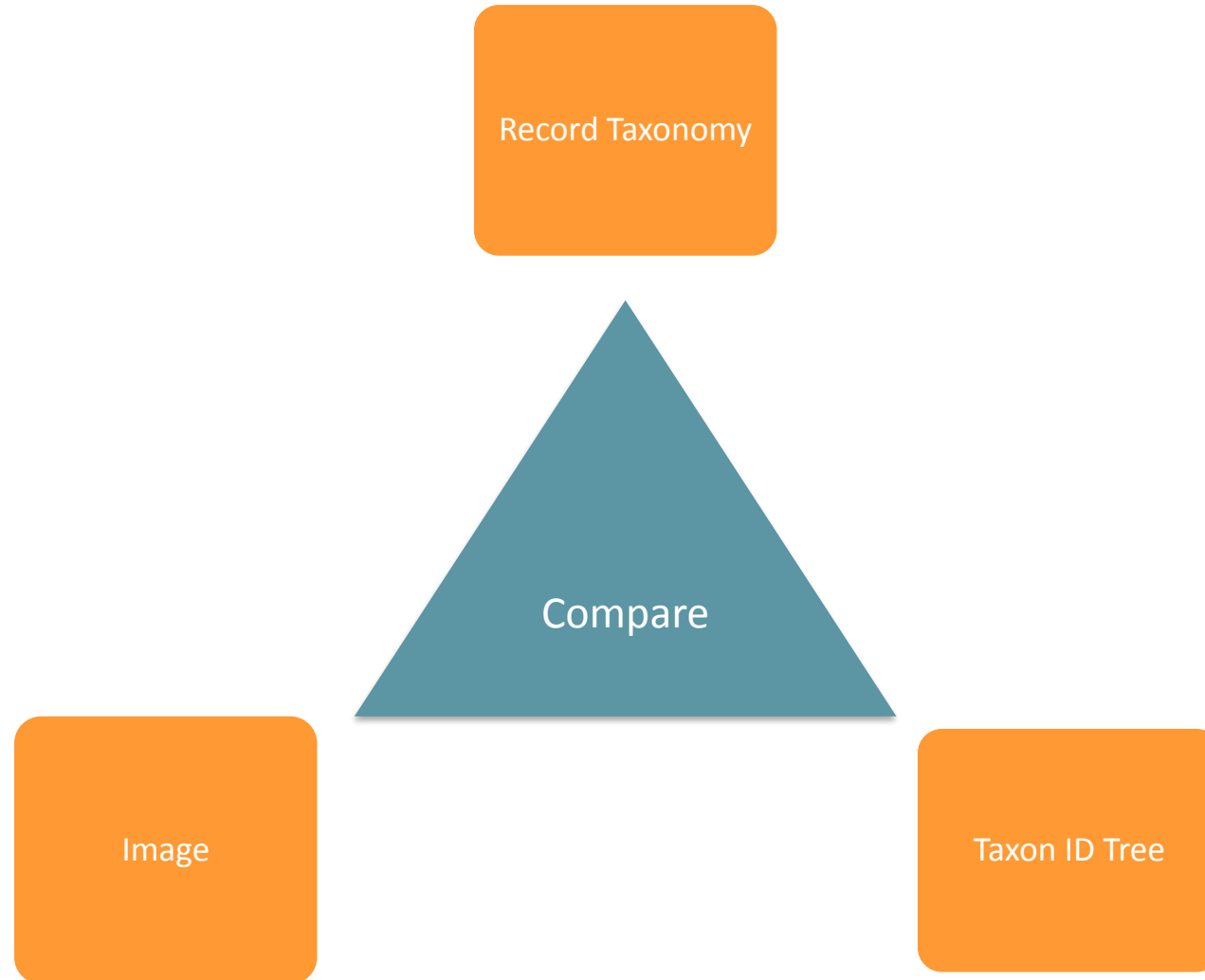
Todiramphus [5]

Species:

Todiramphus chloris [5]

	A	B	C	D	E	F	G	H
1	Tree Order	Processid	Sampleid	Phylum	Class	Order	Family	Subfamily
2	1	KAARG598-07	MACN-Or-ct 3226	Chordata	Aves	Passeriformes	Thamnophilidae	
3	2	KAARG547-07	MACN-Or-ct 3156	Chordata	Aves	Passeriformes	Thamnophilidae	
4	3	KAARG584-07	MACN-Or-ct 3203	Chordata	Aves	Passeriformes	Thamnophilidae	
5	4	KBARG353-07	MACN-Or-ct 2894	Chordata	Aves	Passeriformes	Thamnophilidae	
6	5	KBARG355-07	MACN-Or-ct 2861	Chordata	Aves	Passeriformes	Thamnophilidae	
7	6	KBARG331-07	MACN-Or-ct 2857	Chordata	Aves	Passeriformes	Thamnophilidae	
8	7	KBARG156-07	MACN-Or-ct 2027	Chordata	Aves	Passeriformes	Thamnophilidae	
9	8	KBARG116-07	MACN-Or-ct 1973	Chordata	Aves	Passeriformes	Thamnophilidae	
10	9	KBARG108-07	MACN-Or-ct 1959	Chordata	Aves	Passeriformes	Thamnophilidae	
11	10	KBARG282-07	MACN-Or-ct 2883	Chordata	Aves	Passeriformes	Thamnophilidae	
12	11	KAARG216-07	MACN-Or-ct 2188	Chordata	Aves	Passeriformes	Thamnophilidae	
13	12	KAARG155-07	MACN-Or-ct 2121	Chordata	Aves	Passeriformes	Thamnophilidae	
14	13	KBARG094-06	MACN-Or-ct 885	Chordata	Aves	Passeriformes	Thamnophilidae	
15	14	KBARG093-06	MACN-Or-ct 1132	Chordata	Aves	Passeriformes	Thamnophilidae	
16	15	KAARG617-07	MACN-Or-ct 3251	Chordata	Aves	Passeriformes	Thamnophilidae	
17	16	KAARG557-07	MACN-Or-ct 3170	Chordata	Aves	Passeriformes	Thamnophilidae	
18	17	KBARG091-06	MACN-Or-ct 1128	Chordata	Aves	Passeriformes	Thamnophilidae	
19	18	KBARG092-06	MACN-Or-ct 892	Chordata	Aves	Passeriformes	Thamnophilidae	
20	19	KBARG867-06	MACN-Or-ct 1630	Chordata	Aves	Passeriformes	Thamnophilidae	
21	20	KBARG779-06	MACN-Or-ct 1425	Chordata	Aves	Passeriformes	Thamnophilidae	
22	21	KBARG767-06	MACN-Or-ct 1387	Chordata	Aves	Passeriformes	Thamnophilidae	
23	22	KBARG162-07	MACN-Or-ct 1950	Chordata	Aves	Passeriformes	Conopophagidae	
24	23	KBARG267-07	MACN-Or-ct 2635	Chordata	Aves	Passeriformes	Rhinocryptidae	
25	24	KBARG141-07	MACN-Or-ct 2574	Chordata	Aves	Passeriformes	Rhinocryptidae	
26	25	KBARG189-07	MACN-Or-ct 2636	Chordata	Aves	Passeriformes	Rhinocryptidae	
27	26	KBARG095-06	MACN-Or-ct 729	Chordata	Aves	Passeriformes	Rhinocryptidae	
28	27	KBARG096-06	MACN-Or-ct 786	Chordata	Aves	Passeriformes	Rhinocryptidae	
29	28	KBARG097-06	MACN-Or-ct 939	Chordata	Aves	Passeriformes	Rhinocryptidae	

Validation Trifecta



Keeping Track Of It All

BOLDSYSTEMS

Chris Ho

Back to Main Console

Project MPPUB

View All Records

Project Options

Publication

Uploads

Downloads

Sequence Analysis

Aggregate Data

Primers

BOLD Main Menu

Project & Dataset Search

Code

Record Search

Activity Report

Project - MPPUB Saturniidae - MNHN collection PUBLIC records

Specimens

49 Specimens

GPS: 31 / 49

Country: 34 / 49

Images: 35 / 49

Barcode Compliant: 31 / 49

Taxonomy

Activity Report

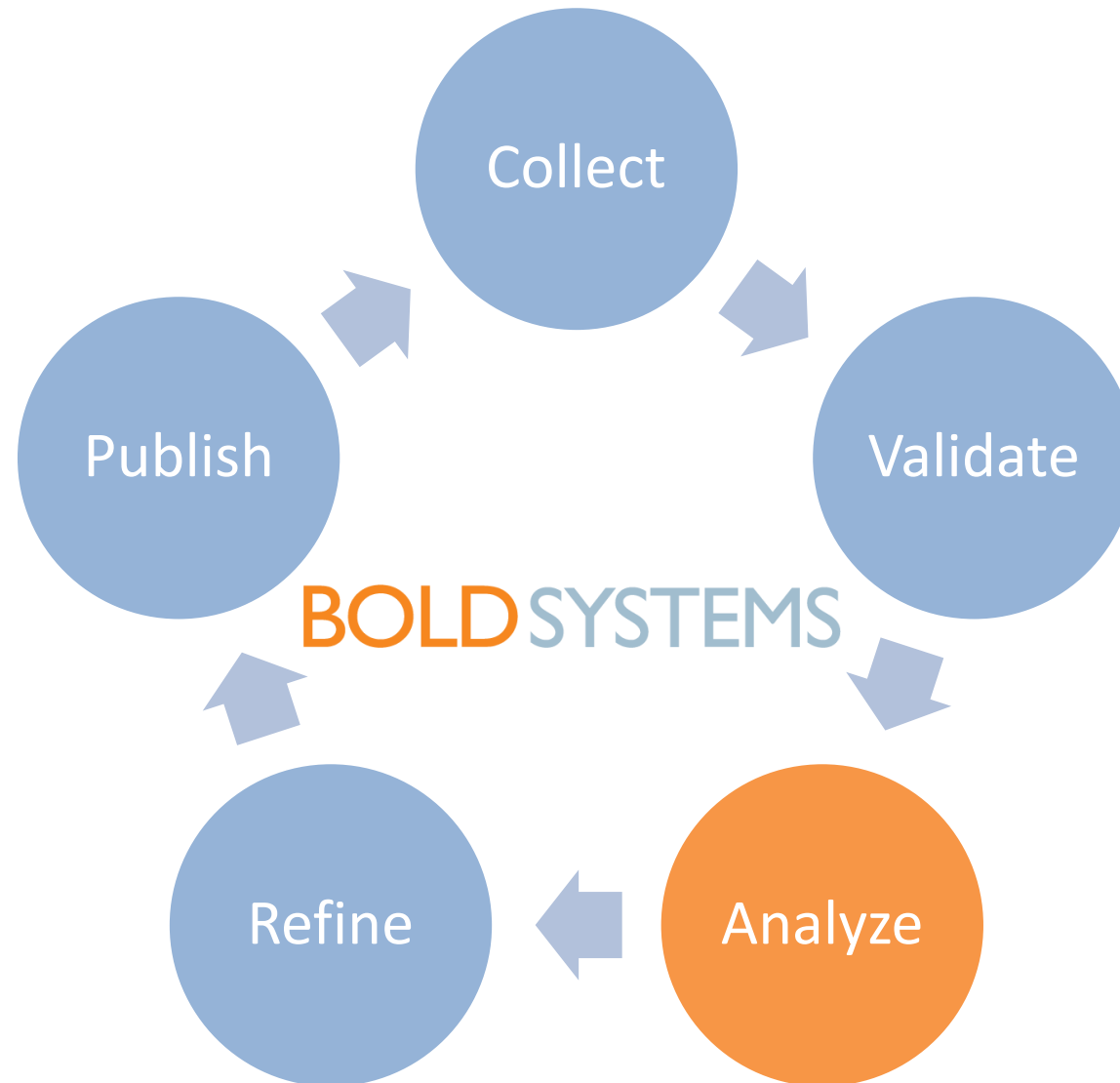
100 records per page

Search:

Timestamp	Who	Action	Project
Oct-10, 2017 12:05	BOLD Data Manager	GbAccession-Association (51)	MPPUB
Jun-21, 2016 11:06	BOLD Data Manager	Modify-Specimens (5)	MPPUB
Dec-21, 2015 11:40	BOLD Data Manager	Modify-Specimens (4)	MPPUB
Dec-21, 2015 11:39	BOLD Data Manager	Modify-Specimens (4)	MPPUB
Feb-27, 2014 14:21	BOLD Data Manager	Modify-Specimens (3)	MPPUB
Feb-27, 2014 14:21	BOLD Data Manager	Modify-Specimens (3)	MPPUB
Sep-20, 2012 15:28	BOLD Data Manager	Modify-Specimens (4)	MPPUB
Sep-20, 2012 15:28	BOLD Data Manager	Modify-Specimens (4)	MPPUB

Download History: Last Week Last Month Last 6 Months

Data Life Cycle



Barcode Index Number (BIN)

Algorithm

- Tuned to the marker (COX1)
- Fixed parameters for balanced OTU generation
- Uses prior threshold but refines for each group

Registry

- Occurrence of DNA Barcode (place and time)
- Aggregation of all associated metadata
- Reusable - works across studies

The screenshot shows the PLOS ONE article page for the paper "A DNA-Based Registry for All Animal Species: The Barcode Index Number (BIN) System" by Sujeevan Ratnasingham and Paul D. N. Hebert. The article is published in PLoS ONE 8(7): e66213, July 08, 2013. The page features a sidebar with navigation links (Abstract, Introduction, Materials and Methods, Results, Discussion, Supporting Information, Acknowledgments, Author Contributions, References, Reader Comments (1), Figures) and a main content area with the abstract and figures. The abstract discusses the challenges of species identification and the development of the BIN system. The figures section displays several charts and graphs. The citation and editor information are provided at the bottom.

Article | About the Authors | Metrics | Comments | Related Content

Abstract

Because many animal species are undescribed, and because the identification of known species is often difficult, interim taxonomic nomenclature has often been used in biodiversity analysis. By assigning individuals to presumptive species, called operational taxonomic units (OTUs), these systems speed investigations into the patterning of biodiversity and enable studies that would otherwise be impossible. Although OTUs have conventionally been separated through their morphological divergence, DNA-based delineations are not only feasible, but have important advantages. OTU designation can be automated, data can be readily archived, and results can be easily compared among investigations. This study exploits these attributes to develop a persistent, species-level taxonomic registry for the animal kingdom based on the analysis of patterns of nucleotide variation in the barcode region of the cytochrome c oxidase I (COI) gene. It begins by examining the correspondence between groups of specimens identified to a species through prior taxonomic work and those inferred from the analysis of COI sequence variation using one new (RESL) and four established (ABGD, CROP, GMYC, jMOTU) algorithms. It subsequently describes the implementation, and structural attributes of the Barcode Index Number (BIN) system. Aside from a pragmatic role in biodiversity assessments, BINs will aid revisionary taxonomy by flagging possible cases of synonymy, and by collating geographical information, descriptive metadata, and images for specimens that are likely to belong to the same species, even if it is undescribed. More than 274,000 BIN web pages are now available, creating a biodiversity resource that is positioned for rapid growth.

Figures

Citation: Ratnasingham S, Hebert PDN (2013) A DNA-Based Registry for All Animal Species: The Barcode Index Number (BIN) System. PLoS ONE 8(7): e66213. doi:10.1371/journal.pone.0066213

Editor: Diego Fontaneto, Consiglio Nazionale delle Ricerche (CNR), Italy

Clustering sequences in BOLD

BINs

- Centrally-set quality requirements
- Across BOLD
- Persistent identifier (BOLD:ACE4976)
- Assigned monthly

OTUs

- User-set quality requirements
- Within project/dataset
- Temporary identifier (OTU1)
- Immediate

BIN Criteria & Membership

BOLD SYSTEMS

DATABASES IDENTIFICATION TAXONOMY WORKBENCH RESOURCES LOGIN

PUBLIC DATA PORTAL - BIN PAGE

BINs

Specimen: [100%](#) [100%](#) [100%](#)
 Sequences: [100%](#) [100%](#)
 Combined: [100%](#) [100%](#)

Show
Help

[Back to Last Page](#)

Barcode Index Number Registry For BOLD:AA44163

[Go to public records in this BIN](#)

BIN DETAILS

BIN URI:	BOLD:AA44163	Average Distance:	0.22% (p-dist)
DOI:	dx.doi.org/10.5883/BOLD-AA44163	Maximum Distance:	0.6% (p-dist)
Member Count:	10 [8 Public]	Distance to Nearest Neighbor:	2.61% (p-dist)
Barcode Compliant Members:	8		
Finding Record:			

NEAREST NEIGHBOR (NN) DETAILS

Nearest BIN URI:	BOLD:ABX4985	Average Distance:	0.94% (p-dist)
Member Count:	10	Maximum Distance:	1.75% (p-dist)
Nearest Member:	COR8463-10	Distance Variance:	0.26% (p-dist)
Nearest Member Taxonomy:	Chordata, Aves, Passeriformes, Troglodytidae, Troglodytes		

TAXONOMY

Phylum:	Chordata [10]	
Class:	Aves [10]	
Order:	Passeriformes [10]	
Family:	Troglodytidae [10]	
Subfamily:		
Genus:	Troglodytes [10]	
Species:	Troglodytes aedon [10]	

Specimen images:

B3BNAT88-06 (Troglodytes aedon)

License:

Copyright (2010)

Collection Sites:

DISTANCE DISTRIBUTION

Pairwise Distance (%)	Within-BIN	Not Troglodytes aedon
0.0-0.1	55	0
0.1-0.2	28	0
0.2-0.3	15	0
0.3-0.4	0	38
0.4-0.5	0	52
0.5-0.6	0	10

PUBLICATIONS

Leonardo Campagna, James J. H. St. Clair, Stephen C. Loughheed, Robin W. Woods, Santiago Imbert and Pablo L. Tubaro Divergence between passerine populations from the Malvinas - Falkland Islands and their continental counterparts: a comparative phylogeographical study *Biological Journal of the Linnean Society* 2012-02-17;106(4):865 - 879 (PDF)

Kevin C. R. Kerr Searching for evidence of selection in avian DNA barcodes *Molecular Ecology Resources* 2011-07-20;11(6):1045-1055 (PDF)

Sugevan Ratnasingham and Paul D. N. Hebert A DNA-Based Registry for All Animal Species: The Barcode Index Number (BIN) System PLoS ONE 2011-07-13;6(7):e21613 (PDF)

Attribution

Specimen Depositories:

- Biodiversity Institute of Ontario - [7]
- Royal Ontario Museum - [1]
- Smithsonian Tropical Research Institute - [1]
- University of Guelph, Centre for Biodiversity Genomics - [1]

Sequencing Centers:

- Biodiversity Institute of Ontario - [7]
- Royal Ontario Museum - [1]
- University of Guelph, Centre for Biodiversity Genomics - [1]

BOLD SYSTEMS
DATABASES
IDENTIFICATION
TAXONOMY
WORKBENCH
RESOURCES
LOG OUT

PUBLIC DATA PORTAL - BIN PAGE

Barcode Index Number Registry For BOLD:AAB2709

[Go to public records in this BIN](#)

BIN DETAILS

BIN URI:	BOLD:AAB2709	Average Distance:	0.58% (p-dist)
DOI:	DOI REQUEST DOI	Maximum Distance:	1.27% (p-dist)
Member Count:	28 [28 Public]	Distance to Nearest Neighbor:	2.14% (p-dist)

Barcode Compliant Members: 25

Founding Record:

NEAREST NEIGHBOR (NN) DETAILS

Nearest BIN URI:	BOLD:AAq1180	Average Distance:	0.18% (p-dist)
Member Count:	14	Maximum Distance:	0.63% (p-dist)
Nearest Member:	BNSE082-11	Distance Variance:	0.05% (p-dist)
Nearest Member Taxonomy:	Echinodermata, Asteroidea, Forcipulatida, Asteridae, Leptasterias, Leptasterias muelleri		

TAXONOMY

- Phylum: Echinodermata [28]
- Class: Asteroidea [28]
- Order: Forcipulatida [28]
- Family: Asteridae [28]
- Subfamily:
- Genus: Leptasterias [27]
Asterias [1]
- Species: Leptasterias littoralis [27]
Asterias forbesi [1]

DISTANCE DISTRIBUTION

TREE RECONSTRUCTION OF BIN & NEAREST NEIGHBOR

PDF Tree (All members and a member of the nearest BIN)

Specimen: DSPEC JMSL TSM

Sequences: EASTA FRAGA

Combined: EMBL TSV

[Show Help](#)

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BIN COMPLIANT WITH METADATA REQUIREMENTS

Specimen Images:

DSPEC701-08 (*Leptasterias littoralis*)

License: Creative Commons - Attribution Non-Commercial Share-Alike

License Holder: CBG Photography Group, Centre for Biodiversity Genomics

Tags 5

Comments New Comments

Collection Sites:

BOLD SYSTEMS

DATABASES IDENTIFICATION TAXONOMY WORKBENCH RESOURCES LOG OUT

PUBLIC DATA PORTAL - BIN PAGE

BINs

Barcode Index Number Registry For BOLD-AAH3302

Go to public records in this BIN

BIN DETAILS

BIN URL:	BOLD-AAH3302	Average Distance:	0.08% (p-dist)
DOI:	dx.doi.org/10.5883/BOLD-AAH3302	Maximum Distance:	0.55% (p-dist)
Member Count:	16 [16 Public]	Distance to Nearest Neighbor:	6.91% (p-dist)
Barcode Compliant Members:	11		
Founding Record:			

NEAREST NEIGHBOR (NN) DETAILS

Nearest BIN URL:	BOLD-ACD5867	Average Distance:	N/A
Member Count:	1	Maximum Distance:	N/A
Nearest Member:	GBMIN13493-13	Distance Variance:	N/A
Nearest Member Taxonomy:	Arthropoda, Insecta, Coleoptera, Coccinellidae, Coccinellinae, Harmonia, Harmonia sedecimnotata		

TAXONOMY

Phylum:	Arthropoda [16]	↗
Class:	Insecta [16]	↗
Order:	Coleoptera [16]	↗
Family:	Coccinellidae [16]	↗
Subfamily:	Coccinellinae [16]	↗
Genus:	Harmonia [16]	↗
Species:	Harmonia conformis [16]	↗
Subspecies:		

DISTANCE DISTRIBUTION

TREE RECONSTRUCTION OF BIN & NEAREST NEIGHBOR

PhCf tree (all members and a member of the nearest BIN)

Specimens:

Sequences:

Combined:

[Show Help](#)

[Back to Last Page](#)

BIN COMPLIANT WITH METADATA REQUIREMENTS

Specimen Images:

COAS1034-12 (*Harmonia conformis*)

License: [Creative Commons - Attribution Non-Commercial Share-Alike](#)

License Holder: CBG Photography Group, Centre for Biodiversity Genomics

Collection Sites:

Attribution

Specimen Depositories:

Mined from GenBank, NCBI - [1]
 University of Guelph, Centre for Biodiversity Genomics - [15]

Sequencing Centers:

Biodiversity Institute of Ontario - [15]

Photography:

CBG Photography Group - [3]

Collectors:

Christy Carr - [3]
 J. McCormick - [1]
 J. Soares - [1]

BIN Discordance

B

BIN Discordance - DS-GBONT1



Summary

Records: 82
Records with BINs: 82
BINs: 20

Discordant BINs

BIN Count: 1
Record Count: 2

Concordant BINs

BIN Count: 2
Record Count: 63

Singleton BINs

BIN Count: 17
Record Count: 17

Discordant BINs (1)

Concordant BINs(2)

Singleton BINs(17)

Discordant BIN Report



Process ID	BIN	Rank	Phylum	Class	Order	Family	Subfamily	Tribe	Genus	Species
GBGL6637-09 GBGL6638-09	BOLD:AAA3447	species	Arthropoda:2	Insecta:2	Lepidoptera:2	Pieridae:2	Coliadinae:2		Colias:2	Colias philodice:1 Colias eurytheme:1

- Checks validity of taxonomic designation on specimen records
- Displays discordance sorted by the degree of conflict

Cluster Sequences & Barcode Gap Analysis

Cluster Sequence Result - DS-ANIC1A

Summary

Summary Report

Detailed Report

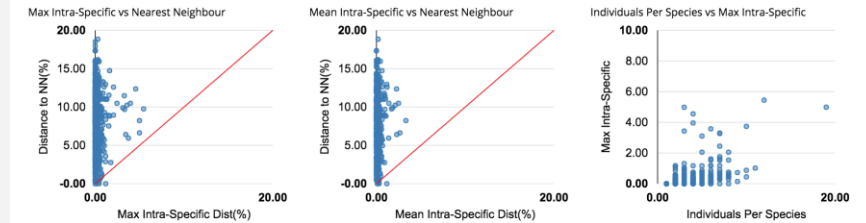
Detailed Report

OTU	Process ID	Sample ID	Average Distance	Max Distance	Taxon	Count	Distance to NN
OTU-1	ANICD167-10	10ANIC-00167	0.30581042	0.30581042	Donuca sp. ANIC1	2	2.9629629
OTU-1	ANICD168-10	10ANIC-00168	0.30581042	0.30581042	Donuca sp. ANIC1	2	2.9629629
OTU-2	ANICD297-10	10ANIC-00297	0.6910961	0.9803922	Genduara fola	3	2.4390242
OTU-2	ANICD298-10	10ANIC-00298	0.6910961	0.9803922	Genduara fola	3	2.4390242
OTU-2	ANICD300-10	10ANIC-00300	0.6910961	0.9803922	Genduara fola	3	2.4390242
OTU-3	ANICD299-10	10ANIC-00299	0	0	Genduara fola	1	2.4390242
OTU-4	ANICD301-10	10ANIC-00301	0	0	Pernattia pusilla	1	3.5598707
OTU-5	ANICD302-10	10ANIC-00302	0	0	Pernattia pusilla	1	3.5598707
OTU-6	ANICD303-10	10ANIC-00303	0	0	Pernattia pusilla	1	3.7037036
OTU-7	ANICD304-10	10ANIC-00304	1.234023	1.6750419	Pernattia brevipennis	3	5.714286
OTU-7	ANICD305-10	10ANIC-00305	1.234023	1.6750419	Pernattia brevipennis	3	5.714286
OTU-7	ANICD306-10	10ANIC-00306	1.234023	1.6750419	Pernattia brevipennis	3	5.714286
OTU-8	ANICD307-10	10ANIC-00307	0.1650165	0.1650165	Pernattia chlorophragma	2	2.550091
OTU-8	ANICD309-10	10ANIC-00309	0.1650165	0.1650165	Pernattia chlorophragma	2	2.550091

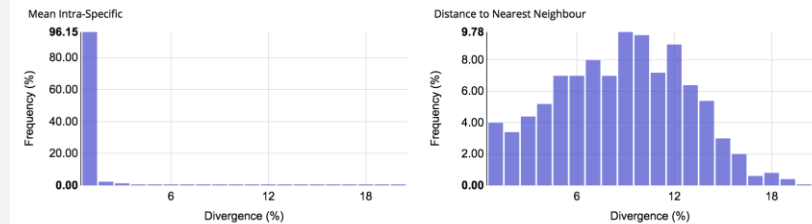
Barcode Gap Analysis Result - BARG

Scatter Plots

Three scatterplots are provided to confirm the existence and magnitude of the Barcode Gap. The first two scatterplots show the overlap of the max and mean intra-specific distances vs the inter-specific (nearest neighbour) distances. The third scatterplot plots the number of individuals in each species against their max intra-specific distances, as a test for sampling bias.



Distance Distribution Histograms



Distribution Details

Min: 0 Mean: 0.18
Max: 0 SE: 0

Distribution Details

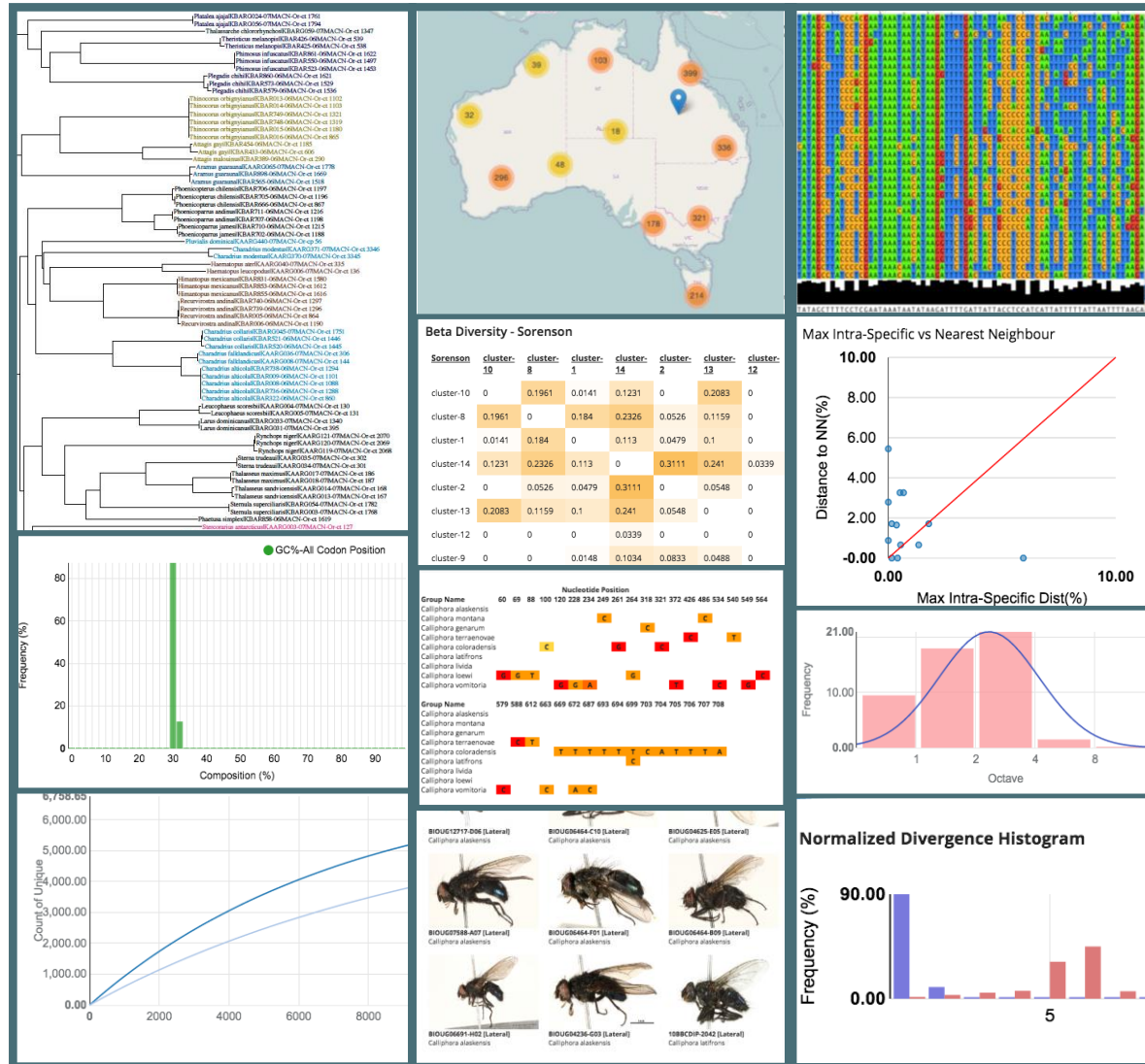
Min: 0 Mean: 8.19
Max: 18.84 SE: 0.01

Ratnasingham S, Hebert PDN (2013) A DNA-Based Registry for All Animal Species: The Barcode Index Number (BIN) System. PLoS ONE 8(8): e66213

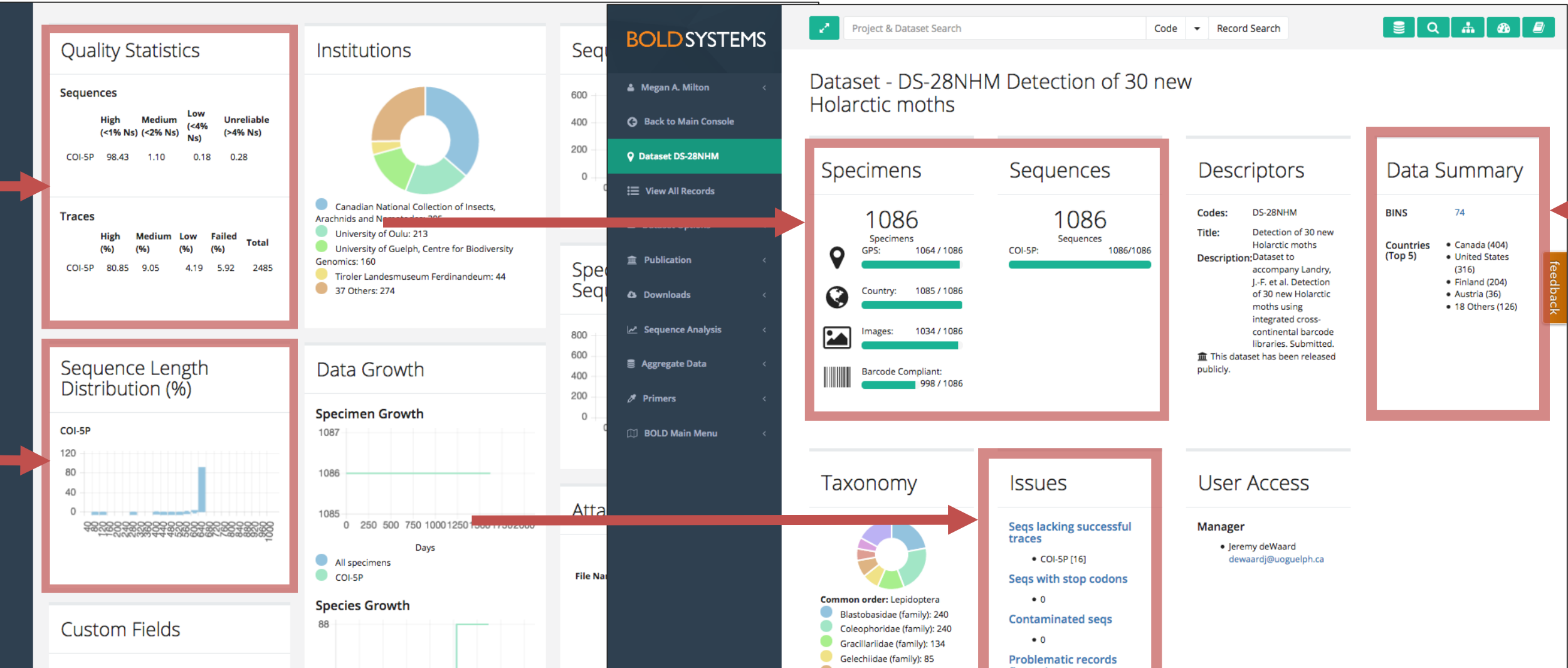
Visualizations

Tools in BOLD:

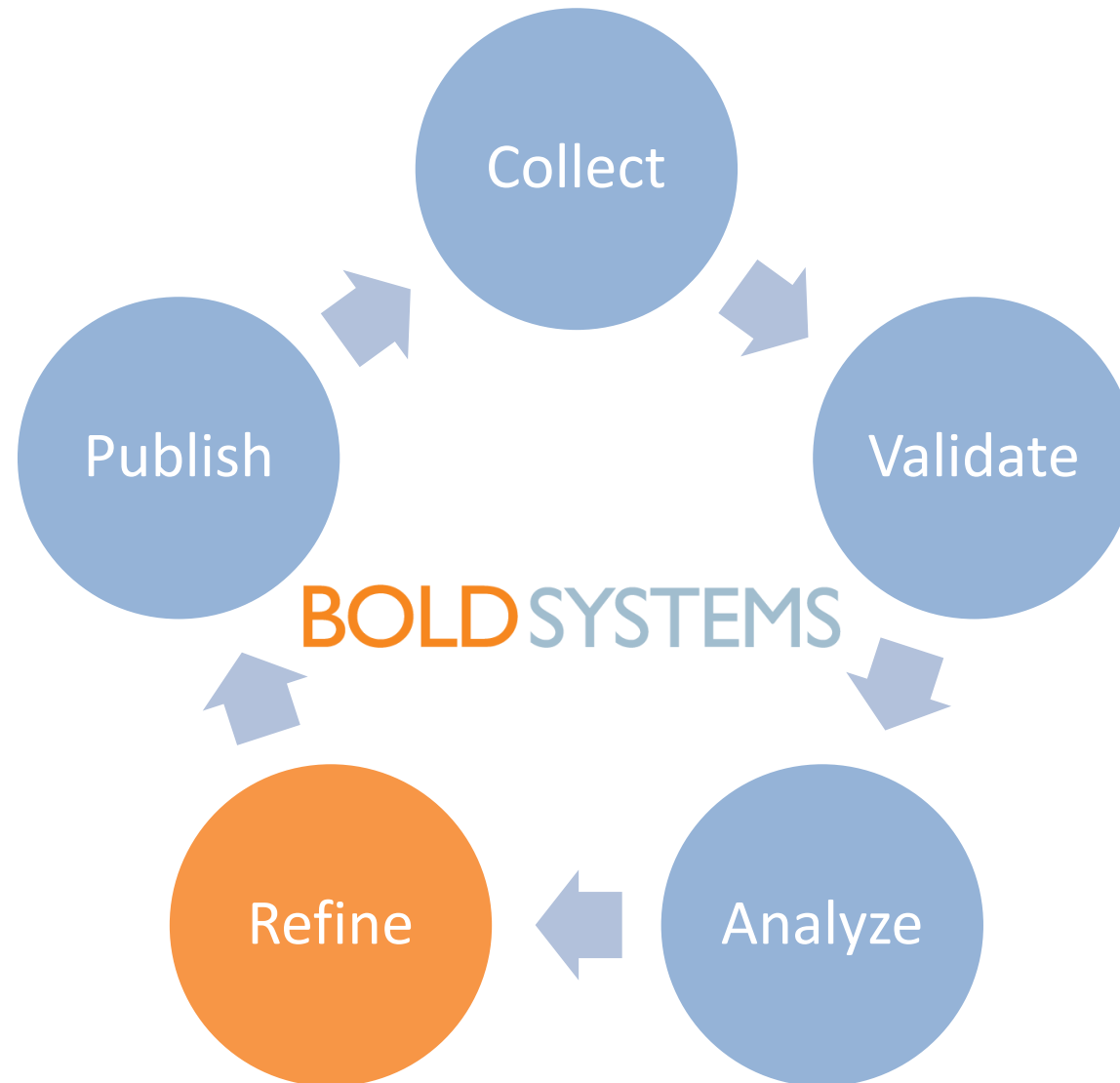
- Taxon ID Tree
- Distribution Mapping
- Accumulation Curve
- Sequence Alignment
- Barcode Gap
- Distance Summary
- Alpha & Beta Measures
- Geo-Genetic Distance Correlation



Data Console – Reports

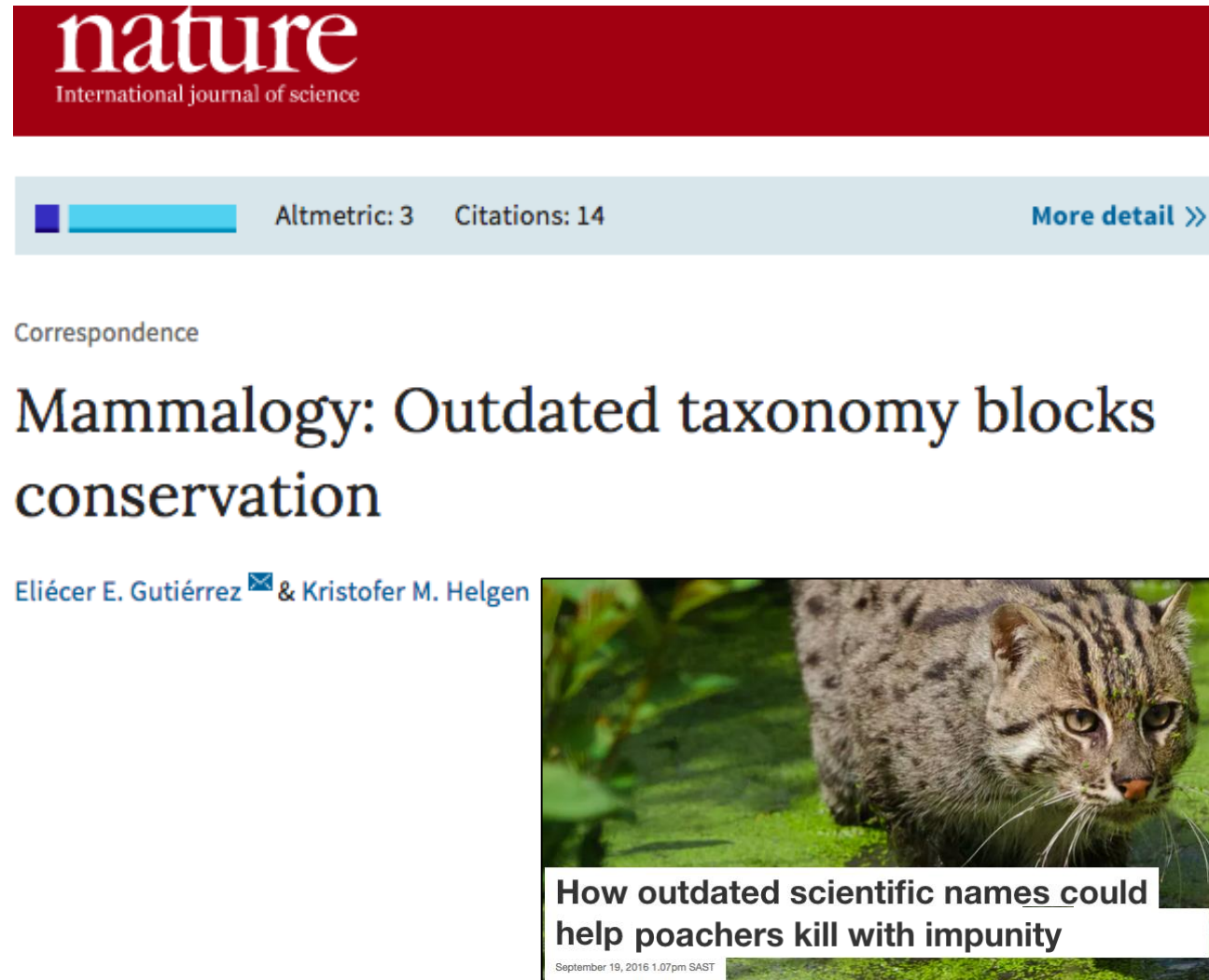


Data Life Cycle



Curation

- A reference library's worth is dependent not only on the amount of data but the quality of data.
- Consequence of outdated taxonomy
 - Conservation issue, laws, protection



BOLD taxonomy curation

CL-ACRRD (IUCN RedList - Critically Endangered) Checklist

Code: CL-ACRRD
Title: IUCN RedList - Critically Endangered(CR) Animals
Citation: IUCN 2017. The IUCN Red List of Threatened Species. Version 2017.2
Downloaded on 29 Oct 2017
URL: <http://www.iucnredlist.org/>
Description:
Contributors: No contributors included
Scope: Geography: South Africa
Taxonomy: Animalia
Theme: Critically Endangered
Terminal Nodes: 66
Reference Breakdown: Phylum - 3 references for taxa
Species - 65 references for taxa

Tax Breakdown:

Phyla: 3
Classes: 15
Orders: 32
Families: 40
Genera: 55
Species: 66

[Disagreement Report](#) [HitList Report](#) [Progress Report](#)

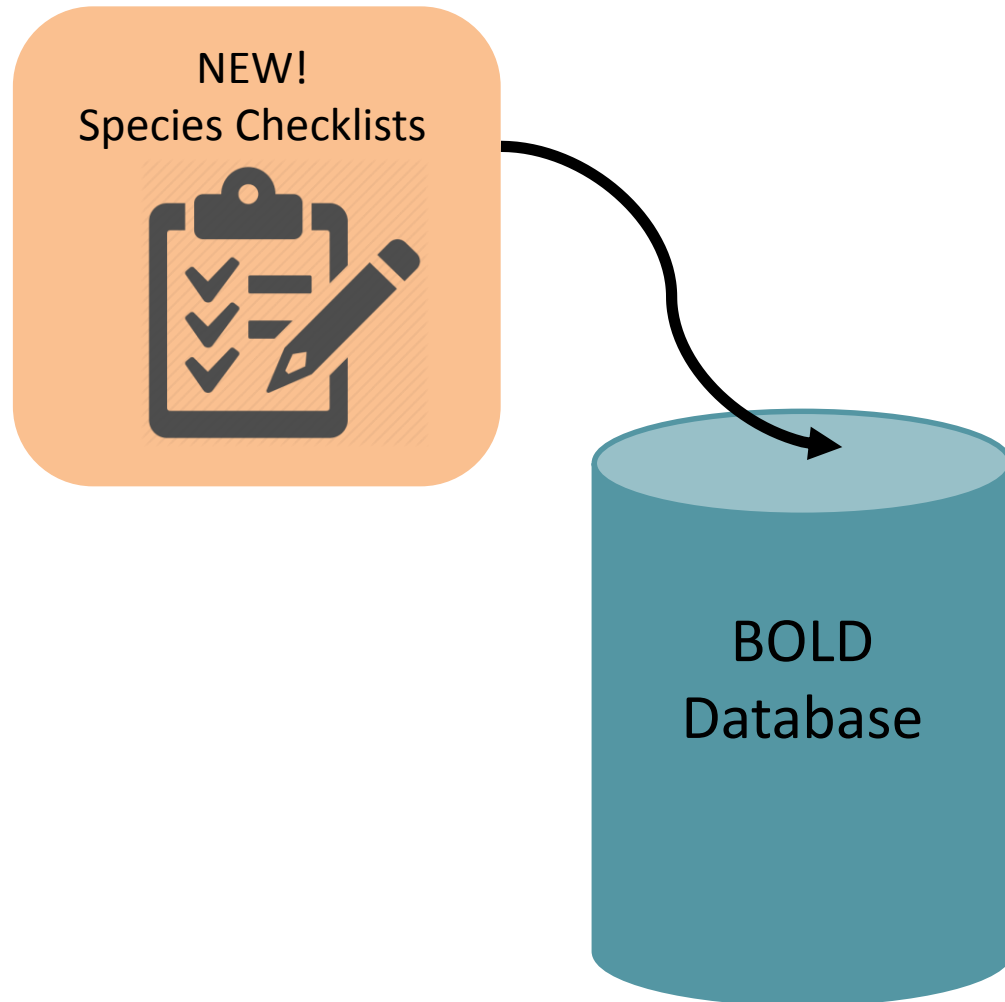
Show 25 entries

Search:

Phylum	Phylum Reference	Class	Order	Family	Genus	Species	Species Reference
Arthropoda	CR	Insecta	Odonata	Coenagrionidae	<i>Proischnura</i>	<i>Proischnura polychromatica</i>	(Hewitt, 1926)
Arthropoda	CR	Insecta	Orthoptera	Tettigoniidae	<i>Acilacris</i>	<i>Acilacris kristinae</i>	(Valenciennes, 1830)
Arthropoda	CR	Insecta	Orthoptera	Tettigoniidae	<i>Acilacris</i>	<i>Acilacris furcatus</i>	Naskrecki, 1994
Arthropoda	CR	Diplopoda	Spirostreptida	Spirostreptidae	<i>Doratogonus</i>	<i>Doratogonus major</i>	(Stewart & Griffiths, 1992)
Arthropoda	CR	Insecta	Coleoptera	Lucanidae	<i>Colophon</i>	<i>Colophon primosi</i>	Turner & Channing, 2008
Arthropoda	CR	Insecta	Lepidoptera	Lycaenidae	<i>Chrysoritis</i>	<i>Chrysoritis cotrelli</i>	Naskrecki, 1996
Arthropoda	CR	Onychophora	Euonychophora	Peripatopsidae	<i>Peripatopsis</i>	<i>Peripatopsis leonina</i>	(Morelet, 1889)
Arthropoda	CR	Onychophora	Euonychophora	Peripatopsidae	<i>Opisthopatus</i>	<i>Opisthopatus roseus</i>	Connolly, 1939
Arthropoda	CR	Malacostraca	Amphipoda	Paramelitidae	<i>Aquadulcaris</i>	<i>Aquadulcaris pheronyx</i>	Péringuey, 1916
Arthropoda	CR	Insecta	Coleoptera	Lucanidae	<i>Colophon</i>	<i>Colophon cassoni</i>	Hewitt, 1937
Arthropoda	CR	Insecta	Coleoptera	Lucanidae	<i>Colophon</i>	<i>Colophon montisatris</i>	Naskrecki, 1996
Arthropoda	CR	Insecta	Lepidoptera	Lycaenidae	<i>Lepidochrysops</i>	<i>Lepidochrysops lotana</i>	(Thomas, 1903)
Arthropoda	CR	Insecta	Odonata	Libellulidae	<i>Orthetrum</i>	<i>Orthetrum rubens</i>	Turner, de Villiers, Dawood & Channing, 2004
Arthropoda	CR	Ostracoda	Podocopida	Cypridae	<i>Kapcypridopsis</i>	<i>Kapcypridopsis barnardi</i>	Naskrecki & Bazelet, 2011
Arthropoda	CR	Insecta	Coleoptera	Lucanidae	<i>Colophon</i>	<i>Colophon berrisfordi</i>	Burmeister, 1871
Arthropoda	CR	Branchiopoda	Anostraca	Streptocephalidae	<i>Streptocephalus</i>	<i>Streptocephalus gracilis</i>	Rentz, 1988
Arthropoda	CR	Insecta	Orthoptera	Tettigoniidae	<i>Austrodontura</i>	<i>Austrodontura castletoni</i>	Barnard, 1929
Arthropoda	CR	Insecta	Orthoptera	Tettigoniidae	<i>Griffiniana</i>	<i>Griffiniana duplessisae</i>	Endr�dy-Younga, 1988
Arthropoda	CR	Insecta	Orthoptera	Tettigoniidae	<i>Paracilacris</i>	<i>Paracilacris periclitatus</i>	Barnard, 1931 (1932)
Arthropoda	CR	Insecta	Orthoptera	Tettigoniidae	<i>Cedarbergeniana</i>	<i>Cedarbergeniana imperfecta</i>	Barnard, 1931 (1932)

- How does BOLD curate taxonomy and records already on BOLD?
- Why, benefits, and how?

Checklist System



- BOLD 4 database hosts species checklists
- Provides Automatic Reports
 - Progress
 - Species needed for completion
- Available to all BOLD users
- Publish Checklist in BOLD to associate with publications

Checklist System for validation

Example Checklist: Birds of Argentina

BOLD SYSTEMS
Megan A. Milton
View All Checklists
Back to Main Console
Projects
Primers
BOLD Main Menu

Project & Dataset Search
Code
Record Search

Welcome to BOLD Systems
Home / Checklists

Checklist Management
Create New Checklist

My Checklists
Show 25 entries

Access	Kingdom	Code	Title	Details
		CL-CCPES	Can Crop Pests In Progress	Geography:Canada
		CL-CITES	CITES Appendix 1, 2015	Theme:Illegal Trade Cite:UNEP-WCMC (Comps.) 2015. The Checklist of CITES Species Secretariat, Geneva, Switzerland. Compiled by UNEP-WCMC. Accessed 30/07/2015
		CL-PLONR	Plants at Risk, Ontario	Geography:Ontario Theme:At Risk Species
		CL-R14CR	IUCN RedList - CR Critically Endangered 2014	Theme:Critically Endangered Cite:IUCN 2014. The IUCN Red List of Threatened Species. Version 3.1. Downloaded on 11 Nov 2014
		CL-R14EN	IUCN RedList - EN Endangered 2014	Theme:Endangered Cite:IUCN 2014. The IUCN Red List of Threatened Species. Version 3.1. Downloaded on 11 Nov 2014
		CL-R14EW	IUCN RedList - EW Extinct in the Wild 2014	Theme:Extinct in the Wild Cite:IUCN 2014. The IUCN Red List of Threatened Species. Version 3.1. Downloaded on 11 Nov 2014
		CL-R14EX	IUCN RedList - EX Extinct 2014	Theme:Extinct Cite:IUCN 2014. The IUCN Red List of Threatened Species. Version 3.1. Downloaded on 11 Nov 2014
		CL-REDCR	IUCN RedList - CR Critically Endangered	Theme:Critically Endangered Cite:IUCN 2015. The IUCN Red List of Threatened Species. Version 3.1. Downloaded on 07 August 2015

CL-BIARG (Birds of Argentina) Checklist

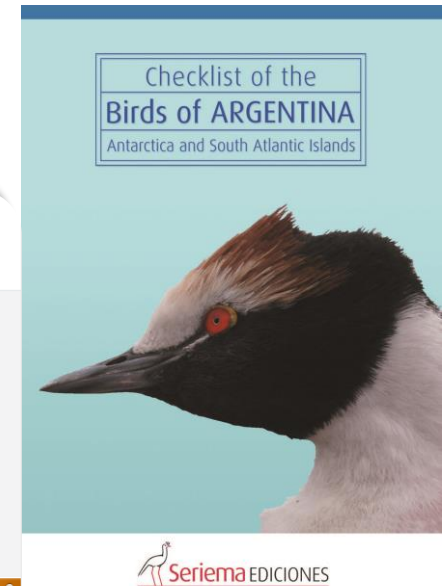
Code: CL-BIARG
Title: Birds of Argentina
Citation:
URL: https://en.wikipedia.org/wiki/List_of_birds_of_Argentina
Description:
Contributors: No contributors included
Scope: Geography: Argentina
Taxonomy: Birds
Theme:
Terminal Nodes: 1029
Reference Breakdown: References lacking

Tax Breakdown:
Phyla: 1
Classes: 1
Orders: 24
Families: 87
Genera: 531
Species: 1029

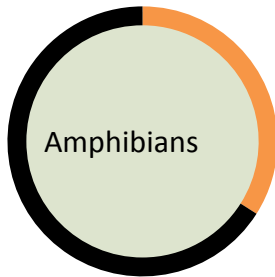
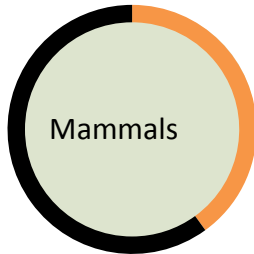
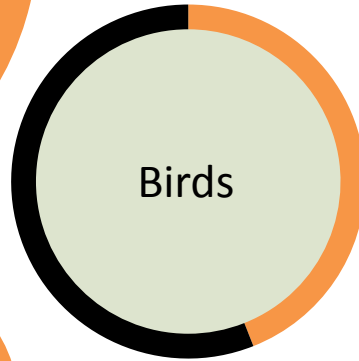
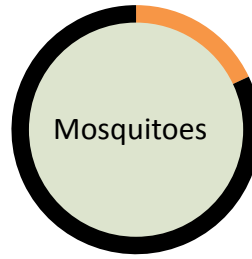
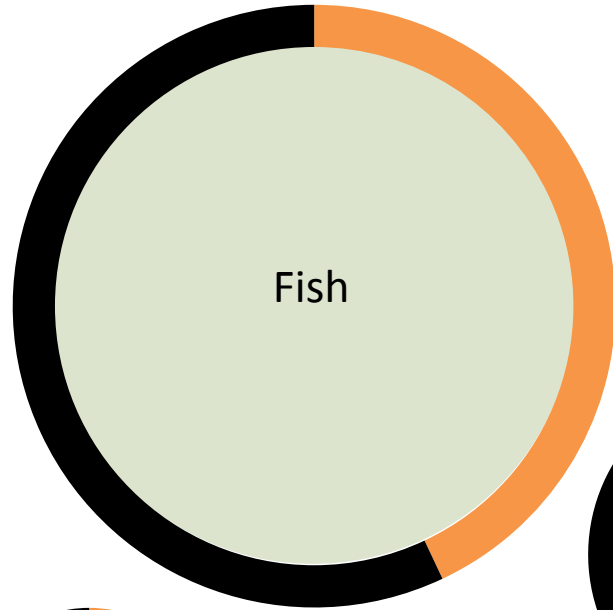
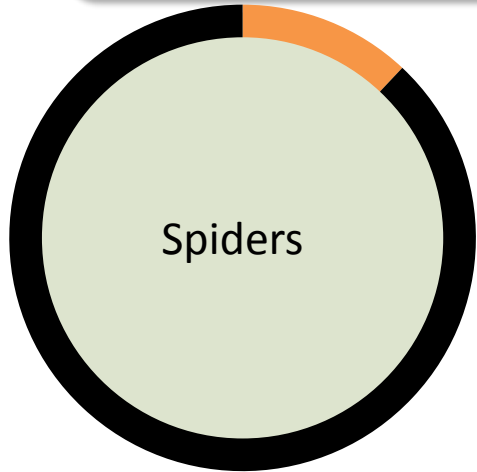
Request DOI for Checklist
Disagreement Report
HitList Report
Progress Report

Show 25 entries

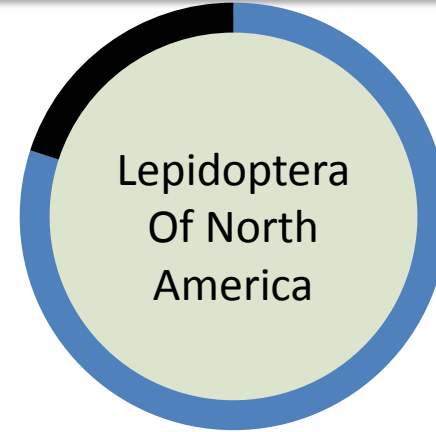
Phylum	Class	Order	Family	Genus	Species
Chordata	Aves	Passeriformes	Tyrannidae	Colorhamphus	Colorhamphus parvirostris
Chordata	Aves	Passeriformes	Rhinocryptidae	Scelorchilus	Scelorchilus rubecula
Chordata	Aves	Passeriformes	Tyrannidae	Xolmis	Xolmis irupero
Chordata	Aves	Passeriformes	Tyrannidae	Anairetes	Anairetes parulus
Chordata	Aves	Passeriformes	Tyrannidae	Phyllomyias	Phyllomyias virescens
Chordata	Aves	Passeriformes	Tyrannidae	Inezia	Inezia inornata
Chordata	Aves	Passeriformes	Tyrannidae	Sublegatus	Sublegatus modestus
Chordata	Aves	Passeriformes	Tyrannidae	Myiotheretes	Myiotheretes striatocollis
Chordata	Aves	Passeriformes	Tyrannidae	Phyllomyias	Phyllomyias uropygialis
Chordata	Aves	Passeriformes	Grallariidae	Hylopezus	Hylopezus nattereri
Chordata	Aves	Passeriformes	Tyrannidae	Empidonax	Empidonax alnorum
Chordata	Aves	Passeriformes	Tyrannidae	Anairetes	Anairetes flavirostris
Chordata	Aves	Passeriformes	Tyrannidae	Suiriri	Suiriri suiriri
Chordata	Aves	Passeriformes	Tyrannidae	Phylloscartes	Phylloscartes paulista



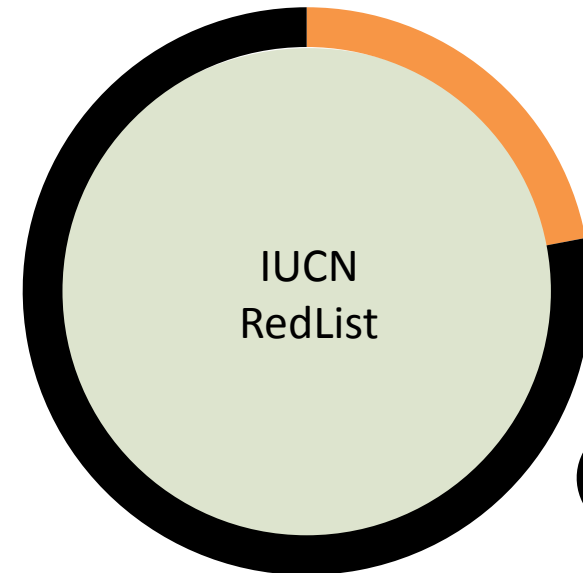
Progress Reporting



Geographic

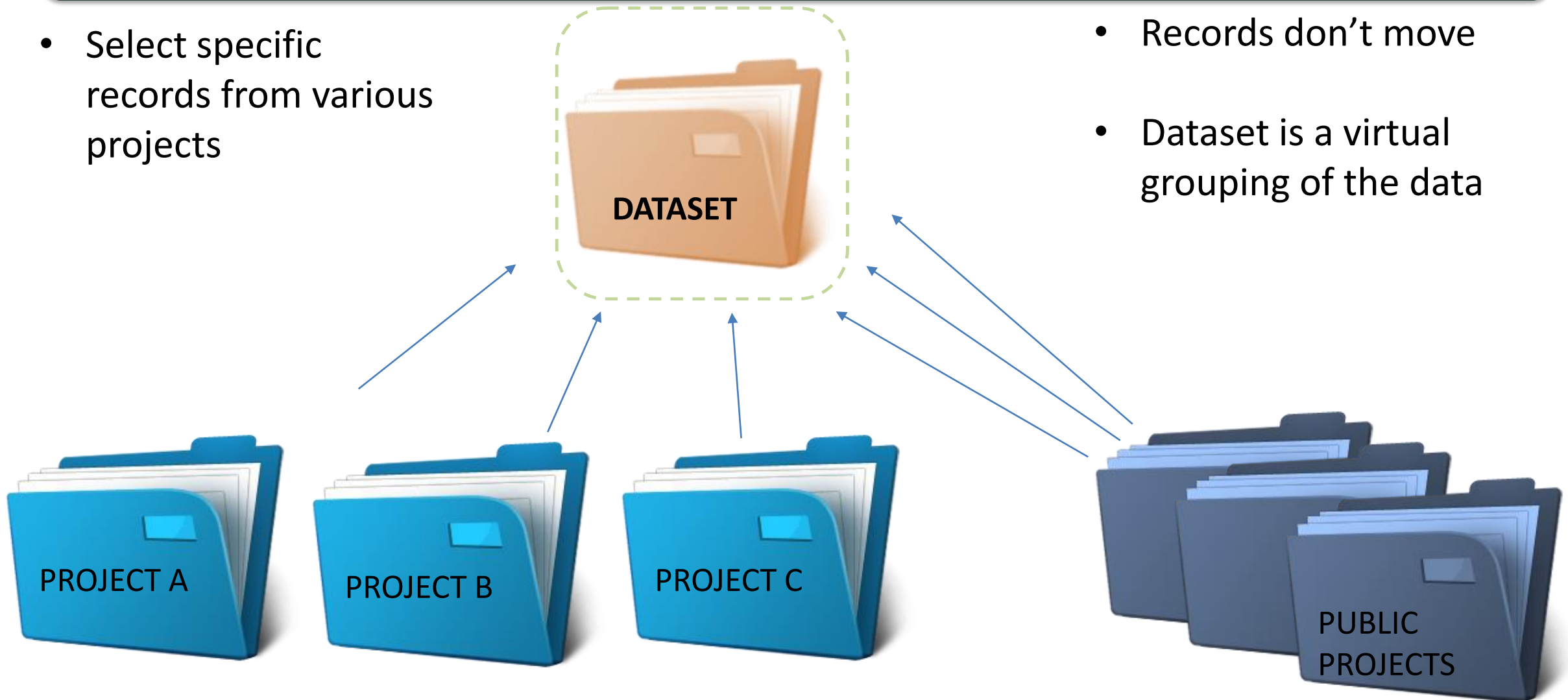


Taxonomic



Datasets

- Select specific records from various projects



- Records don't move
- Dataset is a virtual grouping of the data

Dataset Creation

Required fields for submission are marked in red.

Dataset Code:

DS- CAIALL1G

(A unique 4-8 character alphanumeric code)

Dataset Title:

Caiman and Alligator Public Dataset

Dataset Description:

A data-set containing public Caiman and Alligator sequences, COI-5P of at least 350bp

(15 characters minimum)

Bounding Box Top Left:

Latitude

Longitude

Bounding Box Lower Right:

Latitude

Longitude

Dataset Access:

☒ Make this dataset **publicly visible**

(All BOLD users will be allowed to view, analyze, and download sequence data)

Manager:

Chris Ho

Assign Users:

To add a user, begin to type in either the first or last name. BOLD will return matches name will select it. To remove a user, delete the name from the field and press Save. To analyze, and download sequence data.

Alexandra Stoneham

Megan A. Milton

Record Search

Taxonomy

"Caimaninae" "Alligatorinae"

Geography

Country/Province

Sequence Length

COI-5P

350

Maximum

Tags

Depository

Extra Info

Collection Range

From: 02-Oct-2005

To: 25-Mar-2009

Add records to dataset

You have selected record(s) from:

Record List - Search: Marker(COI-5P), Seq Length(350 bp), Tax("Caimaninae" "Alligatorinae"), Include public records (31 records returned)

To be added to dataset:

DS-CAIMALL1G - A data-set containing Caiman and Alliga..

☒ Sort by Code ☐ Sort by Title







New dataset

Add Records

Close

Working With & Sharing Datasets

📁 Your Datasets: 22 New Dataset

Code	Title	Specimens
 DS-CAIAL1G	Caiman and Alligator Public Dataset	80
 DS-GBONT1	GenBank Mined Records from Ontario COI COI-SP[89]	89
 DS-GBRBL1	GenBank Mined Records from Canada rbcL rbcL[390], matK[1]	390
 DS-MHALA2	Analysis test for Geo Gen Dist2 COI-SP[36]	36
 DS-MISMA1	Mismatched SDP Records COI-SP[16]	16
 DS-MOB00	00 Mobile App Mapping COI-SP[107690], ITS2[129], 16S[552], 18S[104], 28S[198], rbcL[110], matK[776], trnH-psbA[458], ITS[152], rbcLa[939], CYTB[378], 28S-D9-D10[23], 28S-D2[215], EF1-alpha[63], 12S[109], D-loop[47], RAG1[26], Rho[16], UPA[25], DBY- EX7-8[9], COI-3P[136], COIII[18], H3[47], Wnt1[16], ND2[14], CAD127, COI-M147, M147, EY3, 3P21, M147, COI	1124

Manager: Chris Ho

Assign Users:

To add a user, begin to type in either the first or last name. BOLD will return matches in a drop down list and clicking on a name will select it. To remove a user, delete the name from the field and press Save. Users in this list will be allowed to view, analyze, and download sequence data.

Milton Megan A.


Stoneham Alexandra

Jessica Johansson

Add User

Record Tracking

je144paf




Benjamin Victor
ben@coralreeffish.com

Tags

Comments

Annotate



Process ID: LIDMA2086-14

Identification: Pseudojuloides polackorum

Identified by: Benjamin Victor

Collected in: Kenya

by: Benjamin Victor

Institution Storing: Bishop Museum

Field ID: je144

Museum ID: BPBM 41208

Edit Specimen

Show Delta View

Specimen Details

Sample ID: je1-
Process ID: LID-
Project: LAB-
Institution Storing: Bis-
Field ID: je1-
Museum ID: BPBM-
Collection Code:
Reference Link:
Note:

Taxonomy

Phylum: Ch-
Class: Act-
Order: Lat-
Family: Lat-
Subfamily: Pse-
Genus: Pse-
Species: pol-

Barcode Index Number

BIN: BO-
Type: Me-
Max Divergence in BIN: 0.3
Distance to NN: 7.0

Recent Activities

25 records per page

Search:

Timestamp	Who	Action
Nov-09, 2017 14:38	Benjamin Victor	Modify-Specimen
Jun-12, 2015 17:28	Benjamin Victor	Modify-Specimen
Jun-12, 2015 17:22	Benjamin Victor	Modify-Specimen
May-13, 2015 20:38	Benjamin Victor	Move-Record
May-08, 2015 17:53	Benjamin Victor	Modify-Specimen
Mar-04, 2015 14:12	Benjamin Victor	Modify-Specimen
Apr-09, 2014 17:42	Benjamin Victor	New-Image(s)
Apr-09, 2014 15:28	BOLD Data Manager	New-Record

Showing 1 to 8 of 8 entries

First Previous 1 Next Last


Download History: Last Week Last Month Last 6 Months

Evaluation of Specimen Records

B BIOUG01359-B05 - Paul Hebert Malaise Trap 2010 - Diptera [PHDIP]

current 2017-04-04 2017-03-28 2016-09-28 2016-09-23 2016-06-22 2016-04-23 2014-03-08 2013-05-25

BIOUG01359-B05



BIO Photography Group
Creative Commons
ccdbcol@uoguelph.ca
NonCommercial
Biodiversity

Process ID: PHDIP1294-11
Identification: Hybomitra (1838)
Identified by: Kate Perez
Collected in: Canada, Ontario
by: Paul Hebert
Institution Storing: Biodiversity Institute of Ontario
Field ID: L#PHPUS-014
Museum ID: BIOUG01359-B05

Show Current View

Specimen Details

Sample ID:	BIOUG01359-B05	Voucher Status:	
Process ID:	PHDIP1294-11	Tissue Descriptor:	
Project:	PHDIP	Sex:	
Institution Storing:	Biodiversity Institute of Ontario	Reproduction:	S
Field ID:	L#PHPUS-014	Life Stage:	A
Museum ID:	BIOUG01359-B05	Extra Info:	
Collection Code:	BIOUG	Associated Taxa:	
Note:	June 26-July 2	Associated Specimens:	

Taxonomy

Phylum:	Arthropoda	Identification:	Hybomitra lasiophthalma (Macquart, 1838)
Class:	Insecta	Rank:	Species
Order:	Diptera	Identifier:	Kate Perez
Family:	Tabanidae	Identification Method:	BIN Taxonomy Match
Subfamily:	Tabaninae	Identifier Institution:	University of Guelph
Genus:	Hybomitra	Identifier Email:	kperez@uoguelph.ca
Species:	Hybomitra lasiophthalma	Taxonomy Note:	
		BIN:	BOLD:AAF0889

- Delta View – review changes made on both Sequence & Specimen

Delta View – Specimen Changes

B

11ANIC-00499 - ANIC Lepidoptera 17 [ANICQ]



current 2016-09-23 2016-03-17 2015-01-31 2013-03-16 2013-02-02 2012-10-20 2012-05-12 2011-08-06 2011-07-02 2011-06-18 2011-03-19

11ANIC-00499



Jaclyn McCormick
ccdbcol@uoguelph.ca

Creative Commons Attribution NonCommercial
ShareAlike (2011)
ANICBiodiversity Institute of Ontario

Specimen Details

Sample ID: 11ANIC-00499
Process ID: ANICQ499-11
Project: ANICQ
Institution Storing: Australian National Insect Collection
Field ID: 11ANIC-00499
Museum ID: ANIC Database No. 31 038496
Collection Code: ANIC
Note: flying over boulder scree

Voucher Status:
Tissue Descriptor:
Sex:
Reproduction: S
Life Stage: A
Extra Info:
Associated Taxa:
Associated Specimens:

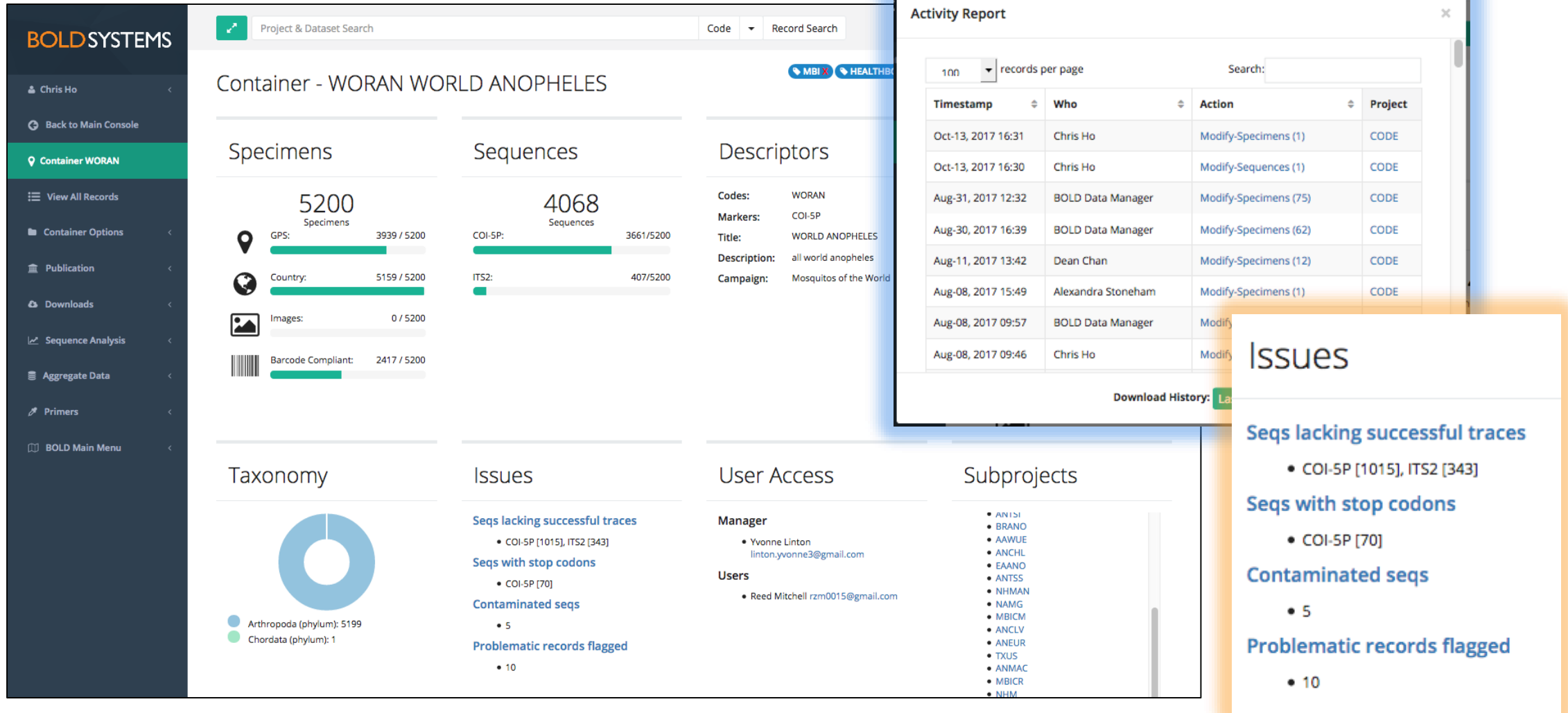
Taxonomy

Phylum: Arthropoda
Class: Insecta
Order: Lepidoptera
Family: Geometridae
Subfamily: Ennominae
Genus: Kunanyia
Species: Kunanyia stephaniae

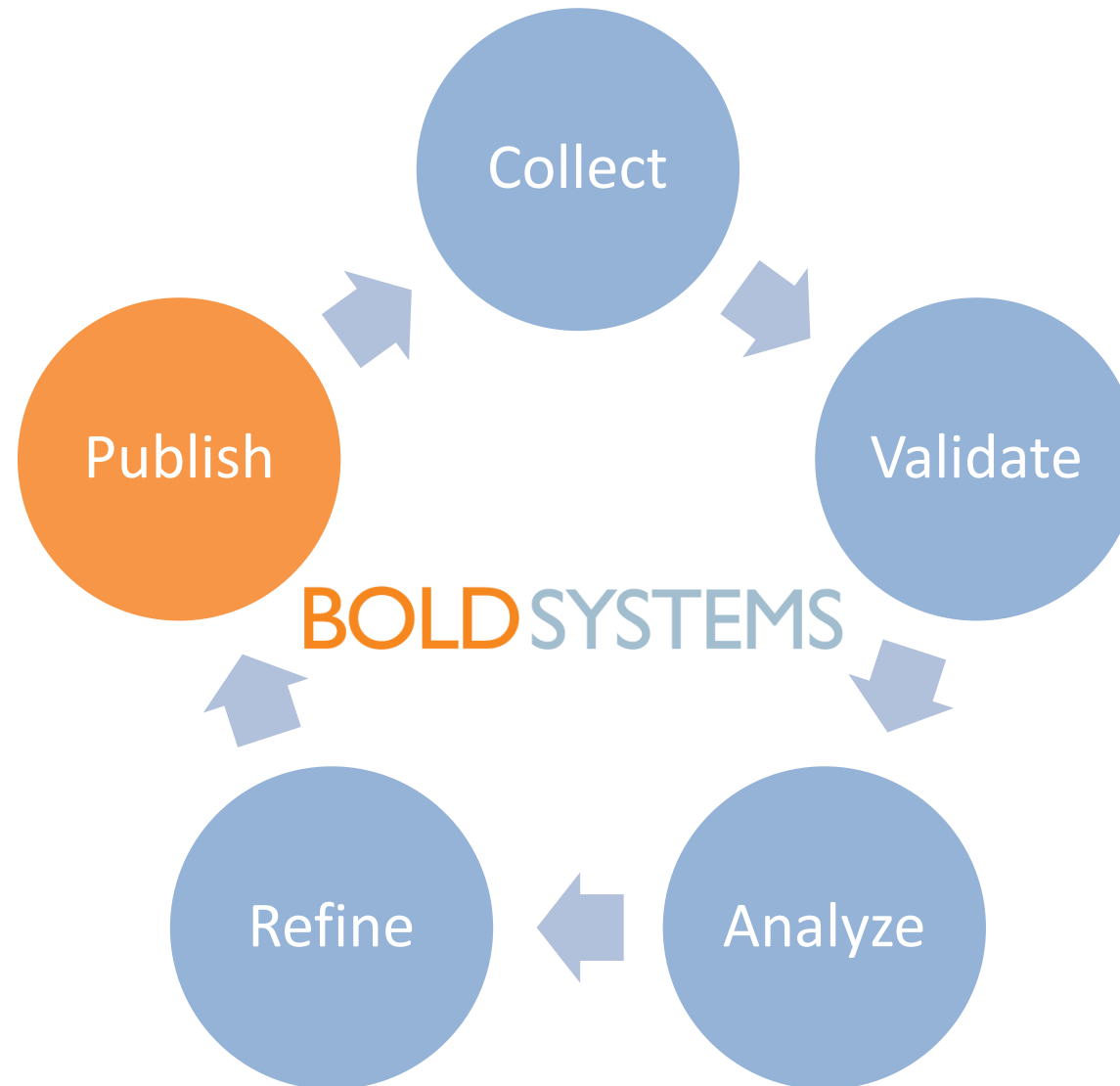
Identification: Kunanyia stephaniae
Rank: Species
Identifier:
Identification Method:
Identifier Institution:
Identifier Email:
Taxonomy Note:
BIN: BOLD:AAX7037

feedback


Measuring Progress for a Team



Data Life Cycle

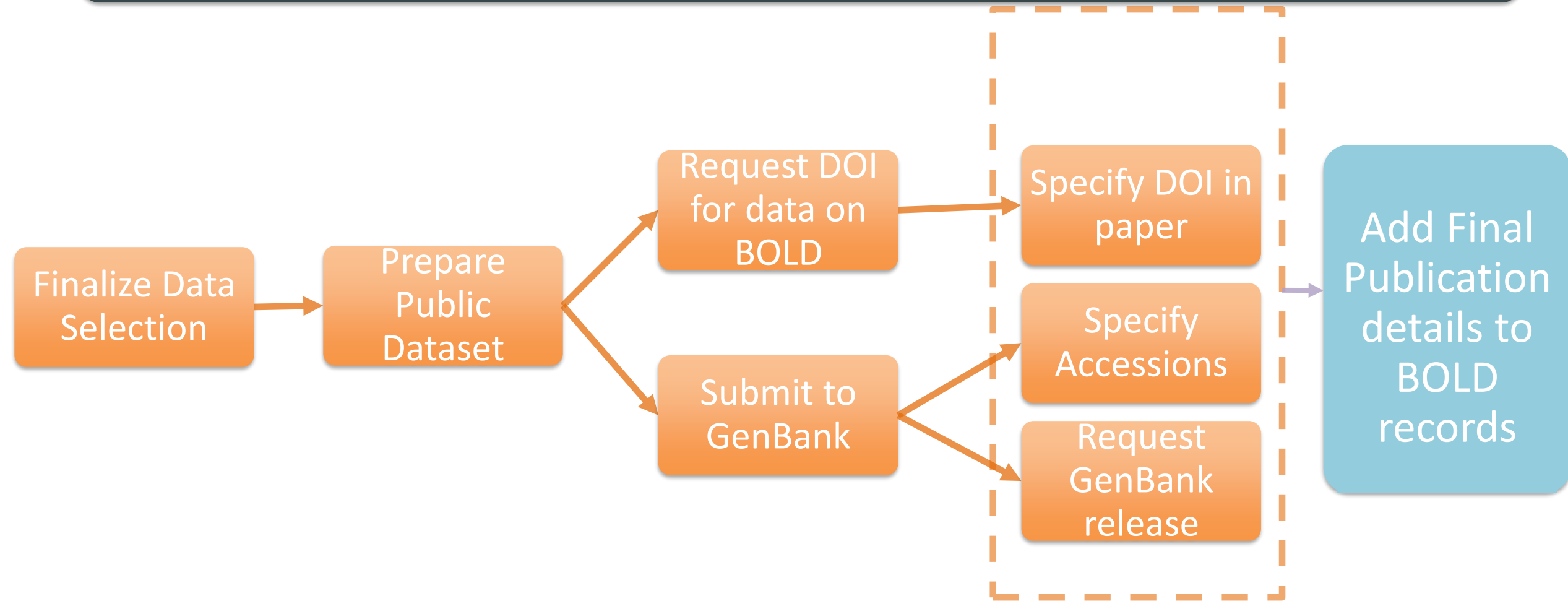


Publication Best Practices

- Include All Relevant Data 
- Prepare data ahead of final review
- Submit to GenBank through BOLD
- Ensure public and accessible! DOI will help

	Institut de Biologia Evolutiva, Roger Vila's DNA & Tissues Collection (4921)
	Mined from GenBank, NCBI (286)
	SNSB, Zoologische Staatssammlung Muenchen (256)
	McGuire Centre for Lepidoptera and Biodiversity (67)
	Research Collection of Ralph Sturm (61)
	Research Collection of Ralf Bolz (51)
	Institut de Biologia Evolutiva (39)
	Tiroler Landesmuseum Ferdinandeum (36)
	University of Oulu (24)
	3 Others (41)

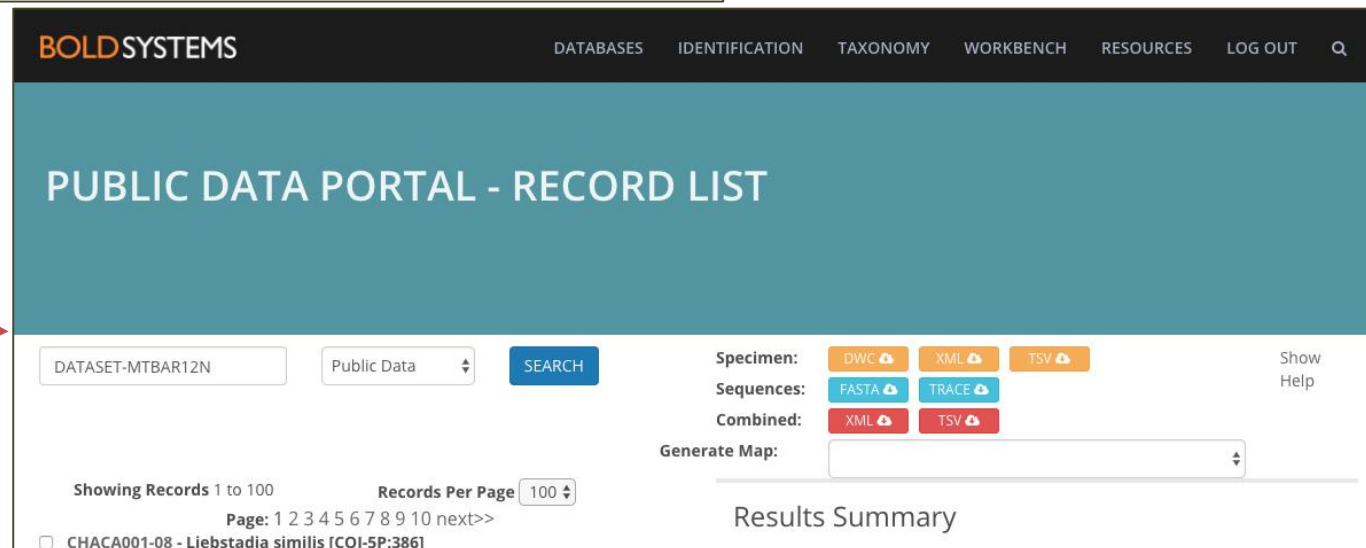
PUBLICATION WORKFLOW VIA BOLD



Publication



“Collection details for each specimen together with its taxonomic assignment and its photograph are provided in a single data set on BOLD. The records can be retrieved using a DOI (<http://www.doi.org/10.5883/DATASET-MTBAR12N>), a novel feature on BOLD enabling easy access and citability of barcode data.”



- Make Records Publicly accessible
- Request a DOI for records (in BINs, Checklist, Dataset)
- Submit to GenBank
- Make citation visible on your records

Ensuring Data Access

SCIENTIFIC REPORTS

OPEN

DNA barcode reference library for Iberian butterflies enables a continental-scale preview of potential cryptic diversity

Received: 11 January 2015

Accepted: 11 May 2015

Published: 24 July 2015

Vlad Dincă^{1,2}, Sergio Montagu³, Gerard Talavera^{3,4,5}, Juan Hernández-Roldán⁶, Miguel L. Munguira⁶, Enrique García-Barros⁶, Paul D. N. Hebert² & Roger Vila¹

How common are cryptic species - those overlooked because of their morphological similarity? Despite its wide-ranging implications for biology and conservation, the answer remains open to debate. Butterflies constitute the best-studied invertebrates, playing a similar role as birds do in providing models for vertebrate biology. An accurate assessment of cryptic diversity in this emblematic group requires meticulous case-by-case assessments, but a preview to highlight cases of particular interest will help to direct future studies. We present a survey of mitochondrial genetic diversity for the butterfly fauna of the Iberian Peninsula with unprecedented resolution (3502 DNA barcodes for all 228 species), creating a reliable system for DNA-based identification and for the detection of overlooked diversity. After compiling available data for European butterflies (5782 sequences, 299 species), we applied the Generalized Mixed Yule-Coalescent model to explore potential continental scale. The results indicate that 27.7% of these species include from two to four evolutionary significant units (ESUs), suggesting that cryptic biodiversity

poor quality. All data have been uploaded to the public dataset “Iberia-Europe” (DS-IBEUR, dx.doi.org/10.5883/DS-IBEUR) on BOLD at www.barcodinglife.org.

- DOIs displayed as linkable, permanent URLs within publications
- Easier than range of IDs
- Faster for readers than location directions

Submission to GenBank

BOLDSYSTEMS

Chris Ho

Back to Main Console

Dataset DS-MOR1

View All Records

Dataset Options

Publication

Submit to GenBank

Project Summary - Specimens, Localities, and GenBank

Downloads

Sequence Analysis

Aggregate Data

Primers

Project & Dataset Search

Code

Record Search

Dataset - DS-MOR1 Morpho

Specimens

251 Specimens

GPS: 120 / 251

Country: 201 / 251

Images: 125 / 251

Barcode Compliant: 116 / 251

GenBank Submission - Morpho Butterflies public dataset [DS-MOR1]

Required fields for submission are marked with an asterisk. Please use only English characters.

GenBank Submission Example: Morpho Butterflies Public Dataset

Author List

At least one author is required. Select the Corresponding Author (CA) using the radio button.

Chris M.I. Ho Suffix CA

Megan M.I. Milton Suffix CA

First Name M.I. Last Name Suffix CA

Add Another Author

Corresponding Author (CA)

Corresponding author must also be in the author list

Chris M.I. Ho Suffix

University of Guelph Biodiversity

5198244120 chris_ho@uoguelph.ca Fax Number

4120 Gordon St. Guelph

Ontario N1G4A3 Canada

Please double-check your entries before requesting submission to GenBank. Your submission request will be entered in our queue for final quality checks, and after validation will be forwarded to GenBank.

☒ Submit an update of these records to GenBank if they already have accessions.

Submit Request Cancel

Dataset Publication & DOI

BOLD SYSTEMS

Chris Ho

Back to Main Console

Dataset DS-MOR1

Dataset Options

Modify Dataset Properties

Publication

Downloads

Sequence Analysis

Aggregate Data

Primers

Required fields for submission are marked in red.

Dataset Code: DS-MOR1

Dataset Title: Morpho Butterflies Public Dataset

Dataset Description: A dataset of the public Morpho sequences from BOLD

(15 characters minimum)

Bounding Box Top Left: Latitude

Bounding Box Lower Right: Latitude

Dataset Access: ☒ Make this dataset publicly visible
(All BOLD users will be allowed to view, analyze, download sequence data)

Publish Confirmation

You have elected to make this dataset public. Please confirm that you want to proceed.

If public, this dataset will be accessible in the BOLD Public Data Portal within 6 business days. The records in this dataset can be retrieved using the following permanent URL: http://www.boldsystems.org/index.php/Public_SearchTerms?query=DS-MOR1.

Requesting of Digital Object Identifiers (DOI)* for datasets so that they can easily be subsequently cited. Please request a DOI if this feature would be useful.

Request DOI

* DOIs are persistent identifiers used to identify and cite publications but are also very useful in citing

Proceed

Publication Details onto Records

BOLD SYSTEMS
Chris Ho <
Back to Main Console
Dataset DS-IBEUR
View All Records
Dataset Options <
Publication >
Publication Submission
Specimens, Localities, and GenBank
Downloads <
Sequence Analysis <
Aggregate Data <
Primers <
BOLD Main Menu <

Project & Dataset Search

Code Record Search

Dataset - DS-IBEUR Iberia-Euro

Specimens

5782 Specimens


GPS: 5437 / 5782

Country: 5632 / 5782

Images: 5221 / 5782

Barcode Compliant: 4930 / 5782

Taxonomy



Sequences

583 Sequences

COI-5P:

ITS2:

EF1-alpha:

Wnt1:

Issues

Seqs lacking sequences

- COI-5P [603]
- ITS2 [32], W

Seqs with stop

Publication Submission

Required fields for submission are marked in red.

Article Title: DNA barcode reference library for Iberian butterflies enables a continental-scale preview of potential cryptic diversity

Authors: Vlad Dinca, Sergio Montagud, Gerard Talavera, Juan Hernandez-Roldan, Miguel L. Munguira, Enrique Garcia-Barros, Paul D. N. Hebert & Roger Vila

Journal: Scientific Reports

Year: 2015 **Volume:** 5

Issue: 12395 **Pages:** 1-12

PDF URL: https://www.nature.com/articles/srep12395.pdf

DOI: 10.1038/srep12395

PubMed Central ID:

Open Access? ☒

Abstract: Mixed Yule-Coalescent model to explore potential cryptic diversity at a continental scale. The results indicate that 27.7% of these species include from two to four evolutionary significant units (ESUs), suggesting that cryptic biodiversity may be higher than expected for one of the best-studied invertebrate groups and regions. The ESUs represent important units for conservation, models for studies of evolutionary and speciation processes, and sentinels for future research to unveil hidden diversity.

feedback

Publishing Data with BOLD

BOLDSYSTEMS

DATABASESIDENTIFICATIONTAXONOMYWORKBENCHRESOURCESLOG OUT

PUBLIC DATA PORTAL - RECORD LIST

DS-28NHM

Public Data

SEARCH

Specimen:

DWC

XML

TSV

Sequences:

FASTA

TRACE

Combined:

XML

TSV

Show Help


Generate Map:

Showing Records 1 to 100

Records Per Page 100

Page: 1 2 3 4 5 6 7 8 9 10 11 next>

☐ ABKWR084-07 - *Olethreutes glaciana* [COI-5P:658]
Taxonomy: Arthropoda, Insecta, Lepidoptera, Tortricidae, Olethreutes
Identifiers: KENWR 6641e[sampleid], KENWR 6641e[fieldid]
Depository: University of Guelph, Centre for Biodiversity Genomics
Collected in: United States, Alaska, Kenai National Wildlife Refuge



☐ BBLOB1432-11 - *Blastobasis glandulella* [COI-5P:658]
Taxonomy: Arthropoda, Insecta, Lepidoptera, Blastobasidae, Blastobasis
Identifiers: BIOUG01419-A07[sampleid], L#11BIOBUS-0518[fieldid], BIOUG01419-A07[museumid]
Depository: University of Guelph, Centre for Biodiversity Genomics
Collected in: United States, Florida, Highlands County


☐ BBLOB388-11 - *Blastobasis glandulella* [COI-5P:658]
Taxonomy: Arthropoda, Insecta, Lepidoptera, Blastobasidae, Blastobasis
Identifiers: BIOUG01396-A08[sampleid], L#11BIOBUS-0993[fieldid]
Depository: University of Guelph, Centre for Biodiversity Genomics

Results Summary

Found **1,086** published records, forming **87** BINs (clusters), with specimens from **21** countries, deposited in **41** institutions.

Of these records, **1,086** have species names, and represent **88** species.

Specimen Distribution



Associated Publications

Sequence View

Sequence View for Process ID: EZSPC490-09

[Upload Traces](#) [Download Traces](#) [Activity Report](#) [Show Data View](#)

Specimen Details current

Sample ID: RVC01.08.R316
Process ID: EZSPC490-09
Project: EZSPN
Tax Names: Arthropoda, Insecta, Lepidoptera, Nymphalidae, Limenitidinae,
Limenitis, Limenitis reducta
Taxon: species
Rank Name:
Sampling Protocol:
BIN URL: BOLD:AAA3800
Kingdom: Animalia

Marker Summary

Marker Code	Sequence Length	GC	Ambiguous	Trace Count
COI-SP	658	29.2%	0%	2

COI-SP

Illustrative Barcode

Nucleotide Sequence

Amino Acid Sequence

Sequence Metadata

Genbank Accession: GUE70864
Translation Matrix: Invertebrate Mitochondrial
Last Updated: 2009-07-31 10:46:12 (GMT+0)
Sequence Runsite: Mined from GenBank, NCBI

Modify Sequence: [Clear Sequence](#) [Edit Sequence](#)

Identify Sequence: [Full DB](#) [Species DB](#) [Published DB](#) [Full Length DB](#)

Download Traces

Sequencing Date: 2009-07-15 06:30:06
Trace Direction: F
Forward Primer: LegP1
Reverse Primer: LegP1
Sequence Primer: LegP1
Status: High-qual
Trace Runsite: Biodiversity Institute of Ontario

Download Traces

Sequencing Date: 2009-07-15 07:56:13
Trace Direction: R
Forward Primer: LegP1
Reverse Primer: LegP1
Sequence Primer: LegP1
Status: High-qual
Trace Runsite: Biodiversity Institute of Ontario

Related Publications

Title:
Author:
Journal:

Sample Report from LIM
BOLDIMS

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Publication DB View

BOLD SYSTEMS DATABASES IDENTIFICATION TAXONOMY WORKBENCH RESOURCES LOG OUT

PUBLICATION SEARCH

The Publication Portal supports queries based on title, authors, abstract terms, year and journal, or any combination of those.

Iberian continental [GO](#)

Showing Results 1 to 7 of 7 Page 1

☐ 1. DNA barcode reference library for Iberian butterflies enables a continental-scale preview of potential cryptic diversity
Authors: Vlad Dinca, Sergio Montagud, Gerard Talavera, Juan Hernandez-Roldan, Miguel L. Munguira, Enrique Garcia-Barros, Paul D. N. Hebert, Roger Vila
Journal: Scientific Reports; 2015; 5(-): 12395
[more](#) [10.1038/srep12395](#)

☐ 2. Patterns of colonization, evolution and gene flow in species of the genus *Patella* in the Macaronesian Islands.
Authors: Alexandra Sá-Pinto, Madalena Branco, Diogo Sayanda and Paulo Alexandrino
Journal: Molecular Ecology; 2008; 17(2): 519-532
[more](#) [10.1111/j.1365-294X.2007.03563.x](#)

☐ 3. Patterns of colonization, evolution and gene flow in species of the genus *Patella* in the Macaronesian Islands: PHYLOGEOGRAPHY OF MACARONESIAN LIMPETS
Authors: Sá-Pinto, Alexandra; Branco, Madalena; Sayanda, Diogo; Alexandrino, Paulo
Journal: Molecular Ecology; 2007; 17(2): 519-532
[more](#) [10.1111/j.1365-294X.2007.03563.x](#)

☐ 4. Persistent genetic signatures of colonization in *Brachionus manjavacas* rotifers in the Iberian Peninsula: SIGNATURES OF COLONIZATION IN A ROTIFER
Authors: Gómez, Africa; Montero-Pau, David H.; Serra, Manuel; Campillo, Sergi
Journal: Molecular Ecology; 2007; 16(15): 3228-3240
[more](#) [10.1111/j.1365-294X.2007.03372.x](#)

☐ 5. Persistent genetic signatures of colonization in *Brachionus manjavacas* rotifers in the Iberian Peninsula.
Authors: Africa Gómez, Javier Montero-Pau, David H. Lunt, Manuel Serra and Sergi Campillo
Journal: Molecular Ecology; 2007; 16(15): 3228-3240
[more](#) [10.1111/j.1365-294X.2007.03372.x](#)

Options

☐ Select All Results
10 Results/Page

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BOLD Public View

BOLD SYSTEMS DATABASES IDENTIFICATION TAXONOMY WORKBENCH RESOURCES LOG OUT

PUBLIC DATA PORTAL - Specimen Record

[Public Data](#) [SEARCH](#)

Specimen: [View](#) [Download](#) [Print](#)
Sequences: [View](#) [Download](#) [Print](#)
Combined: [View](#) [Download](#) [Print](#)
Generate Map: [View](#) [Download](#) [Print](#)

[Back to Search: Records](#)

Record Details For EZSPC490-09


IDENTIFIERS

Sample ID: RVC01.08.R316 Museum ID:
Field ID: RVC01.08.R316 Collection Code:
Deposited in: Institut de Biologia Evolutiva (CSIC-UPF), Butterfly Diversity and Evolution Lab

TAXONOMY


Phylum: Arthropoda Subfamily: Limenitidinae
Class: Insecta Genus: *Limenitis*
Order: Lepidoptera Species: *Limenitis reducta*
Family: Nymphalidae Subspecies:
BIN (Cluster ID): BOLD:AAA3800

SPECIMEN IMAGES:



License: Copyright (2012)
License Holder: Roger Vila, Institute of Evolutionary Biology

COLLECTION SITE:

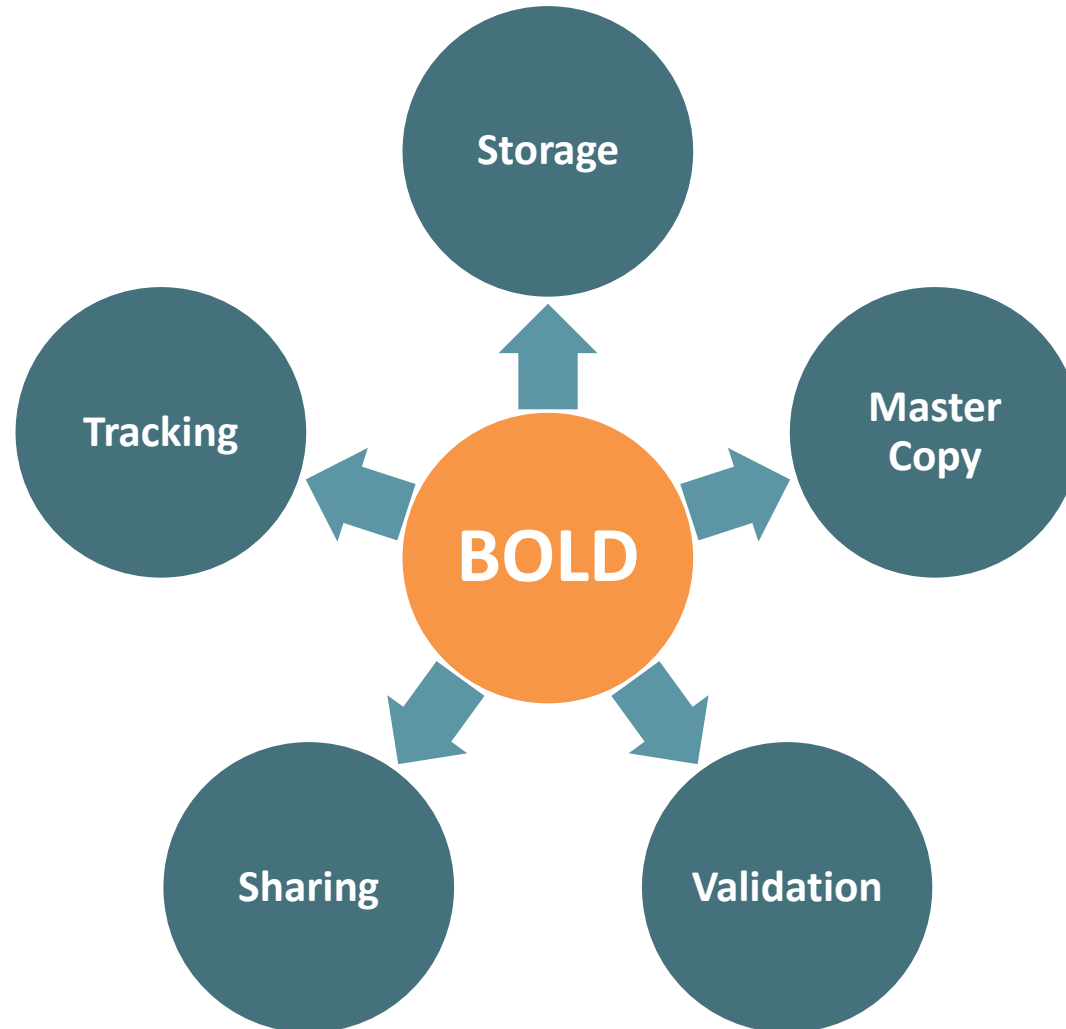


SPECIMEN DETAILS

Voucher Status: Reproduction: S
Tissue Descriptor: Sex: F
Brief Note: Life Stage: A
Detailed Notes:

DNA barcode reference library for Iberian butterflies enables a continental-scale preview of potential cryptic diversity
Authors: Vlad Dinca, Sergio Montagud, Gerard Talavera, Juan Hernandez-Roldan, Miguel L. Munguira, Enrique Garcia-Barros, Paul D. N. Hebert, Roger Vila
Journal: Scientific Reports; 2015; 5(-): 12395
[more](#) [10.1038/srep12395](#)

Virtual Research Environment



Thank You

Acknowledgements

