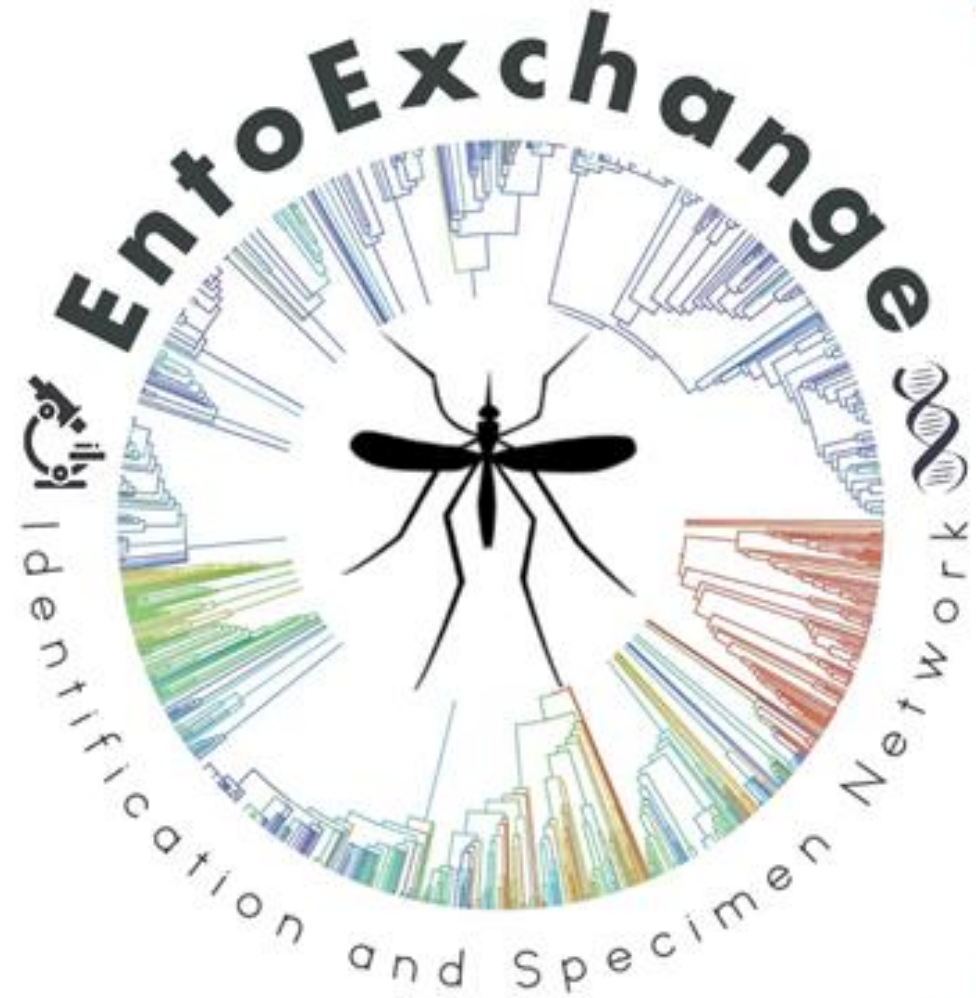


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Mosquito BEACONS 2022 Workshop

Presented on Monday Jan 24th 2022

Dan Killingsworth
Environmental Security Pest and Lawn
dan.killingsworth@pest.com

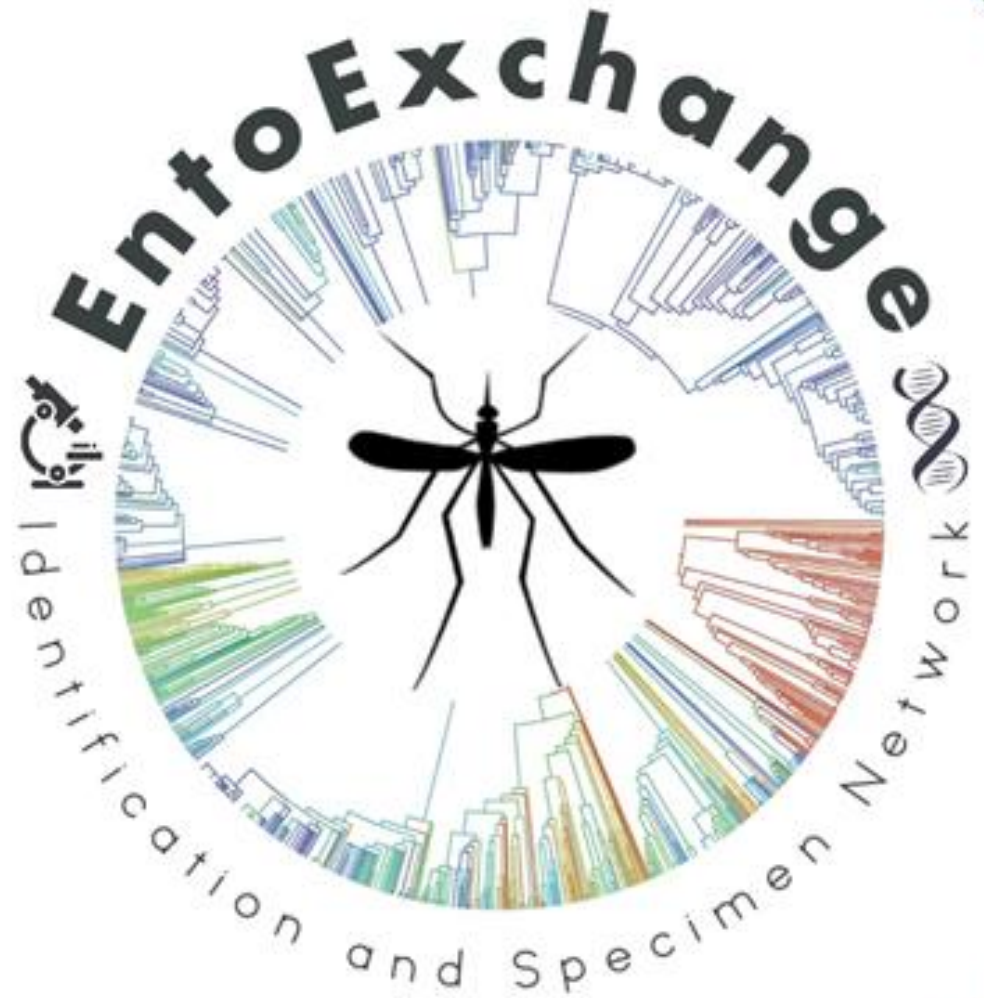


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"To name a thing has always been to make it familiar and therefore a little less dangerous to us...the abstract may harbor some evil until it has a name, but once having a name one can cope with it."

John Steinbeck & E.F. Ricketts- The Sea of Cortez (1941)



What's In A Name?

In the realm of mosquito surveillance, identification of a particular species can set off a cascade of events from vector management treatments, to scientific publications, to newsworthy headlines. **Identification is everything.**



JOURNAL OF MEDICAL ENTOMOLOGY



ENTOMOLOGICAL
SOCIETY OF AMERICA

Article Navigation

Aedeomyia squamipennis (Diptera: Culicidae) in Florida, USA, a New State and Country Record

Nathan D. Burkett-Cadena, Erik M. Blosser

Author Notes

Journal of Medical Entomology, Volume 54, Issue 3, May
2017, Pages 788–792,
<https://doi.org/10.1093/jme/tjw226>

NATIONAL

Scientists Find New Invasive Mosquito Species In Florida

March 16, 2021 - 5:00 AM ET
Heard on Morning Edition

GREG ALLEN



2-Minute Listen



Aedeomyia squamipennis mosquitoes can carry yellow fever and are well established in two South Florida counties.
Lawrence Neves, UF/IFAS

Why Does It Matter?

Journal of the American Mosquito Control Association, 16(3):175–188, 2000
Copyright © 2000 by the American Mosquito Control Association, Inc.

NEW CLASSIFICATION FOR THE COMPOSITE GENUS *Aedes* (DIPTERA: CULICIDAE: AEDINI), ELEVATION OF SUBGENUS *Ochlerotatus* TO GENERIC RANK, RECLASSIFICATION OF THE OTHER SUBGENERA, AND NOTES ON CERTAIN SUBGENERA AND SPECIES

JOHN E. REINERT¹

Center for Medical, Agricultural, and Veterinary Entomology (CMAVE), United States Department of Agriculture, Agricultural Research Service, 1600/1700 SW 23rd Drive, Gainesville, FL 32608

ABSTRACT. The composite genus *Aedes* is divided into 2 genera, *Aedes* and *Ochlerotatus*, on the basis of consistent primary characters of the female and male genitalia. *Ochlerotatus* is separated into 2 sections. Additional supplemental features of the female and male genitalia, 4th-stage larvae, and pupae are provided for the separation of the genera and sections as well as a discussion of exceptions and comparisons. This classification is based on a morphological examination of specimens of over 65% of the currently recognized species and all subgenera previously included in *Aedes* and representative material of all subgenera and genera of tribe Aedini. Published literature was examined and evaluated. All currently recognized subgenera are assigned to the appropriate genus. The proposed new generic classification provides better defined genera and a more natural arrangement of included taxa. *Armigerini* is formally recognized as a synonym, in part, of *Aedini*.

KEY WORDS. *Aedes*, *Ochlerotatus*, Aedini, Armigerini, taxonomy



PLOS ONE



Browse Topics

RESEARCH ARTICLE

Making Mosquito Taxonomy Useful: A Stable Classification of Tribe Aedini that Balances Utility with Current Knowledge of Evolutionary Relationships

Richard C. Wilkerson, Yvonne-Marie Linton,
Dina M. Fonseca, Ted R. Schultz, Dana C.
Price, Daniel A. Strickman

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0133602>

Why Do We Collect?

Wonderful book by Stephen A. Marshall

Flies: The Natural History and Diversity of Diptera

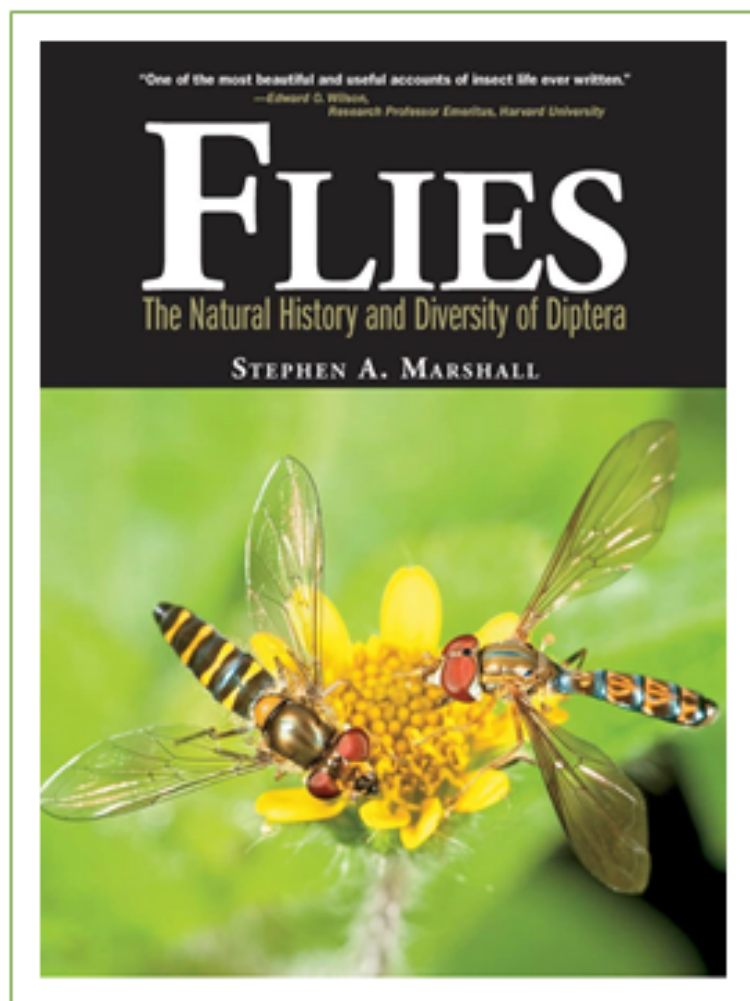
"...species are the working units of biodiversity, and species-level identification provides the link between specimens and the knowledge linked to those species names." (pg 559)



In discussing Hover flies, he states, "Syrphidae have for years been the most widely collected of all Diptera" (pg 306)

I'm hard pressed to think of an insect family that is purposefully targeted and systematically collected at a greater rate than Culicidae.

In the end, this isn't a contest. We all have an appreciation for pollinators, mosquito ecology and the utility of vector and nuisance mosquito surveillance.

We collect a lot of mosquitoes!





What To Do With Our Surveillance Collections?

Collate

Count



Curate



Report

Discard

(Feed *Gambusia* mosquito fish)

Maybe we can find an additional outlet...







Fulfilling A Need


Welcome to the EntoExchange Mosquito ID and Specimen Network.

Collaboration when encountering a new or unknown specimen through vector surveillance can be very helpful.


Neighboring mosquito control districts and other mosquito management entities can be alerted and on the lookout for mosquitoes of concern and members of the network can assist with identification when the need arises.

You may find yourself in need of specimens for teaching, training, or research. This is an excellent resource for acquiring material for working collections and making professional connections with colleagues on current and future work.





Early Beginnings




This project started from a series of conversations with Florida mosquito control personnel.

Wade Brennan from Sarasota County
Mike Riles from Beach MCD in Panama City
Mike Hudon from Indian River MCD
Jason Stuck from Pinellas County
Beth Carey-Kovach from Charlotte County

Open discussions about forming a mosquito specimen exchange group.

This idea materialized previously as a project by Wade Brennan and Mike Hudon known as the **Mosquito Adult & Larvae Traders (MALT)** group.



2/1/10

Got Mosquito reference specimens?


I'll trade you six *Culex restuans* for one *Orthopodomyia signifera*!

The "Mosquito Adult & Larvae Traders" (MALT) is gathering momentum.

When you attend meetings bring your extra pinned adult mosquitoes or slide preserved larvae and exchange them for ones that are not in your collection.

We can trade non-target species as well.

How it works:

- 1) Send an email with your contact information to Wade Brennan wbrennan@scgov.net or Michael Hudon m.hudon@irmosquito2.org and ask to be added to the MALT email distribution list. You will be added to the list and provided a spreadsheet that has information on who has extras of each species.
 - 2) Update the spreadsheet with your extras that can be shared, and email that back to Wade or Mike.
 - 3) Contact whoever has what you need prior to the next meeting and have them bring you what you requested.
 - 4) Prior to major meetings like Dodd and FMCA we will send an email blast to all with the updated spreadsheet and a suggested time and date to have our MALT meeting. Something like a 10 minute get together at the end of classes or presentations.
- 



How To Make Version 2.0 Succeed



It is suggested that each member of the network provide a list of mosquitoes in your area that you would be willing and able to provide if requested (adults, larvae, and eggs).

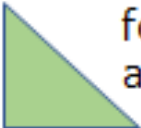
Additionally, provide a calendar of when those specimens are available for exchange.

There is a website discussion board, forum, and a photo gallery to assist with specimen identification and requests.


If your duties prohibit field collection efforts, that is perfectly fine. This is simply a semi-formal way of exchanging information and specimens with one another.

This is a volunteer network. No fees. No dues.

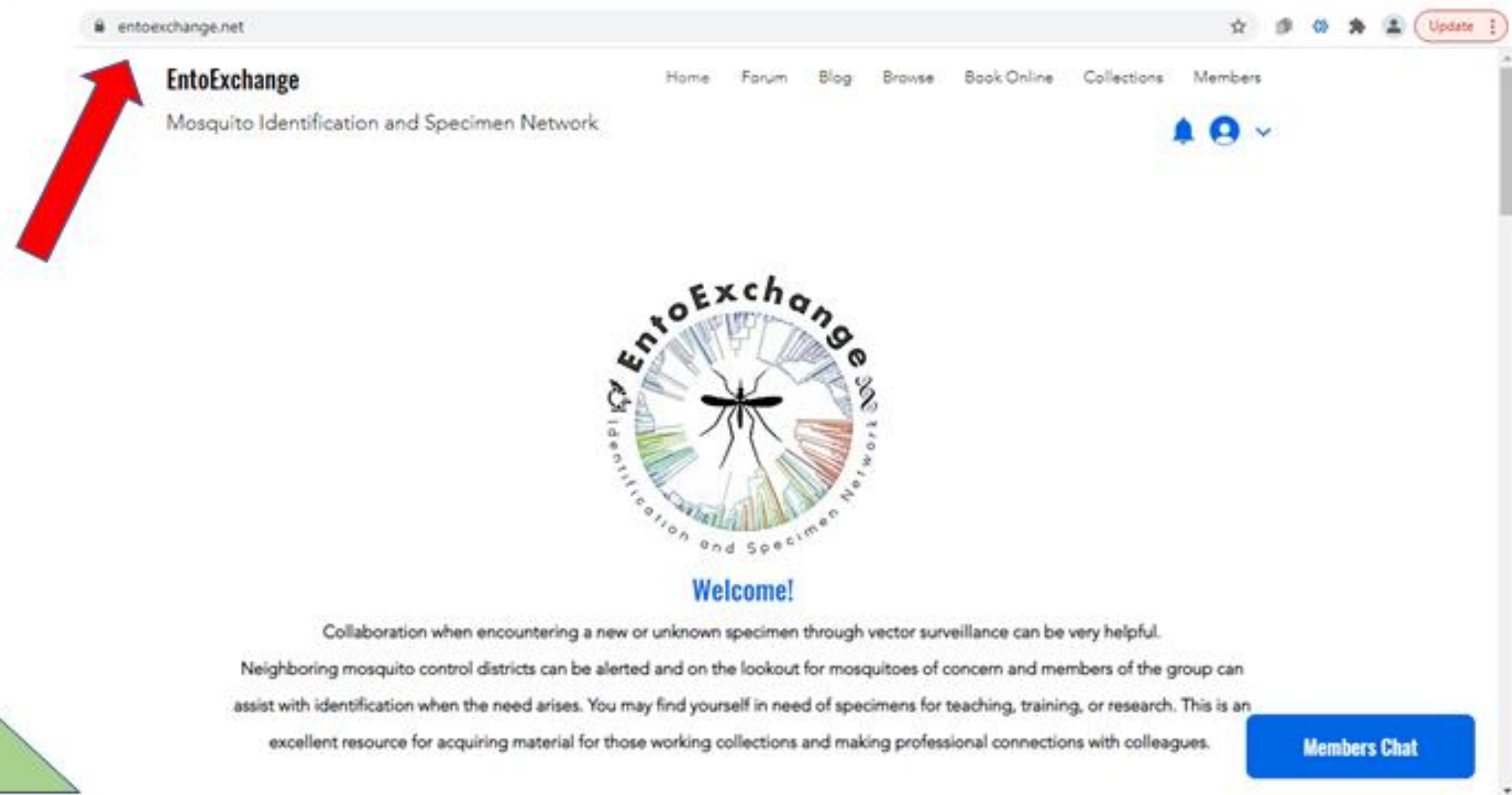
Over time the network will grow. Please feel free to invite colleagues to be a part of the exchange. The more the merrier.



The website is available for scrutiny. Please feel free to contact me with any questions, suggestions, concerns, or ideas you may have. Any level of critique or criticism about the format, accessibility, interface, etc is welcomed. This project needs to be as user friendly and helpful as possible.



EntoExchange Website...entoexchange.net



Specimen Identification Request

EntoExchange

Mosquito Identification and Specimen Network

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Mosquito Specimen Identification Inquiry

When posting an inquiry about an unidentified specimen to the forum, please indicate the ecological setting the specimen was acquired in (sunlit pool, tree hole, etc.), method of collection (ex. CDC light trap with dry ice), time of day and region of the country (the more specific the better). Posting quality images from multiple angles is also beneficial. Thank you. (send message below)



Members Chat

Specimen ID Request or General Message

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Get In Touch. Send a Message.

Name

Email

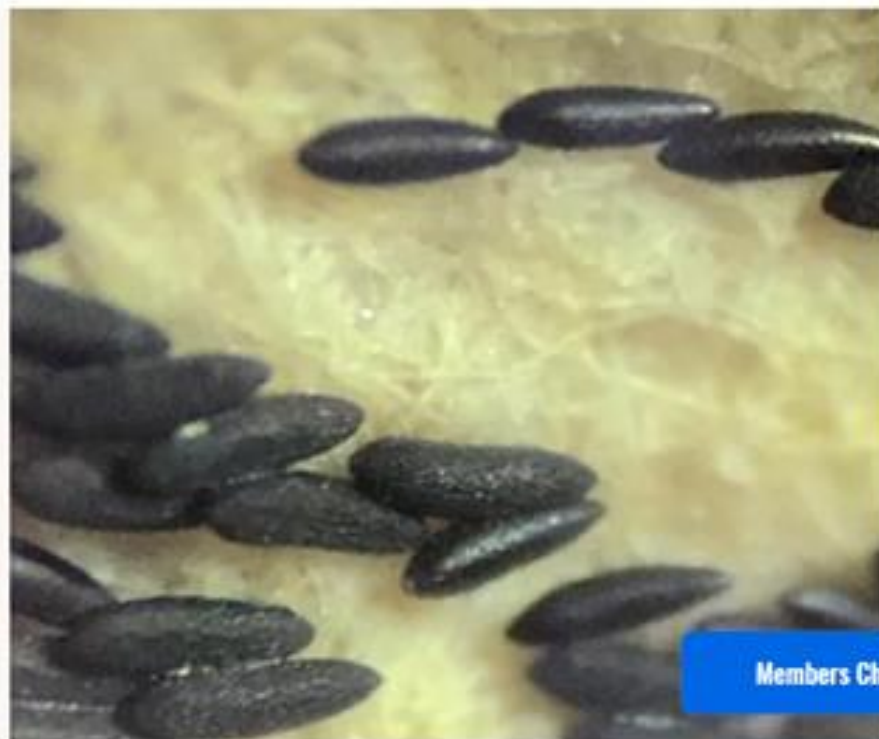
Phone

Address

Subject

Type your message here...

Submit



Members Chat

Specimen Shipping Information

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We want everyone to have a positive experience with EntoExchange. Curating specimens for shipping is an important part of the process. Please let us know if there are any suggestions, questions, or concerns that you feel need to be brought to our attention to ensure quality specimens. Thank you.



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Proper Mailing Procedures

We want everyone to have a positive experience with EntoExchange. Curating specimens for shipping is an important part of the process. Please let us know if there are any suggestions, questions, or concerns that you feel need to be brought to our attention to ensure quality specimens. Thank you.



Thanks for Subscribing!

We'll send news to your inbox.

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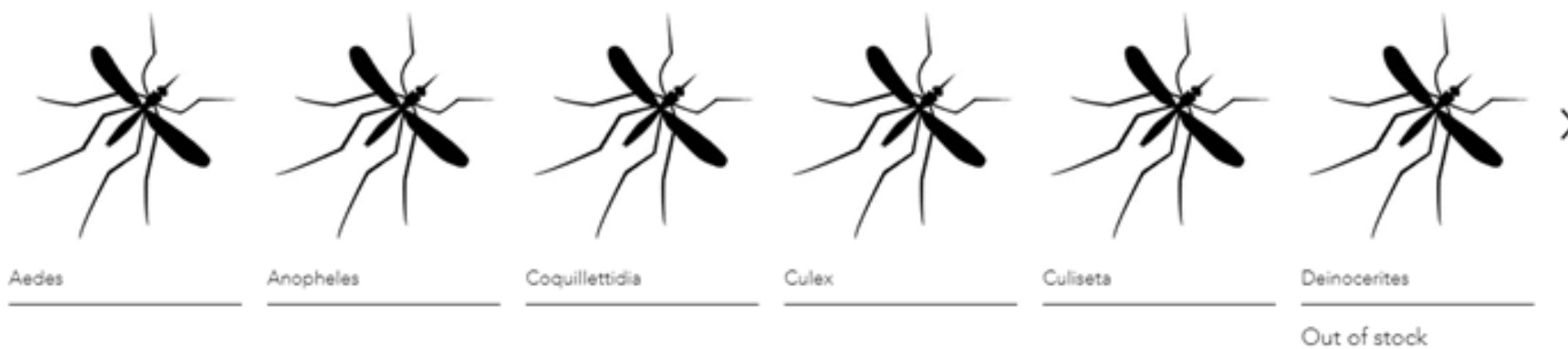
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Specimen Availability



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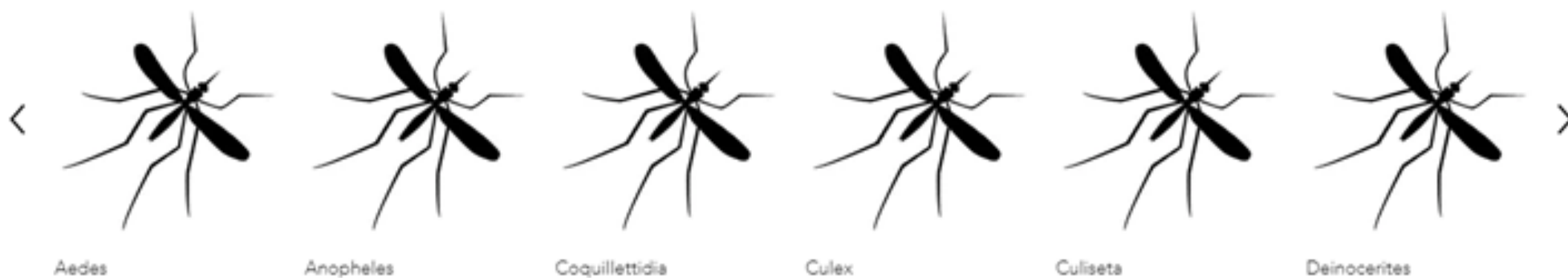
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Specimen Availability



Out of stock



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entoexchange.net

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Welcome!

Collaboration when encountering a new or unknown specimen through vector surveillance can be very helpful. Neighboring mosquito control districts can be alerted and on the lookout for mosquitoes of concern and members of the group can assist with identification when the need arises. You may find yourself in need of specimens for teaching, training, or research. This is an excellent resource for acquiring material for those working collections and making professional connections with colleagues.

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General Discussions

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Share stories, ideas, pictures and more!

EntoWord of the Week


Following

👁 0 💬 0

Entomology is full of descriptive and complex jargon. Let's take a look.

New Posts



dankillingsworth 
May 20, 2020

Welcome to the EntoExchange
General Discussions



dankillingsworth 
May 20, 2020

Get Started with Your Forum
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dankillingsworth

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Mosquito collecting in winter

What species and life stages to expect in cold weather

0 views 0 comments



denkillingsworth

Mar 1, 2020 • 1 min

Mosquito Ecology 101

Site conditions to consider when targeting a particular species



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Aedes



Anopheles



Coquilletidia



Culex



Members Chat

EntoExchange


Data Management and Security

Data management is supported by EarthSoft EQuIS Alive commercial software which is used extensively to manage biological, ecological, survey, and taxonomic data.

All data will be securely hosted on Microsoft Azure databases.

Data is entered through spreadsheets, tablets, or EntoExchange web portals.

Named logins are required with security protocols in place.



EQuIS™ Alive

Manage Ecological/Biological/Taxonomy data

Surveys

Create Surveys


- Define survey parameters for ecological/biological/taxonomy data collection
- Choose target species
- Develop electronic survey forms
- Read survey forms for field data collection

EQuIS Data Gathering Engine (EDGE)

- Collect field surveys with smart forms
- Runs on ruggedized tablets or PCs
- Connects to GPS, digital camera, sensors, and more
- Directly upload to EQuIS

Electronic Data Deliverables

- Electronic checks included
- Produce eCoCs, labels, and bar codes
- Analyze and visualize data with dashboards in Enterprise




Alive integrates with the EDGE field survey data collection tool


Manage Survey Types

Species Inventory & Monitoring	Ecological Observations
<ul style="list-style-type: none">• Indigenous• Invasive• Protected	<ul style="list-style-type: none">• Dates and Times• Places• Behaviors• Habitats• Climate Conditions
Habitat Assessment	<ul style="list-style-type: none">• Species• Counts• Conditions• Tissue Analysis
Vegetation Management	
<ul style="list-style-type: none">• Clearing & Relocation• Re-vegetation	


Utilize

- Dashboards in Enterprise
- Design and create standard reports
- Produce statistical data analysis
- Visualize results: charts, tables, maps
- Editable data parameters as report filter options





Own the workflow, make better decisions



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Store Orders

Booking Services

Booking Calendar

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Inventory 18

Filter by: All More Filters Search...

	Name	SKU	Inventory
<input type="checkbox"/>	 Aedes		In stock
<input type="checkbox"/>	 Deinocerites		In stock
<input type="checkbox"/>	 Aedes thibaulti		In stock
<input type="checkbox"/>	 Culiseta		In stock
<input type="checkbox"/>	 Mansonia		In stock

?

Inventory Management

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Filter by: All ▾ [More Filters](#)

Search...

<input type="checkbox"/>	Name	SKU	Inventory	
<input type="checkbox"/>	 Aedes		In stock ▾	...
<input type="checkbox"/>	 Deinocerites		Out of stock ▾	...
<input type="checkbox"/>	 Aedes thibaulti		In stock	Out of stock
<input type="checkbox"/>	 Culiseta		In stock ▾	...
<input type="checkbox"/>	 Mansonia		In stock ▾	...

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Specimen Shortages

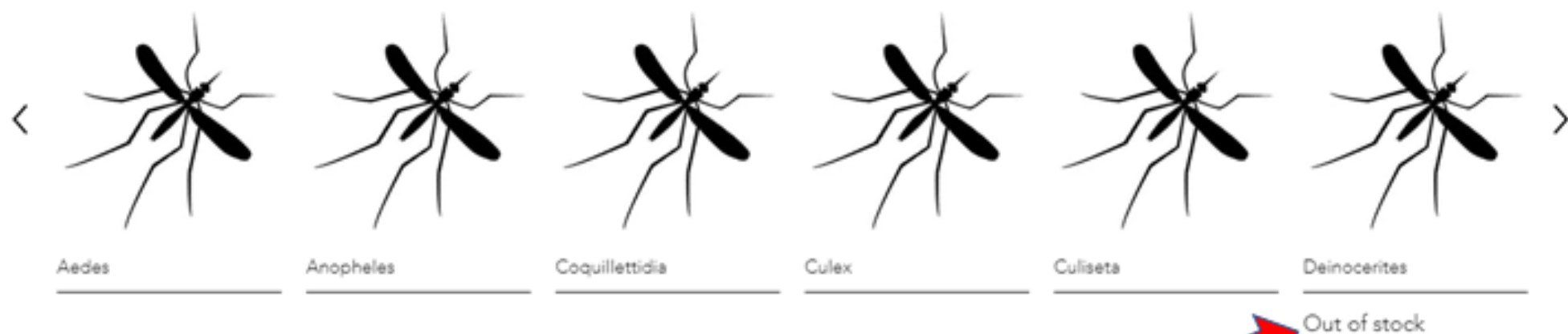
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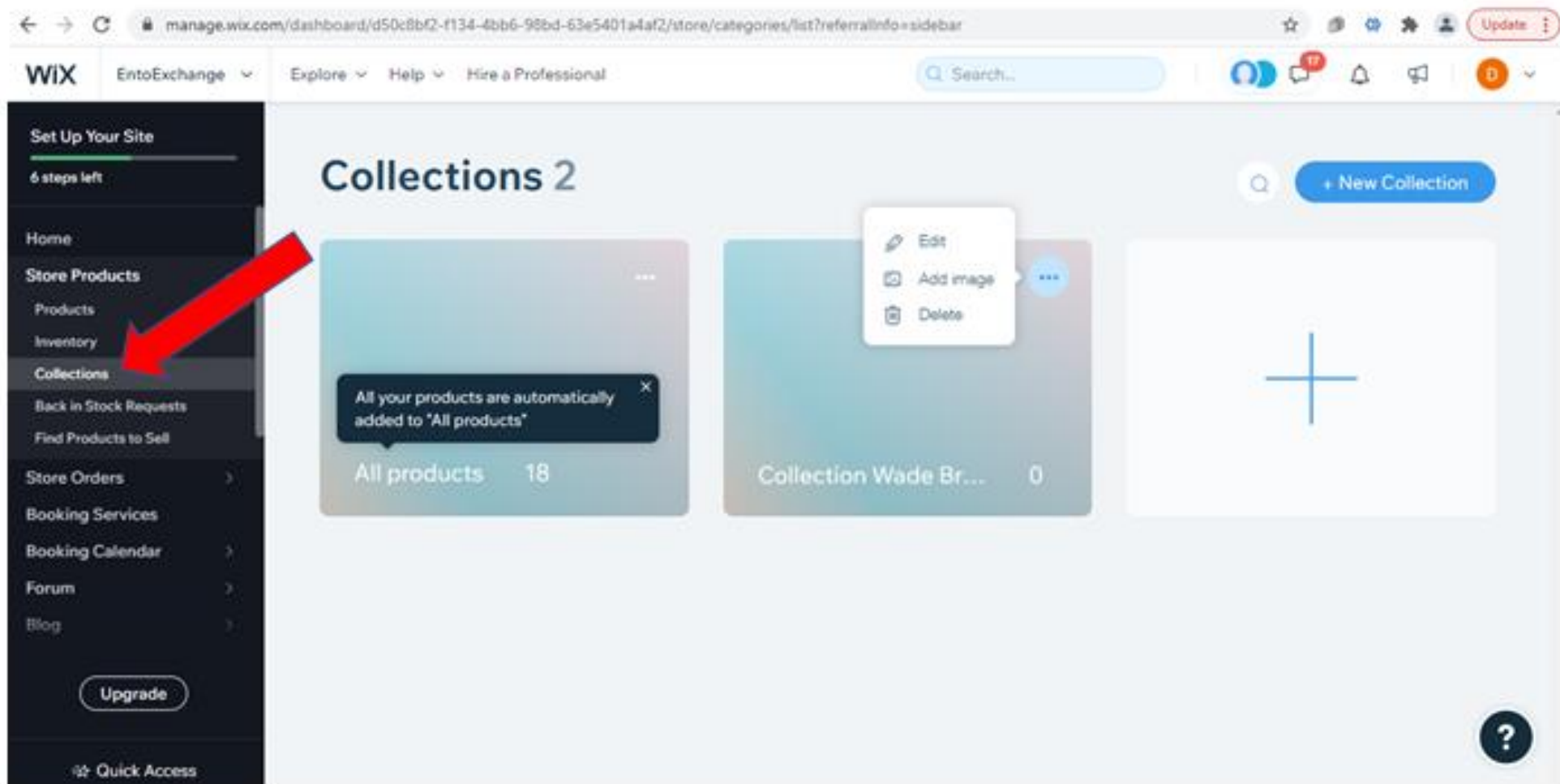
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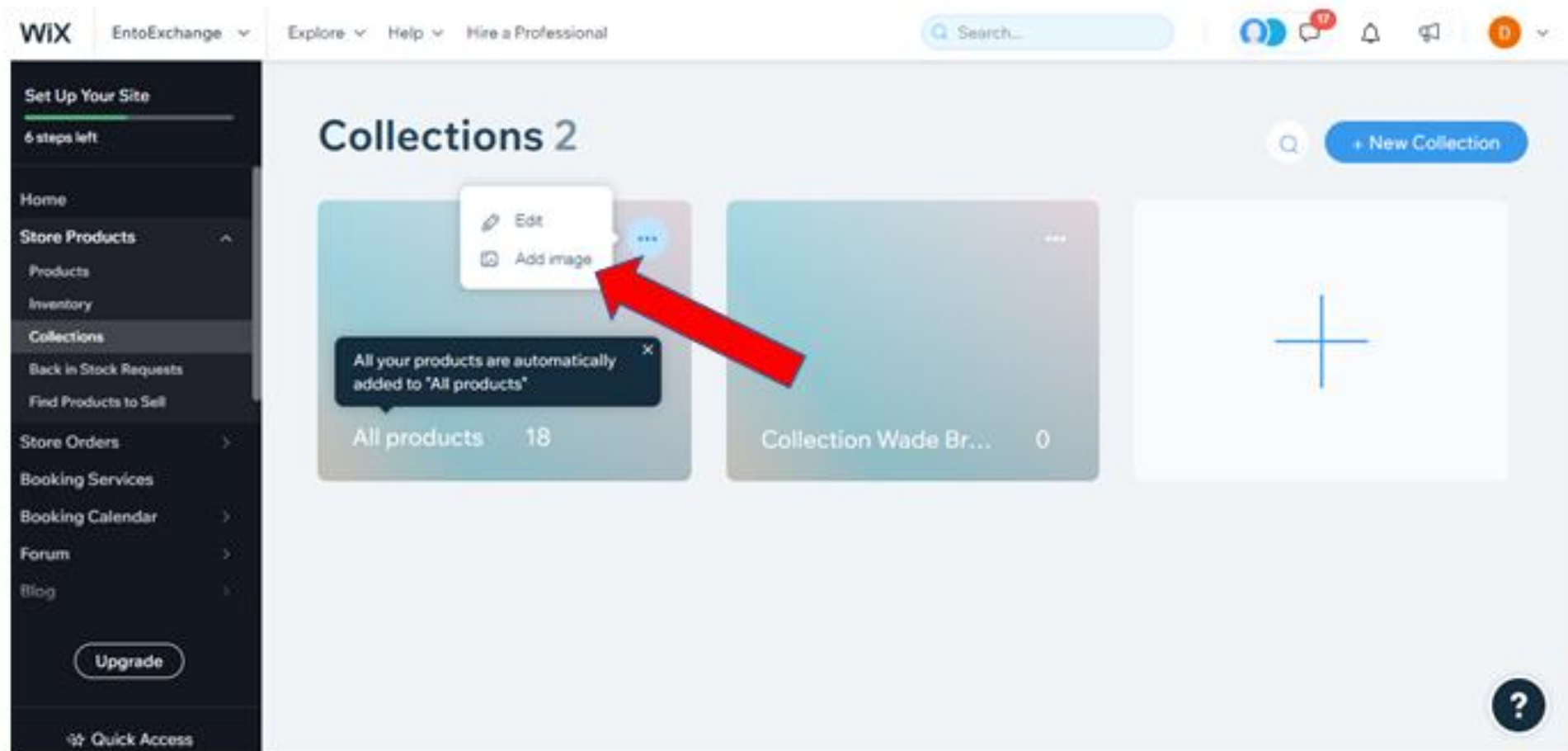
Specimen Availability



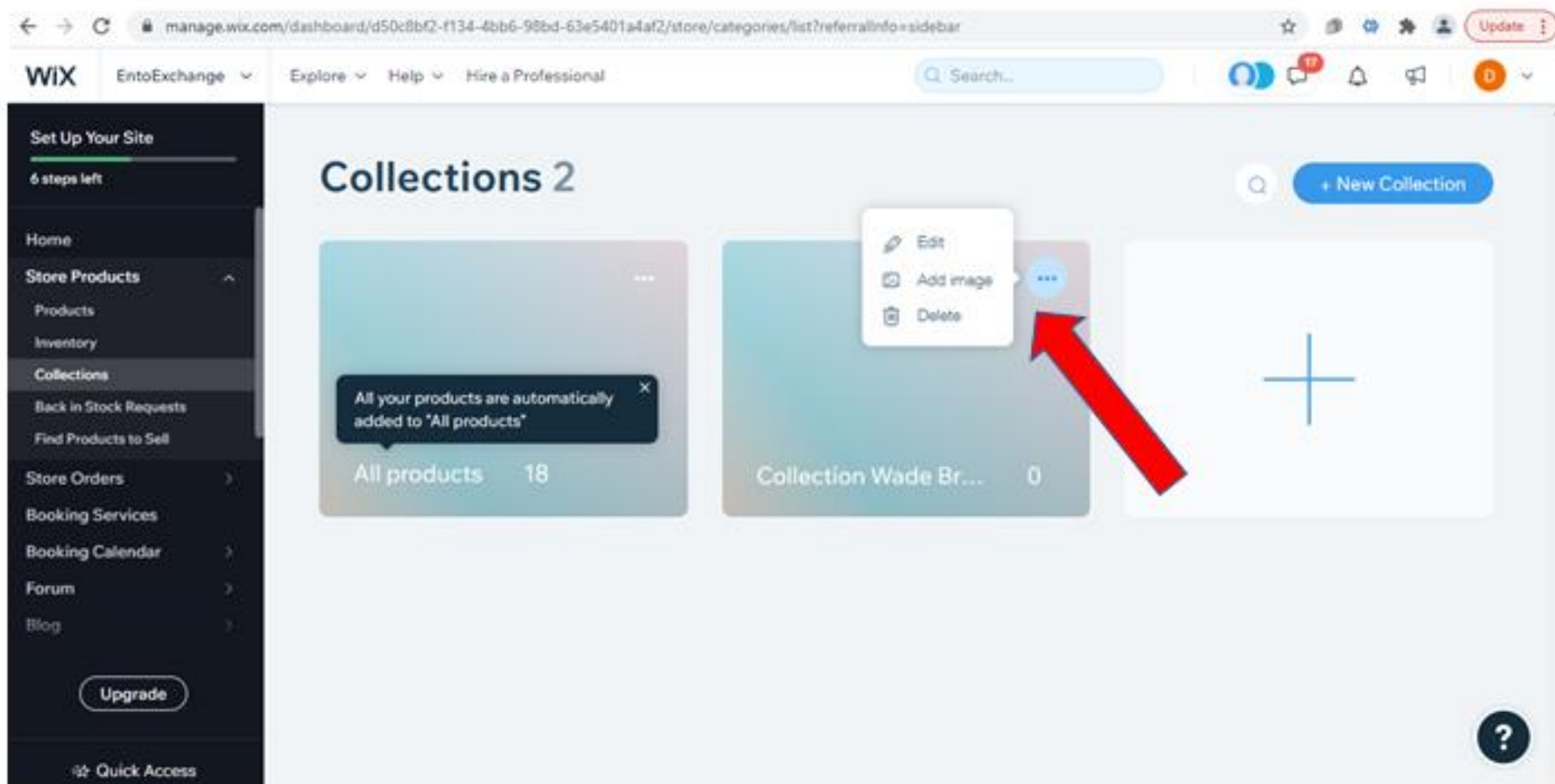
Building Collections



Images to Represent Specimens



Collector Specific Images



Specimen Images

Choose an Image

+ Upload Media

Home

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Site Files

Visitor Uploads

My Boards

Trash

EXPLORE

Media from Wox

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Moz Silhouette.jpg

0CFD0213-699C-4BFD-9...

Site Files

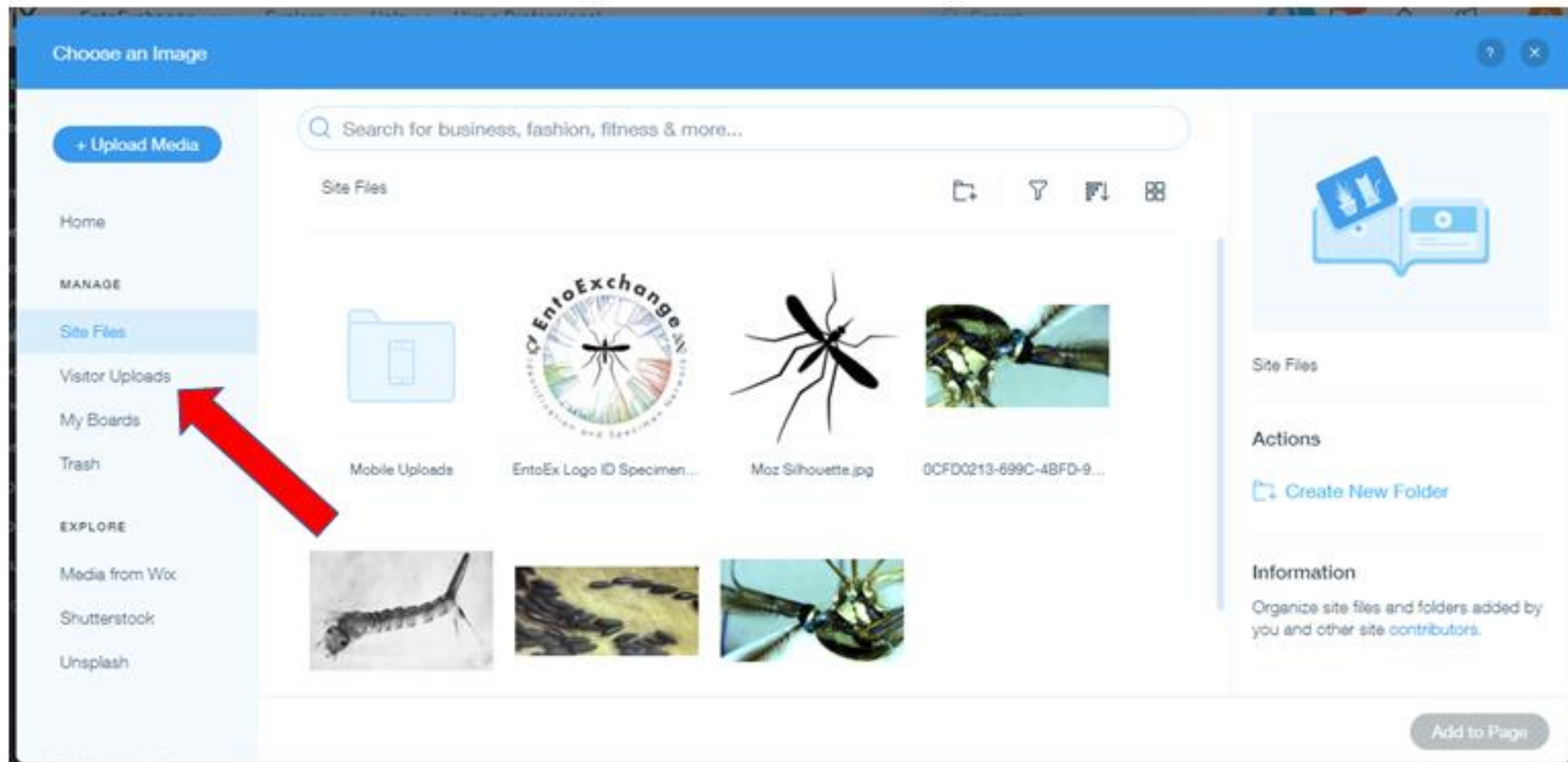
Actions

Create New Folder

Information

Organize site files and folders added by you and other site contributors.

Add to Page

The image is a screenshot of a web application titled "Choose an Image". It features a blue header bar with the title and window controls. On the left is a light blue sidebar with navigation links: "Home", "MANAGE" (with sub-links "Site Files", "Visitor Uploads", "My Boards", "Trash"), and "EXPLORE" (with sub-links "Media from Wox", "Shutterstock", "Unsplash"). A red arrow points to "Visitor Uploads". The main content area has a search bar and a "Site Files" section displaying a grid of image thumbnails. These include a folder icon labeled "Mobile Uploads", a circular logo for "EntoExchange" with a fly in the center, a black silhouette of a fly labeled "Moz Silhouette.jpg", and several photographs of insect specimens. On the right side, there are sections for "Site Files", "Actions" (with a "Create New Folder" link), and "Information" (with a description of the site's file organization). An "Add to Page" button is located at the bottom right.

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Upgrade

Quick Access

Booking Calendar

Time Zone: (GMT-06:00) Central Time

Today

Oct 17 - 23, 2021

Calendar Filters

Weekly

Daily

	Sun 17	Mon 18	Tue 19	Wed 20	Thu 21	Fri 22	Sat 23
9 am							
10 am							
11 am							
12 pm							
1 pm							
2 pm							
3 pm							

Notifications for Specimens Back in Stock

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Back in Stock Requests

Collect requests and notify customers when products are back in stock. [Learn more](#)

Send automated notifications

Save time with automatic emails to quickly notify customers when a requested product is back in stock.

Activate Automation



Requests will show up here.

Customers can send notification requests for out of stock products. You can view and respond to requests when products are available.

[Learn more](#)

?

EntoExchange

Mosquito BEACONS 2022 Workshop

Thank you for your time and the opportunity
to present.

Please reach out with any questions,
concerns, critiques, or ideas to help make
this project a success.

Dan Killingsworth
dan.killingsworth@entoexchange.net

