

# One Health Surveillance Data: Sharing, Standards, and Stories

Noam Ross

BOHRN Meeting

Phuket, Thailand July 2019



EcoHealth  
Alliance

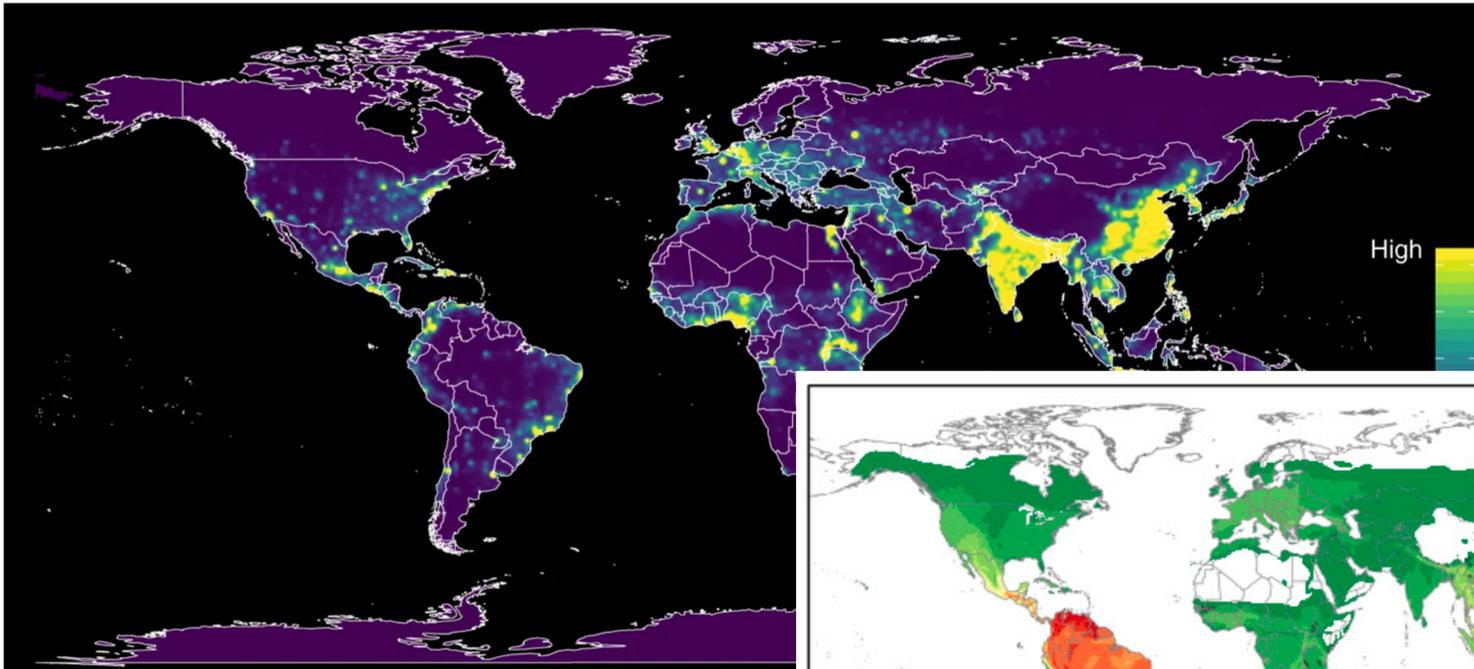


**BOHRN**

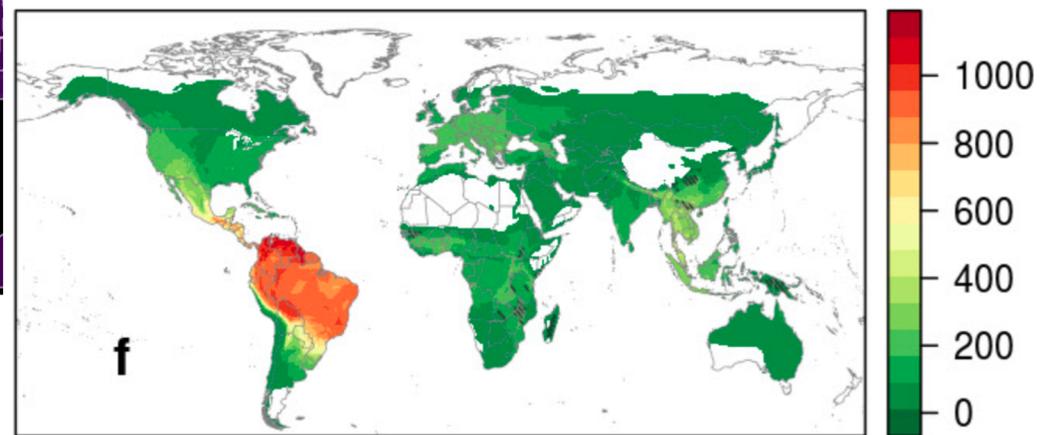
# Goals

- "Formalize community standards...for one health disease research"
- "Create...collaborative and sustainable projects"
- "Facilitate interdisciplinary collaboration"
- "Enable better communication, coordination, and outreach"

# The Anarchy of Data

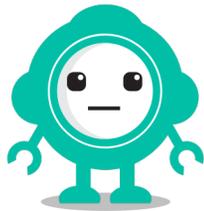


Allen et al (2017)

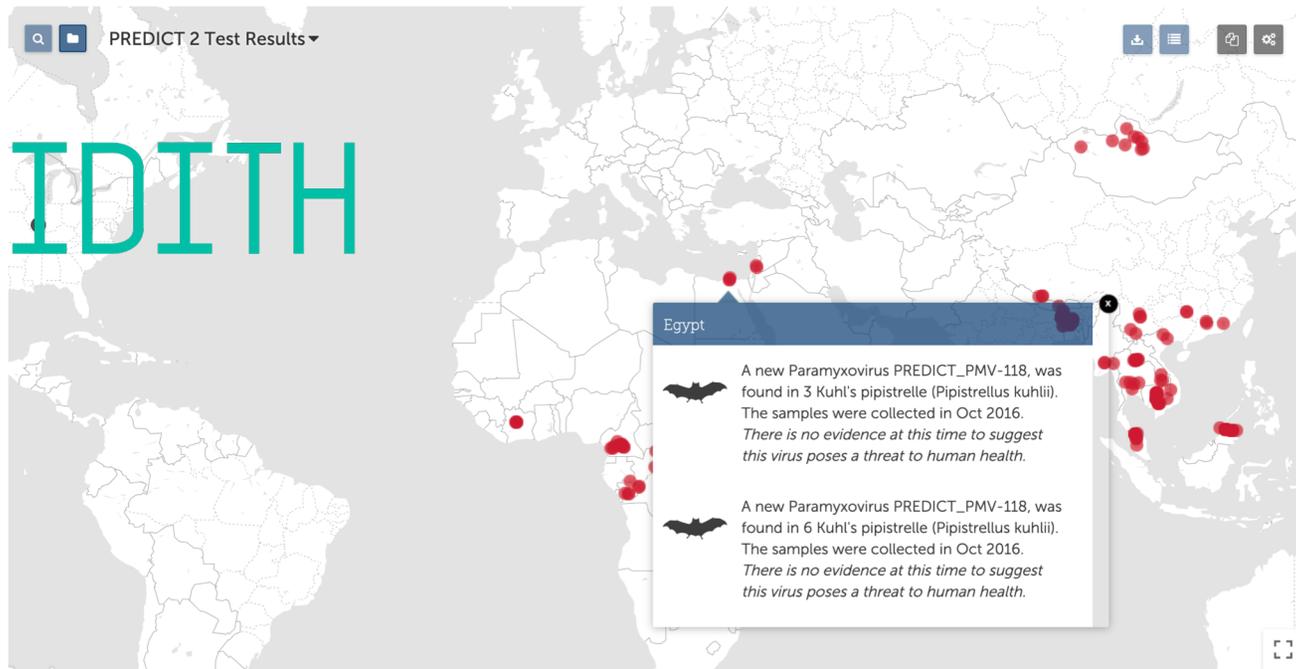


Olival et al (2017)

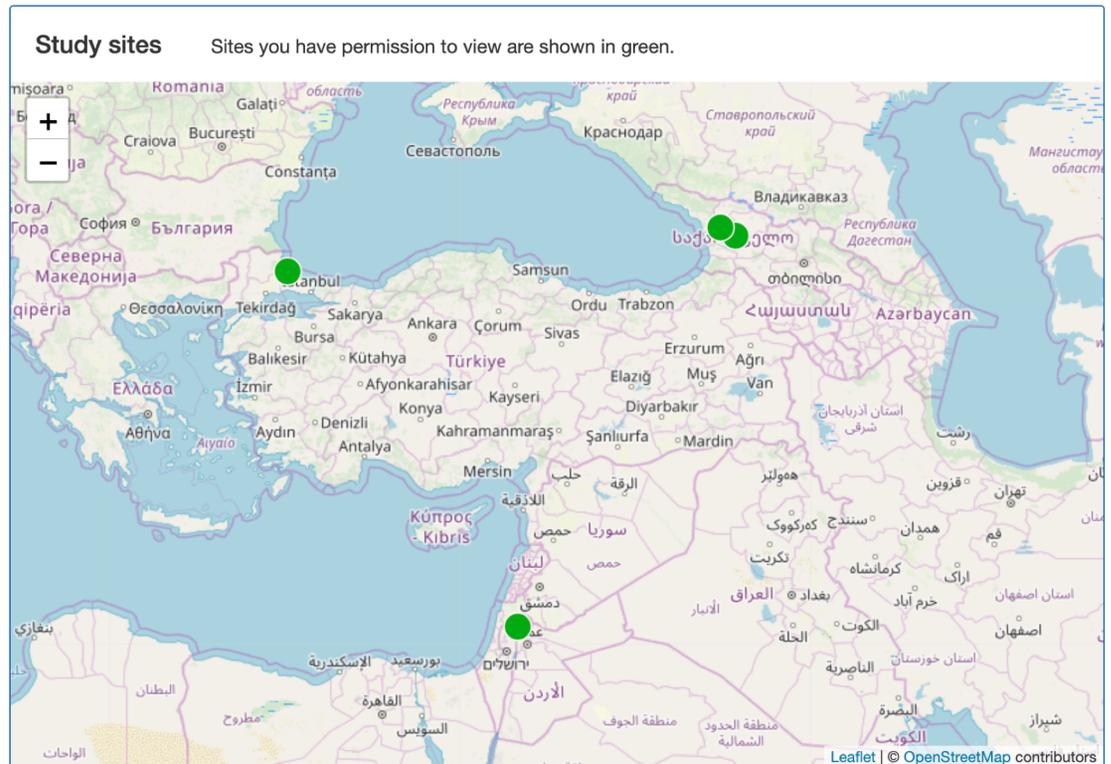
# Project Databases



# EIDITH



# Project Databases



***Rousettus aegyptiacus***

35 samples

***Rhinopoma microphyllum***

60 samples

***Rhinopoma cystops***

2 samples

***Miniopterus schreibersii***

108 samples

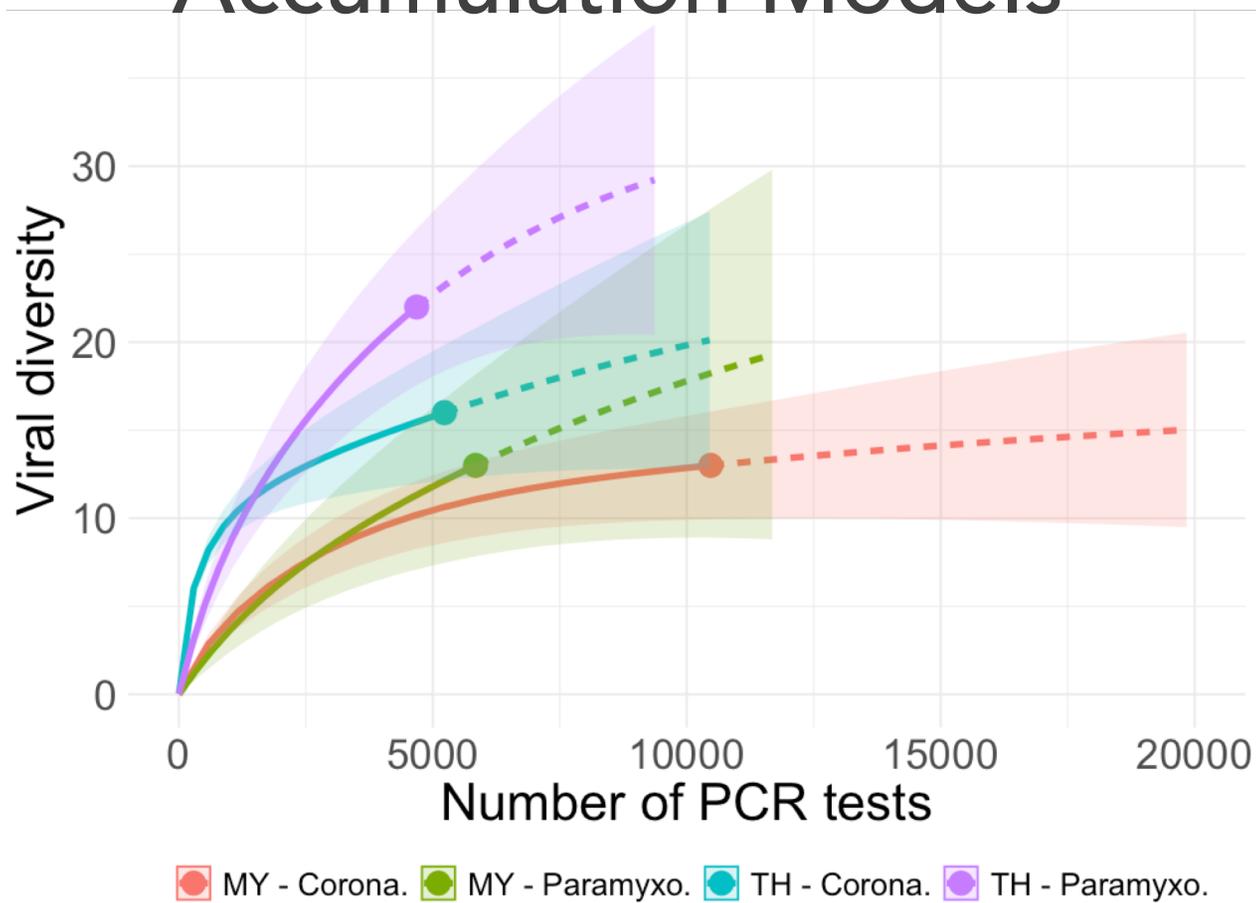


<b>Virus Name</b>	<b>Number of Detections</b>	<b>Taxa Groups</b>	<b>Species Names</b>	<b>Site Names</b>	<b>Concurrent Detections</b>
<b>Bat coronavirus 1</b>	<b>1</b>	<b>bats</b>	<b>Miniopterus schreibersii</b>	<b>Khao Chakan</b>	<b>China</b>
<b>Lonquan Aa mouse coronavirus</b>	<b>1</b>	<b>rodents/shrews</b>	<b>Bandicota savilei</b>	<b>Loei-Kang Muang-R</b>	<b>Cambodia</b>
<b>Murine coronavirus</b>	<b>43</b>	<b>rodents/shrews</b>	<b>Maxomys surifer Mus cervicolor Mus cookii Niviventer fulvescens Rattus exulans Rattus sp. Rattus tanezumi Rodentia</b>	<b>Loei-Phu Luang Forest Loei-Phu Khor Phu Kratae- R Loei-Kang Muang Loei-Santom Loei-Kang Muang-R Loei-Nong Hin Village Loei-Phu Khor Phu Kratae Ratchaburi-Wat Khao Chong Pran-R Loei-Santom-R Loei-Maholan Cave Loei-Phu Ruea Market Loei-Phu Ruea Market-R</b>	<b>Bangladesh Cambodia Malaysia Nepal</b>
<b>PREDICT_CoV-17</b>	<b>42</b>	<b>bats</b>	<b>Pteropus giganteus Pteropus lylei</b>	<b>Chonburi-Wat Luang Temple-B Chonburi-Wat Luang Temple</b>	<b>Bangladesh</b>

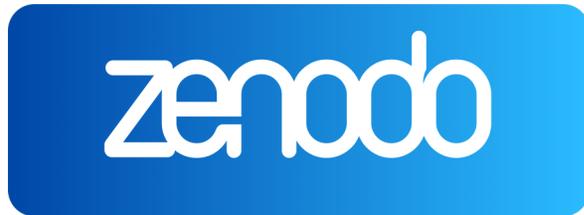




# Assessing Sampling with Viral Accumulation Models



# Scientific Archives



Knowledge Network  
For BioComplexity



GenBank



Search ?

Search phrase

Filter by:

Data attribute

density, length, etc.

Data files

Creator

Year

Identifier

Taxon

Location

DATASETS 1 TO 25 OF 27,542

1 2 3 ... 1,102 Next

Sort by Most recent

**knb** Ganesh Marín, Victor Arroyo-Rodríguez, Rodrigo Sierra-Corona, Eduardo Ponce-Guevara, and Gerardo Ceballos. 2019. **Ocurrence data base of the mountain carnivores in Northwestern Mexico, script and matrix for model the diversity and habitat use for each species.** Knowledge Network for Biocomplexity. doi:10.5063/F1639N12.

**knb** Stephen Hovick. 2019. **The independent effects of nutrient enrichment and pulsed nutrient delivery on a common wetland invader and its native conspecific.** Knowledge Network for Biocomplexity.

doi:10.5063/F1BV7DXW.

**knb** Edward Otis and Joseph Loboy. **Lower Cook Inlet Salmon Escapement Database, 1927–2018.** Knowledge Network for Biocomplexity.

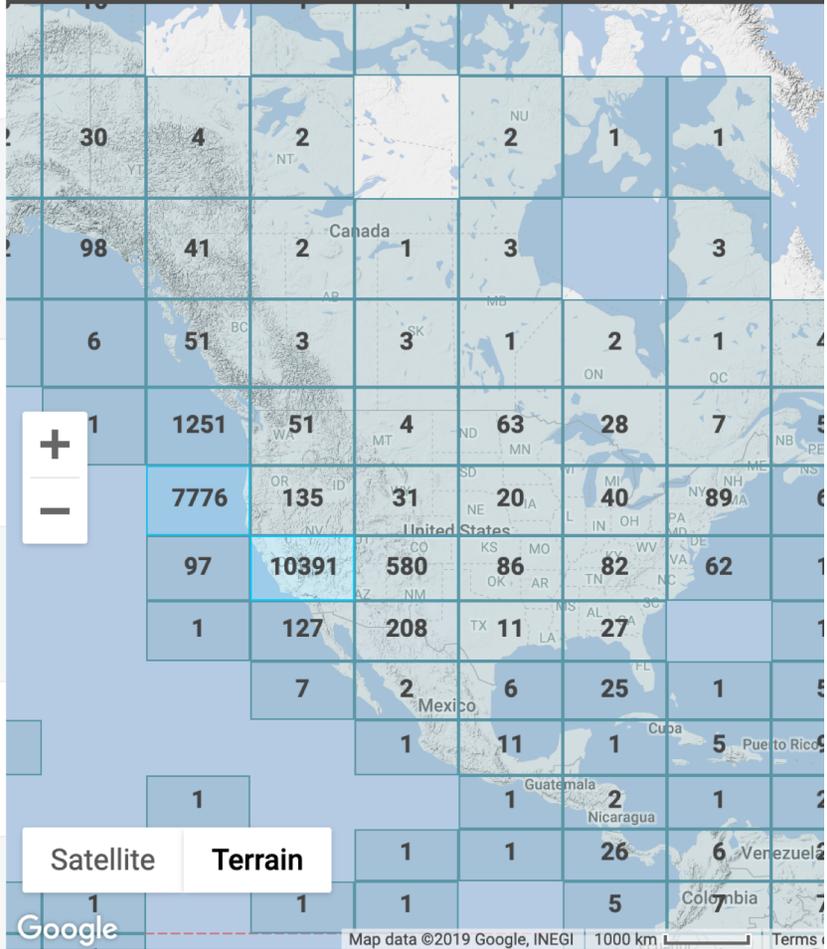
doi:10.5063/F14B2ZMJ.

**knb** Ariel Simons. 2019. **Benthic macroinvertebrate community count data. California streams (1994 - 2016).** Knowledge Network for Biocomplexity.

doi:10.5063/F10K26VR.

**knb** Stephanie Pau. 2023. **Leaf and reproductive litterfall from Laupahoehoe, Hawaii from October 2009 to July 2018.** Knowledge Network for Biocomplexity. urn:uuid:f3a91e26-03a9-449c-8e6a-04a137f8d139.

Hide Map >>

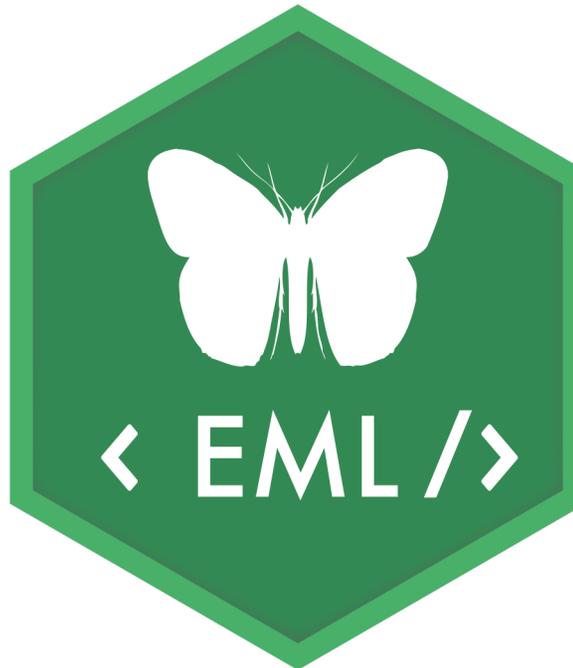


# Metadata Standards



## Darwin Core

Darwin Core is a standard maintained by the Darwin Core maintenance group. It includes a glossary of terms intended to facilitate the sharing of information about biological diversity by providing identifiers, labels, and definitions. Darwin Core is primarily based on taxa, their occurrence in nature as documented by observations, specimens, samples, and related information.



Ecological Metadata Language



# Secondary Linking Databases



BAT ECO-INTERACTIONS



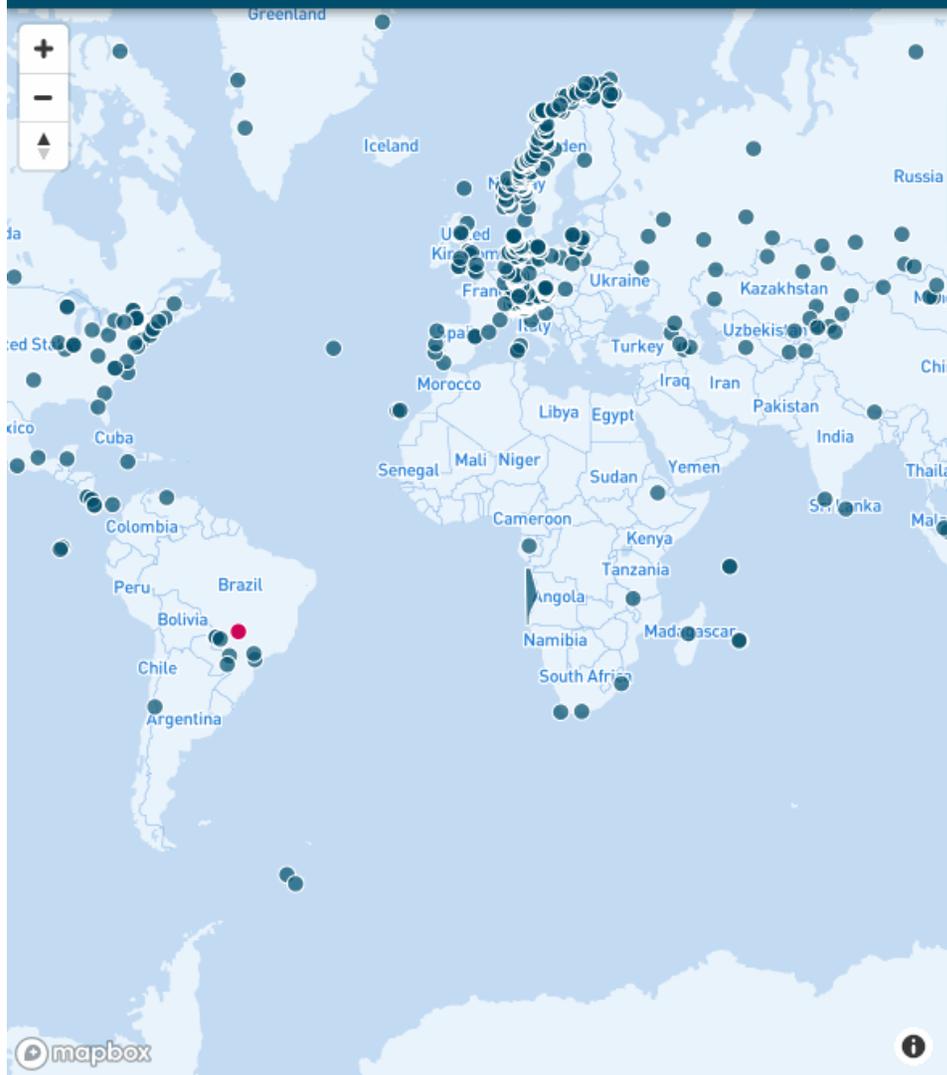
Welcome to the  
**Global Mammal Parasite Database**





Example queries: [What do sea otters \(\*Enhydra lutris\*\) eat?](#) or [What do honey bees \(\*Apis\*\) pollinate?](#)

What kind of  do   according to  ?



NETWORK

NODE PROPERTIES

INTERACTIONS LIST

DATASET

### Interaction of a mixed food web in the Corrente River in the Paraná River Basin

Mangal network ID #1448, measurement date: 2003-05-01

Public

Unrecorded absences

Number of nodes

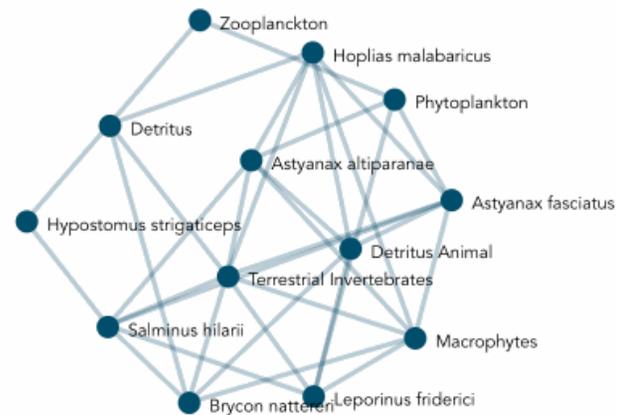
13

Number of interactions

34

Connectance

0.20



# Ontologies / Vocabularies

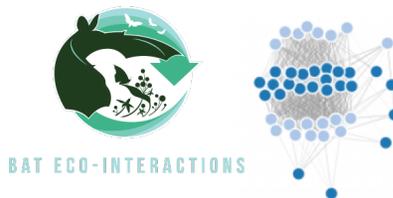
- Host Species (ITIS, CoL)
- Pathogen Species (ICTV)
- Interaction Types
- Assays and methods
- Units of measure

# The Gap for Disease Surveillance Data

## Disease State Information



**GloBI**



Event ID	Lat	Long	Time	Habitat...
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Animal ID	Event ID	Species	Sex	Mass...
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Specimen ID	Animal ID	Specimen Type	Storage Medium	Storage Location...
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Test ID	Specimen ID	Test Type	Test Result	Sequence...



# Options for BOHRN

- Premier One Health Surveillance Database
- Centralized BOHRN database
- A common One Health Data Standard
- Layer on top of existing databases
- Centralized metadata store
- Communications portal and directory

# Over to You

## Options

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## Challenges and Considerations

- Differential privacy
- Human subjects data
- Incentives, Effort, Training
- Existing workflows and systems
- Staleness and sustainability
- Capturing other activities and capacities

# Challenges and Discussion Points

- Differential privacy
- Human subjects data
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