

What is a Collecting Event?

A unique combination of collection data

Example: Locality+Date+Habitat+Method



What is a Collecting Event?

A unique combination of collection data

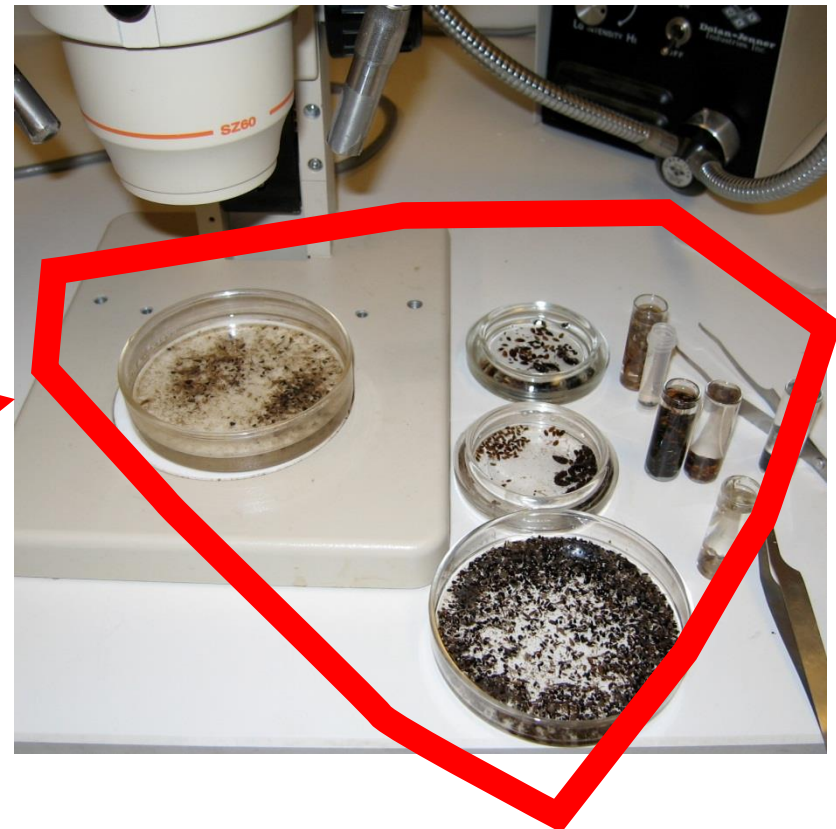
Example: Locality+Date+Habitat+Method



What is a Collecting Event?

A unique combination of collection data

Example: Locality+Date+Habitat+Method



Databasing Approaches

Specimen Based: Data attached to
Specimens

vs.

Event Based: Specimens attached to Data

Why a collecting event approach?

- efficiency & accuracy
- distinguish true absences from collecting artifacts
 - voucher biological observations

Visualizing Absence Data

- Allows for a clear picture of where specimens have been collected vs. where collection attempts were made
- No ecological data is lost
- Provides tools to investigate why specimens occur in some habitats or regions but not others

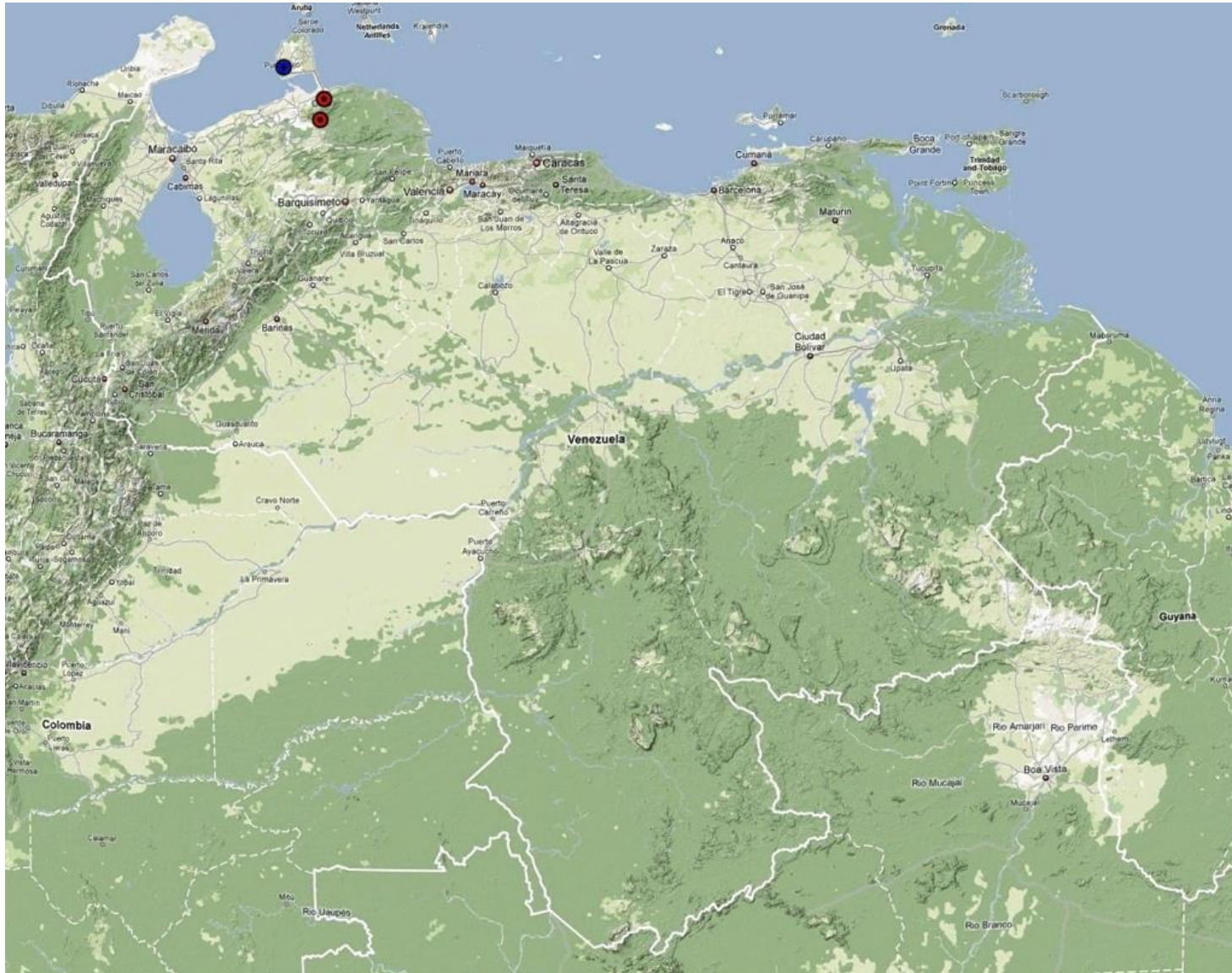
Specimens vs Events



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

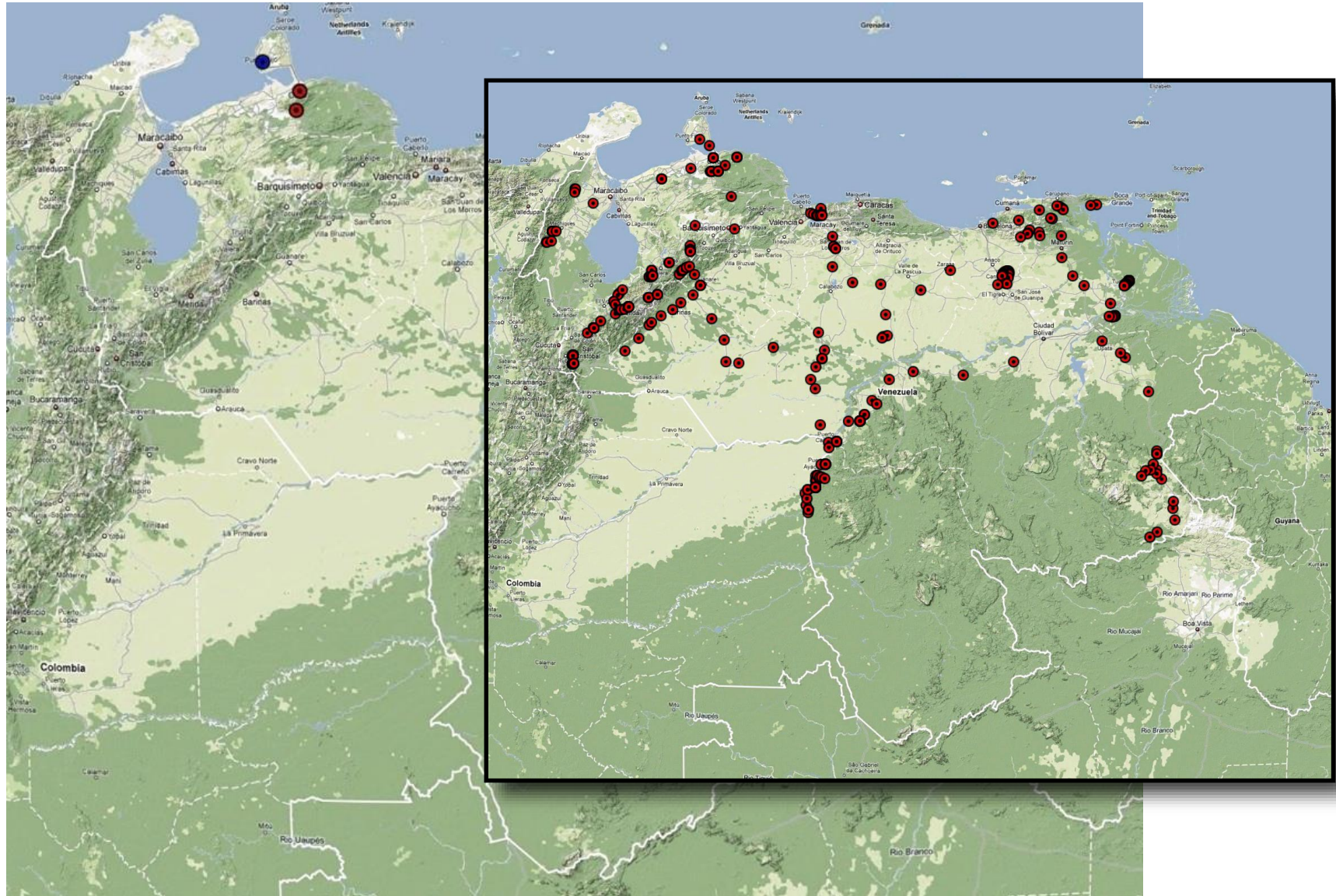


Tropisternus lateralis





Tropisternus lateralis



CR_eAC

Collection **R**esources for **A**quatic **C**oleoptera

Current Stats:


- 144,000 specimens
- Original Field notes from c. 2500 events
- More than 3000 habitat photographs

Aquatic Beetle Collections in CReAC

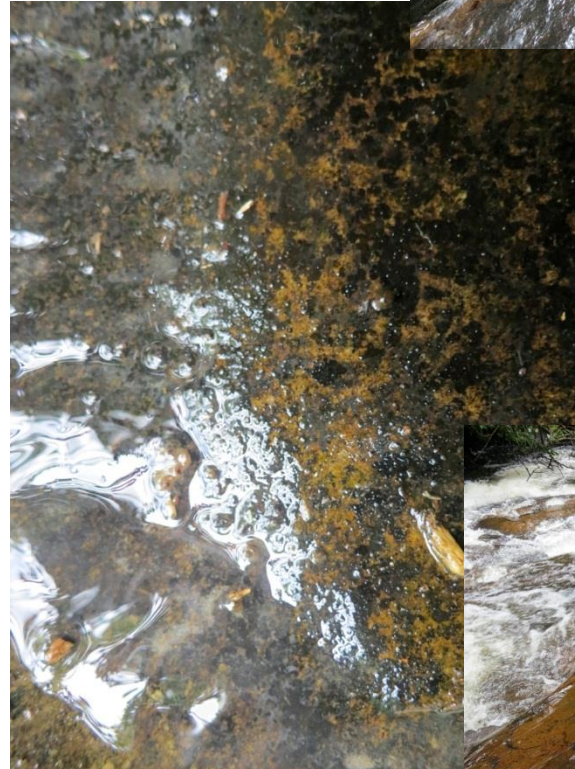
- University of Kansas
- Kansas Biological Survey (field notes not databased!)
- Smithsonian Institution
- Universidad Central de Venezuela
- Universidad del Zulia
- National Zoological Collection of Suriname
- Santa Barbara Museum of Natural History

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

example: SR12-0311-03A

General Info		Coordinate Map	Event Images	Event Specimens
Locality				
Realm	Neotropical			
Country	Suriname			
State	Sipaliwini			
Locality	Camp 1: Upper Palemeu			
Latitude	2.477000 (2° 28' 37.1994")			
Longitude	-55.629410 (-55° 37' 45.876")			
Lat/Lon Method	GPS			
Max Elevation (m)	275			
Min Elevation (m)	275			
Collecting Event Details				
Field Number	SR12-0311-03A			
Collection Start Date	11 Mar 2012			
End Date	11 Mar 2012			
Collector Name	Short, Andrew E			
Verbatim Habitat	Waterfall Site			
Habitat Classification	Hygropetric			
Water Quality				
Field Notes				
Field Notes Attachment	 View Document			

SR12-0311-03A



SR12-0311-03A

SR12-0311-03A

SR12-0311-03A - Waterfall! - on roads
 + debris along low/mid stretch. Oocysts are
 just sitting out on open/semi moist zone,
 + in moss too. Using flotation, get
 series of notochords + "Acrobacini" from
 not little on rocks.
 - Scrubbed rocks but no lake or mixophaga
 - Flat Maucaord on wet road surface



Family: Hydrophidae (42 Specimens)

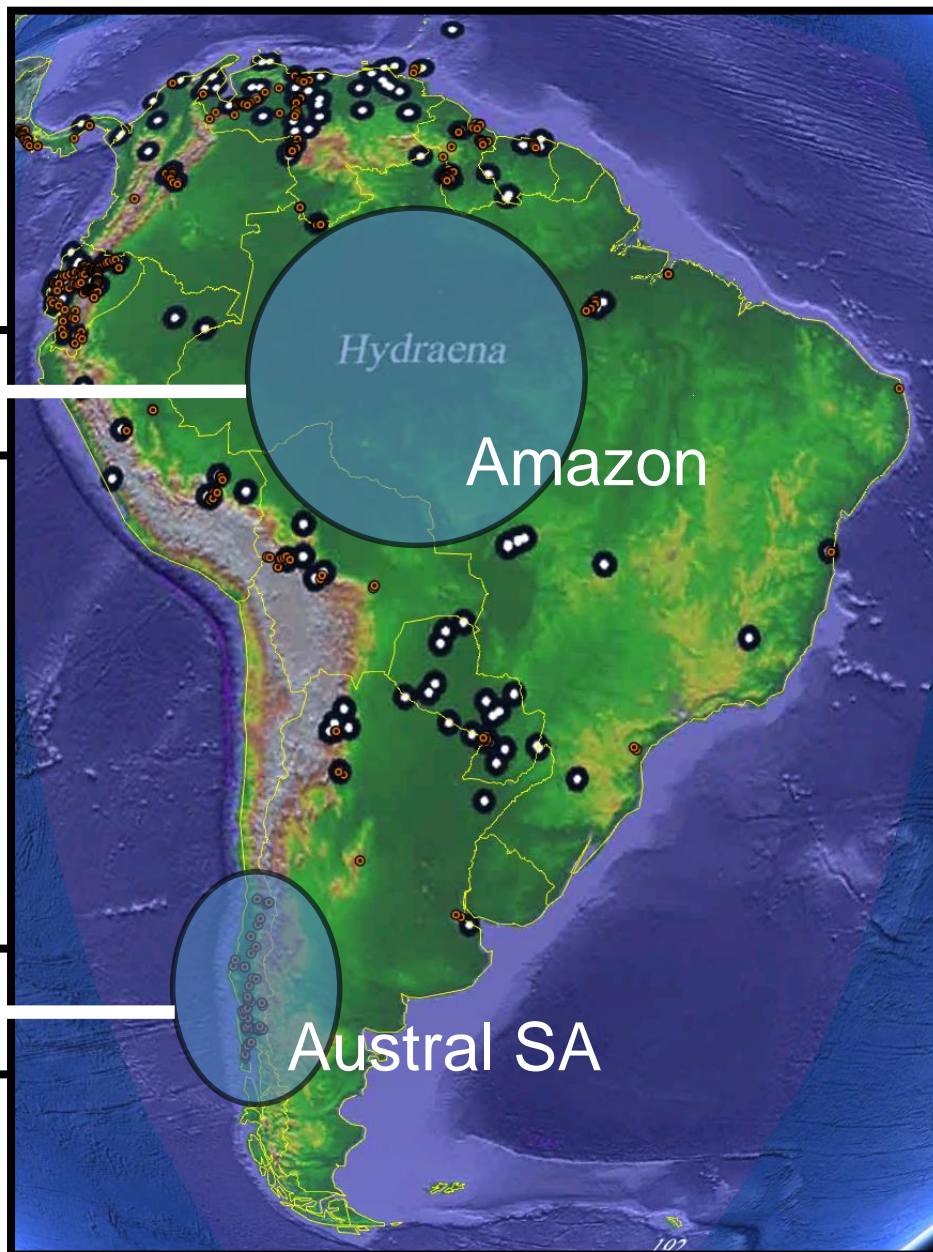
ID	SEIC	Hydrophidae	Notonotus	short	Suriname	Sipaliwini	Camp 1: Upper Pale...	SR12-0311-03A	Short, Andrew E	11 Mar 2012	Nottype	S...
1086894	SEIC	Hydrophidae	Notonotus	short	Suriname	Sipaliwini	Camp 1: Upper Pale...	SR12-0311-03A	Short, Andrew E	11 Mar 2012	Nottype	S...
1086895	SEIC	Hydrophidae	Notonotus	short	Suriname	Sipaliwini	Camp 1: Upper Pale...	SR12-0311-03A	Short, Andrew E	11 Mar 2012	Nottype	S...
1086871	SEIC	Hydrophidae	Oocystus	foccos	Suriname	Sipaliwini	Camp 1: Upper Pale...	SR12-0311-03A	Short, Andrew E	11 Mar 2012	Nottype	S...
1086872	SEIC	Hydrophidae	Oocystus	foccos	Suriname	Sipaliwini	Camp 1: Upper Pale...	SR12-0311-03A	Short, Andrew E	11 Mar 2012	Nottype	S...
1086873	SEIC	Hydrophidae	Oocystus	foccos	Suriname	Sipaliwini	Camp 1: Upper Pale...	SR12-0311-03A	Short, Andrew E	11 Mar 2012	Nottype	S...
1086874	SEIC	Hydrophidae	Oocystus	foccos	Suriname	Sipaliwini	Camp 1: Upper Pale...	SR12-0311-03A	Short, Andrew E	11 Mar 2012	Nottype	S...
1086875	SEIC	Hydrophidae	Oocystus	foccos	Suriname	Sipaliwini	Camp 1: Upper Pale...	SR12-0311-03A	Short, Andrew E	11 Mar 2012	Nottype	S...
1086876	SEIC	Hydrophidae	Oocystus	foccos	Suriname	Sipaliwini	Camp 1: Upper Pale...	SR12-0311-03A	Short, Andrew E	11 Mar 2012	Nottype	S...
1086877	SEIC	Hydrophidae	Oocystus	foccos	Suriname	Sipaliwini	Camp 1: Upper Pale...	SR12-0311-03A	Short, Andrew E	11 Mar 2012	Nottype	S...
1086878	SEIC	Hydrophidae	Oocystus	foccos	Suriname	Sipaliwini	Camp 1: Upper Pale...	SR12-0311-03A	Short, Andrew E	11 Mar 2012	Nottype	S...
1086879	SEIC	Hydrophidae	Oocystus	foccos	Suriname	Sipaliwini	Camp 1: Upper Pale...	SR12-0311-03A	Short, Andrew E	11 Mar 2012	Nottype	S...
1086880	SEIC	Hydrophidae	Oocystus	foccos	Suriname	Sipaliwini	Camp 1: Upper Pale...	SR12-0311-03A	Short, Andrew E	11 Mar 2012	Nottype	S...
1086881	SEIC	Hydrophidae	Oocystus	foccos	Suriname	Sipaliwini	Camp 1: Upper Pale...	SR12-0311-03A	Short, Andrew E	11 Mar 2012	Nottype	S...
1086882	SEIC	Hydrophidae	Oocystus	foccos	Suriname	Sipaliwini	Camp 1: Upper Pale...	SR12-0311-03A	Short, Andrew E	11 Mar 2012	Nottype	S...
1086883	SEIC	Hydrophidae	Oocystus	foccos	Suriname	Sipaliwini	Camp 1: Upper Pale...	SR12-0311-03A	Short, Andrew E	11 Mar 2012	Nottype	S...
1086884	SEIC	Hydrophidae	Oocystus	foccos	Suriname	Sipaliwini	Camp 1: Upper Pale...	SR12-0311-03A	Short, Andrew E	11 Mar 2012	Nottype	S...
1086885	SEIC	Hydrophidae	Oocystus	foccos	Suriname	Sipaliwini	Camp 1: Upper Pale...	SR12-0311-03A	Short, Andrew E	11 Mar 2012	Nottype	S...
1086886	SEIC	Hydrophidae	Oocystus	foccos	Suriname	Sipaliwini	Camp 1: Upper Pale...	SR12-0311-03A	Short, Andrew E	11 Mar 2012	Nottype	S...
1086887	SEIC	Hydrophidae	Oocystus	foccos	Suriname	Sipaliwini	Camp 1: Upper Pale...	SR12-0311-03A	Short, Andrew E	11 Mar 2012	Nottype	S...
1086888	SEIC	Hydrophidae	Oocystus	foccos	Suriname	Sipaliwini	Camp 1: Upper Pale...	SR12-0311-03A	Short, Andrew E	11 Mar 2012	Nottype	S...
1086889	SEIC	Hydrophidae	Oocystus	foccos	Suriname	Sipaliwini	Camp 1: Upper Pale...	SR12-0311-03A	Short, Andrew E	11 Mar 2012	Nottype	S...
1086890	SEIC	Hydrophidae	Oocystus	foccos	Suriname	Sipaliwini	Camp 1: Upper Pale...	SR12-0311-03A	Short, Andrew E	11 Mar 2012	Nottype	S...
1086891	SEIC	Hydrophidae	Oocystus	foccos	Suriname	Sipaliwini	Camp 1: Upper Pale...	SR12-0311-03A	Short, Andrew E	11 Mar 2012	Nottype	S...
1086892	SEIC	Hydrophidae	Oocystus	foccos	Suriname	Sipaliwini	Camp 1: Upper Pale...	SR12-0311-03A	Short, Andrew E	11 Mar 2012	Nottype	S...
1086893	SEIC	Hydrophidae	Oocystus	foccos	Suriname	Sipaliwini	Camp 1: Upper Pale...	SR12-0311-03A	Short, Andrew E	11 Mar 2012	Nottype	S...
1086894	SEIC	Hydrophidae	Oocystus	foccos	Suriname	Sipaliwini	Camp 1: Upper Pale...	SR12-0311-03A	Short, Andrew E	11 Mar 2012	Nottype	S...
1086895	SEIC	Hydrophidae	Oocystus	foccos	Suriname	Sipaliwini	Camp 1: Upper Pale...	SR12-0311-03A	Short, Andrew E	11 Mar 2012	Nottype	S...
1086896	SEIC	Hydrophidae	Oocystus	foccos	Suriname	Sipaliwini	Camp 1: Upper Pale...	SR12-0311-03A	Short, Andrew E	11 Mar 2012	Nottype	S...
1086897	SEIC	Hydrophidae	Oocystus	foccos	Suriname	Sipaliwini	Camp 1: Upper Pale...	SR12-0311-03A	Short, Andrew E	11 Mar 2012	Nottype	S...
1086898	SEIC	Hydrophidae	Oocystus	foccos	Suriname	Sipaliwini	Camp 1: Upper Pale...	SR12-0311-03A	Short, Andrew E	11 Mar 2012	Nottype	S...

Visualizing Absence Data





Lack of Data
(possible collecting artifact)



Absence Data

Austral SA

Hydraena

Amazon

Example of the CE approach:

Smithsonian Aquatic Beetle Collection
c. 1.5 million specimens



Starting Point: Specimen Based Approach



Starting Point: Event Based Approach

P. J. Spangler



Field notes for ca. 40 expeditions [1952-1995]

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: RESTO AYACUCHO Latitude: ° " Longitude: °
~~10~~ Kilometers N W E W: 40 River/Brook name: OCORIBOTO

COLLECTORS: PJS PHOTO: 3-5 Yes No

COLL'N METHOD: Dipnet; seine; bkllite; bkllite 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; stock pond; stock tank; swim pool; woodland pond; pothole; culvert; leaf packs; wet wood; other ABOVE UPPER MOST PINE

AIR TEMPERATURE: 91 (PO) °C WATER TEMPERATURE: 77 (PO) °C PH: 5 SHELTER
OXYGEN: 12 DPM 33 °C HARDNESS: 0 TURBIDITY: clear ALTITUDE: ft/m

DEPTH: 1 m WIDTH: 3 m VELOCITY: 6 ft/sec. SHADED - SUNNY
1/4 ft/sec. GRANITE BEDROCK

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

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 Collecting 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: RESTO AYACUCHO Latitude: ° " Longitude: °

~~10~~ Kilometers N W E W: 40 River/Brook name: OCURIBATO

COLLECTORS: PJS PHOTO: 3-5 Yes No

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

HABITAT: Stream; pond; lake; roadside ditch; rut in road; spring seepage; waterfall; in bromellad; 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 UPPERMOST

AIR TEMPERATURE: 91 (PO) WATER TEMPERATURE: 77 (PO) PH: 5 SHEETER

OXYGEN: 12 DPM 33 HARDNESS: 0 TURBIDITY: clear ALTITUDE: ft/m

DEPTH: 1 m WIDTH: 3 m VELOCITY: 6 ft/sec. SHADE - SUNNY
1/4 sec.
1/4 sec.

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

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several genera ? of Torridincolidae.

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Larvae numerous larvae

EST. # SPMS. 100±
Actual - 216

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: ROBIGNY
City: RESTO AYACUCHO Latitude: 0 " Longitude: 0 "

~~10~~ Kilometers N 0 E W: 40 River/Brook name: OCORIBOTO

COLLECTORS: PJS PHOTO: 3-5 Yes No

COLL'N METHOD: Dipnet; seine; bklite; bklite 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 UPPER MOST POND

AIR TEMPERATURE: 91 (PO) WATER TEMPERATURE: 77 (PO) PH: 5 SHELTER

OXYGEN: 12 DPM 33 HARDNESS: 0 TURBIDITY: clear ALTITUDE: _____ ft/m

DEPTH: 1 m WIDTH: 3 m VELOCITY: 0 ft/sec. SHADED - 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; Nymphaea; 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 (phaenotum like) hydrophilid; 1? hydraenid (in other vial); several genera? of Torrudincolidae.

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

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

planned

Trichops - 19	Aleohol
Hymenops - 1	Coleop - 58
Coleop - 4	
Leps - 13	
<u>37</u>	

PJS-KE-680204-5

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

PJS-KE-680204-6

KENYA, 10 Mi. N. - Hemips - 13
 Thika, II-4-68 Coleop - 2
 P.J. Spangler 15

to narrow

1968

37th day 329 days to come NANYUKI

Coordinates: 1°20'00"N
 36°41'00"E

to narrow

Roadside area

Spercheus & eggs, Helochares & eggs,
 Enochrus, Copelatus, Rhantus
 Ochthebius, Laccophilus, Bidessus
 Hygrotes, Regimbartia, Corisids
 Notonectids, Laccotrophes.

PJS-KE-680205-2

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

Burguret River - Rhantus
 Bidessus, Enochrus, Helochares
 Ochthebius, Elmids, Bemibidion

PJS-KE-680205-3

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

Roadside seepage area

PJS-KE-680205-4

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

Hymenops - 10 (4 planned)
 Dip - 8
 Hemips - 9
 Coleop - 11
38

PJS-KE-680205-5

KENYA
 10 Mi. S.
 Nanyuki

Odonata - 7
 Hymenops - 21
 Hemips - 4
 Dip - 6
 Int-d - 1

PJS-KE-680204-

968

3

day PJS-KE-680205-1

to narrow

1968

37th day
329 days to come

NANYUKI

Coordinates: 1°20'00"N
36°41'00"E

01 Dec 68

KENYA
Nyeri
II-4-68
Blacklite
Krambeint
Spangler

summed

Trichops - 19 Alcohol
Hymenops - 1 Coleop - 58
Coleop - 4
Lep - 13
37

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

Roadside

Spercheus 2 eggs, Helochares 2 eggs,
Enochrus, Copelatus, Rhantus
Ochthebius, Laccophilus, Bidessus
Hygrotes, Regimbartia, Corixids
Notonectids, Laccotrophes.

PJS-KE-680205-

PJS-KE-680204-5

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

- Aquatic stream
approx. - 125

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

Burguret River - Rhantus
Bidessus, Enochrus, Helochares
Ochthebius, Elmids, Bembidion
Clovinia

PJS-KE-680205-3

PJS-KE-680204-

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

Hemip - 13
Coleop - 2
15

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

Roadside supage area

PJS-KE-680205-

17 Mi. S.
Nanyuki
II-5-68

Hymenops - 10 (4 summed)
Dip - 8
Hemip - 7
Coleop - 11
25

PJS-KE-680205-5

10 Mi. S.
Nanyuki

Tomata - 7
Hymenops - 21
Hemip - 4
Dip - 6
In + d - 1

Step 3: Digitize Data + QC

PJS-VZ-860224-1

DATE: 24 Feb. 86 COLLECTION #: 12 TIME: 12:30:00

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

City: PUERTO AYACUCHO Latitude: 0° 00' 00" W

10 Kilometers N 6 E W: 40 River/Brook name

COLLECTORS: PJS

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

HABITAT: Stream; pond; lake; roadside ditch; rut waterfall; in bromeliad; brackish pool; mineral wa crab hole; side pool of stream; stockpond; stock woodland pond; pothole; culvert; leaf packs; wet w

AIR TEMPERATURE: 91 (°F) WATER TEMPERATURE: 77 (°F)

OXYGEN: 12 ppm HARDNESS: 0 TURBIDITY: 0.00

DEPTH: 1.2 m WIDTH: 3 m VELOCITY: 0.4 m/s

SUBSTRATUM: Mud; gravel; sand; peaty; leafy; bo

SOIL COLOR: Red; yellow; black; brown.

PLANT ASSOCIATES: Alisma; Alternanthera; Anacharis Chara; Cephalanthus; Eichornia; Eleocharis; Hibis Isoetes; Jussiaea; Lemna; Ludwigia; Marsilea; Mo Nitella; Nymphae; Pistia; Polygonum; Potamogeton; Ranunculus; Rhizophora; Riccia; Ruppia; Sagittari Spirogyra; Taxodium; Typha; Trapa; Utricularia; other

ANIMAL ASSOCIATES:

Adults: SEVERAL genera of Elmids; 1 sp. of ?; small convex (phaerostom like) hydrophilid; several genera? of Torridincolidae.

1 sphaeriid in small pool at shoreline in the M. Family! along a tiny hydroptilid larva & other

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 Pu
PJS-VZ-860220-1	20.ii.1986	Venezuela	Amazonas	Gavilan, 37 km SE of P
PJS-VZ-860220-2	20.ii.1986	Venezuela	Amazonas	Gavilan, 35 km SE of P
PJS-VZ-860220-3	20.ii.1986	Venezuela	Amazonas	15 km S of Puerto Ayac
PJS-VZ-860220-4	20.ii.1986	Venezuela	Amazonas	29 km S of Puerto Ayac
PJS-VZ-860222-1	22.ii.1986	Venezuela	Amazonas	Tobogan, 40 km S of Pu
PJS-VZ-860222-2	22.ii.1986	Venezuela	Amazonas	Tobogan, 40 km S of Pu
PJS-VZ-860222-3	22.ii.1986	Venezuela	Amazonas	Tobogan, 40 km S of Pu
PJS-VZ-860222-4	22.ii.1986	Venezuela	Amazonas	Tobogan, 40 km S of Pu
PJS-VZ-860223-1	23.ii.1986	Venezuela	Amazonas	Tobogan, 40 km S of Pu
PJS-VZ-860223-2	23.ii.1986	Venezuela	Amazonas	Tobogan, 40 km S of Pu
PJS-VZ-860224-1	24.ii.1986	Venezuela	Amazonas	Tobogan, 40 km S of Pu
PJS-VZ-860224-2	24.ii.1986	Venezuela	Amazonas	Tobogan, 40 km S of Pu
PJS-VZ-860225-1	25.ii.1986	Venezuela	Amazonas	Tobogan, 40 km S of Pu
PJS-VZ-860225-2	25.ii.1986	Venezuela	Amazonas	Tobogan, 40 km S of Pu
PJS-VZ-860225-3	25.ii.1986	Venezuela	Amazonas	Tobogan, 40 km S of Pu
PJS-VZ-860226-1	26.ii.1986	Venezuela	Amazonas	29 km S of Puerto Ayac
PJS-VZ-860226-2	26.ii.1986	Venezuela	Amazonas	Tobogan, 40 km S of Pu
PJS-VZ-860226-3	26.ii.1986	Venezuela	Amazonas	Tobogan, 40 km S of Pu
PJS-VZ-860227-1	27.ii.1986	Venezuela	Amazonas	Tobogan, 40 km S of Pu
PJS-VZ-860228-1	28.ii.1986	Venezuela	Amazonas	Tobogan, 40 km S of Pu
PJS-VZ-860304-1	04.iii.1986	Venezuela	Guarico	Hato Masaguaral, 44 kr
PJS-VZ-860305-1	05.iii.1986	Venezuela	Guarico	Hato Masaguaral, 44 kr
PJS-VZ-860305-2	05.iii.1986	Venezuela	Guarico	Hato Masaguaral, 40 kr
PJS-VZ-860305-3	05.iii.1986	Venezuela	Guarico	Hato Masaguaral, 44 kr
PJS-VZ-860305-4	05.iii.1986	Venezuela	Guarico	Hato Masaguaral
PJS-VZ-860306-1	06.iii.1986	Venezuela	Guarico	Hato Masaguaral, 44 kr
PJS-VZ-860306-2	06.iii.1986	Venezuela	Guarico	Hato Masaguaral, 44 kr
PJS-VZ-860306-3	06.iii.1986	Venezuela	Guarico	Hato Masaguaral
PJS-VZ-860306-4	06.iii.1986	Venezuela	Guarico	Hato Masaguaral, 44 kr
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 4: Georeference as necessary

PJS-VZ-860224-1

DATE: 24 Feb. 86

COLLECTION #: 12 TIME: 12:30:00

LOCALITY: COUNTRY: V

CITY: ~~BOGOTÁ~~ BOGOTÁ Latitude:

~~10~~ Kilometers N S E W: 40 Riv

COLLECTORS: PJS

COLL'N METHOD: Dipnet; seine; bkllite; b
pitfall trap

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

AIR TEMPERATURE: 91 (°F) WATER TEMPERATURE: 33 (°C)

OXYGEN: 12 ppm HARDNESS: 0 TURBIDITY: 0

DEPTH: 1 m WIDTH: 3 m VEGETATION: 0

SUBSTRATUM: Mud; gravel; sand; peaty

SOIL COLOR: Red; yellow; black; brow

PLANT ASSOCIATES: Alisma; Alternanther
Chara; Cephalanthus; Eichornia; Eleocharis
Isoetes; Jussiaea; Lemna; Ludwigia;
Nitella; Nymphaea; Pistia; Polygonum;
Ranunculus; Rhizophora; Riccia; Ruppia
Spirogyra; Taxodium; Typha; Trapa; Utricularia
other

ANIMAL ASSOCIATES:

Adults: SEVERAL Genera of Elmidae
?, small convex (phaerontum like) h
several genera? of Torriniidae.


1 sphaeriid in small pool at st
the M. Family! along a tiny hydroptilid

Larvae numerous larvae

Code	Start Date	Country
PJS-VZ-860219-1	19.ii.1986	Ver
PJS-VZ-860220-1	20.ii.1986	Ver
PJS-VZ-860220-2	20.ii.1986	Ver
PJS-VZ-860220-3	20.ii.1986	Ver
PJS-VZ-860220-4	20.ii.1986	Ver
PJS-VZ-860222-1	22.ii.1986	Ver
PJS-VZ-860222-2	22.ii.1986	Ver
PJS-VZ-860222-3	22.ii.1986	Ver
PJS-VZ-860222-4	22.ii.1986	Ver
PJS-VZ-860223-1	23.ii.1986	Ver
PJS-VZ-860223-2	23.ii.1986	Ver
PJS-VZ-860224-1	24.ii.1986	Ver
PJS-VZ-860224-2	24.ii.1986	Ver
PJS-VZ-860225-1	25.ii.1986	Ver
PJS-VZ-860225-2	25.ii.1986	Ver
PJS-VZ-860225-3	25.ii.1986	Ver
PJS-VZ-860226-1	26.ii.1986	Ver
PJS-VZ-860226-2	26.ii.1986	Ver
PJS-VZ-860226-3	26.ii.1986	Ver
PJS-VZ-860227-1	27.ii.1986	Ver
PJS-VZ-860228-1	28.ii.1986	Ver
PJS-VZ-860304-1	04.iii.1986	Ver
PJS-VZ-860305-1	05.iii.1986	Ver
PJS-VZ-860305-2	05.iii.1986	Ver
PJS-VZ-860305-3	05.iii.1986	Ver
PJS-VZ-860305-4	05.iii.1986	Ver
PJS-VZ-860306-1	06.iii.1986	Ver
PJS-VZ-860306-2	06.iii.1986	Ver
PJS-VZ-860306-3	06.iii.1986	Ver
PJS-VZ-860306-4	06.iii.1986	Ver
PJS-VZ-860307-1	07.iii.1986	Ver
PJS-VZ-860307-2	07.iii.1986	Ver
PJS-VZ-860308-1	08.iii.1986	Ver
PJS-VZ-860309-1	09.iii.1986	Ver



Step 5: Associate scans in database

General Info		Coordinate Map	Event Specimens
Locality			
Realm	Afrotropical		
Country	Kenya		
State	Rift Valley		
Locality	Ngong, Ngong Forestry Station		
Latitude	-1.316667 (-1° 19' 0.0012")		
Longitude	36.733334 (36° 44' 0.0018")		
Lat/Lon Method	fieldnotes		
Collecting Event Details			
Field Number	PJS-KE-680114-1		
Collection Start Date	14 Jan 1968		
End Date	14 Jan 1968		
Collector Name	Spangler & KVK		
Method	malaise trap		
Verbatim Habitat	near dam		
Habitat Classification	Passive Trapping		
Water Quality			
Field Notes			
Field Notes Attachment	 View Document		

SUNDAY 14 JANUARY		MONDAY 15 JANUARY	
PJS-KE-680113-5	1968	PJS-KE-680115-1	1968
Second Sunday after Epiphany	14th day 352 days to come	15th day 351 days to come	
✓ KENYA, Ngong Malaise Trap -		✓ KENYA Malaise near dam	
Ngong Forestry Station, I-14-68	24 - Homoptera 23 - Butterflies	Ngong Forestry Station, I-15-68	Homoptera - 22 Hymenoptera 25 Lepidoptera 115
Spangler & Krambein = 17		Spangler & Krambein	Diptera 145 Caddisfly - 1 Neuroptera - 2 Beetle - 1 (311)
12-18 Jan 68 Malaise			
PJS-KE-680114-1		PJS-KE-680115-2	
✓ KENYA Malaise Trap -		✓ KENYA Malaise in Forest	
Ngong Forestry Station, I-14-68	70 Homoptera & Hemiptera 150 Diptera 45 Hymenoptera 5 Trichoptera 1 Neuroptera	Ngong Forestry Station, I-15-68	Diptera - 576 Hymenoptera - 63 Hemiptera - 15
Spangler & Krambein	104 Lepidoptera 3 Coleoptera	Krambein & Spangler	Lepidoptera - 825
			1479 + 311 1790

Fourth Payment Last Year's Income Tax Due.

Step 6: Associate Specimens



Step 6: 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	
	<input type="checkbox"/>	Contains	860305	<input checked="" type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	Contains		<input checked="" type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	=		<input type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	=		<input type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	Contains		<input checked="" type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	=		<input checked="" type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	=		<input checked="" type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	=		<input checked="" type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	Contains		<input checked="" type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	Contains		<input checked="" type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	=		<input checked="" type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	Contains		<input checked="" type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>



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

? 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

? Tell me more about these results.

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



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.

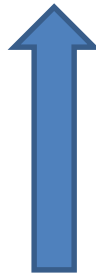
VENEZUELA, Guar.
Calabozo (40 km S)
Hato Masaguaral
5 March 1986 PJSpangler
colln#24



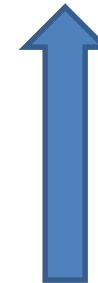
Trash

Efficiency:

823748	USNM	Tropisternus	apicipalpis	Spangler	PJ	PJS-VZ-690223-2				
823749	USNM	Tropisternus	apicipalpis	Spangler	PJ	PJS-VZ-690213-2	VZ	2/8-13/1969	Venezuela/Guar., 20 Km S./Calabozo/II-8-13-1969/P&P Spangler//Collected in Rio Orituco	
823750	USNM	Tropisternus	apicipalpis	Spangler	PJ	PJS-VZ-690213-2	VZ	2/8-13/1969	Venezuela/Guar., 20 Km S./Calabozo/II-8-13-1969/P&P Spangler//Collected in Rio Orituco	
823751	USNM	Tropisternus	apicipalpis	Spangler	PJ	PJS-VZ-690226-1				
823752	USNM	Tropisternus	apicipalpis	Spangler	PJ	PJS-VZ-690226-1				
823753	USNM	Tropisternus	apicipalpis	Spangler	PJ	PJS-VZ-690213-2	VZ	2/8-13/1969	Venezuela/Guar., 20 Km S./Calabozo/II-8-13-1969/P&P Spangler//Collected in Rio Orituco	
823754	USNM	Tropisternus	apicipalpis	Spangler	PJ	PJS-VZ-690213-2	VZ	2/8-13/1969	Venezuela/Guar., 20 Km S./Calabozo/II-8-13-1969/P&P Spangler//Collected in Rio Orituco	
823755	USNM	Tropisternus	apicipalpis	Spangler	PJ	PJS-VZ-690226-1				
823756	USNM	Tropisternus	apicipalpis	Spangler	PJ	PJS-VZ-690226-1				
823757	USNM	Tropisternus	apicipalpis	Spangler	PJ		VZ	2/8-13/1969	Venezuela/Guar., 20 Km S./Calabozo/II-8-13-1969/P&P Spangler//Collected in Rio Orituco	



Matching Collecting Event



Verbatim Label Data

Habitat Classification

All Events Assigned one of the following:

Lotic

Lentic (general)

Lentic (riparian)

Hygropetric

Phytotelmata

Non-Aquatic

Passive Trapping

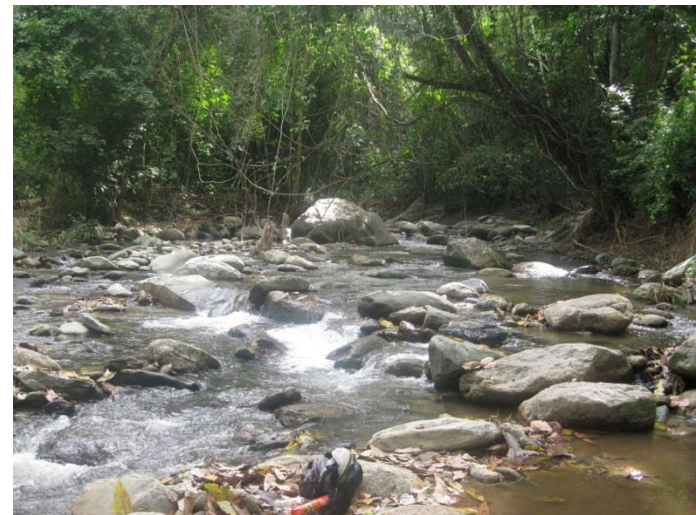
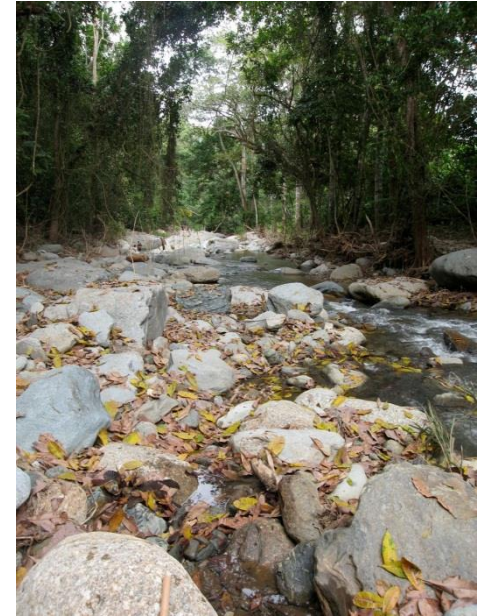
Unspecified

Ecological Classification by Habitat Information

Coll Event #	Locality Name	Verbatim Habitat
PJS-US-620806-4	Mississippi Palisades State Park	flower blossoms
PJS-US-620829-1	Ogallala, 9 mi N	helicanthus?
PJS-EC-770508-3	Puyo	Heloconia
PJS-EC-770607-1	Limoncocha	collected in Heloconia inflorescences
PJS-VZ-850205-2	Cerro Neblina	Brocchinia bromeliad
PJS-VZ-850207-1	Cerro Neblina	Brocchinia bromeliad
PJS-PE-890910-1	Pakitza, Troca Dos, Troca Dos	in dead leaves of Socrates palm flowers, along river, some aquatic and some terrestrial collected
PAN1AB96 118	Cana Biological Station	Heliconia "flowers"
PAN1AB96 087	Cana Biological Station	Heliconia flowers
VEN1ABH98 013	Pico Periquitos, Rancho Grande Biological Station, Henri Pittier National Park	rolled leaves of Heliconia sp.
VEN1ABH98 035	Portachuelo Pass, Rancho Grande Biological Station, Henri Pittier National Park	Heliconia inflorescence
VEN1ABH98 152	San Cristobol, 22.5 SE, Chorro El Indio National Park	Heliconia inflorescence
SUR1F99 105	Brownsberg Nature Preserve, Entrance Road	premontane tropical forest Heliconia flower bracts
ECU1F99 115	El Chaco, 4.8 km NW on road to Oyacachi	
PAN1C00 029	Barro Colorado Island	Heliconia flrs.
CR1ABF00 075	San Ramon EB, San Ramon RB, 27 km N & 8 km W San Ramon	Heliconia inflorescence
PAN1C00 068	Barro Colorado Island	Heliconia flrs.
PAN1C00 098	Barro Colorado Island	Heliconia flrs.
NIC1BFC02 023	Matagalpa, 6 km N, Selva Negra Hotel	Heliconia fruits
NIC1BFC02 045	Matagalpa, 6 km N, Selva Negra Hotel	Heliconia fruits
NIC1BFC02 061	Matagalpa, 16 km N, Matagalpa-Jinotega Rd	Heliconia fruits
NIC1BFC02 091	San Carlos, 60 km SE, Refugio Bartola	Heliconia fruits
AS-04-005	Tapanti National Park, 9.6 km after scientific gate	Heliconias and small muddy roadside drainage area
AS-04-008	Tapanti National Park, along park road	heliconia Flowers
AS-04-021	Tapanti National Park, between scientific gate and dam	Bromeliads
AS-08-021a	Parque Internacional La Amistad, at research cabin	aroid flowers
AS-08-020d	Parque Internacional La Amistad, Cascada trail	bromeliads
AS-08-033	Perija National Park, Tukuko, trail to Rio Manantial	mixed heliconia flowers
VZ09-0704-01A	Perija National Park, Tukuko, Rio Manantial	yellow heliconia inflorescences (spherical)
VZ09-0704-01B	Perija National Park, Tukuko, Manantial trail	red heliconias
VZ09-0716-06A	El Tama National Park, Rio Negro at bridge crossing	red heliconia inflorescences
CR10-0318-SG1	Tapanti National Park, pipeline crossing	Heliconia inflorescences
PER-11-CSC-004	CICRA Field Station, trail 1, G5	Heliconia leaf roll, miscellaneous collecting
SR13-0824-05A	Central Suriname Nature Reserve: near Rudi Kappel Airstrip	Giant "heliconia"

Voucher Biological Observations

Locality	
Realm	Neotropical
Country	Venezuela
State	Aragua
Locality	Henri Pittier National Park, Rio Cumboto
Latitude	10.393760 (10° 23' 37.536")
Longitude	-67.795967 (-67° 47' 45.4812")
Lat/Lon Method	GPS
Max Elevation (m)	130
Min Elevation (m)	130
Collecting Event Details	
Field Number	VZ09-0104-02D
Collection Start Date	4 Jan 2009
End Date	4 Jan 2009
Collector Name	Miller, Kelly
Verbatim Habitat	river backwaters
Habitat Classification	Lotic
Water Quality	



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Ry Patton

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Universidad del Zulia, Venezuela (Jesus Camacho)

National Zoological Collection of Suriname (Paul Ouboter)

Santa Barbara Museum of Natural History (Michael Caterino)