

Stuart M. Fullerton Collection of Arthropods at the University of Central Florida

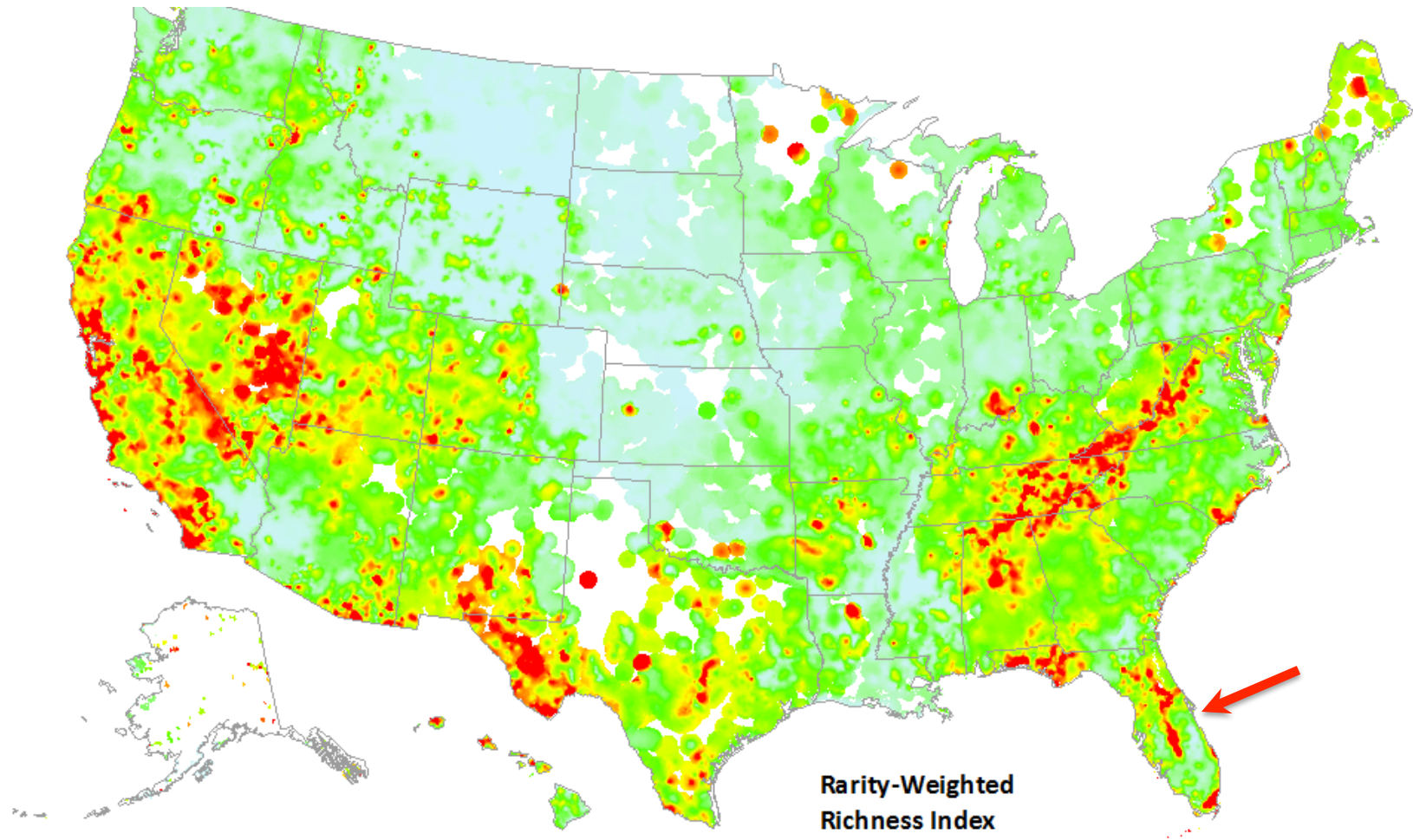
Past, Present, and Future



<http://bugcloset.cos.ucf.edu/>

Hojun Song
Department of Biology
University of Central Florida

Why are regionally focused collections important?



The continuous surface model representation of Rarity-Weighted Richness (RWR) of critically imperiled (G1) and imperiled (G2) species provides a picture of areas that represent concentrations of limited-range species and highlights locations with species composition different from adjacent areas. By combining overall species richness and the relative rarity (based on restricted distributions) of the species, this analysis points to locations that are essentially irreplaceable, and which present conservation opportunities that are found in very few other places.



Source: NatureServe and its Natural Heritage member programs 2013
Produced by NatureServe, October 2013



The Bug Closet

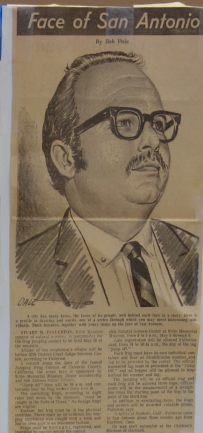
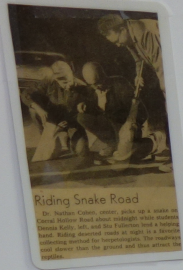
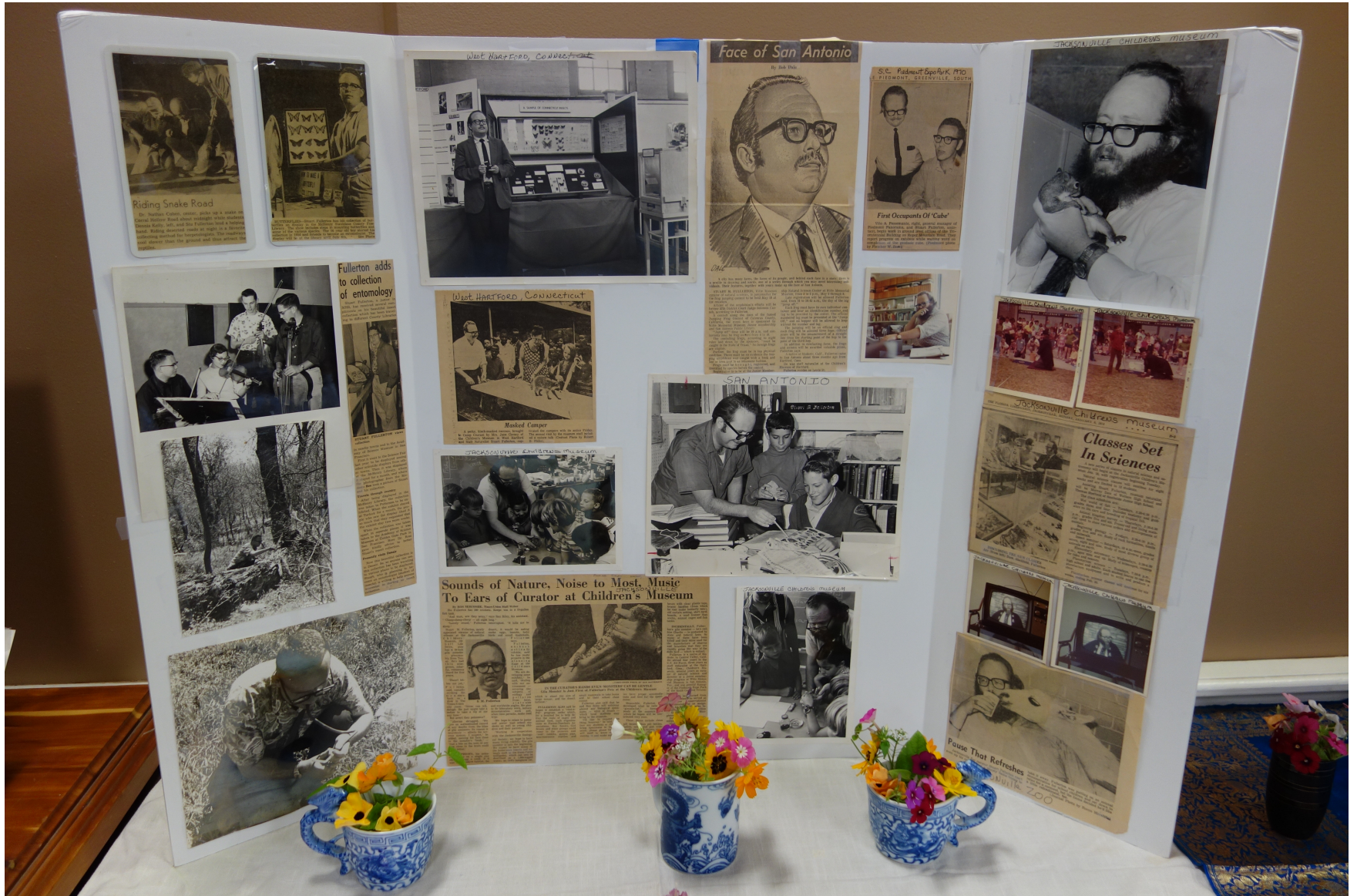
The Stuart M. Fullerton Collection of Arthropods
at the University of Central Florida (UCFC)

The Stuart M. Fullerton Collection of Arthropods at the University of Central Florida (UCFC)

- Regionally focused research collection
- Core mission: to document the biodiversity of insects and related arthropods in Central Florida
- The best recent material for Central Florida insects
- The largest regional collection that has the entire holdings digitized

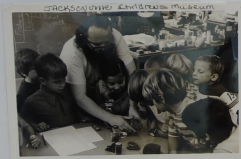
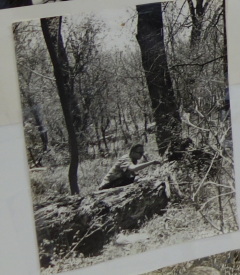


It all started with Stuart M. Fullerton



Fullerton adds to collection of entomology

Stuart M. Fullerton, curator of the Jacksonville Children's Museum, has added a new collection of entomology to his museum. The collection includes various insects and related items, which will be displayed in a new exhibit area.



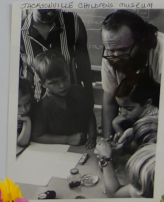
Classes Set In Sciences

The Jacksonville Children's Museum is offering a series of science classes for children. The classes will cover topics such as entomology, geology, and biology. The classes are designed to be interactive and fun, with hands-on activities and experiments.



Sounds of Nature, Noise to Most, Music To Ears of Curator at Children's Museum

Stuart M. Fullerton, curator of the Jacksonville Children's Museum, has a unique perspective on the sounds of nature. He has collected a variety of natural sounds, which he has turned into a musical composition. The composition is a collection of natural sounds, such as the chirping of birds and the rustling of leaves, which he has arranged into a melody.

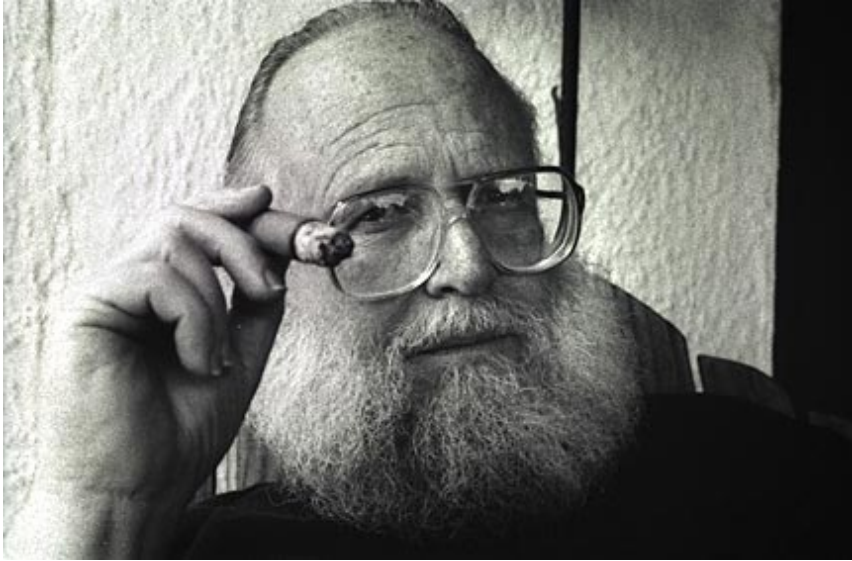


Pause That Refreshes

The Jacksonville Children's Museum is offering a series of science classes for children. The classes will cover topics such as entomology, geology, and biology. The classes are designed to be interactive and fun, with hands-on activities and experiments.



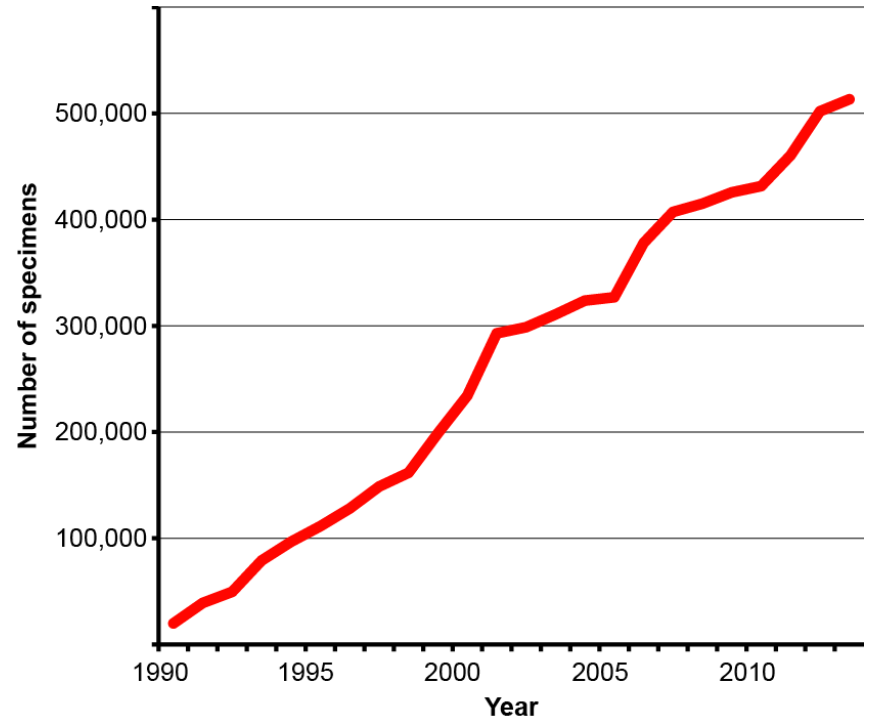
History of the Bug Closet



- In 1990, **Stuart M. Fullerton**, upon retirement, decided to create a formal research collection based on local insect fauna.
- In 1993, UCF Dept. Biology gave him a closet-sized room (7 ft x 16 ft), which was affectionately dubbed as the “Bug Closet.”



Early days (1993-1997)



- Insects collected from major micro eco-zones defined by vegetation representative of native Central Florida ecosystems [i) Long Leaf Pine/Sand Pine/Turkey Oak, ii) Sand Pine/Rosemary Scrub, iii) Cypress Dome, and iv) Long Leaf Pine/Saw Palmetto]
- Mostly collected by passive traps: Malaise trap, FIT, yellow pan trap, pit fall trap, etc.

Period of expansion (1997-2010)



- In 1997, Dept. Biology created a museum range to house natural history collections.
- In 1997, Fullerton created an endowed account known as the “Fullerton Family Fund” in memory of his family (\$100K + \$50K match).
- The entire operation largely self-funded by Fullerton.
- The collection grew to ~400K specimens.
- *It is estimated that Fullerton has given over 1 million dollars in building UCFC.*

Period of transformation (2010-2014)

- First curator of UCFC (2010): Hojun Song
- Dept. Biology hired another entomologist (2011): Josh King
- Establishment of a full-time collection manager (2012): Sandor “Shawn” Kelly
- Digitization process ongoing
- Current size: 555,714 specimens (as of 11/10/14)

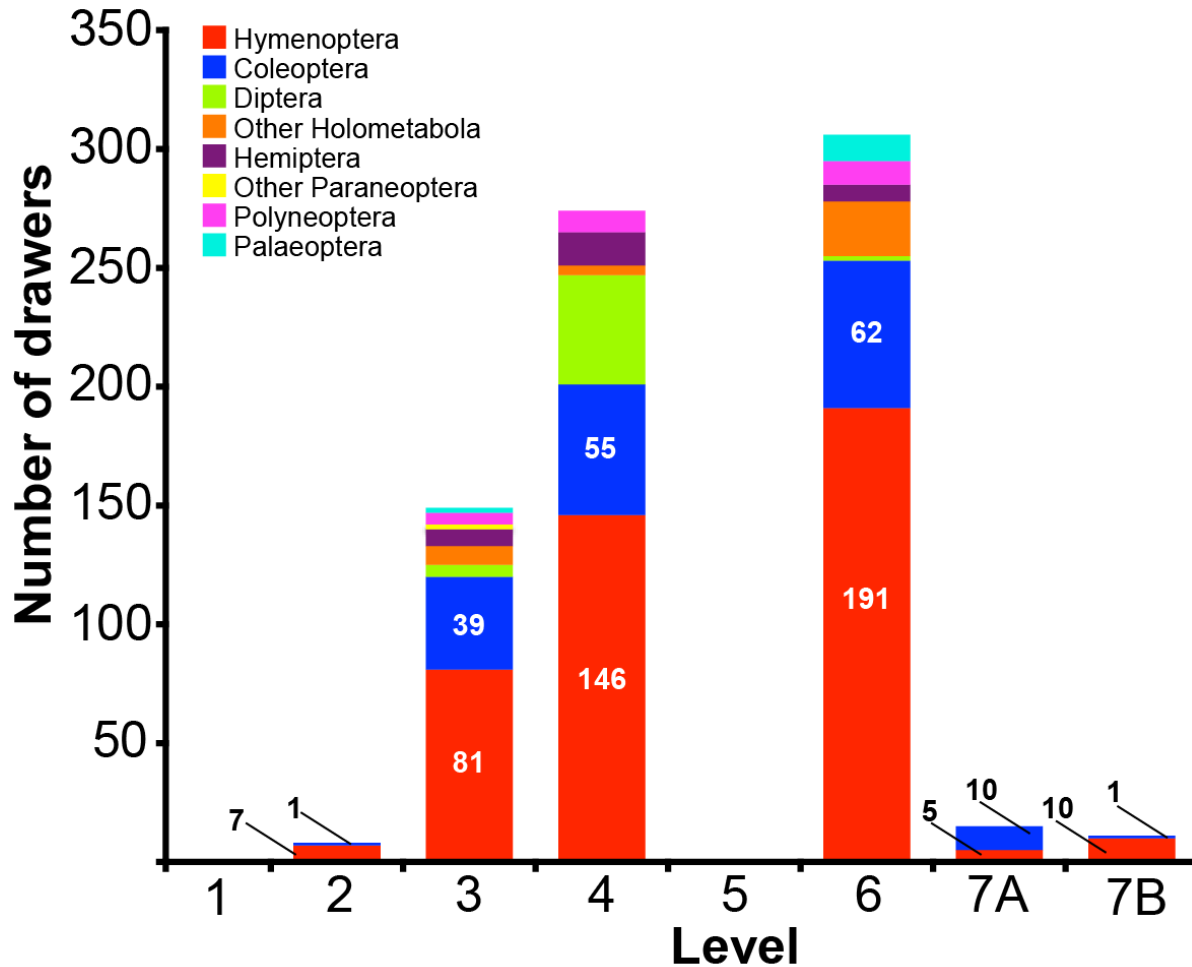


Taxonomic breadth and holdings of UCFC (as of 2013)

	UCFC			
Order	# family	# genera	# species	# specimens
Hymenoptera	74	1,235	2,330	360,339
Coleoptera	102	1,012	1,477	97,784
Diptera	72	426	538	21,238
Lepidoptera	27	160	233	1,818
Other Holometabola	29	54	88	3,669
Hemiptera	55	242	335	17,905
Other Paraneoptera	3	-	-	940
Polyneoptera	27	98	147	5,060
Palaeoptera	13	50	92	1,579
Non-insect Hexapoda	9	-	-	99
Other Arthropoda	35	109	131	2,806
TOTAL	446	3,386	5,371	513,237

Currently, 555,714 specimens

Health of UCFC



- Level 1:** Conservation problem
- Level 2:** Specimens unidentified and inaccessible
- Level 3:** Specimens identified to family and accessible
- Level 4:** Specimens identified to subfamily or genus and accessible
- Level 5:** Specimens identified to species and accessible but curation incomplete
- Level 6:** Specimens identified to species and properly curated in accordance with collection standards
- Level 7A:** Data capture: Research data capture
- Level 7B:** Scientific voucher material

(Cornell-style drawers, wooden open-face cabinets, metal cabinets)

Geographic profile of UCFC holdings (as of 2013)

Central Florida	329,486	64.20%
Central California	61,040	11.89%
Northern Florida	42,236	8.23%
Great Smoky Mts	21,432	4.18%
Other USA	28,353	5.52%
International	30,690	5.98%
<i>Total</i>	<i>513,237</i>	<i>100.00%</i>

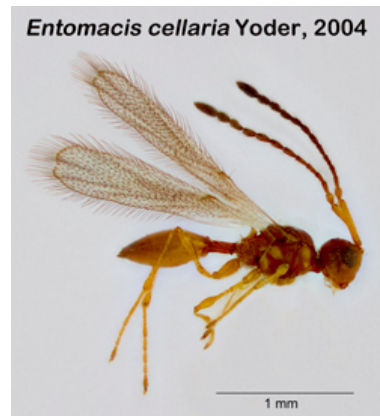
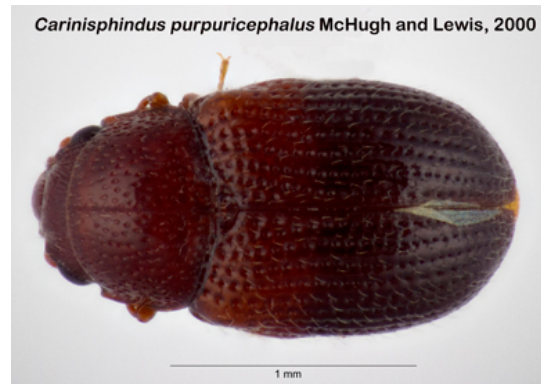
New species described from UCFC

To date, a total of **20 new species** (16 in Hymenoptera, 3 in Coleoptera and one in Diptera) have been described based on recently-collected material.



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UCFC Database (Stuart's foresight)

UCFC

Collection

Lot ID: 15

Collection Date: Sep 14, 1993

Habitat: Long Leaf/Sand Pine

Method: Malaise trap

Date: Sep 14, 1993

Collector: S.M. Fullerton

Geographic Data: Elev 70 ft

Associated Specimens

Specimen ID	Family	Genus	Species	Author

Click on the icon next to the field name to sort (in ascending order) by the contents of that field.

ID	Order	Superfamily	Family	Subfamily	Genus	Species	Author	Lot	Year
Habitat	Nation	State	County	City	Specifics	Date Collected	Mon	Day	Year
0400057	4000	Hymenoptera	Mutillidae	Orange	Dasymutilla	quadriguttata	(Say)	726	1997
0400058	4000	Hymenoptera	Mutillidae	Orange	Dasymutilla	quadriguttata	(Say)	726	1997
0400059	4000	Hymenoptera	Mutillidae	Orange	Dasymutilla	quadriguttata	(Say)	726	1997
0400060	4000	Hymenoptera	Mutillidae	Orange	Dasymutilla	quadriguttata	(Say)	726	1997
0400061	4000	Hymenoptera	Mutillidae	Orange	Dasymutilla	quadriguttata	(Say)	610	1997
0400062	4000	Hymenoptera	Mutillidae	Orange	Dasymutilla	quadriguttata	(Say)	876	1997
0400063	4000	Hymenoptera	Mutillidae	Orange	Dasymutilla	quadriguttata	(Say)	876	1997
0400064	4000	Hymenoptera	Mutillidae	Orange	Dasymutilla	quadriguttata	(Say)	876	1997
0400065	4000	Hymenoptera	Mutillidae	Orange	Dasymutilla	quadriguttata	(Say)	610	1997
0400066	4000	Hymenoptera	Mutillidae	Orange	Dasymutilla	quadriguttata	(Say)	610	1997
0400067	4000	Hymenoptera	Mutillidae	Orange	Dasymutilla	quadriguttata	(Say)	610	1997
0400068	4000	Hymenoptera	Mutillidae	Orange	Dasymutilla	quadriguttata	(Say)	610	1997
0400069	4000	Hymenoptera	Mutillidae	Orange	Dasymutilla	quadriguttata	(Say)	721	1997
0400070	4000	Hymenoptera	Mutillidae	Orange	Dasymutilla	quadriguttata	(Say)	721	1997
0400071	4000	Hymenoptera	Mutillidae	Orange	Dasymutilla	quadriguttata	(Say)	721	1997
0400072	4000	Hymenoptera	Mutillidae	Orange	Dasymutilla	quadriguttata	(Say)	721	1997
0400073	Hymenoptera	Mutillidae	Dasymutilla	quadriguttata	(Say)	721	1997		
0400074	4000	Hymenoptera	Mutillidae	Orange	Dasymutilla	bioculata	(Cresson)	267	1993
0400075	4000	Hymenoptera	Mutillidae	Orange	Dasymutilla	bioculata	(Cresson)	267	1993
0400076	4000	Hymenoptera	Mutillidae	Orange	Dasymutilla	bioculata	(Cresson)	267	1993
0400077	Hymenoptera	Mutillidae	Dasymutilla	bioculata	(Cresson)	818	1993		
0400078	Hymenoptera	Mutillidae	Dasymutilla	bioculata	(Cresson)	304	1993		
0400079	4000	Hymenoptera	Mutillidae	Orange	Dasymutilla	bioculata	(Cresson)	107	1993
0400080	4000	Hymenoptera	Mutillidae	Orange	Dasymutilla	bioculata	(Cresson)	107	1993
0400081	4000	Hymenoptera	Mutillidae	Orange	Dasymutilla	bioculata	(Cresson)	107	1993

- FileMaker Pro database
- Lot database & Specimen database
- Ecological data (habitat)
- Large series
- Complete and ongoing
- 555,714 specimens databased to date

Database conversion initiative

- Limitation of custom-made FileMaker-based database
 - Not in Darwin Core format
 - Accessibility cumbersome
 - Online, but hidden
- Collaboration with Norman F. Johnson at the Charles A. Triplehorn Insect Collection at the Ohio State University (OSUC)
 - OSUC Hymenoptera Online as a backbone
 - Oracle RDBMS
 - Registered data provider for the GBIF through a DiGIR interface

Image drawn by Anthony Watsham

HYMENOPTERA ONLINE (HOL)

The order Hymenoptera contains some 115,000 species and literally millions of specimens in collections around the world. Some parts of this database have extensive information available (e.g., [Proctotrupoidea](#), [Platygastridae](#), [Cerambycidae](#), [Apidae](#)), even to the level of specimens (see [Platygastridae](#), [Pelecinidae](#), [Monomachidae](#), [Stephanidae](#)). These data have been gathered with the collaboration of a number of colleagues. Other taxa still need work. Hymenoptera Online (HOL) is no longer solely dedicated to Hymenoptera as recent acquisitions have expanded the taxonomic scope of this resource to include Hemiptera, Coleoptera, [Mites](#), [Fishes](#), and others with the help of a number of tireless collaborators. If you would like to contribute to the further development and enhancement of this resource or need technical assistance related to Hymenoptera Online services, please contact [HOL Help](#), [Norman F. Johnson](#), or the [HOL Google+ Page](#).

Search for taxa, collections, authors, collectors and specimens by typing your simple query in the text box below. Taxon name searches are case-sensitive and a wildcard (%) will automatically be appended to the end of your query (e.g. [Telenomus](#)); the same applies to collectors and authors (e.g. [Johnson](#)), collections (e.g. [CNC](#)), places (e.g. [Bains](#)), journals (e.g. [Hemiptera](#)), and specimen searches by specimen ID (e.g. [ANIC 05 32](#)).

If you would like to see a list of new features, recent changes and recent additions to Hymenoptera Online, visit the [HOL Google+ Page](#). For basic site statistics and archived updates, browse the [updates page](#). Visit the [collection page](#) for the C.A. Triplehorn Insect Collection at the Ohio State University for information on its primary and secondary type holdings as well as databased taxa in the collection.

Search:



<http://bugcloset.cos.ucf.edu>



The Bug Closet

The Stuart M. Fullerton Collection of Arthropods
at the University of Central Florida (UCFC)

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Welcome to the on-line home of Central Florida's preeminent insect collection:
The Bug Closet!



Search UCFC Holdings

Search:

Find 

Collection Info

The Stuart M. Fullerton Collection of Arthropods at the University of Central Florida, Orlando, FL


UCFC

Collection Stats

of Primary Types: 0

of Secondary Types: 4

of Species-group Taxa w/ Specimens: 1,153

of Specimens: 38,955 

Oldest Specimen: June 14, 1958 (UCFC 0 039 242)

Time Last Specimen Entered: November 15, 2014, 04:18:30 PM

Primary Types

show graph:

[export type data](#)

Secondary Types

show graph:

[export type data](#)

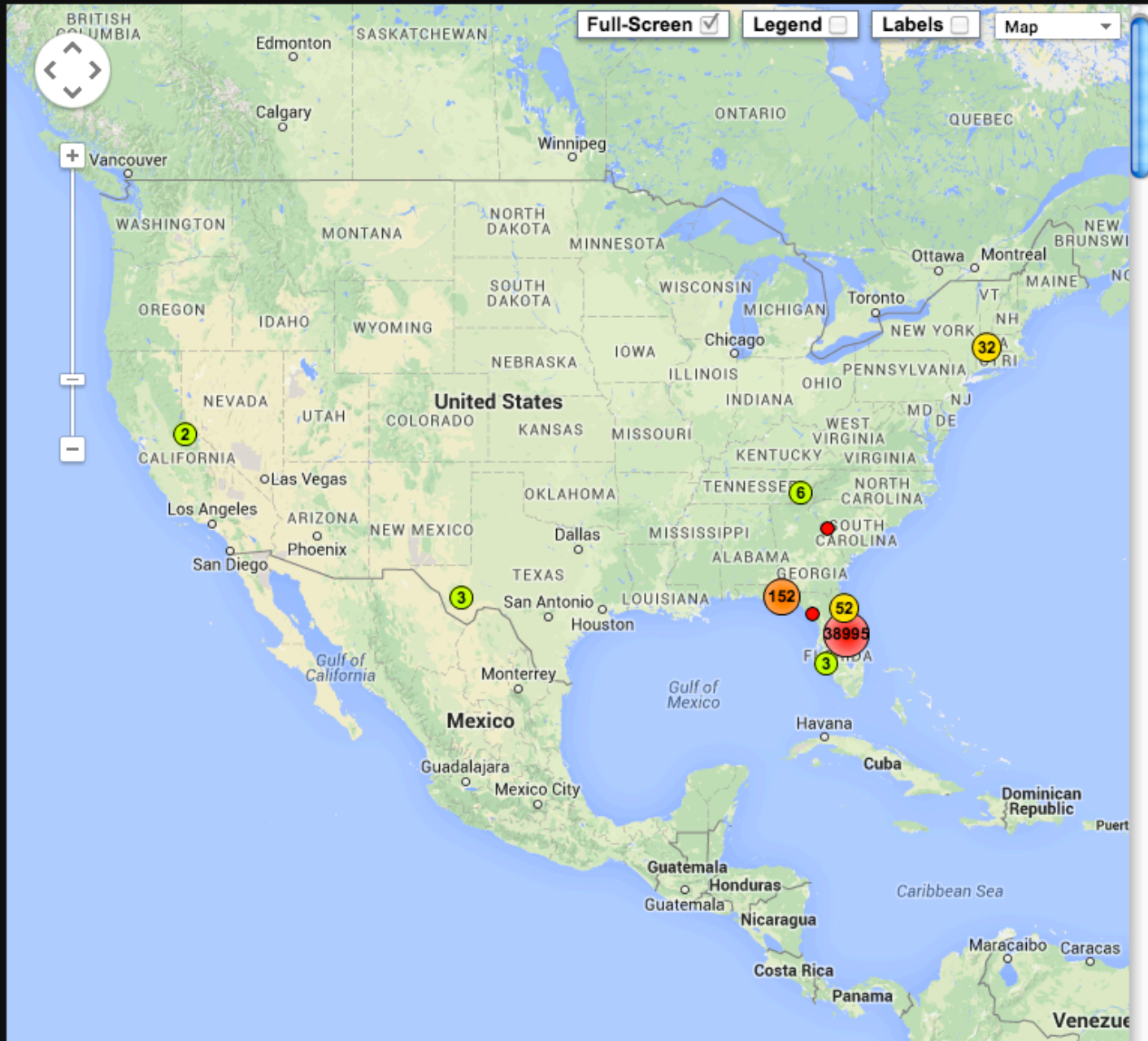
Taxa with Specimens

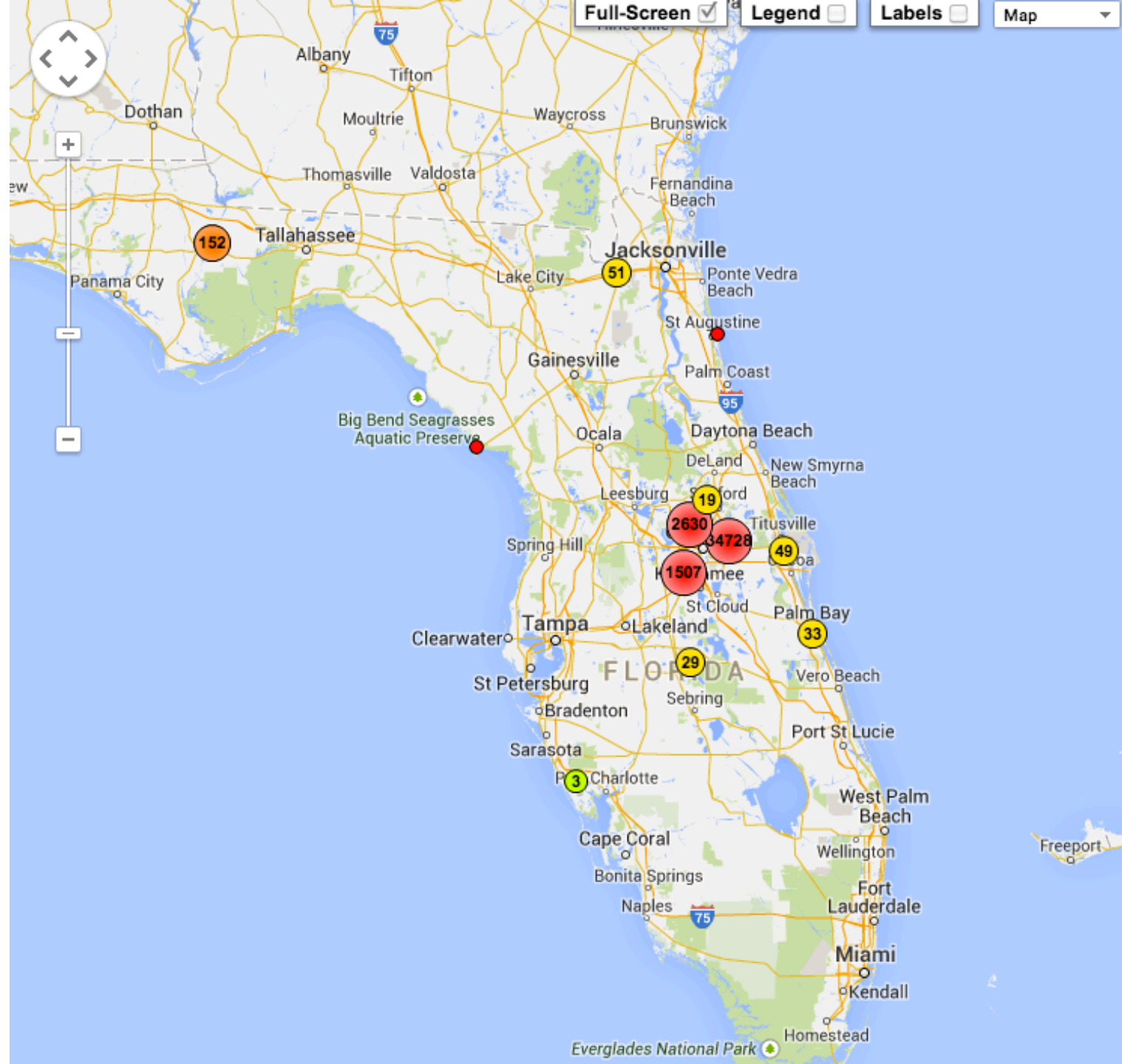
Geographic Distribution of Specimens (38955)

[export map data](#)

<http://bugcloset.cos.ucf.edu/database/holdings/>

Search UCFC Holdings





Search UCFC Holdings

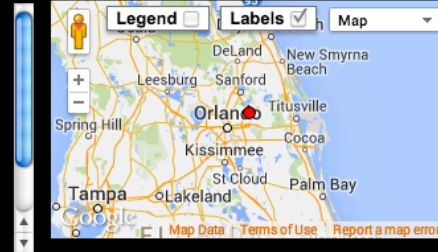
Search:

Find

Info for Specimen: **UCFC 0 135 828**

▣ Locality Info

Locality Name: **Orlando, 28°36'7"N
81°12'1"W, 70ft, UCF Campus, Orange Co.,
FL**
Coordinates: **28.6019°N 81.2003°W (label)**
Elevation: **21m**
Country: **United States (Country)**
State: **Florida (State)**
County: **Orange (County)**
Town: **Orlando (Town)**



▣ Collecting Trip Info

Date: **20 March 1991**
Collector(s): **Fullerton, S. M. (†)**
Collecting Method: **none specified**
Field Code: **UCFC Lot ID: 78**

▣ Determination(s)

Identified As: **Ammophila umaria Dahlbom**
Determined By: **Fullerton, S. M. (Stuart M.)**
Date of Determination: **2002**
Determination Status: **CURRENT**


▣ Weather Data courtesy of

Temperature: **25°C (77°F) - 11°C (52°F)**
Humidity: **93% - 25%**
Barometric Pressure: **1021mb - 1018mb**
Wind: **19km/hr (12mph) - 0km/hr (0mph)**

▣ Biological Info


Habitat:
Association(s):

Search UCFC Holdings

Search: **Find** 

Hierarchy: [Arthropoda](#) > [Hexapoda](#) > [Hymenoptera](#) > [Apoidea](#) > [Sphecidae](#) > [Ammophilinae](#) > [Ammophila](#) > [Ammophila urnaria](#)

▣ General Information

Species: **Ammophila urnaria**
Author: **Dahlbom**
Status: **Valid, Original name/combination**
Rank: **Species**
Generate taxon checklist: 

Contributors

Taxonomy: **Joseph R. Cora [1]**, **Norman F. Johnson [2]**
Occurrence: **Joseph R. Cora [1]**, **Nancy Deyrup [2]**, **Stuart M. Fullerton [3]**, **Zachary R. Hurley [4]**, **Victor Zeinner [5]**

Valid Subordinate Taxa

Specimens: 8

▣ Synonyms show fossils:

▣ Map show all records: view large map [export map data](#)

▣ Literature show synonyms: show all annotations: view type: annotation-view bibliography-view

▣ Types show all types:

▣ Determiners

▣ Associations show options

▣ Habitat

▣ Collecting Methods

▣ NCBI (48)

Friends of the Bug Closet



Robert Zuparko (Chalcidoidea)



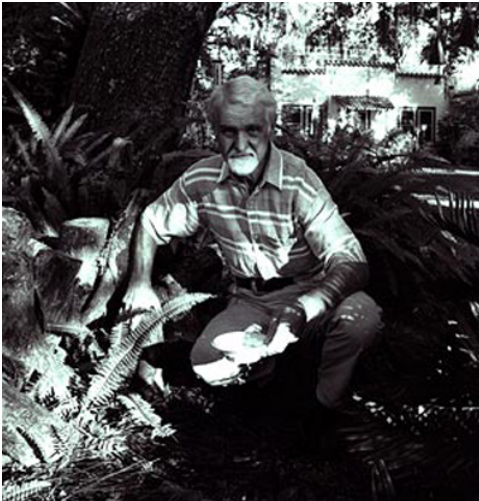
Gary Gibson (Chalcidoidea)



Jason Gibbs (*Lasioglossum*)



Matthias Buck (Vespoidea)



Lubomir Masner
(parasitic Hymenoptera)



Kevin Pitz (Braconidae)



Margaret Thayer and Al Newton
(Staphylinidae)

... and many more...

Outreach

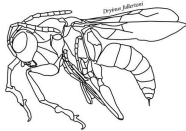


Outreach Coordinator: Derek A. Woller



Entomological Society of Central Florida

ESCAPE From boredom...

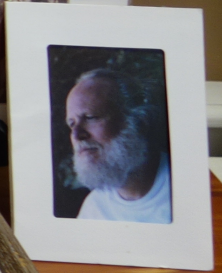


Entomological Society of Central Florida



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Stuart M. Fullerton (1940-2014)



The Future of UCFC

- UCF commitment
- Endowment
- Facility renovation planned
- Seeking a new curator (tenure-track faculty position)
 - <http://biology.cos.ucf.edu/faculty-positions/>



Stuart M Fullerton ROF