

SCAN-LepNet TCNs

1. Overview and growth of SCAN

2. LepNet on Target

3. Broader Impacts for both: LightningBug Mass Digitization & Index of Arthropod Collections



Seeding Sustainable Digitization



SCAN TCN 2012-2016 (Active PENs continue)

1. **10** Collections, **6** funded PEN Projects, 2 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. **32** pubs on SCAN or using data
6. **Current focus = North American Arthropods, 21.3 million records and 4.7 million images**

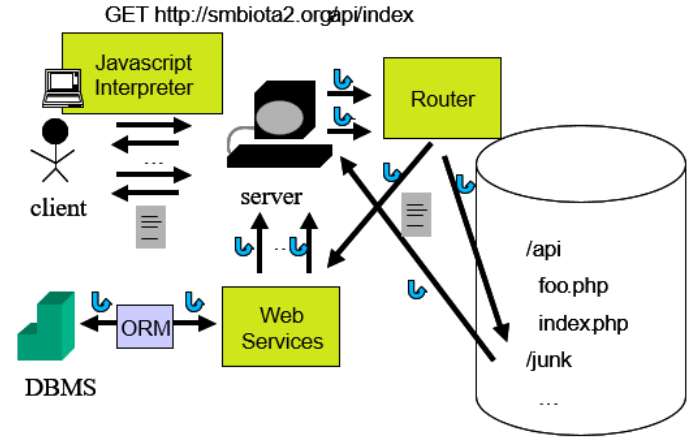
NSF-ABI Symbiota2 2018-2021



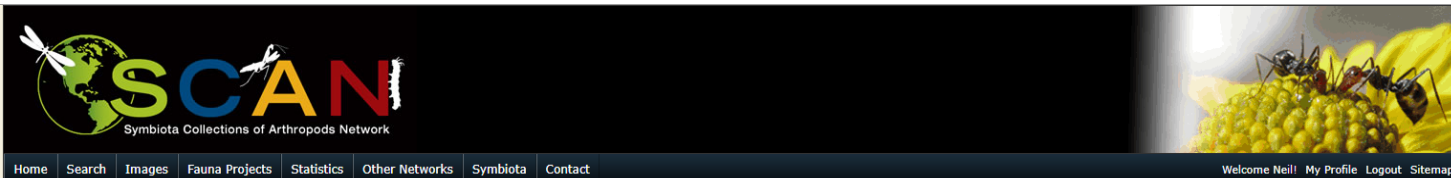
Symbiota هي منصة مفتوحة المصدر لتتبع بيانات التنوع البيولوجي للمحيطات والمراقبة. تعمل Symbiota مع قاعدة بيانات SQL مع نظام إدارة محتوى مفتوح المصدر لتتبع بيانات التنوع البيولوجي للمحيطات والمراقبة. تشمل بوابات التنوع البيولوجي، والخلايا الطبيعية، والطحالب، والفطريات، واللافقاريات، ودرجات أقل Symbiota والتي بدورها يتم تنظيمها في 30 بوابة مواضيعية. جمعت هذه البوابات مجتمعة 20 مليون سجل لحدوث الإصابات خلال السنوات العشر الماضية. تشمل بوابات التنوع البيولوجي، والخلايا الطبيعية، والطحالب، والفطريات، واللافقاريات، ودرجات أقل Symbiota والتي بدورها يتم تنظيمها في 30 بوابة مواضيعية. يمكن ربط السجلات الممسوكة بالصور والأنسجة وبيانات تسلسل الحمض النووي والمعلومات التصنيفية الأخرى من الفقاريات.

لتوثيق حوادث التنوع البيولوجي استنادًا إلى العينات والملاحظات، من خلال توفير أدوات معيارية لتبادل وتصور وتوليف بيانات التنوع البيولوجي للبحوث التي تعتمد على الأسئلة (على سبيل المثال عبر قوائم المراجعة والمفاتيح Symbiota) يتمثل الهدف الأساسي لـ Symbiota بإنشاء برامج قوية ومتعددة الوظائف للتنوع البيولوجي وسير عمل معالجة البيانات، بالإضافة إلى تنسيق علاقات البيانات لإدارة المرنة والنشر عبر الإنترنت، كلاً من الأهداف القادرة على تفوق موارد تكنولوجيا المعلومات لمجموعة فردية. ومن الافتراضات المركزية لـ Symbiota أن جودة أعلى وأكثر فائدة للجمهور، بدلاً من النموذج القديم لقواعد بيانات قائمة بذاتها يتم تخصيصها بشكل كبير في مؤسسة فردية. يشجع Symbiota كل هذا بسماع لعملاء المجموعات بتركيز جهودهم على تنسيق مجموعات البيانات عالية الجودة Symbiota إطار تطوير برمجيات المصدر المفتوح في

Skeletal version available now, plugins set for early-mid 2020



هذا المشروع أصبح ممكناً من خلال هذا جائزة المؤسسة الوطنية للعلوم



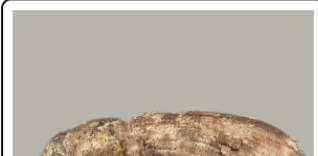
Home Search Images Fauna Projects Statistics Other Networks Symbiote Contact Welcome Neill! My Profile Logout Sitemap

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

The Symbiote Collections of Arthropods Network (SCAN) is a data portal for the Symbiote Collections of Arthropods Network (SCAN TCN), the Lepidoptera of North America, and other non-arthropod taxa. We also have a database for mollusk and other non-arthropod taxa. We also have a database for mollusk and other non-arthropod taxa. We also have a database for mollusk and other non-arthropod taxa.

Snapshot	Live	None	Total
46	62	108	223

Taxon Search

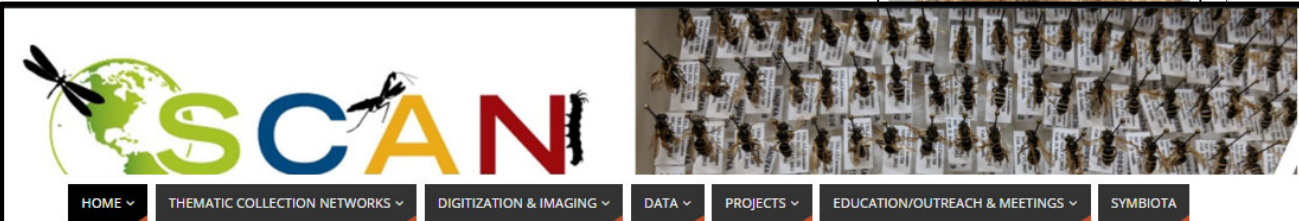


- Important features of all Symbiote portals include:
1. Easy web-based data entry.
 2. Download entire datasets in two clicks.
 3. Map georeferenced records in two clicks.
 4. Upload high-resolution images & create species profile pages.
 5. Design custom species lists for any locality at multiple scales.
 6. Develop educational games with data.
 7. Create taxonomic keys.

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

SCAN currently serves over 18 million records.

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



SCAN Overview

The primary purpose of this website is to provide support material and background information for the SCAN data portal. The SCAN portal is well set up to process, package and deliver biodiversity data focused on North America. It is not good for providing user guides and summary products that we show here. This website was previously focused on supporting the LepNet Thematic Collections Network (TCN). LepNet is now well established and in its 4th year and much of the information provided are relevant to all arthropod digitization projects. We converted the LepNet project website to more completely include information for anyone that uses the SCAN data portal. The SCAN data portal is funded by three major TCNs (see links below), all of which share the SCAN database along with arthropod collections associated with the InvertEBase TCN. SCAN includes over 21 million arthropod records and 4.7 million images.

This WordPress site includes several types of information including summaries of digitization efforts, user guides for entering records and images as well as how to view and download these records and images for species and regions. Although most of the collections on the SCAN portal use Symbiote software as their database management system, the SCAN data portal serves specimen and observation data from any database, with a focus on North America.

SEARCH

FOLLOW US ON TWITTER



Lep-Net.org @Lep_Net · 29 Jul
Save University of Alaska museum

NSCAIalliance @NSCAIalliance
Today, the @NSCAIalliance encouraged the Univ of Alaska regents to not shutter the Museum of the North as it will cause immediate and long lasting

SCAN Portal

1. Data Portal

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

2. Most Complete Occurrence data for North America (21 million records) (4.7 million images)

3. WordPress site Provides user guides, compiled data and literature

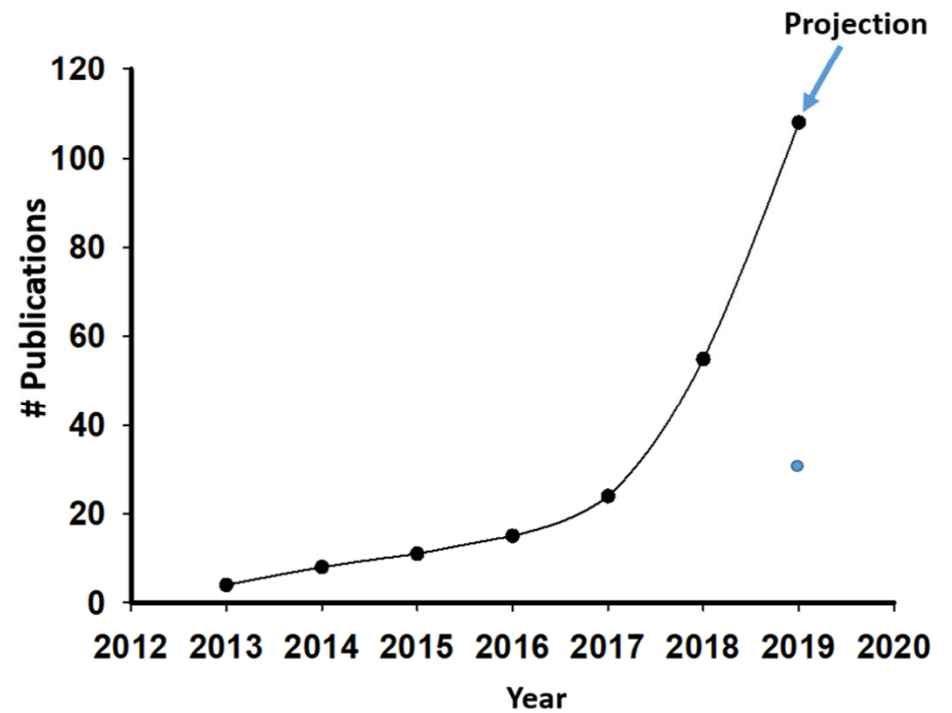
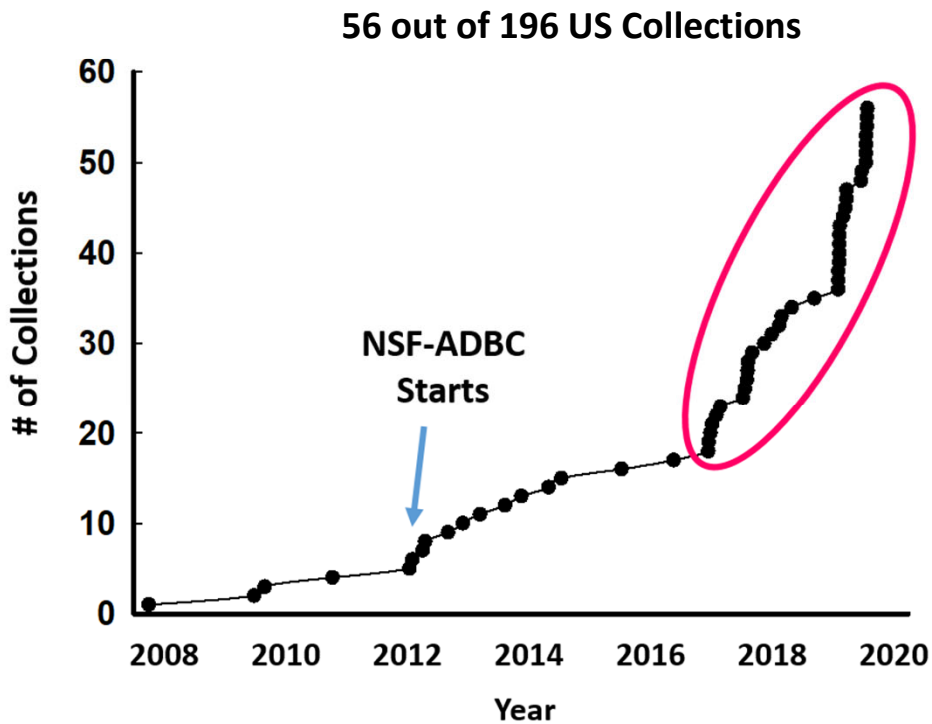
SCAN Progress and Challenges

Five priority taxa are representative of most SCAN taxa

1. Significant number of records added every year
2. Need to continue making more data **research ready** – identifications are biggest bottleneck

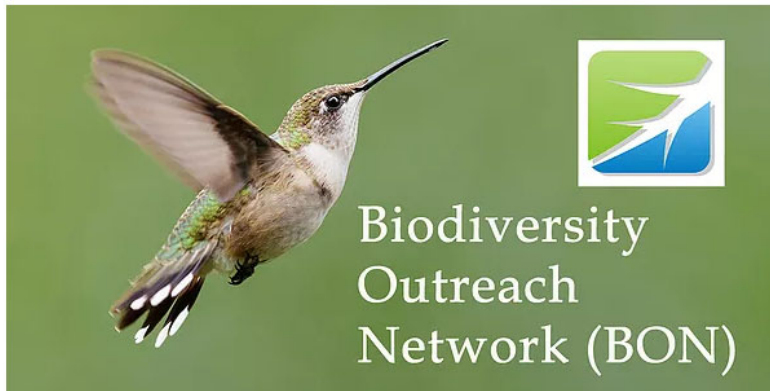
Taxa	# Specimen Records	# Georeferenced	# Specimen Identified to species	# Georeferenced & Identified to species Research Ready
Formicidae - Ants	1,165,344	89%	56%	50%
Carabidae - Ground beetles	616,308	80%	66%	53%
Araneae - Spiders	240,161	81%	86%	70%
Acrididae - Grasshoppers	373,583	55%	95%	55%
Tenebrionidae Darkling Beetles	185,060	87%	62%	54%

United States Data Providers GBIF Registration & Publications





BON-EARTH



In partnership with museums, universities, government agencies, and nonprofits, BON-Earth is involved in the development of programs and projects that focus on bridging the gaps between digital data, the scientific community, and the community at large. From community-based exhibits, summer camps, and discovery centers, to the development of national public campaigns our products and programs are aligned with the mission to promote enrichment and biodiversity literacy while connecting people with each other and the natural world we share.

SCAN-LepNet Education-Outreach

Anne Basham

Biodiversity Outreach Network Non-profit

Just launched in September, 2019

- LepXplor Phase II
- Integrating WebAR learning applications into Symbiota

Arizona State University Hasbrouck Insect Collection
ASU : ASUHTC

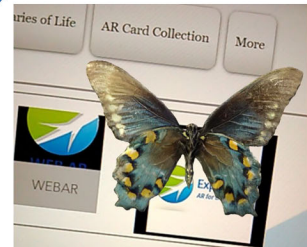
Catalog #: ASUHIC0066182
Taxon: *Battus philenor subsp. philenor* (Linnaeus, 1771)
Family: Papilionidae
Determiner: Ronald S. Wielgus (1969)
Collector: Ronald S. Wielgus
Date: 1969-05-03
Additional Collectors: Dale Wielgus
Locality: USA, Arizona, Maricopa County, Sycamore Creek near Sunflower 33.892414 -111.481757 WGS84
Sex: male

Specimen Images

Open Medium Image Open Large Image Open Medium Image Open Large Image

Usage Rights: CC0 1.0 (Public-domain)
Record Id: df553eaf-5dcc-4aef-8c97-70bdbf21c118
Occurrence ID (GUID): df553eaf-5dcc-4aef-8c97-70bdbf21c118
 For additional information on this occurrence, please contact: Nico Franz (nico.franz@asu.edu)

Teachers can click on the app which will launch webcam enabling them to bring in real-time augmented reality specimens/content/data with their students.



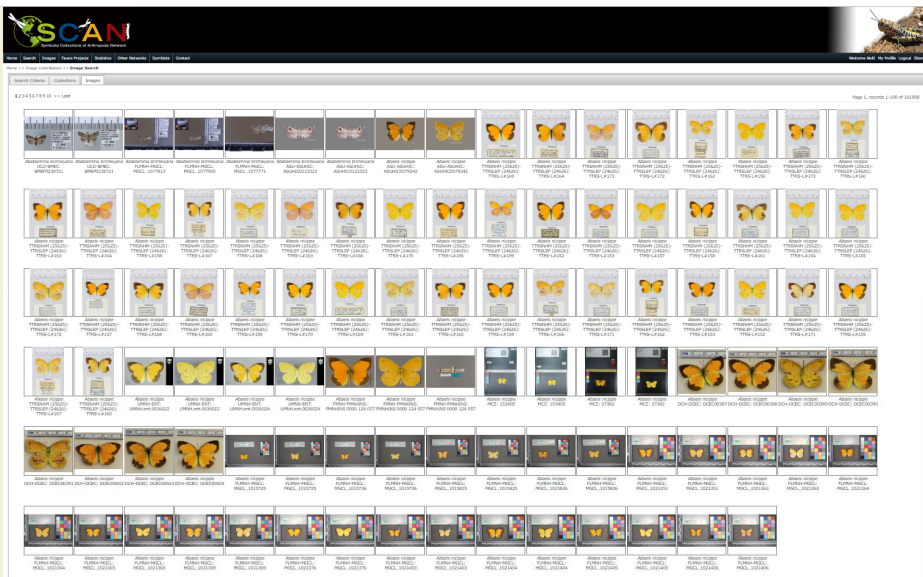


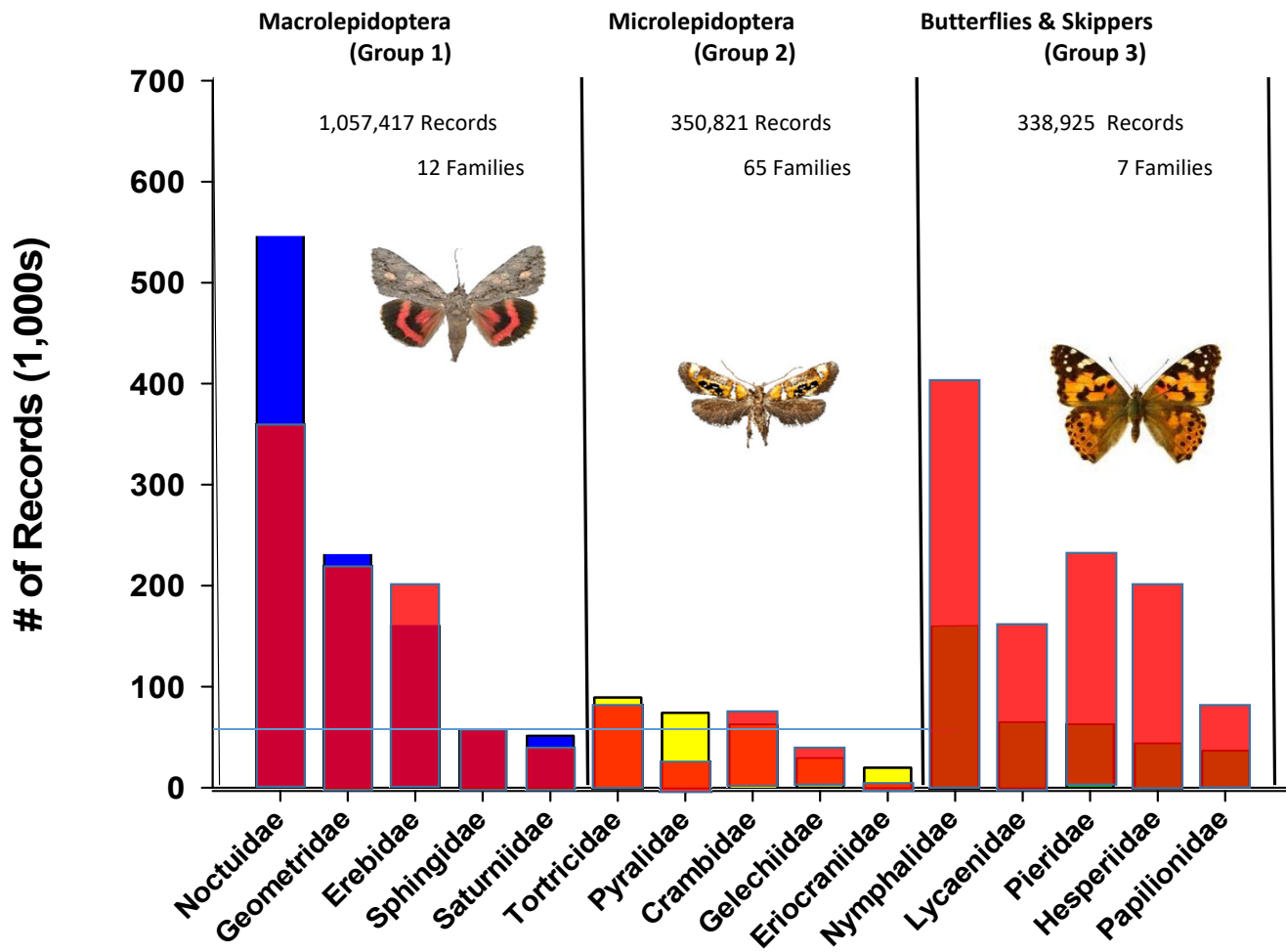
Core TCN Collections 2016-2020

1. Focus on North American Lepidoptera - ~142,000 species
2. **26** Collections, **1** PEN grant
3. **1.4** million records, **162k** images

Broader Impacts

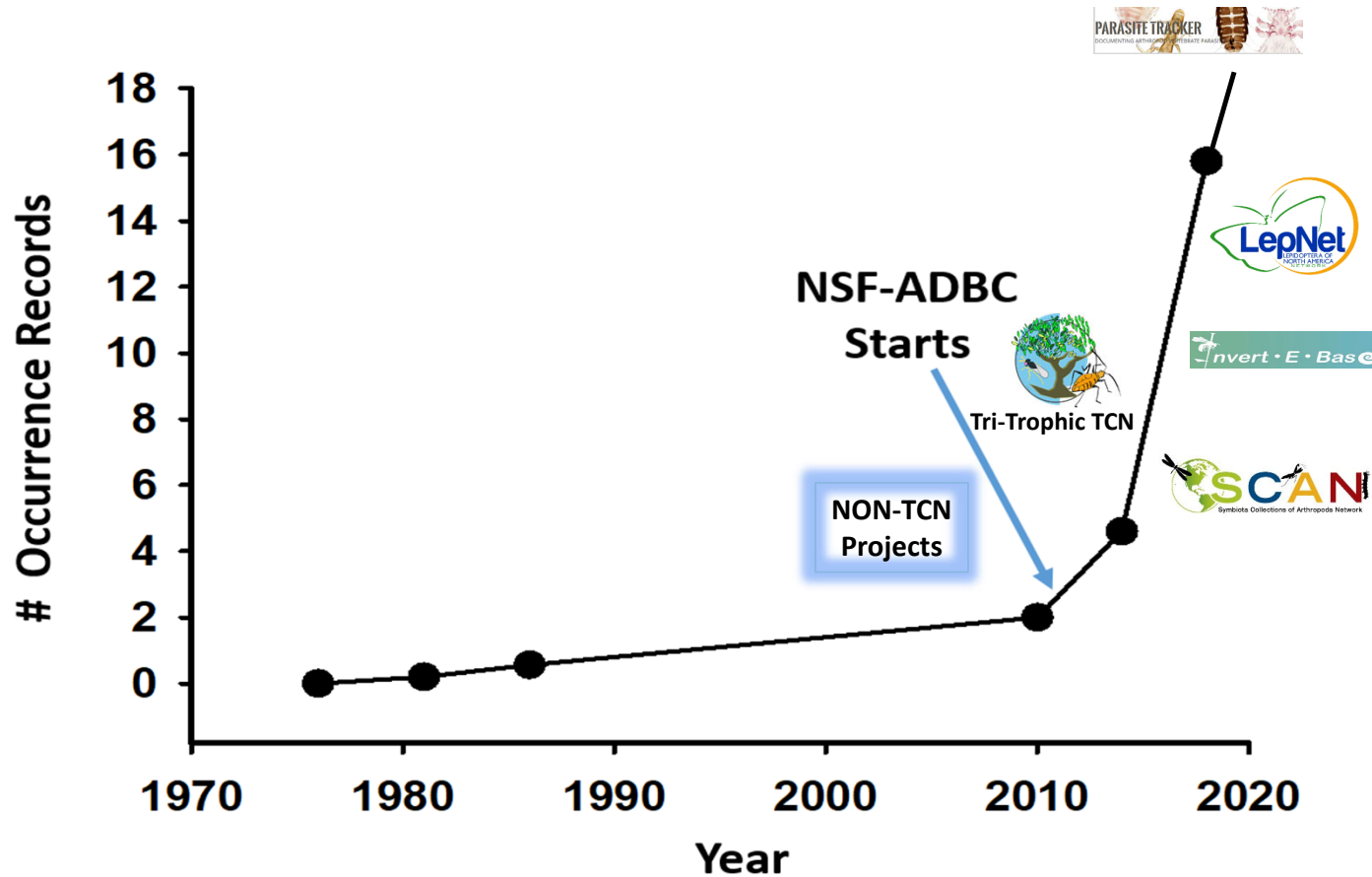
1. **132** collections contribute > **2 million** Lepidoptera records
2. **148** families represented
3. **93%** of records from North America, but **358** countries/regions represented





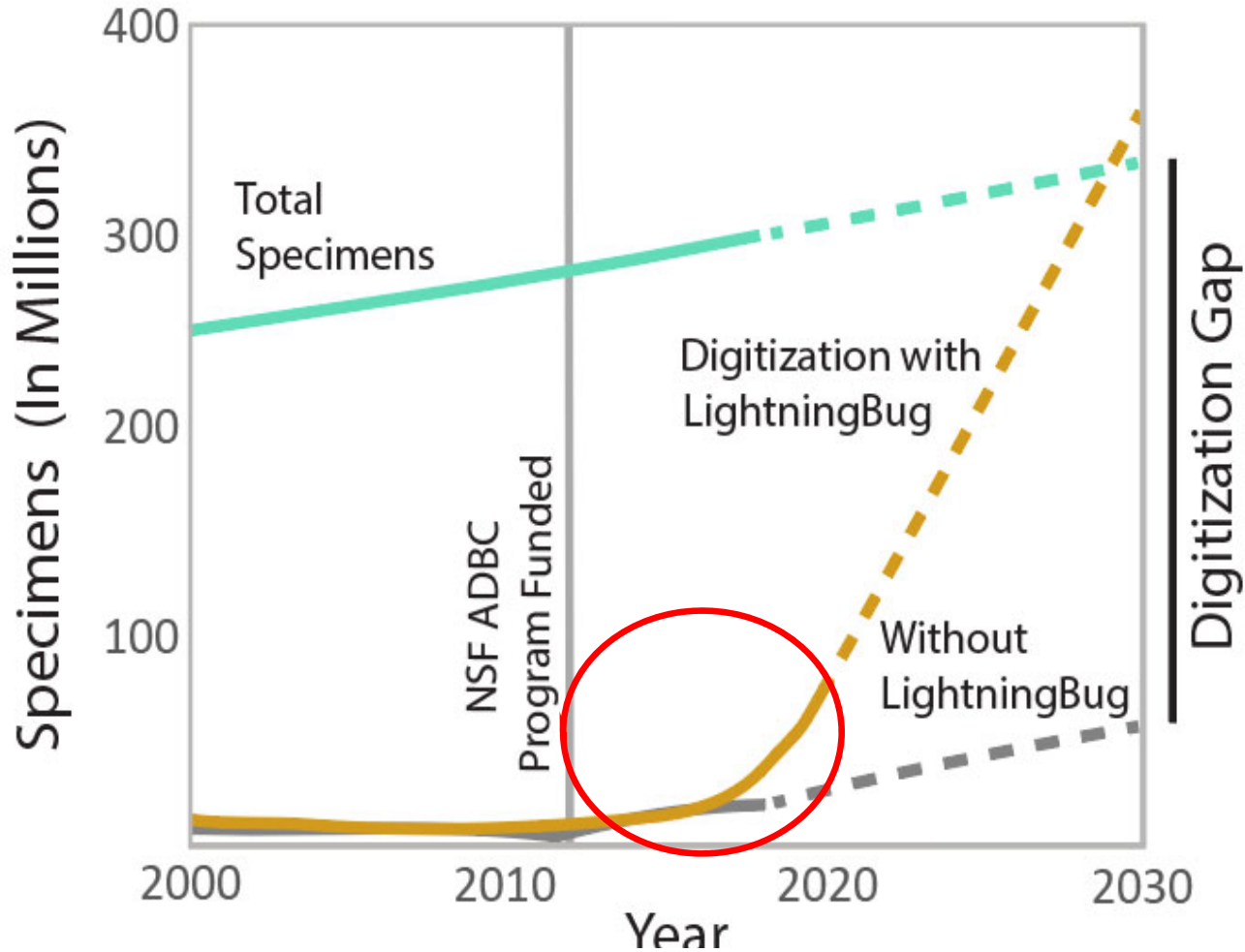
North American Data Providers: The ADBC Transformation

1,248 registered SCAN portal users



LightningBug

An Integrated Pipeline to Overcome the Biodiversity Digitization Gap



Compiled by Crystal Maier

LightningBug: Collectively, over 25 years of development

BugSnapper: Label reconstruction



Argonne National Laboratory

Notes from Nature
OCR/HCR



COPIS: Photogrammetry



Yale Peabody Museum

1. A robotic-informatics system that will produce 3D images of both **specimens** and “**on-the-pin**” labels.
2. Reduce cost and increase efficiency of transcription by **10-fold**.
3. No specimen left behind: **3D research quality image suites** for each specimen, promoting a new research initiative on traits and automated species identifications.

LightningBug

An Integrated Pipeline to Overcome the Biodiversity Digitization Gap

Core Team

Yale – Nelson Rios (photogrammetry) Larry Gall (testing)
Argonne National Lab – Mark Hereld & Nicola Ferrier (label reconstruction & OCR)
Notes From Nature – Rob Guralnick & Michael Denslow (OCR, HCR, citizen science)
Harvard –Crystal Maier, Paul Morris, Jim Hanken (testing, archiving)

Collaborators

CSIRO – Simon Checksfield & Nicole Fisher (robotics, informatics, curation)
NHM– Ben Price (robotics & informatics)
The Field Museum – Petra Sierwald (testing)
U of Arizona - Wendy Moore (NEON – automated species identification, trait analyses)
NEON-Macrosystem - Michael Wieser (NEON – automated species identification, trait analyses)
Cal Academy – Chris Grinter (testing)
SCAN - Neil Cobb (Coordination among collections – CSBR preparation)

Building an Arthropod Collection Network

1. Index of Arthropod Collections
2. Patterned after Index Herbariorum
3. Phase One, Clickable map linked to collection websites and basic collection statistics.
4. Future: extend globally, have collections manage their information, use data for strategic planning.

The End

