

# Tips & Workflows for Managing Field Data

PJS-VZ-860224-1

DATE: 24 Feb. 86

LOCALITY: Country: V City: RENO, VIRGINIA

COLLECTION #: 12 TIME: 12-3:00

Kilometers N/S E/W: 40 Latitude: State/Dept.: T.E.A. Longitude: River/Brook name: AQUEDUCT

COLLECTORS: PJS

COL'L N METHOD: Dipnet; seine; bklite; bklite trap; flight trap; maleise; 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; stock tank; swim pool; woodland pond; pothole; culvert; leaf packs; wet wood; other: ABOVE WATER

AIR TEMPERATURE: 91 F 33 C WATER TEMPERATURE: 77 F 25 C

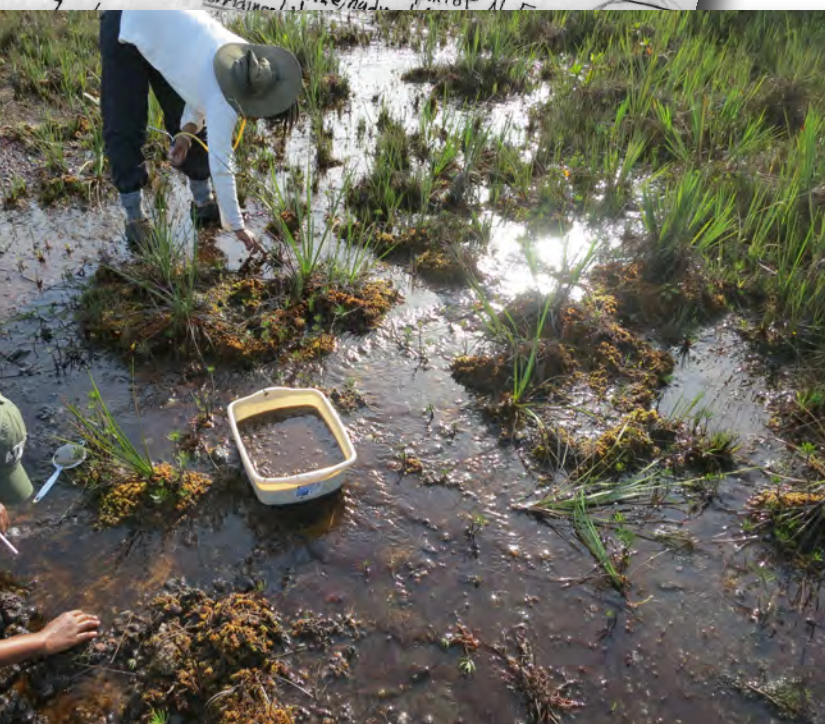
OXYGEN: 12 ppm DEPTH: 1 m HARDNESS: 0 TURBIDITY: clear pH: 5.5

SUBSTRATUM: Mud; gravel; sand; peaty; leafy; boulders; other: GRAVEL, BEDROCK

SOIL COLOR: Red; yellow; black; brown.

PLANT ASSOCIATES: Chara; Cephalanthus; Alisma; Alternanthera; Anacharis; Azolla; Brassia; Isotetes; Jussiaea; Lemna; Ludwigia; Eleocharis; Hibiscus; Hydrodictyon; Nitella; Nymphaea; Pistia; Polygonum; Marsilea; Mougeotia; Myriophyllum; Ranunculus; Rhizophora; Riccia; Ruppia; Sagittaria; Salvinia; Scirpus; Spirogyra; Taxodium; Typha; Trapa; Utricularia; Wolfia;

ANIMAL ASSOCIATES: Adults: SEVERAL genera of Elmids; 1 spm. of A. ? small convex (Psephenus like) had several genera? of Tenebrionidae.



Andrew Short

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THE UNIVERSITY OF  
KANSAS

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**Average: 3000-5000 prepared specimens  
*per week of fieldwork***

# Talk Overview

- Collecting Event Codes
- Field Sheets & Data labels
- Data Entry & Standardization
- Retroactive Datacapture



**Localities**

**Unique GPS**

**Localities**

**Unique GPS**

*Can have multiple...*

**Collecting Events**

**Discrete/unique  
bundle data**

**Localities**

**Unique GPS**

*Can have multiple...*

**Collecting Events**

**Discrete/unique  
bundle data**

*Can have multiple...*

**Specimens  
(Collection Objects)**

**The specimens**



# Collecting Event Codes

Consistently use informative  
Collecting Event Codes to organize  
all your data

# Collecting Event Codes

**Smart vs. Dumb Codes**



# Collecting Event Codes

## Smart vs. Dumb Codes

Dumb Codes: Arbitrary; do not encode information

#58

L-1268

Semi-smart:

NC-28

AEZS-325

# Collecting Event Codes

## Smart vs. Dumb Codes

Dumb Codes: Arbitrary; do not encode information

#58

**NOT LIKELY  
TO BE  
UNIQUE!**

L-1268

Semi-smart:

NC-28

AEZS-325



# Collecting Event Codes

## Smart vs. Dumb Codes

Smart Codes: Code itself contains information

**AEZS-15-US-FL-01**

**GY14-0921-01A**

# Collecting Event Codes

## Smart vs. Dumb Codes

Smart Codes: Code itself contains information

**AEZS-15-US-FL-01**

**GY14-0921-01A**

**MORE LIKELY TO BE UNIQUE**

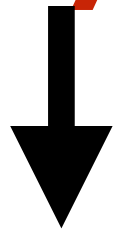


# Collecting Event Codes

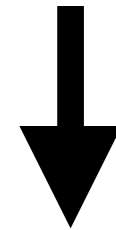
GY14-0921-01A

# Collecting Event Codes

Country Code



Locality



GY	14-0921	-01	A
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Date



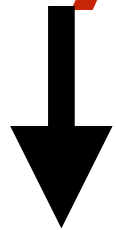
Event



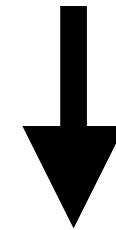


# Collecting Event Codes

Country Code



Locality

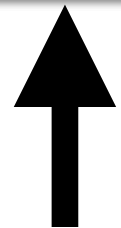


GY	14-0921	-01	A
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Date



Event



Guyana: 21 September 2014: First locality that day



SR I 0-0820-03





# SR I 0-0820-03

A: Hygropetric  
Surface

B: Leaf Packs

D: Woody debris

E: Gravel Bottom

C: Side Pool

F: Sand Margin





# Recording Absence Data

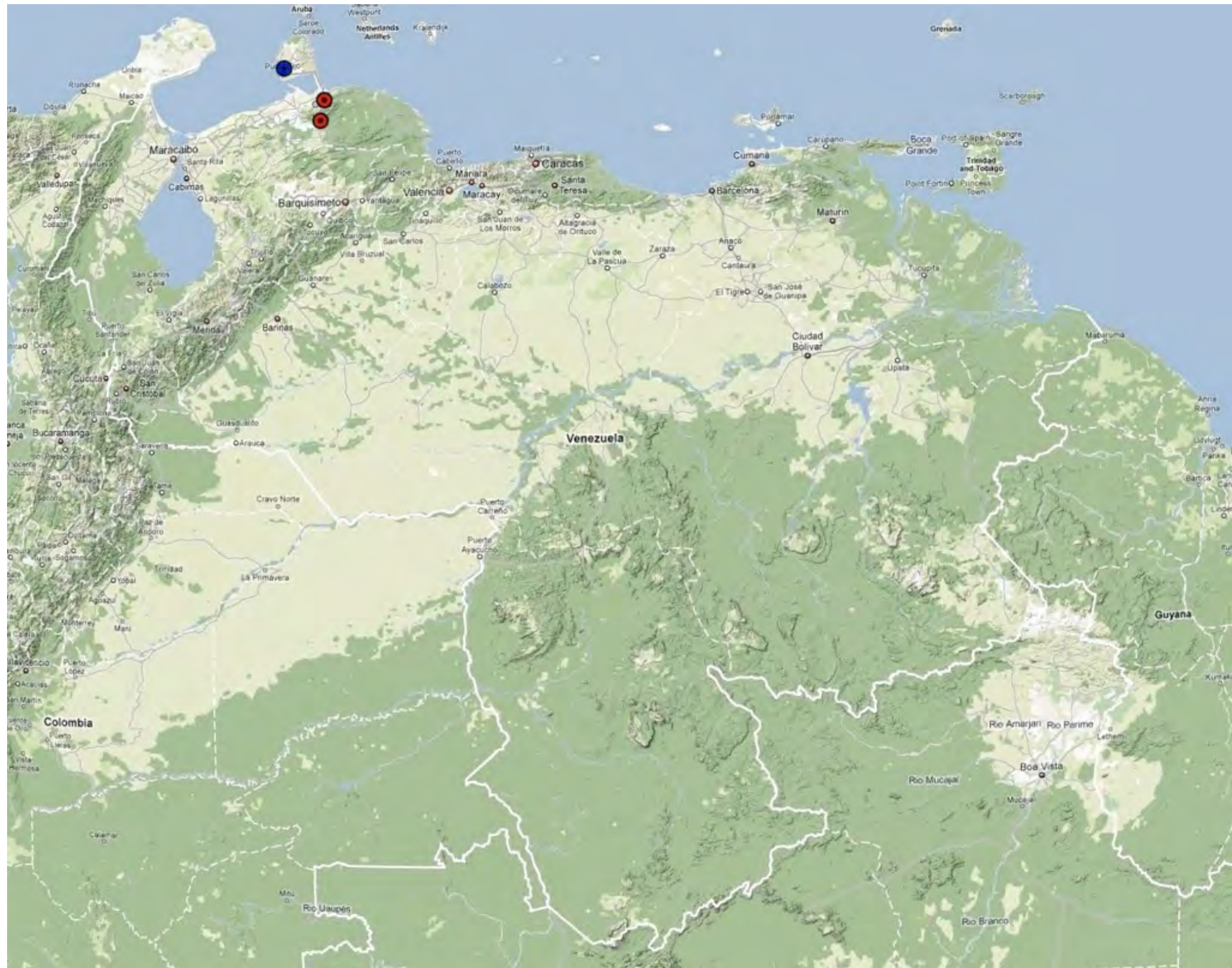


**Specimen-based approach: This event never happened!**





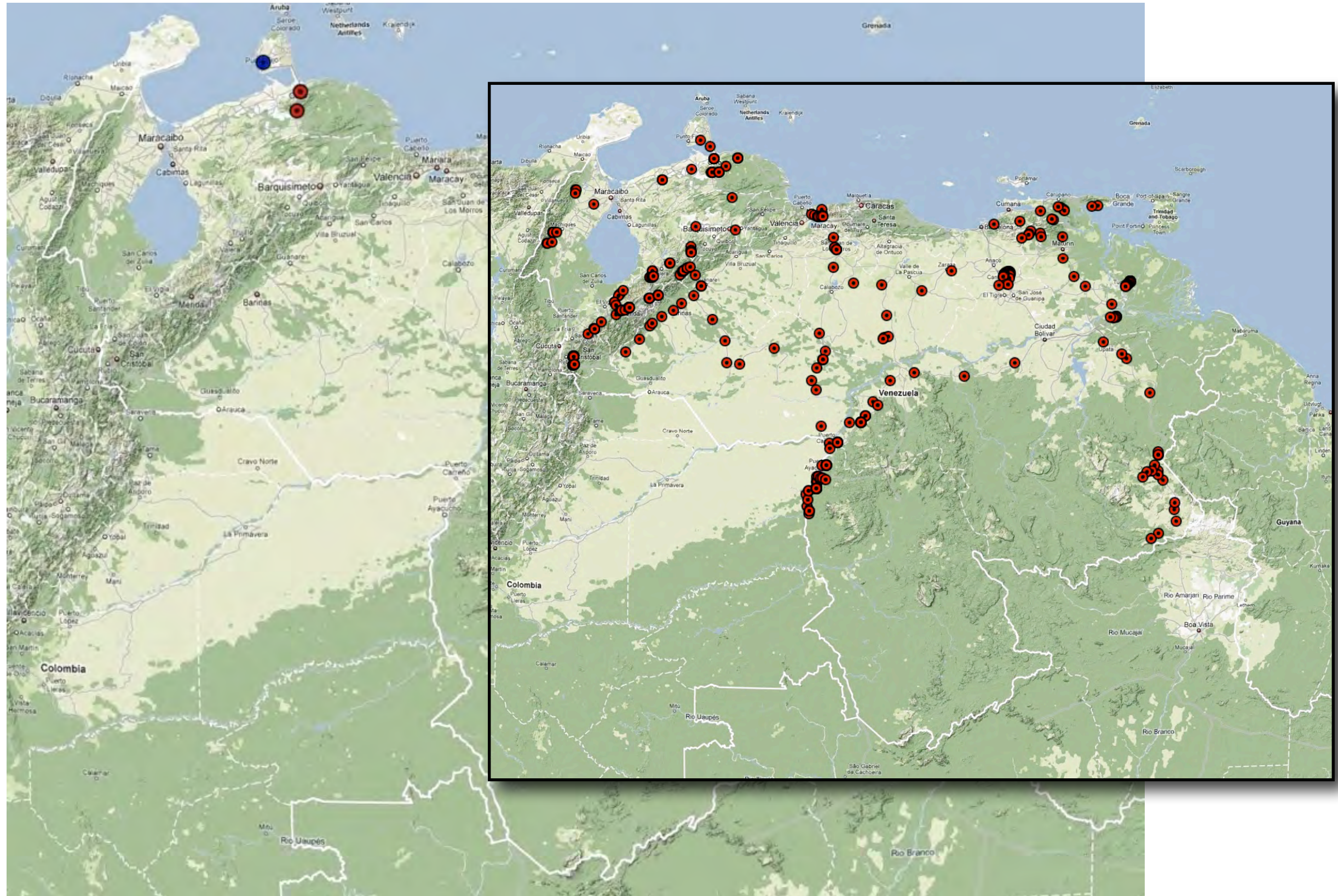
# *Tropisternus lateralis*







# *Tropisternus lateralis*





# Taking Field Notes






# Option 1: Blank notebooks

SR12-0312-01A

SR12-0312-01A - Rock Seepage on G!

Large Granite Exposure on side of mountain - mossy seepage covered in algae, etc. - D. in hot day they

12<sup>th</sup> - Return  
15-16 → overnight collecting. When it rains, active surface is seeping.

One "primary" seep and surrounding area I found lots of Tardigrades - at least 3 species perhaps more - 2 look like "spongy" from Vasezuela. Round black bodies with tiny head - one has red markings. The other is like the large shield-like one  - like Elytra. The latter kind is much less common. I also got some (few) Hydrocorydids, mostly by flotation. Atycids of several sizes common but spotty. Certain Acanthocarsi can be common around moss/plant patches. Got 1 of the large "New Canis" that carries eggs for 4 wks, and 4-5 more during the day by flotation near mats from saturated area. Perhaps one Chironomid? Oocysts were present but frustratingly sparse - at least 2 species. I collected 2 Bags of Algae take back. Things definitely more active at night, but still visible if you look close during the day (at least some Tardigrades).

SR12-0314-01A

SR12-0314-01A - Sandy stream by camp, day trail to helipad. Some Loricatids along muddy root margin. Along sand/detritus sandlot of Chironomids, some Hydracids, Echinids, - in detritus packed area, a # of small Dytiscids - including Laccophilus + lots of Sphaerids.

CAMP 3 - K

SR12-0319-01A

SR12-0319-01A - Pool in back by river. Anuraena + Dytiscids + 1 Echinid.

SR12-0320-01A

SR12-0320-01A - "Inlet" stream near camp on trail to METE

SR12-0314-LT1

SR12-0314-LT1 - UV light by camp 1 w/ tent - One night only.



# Option 2: Printed Datasheets

## GUYANA 2013: WWF EXPEDITION

Field Number: GY13- 1024-01 Date: 24 - X -2013 Start Time: \_\_\_\_\_ End Time: \_\_\_\_\_  
Country: GUYANA District: Region 9 Lat.: 2°50.159' N Long.: 59°59.425' W  
Elev.: 108 m GPS Error: +/- 5 m Extent: 20 m Photo: yes no  
Specific Locality: Takatu River (Border w/ Brazil) nr. Kusad Mts.  
General Site Description/Overview: Large (very large) river

Collection sub-code A: Collectors: Short Other Sherr:  
Description: Small (~2 square meter) pool just off of flow area in rocky margin, with some sand & detritus  
Taxa Collected: Amacoma, Berosus n. Hammon, Dytiscids (small B. tessellatus), Hydraena, Descluse

Collection sub-code B: Collectors: Short, Other Timothy  
Description: General collecting in River

Taxa Collected:

Collection sub-code C: Collectors: Short Other Sherr & Timothy Sherr:  
Description: Side area along margin on pool

Taxa Collected: Laccophilus -2 Amacoma -1 Hydraena -1  
Hammon -1 Sialis -2  
Descluse 2 Macanilla -1  
Dytiscids -1

# Specific Locality Info & Collections Description

## Field Notes

GUYANA 2014: WWF EXPEDITION: BAT II			
Field Number: GY14-	0312-01	Date: 12-14	-March-2014 Start Time: End Time
Country: GUYANA	District: Region 8	Lat.: 5°0.673' N	Long.: 59°38.358' W
Elev.: 500 m	GPS Error: +/- m	Extent: 25 m	Photo: <input checked="" type="checkbox"/> yes / no
Specific Locality: Upper Rotom Balcamp I			
General Site Description/Overview: Bay Balcamp, trail to Hammocks			
Collection sub-code A: Collectors: Short, Baca, Other Photo: <input checked="" type="checkbox"/> yes / no			
Description: Bottom Fruits of Clusia ("Koofo")			
Taxa Collected: Quadriops!! Hell Yes! Some Coelostomatini + Pelosoma (?)			
Collection sub-code B: Collectors: Short, Baca, Other Photo: yes / no			
Description: Abundant (hundreds) - used flotation bag to get them out + Pidgeon sticky fruits on log rot -			
Taxa Collected:			
Collection sub-code C: Collectors: Short, Baca, Other Photo: yes / no			
Description:			
Taxa Collected:			

# Pre-printed Field Labels

**SURINAME: Sipaliwini District**  
**SR10-\_\_\_\_\_**

**CI-RAP Expedition 2010**

**Each night:**  
**Data entered into Excel**  
**Spreadsheet is laid out in**  
**standard fields for import**  
**into Specify**



**Each night:  
Data entered into Excel**

**This is the time to start  
'cleaning' and standardizing  
your data**

# Each night: Data entered into Excel

near stream just N. of Basecamp I

1 km N. Basecamp, near stream

Stream N. of Basecamp I

Basecamp I, 1 km N, near stream

# Field Images

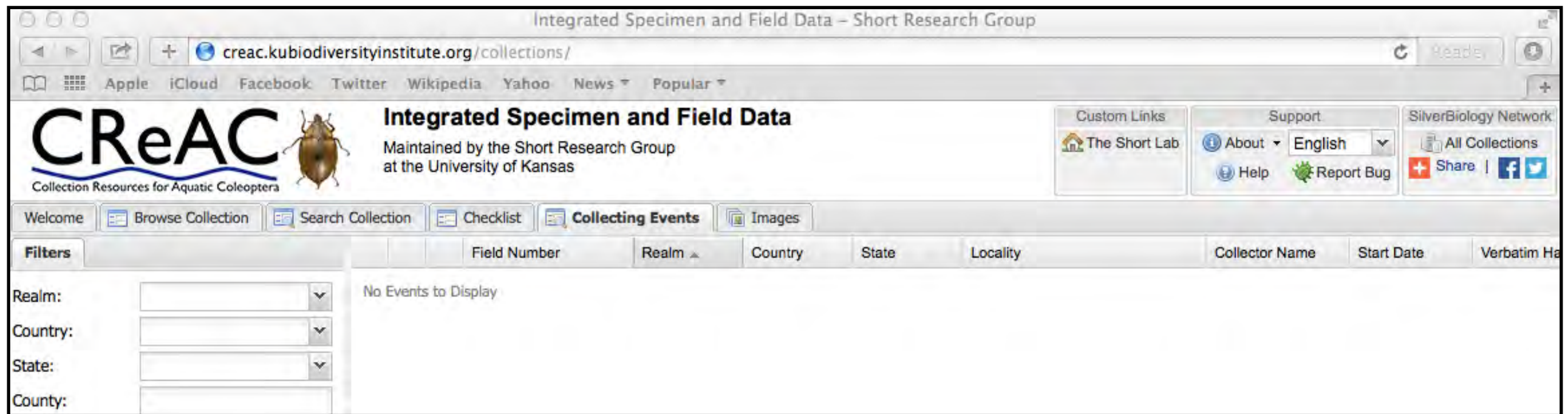


**GYI4-03I2-04A**



# Prior to & In the Field

- Pre-print Field Data sheets
- Pre-print Skeleton Field Data Labels
- Transcribe data into Excel every night
- Download-relabel images every few days



<http://creac.kubiodiversityinstitute.org/collections/>

Then you return home with your goods:



Managing Sample Processing...



# The First Sort



- To Mount
- To Freeze (DNA)
- Extra (Residue)

**Note: Sets of labels printed and put in every vial at this stage**





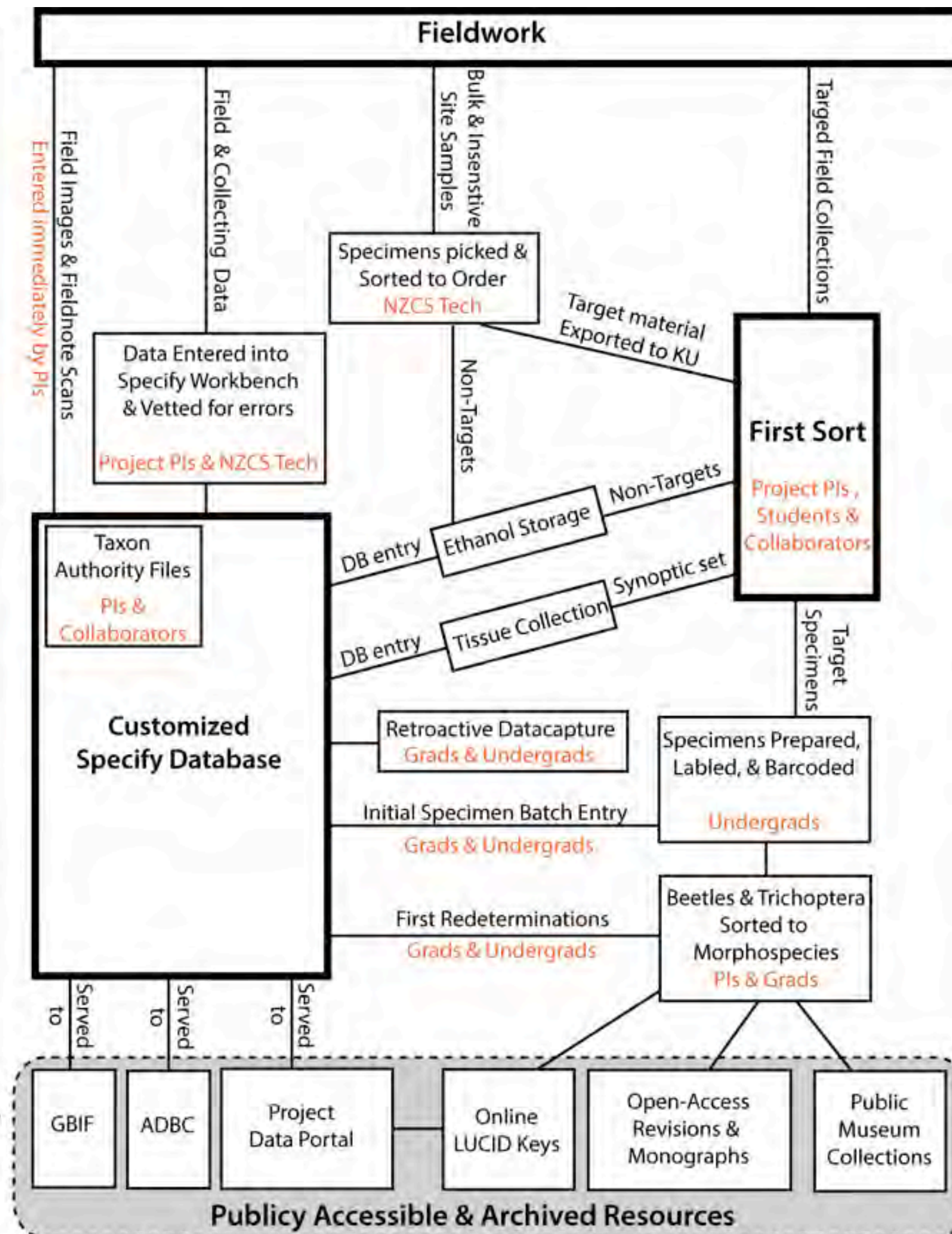


# Archiving DNA material



Each vial and its location is databased

WORKFLOW: From Fieldwork to Publicly Accessible Knowledge





Other:  
Retroactive  
Data Capture

# Step 1: Scan Notes

PJS-VZ-860224-1

DATE: 24 Feb. 86 COLLECTION #: 12 TIME: 12-3:00

LOCALITY: Country: V State/Dept.: T.F.A.

City: PUERTO AYACUCHO Latitude: 0 " Longitude: 0

~~1000~~ Kilometers N 6 E W: 40 River/Brook name: COCHIMOTO

COLLECTORS: PJS PHOTO: 3-5 Yes ☒ No ☐

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 ABOVE WATERMOST

AIR TEMPERATURE: 91 °F 33 °C WATER TEMPERATURE: 77 °F 25 °C PH: 5 on stream margin

OXYGEN: 12 ppm HARDNESS: 0 TURBIDITY: clear ALTITUDE: 0 ft/m

DEPTH: 1 m WIDTH: 3 m VELOCITY: 6 ft/sec. SHADE - SUNNY

SUBSTRATUM: Mud; gravel; sand; peaty; leafy; boulders; other GRANITE BEDROCK

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

ANIMAL ASSOCIATES:

Adults: SEVERAL genera of Elmids; 1 spm. of N. Family; 1 Lutrochus?; small convex (phaenoxetum like) hydrophilid; 1? hydraenid (in other vial); several genera? of Torridincolidae.

1 sphaeriid in small pool at shoreline in other glass vial with the N. Family! along a tiny hydroptilid larva & other tiny stuff.

Larvae numerous larvae

EST. # SPMS. 100±  
Actual - 216



# Step 2: Assign & Stamp Coll Event #s

PJS-VZ-860224-1

DATE: 24 Feb. 86 COLLECTION #: 12 TIME: 12-3:00

LOCALITY: Country: V State/Dept.: T.F.A.

City: POBORGAN Latitude: 0 " Longitude: 0

1.5 Kilometers N 6 E W: 40 River/Brook name: COCHINOTO

COLLECTORS: PJS PHOTO: 3-5 Yes No

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 ABOVE WATERMOST

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PJS-VZ-860224-1

# Step 2: Assign & Stamp Coll Event #s

PJS-VZ-860224-1

DATE: 24 Feb. 86 COLLECTION #: 12 TIME: 12-3:00

LOCALITY: Country: V State/Dept.: T.F.A.

City: PUERTO AYACUCHO Latitude: 0 " Longitude: 0

1.5 Kilometers N 6 E W: 40 River/Brook name: COCHIMOTO

COLLECTORS: PJS PHOTO: 3-5 Yes No

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

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AIR TEMPERATURE: 91 °F 33 °C WATER TEMPERATURE: 77 °F 25 °C pH: 5

OXYGEN: 12 ppm HARDNESS: 0 TURBIDITY: clear ALTITUDE: 0 ft/m

DEPTH: 1 m WIDTH: 3 m VELOCITY: 6 ft/sec. SHADE - SUNNY

SUBSTRATUM: Mud; gravel; sand; peaty; leafy; boulders; other GRANITE BEDROCK

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

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Larvae numerous larvae

EST. # SPMS. 100±  
Actual - 216

Collector

Date

PJS-VZ-860224-1

Country

Event



PJS-KE-680204-41968

36th day 330 days to come PJS-KE-680205-1

KENYA  
Nyeri  
II-4-68  
Blacklite  
Krambeint  
Spangler

perennial

Tachops - 19 Alcohol  
Hymenops - 1 Coleop - 58  
Coleop - 4  
Leps - 13  
37

PJS-KE-680204-5

KENYA - Aquatics - stream  
Nyeri approx. - 125  
II-4-68, stream  
P.J.S.

PJS-KE-680204-6

KENYA, 10 Mi. N.  
Thika, II-4-68  
P.J. Spangler

Hemips - 13  
Coleop - 2  
15

KENYA

17 Mi. S.  
Nanyuki  
II-5-68  
P.J.S.

PJS-KE-680205-2

KENYA  
10 Mi. S.  
Nanyuki  
II-5-68  
P.J.S.

PJS-KE-680205-3 - Clovinia

KENYA  
10 Mi. S.  
Nanyuki 2000  
II-5-68  
P.J.S.

PJS-KE-680205-4

KENYA  
17 Mi. S.  
Nanyuki  
II-5-68  
KVK

Hymenops - 10 (4 perennial)  
Dip - 8  
Hemips - 9  
Coleop - 11  
35

PJS-KE-680205-5

KENYA  
10 Mi. S.  
Nanyuki

Odonata - 7  
Hymenops - 21  
Hemips - 4  
Dip - 6  
m+d - 1

to Nairobi 1968 37th day 329 days to come NANYUKI  
Coordinates: 1°20'00"N 36°41'00"E  
Dec 99

Spercheus & eggs, Helochares & eggs,  
Enochrus, Copelatus, Rhantus  
Achthebus, Laccophilus, Biddeman  
Hygrobus, Reginbarta, Corisida  
Notonectidae, Laccotrepes.

Burguret River - Rhantus  
Biddeman, Enochrus, Helochares  
Achthebus, Elmide, Bembidean

Roadside supage area



PJS-KE-680204-4

68

PJS-KE-680205-1

KENYA

Nyeri

II-4-68

Blacklite

Kronbeint

Spangler

perman

Tachops - 19

Alcohol

Hymenops - 1

Coleops - 58

Coleops - 4

Leps - 13

37

KENYA

17 Mi. S.

Nanyuki

II-5-68

P.J.S.

to Nairobi

1968

37th day  
329 days to come

NANYUKI

Coordinates: 1°20'00"N  
36°41'00"E

Spercheus & eggs, Helochares & eggs,

Enochrus, Copelatus, Rhantus

Ochthebius, Laccophilus, Biddeman

Hygrotes, Rhyzobartus, Corisids

Notonectidae, Laccotrepes

PJS-KE-680205-2

PJS-KE-680204-5

KENYA

Nyeri

II-4-68

stream

P.J.S.

- Aquatics - stream

approx. - 125

KENYA

10 Mi. S.

Nanyuki

II-5-68

P.J.S.

Burguret River - Rhantus

Biddeman, Enochrus, Helochares

Ochthebius, Elmuds, Bembidean

Glovinia

PJS-KE-680205-3

PJS-KE-680204-6

KENYA, 10 Mi. N.

Thika, II-4-68

P.J. Spangler

Hemips - 13

Coleops - 2

15

KENYA

10 Mi. S.

Nanyuki

II-5-68

P.J.S.

Roadside supage area

PJS-KE-680205-4

KENYA

17 Mi. S.

Nanyuki

II-5-68

P.J.S.

Hymenops - 10 (4 permanent)

Dip - 8

Hemips - 9

Coleops - 11

35

PJS-KE-680205-5

KENYA

10 Mi. S.

Nanyuki

tonata - 7

Hymenops - 21

Hemips - 4

Dip - 6

total - 1



# Step 3: Digitize Data + QC

PJS-VZ-860224-1

DATE: 24 Feb. 86 COLLECTION #: 12 TIME: 12-3:00

LOCALITY: Country: V  
 City: TOBOGAN Latitude: 40  
40 Kilometers N 6 E W: 40

COLLECTORS: PJS

COLL'N METHOD: Dipnet; seine; bklt  
 pitfall trap

HABITAT: Stream; pond; lake; r  
 waterfall; in bromeliad; brackish  
 crab hole; side pool of stream;  
 woodland pond; pothole; culvert;

AIR TEMPERATURE: 91 PO WA  
33 °C

OXYGEN: 12 ppm HARDNESS: 0

DEPTH: 1 m WIDTH: 3 m

SUBSTRATUM: Mud; gravel; sand

SOIL COLOR: Red; yellow; black;

PLANT ASSOCIATES: Alisma; Altern  
 Chara; Cephalanthus; Eichornia;  
 Isoetes; Jussiaea; Lemna; Ludw  
 Nitella; Nymphae; Pistia; Polyg  
 Ranunculus; Rhizophora; Riccia;  
 Spirogyra; Taxodium; Typha; Tra  
 other

ANIMAL ASSOCIATES:  
 Adults: SEVERAL Genera of E  
 ?; small convex (phaenostom  
 several genera? of Torridincolide  
 1 sphaeriid in small pool a  
 the W. Family! along a tiny hydropt  
 Larvae Numerous larvae

Code	Start Date	Country	State	City/ Locality String
PJS-VZ-860219-1	19.II.1986	Venezuela	Amazonas	Tobogan, 40 km S of
PJS-VZ-860220-1	20.II.1986	Venezuela	Amazonas	Gavilan, 37 km SE of
PJS-VZ-860220-2	20.II.1986	Venezuela	Amazonas	Gavilan, 35 km SE of
PJS-VZ-860220-3	20.II.1986	Venezuela	Amazonas	15 km S of Puerto Aya
PJS-VZ-860220-4	20.II.1986	Venezuela	Amazonas	29 km S of Puerto Aya
PJS-VZ-860222-1	22.II.1986	Venezuela	Amazonas	Tobogan, 40 km S of
PJS-VZ-860222-2	22.II.1986	Venezuela	Amazonas	Tobogan, 40 km S of
PJS-VZ-860222-3	22.II.1986	Venezuela	Amazonas	Tobogan, 40 km S of
PJS-VZ-860222-4	22.II.1986	Venezuela	Amazonas	Tobogan, 40 km S of
PJS-VZ-860223-1	23.II.1986	Venezuela	Amazonas	Tobogan, 40 km S of
PJS-VZ-860223-2	23.II.1986	Venezuela	Amazonas	Tobogan, 40 km S of
PJS-VZ-860224-1	24.II.1986	Venezuela	Amazonas	Tobogan, 40 km S of
PJS-VZ-860224-2	24.II.1986	Venezuela	Amazonas	Tobogan, 40 km S of
PJS-VZ-860225-1	25.II.1986	Venezuela	Amazonas	Tobogan, 40 km S of
PJS-VZ-860225-2	25.II.1986	Venezuela	Amazonas	Tobogan, 40 km S of
PJS-VZ-860225-3	25.II.1986	Venezuela	Amazonas	Tobogan, 40 km S of
PJS-VZ-860226-1	26.II.1986	Venezuela	Amazonas	29 km S of Puerto Aya
PJS-VZ-860226-2	26.II.1986	Venezuela	Amazonas	Tobogan, 40 km S of
PJS-VZ-860226-3	26.II.1986	Venezuela	Amazonas	Tobogan, 40 km S of
PJS-VZ-860227-1	27.II.1986	Venezuela	Amazonas	Tobogan, 40 km S of
PJS-VZ-860228-1	28.II.1986	Venezuela	Amazonas	Tobogan, 40 km S of
PJS-VZ-860304-1	04.III.1986	Venezuela	Guarico	Hato Masaguaral, 44
PJS-VZ-860305-1	05.III.1986	Venezuela	Guarico	Hato Masaguaral, 44
PJS-VZ-860305-2	05.III.1986	Venezuela	Guarico	Hato Masaguaral, 40
PJS-VZ-860305-3	05.III.1986	Venezuela	Guarico	Hato Masaguaral, 44
PJS-VZ-860305-4	05.III.1986	Venezuela	Guarico	Hato Masaguaral
PJS-VZ-860306-1	06.III.1986	Venezuela	Guarico	Hato Masaguaral, 44
PJS-VZ-860306-2	06.III.1986	Venezuela	Guarico	Hato Masaguaral, 44
PJS-VZ-860306-3	06.III.1986	Venezuela	Guarico	Hato Masaguaral
PJS-VZ-860306-4	06.III.1986	Venezuela	Guarico	Hato Masaguaral, 44
PJS-VZ-860307-1	07.III.1986	Venezuela	Guarico	Hato Masaguaral
PJS-VZ-860307-2	07.III.1986	Venezuela	Guarico	Hato Masaguaral
PJS-VZ-860308-1	08.III.1986	Venezuela	Guarico	16 km S of Calabozo
PJS-VZ-860309-1	09.III.1986	Venezuela	Guarico	16 km S of Calabozo



# Step 3: Digitize Data + QC

PJS-VZ-860224-1

DATE: 24 Feb. 86 COLLECTION #: 12 TIME: 12-3:00

LOCALITY: Country: V  
 City: TOBOGAN Latitude: 40  
40 Kilometers N 6 E W: 40

COLLECTORS: PJS

COLL'N METHOD: Dipnet; seine; bkkl  
 pitfall trap

HABITAT: Stream; pond; lake; r  
 waterfall; in bromeliad; brackish  
 crab hole; side pool of stream;  
 woodland pond; pothole; culvert;

AIR TEMPERATURE: 91 PO WA  
33 °C

OXYGEN: 12 ppm HARDNESS: 0

DEPTH: 1 m WIDTH: 3 m

SUBSTRATUM: Mud; gravel; sand

SOIL COLOR: Red; yellow; black;

PLANT ASSOCIATES: Alisma; Altern  
 Chara; Cephalanthus; Eichornia;  
 Isoetes; Jussiaea; Lemna; Ludwi  
 Nitella; Nymphae; Pistia; Polyg  
 Ranunculus; Rhizophora; Riccia;  
 Spirogyra; Taxodium; Typha; Tra  
 other

ANIMAL ASSOCIATES:  
 Adults: SEVERAL Genera of E  
 ? small convex (phaenostom  
 several genera? of Torridincolide  
 1 sphaeriid in small pool a  
 the W. Family! along a tiny hydropt

Code	Start Date	Country	State	City/ Locality String
PJS-VZ-860219-1	19.II.1986	Venezuela	Amazonas	Tobogan, 40 km S of
PJS-VZ-860220-1	20.II.1986	Venezuela	Amazonas	Gavilan, 37 km SE of
PJS-VZ-860220-2	20.II.1986	Venezuela	Amazonas	Gavilan, 35 km SE of
PJS-VZ-860220-3	20.II.1986	Venezuela	Amazonas	15 km S of Puerto Aya
PJS-VZ-860220-4	20.II.1986	Venezuela	Amazonas	29 km S of Puerto Aya
PJS-VZ-860222-1	22.II.1986	Venezuela	Amazonas	Tobogan, 40 km S of
PJS-VZ-860222-2	22.II.1986	Venezuela	Amazonas	Tobogan, 40 km S of
PJS-VZ-860222-3	22.II.1986	Venezuela	Amazonas	Tobogan, 40 km S of
PJS-VZ-860222-4	22.II.1986	Venezuela	Amazonas	Tobogan, 40 km S of
PJS-VZ-860223-1	23.II.1986	Venezuela	Amazonas	Tobogan, 40 km S of
PJS-VZ-860223-2	23.II.1986	Venezuela	Amazonas	Tobogan, 40 km S of
PJS-VZ-860224-1	24.II.1986	Venezuela	Amazonas	Tobogan, 40 km S of
PJS-VZ-860224-2	24.II.1986	Venezuela	Amazonas	Tobogan, 40 km S of
PJS-VZ-860225-1	25.II.1986	Venezuela	Amazonas	Tobogan, 40 km S of
PJS-VZ-860225-2	25.II.1986	Venezuela	Amazonas	Tobogan, 40 km S of
PJS-VZ-860225-3	25.II.1986	Venezuela	Amazonas	Tobogan, 40 km S of
PJS-VZ-860226-1	26.II.1986	Venezuela	Amazonas	29 km S of Puerto Aya
PJS-VZ-860226-2	26.II.1986	Venezuela	Amazonas	Tobogan, 40 km S of
PJS-VZ-860226-3	26.II.1986	Venezuela	Amazonas	Tobogan, 40 km S of
PJS-VZ-860227-1	27.II.1986	Venezuela	Amazonas	Tobogan, 40 km S of
PJS-VZ-860228-1	28.II.1986	Venezuela	Amazonas	Tobogan, 40 km S of
PJS-VZ-860304-1	04.III.1986	Venezuela	Guarico	Hato Masaguaral, 44
PJS-VZ-860305-1	05.III.1986	Venezuela	Guarico	Hato Masaguaral, 44
PJS-VZ-860305-2	05.III.1986	Venezuela	Guarico	Hato Masaguaral, 40
PJS-VZ-860305-3	05.III.1986	Venezuela	Guarico	Hato Masaguaral, 44
PJS-VZ-860305-4	05.III.1986	Venezuela	Guarico	Hato Masaguaral
PJS-VZ-860306-1	06.III.1986	Venezuela	Guarico	Hato Masaguaral, 44
PJS-VZ-860306-2	06.III.1986	Venezuela	Guarico	Hato Masaguaral, 44
				Hato Masaguaral
				Hato Masaguaral, 44
				Hato Masaguaral
				Hato Masaguaral
				16 km S of Calabozo
				16 km S of Calabozo

**Note: we use a remarks field to record “original errors” & label/ note discrepancies**



## Step 4: Georeference as necessary

PJS-VZ-860224-1

DATE: 24 Feb. 86 COLLECTION #: \_\_\_\_\_

LOCALITY: Country: V  
City: TOBAGO PORT KAITUMA Latitude \_\_\_\_\_  
Kilometers N 6 E W: 40

COLLECTORS: PJS

COLL'N METHOD: Dipnet; seine; blk  
pitfall trap

HABITAT: Stream; pond; lake; re  
waterfall; in bromeliad; brackish  
crab hole; side pool of stream;  
woodland pond; pothole; culvert;

AIR TEMPERATURE: 91 PO WAT  
= 33 °C

OXYGEN: 12 ppm HARDNESS: 0  
to 1 m

DEPTH: 1 m WIDTH: 3 m

SUBSTRATUM: Mud; gravel; sand

SOIL COLOR: Red; yellow; black;

PLANT ASSOCIATES: Alisma; Alternanthera;  
Chara; Cephalanthus; Eichornia;  
Isoetes; Jussiaea; Lemna; Ludwigia;  
Nitella; Nymphaea; Pistia; Polygala;  
Ranunculus; Rhizophora; Riccia;  
Spirogyra; Taxodium; Typha; Tradescantia;  
other \_\_\_\_\_

ANIMAL ASSOCIATES:

Adults: SEVERAL Genera of E  
?, small convex (Phaenoxystus) !  
several genera? of Torridincolidae

1 sphaeriid in small pool !  
the N. Family! along to tiny hydropt

Larvae numerous larvae

Code  
PJS-VZ-860219-1  
PJS-VZ-860220-1  
PJS-VZ-860220-2  
PJS-VZ-860220-3  
PJS-VZ-860220-4  
PJS-VZ-860222-1  
PJS-VZ-860222-2  
PJS-VZ-860222-3  
PJS-VZ-860222-4  
PJS-VZ-860223-1  
PJS-VZ-860223-2  
PJS-VZ-860224-1  
PJS-VZ-860224-2  
PJS-VZ-860225-1  
PJS-VZ-860225-2  
PJS-VZ-860225-3  
PJS-VZ-860226-1  
PJS-VZ-860226-2  
PJS-VZ-860226-3  
PJS-VZ-860227-1  
PJS-VZ-860228-1  
PJS-VZ-860304-1  
PJS-VZ-860305-1  
PJS-VZ-860305-2  
PJS-VZ-860305-3  
PJS-VZ-860305-4  
PJS-VZ-860306-1  
PJS-VZ-860306-2  
PJS-VZ-860306-3  
PJS-VZ-860306-4  
PJS-VZ-860307-1  
PJS-VZ-860307-2  
PJS-VZ-860308-1  
PJS-VZ-860309-1





PJS-KE-680204-4

68

PJS-KE-680205-1

KENYA

Nyeri

II-4-68

Blacklite

Kronbeint

Spangler

perman

Trichops - 19

Alcohol

Hymenops - 1

Coleops - 58

Coleops - 4

Leps - 13

37

KENYA

17 Mi. S.

Nanyuki

II-5-68

P.J.S.

to Nairobi

1968

37th day  
329 days to come

NANYUKI

Coordinates: 1°20'00"N  
36°41'00"E

Spercheus & eggs, Helochares & eggs,

Enochrus, Copelatus, Rhantus

Ochthebius, Laccophilus, Biddeman

Hygrotes, Rhyzobartus, Corisids

Notonectidae, Laccotrepes

PJS-KE-680205-2

PJS-KE-680204-5

KENYA

Nyeri

II-4-68, stream

P.J.S.

- Aquatics - stream

approx. - 125

KENYA

10 Mi. S.

Nanyuki

II-5-68

P.J.S.

(Burguret River) - Rhantus

Biddeman, Enochrus, Helochares

Ochthebius, Elmuds, Bembidean

Glovinia

PJS-KE-680205-3

PJS-KE-680204-6

KENYA, 10 Mi. N.

Thika, II-4-68

P.J. Spangler

Hemips - 13

Coleops - 2

15

KENYA

10 Mi. S.

Nanyuki

II-5-68

P.J.S.

2000

Roadside supage area

PJS-KE-680205-4

KENYA

17 Mi. S.

Nanyuki

II-5-68

P.J.S.

Hymenops - 10 (4 permanent)

Dip - 8

Hemips - 9

Coleops - 11

35

PJS-KE-680205-5

KENYA

10 Mi. S.

Nanyuki

tonate - 7

Hymenops - 21

Hemips - 4

Dip - 6

total - 1



# Step 5: Associate Specimens

## Actual Label:

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



PJS-VZ-860305-?

## Create Query

- Agent
- Collecting Information
- Collection Object
- Loan
- Locality
- Taxon
- More Tables

## Saved Queries

- Agent Query
- Basic Specimen query
- General Collecting Information Query
- General Collection Object Query
- General Locality Query
- Habitat Classification Query
- Short Query 1
- Taxon Query
- Waterbody Query

## Collecting Information

- ✓ Coll Event #
- Collecting Event Attachments
- Collecting Event Attribute
- Collection Objects
- Collectors
- Created
- ✓ End Date
- End Date (Day)

Search For Event

		Not	Operator	Criteria	Sort	Show	Prompt	Always	
CE	Coll Event #	<input type="checkbox"/>	Contains	860305	<input checked="" type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="X"/>
CE	Orig Field #	<input type="checkbox"/>	Contains		<input checked="" type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="X"/>
CE	Start Date	<input type="checkbox"/>	=		<input checked="" type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="X"/>
CE	End Date	<input type="checkbox"/>	=		<input checked="" type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="X"/>
Loc	Locality Name	<input type="checkbox"/>	Contains		<input checked="" type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="X"/>
Geo	State	<input type="checkbox"/>	=		<input checked="" type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="X"/>
Geo	Country	<input type="checkbox"/>	=		<input checked="" type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="X"/>
CE	Method	<input type="checkbox"/>	=		<input checked="" type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="X"/>
Ag	First Name	<input type="checkbox"/>	Contains		<input checked="" type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="X"/>
Ag	Last Name	<input type="checkbox"/>	Contains		<input checked="" type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="X"/>
CE	Habitat Classification	<input type="checkbox"/>	=		<input checked="" type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="X"/>
	Original Filename	<input type="checkbox"/>	Contains		<input checked="" type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="button" value="X"/>



Trash

☒ Search Synonyms ☐ Distinct ☐ Count



## Record Sets

## ▼ Search Results - 4

Coll Event #	Orig Field #	Start Date	End Date	Locality Name	State	Country	Method	First Name	Last Name	Original Filename
PJS-VZ-860305-1	23	03/05/1986	03/05/1986	Hato Masaguaral, 44 km S of Calabozo	Guarico	Venezuela			unspecified_Spangler	S:\Creac\PJS-VZ-860305-1FN.p
PJS-VZ-860305-2	24	03/05/1986	03/05/1986	Hato Masaguaral, 40 km S of Calabozo	Guarico	Venezuela	dipnet		unspecified_Spangler	S:\Creac\PJS-VZ-860305-2FN.p
PJS-VZ-860305-3	25	03/05/1986	03/05/1986	Hato Masaguaral, 44 km S of Calabozo, Gate Lagoon	Guarico	Venezuela			unspecified_Spangler	S:\Creac\PJS-VZ-860305-3FN.p
PJS-VZ-860305-4	26	03/05/1986	03/05/1986	Hato Masaguaral	Guarico	Venezuela			unspecified_Spangler	S:\Creac\PJS-VZ-860305-4FN.p



Select All

Deselect All



Tell me more about these results



Trash

## Record Sets

## Search Results - 4

Coll Event #	Orig Field #	Start Date	End Date	Locality Name	State	Country	Method	First Name	Last Name	Original Filename
PJS-VZ-860305-1	23	03/05/1986	03/05/1986	Hato Masaguaral, 44 km S of Calabozo	Guarico	Venezuela			unspecified_Spangler	S:\Creac\PJS-VZ-860305-1FN.p
PJS-VZ-860305-2	24	03/05/1986	03/05/1986	Hato Masaguaral, 40 km S of Calabozo	Guarico	Venezuela	dipnet		unspecified_Spangler	S:\Creac\PJS-VZ-860305-2FN.p
PJS-VZ-860305-3	25	03/05/1986	03/05/1986	Hato Masaguaral, 44 km S of Calabozo, Gate Lagoon	Guarico	Venezuela			unspecified_Spangler	S:\Creac\PJS-VZ-860305-3FN.p
PJS-VZ-860305-4	26	03/05/1986	03/05/1986	Hato Masaguaral	Guarico	Venezuela			unspecified_Spangler	S:\Creac\PJS-VZ-860305-4FN.p

Select All

Deselect All

? Tell me more about these results

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



Trash



Specify 6.4.11

WelcomeDataTreesReportsInteractionsStatisticsQueryWorkbench

q

Record Sets

Search Results - 4

Coll Event #	Orig Field #	Start Date	End Date	Locality Name	State	Country	Method	First Name	Last Name	Original Filename
PJS-VZ-860305-1	23	03/05/1986	03/05/1986	Hato Masaguaral, 44 km S of Calabozo	Guarico	Venezuela			unspecified_Spangler	S:\Creac\PJS-VZ-860305-1FN.p
PJS-VZ-860305-2	24	03/05/1986	03/05/1986	Hato Masaguaral, 40 km S of Calabozo	Guarico	Venezuela	dipnet		unspecified_Spangler	S:\Creac\PJS-VZ-860305-2FN.p
PJS-VZ-860305-3	25	03/05/1986	03/05/1986	Hato Masaguaral, 44 km S of Calabozo, Gate Lagoon	Guarico	Venezuela			unspecified_Spangler	S:\Creac\PJS-VZ-860305-3FN.p
PJS-VZ-860305-4	26	03/05/1986	03/05/1986	Hato Masaguaral	Guarico	Venezuela			unspecified_Spangler	S:\Creac\PJS-VZ-860305-4FN.p

Select All

Deselect All

?

Tell me more about these results

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

Trash

WelcomeGeneral Collecting Information QueryCollecting InformationQuery Results

EntomologyCREACaezshort

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

PJS-VZ-860305-2

DATE: 5 Nov 86 COLLECTION #: 24 TIME: 0915

LOCALITY: Country: Venez. State/Dept.: 70  
Zulia

City: Calderon Latitude:      °      " Longitude:      °      "

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

COLLECTORS: \_\_\_\_\_ PHOTO: ☒ Yes ☐ No

Carla on east side of highway at Parakee Rd. and study area.

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

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; Nymphaea; Pistia; Polygonum; Potamogeton; Proserpinaca;  
Ranunculus; Rhizophora; Riccia; Ruppia; Sagittaria; Salvinia; Scirpus;  
Spirogyra; Taxodium; Typha; Trapa; Utricularia; Wolffia;  
other

ANIMAL ASSOCIATES: INCREDIBLY RICH!

[illegible]

*Euphorbia, Hydrocotyle,  
Rorippa, Pilea?*

### Larvae

EST. # SPMS. 3000  
5460

\*: end of 1 roll of 400 X + first few of 100 X roll - pond  $\bar{c}$  Purton  
in 2 plastic bottles

PJS-VZ-860305-2

COLLEOPTERA

Aquatic

Helobata	3
Helochaetes	6
Enochaetes	11 A
	2 L
Berosus	1
Tropestermus (3 sp.)	22
Derallus	365
Hydrochus	97

Laccophilus 162 + 2  
Laccominus 8 A

Macroretallus	4
Deroretallus	7
Thermonectus	4
Dibolocelus	1
Copelatus	4
Celina	1

Anodonta (25) 33  
Neobidessus 107  
" 1

Pachydus	12
Desmopachia	201
Bidessodes	31
"	896
"	2028
Microbidessus	1

Notomierus	13
Suphis 2	1
Hydrocanthus	7
Suphisellus	11
"	654
"	16
"	17

Hydraena

TERRES

Helodid 2 13

## HEMIPTERA

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

 $\tau = 10$ 

DIPTERA

ARACHNID

5460



**So, what cool  
things can we  
do with all this  
fine-scale data?**

# Bonus Step: Ecological Classification

All Events Assigned one of the following:

Lotic

Lentic (general)

Lentic (riparian)

Hygropetric

Phytotelmata

Non-Aquatic

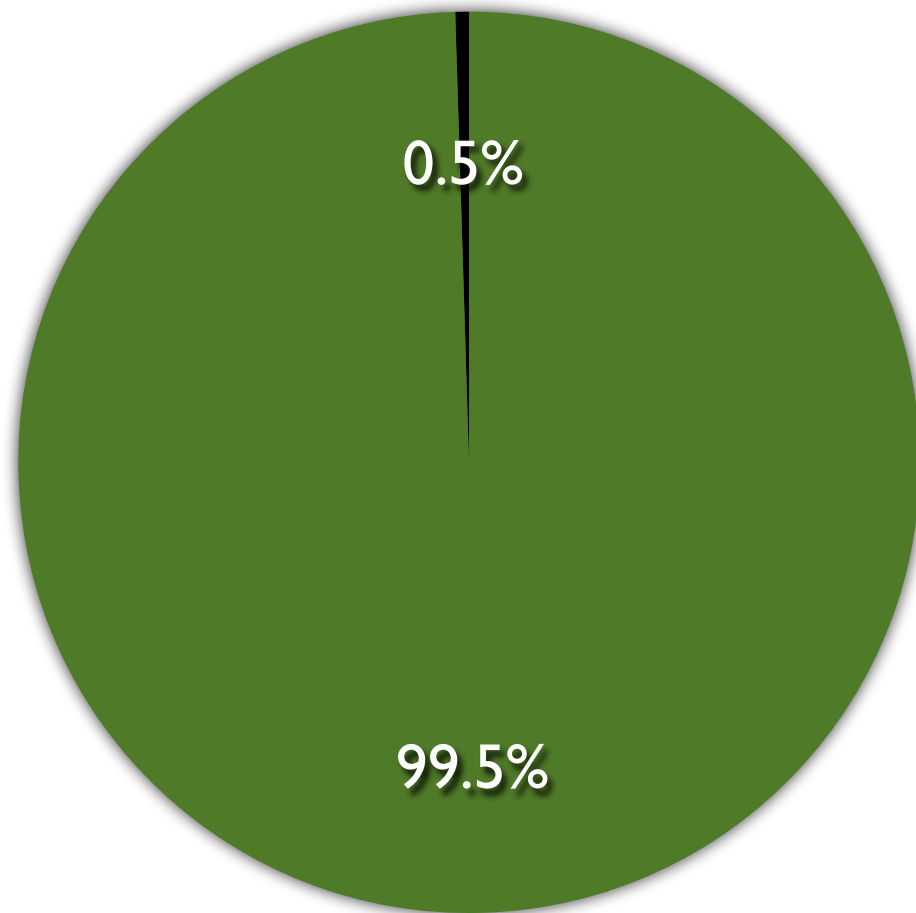
Passive Trapping

Unspecified



# CReAC

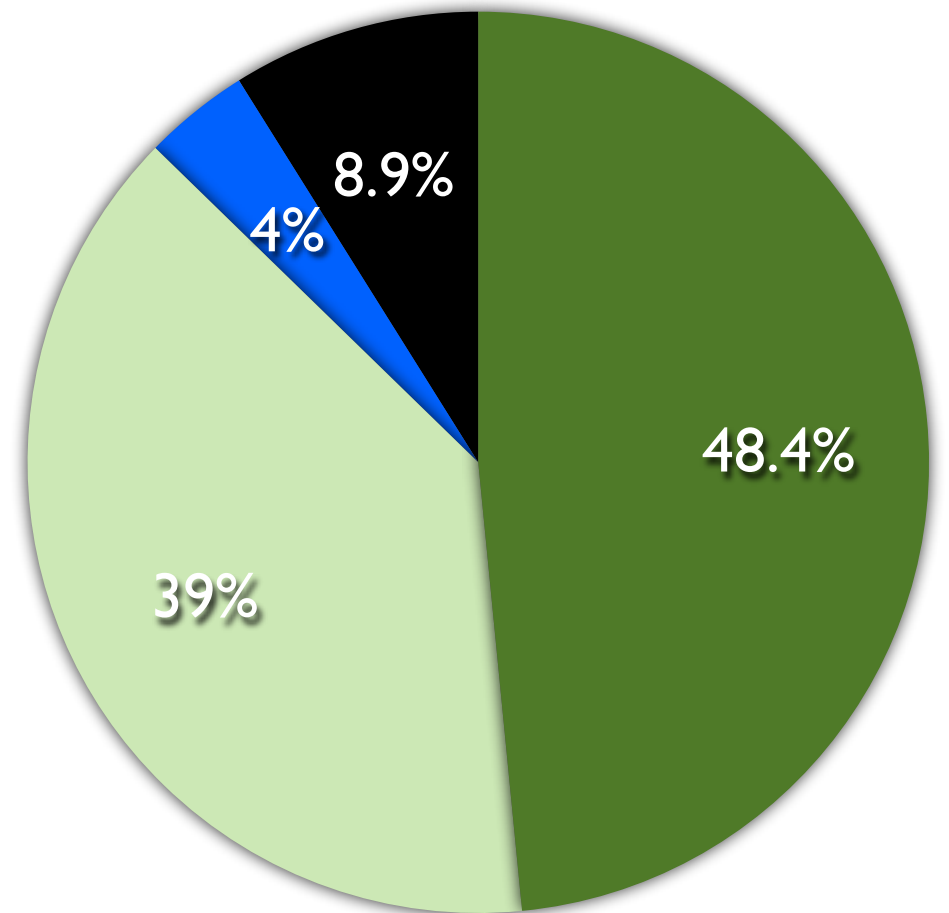
Collection Resources for Aquatic Coleoptera



n=1631

*Tropisternus apicipalpis*  
(Hydrophilidae)

- Lentic (General)
- Lentic (Riparian)
- Lotic
- Hygropetric
- Pytotelmata
- Terrestrial
- Passive Trapping
- Unknown



n=1001

*Tropisternus chalybeus*  
(Hydrophilidae)



Phylum:

Class:

Order:

Family:

Genus:

Species:

Country:

State:

County:

Locality:

Catalog #:

Collector:

Collector #:

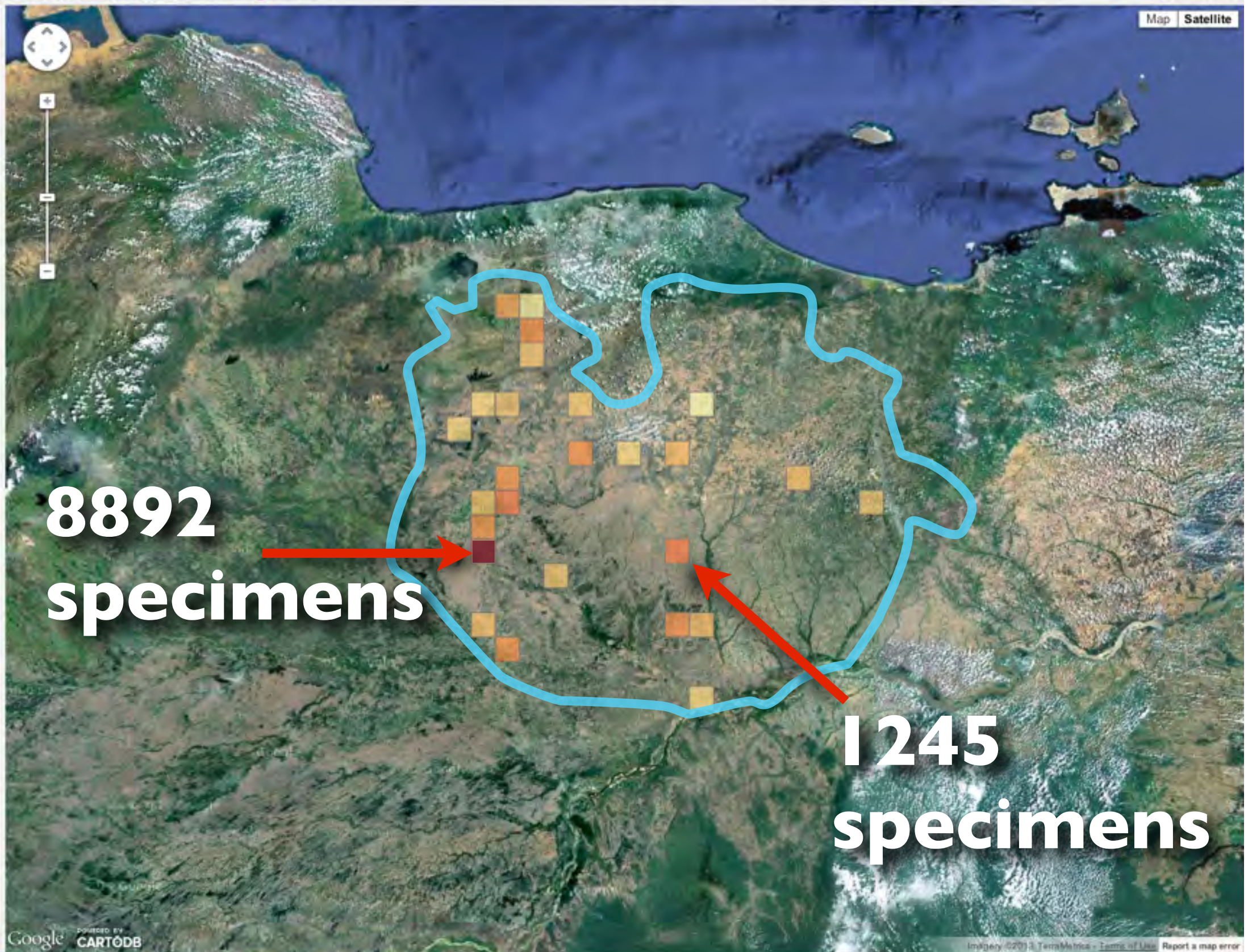
Collected Start:

Collected End:

Type Status:

Images:

Coordinates:



**8892  
specimens**

**1245  
specimens**



Phylum:

Class:

Order:

Family:

Genus:

Species:

Country:

State:

County:

Locality:

Catalog #:

Collector:

Collector #:

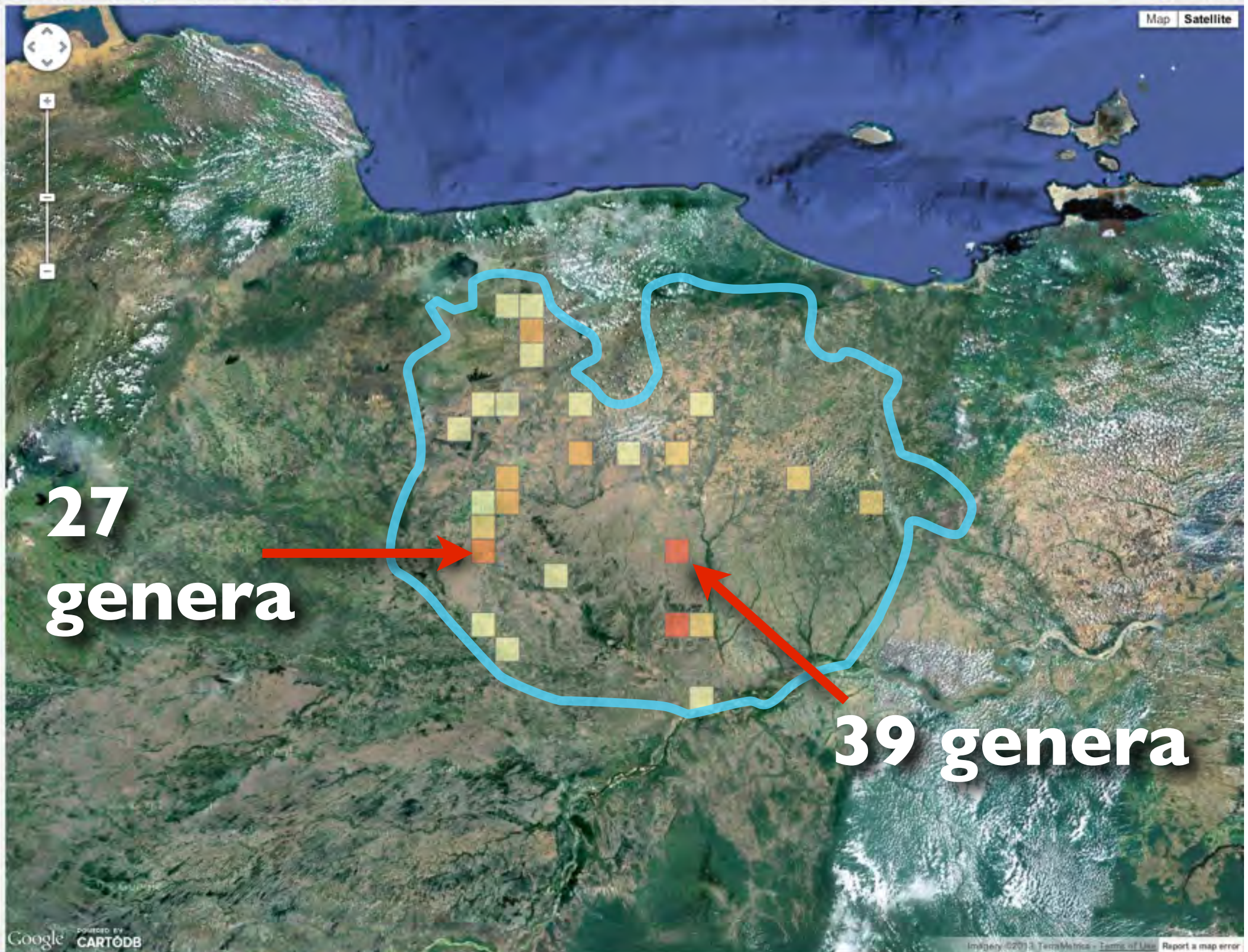
Collected Start:

Collected End:

Type Status:

Images:

Coordinates:



**27  
genera**

**39 genera**



# Predicted Potential Species-Richness Estimate

