

# DiGIn



DIGITIZING MARINE  
INVERTEBRATE COLLECTIONS

UNIVERSITY OF MIAMI  
ROSENSTIEL  
SCHOOL of MARINE &  
ATMOSPHERIC SCIENCE



BISHOP MUSEUM



MUSEUM OF  
NATURAL  
HISTORY



Biodiversity  
Knowledge  
Integration  
Center

Arizona State  
University

CSUDH

CALIFORNIA STATE UNIVERSITY, DOMINGUEZ HILLS

SANTA BARBARA  
MUSEUM  
of  
NATURAL  
HISTORY

150 YEARS

AMERICAN MUSEUM  
of NATURAL HISTORY



NORTH  
CAROLINA  
Museum of  
Natural Sciences



SCRIPPS INSTITUTION OF  
OCEANOGRAPHY

UC San Diego



FLORIDA  
MUSEUM



Q-quatics



CALIFORNIA  
ACADEMY OF  
SCIENCES



The Academy of  
Natural Sciences  
of DREXEL UNIVERSITY



VIMS | WILLIAM  
& MARY  
VIRGINIA INSTITUTE OF MARINE SCIENCE

MUSEUM OF COMPARATIVE ZOOLOGY



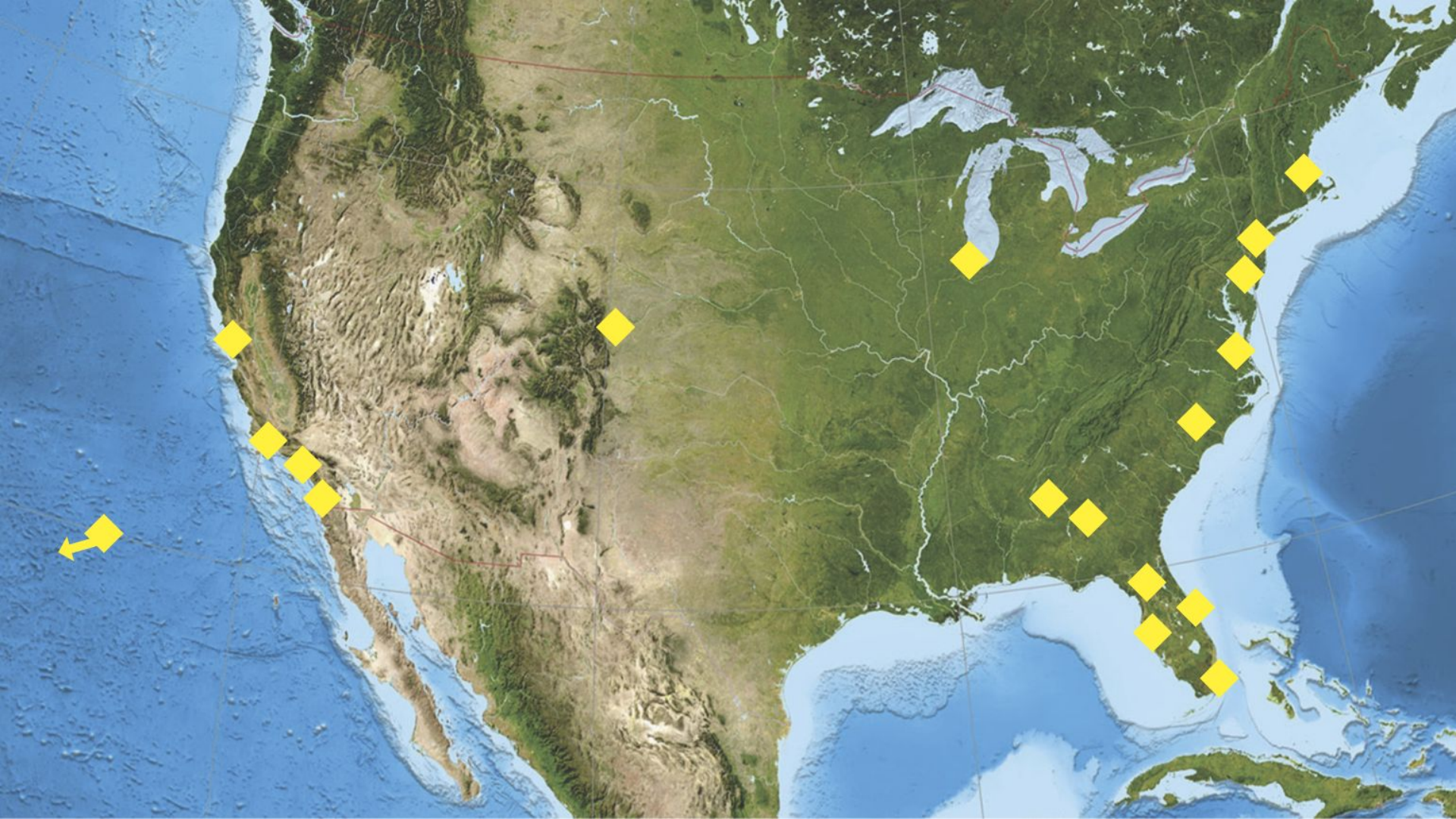
HARVARD UNIVERSITY



HARBOR BRANCH

FLORIDA ATLANTIC UNIVERSITY

Yale PEABODY MUSEUM  
OF NATURAL HISTORY



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# The task at hand

- Adding 835,000 lots, representing 7.5 million specimens to iDigBio and GBIF databases
- Georeferencing 175,000 existing and newly digitizes station records
- Improving nomenclatural standardization, facilitating taxonomic resolution
- Unifying the collections community with best practices and training
- Collaborating with K-16 educators to develop open and modifiable lessons
- Develop tools and resources for undergraduate student training, public engagement, and online participation via Zooniverse and other platforms

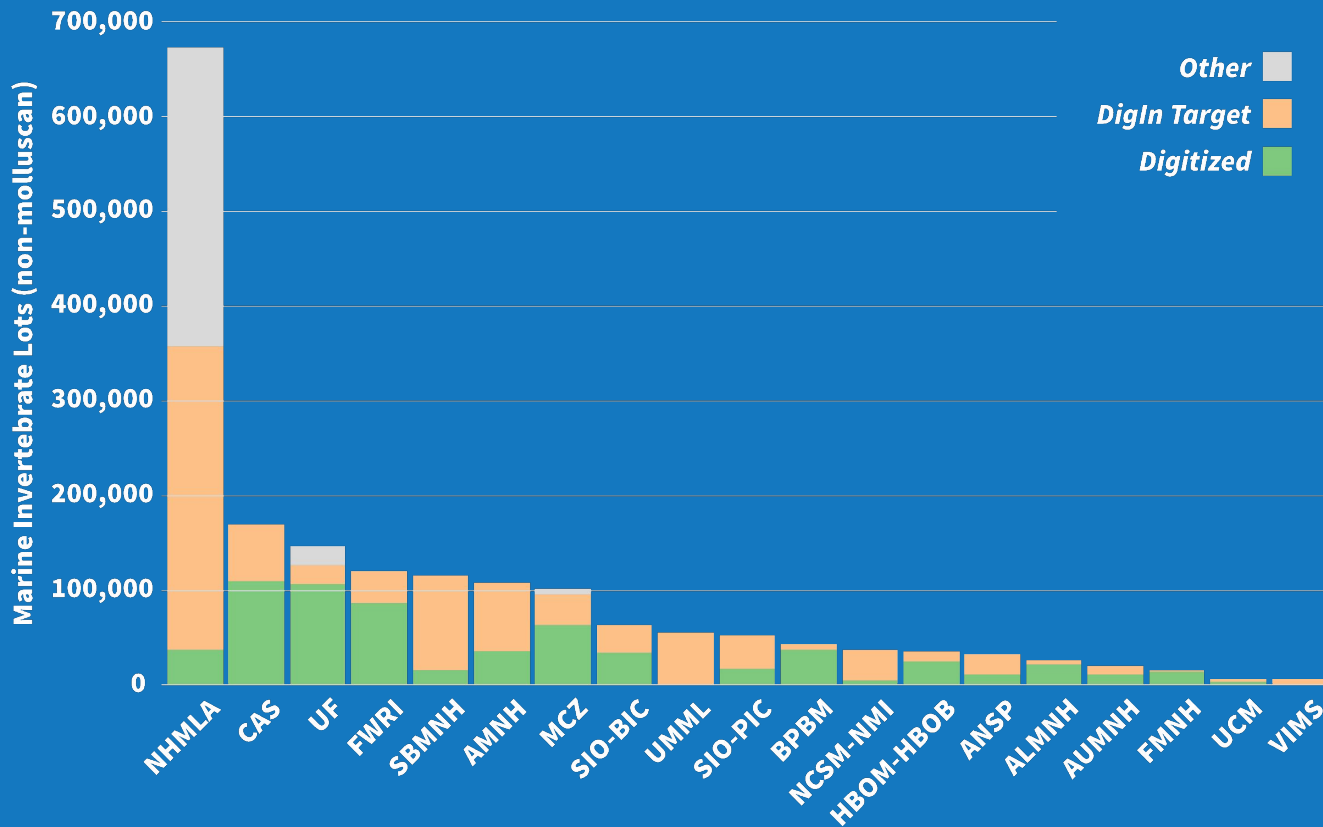


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# Key challenge: workflow diversity

- **Marshalling existing digitized records — diversity of sources and platforms**
- **Expedition station data — cross-collection, cross-institutional**
  - Shared centralized resource for all collections
- **Georeferencing — new features: complex geospatial representation, elevation & bathymetry**
- **Specimen data**
  - Data capture from specimen labels, paper/cards
  - Linking existing specimen images (minimal new specimen imaging)
  - Linking existing genetic/tissue data
  - Nomenclatural reconciliation (based primarily on WoRMS)
  - Multiple workflows needed to capture data from specimen containers

# Institutional holdings



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# One lesson learned

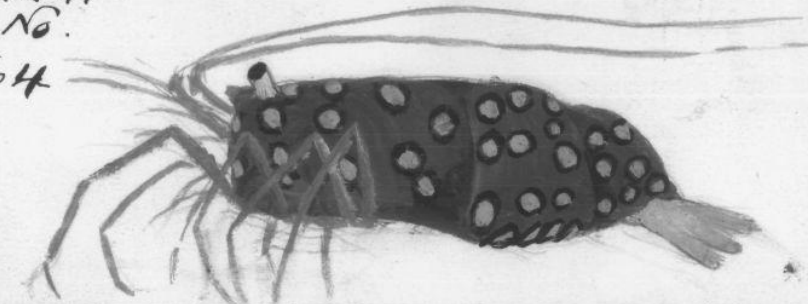
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# Just say no to email





A.M.N.H.  
Cgt. No.  
9864



831D arc

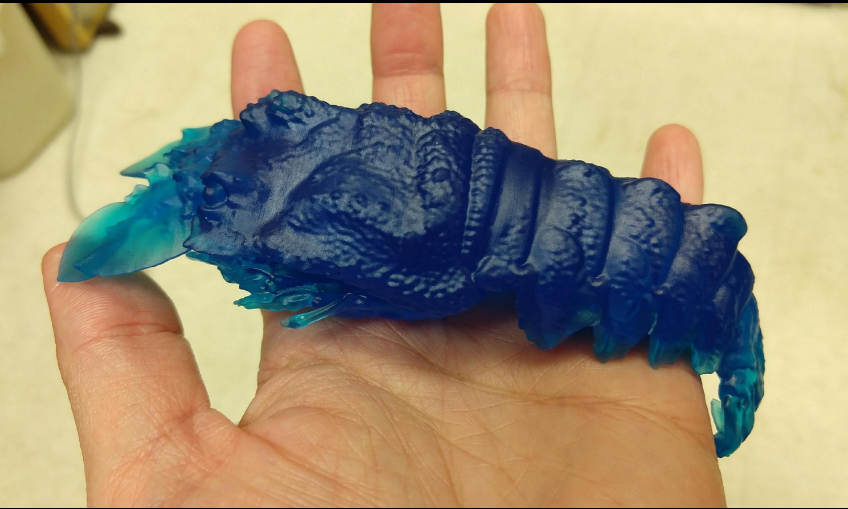
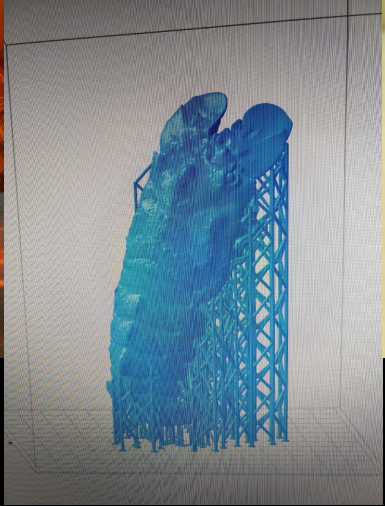
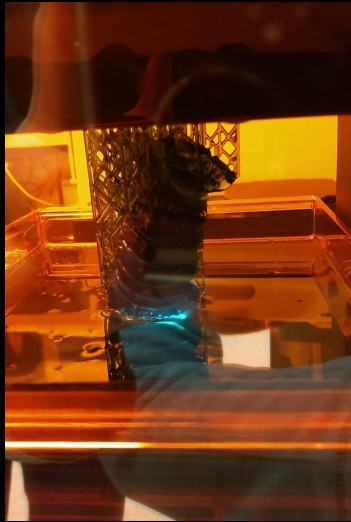
Dept. No. 9864	RECORD CATALOGUE		Date Received
Acc'n No. 7283	ARTHROPODA		Number of Specimens
Orig. No.	Gnathophyllidae		Sex
	FAMILY NAME HIPPOLYTIDAE		Growth
SCIENTIFIC NAME	Thor paschalis (Heller) 1861 <i>Gnathophyllus</i>		
IDENTIFIED BY	Dr. W.G. Van Name <i>Sp.?</i>		
LOCALITY	Lake Worth, Florida		
DATE WHEN COLLECTED	February 1946	CHARACTER OF SPECIMEN	Alc
COLLECTOR	T. McGinity		
REMARKS	Color of back dark brown with large orange black bordered ocellate spots. Color sketch by A.H. Verrill		
	<i>Changed by Jca.</i>		

Amer. Mus. Nat. Hist.



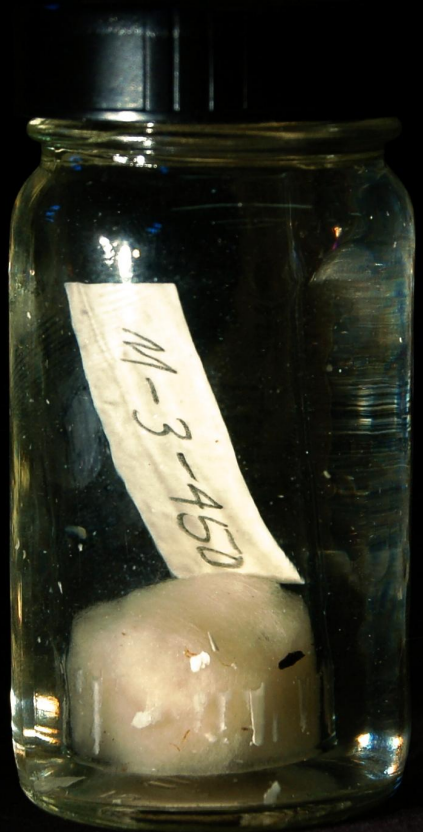






















Diana Uski - LMU Rosenstiel School of Marine and Atmospheric Science



















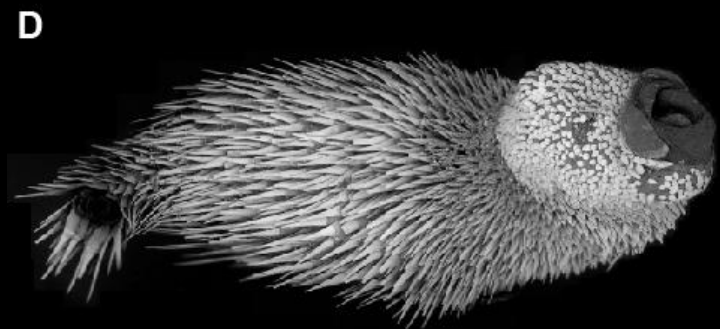
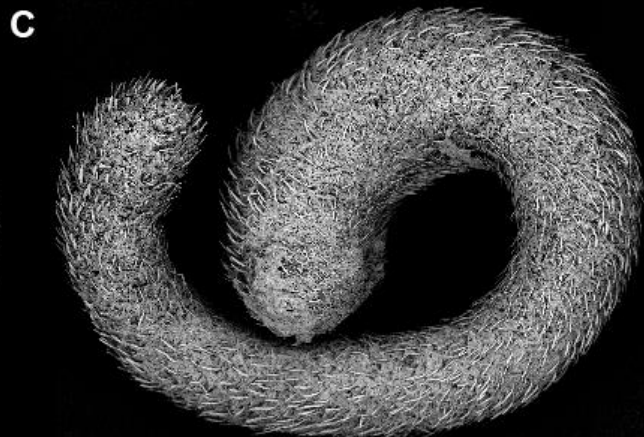
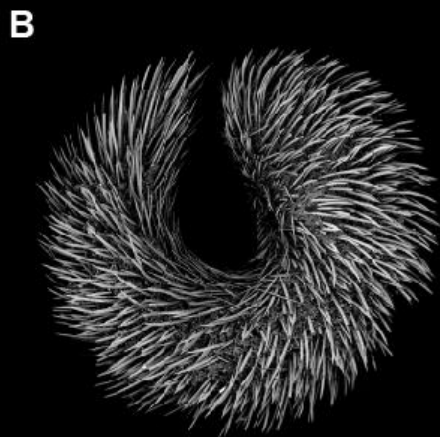
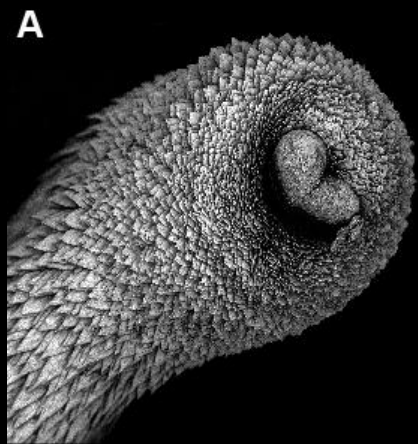




**HURRICANE SHELTER**













### Search Records

search all fields

Must have media  Must have map point

Filters | Mapping | Sorting | Download

Add a field  Clear

Class: Malacostraca  
 Present  Missing

Recordset: EBN153AN-P116A-4161-bd1c1-47318R4G345  
 Present  Missing

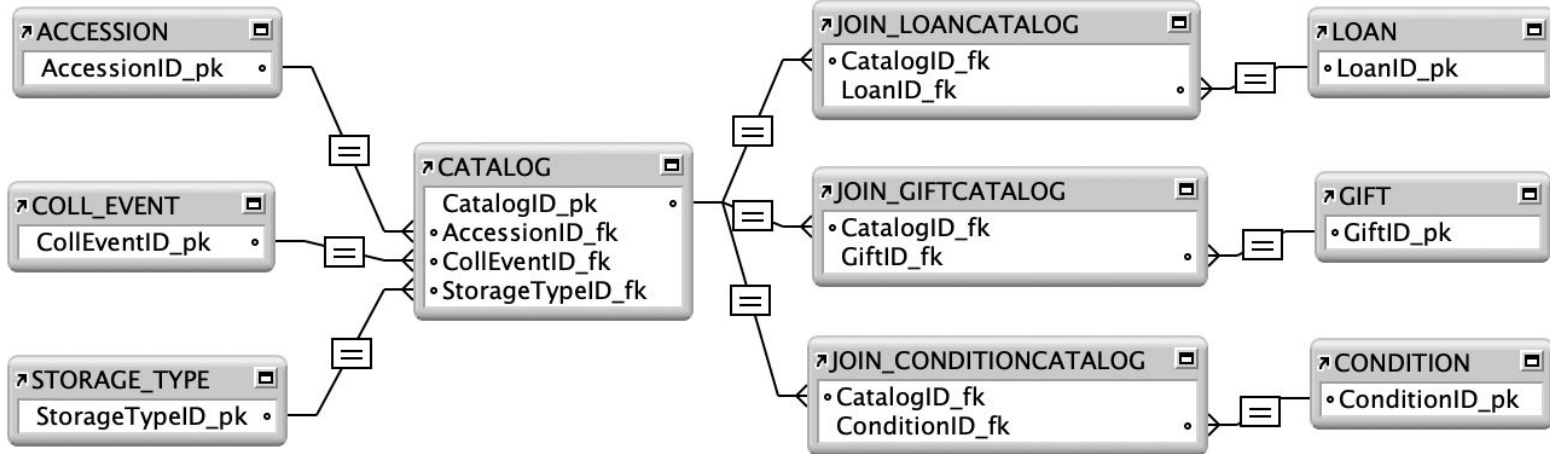
Scientific Name: dws:scientificName  Add EOL Synonyms  
 Present  Missing

Scroll To Bottom

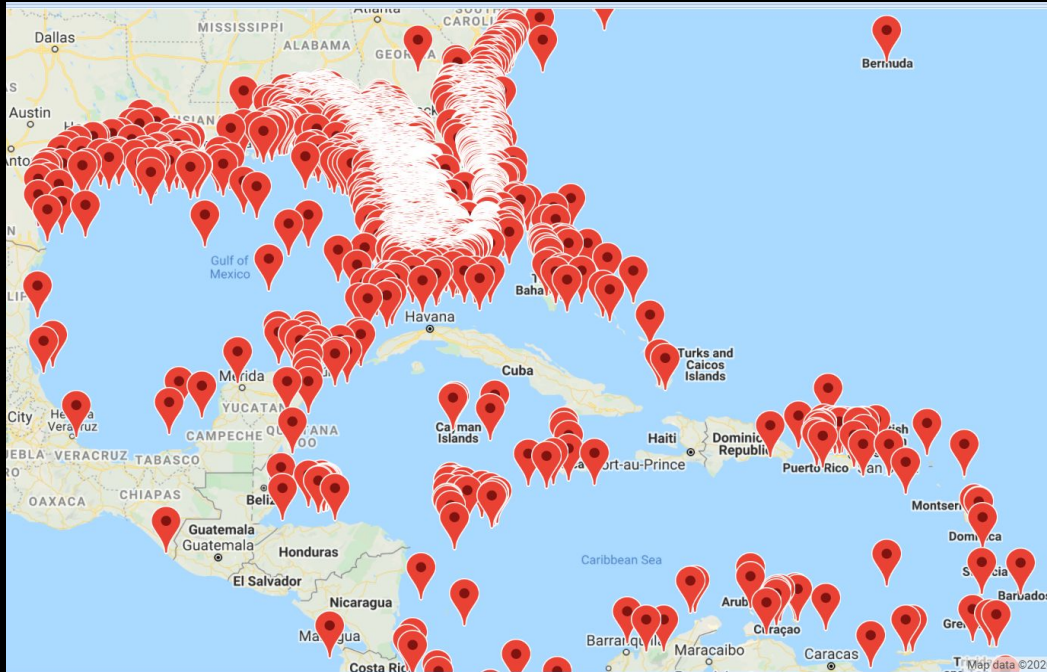


List | Labels | Media | Recordsets Total: 46 549














Natural History Collections +  
NEON Biorepository

*Symbiota* data portals make  
biodiversity data collected at  
different scales interoperable















Small white tag with text, likely a specimen label, partially obscured.



Small white tag with text, likely a specimen label.









## Symbiota Collections of Arthropods Network (SCAN): A Data Portal Built to Visualize, Manipulate, and Export Species Occurrences

Symbiota Collections of Arthropods Network (SCAN) serves specimen occurrence records and images from over 100 North American arthropod collections for **all** arthropod taxa. The focus is on North America, but the database is global in scope. SCAN is built on Symbiota, a web-based collections database system that is used for other taxonomic data portals, including (Symbiota Portals). SCAN is the primary repository for occurrence data produced by the four continuing Thematic Collections Networks (TCNs), the Southwest Collections of Arthropods Network (SCAN TCN), the Lepidoptera of North America Network (LepNet TCN), Terrestrial Invertebrate Tracker (TPT), and arthropod data produced by InvertEBase TCN. InvertEBase serves occurrence data for mollusk and other non-arthropod taxa. We also host observational data, the largest data provider on iNaturalist. Each collection is primarily responsible for their data and we have structured the database to make it easy to include collections of interest when querying the database.

### Important features of all Symbiota portals include:

1. Easy web-based data entry.
2. Download entire datasets in two clicks.
3. Map georeferenced records in two clicks.
4. Upload high-resolution images & create species profile pages.
5. Design custom species lists for any locality at multiple scales.
6. Develop educational games with data.

#### Taxon Search









**Eastern Seaboard**  
Mobilizing Millions of Marine Mollusks



**Invert  
EBase**





**Mahalo- Let's go  
DigIn!**

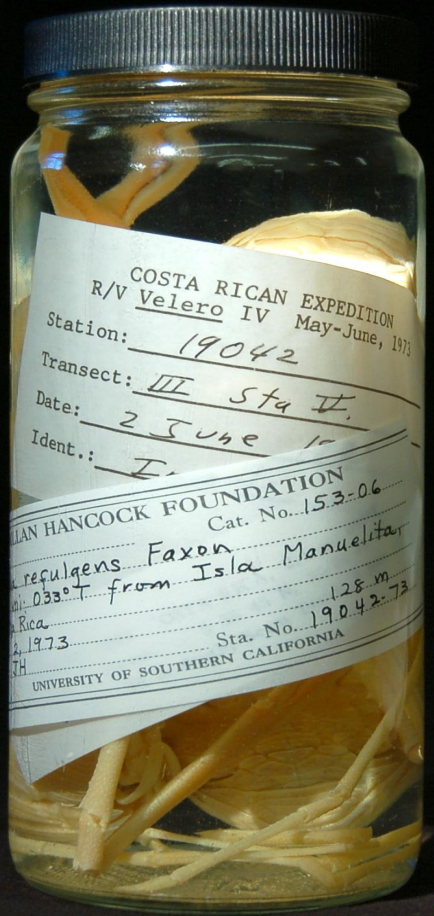












COSTA RICAN EXPEDITION  
 R/V Velero IV May-June, 1973  
 Station: 19042  
 Transect: III Sta II  
 Date: 2 June 1973  
 Ident.: I

WILLIAM H. H. FOUNDATION  
 Cat. No. 153-06  
regulgens Faxon  
 Collected from Isla Manuelita  
 Costa Rica 128 m  
 June 1973 Sta. No. 19042-73  
 UNIVERSITY OF SOUTHERN CALIFORNIA













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# Say yes to Slack



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# Just say no to email

- Google drive space (Google docs, sheets, presentations, recordings, etc.) – filing hierarchy for all documents and folders
- Working groups or recurring meetings have a single agenda document – just add agenda items to the top of the page, and add meeting notes in real-time during the meeting – one stop shopping, chronologically ordered – everyone has editing privileges
- Slack mandatory for all communication – everything we write to each other is posted and archived in one place and completely searchable
- Slack channels for topics and working groups – these are places for discussion, making announcements, organizing threads, and archiving conversations – calendars automatically linked to send reminders
- Connect your Slack to other groups (e.g., ESB TCN, BugFlow, and others)

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**It takes a large village to digitize**



ALMNH University of Alabama, Tuscaloosa, AL (K.Kocot, K. Abbott, S. Hennig, J. Beights, M. Yap-Chiongco, N. Roberts)

AMNH American Museum of Natural History, New York, NY (E.Rodríguez, C.Johnson, L. Berniker, M. Doering, L. Gusmão, A. Davis, J. Stenzel)

ANSP Academy of Natural Sciences, Philadelphia, PA (G.Rosenberg, P.Callomon, A. Farley Drexel)

ASU Arizona State University, Tempe, AZ [subaward] (E.Gilbert, N. Franz, K. Pearson)

AUMNH Auburn University, Auburn, AL (K.Halanych, N. Noor)

BPBM Bishop Museum, Honolulu, HI (H.Bolick, K.Hayes, N. Walvoord, W. Tukumine)

CAS California Academy of Sciences, San Francisco, CA (C.Piotrowski, E. Kools, J. Loacker)

FMNH Field Museum of Natural History, Chicago, IL [subward] (R.Bieler, P.Sierwald)

FWRI Fish and Wildlife Research Institute, St. Petersburg, FL (P.Larson, C. Fuchs, H. Holloway)

HBOM Florida Atlantic University, Fort Pierce, FL (D.Hanisak, N. Seiden, M. Williams)

MCZ Harvard University, Cambridge, MA (J.Hanken, A.Baldinger, J. Lenihan-Trimble, P. Benson, J. Goldstein)

NCSM-NMI North Carolina Museum of Natural Sciences, Raleigh, NC (B.Williams, M.McCuller)

NHMLA Natural History Museum of Los Angeles County (lead), Los Angeles, CA (R.Wetzer, E.Ellwood, T.Roberts, K.Omura, J.Wall, A.Wall, N.D.Pentcheff, L. Harris, B.Yanuskevich, M. Guevara, M.Herrera)

Q-Quatics, Laguna, Philippines [subaward] (N.Bailly, L. Abucay)

RSMAS University of Miami, Rosenstiel School of Marine & Atmospheric Science, Miami, FL (N.Traylor-Knowles, M. Ciales, A. Clark)

SBNHM Santa Barbara Museum of Natural History, Santa Barbara, CA (D.Geiger, V.Delnavaz)

SIO-BIC Scripps Institution of Oceanography, University of California San Diego, CA (G.Rouse, C.Seid, K. Green, P. Proctor)

SIO-PIC Scripps Institution of Oceanography, University of California San Diego, CA (M.Ohman, L.Sala)

UCM University of Colorado, Boulder, CO (J.Li, L.Elder, E. Nielsen)

UF University of Florida, Gainesville, FL (G.Paulay, J. Slapcinsky, A. Bemis, B. Wilkinson, students: D. Bennett, G. O'Donnell, E. Ibanez, A. Smith, D. Noto, M. Huang, Z. Zacharias)

VIMS College of William & Mary—Virginia Institute of Marine Science, Gloucester Point, VA (J.Dreyer, G. Buoncristiano-Thai)

YPM Yale University Peabody Museum of Natural History, Boston, MA [subaward], (N.Rios)

Not funded, but participating –

USNM National Museum of Natural History (W.Moser, K.Reed)

TAMU Texas A&M University (M.Wicksten)

