Entomological data in Arctos: Uses inside and out of the museum

Derek Sikes & Sarah Meierotto
University of Alaska Museum
Fairbanks, AK

Entomological Collections Network
Portland, OR 2014-11-15

Why having a mostly databased collection is awesome

Derek Sikes & Sarah Meierotto
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Fairbanks, AK

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Portland, OR 2014-11-15

THE INSECT AND SPIDER COLLECTIONS OF THE WORLD

By

Ross H. Arnett, Jr.
Florida State Collection of Arthropods
Gainesville, Florida

G. Allan Samuelson
Bishop Museum
Honolulu, Hawaii

and

Gordon M. Nishida
Bishop Museum
Honolulu, Hawaii

SECOND EDITION

1993

ALASKA

[*No known collection of insects in Alaska.*]

ARIZONA

Flagstaff

COLLECTION OF INSECTS, BOX 5640, BIOLOGY, NORTHERN ARIZONA UNIVERSITY, FLAGSTAFF, AZ 86011. [NAUF]

Director: Dr. C. Dan Johnson. Phone: (602) 523-2505. Professional staff: Dr. R. S. Beal, Dr. C. N. Slobodchikoff. About 1.2 million specimens are housed in 110 cabinets with 1,320 drawers. Coleoptera are best represented with excellent ecological supporting data for the Bruchidae. Insects are especially well represented from the Southwest, Mexico, Central and South America. [1986]

Grand Canyon

SCIENTIFIC STUDY COLLECTION, GRAND CANYON NATIONAL PARK, GRAND CANYON, AZ 86023. [GCNP]

Curator: Carolyn Richard. Phone (602) 638-7769. There are approximately 6,000 insects in the collection, including numerous butterflies, moths, and beetles. There are a few type specimens from Grand Canyon subspecies. [1992]

Portal

SOUTHWESTERN RESEARCH STATION OF THE AMERICAN MUSEUM OF NATURAL HISTORY, PORTAL, AZ 85632. [SWRS]

Director: Dr. Wade C. Sgerbrooke. Phone: (602) 558-2396. The collection consists of about 14,000 specimens (no long series) of the insects of the Chiricahua Mountains and surrounding valleys. It is housed in drawers in cabinets. Most of the material is identified at least to genus. There is a good collection of arachnids from the area, all identified to species [1992].

entomology collections

Web | Shopping | Images | News | Videos | More | Search tools

About 1,100,000 results (0.26 seconds)

Entomology NMNH
entomology.si.edu/**collections**.html ▾ Smithsonian Institution ▾
description of the **insect collections** at the National Museum of Natural History, Smithsonian Institution, Washington, DC, with links to lists and databases.

Collections - | Biodiversity Institute & Natural History Museum
naturalhistory.ku.edu/**colle**... ▾ University of Kansas Natural History Museum ▾
The Biodiversity Institute collections include 9 million specimens of plants, ... The **entomology collection** includes almost 5 million specimens of insects from all ...

Entomology | Collections : Yale Peabody Museum of Natural ...
peabody.yale.edu/**collections/entom**... ▾ Peabody Museum of Natural History ▾
The systematic **collections** of the Yale Peabody Museum's Division of **Entomology** comprise over one million curated specimens.

Collections & Archives | Entomological Society of America ...
www.entsoc.org/.../**collections**_archive... ▾ Entomological Society of America ▾
Indexes to **Collections** International Society of Arachnology (ISA) **Insect** and Spider **Collections** of the World Iowa State **Entomology** Index: **Collections** U.S. ...

Entomology | Museum - University of Alaska Fairbanks
www.uaf.edu/museum/**collections**/ento/ ▾ University of Alaska Fairbanks ▾
Overview Welcome to the University of Alaska Museum **Entomology** Web Page. The **collection** was established as part of a NSF - funded Arctic Archival ...

Full List of Insect and Spider Collections
hbs.bishopmuseum.org/codens/codens-inst.html ▾
Abbreviations for **Insect** and Spider **Collections** of the World ..... Consortium for Natural Science **Collections**, Department of Biology Laboratory of **Entomology**.

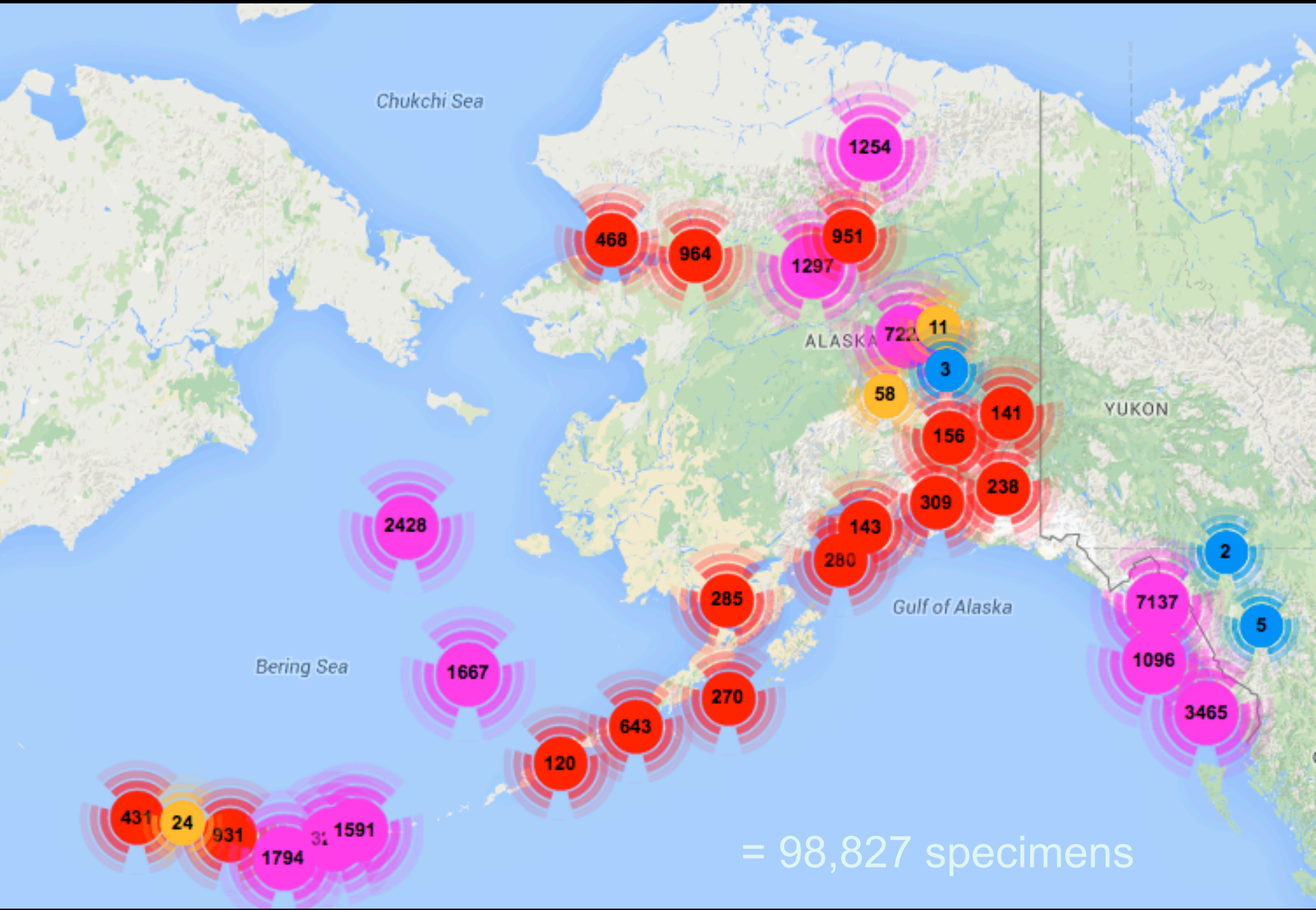
Entomological Collections Network: Welcome
www.ecnweb.org/ ▾
The **Entomological Collections** Network is a long standing organization whose mission is to disseminate information about best practices in entomological (and ...

Research Collections | Entomology | MCZ | Harvard
www.mcz.harvard.edu/.../**Entomology**/holdings.html ▾ Harvard University ▾
Holdings. The **insect collection** of the Museum of Comparative Zoology is among the richest and historically most significant in North America, containing more ...

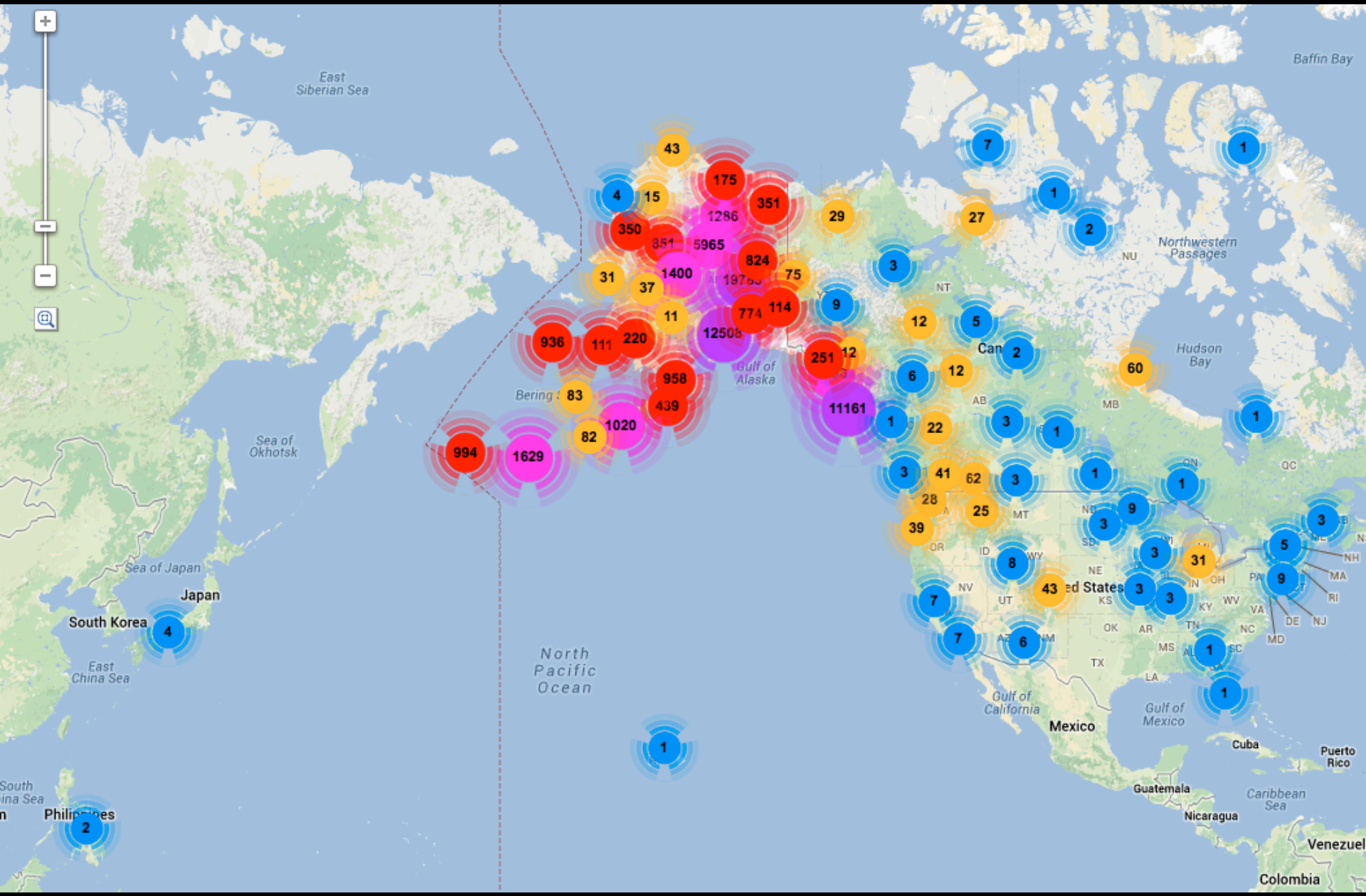
Entomology | MCZ | Harvard
www.mcz.harvard.edu/Departments/**Entomology**/ ▾ Harvard University ▾
Entomology Department. About the Department ... Search the MCZ **Collections** Database. Hesperia nabokovi ... Photo: **Entomology** Department. Formica impexa ...


UAM
100056249
UAM
100056250
UAM
100056251
UAM
100056252
UAM
100056254
UAM
100056244
UAM
100056245
2012 D. S. Sikes, C. E. Bickford
UAM:Ento:245859
UAM100056251
UAM:Ento:245855
UAM100056245

Map of all records (38,664) in Arctos 2014-11-11 collected by D. Sikes



Map of all UAM Insect Coll. Arthropod records (207,011) in Arctos 2014-08-27



Outline

1. Uses inside the museum
    1. Labels
    2. Finding specimens not yet ‘installed’
    3. DNA barcoding
    4. Reporting

2. Uses outside the museum
    1. Loans – loanees can get a spreadsheet of all the data
    2. Voucher specimens links to publications
    3. GBIF downloads

Numbers...

Administrators really like numbers

Saying “We have a lot specimens” doesn’t seem to impress them very much.

Only 8% of the data in GBIF are entomological.

This is sad, it should be more like 92% entomological!

We are entering a new era of ***Big Data***

Mission

To create a resource that makes publicly available as much information as possible concerning the non-marine arthropods of Alaska.

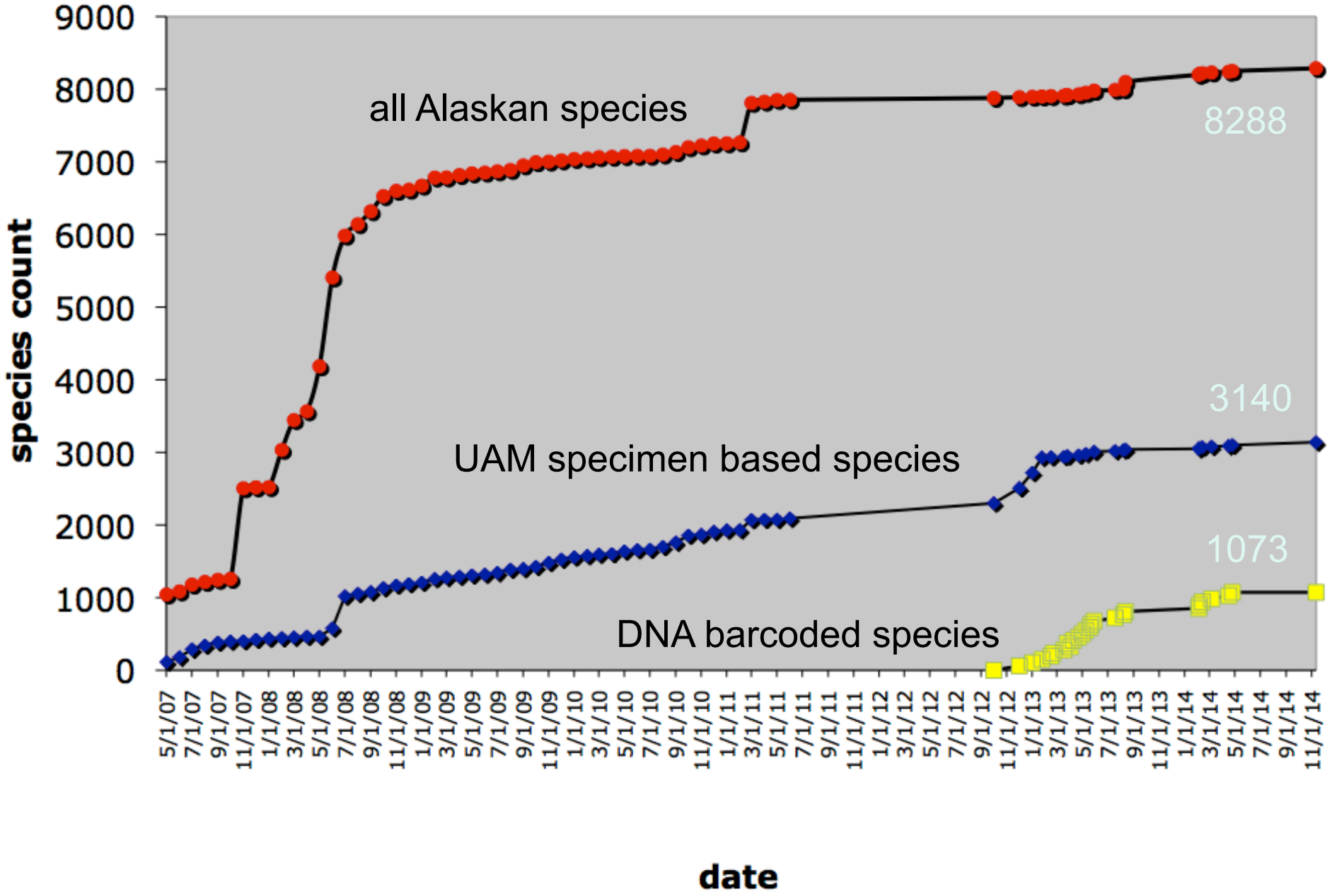
Using specimens + literature + ‘grey’ literature

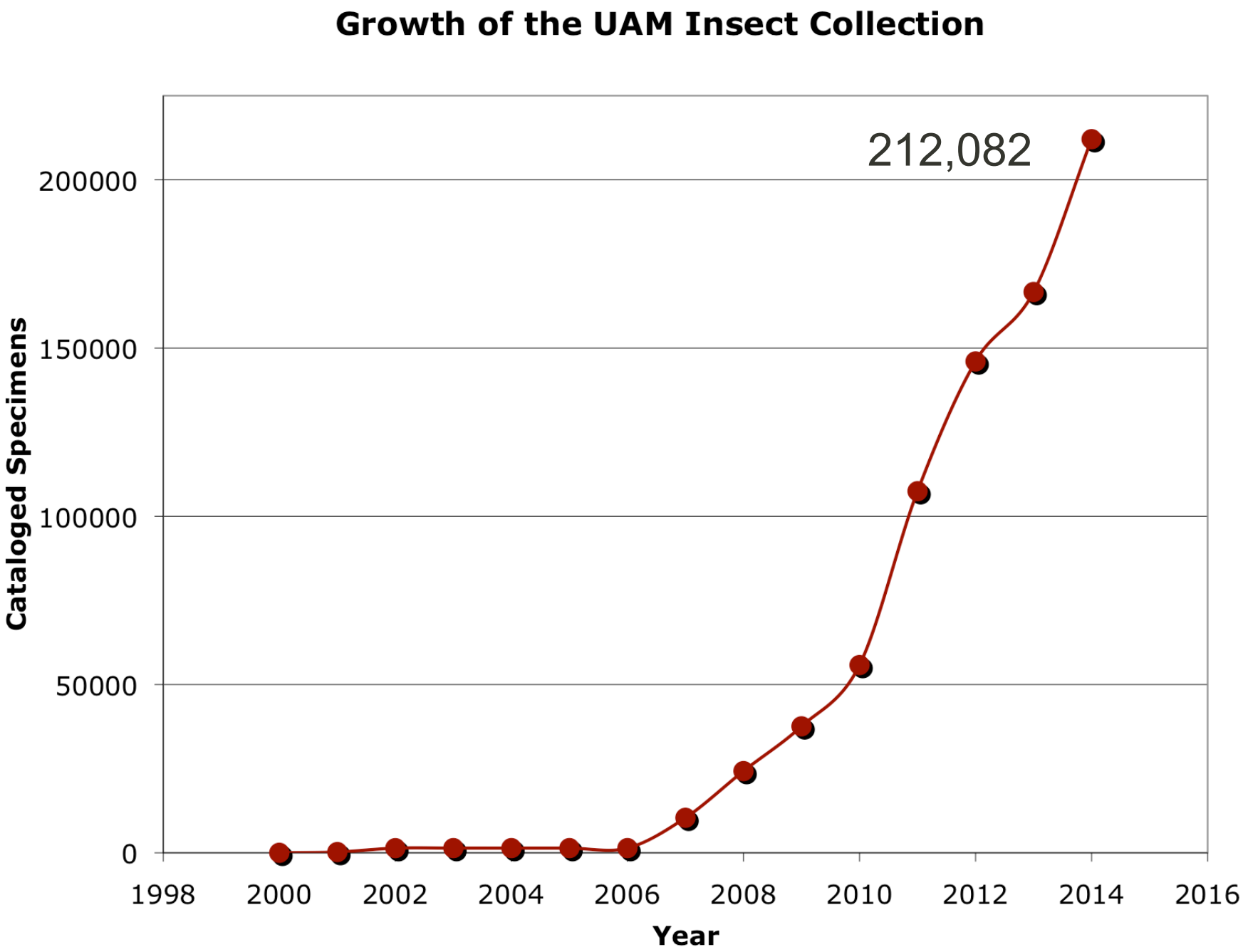
Which species occur in Alaska?

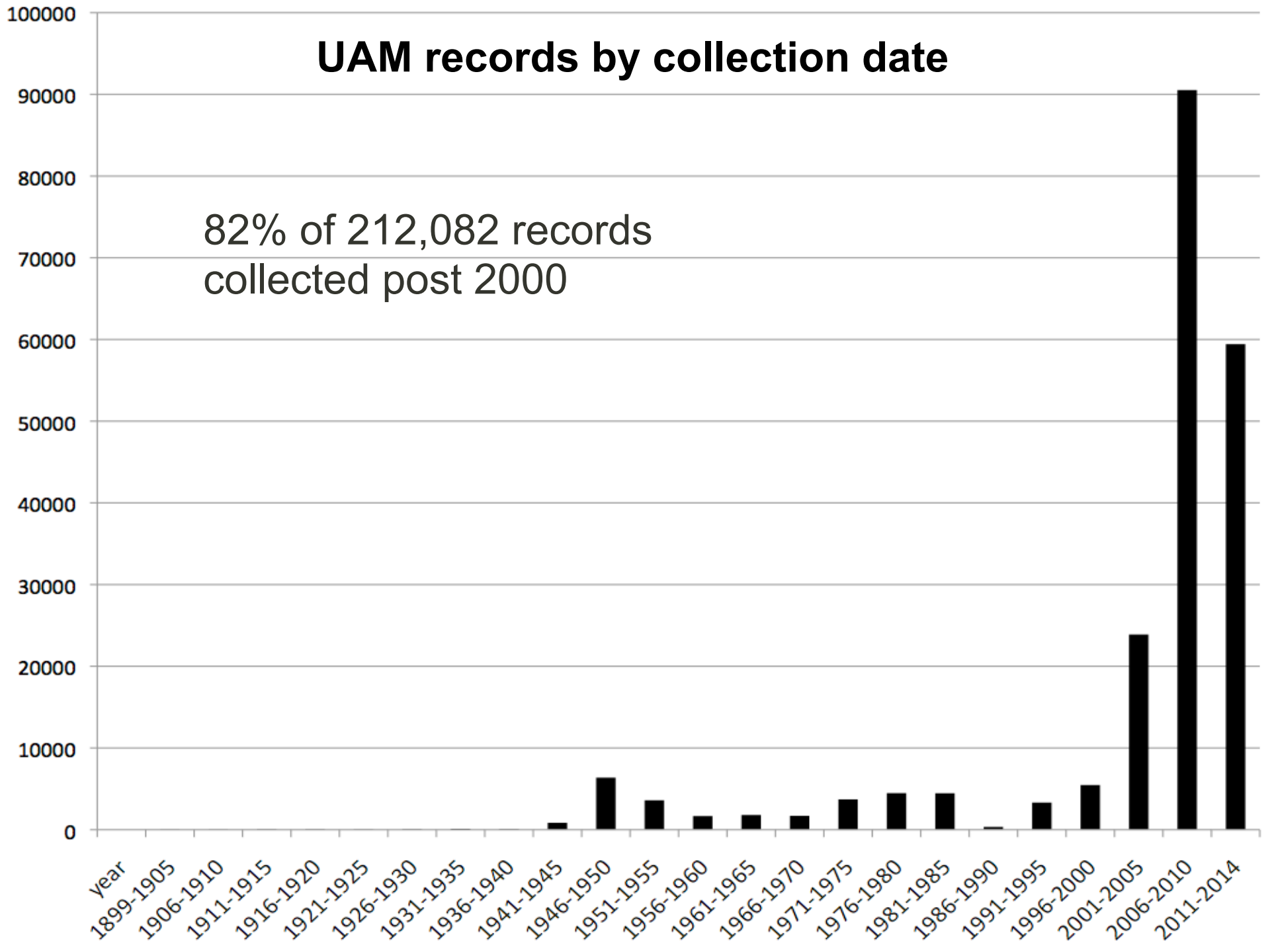
Where do these species occur?

What do they do? / Are they changing?

Cumulative AK Species Added to Database




Growth of the UAM Insect Collection
212,082
200000
150000
100000
50000
0
Cataloged Specimens
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
Year


UAM records by collection date
82% of 212,082 records collected post 2000
100000
90000
80000
70000
60000
50000
40000
30000
20000
10000
0
year
1899-1905
1906-1910
1911-1915
1916-1920
1921-1925
1926-1930
1931-1935
1936-1940
1941-1945
1946-1950
1951-1955
1956-1960
1961-1965
1966-1970
1971-1975
1976-1980
1981-1985
1986-1990
1991-1995
1996-2000
2001-2005
2006-2010
2011-2014

Processing Protocol

1. Field collected samples (eg 30 coll. events)
2. Bulk samples entered as 30 records
3. Lab techs prepare samples -> eg 2,000 specimens / vials
4. Barcodes are assigned to each
5. Database is used to ‘clone records by barcode’ so (eg) 2,000 records are made from the original 30, all identified as ‘Arthropoda’
6. Specimen/vial labels are prepared from database
7. Specimens labeled, sorted to order then morphospecies
8. Identifications are made & barcodes scanned to find records to update their IDs

What is a record?

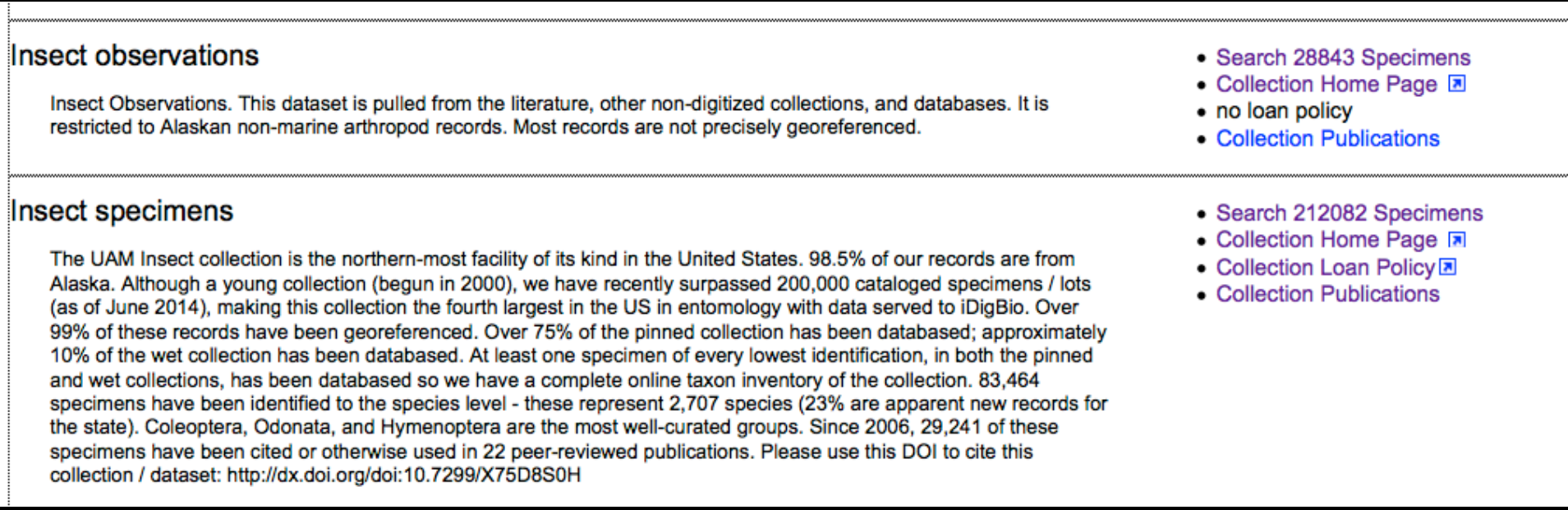
One species:

one record = one specimen (eg beetle on pin)

one record = multiple specimens (eg spiders in vial)

Multiple species:

one record = one specimen stored in vial with other specimens of different species (many records, one vial)



Insect observations

Insect Observations. This dataset is pulled from the literature, other non-digitized collections, and databases. It is restricted to Alaskan non-marine arthropod records. Most records are not precisely georeferenced.

- Search 28843 Specimens
- Collection Home Page
- no loan policy
- Collection Publications

Insect specimens

The UAM Insect collection is the northern-most facility of its kind in the United States. 98.5% of our records are from Alaska. Although a young collection (begun in 2000), we have recently surpassed 200,000 cataloged specimens / lots (as of June 2014), making this collection the fourth largest in the US in entomology with data served to iDigBio. Over 99% of these records have been georeferenced. Over 75% of the pinned collection has been databased; approximately 10% of the wet collection has been databased. At least one specimen of every lowest identification, in both the pinned and wet collections, has been databased so we have a complete online taxon inventory of the collection. 83,464 specimens have been identified to the species level - these represent 2,707 species (23% are apparent new records for the state). Coleoptera, Odonata, and Hymenoptera are the most well-curated groups. Since 2006, 29,241 of these specimens have been cited or otherwise used in 22 peer-reviewed publications. Please use this DOI to cite this collection / dataset: http://dx.doi.org/doi:10.7299/X75D8S0H

- Search 212082 Specimens
- Collection Home Page
- Collection Loan Policy
- Collection Publications

What is a record?

212,082 specimens -> wrong, 212,082 ***records***

actually closer to 1.15M *specimens*

Identified to species = 90,107 records (137,342 specimens)

42% of records ID'd, 12% of specimens

Insect observations

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Caveat emptor

"*Continuing emphasis on the mere computerization of label data from museums and herbaria is misguided, when eight out of 10 records may be mistaken. There is limited benefit in rapid electronic access to unreliable data*." – Q. Wheeler

Wheeler, Q. D. 2004. Taxonomic triage and the poverty of phylogeny Phil. Trans. R. Soc. Lond. B (2004) 359, 571–583 DOI 10.1098/rstb.2003.1452

Caveat emptor

-If you were about to revise a taxon would you prefer to borrow undatabased specimens or databased specimens?

-10,000+ specimens undatabased, MS student cannot database them all

= ~ $30,000 for grad student, 8 months of databasing 8h/d for 5d/wk.

Caveat emptor

- IDs may be incomplete or wrong prior to revision but georeferencing should be highest quality

- ALL specimens should be databased by their home institutions

-Too many revisions database specimens but the data are not available

Identification comparison (Mar – Nov 2014)

$39,000 from AK Dept Fish & Game
$19,972 – traditional IDs
$10,713 – DNA barcoding

1. Aleocharinae by Jan Klimaszewski
2. Araneae by Jozef Slowik
3. Staphylinidae by Thayer & Newton
4. DNA barcoding

Identification comparison

1. Aleocharinae by Jan Klimaszewski
   - 1,872 specimens
   - 1,738 to species
2. Araneae by Jozef Slowik
   - 6,829 records (21,994 specimens)
   - 4,651 records (16,649 specimens) to species
3. Staphylinidae etc. by Newton & Thayer
   - 3,830 specimens
   - 1,157 to species

TOTAL: 27,696 specimens identified, 19,544 to species

DNA Barcoding

10 plates of legs sent of unidentified specimens
Coleoptera, Hymenoptera, Diptera

specimens sent	950	
Barcodes	601	
ID improvement	562	
Confident species IDs	161	(27% of 601)

	number of confident spp IDs / No. succ barcoded	
Coleoptera	13 / 82	15%
Hymenoptera	85 / 338	25%
Diptera	62 / 181	34%

Cost Comparison

Traditional identifcations $19,972

27,696 specimens identified, 19,544 to species

= $1 per specimen

DNA barcoding IDs $10,713

562 specimens identified, 161 to species

= $71 per specimen (if all 950 had worked would have been $11 each)

Smithsonian Curation Standards and Profiling System

LEVEL 1: materials conservation
LEVEL 2-4: specimen accessibility
LEVEL 5-6: physical organization
LEVEL 7-9: data capture
LEVEL 10: scientific voucher material

- DNA barcoded specimens, imaged
- GenBank vouchers
- Vouchers for publications
  = LEVEL 10

Voucher Material

29,241 of these specimen records have been cited or otherwise used in 23 peer-reviewed publications.

3,237 have BOLD or GenBank #s

Hegna, R. H. and J. Mappes. 2014. Influences of geographic differentiation in the forewing warning signal of the wood tiger moth in Alaska. Evolutionary Ecology.

- Annotate
- 19 Cited Specimens
- http://dx.doi.org/10.1007/s10682-014-9734-7
- Edit
- Manage Citations

Jarvis, K. J., Whiting, M. F. 2006. Phylogeny and biogeography of ice crawlers (Insecta: Grylloblattodea) based on six molecular loci: Designating conservation status for Grylloblattodea species. Molecular Phylogenetics and Evolution 41(1): 222-237.

- Annotate
- 1 Cited Specimens
- http://dx.doi.org/10.1016/j.ympev.2006.04.013
- Edit
- Manage Citations

Klimaszewski, J., Webster. R., Langor D., Bourdon, C., Jacobs, J. 2013. Review of Canadian species of the genus Dinaraea Thomson, with descriptions of six new species (Coleoptera, Staphylinidae, Aleocharinae, Athetini). ZooKeys 327:65-101.

- Annotate
- 2 Cited Specimens
- http://dx.doi.org/10.3897/zookeys.327.5908
- Edit
- Manage Citations

Lewis, T.M., D.R. Horton. 2012. A new species of Anthocoris (Hemiptera: Heteroptera: Anthocoridae) from western North America. Proc. Entomol. Soc. Wash. 114(4): 476-491.

- Annotate
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Pantoja, A., Sikes, D.S., Hagerty, A.M., Emmert, S.Y., Rondon, S. 2013. Ground beetle (Coleoptera: Carabidae) assemblages in the Conservation Reserve Program crop rotation systems in interior Alaska. J. Entomol. Soc. Brit. Columbia 110: 6-18.

- Annotate
- 6547 Cited Specimens
- Edit
- Manage Citations

ZooKeys 329: 23–32 (2013)
doi: 10.3897/zookeys.329.4957
www.zookeys.org

RESEARCH ARTICLE

A peer-reviewed open-access journal
ZooKeys
Launched to accelerate biodiversity research

A redescripton of *Lyrosoma pallidum* (Eschscholtz) and distributional range extension of *Lyrosoma* Mannerheim (Coleoptera, Agyrtidae)

In-Seong Yoo[1], Derek Sikes[2], Kee-Jeong Ahn[1]

1 *Department of Biology, Chungnam National University, Daejeon 305-764, Republic of Korea* **2** *University of Alaska Museum, 907 Yukon Dr., Fairbanks, Alaska, 99775, USA*

Corresponding author: *Kee-Jeong Ahn* (kjahn@cnu.ac.kr)

Academic editor: *Michael Ivie* | Received 4 March 2013 | Accepted 26 August 2013 | Published 5 September 2013

Citation: Yoo I-S, Sikes D, Ahn K-J (2013) A redescripton of *Lyrosoma pallidum* (Eschscholtz) and distributional range extension of *Lyrosoma* Mannerheim (Coleoptera, Agyrtidae). ZooKeys 329: 23–32. doi: 10.3897/zookeys.329.4957

Abstract

A redescription with illustrations of the species *Lyrosoma pallidum* and a key to the Korean species of the family Agyrtidae are provided. New distributional data, including a range extension, of the two *Lyrosoma* Mannerheim species are presented. *Lyrosoma pallidum* (Eschscholtz) is recorded for the first time in Korea.

Keywords

Lyrosoma pallidum, *L. opacum*, distribution range, coastal, Agyrtidae

to the Korean fauna. Newton (1997) classified *Lyrosoma* under Agyrtinae (one of the three subfamilies, *sensu* Newton 1997) based on abdominal-elytral interacting system and structure of aedeagus, and discussed its phylogenetic relationships with other genera. Later, Schawaller (1998) revised the genus *Lyrosoma*, synonymizing six species, thereby reducing the genus from eight species to only two species, and also reported its distributional range along northern Pacific coasts. However, the description of *L. pallidum* was insufficient, lacking important features such as mouthparts and body sculpture and the distributional data were sparse and incompletely mapped. Here, we present a redescription with a habitus photograph and illustrations of *Lyrosoma pallidum*, provide improved distribution data for both species, a range extension for *L. pallidum*, and a key to the Korean species of Agyrtidae.

Material and methods

All *L. pallidum* specimens used in this study are deposited in the Chungnam National University Insect Collection (CNUIC), Daejeon, Korea. New data for *L. opacum* are from specimens deposited in the University of Alaska Museum Insect Collection (UAM), Fairbanks, Alaska, USA. These data and all literature records reported here for *L. opacum* are available online at http://arctos.database.museum/saved/Lyrosoma_opacum. Digital images of habitus were merged using image stacking software (Combine ZP). For measurement, we selected 10 males and 10 females (2♂1♀ from Korea; 5♂6♀ from Japan; 3♂3♀ from Russia) with maximum body size variation. The following abbreviations were used in the text: BL, body length (HL+PL+EL); HL, length of head from the anterior margin of the clypeus to the posterior margin of head; HW, width of head, including the eyes; PL, maximum length of pronotum; PW, maximum width of pronotum; EL, length of elytron from the base to the posterior margin of elytron; EW, width of elytra.

Insect Collection

University of Alaska Museum of the North

[Show/Hide Search Terms]

none~ tiny~ small~ large~ huge~ QueryByViewport

Found 212 specimens. Tools: Map, Customize, or Download | Manage... | HTML version | Report Bad Data

Specimen Results

GUID	othercatalognumbers	Identified As	identifiedby	order	family	genus	collectors	country	state/province	min_elev_in_m	specific locality	habitat	collectin
UAM:Ento:103857 voucher(2)	original identifier=7859	Lyrosoma opacum	Derek S. Sikes	Coleoptera	Agyrtidae	Lyrosoma	Dominique M. Collet	United States	Alaska	1	Ulak Isl.	Elymus stand	
UAM:Ento:103909 voucher(2)	original identifier=7872	Lyrosoma opacum	Derek S. Sikes	Coleoptera	Agyrtidae	Lyrosoma	Dominique M. Collet	United States	Alaska	1	Bogoslof Isl.	under bird carcass	
UAM:Ento:103910 voucher(2)	original identifier=7872	Lyrosoma opacum	Alfred Newton	Coleoptera	Agyrtidae	Lyrosoma	Dominique M. Collet	United States	Alaska	1	Bogoslof Isl.	under bird carcass	

Voucher Material

Type specimens ->

Hegna, R. H. and J. Mappes. 2014. Influences of geographic differentiation in the forewing warning signal of the wood tiger moth in Alaska. Evolutionary Ecology.

- Annotate
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Jarvis, K. J., Whiting, M. F. 2006. Phylogeny and biogeography of ice crawlers (Insecta: Grylloblattodea) based on six molecular loci: Designating conservation status for Grylloblattodea species. Molecular Phylogenetics and Evolution 41(1): 222-237.

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- Annotate
- 6547 Cited Specimens
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UAM:Ento:70964

Anthocoris aquilivenis

<< Return to results

get a DOI

Becharof NWR Upper Kejulik
North America, United States, Alaska
13 June 2007

whole organism (pinned)

Edit

Anthocoris aquilivenis
Animalia; Arthropoda; Insecta; Hemiptera; Anthocoridae; Anthocoris aquilivenis Lewis 2012
Identified by Tamera Lewis on 2012
Nature of ID: type specimen
Remarks: PARATYPE

Anthocoris n.sp. Lewis
Identified by Tamera Lewis on 2012
Nature of ID: expert
Remarks: to be paratype, n.sp. aquilivenis; manuscript in prep 2012

Citations

paratype of Anthocoris aquilivenis, page 482 in Lewis & Horton 2012

Edit

Determination Type: accepted place of collection
assigned by Gaetan Milet on 2007-06-13
Higher Geography: North America, United States, Alaska
Specific Locality: Becharof NWR Upper Kejulik
Collecting Method: sweep
Collecting Source: wild caught
Event Date: 2007-06-13
Verbatim Date: 13 June 2007
Verification Status: checked by curator

Coordinates: 57.97709 / -155.50765
Verbatim Coordinates:
57.97709/-155.50765
Datum: North American Datum 1983
Error: 50 m
Georeference Source: GPS
Georeference Protocol: not recorded

Elevation 82 to 82 m

No Media Found

Collector(s)

Edit

Gaetan Milet

Identifiers

BoLD barcode ID: UAMIC673-13

Part Name	Condition	Disposition	Qty	Label	Remarks
whole organism (pinned)	intact	being processed	1	UAM100015441	

sex: unknown
Tamera Lewis, 2012
Remark: 1

age class: adult
Tamera Lewis, 2012

Entered By: Derek S. Sikes on 2012-03-28
Last Edited By: FFDSS on 2014-11-12

Accession

UAM-2007.10-PenNWR-Ento

Usage

Contributed By Project: Arthropods inventory of Peninsula National Wildlife Refuge

Public Data Portal - Specimen Record

Print

Public Data Search

XML TSV Specimen Data | FASTA TRACE Sequences | XML TSV Combined

Show Help

Record Details For UAMIC673-13

Back to Search: Records

IDENTIFIERS:

Sample ID:	UAM:Ento:70964	Museum ID:	UAM Insects 70964
Field ID:		Collection Code:	
Deposited In:	University of Alaska Museum		

Add Tags & Comments Comments: 0 Associated Tags: No Tags

TAXONOMY:

Phylum:	Arthropoda	Subfamily:	
Class:	Insecta	Genus:	*Anthocoris*
Order:	Hemiptera	Species:	*Anthocoris n sp. Lewis*
Family:	Anthocoridae	BIN (Cluster ID):	

** Barcode Index Numbers(BIN): cluster barcode sequences to create OTUs that closely reflect species groupings*

SPECIMEN DETAILS:

Voucher Status:	vouchered:registered collection	Reproduction:	S
Tissue Descriptor:	leg	Sex:	
Brief Note:		Life Stage:	adult
Detailed Notes:			

COLLECTION DATA:

Country:	United States	Date Collected:	2007-06-13
Province/State:	Alaska	Collectors:	Gaetan Milet
Region/County:			
Sector:			
Exact Site:	Becharof NWR Upper Kejulik		
Latitude:	57.977	Elevation:	82 Meters
Longitude:	-155.508	Elv. Accuracy:	
Coord. Source:	GPS	Depth:	
Coord. Accuracy:	50 Meters	Depth Accuracy :	

SEQUENCE: COI-5P [Funding Source: N/A]

Sequence ID:	UAMIC673-13.COI-5P	GenBank Accession:	
Last Updated:	2014-11-09	Genome:	Mitochondrial
Locus:	Cytochrome Oxidase Subunit 1 5' Region		
Nucleotides:	407 bp		

TAAGATTTTGATTATTACCCCCCTCAATCACCTTATTAATAATAAGAAGATTAGTAGAAAATGGTGCTGGAACAG
GATGAACAGTATATCCTCCTCTTTCAACTAACATTGCACATAGAGGGGCATCAGTAGATTTAGCAATCTTCTCTC
TACATCTAGCAGGTGTGTCATCAATCCTAGGAGCAATTAACTTCATTTCAACAATTATAAATATACGACCACAAG
GGATGTCAATAGAACGAATCCCTCTATTTGTATGATCAGTGGGAATTACTGCACTACTATTATTATTATCACTAC
CAGTATTAGCAGGAGCTATCACAATATTATTAGCAGATCGTAATTTTAATACATCATTCTTTGACCCATCAGGGG
GAGGGGATCCTATCCTATACCAACACTTATTT

Amino Acids:

SFWLLPPSITLLMMSSLVENGAGTGWTVYPPLSTNIAHSGASVDLAIFSLHLAGVSSILGAINFISTIMNMRPQG
MSMERIPLFVWSVGITALLLLSLPVLAGAITMLLADRNFNTSFFDPSGGGDPILYQHLF

Illustrative Barcode:

Specimen Images:

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Add Tags & Comments Comments: 0 Associated Tags: No Tags

Collection Site:

Winker & Withrow 2013
Small collections make
A big impact. Nature 493:
480

h-index of 42

Equivalent to a Nobel
laureate in Physics

Small collections make a big impact

In an era in which support for natural-history collections is waning, we wish to point out how effective even a small, young collection can be.

We constructed a Google Scholar profile (called UAM Birds) of publications that used the bird collection we oversee at the University of Alaska Museum in Fairbanks. The collection is supported by 1.3 full-time-equivalent staff, and it served in whole or in part as research infrastructure for these publications, contributing and preserving specimens and associated information.

The body of work supported by the collection is diverse and well cited, with a profile *h*-index of 42, equivalent to an average Nobel laureate in physics (J. E. Hirsch *Proc. Acad. Natl Acad. Sci. USA* **102,** 16569–16572; 2005). This positively sings 'good investment' and should encourage other institutions to rediscover and reinvest in collections as important societal resources.

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Change photo

UAM Insects

Edit | Follow

University of Alaska Museum Insect Collection
Non-marine arthropods of Alaska
No verified email - Homepage
My profile is public

Title | Add | More | 1–20 | Cited by | Year

Latitudinal patterns in leaf litter breakdown: is temperature really important? JG IRONS III, MW Oswood, R STOUT, CM Pringle Freshwater Biology 32 (2), 401-411	230	1994
Consumption of leaf detritus by a stream shredder: influence of tree species and nutrient status JG Irons, MW Oswood, JP Bryant Hydrobiologia 160 (1), 53-61	96	1988
The carrion beetles of Canada and Alaska. Coleoptera: Silphidae and Agyrtidae. RS Anderson, SB Peck Insects and Arachnids of Canada	60	1985
Ecological adaptations of aquatic macroinvertebrates to overwintering in interior Alaska (USA) subarctic streams JG Irons III, LK Miller, MW Oswood Canadian Journal of Zoology 71 (1), 98-108	52	1993
Community structure of benthic invertebrates in interior Alaskan (USA) streams and rivers MW Oswood Hydrobiologia 172 (1), 97-110	41	1989
Biology of Alaskan black flies (Simuliidae, Diptera) KM Sommerman, RI Sailer, CO Esselbaugh Ecological monographs 25 (4), 345-385	40	1955

Google Scholar

Citation indices	All	Since 2009
Citations	1023	393
h-index	18	11
i10-index	25	12

Add co-authors

Robert S. Anderson
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Michael Draney
Johanna Mappes
John C Moore
Robert H. Hegna
Silvia I Rondon

Co-authors Edit...

Derek Sikes

GBIF downloads UAM 30 Jun 2013 – 1 Jul 2014

UAM Fish Collection	1,481,242
UAM Mammal Collection	37,927,492
UAM Herbarium	62,794,720
UAM Earth Sciences Collection	9,837,359
UAM Bird Collection	4,523,218
UAM Entomology Observations	8,407,893
UAM Entomology Collection	46,078,027
Total for UAM	171,049,951

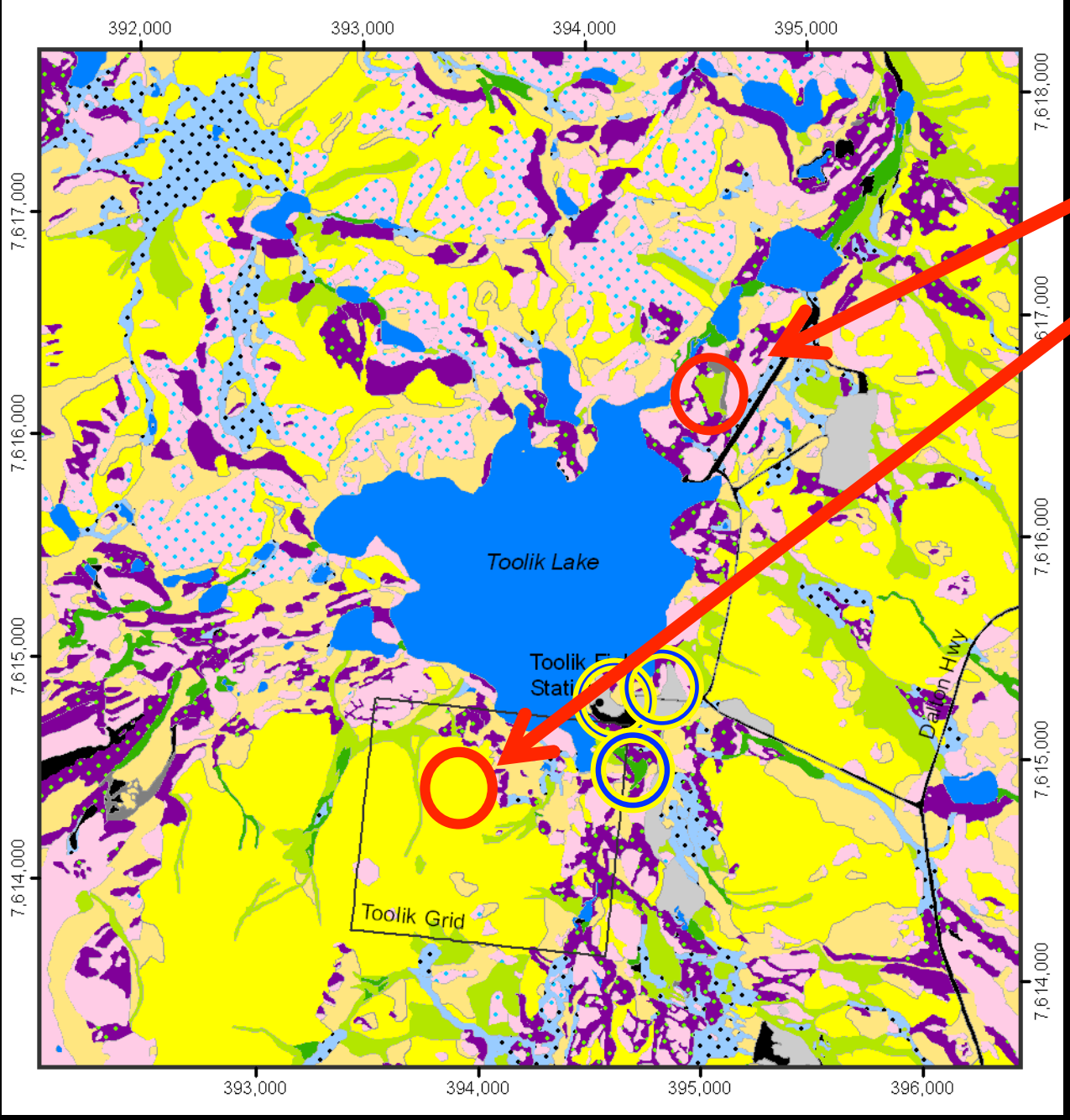
iDigBio usage (~ 3 months prior to 3 Oct 2014)

Top 10 Entomological datasets

Name	searched	downloaded
Snow Entomological Museum Collection	334,176,628	5,602,928
Illinois Natural History Survey	210,111,982	3,599,583
AntWeb	148,328,835	2,835,370
Tri-Trophic Interactions Dataset	121,938,641	2,130,753
C.A. Triplehorn Insect Collection (OSUC)	98,420,400	1,507,217
CAS Entomology (ENT)	57,483,931	1,241,563
UAM Entomology Collection (Arctos)	53,897,870	1,013,294
Texas A&M University Insect Collection	49,864,841	890,136
Tri-Trophic Interactions – Texas A&M	34,984,959	674,322
Michigan State University ?	32,882,294	509,854

Example of research results

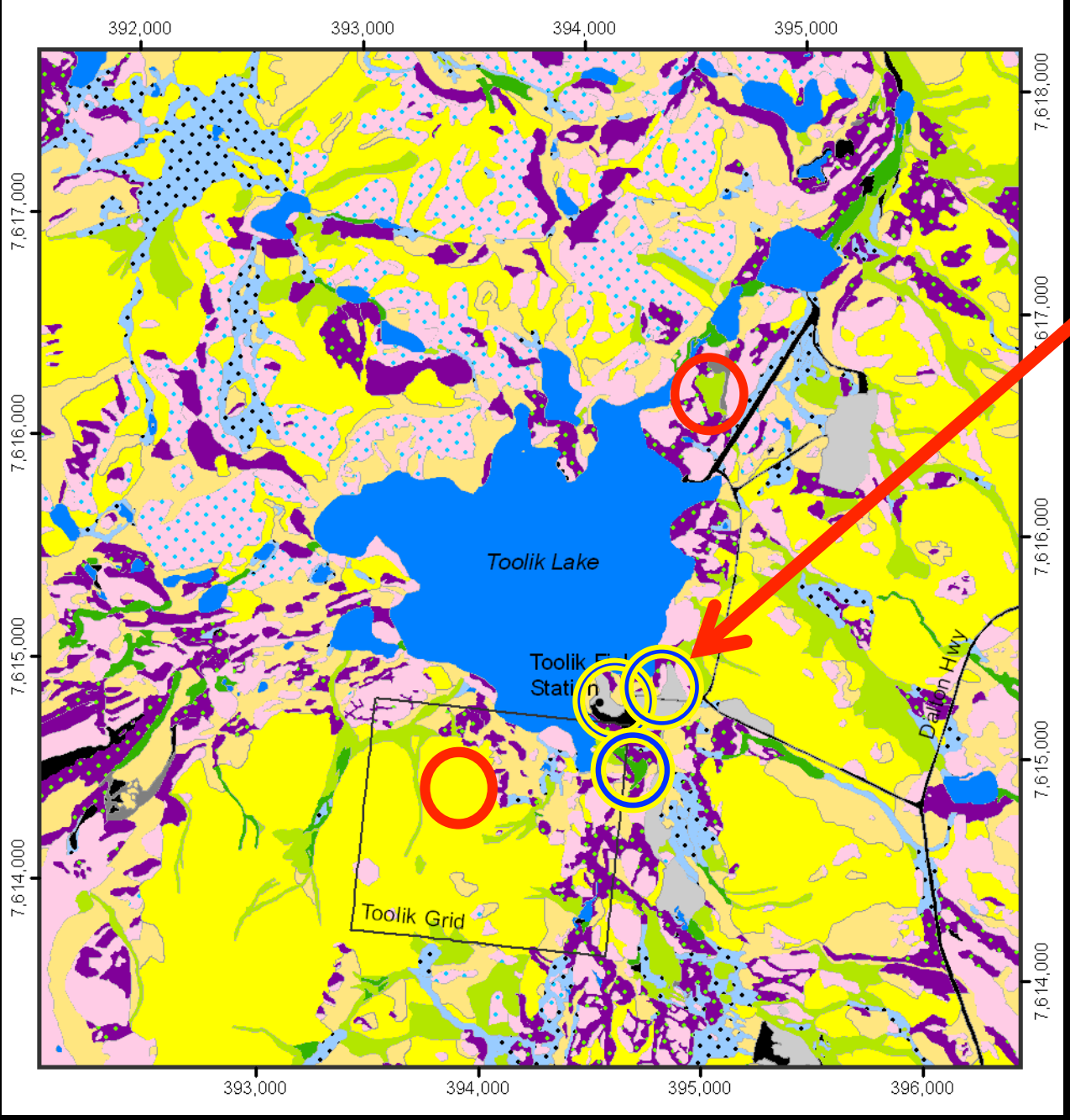

Toolik Lake, Arctic Alaska, 2008



Wyant et al. 2006 – 3 years of pitfall trapping of spiders
3642 trap days
6,981 spiders of 51 species

2 sites ~2km apart

Thorough Sampling?
Arctic = species poor?



1 year, pitfall, net, hand, Berlese
174 trap days
165 spiders of 39 species

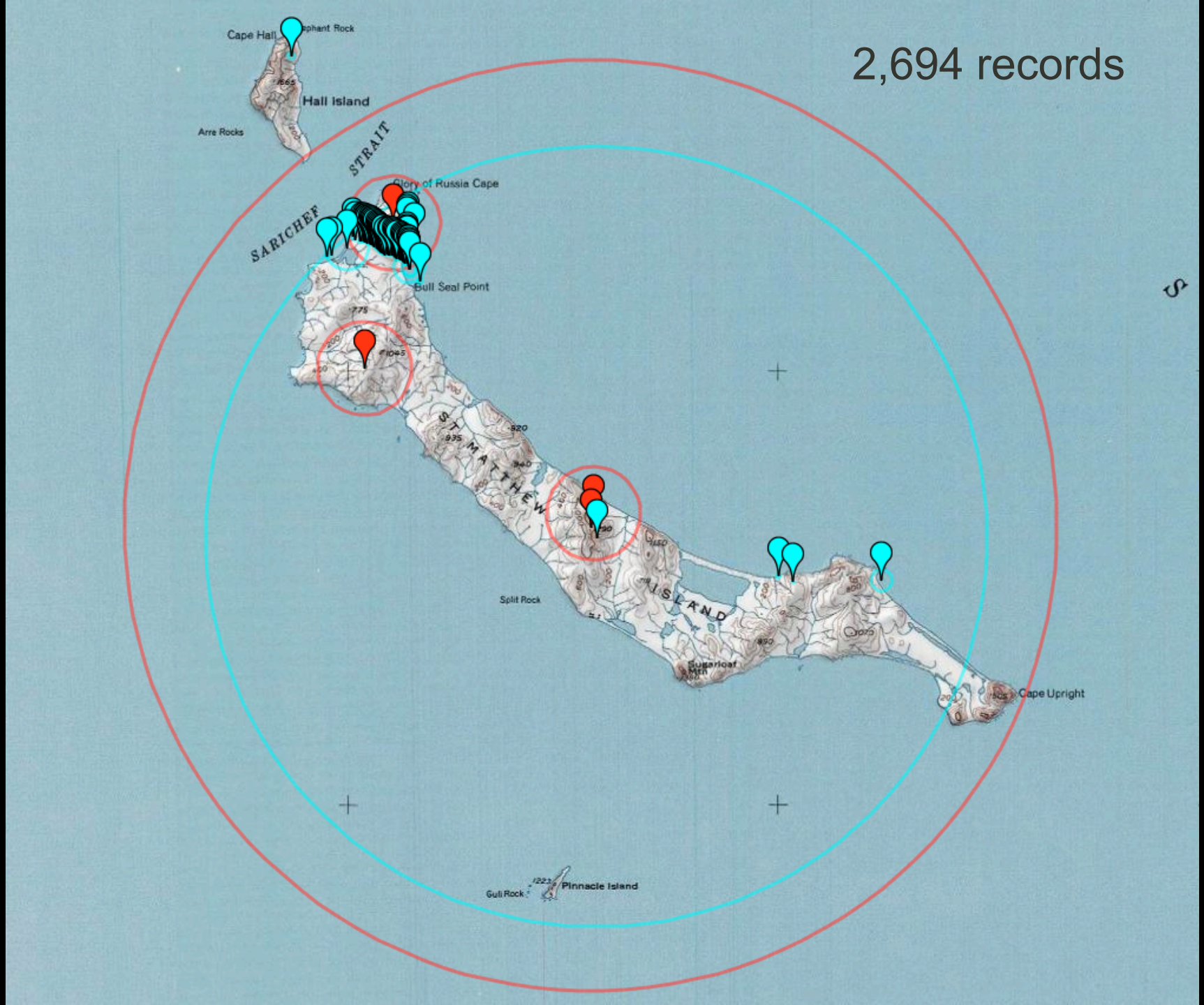
24 were not in Wyant et al. list (64% new)

new total for site = 75 species

Sikes, D. S., Draney, M. L. and Fleshman*, B. 2013. Unexpectedly high among–habitat spider faunal diversity (Araneae) from the Arctic Long Term Experimental Research (LTER) field station at Toolik Lake, Alaska, United States of America. Canadian Entomologist 145: 219-226. DOI: http://dx.doi.org/10.4039/tce.2013.5


USDA Agricultural Research Service
Bombus study 2009-2010
8,482 specimens + others in
UAM = 22,956 specimens

St. Matthew Island


2,694 records
Cape Hall
Hall Island
Arre Rocks
STRAIT
SARICHEF
Glory of Russia Cape
Bull Seal Point
ST MATTHEW
ISLAND
Split Rock
Sugarloaf
Cape Upright
Guli Rock
Pinnacle Island

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Trista Crass

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Steve Peek (Diptera)

Mary Wyatt

- National Science Foundation

-USDA ARS / FHP

-USFWS

-NPS

-ADFG

-AK Div of Ag

-USGS


Questions?