

# InvertEBase

Reaching Back to See the Future:

## Species-rich Invertebrate Faunas Document Causes and Consequences of Biodiversity Shifts in North America

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On behalf of the InvertEBase TCN PIs





## InverteBase: North American terrestrial & aquatic invertebrates

### Eight institutions, 13 collections

- Selected terrestrials and aquatic insects (e.g., dragonflies, water beetles); arachnids, myriapods, and mollusks
- Digitize, georeference, mobilize up to 3 million specimen data
- Several museums serve data online for the first time (DMNH, AUMNH, CMNH)
- Arthropod data served on 
- Invertebrate data served on InverteBase

California Academy of Sciences – Inverts  
 Invertebrate Collection at the Natural History Collection of Utah  
 Carnegie Museum of Natural History – Mollusks  
 Naturalis Biodiversity Center (NL) – Mollusks  
 Chicago Academy of Sciences – Mollusks  
 North Carolina Museum of Natural Sciences – Mollusk Collection  
 Colorado Plateau Biodiversity Center –  
 Mollusks Sam Noble Oklahoma Museum of Natural History – Inverts  
 Mollusks Texas A&M University Biodiversity Research and Teaching Collections  
 Eastern Kentucky University Mollusk Collection  
 University of Alaska Museum – Inverts  
 Florida Museum of Natural History – Mollusks  
 Yale University Peabody Museum – Inverts  
 Illinois Natural History Survey- Mollusk Collection



InverteBase Portal moved to Arizona State University in 2019



Currently on InvertEBase (and growing)

- >2.2 million mollusk *lots* now available!
- FMNH, Auburn, Chicago Academy of Sciences, DMNH, UMMZ

Partner	Mollusk (M) or Insect (I)	#lots or occurrences	% geo referenced	estimated #specimens	as of	Notes:
Auburn U. MNH	M, I	133,486	31-82%	133,486	2021	new online
Chicago Academy of Sci	M, I	41,715	42	180,000	2021	PEN, new online
Cleveland MNH	I	126,703	97	126,703	2021	new online
Delaware MNH	M	79,751	61	784,820	2021	new online
Field MNH	M	256,522	22	2,565,220	2021	# includes all digitized material
Field MNH	I	462,736	75	438,272	2021	# includes all digitized material
Frost Entomological M	I	136,754	80	136,754	2021	new online
Museum of N. Arizona	I	456	87-100	456	2021	PEN, new online
U. Colorado MNH	I	100,754	100	100,754	2021	PEN, new online
U Mich Mus Zoology	M	363,000	75	1,050,940	2021	
U Mich Mus Zoology	I	190,557	42	190,557	2021	
<b>Total lots</b>	<b>Total lots</b>	<b>1,892,434</b>	<b>Total Spms</b>	<b>5,707,962</b>		



# Sustaining Digitization

PEN grants associated with the InvertEBase TCN



Joining in 2016: completed    in 2018: now complet    in 2020: Colorado University Museum

Sustaining the DIGITIZATION EFFORTS at FMNH:

1. PEN to the SCAN-Bug project, digitizing and imaging NA beetle specimens of darkling beetles (*Tenebrionidae*, eeh, mealworms), featherwing beetles (*Ptiliidae*) and *Pselaphinae* beetles (both are are really, really tiny), and ironclad beetles (*Zopheridae*)



2. The TPT TCN: tracking terrestrial parasites, see the presentation by lead PI Jen Zaspel.

FMNH is a collaborating partner collection in TPT due to its large parasite collections



## The future of the InvertEBase portal

The InvertEBase portal is expanding its mission, with new TCNs

### Eastern Seaboard TCN (“rounding up the usual suspects....”)

Following a series of workshops, surveys, and publications in the malacological community resulted in the Eastern Seaboard TCN



Also trending: DigIn TCN



Marine Life of Panama Portal



Partnerships with WoRMS: developing and sustaining the taxonomic authority files





# Lessons learned

1. Pre-curation, pre-curation, pre-curation
2. Voice recognition failed with data entry staff
3. Collection databases evolve during the grant period, e.g., standardization issues
4. IPT development problems for certain databases
5. Data entry in complex collection data management systems requires extensive training, not to be accomplished by short-term student interns
6. Well trained and long-term personnel increases data entry speed and accuracy
7. Data transcription via crowdsourcing requires careful proofing and correction by well-trained staff with taxonomic and geographic knowledge of the taxon group in question
8. **Continued and long-term Data integrity maintenance:** Extensive feedback notifications (e.g., envisaged via Filtered Push) to the data owner, e.g., id mistakes, spelling errors, cannot currently be handled by the existing permanent staff in collections
9. **Updating: taxonomy, geography, are the two most pressing immediate concerns to keep specimen collection databases current**