

Seeding Sustainable Digitization




SCAN 2012-2016 (Active - PENs continue)

1. **10** Collections, **6** funded PEN Projects
2. Original focus on Southwest Ground-Dwelling Arthropods
3. **2,050,000** records to date (1.8X expected)
4. **65** non-ADBC funded collections, **1,040,293** digitized records
5. **32** pubs on SCAN or using data
6. **Current focus = North American Arthropods, 18 million records**




LepNet 2016-2020

1. **26** Collections, **4** PEN Proposals
2. Focus on North American Lepidoptera
3. **900k** records, **120k** images,
4. Ingesting Lepidoptera data from **160** North America collections
> 2 million



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HOME SCAN GENERAL INFORMATION DIGITIZATION & IMAGING GUIDES DATA PROJECTS MEETINGS & TALKS EDUCATION & OUTREACH

Digitizing & Imaging Guides

The suite of pages under digitizing and imaging guides focus on the use of the Symbiota portal, which has two skins, **SCAN** and **LepNet**. They both share the same database and functionality. Curation pages cover pre-digitization curation.

Curation

Checkerboarding Avoid Checkerboarding: Efficiently digitizing a collection

Slotted Forceps Specifications for making slotted flat forceps to remove labels.

Collection organization examples: [U of Minnesota](#), [Northern Arizona University](#)

Specimen Digitization

Catalog Code The need to develop a catalogNumber format that is unique but workable

Darwin Core Fields Darwin Core fields (DwC) that are used by Symbiota

Data Entry & Editing Basic guide for people entering & editing data into a collection dataset (i.e., Live collection)

Georeferencing Guides A general guide for georeferencing


Imaging


6. Disseminate rich education-outreach content to students and the public through **LepXPLOr**.


LepNet shares the same database as Symbiota Collections of Arthropods Network (SCAN), which serves occurrence data and images for all arthropods. Both are built on Symbiota, a web-based collections database system that is used for other taxonomic data portals. Both portals work closely with iDigBio, which supports digitization efforts associated with the NSF-ADBC program (e.g., servers, workshops, technical support).

SEARCH

FOLLOW US ON TWITTER

 **Lep-Net.org** [Follow](#)

 **Lep-Net.org** @Lep_Net · 15 Sep
The dark side of Lepidoptera: Colour lightness of geometrid moths decreases with increasing latitude
<https://t.co/PGvuf6AHgN>
Twitter

 **Lep-Net.org** @Lep_Net · 15 Sep
Phylogeographic structure in three North American tent caterpillar species (Lepidoptera: Lasiocampidae): *Malacosoma americana*, *M. californica*, and *M. disstria* <https://t.co/nHuY8QG8Vh>

SCAN & LepNet

1. Two flavors of homepage, but one database hosted by ACIS (UF)
2. Everyone contributes to taxonomy tables, data cleaning, data standards and development of added-value functions

Search Records

<http://scan-bugs.org/portal/collections/index.php>

Statistics Summary

<http://scan-bugs.org>

Select

Display

Show St

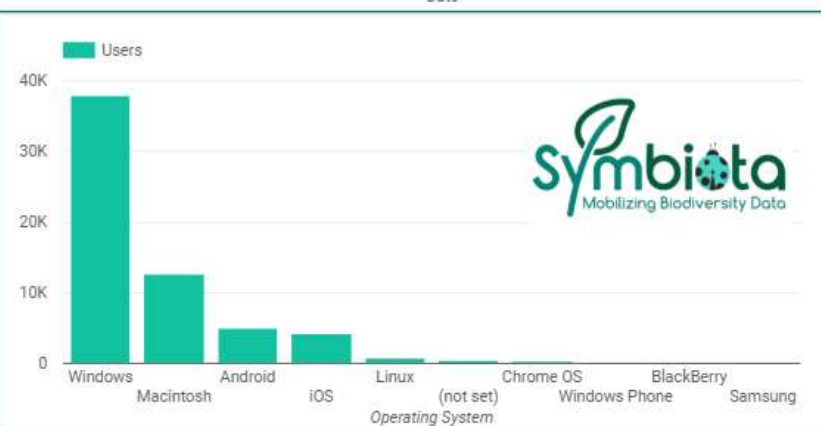
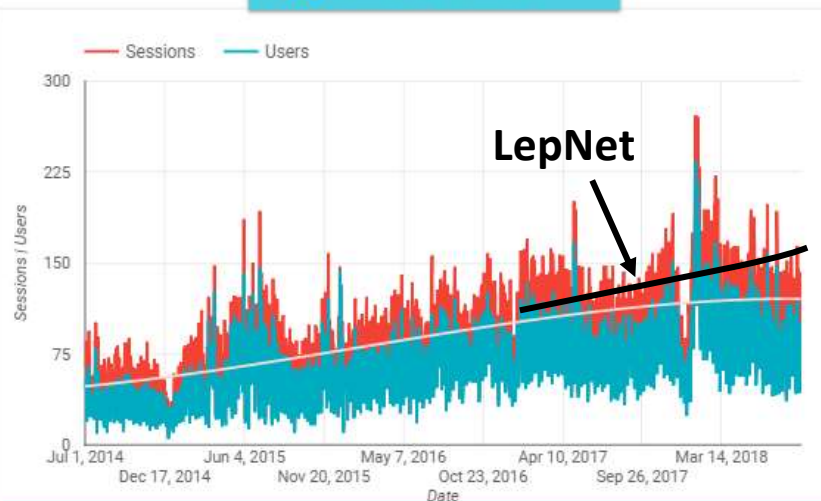
SCAN Data Portal Statistics (www.scan-bugs.org)

Data from Google Analytics

Users: 62,111 Sessions: 135,822 Pageviews: 476,992 Bounce Rate: 49.96% New Users: 61,920 Pages / Session: 3.51 Avg. Session Duration: 00:04:17 Number of Sessions per User: 2.19



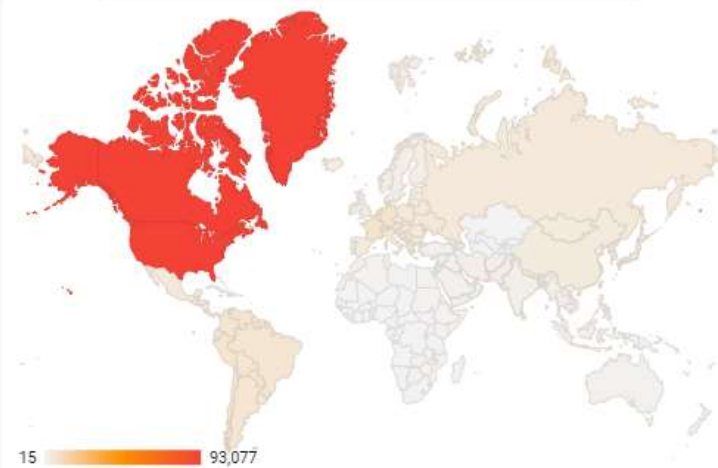
Default Data
Click to select your dat



Google Analytics



Jul 1, 2014 - Aug 29, 2018



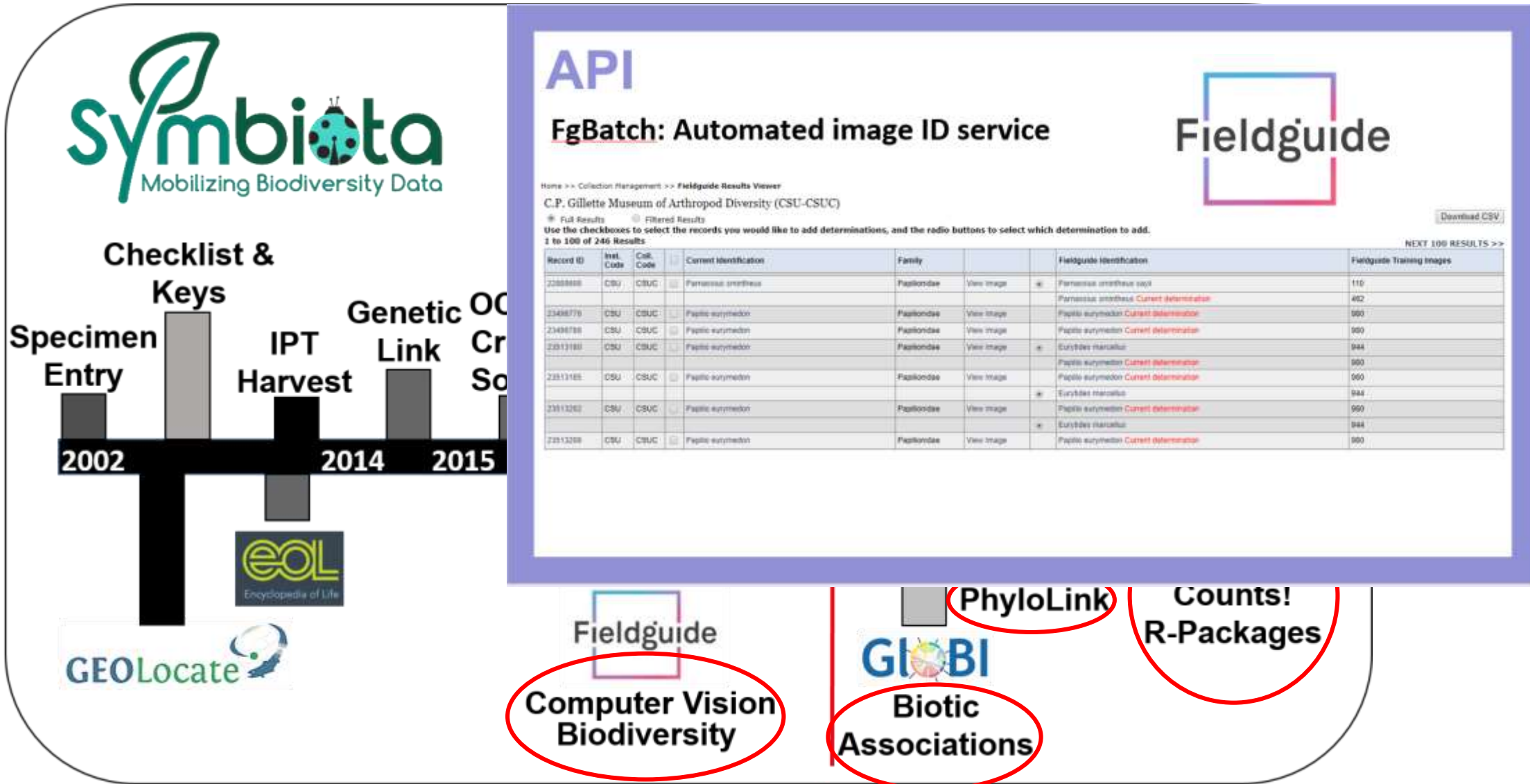
	Country	Sessions	Users
1.	United States	90,123	29,912
2.	Germany	2,069	1,646
3.	France	2,667	1,992
4.	Brazil	2,546	2,023
5.	United Kingdom	1,539	1,357
6.	Canada	2,940	1,966
7.	Japan	1,616	1,285
8.	Italy	1,507	1,093
9.	Netherlands	650	529
10.	Mexico	3,688	2,517



Information

SCAN/LepNet Investment in Symbiota modules

Increasing research capacity of data

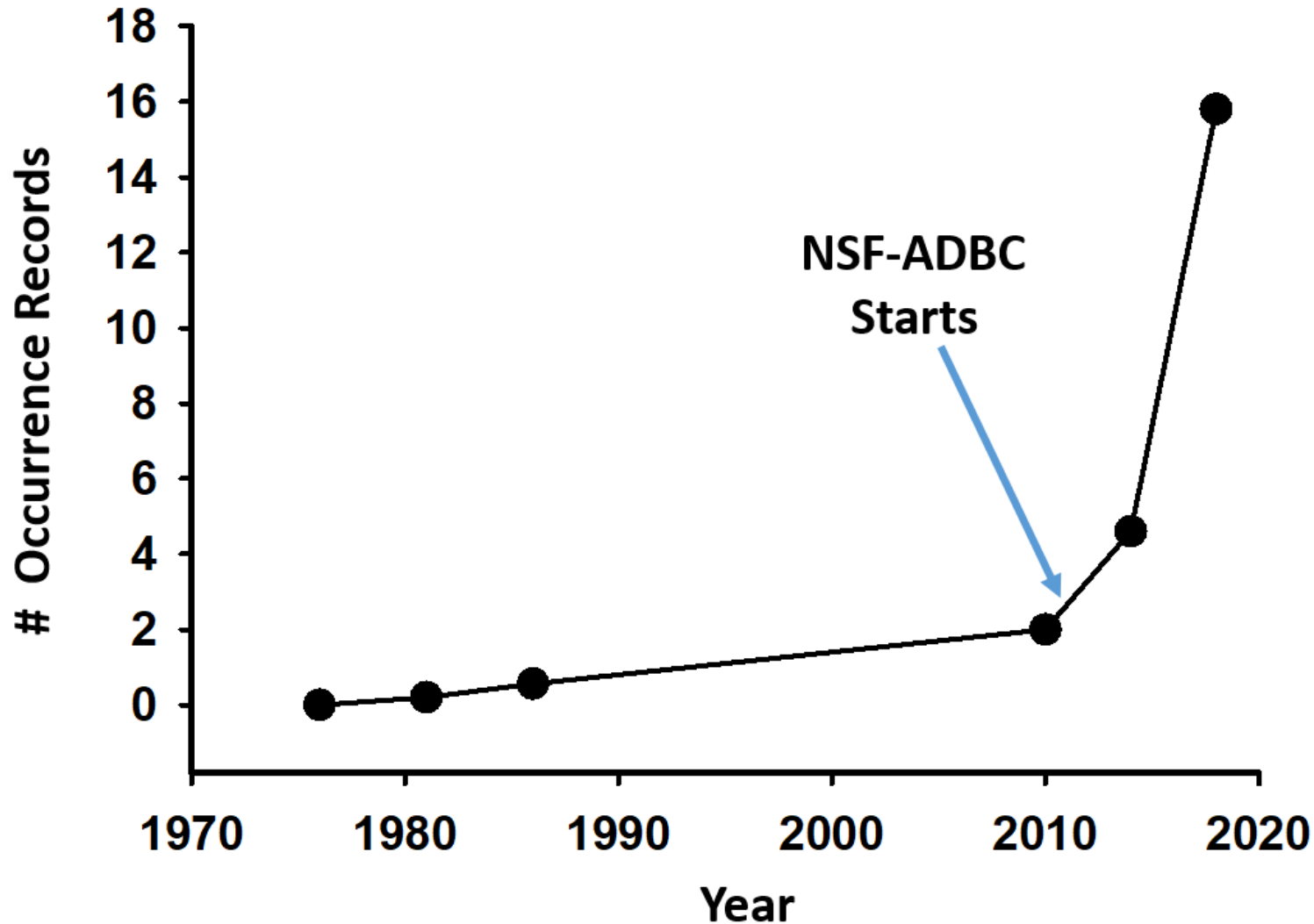


State of US Entomology Collections: **Digitization-Holdings**

Sustainable Digitization Post-ADBC

North American Arthropod Occurrences

Digitization Timeline



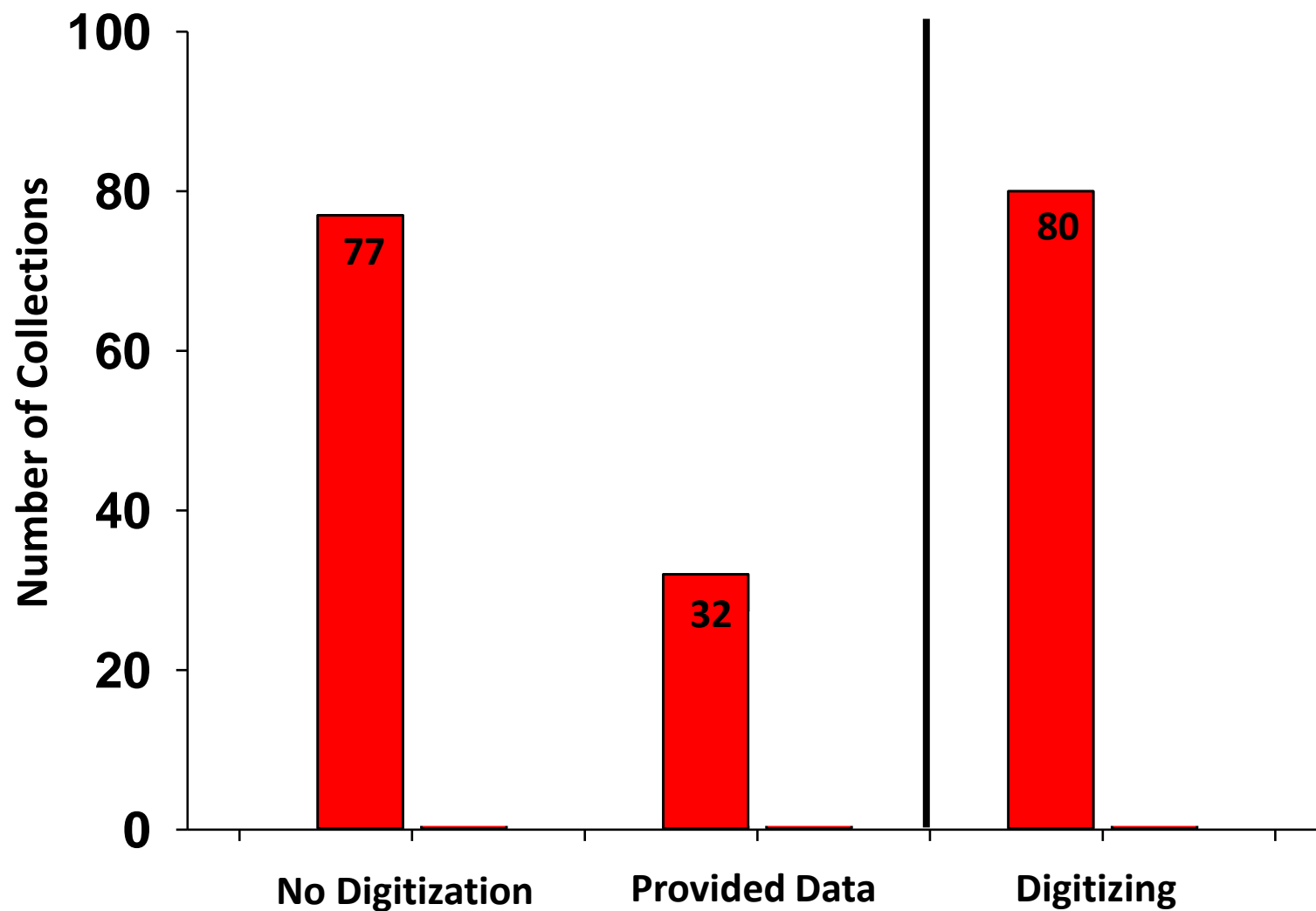
Conclusions

1. ADBC mobilized arthropod digitization in US
(Tri-Trophic, SCAN, InvertEBase, LepNet)
2. It was “Transformational”
 - A. Data
 - B. Culture
3. 6% of North American specimens digitized
4. How do we continue this beyond ADBC?

United States Collections and Specimens

189 US Collections

263 million specimens



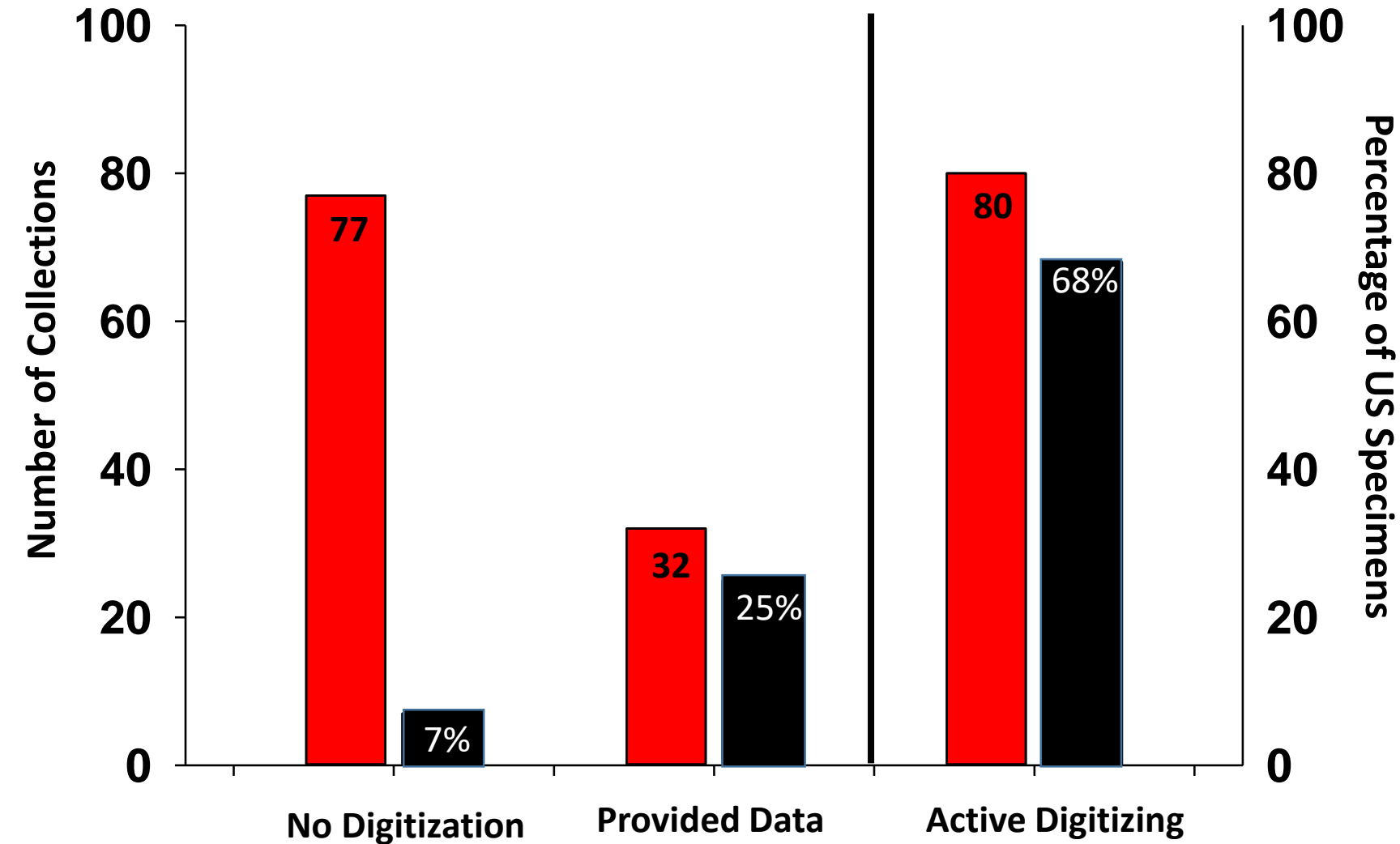
Conclusions

1. **80** collections active digitizing
2. **32** collections provided data
3. **77** collections not digitizing

United States Collections and Specimens

189 US Collections

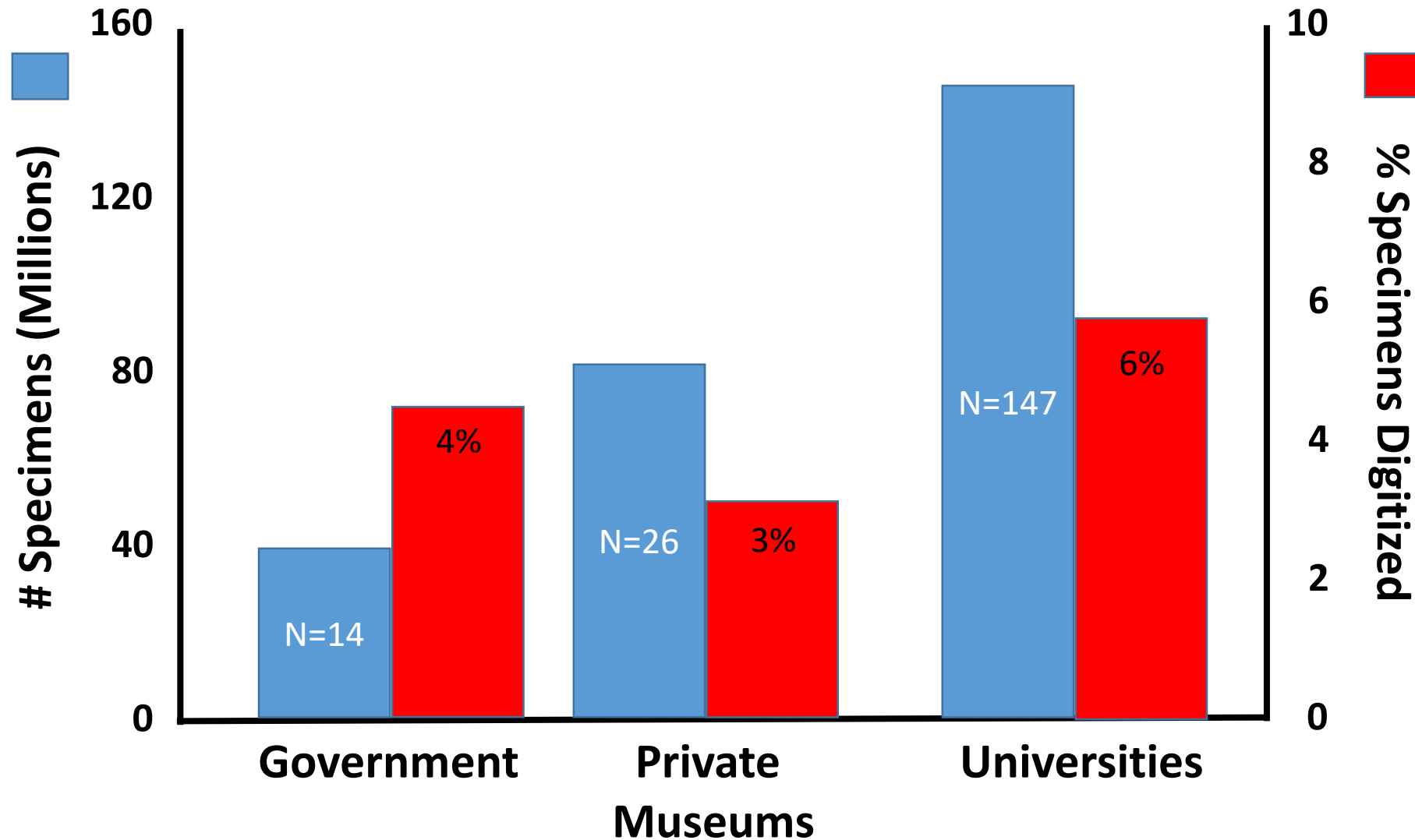
263 million specimens



Conclusions

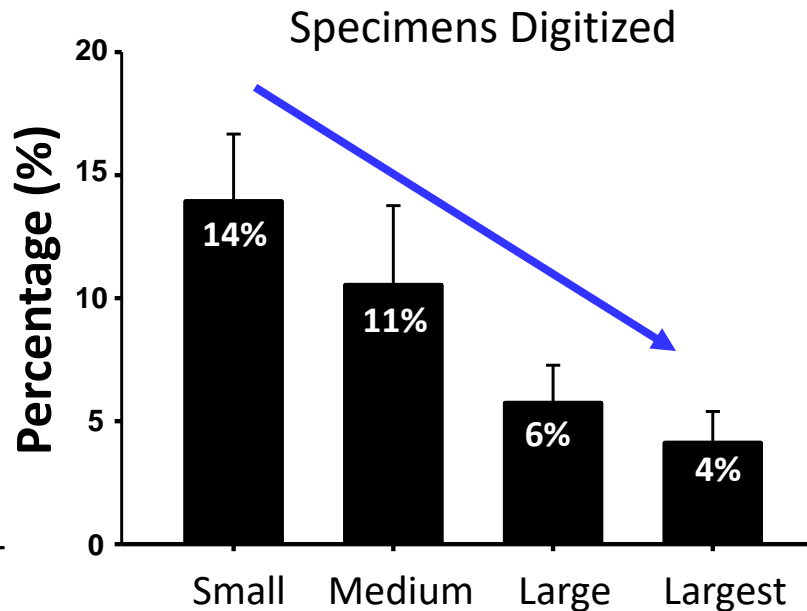
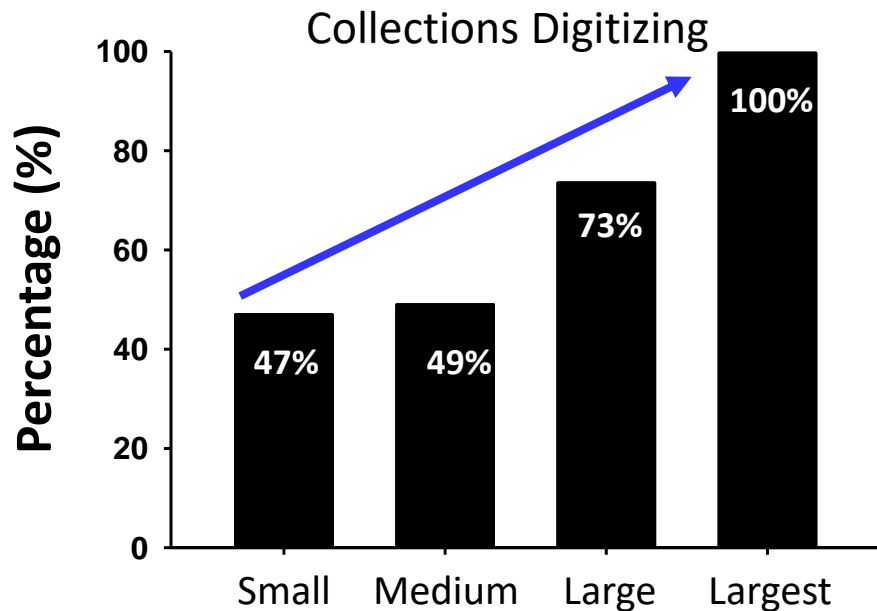
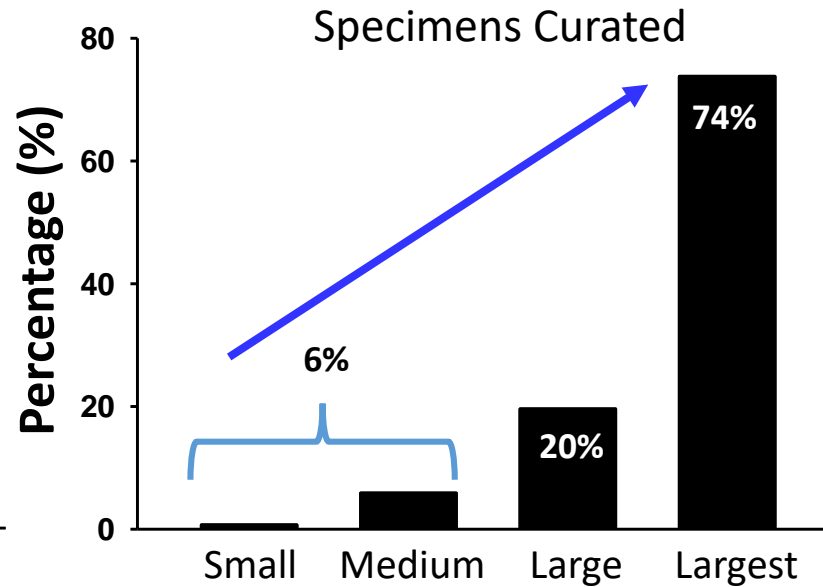
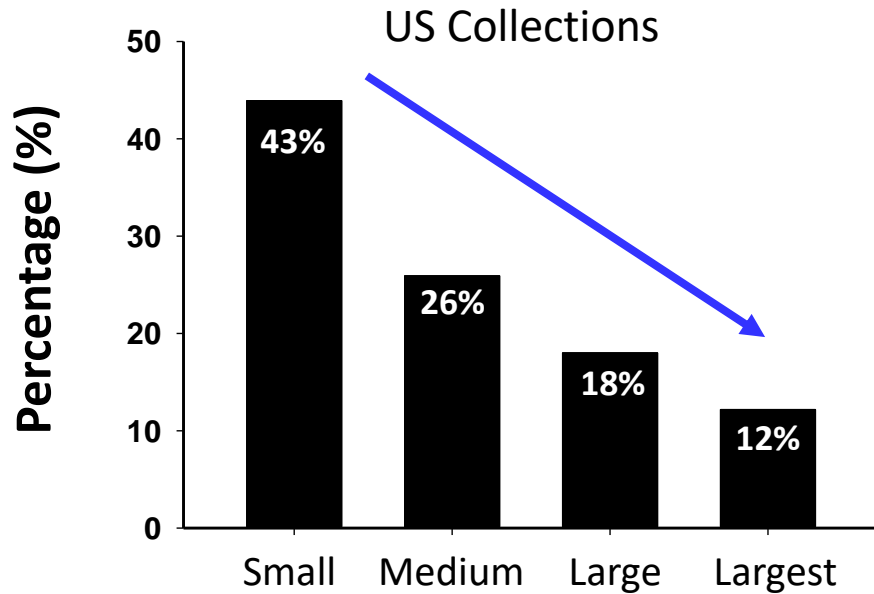
1. **80** collections active digitizing
2. **32** collections provided data
3. **77** collections not digitizing
4. Most specimens are held in collections actively digitizing!

Holdings vs Digitization



Conclusions

1. Universities house the most specimens and digitize the most.



Conclusion

1. Need to increase productivity in larger collections.

Collection Size Classes

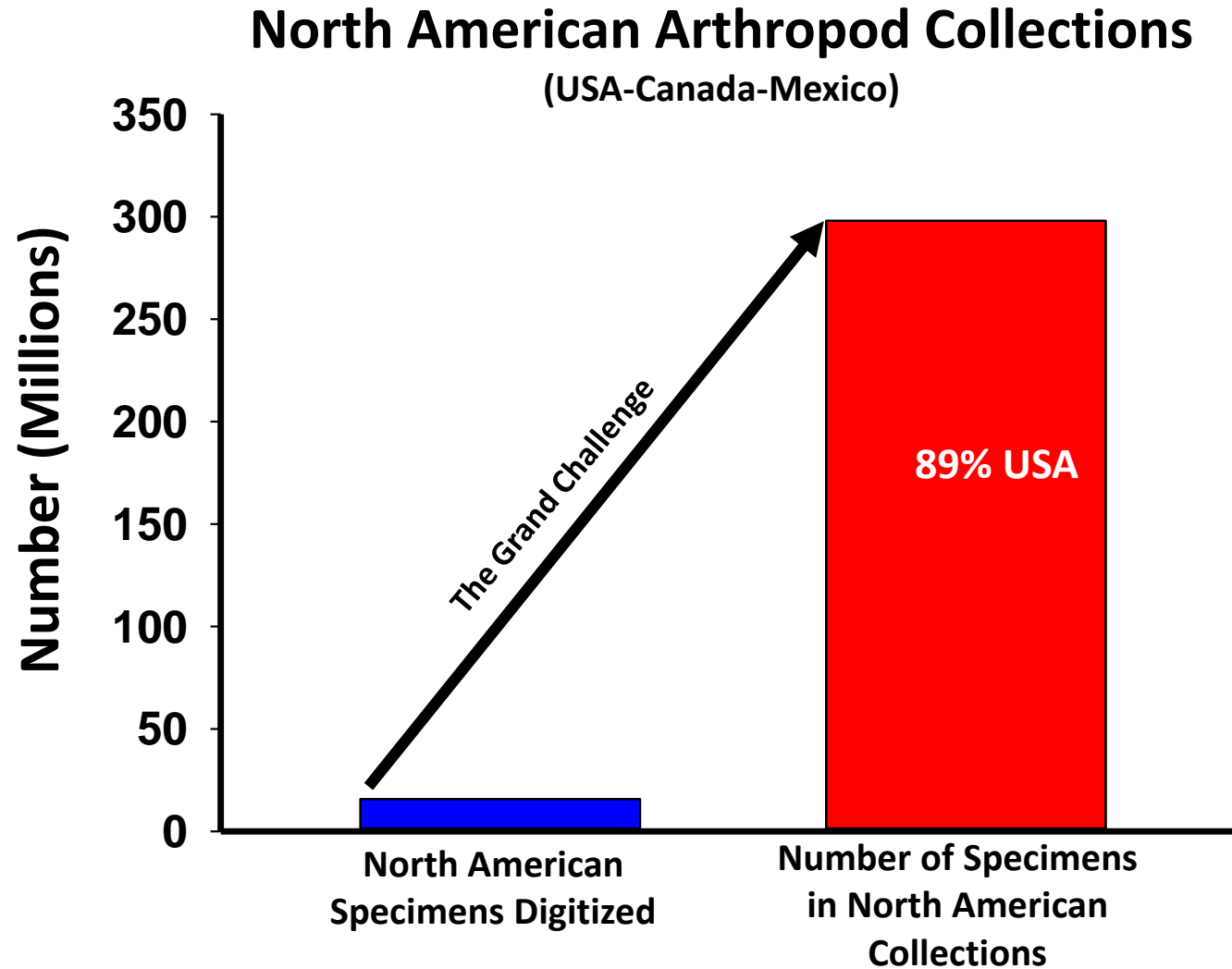
Largest: 3-35 million specimens

Large: 1-3 million specimens

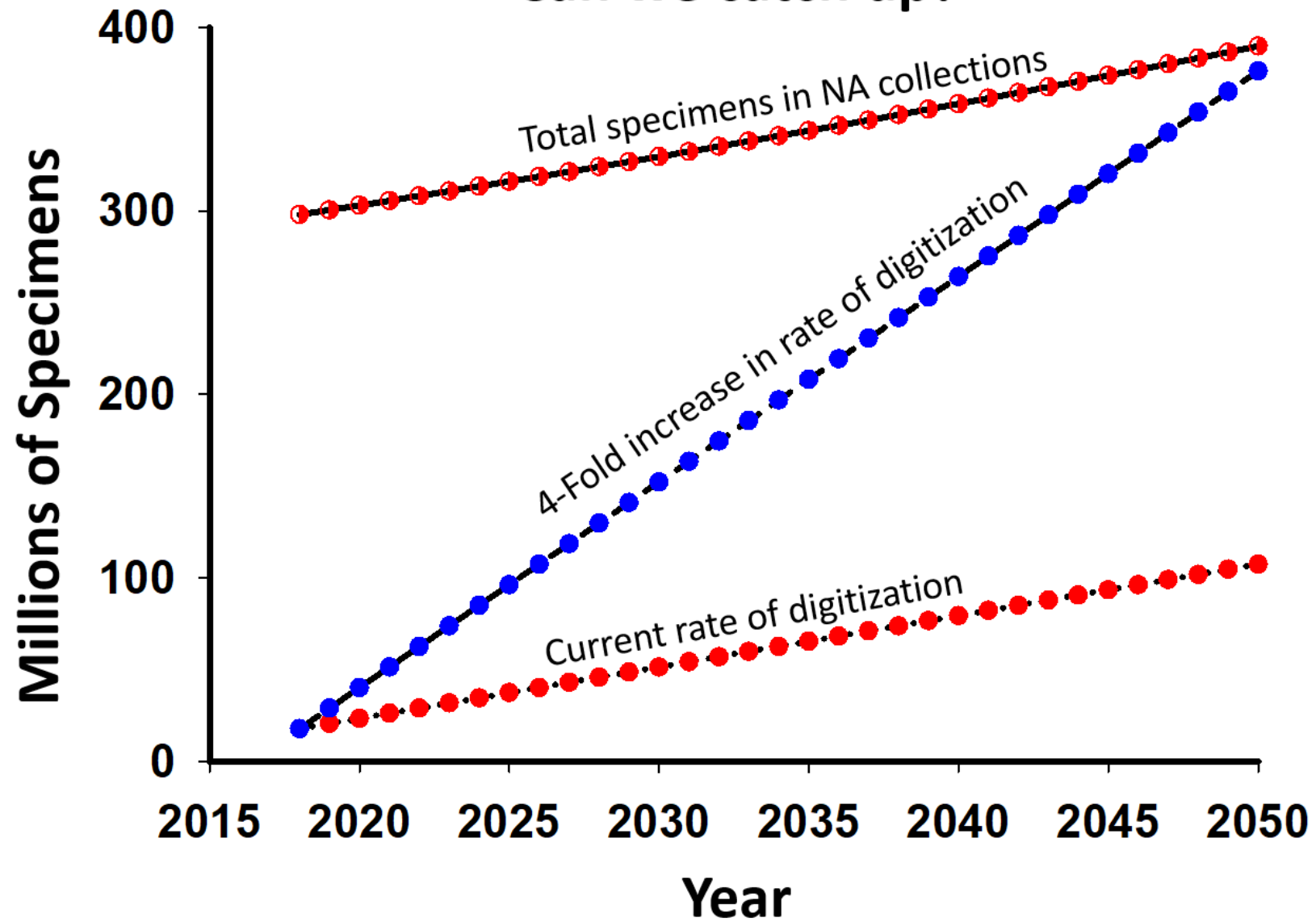
Medium: 100k-1 million specimens

Small: Less than 100k specimens

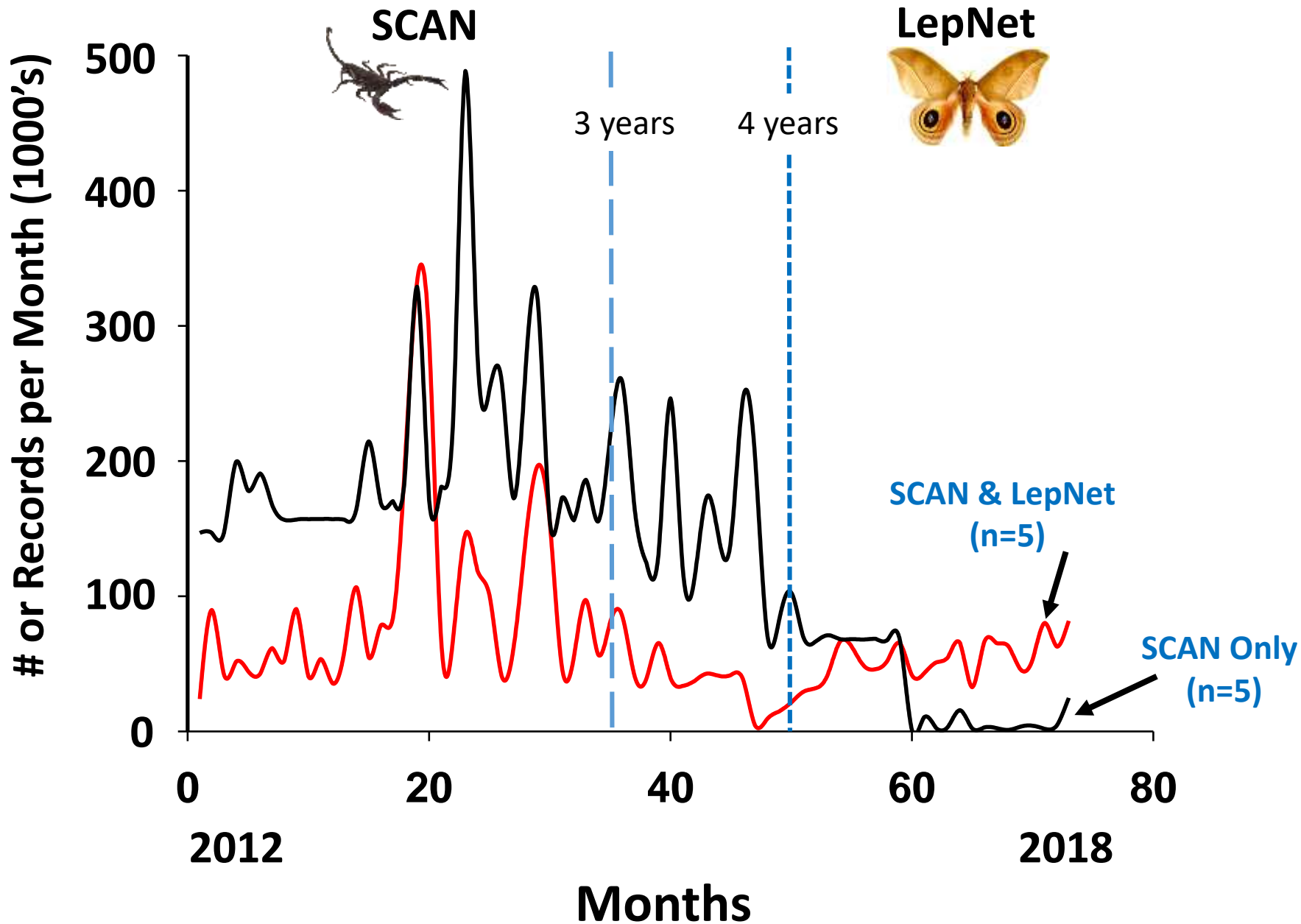
Can we catch up by 2050?



Can we catch up?



SUSTAINABILITY: 10 Original SCAN Museums





- 1. SCAN & LepNet are successful key initiatives : But sustainable digitization is still a ?**
- 2. Understanding where we need to improve now will be key to “sustainable digitization”**