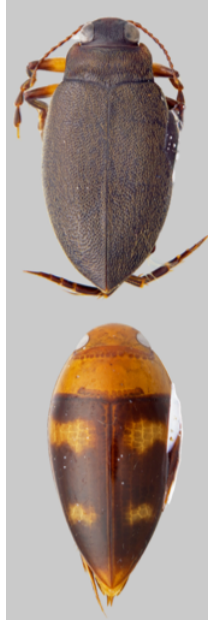
invertnet



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iDigBio Integrated Digitized Biocollections

CARNEGIE MUSEUM OF NATURAL HISTORY

KU

ILLINOIS NATURAL HISTORY SURVEY
PRAIRIE RESEARCH INSTITUTE

Objective

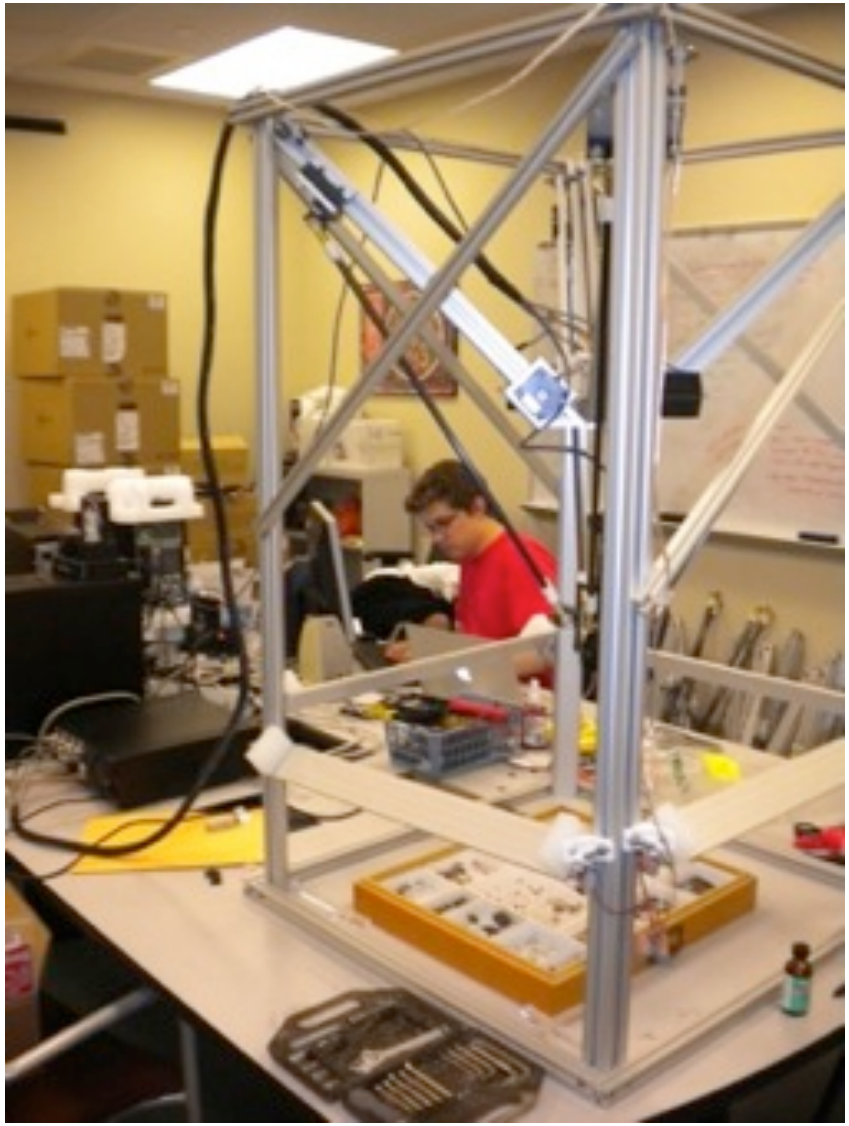
- develop and implement an efficient workflow for cost-effective, high-throughput digitization of insect collections

Specific Goals

- Digitize all holdings of 22 midwestern arthropod collections (~50 million specimens)
  - Specimen images and metadata (label info)
  - Drawers, vials, slides
  - Advanced imaging (including 3D)
  - Best quality at reasonable cost (~$0.10/specimen)
- Provide access to images and other data via online virtual museum
  - browsable/searchable/zoomable web interface
  - link to other data providers (GBIF, iDigBio etc.)
- Provide platform for research and development of additional tools and resources
  - Data mining and analysis
  - Community building, collaboration, and support
  - Education, outreach, and reference

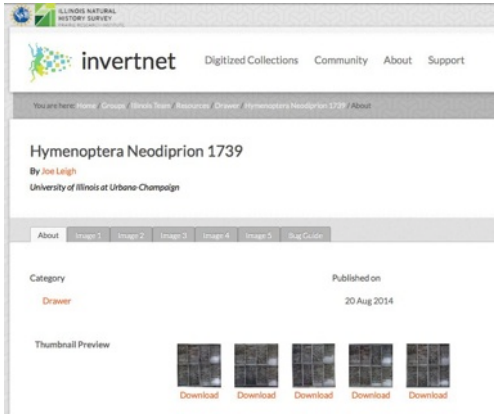
Accomplishments

- Created InvertNet cyberinfrastructure platform based on HUBzero (invertnet.org)
- Implemented efficient workflows for slides and vials using 2D scanning technology
- Built 14 robotic drawer digitization systems & delivered to collaborators
- Built 180 TB storage system to house InvertNet image library
- Ingested >46,000 images and metadata from collaborating institutions representing >2.5 million specimens
- Developed image annotation tool to facilitate specimen-level data capture
- Linked InvertNet data repository to iDigBio portal and BugGuide.net
- Held two training workshops for collaborators (April 2012 and November 2013)
- Participated in numerous workshops, symposia and planning meetings
- Published 2 papers describing our high-throughput digitization approach
- Trained 15 grad students and >30 undergrads



Ongoing Activities

- Capturing whole-drawer images at collaborating institutions
- Seeking additional funding for gameification of label data capture



InvertNet data management and use

- Data management
  - HUBzero-based cyberinfrastructure
  - 180TB storage system with tape archiving
  - local image capture to duplicated removable hard drives
  - all data are open access
- Research use of data
  - 3D modeling and reconstruction
  - automated identification using computer vision and machine learning
- Management of the network including oversight and processes
  - INHS permanent IT staff have assumed management responsibility for managing website and cyberinfrastructure
  - InvertNet PIs continue to provide oversight

VENEZUELA, Guar./Calabozo (40 km S)/Hato Masaguaral/ 5 March 1986/ PJSpangler/ colln#24

PJS-VZ-860305-2

DATE: 5 Mar 86 COLLECTION #: 24 TIME: 0915 To

LOCALITY: Country: Venez. State/Dept.: Guarico

Hato Masaguaral

City: Calabozo Latitude: ° " Longitude: °

Miles/Kilometers - N S E W: 40 River/Brook name:

COLLECTORS: PHOTO: Yes No

[crossed-out handwriting]

COLL'N METHOD: Dipnet; seine; blklite; blklite trap; flight trap; malaise; pitfall trap

HABITAT: Stream; pond; lake; roadside ditch; rut in road; spring seepage; waterfall; in bromeliad; brackish pool; mineral water pool; hot spring; crab hole; side pool of stream; stockpond; stock tank; swim pool; woodland pond; pothole; culvert; leaf packs; wet wood; other

Pond

AIR TEMPERATURE: 106 F° WATER TEMPERATURE: 81 F° pH: 7

OXYGEN: 3 ppm HARDNESS: 20 TURBIDITY: clear ALTITUDE: ft/m

DEPTH: 1/3 m WIDTH: 10m x 150m VELOCITY: 0 ft/sec. SHADED - SUNNY

SUBSTRATUM: Mud; gravel; sand; peaty; leafy; boulders; other -

SOIL COLOR: Red; yellow; black; brown.

PLANT ASSOCIATES: Alisma; Alternanthera; Anacharis; Azolla; Brasenia; Chara; Cephalanthus; Eichornia; Eleocharis; Hibiscus; Hydrodictyum; Isoetes; Jussiaea; Lemna; Ludwigia; Marsilea; Mougeotia; Myriophyllum; Nitella; Nymphae; Pistia; Polygonum; Potamogeton; Proserpinaca; Ranunculus; Rhizophora; Riccia; Ruppia; Sagittaria; Salvinia; Scirpus; Spirogyra; Taxodium; Typha; Trapa; Utricularia; Wolffia; other [illegible]; grass

ANIMAL ASSOCIATES: INCREDIBLY RICH!

Adults: Berosus, Derallus, Hydrochus, Helochares, Helobata, Enochrus(?), Tropisternus, Dibolocelus, Hydrocanthus, Derovatellus, Macrovatellus, Anodocheilus, Bidessonotus, Laccophilus, Celina, Copelatus, Thermonectus, Pachydrus, Desmopachria, Hydrovatus(?), Neobidessus, other bidessines.

Suphisellus, Hydrocanthus, Belostoma, Plea(?),

Larvae

EST. # SPMS. ~~3000~~ 5460

*: end of 1 roll of 400X + first few of 100X roll - pond c Pistia

In 2 plastic bottles

PJS-VZ-860305-2

COLEOPTERA

Aquatic

Helobata	3
Helochares	6
Enochrus	11 A
	2 L
Berosus	1
Tropesternus (3 sp.)	22
Derallus	365
Hydrochus	97
Laccophilus	162 + 2
Laccomimus	8 A
	3 L
Macrovetallus	4
Derovetallus	47
thermonectus	4
Dibolocelus	1
Copelatus	4
Celina	1
Anodocheilus (2 sp)	33
Neobidessus	107 + 1
"	1
Pachydrus	12
Desmopachria	201
Bidessodes	31
"	896
"	2028
Microbidessus	1
Notomicrus	13
Suphis L	1
Hydrocanthus	7
Suphisellus	11
"	654
"	16
"	671
Hydraena	9

Σ=5435

TERRES

Helodid L	13

HEMIPTERA

Belostomatid	1
Hebrid nymph	1
Notonectid immature	1
Naucoridae	1
Gerrid. nymph	1
Plea	2
Corixidae	1
Microvelia	2

Σ=10

DIPTERA 1

ARACHNID 1

5460

NAMID

North American MacroInvertebrate Database

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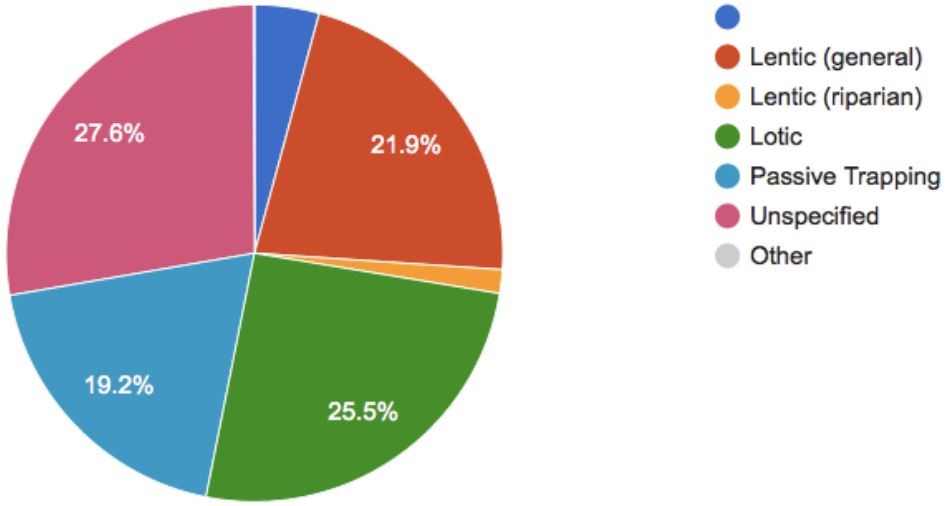
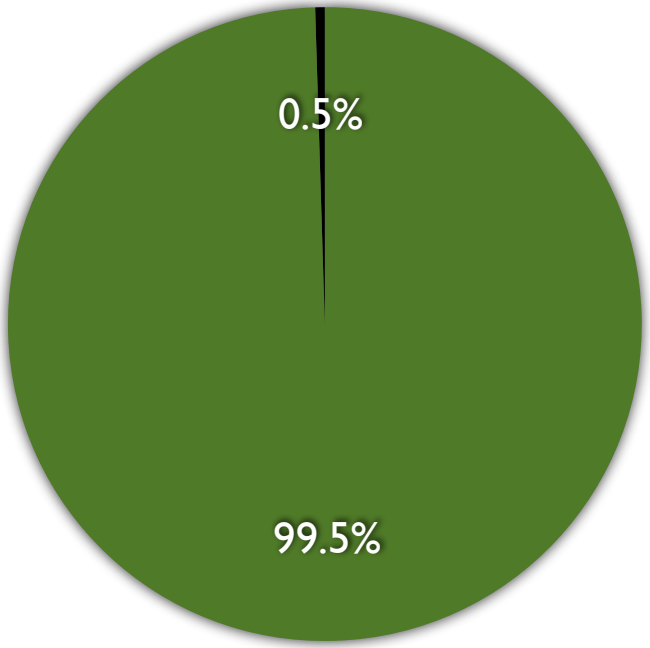
CReAC Collection | Help | Report Bug | Share

Welcome | Browse Collection | Search Collection | Checklist | Collecting Events | Images | **Species Profile Page (Berosus)**

Species: Berosus

- Taxonomy
- Phenology
- Distribution
- Habitat Images
- Species Images
- Record Sources
- Water Chemistry
  - pH
  - Dissolved O^2
  - Water Temp
  - Air Temp (C)
  - Turbidity
  - Conductivity
  - Salinity
- Habitat Classification
  - By Specimens
  - By Event

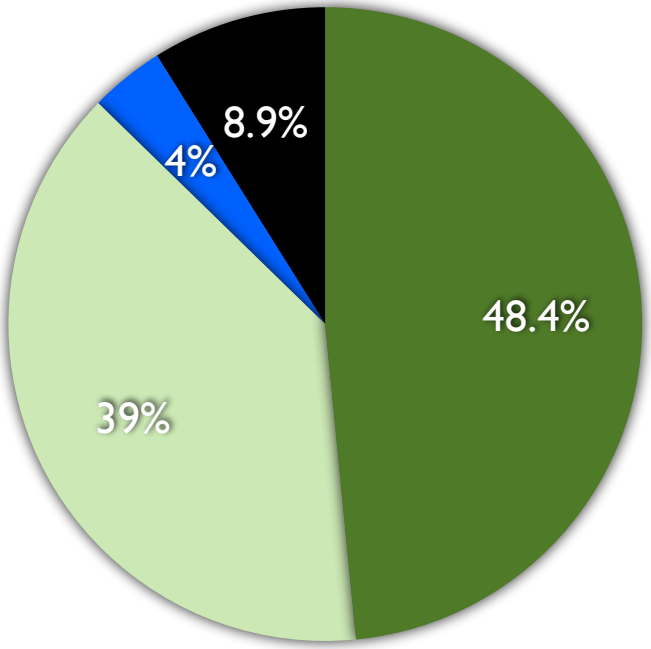




n=1631

Tropisternus apicipalpis

(Hydrophilidae)



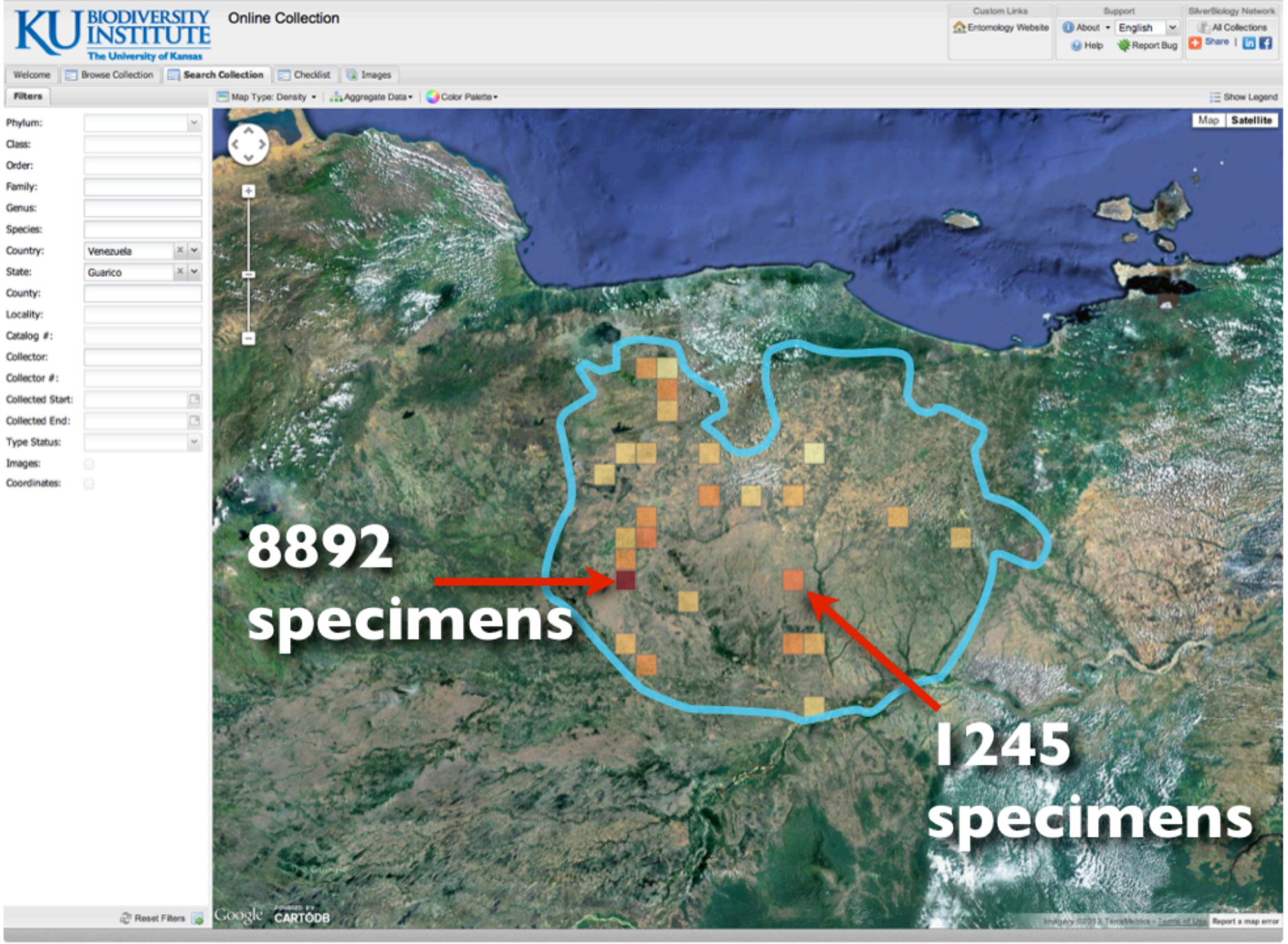
n=1001

Tropisternus chalybeus

(Hydrophilidae)

Specimens vs Events

Specimen-based approach: This event **never happened!**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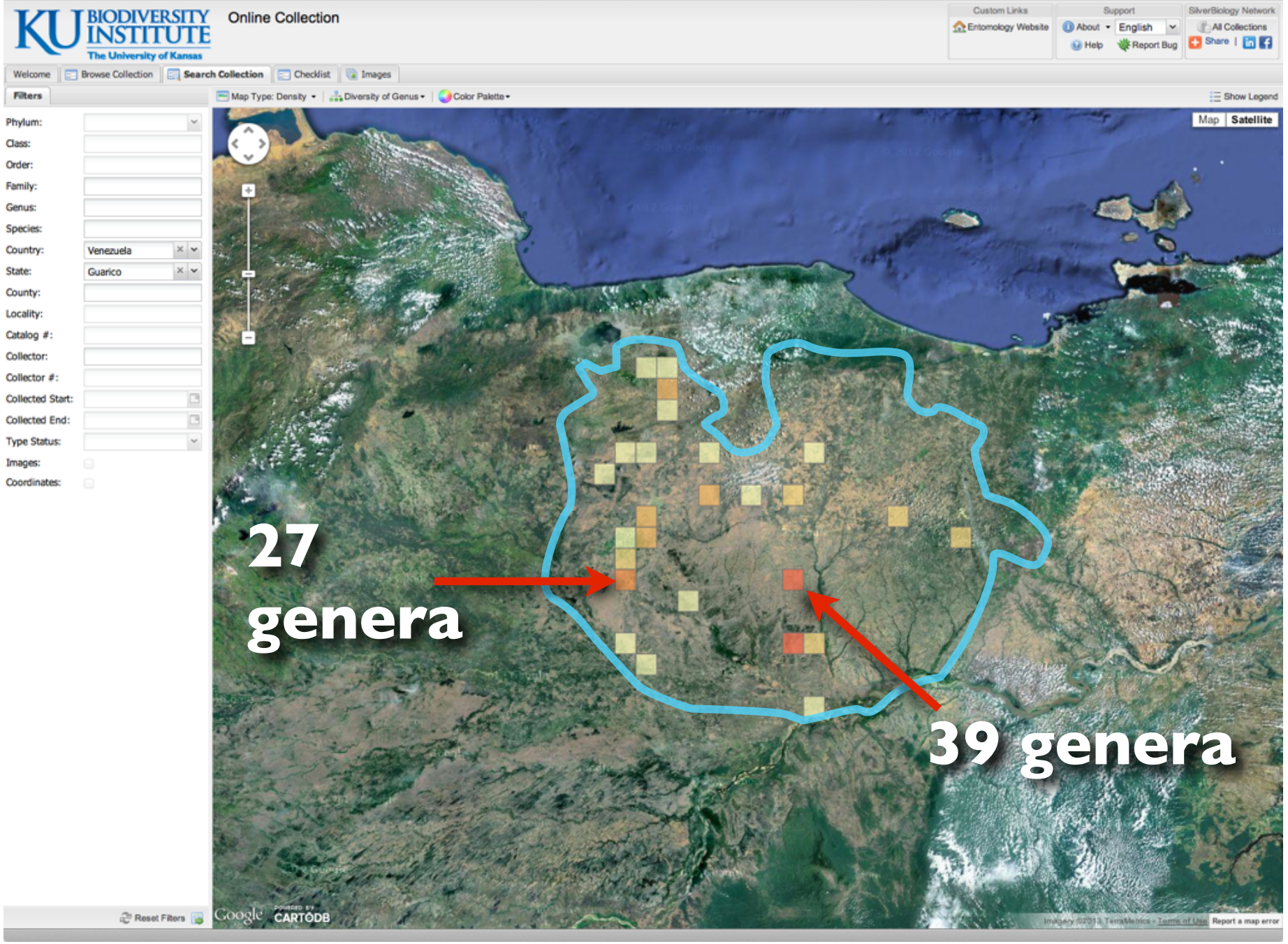
Checklist
Images
Filters
Map Type: Density
Aggregate Data
Color Palette
Show Legend
Map
Satellite
Phylum:
Class:
Order:
Family:
Genus:
Species:
Country: Venezuela
State: Guarico
County:
Locality:
Catalog #:
Collector:
Collector #:
Collected Start:
Collected End:
Type Status:
Images:
Coordinates:
8892 specimens
1245 specimens
Reset Filters
Google
CARTODB
Report a map error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Checklist
Images
Filters
Map Type: Density
Diversity of Genus
Color Palette
Show Legend
Map
Satellite
Phylum:
Class:
Order:
Family:
Genus:
Species:
Country:
Venezuela
State:
Guarico
County:
Locality:
Catalog #:
Collector:
Collector #:
Collected Start:
Collected End:
Type Status:
Images:
Coordinates:
27 genera
39 genera
Reset Filters
Google
CARTODB
Report a map error