

SCAN-LepNet TCNs

1. Overview and growth of SCAN

2. LepNet is adding PENs

3. The need for “Deep Digitization” (iDigBees)

4. Highlight PEN grants



LepNet

- A. SDNHM –Leps of Southern California & Baja Mexico (Michael Wall)
- B. U of Wisconsin – Lepidoptera across stress zones in the upper Midwest (Craig Brabant)
- C. UNH – New England Lepidoptera (Istvan Miko)

SCAN (Southwest Collections of Arthropods Network)

- A. ANMH – Ground-dwelling arthropods of the Southwest (Chris Johnson)

Seeding Sustainable Digitization



SCAN TCN 2012-2016 (Active PENs continue)

1. **10** Collections, **7** funded PEN Projects, 1 pending
2. Original focus on Southwest Ground-Dwelling Arthropods
3. **2,252,066** records to date (2X expected)
4. **65** non-ADBC funded collections, **1,040,293** digitized records
5. **36** pubs on SCAN or using data
6. **Current focus = North American Arthropods, 253 collections, 25 million records and 5.2 million images**

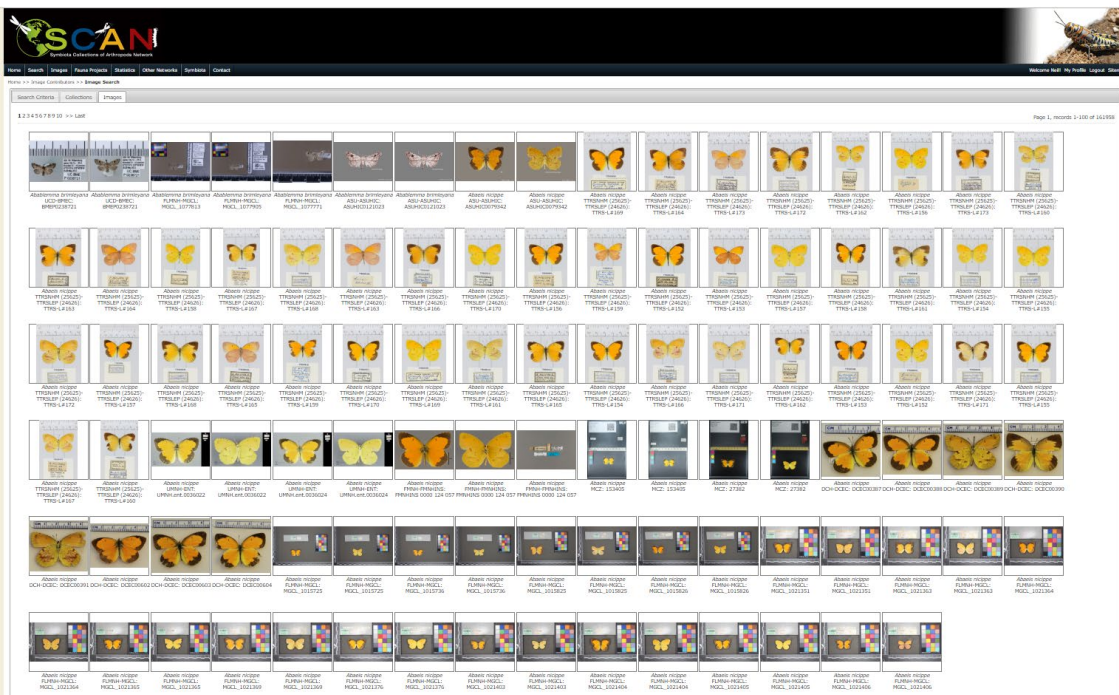


Core TCN Collections 2016-2020-1

1. Focus on North American Lepidoptera - ~142,000 species
2. 26 Collections, 3 PEN grant, 1 pending
3. 1.5 million records, 172k images

Broader Impacts

1. 132 collections contribute > 2.2 million Lepidoptera records
2. 148 families represented
3. 93% of records from North America, but 358 countries/regions represented





Home Search Images Fauna Projects Statistics

Symbiote Collections of Arthropods Network

The Symbiote Collections of Arthropods Network (SCAN) The focus is on North America but global in scope. SCAN (Symbiote Portals). SCAN is the primary repository for the Arthropods Network (SCAN TCN), the Lepidoptera of North America (SCAN LepNet), the Lepidoptera of North America for mollusk and other non-arthropod taxa. We also host several national data portals. The largest data provider to the network is 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.

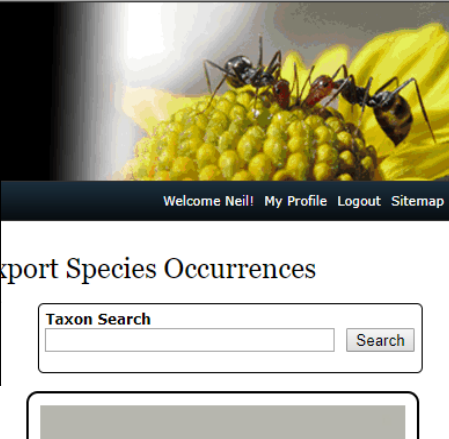
Important features of all Symbiote portals include:

1. Easy web-based data entry
2. Download entire dataset
3. Map georeferenced records
4. Upload high-resolution images
5. Design custom species lists
6. Develop educational games
7. Create taxonomic keys.

The key organizational feature is "collections", or just a subset, of network updates.

SCAN currently serves over 18

| | | |
|------------------|--------------------|----------------------|
| SCAN Collections | Not Yet Digitizing | Total North American |
| 113 | 80 | 193 |



SCAN Portal

1. Data Portal

- Tri-Trophic
- InvertEBase
- LepNet
- Parasite Tracker
- Original SCAN
- North American collections & Larger North American data



Get a free 1-on-1 Demo
Manage your collection data with a free skype/phone meeting

SCAN Overview
The primary purpose of the SCAN data portal. The SCAN portal is not good for providing data. It is focused on supporting the 4th year and much of the LepNet project website. SCAN data portal is an arthropod collection database with 4.7 million images.



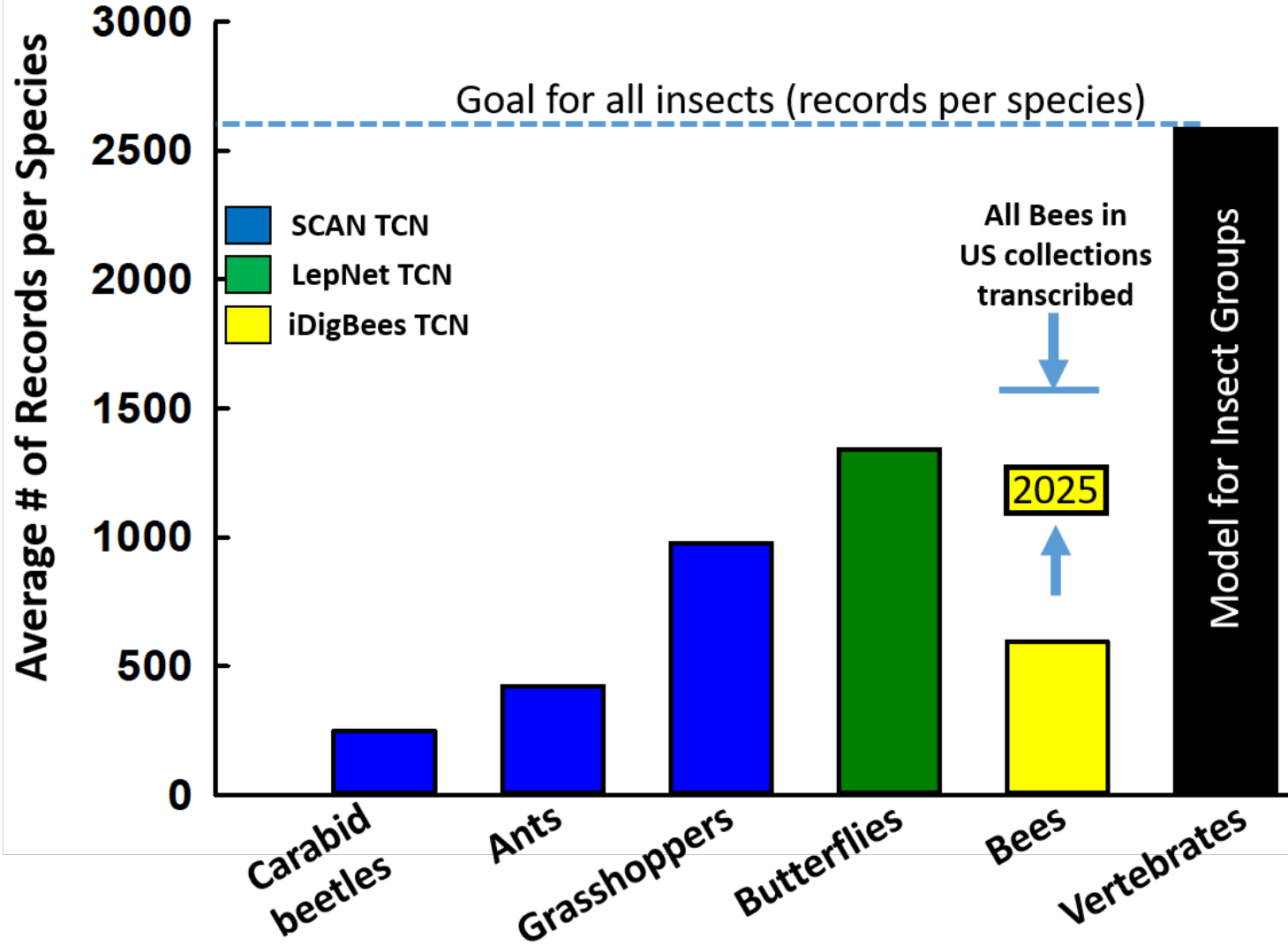
2. Most Complete Occurrence data for North America (25 million records) (5.2 million images)

3. WordPress site

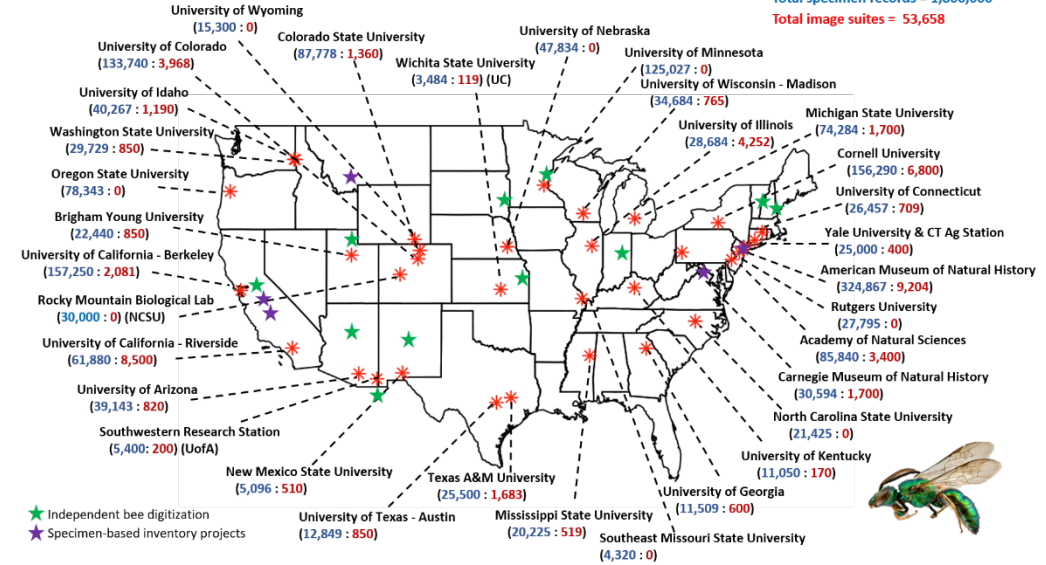
4. The Arthropod Index Database of 933 arthropod collections



Data Adequacy: Deep Digitization in Terrestrial Insects



iDigBees Research Collections



Partners to Existing Networks (PEN) Summaries

LepNet

San Diego Natural History Museum –Leps of Southern California & Baja Mexico (Michael Wall)

University of Wisconsin – Lepidoptera across stress zones in the upper Midwest (Craig Brabant)

University of New Hampshire – New England Lepidoptera (Istvan Miko)

SCAN (Southwest Collections of Arthropods Network)

American Museum of Natural History – Ground-dwelling arthropods of the Southwest
(Chris Johnson)

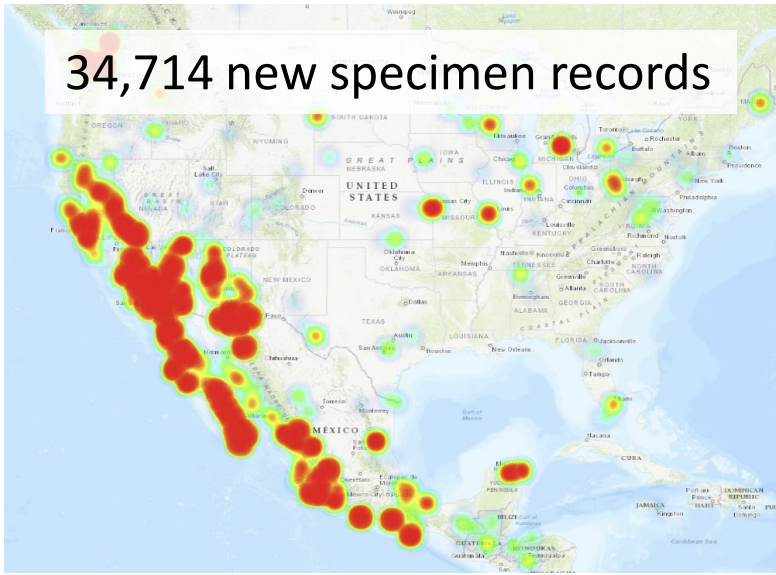


**SAN DIEGO
NATURAL HISTORY
MUSEUM**

PEN Filling Gaps

(based on Tortricidae)

34,714 new specimen records



Temporal
(specimen
records)

SDNHM
14% from 1900-1915
(n=307)

All other SCAN
0.2% from 1900-1915
(n=7)

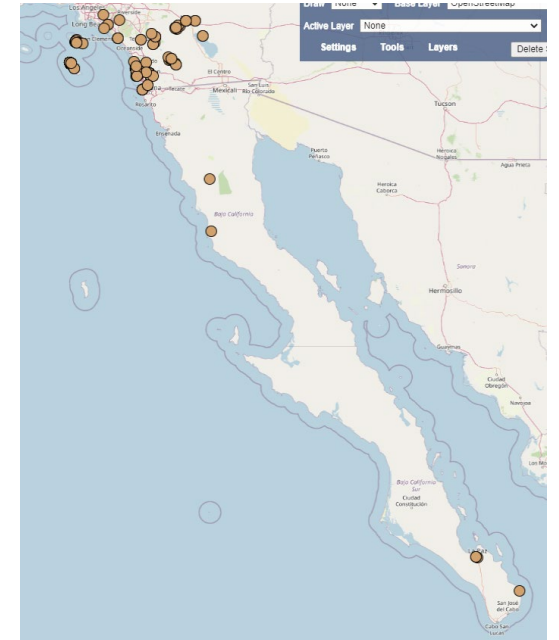
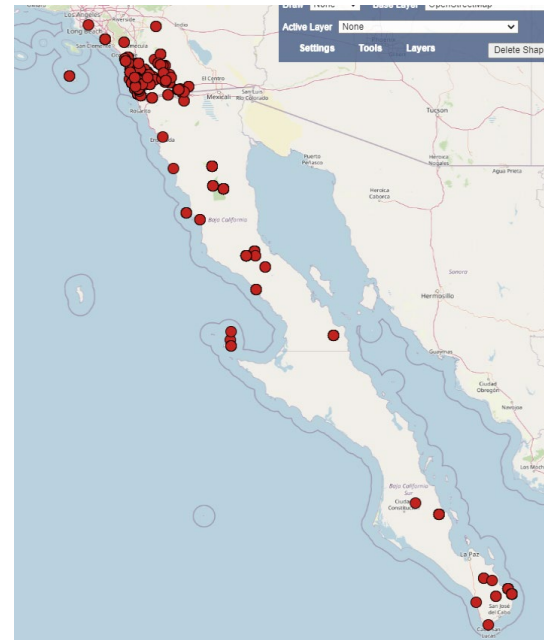
Taxonomic
(species-
level taxa)

16 of 87 species level taxa (18%) are new
for CA in SCAN

7922 specimens with images



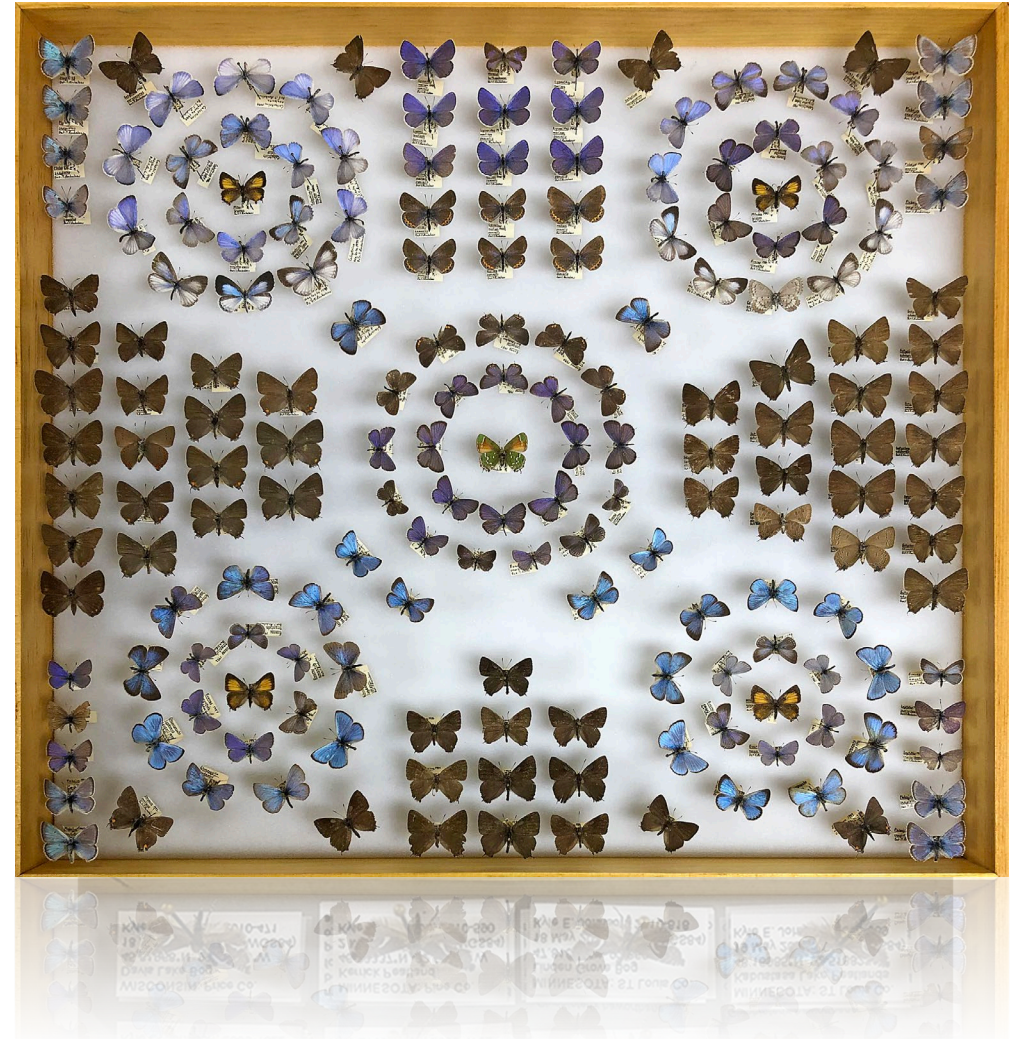
Geographic
(specimen
records)



PEN: Digitization: Enhancing LepNet: Digitization and integration of significant butterfly and moth collections from the upper Midwest Tension Zone region



- Provide digitized and georeferenced data for nearly 70,000 North American Lepidoptera specimens
- High-resolution images will also be generated for ~1,500 adult exemplar specimens
- Inclusion of the WIRC dataset will significantly increase the number of species-level occurrences for the Great Lake Tension Zone region for most Lepidoptera superfamilies, which will...
- ...greatly enhance the target number of species for ecological niche modeling

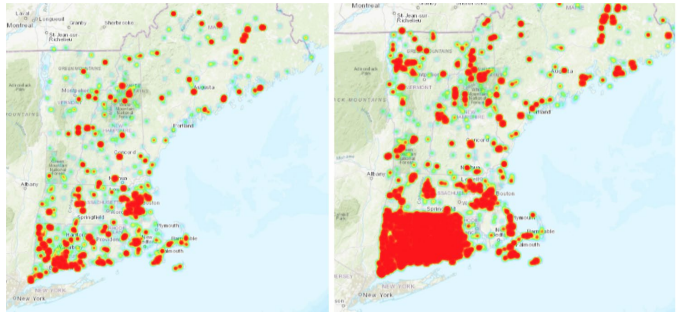
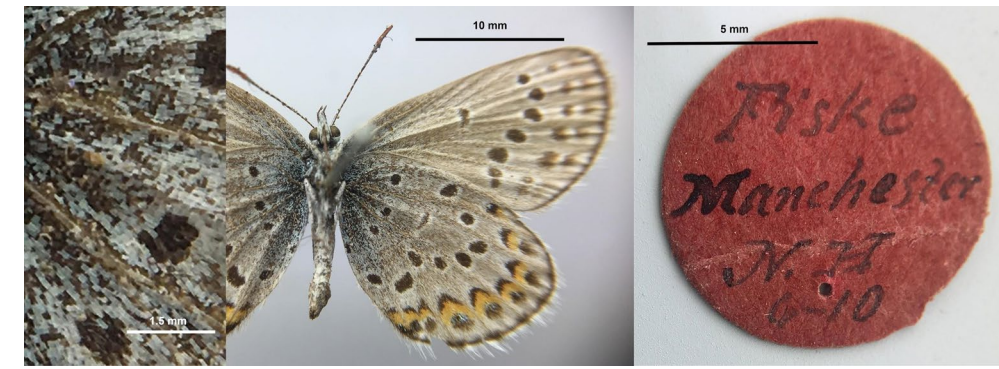


Wisconsin Insect Research Collection (WIRC)

• University of Wisconsin-Madison

Digitization PEN: Integration of data from the UNH Insect Collection with LepNet.

- Focus on New England Lepidoptera collected before 1965
- Image and transcribe labels for 30000
- Increase New England species in LepNet by 63% and specimens by 40%
- Cell phone-based imaging workflow



NSF PEN: Filling gaps with AMNH Ground-dwelling NA Orthopteroids (Polyneoptera)

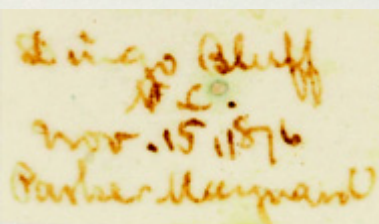


Goal:

- ❖ Digitize ~54K North American ground-dwelling orthopteroids (crickets, grasshoppers, earwigs, roaches)

Scheme:

- ❖ Expert Visits (Hojun Sung, Jeff Cole) to rectify mis-indentifications
- ❖ Hired Interns to image specimens & labels, use OCR to assist with data entry, & georeference localities
- ❖ PI management of data quality (taxonomy, localities, names) & data sharing



Product:

- ❖ Filled taxon, locality & temporal gaps in SCAN dataset with AMNH specimens
 - Added records for >55 unique species, doubled locality records, 65-95% increase in records prior to 1965
- ❖ Wing & cerci images for data visualization projects looking at variation within & between sex & species across gradients & populations.



AMNH_IJC 01234567



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