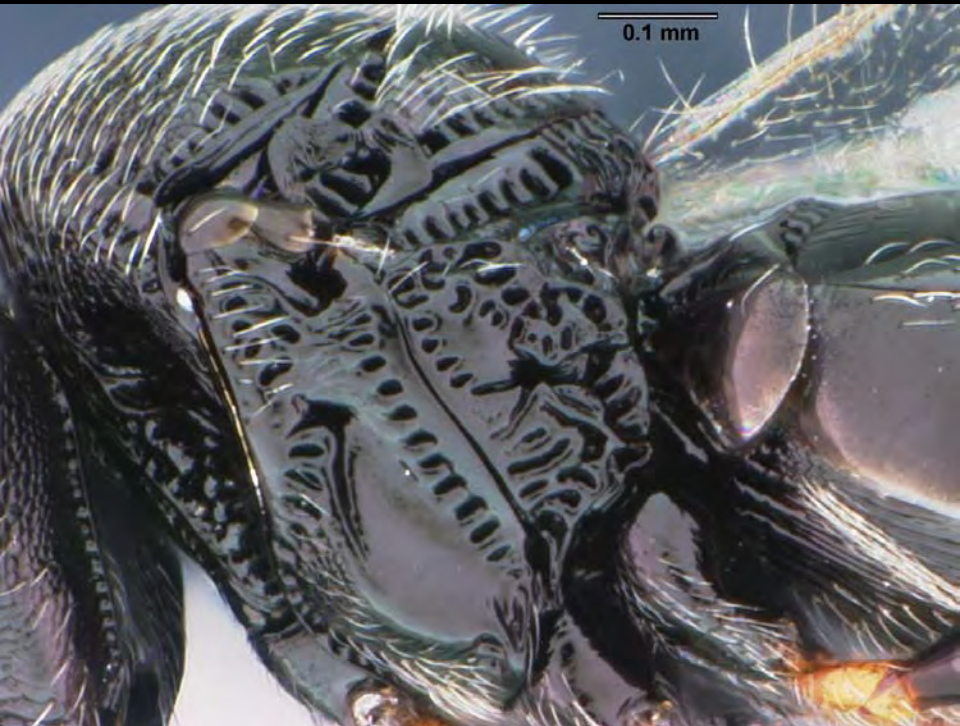



# *Trissolcus*



Elijah Talamas  
Matthew Buffington

Systematic Entomology Laboratory  
USDA / ARS

# Platygastroidea

- Historically divided into two families
- Platygastridae
  - egg parasitoids
  - gall midge (Cecidomyiidae) parasitoids
  - mealybug parasitoids
- Scelionidae  Contains parasitoids of stink bug eggs
  - egg parasitoids
    - diverse array of host taxa
- Now treated as a single family: Platygastridae

# Platygastroid Parasitoids of Stink Bug Eggs

## Scelioninae

*Gryon*

## Telenominae

*Trissolcus*  
*Telenomus*  
*Psix*





# Platygastroidea



# Platygastroidea



# Platygastroidea





# Taxonomy

- Foundation for species identification
  - initial naming and description of species
  - production of identification keys
  - synonymy of species that are described more than once
    - minimize confusion
- Basis for all other biological study

# Taxonomy

- Platygastroid diversity largely unexplored
  - *Oreiscelio*: 4 → 19 species
  - *Trichoteleia*: 2 → 42 species
  - New World *Paridris*: 2 → 15 species
  - *Paridris neptha* species group 1 → 15 species

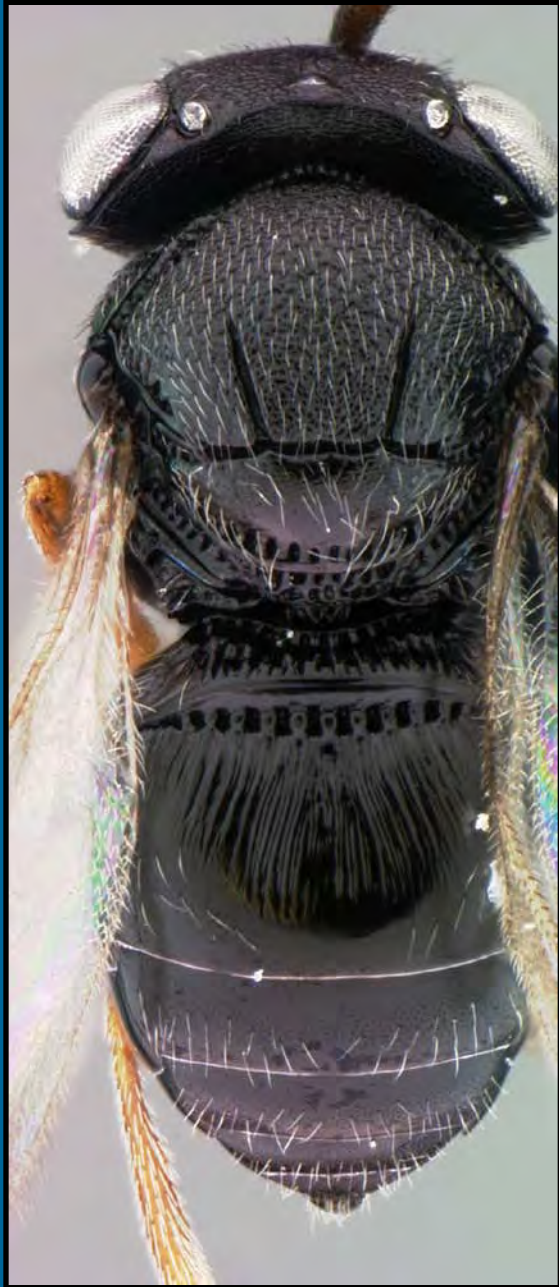
# Revision of East Palearctic *Trissolcus*

- Previous taxonomy
  - Multiple authors
    - Japan                      Netherlands
    - China                      United States
    - Russia                      Ukraine
  - Rarely examined holotypes
  - Stability of species names is dubious
  - Real species distributions is unknown
  - *Trissolcus* may be prone to over-description



## *Trissolcus japonicus*

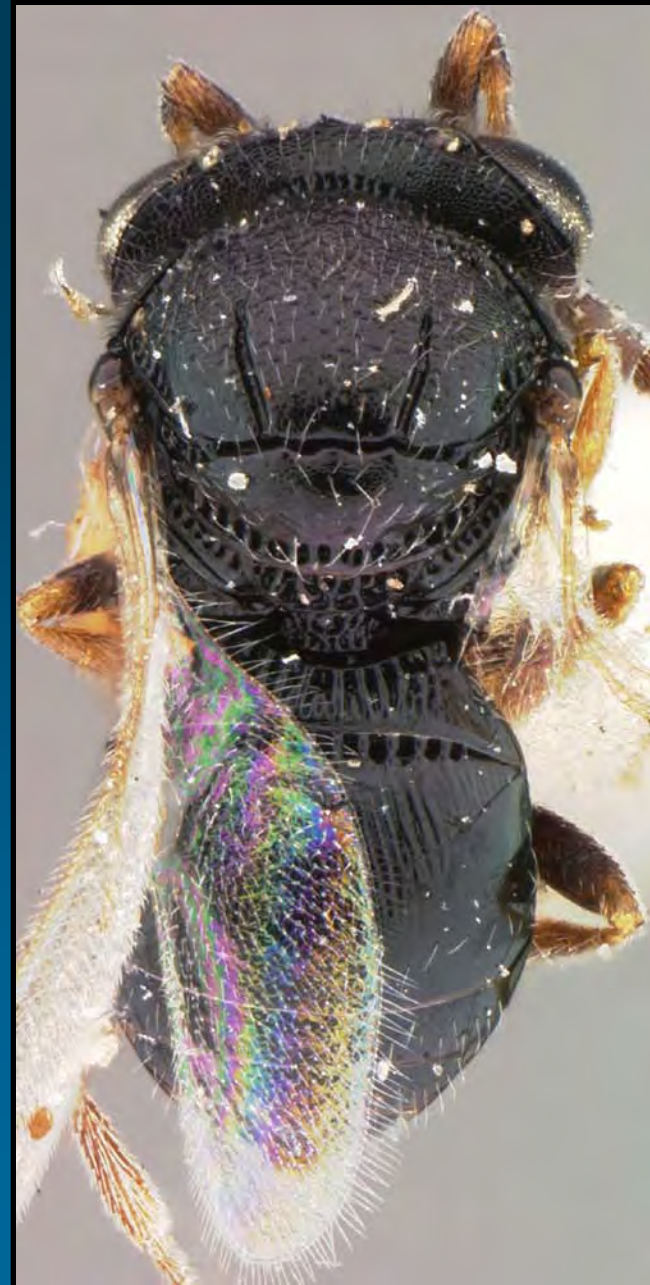
- described by Ashmead 1904

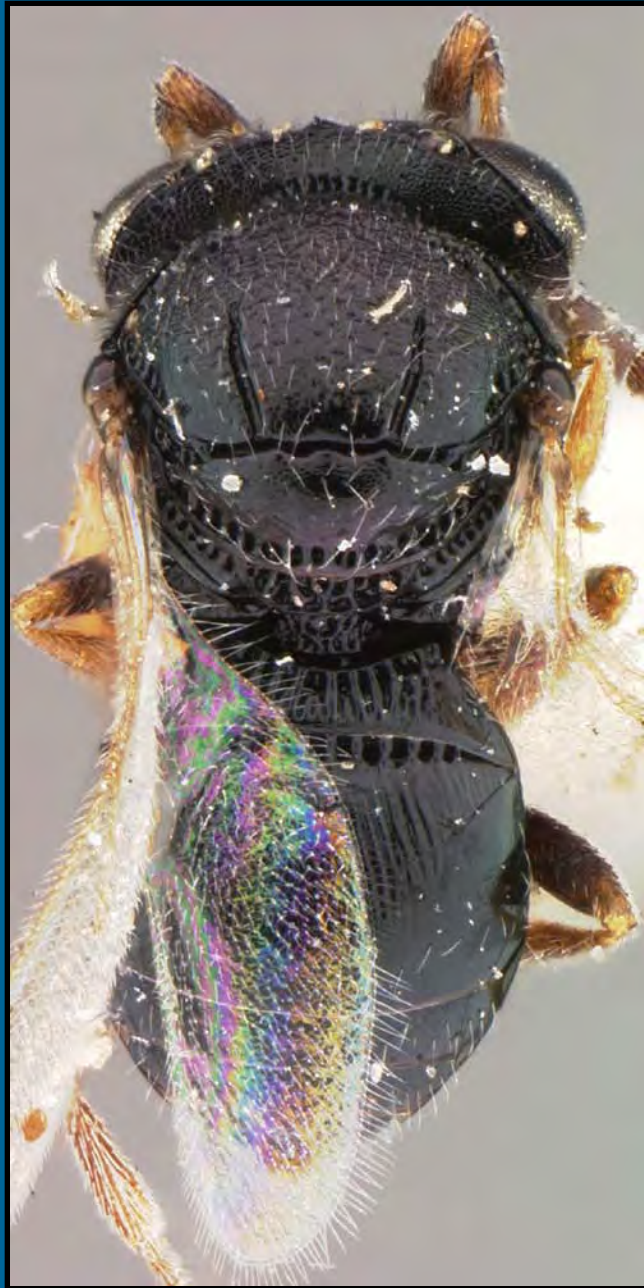


## *Trissolcus halyomorphae*

- described by Yang et al 2009
- did not include examination of holotypes
- holotype of *T. halyomorphae* unavailable
- but... Kim Hoelmer obtained cohort paratypes

*Trissolcus halyomorphae* = *Trissolcus japonicus*





*Trissolcus japonicus* 1904  
- ~~*Trissolcus plautiae*~~ 1954  
- ~~*Trissolcus halymorphae*~~ 2009

# Status of Revision

- All holotype/lectotypes of *Trissolcus* (worldwide) in USNM have been imaged
- 5 additional holotypes from East Asia examined/imaged
- Additional type material in
  - St. Petersburg ←
  - Kiev
  - Lund
  - Hanoi ←
  - Vienna



# Hymenoptera Online Database

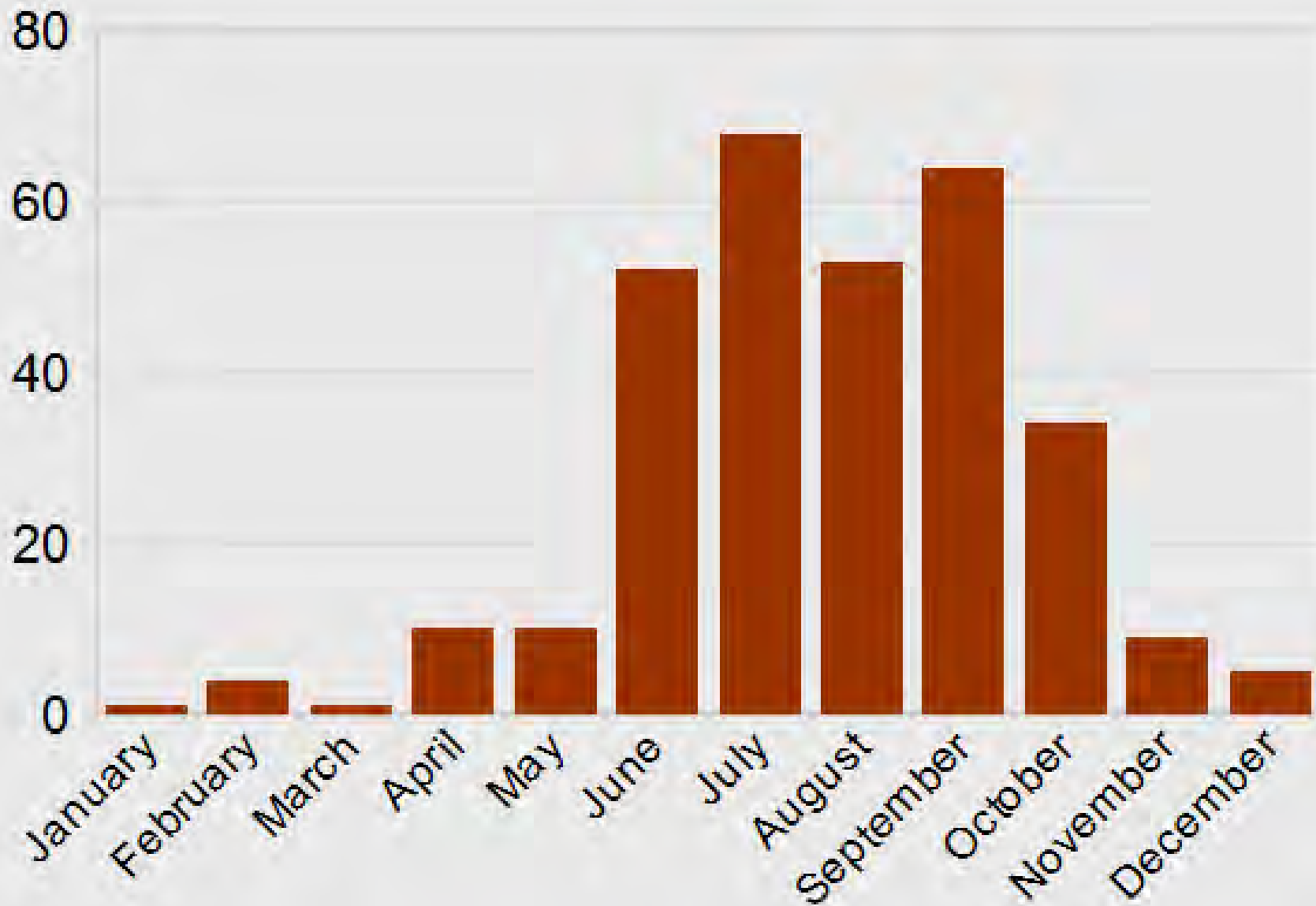
*hol.osu.edu*

- **Every specimen is barcoded (CUID)**
- **Label data is georeferenced and databased**

# Species Distribution Maps



# Phenology



# Host Associations

Associations (19) [show options](#)

Taxon	Valid Name	Association Type	Taxonomic Hierarchy	Association IDs	Reference
<i>Acrosternum hilare</i> (Say)	<i>Chinavia hilaris</i> (Say)	emerged from egg of	Hemiptera: Heteroptera: Pentatomoidea: Pentatomidae: Pentatominae: Nezarini: Chinavia		
<i>Edessa mediatubunda</i> (Fabricius)		emerged from egg of	Hemiptera: Heteroptera: Pentatomoidea: Pentatomidae: Edessinae: Edessa		Golin, Loiàcono, Margaria & Aquino, 2011: 618
<i>Euschistus Dallas</i>		emerged from egg of / host egg of	Hemiptera: Heteroptera: Pentatomoidea: Pentatomidae: Pentatominae: Carpocorini		
<i>Euschistus conspersus</i> Uhler		emerged from egg of	Hemiptera: Heteroptera: Pentatomoidea: Pentatomidae: Pentatominae: Carpocorini: Euschistus		
Pentatomidae		emerged from egg of	Hemiptera: Heteroptera: Pentatomoidea		
Pentatomidae		unspecified association	Hemiptera: Heteroptera: Pentatomoidea		
<i>Podisus maculiventris</i> (Say)		emerged from egg of	Hemiptera: Heteroptera: Pentatomoidea: Pentatomidae: Asopinae: Podisus		
<i>Podisus maculiventris</i> (Say)		emerged from sentinel egg mass of	Hemiptera: Heteroptera: Pentatomoidea: Pentatomidae: Asopinae: Podisus		
<i>Podisus maculiventris</i> (Say)		parasite of	Hemiptera: Heteroptera: Pentatomoidea: Pentatomidae: Asopinae: Podisus		
<i>Podisus maculiventris</i> (Say)		unspecified association	Hemiptera: Heteroptera: Pentatomoidea: Pentatomidae: Asopinae: Podisus		
<i>Podisus serieiventris</i> Uhler		emerged from egg of	Hemiptera: Heteroptera: Pentatomoidea: Pentatomidae: Asopinae: Podisus		
<i>Podisus spinosus</i> (Dallas)	<i>Podisus maculiventris</i> (Say)	emerged from egg of	Hemiptera: Heteroptera: Pentatomoidea: Pentatomidae: Asopinae: Podisus		
<i>Quercus agrifolia</i> Nee.		collected on	Fagales: Fagaceae: Quercus		
<i>Thyanta accerra custator</i> (Fabricius)	<i>Thyanta custator</i> (Fabricius)	emerged from sentinel egg mass of	Hemiptera: Heteroptera: Pentatomoidea: Pentatomidae: Pentatominae: Pentatomini: Thyanta		
alder	<i>Alnus</i> Mill.	collected on	Fagales: Betulaceae: Alnus		
maple	<i>Acer</i> Linnaeus	on young	Sapindales: Aceraceae: Acer		
pecan	<i>Carya illinoensis</i> (Wangenh.) K. Koch	collected on	Juglandales: Juglandaceae: Carya		
red pine	<i>Pinus resinosa</i> Aiton	collected on	Pinales: Pinaceae: Pinus		
wax myrtle	<i>Myrica heterophylla</i> Raf.	collected on	Myricales: Myricaceae: Myrica		

# Taxonomic Tools

## Literature

Literature (7)    show synonyms:     show all annotations:     view type:  annotation-view  bibliography-view

### Filter

Authors:

- Thoron pallipes* Ashmead**, 1887: 99. Original description.
- Thoron pallipes* Ashmead**: Ashmead, 1893: 168. Description.
- Thoron pallidipes* Dalla Torre**: Dalla Torre, 1898: 512. Unjustified emendation.
- Thoron pallipes* Ashmead**: Kieffer, 1926: 171, 173. Description, keyed.
- Paridris pallipes* (Ashmead)**: Krombein & Burks, 1967: 298. Generic transfer.
- Paridris pallipes* (Ashmead)**: Masner & Muesebeck, 1968: 42. Type information.
- Paridris pallipes* (Ashmead)**: Talamas, Masner & Johnson, 2012: 35, 38, 71. Description, diagnosis, synonymy, keyed, type information.

# Taxonomic Tools

## Literature

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## Repositories

Specimen ID	Collection	Taxon	Valid Name	Type	Taxonomic Hierarchy	Reference
USNM Type No. 24541	USNM	<i>Idris laeviceps</i> Ashmead	<i>Paridris pallipes</i> (Ashmead)	Holotype	Hymenoptera: Platygastroidea: Platygastridae: Scelioninae: Paridris	Ashmead, 1893: 235
M.C.Z. Type 31016	MCZC	<i>Idris nigricornis</i> Brues	<i>Paridris pallipes</i> (Ashmead)	Lectotype	Hymenoptera: Platygastroidea: Platygastridae: Scelioninae: Paridris	Brues, 1903: 125
USNM Type No. 22798	USNM	<i>Paridris brevipennis</i> Fouts	<i>Paridris pallipes</i> (Ashmead)	Holotype	Hymenoptera: Platygastroidea: Platygastridae: Scelioninae: Paridris	Fouts, 1920: 66
USNM Type No. 24485	USNM	<i>Thoron pallipes</i> Ashmead	<i>Paridris pallipes</i> (Ashmead)	Holotype	Hymenoptera: Platygastroidea: Platygastridae: Scelioninae: Paridris	Ashmead, 1887: 99

# Image Database specimage.osu.edu


Specimage - List Specimen Images - Mozilla Firefox

File Edit View History Bookmarks Tools Help


specimage.osu.edu specimage.osu.edu/list/SpmImages.html

Search:  100 Search Advanced Search

Specimen 1: OSUC 145594 - *Trissolcus setifer* Johnson



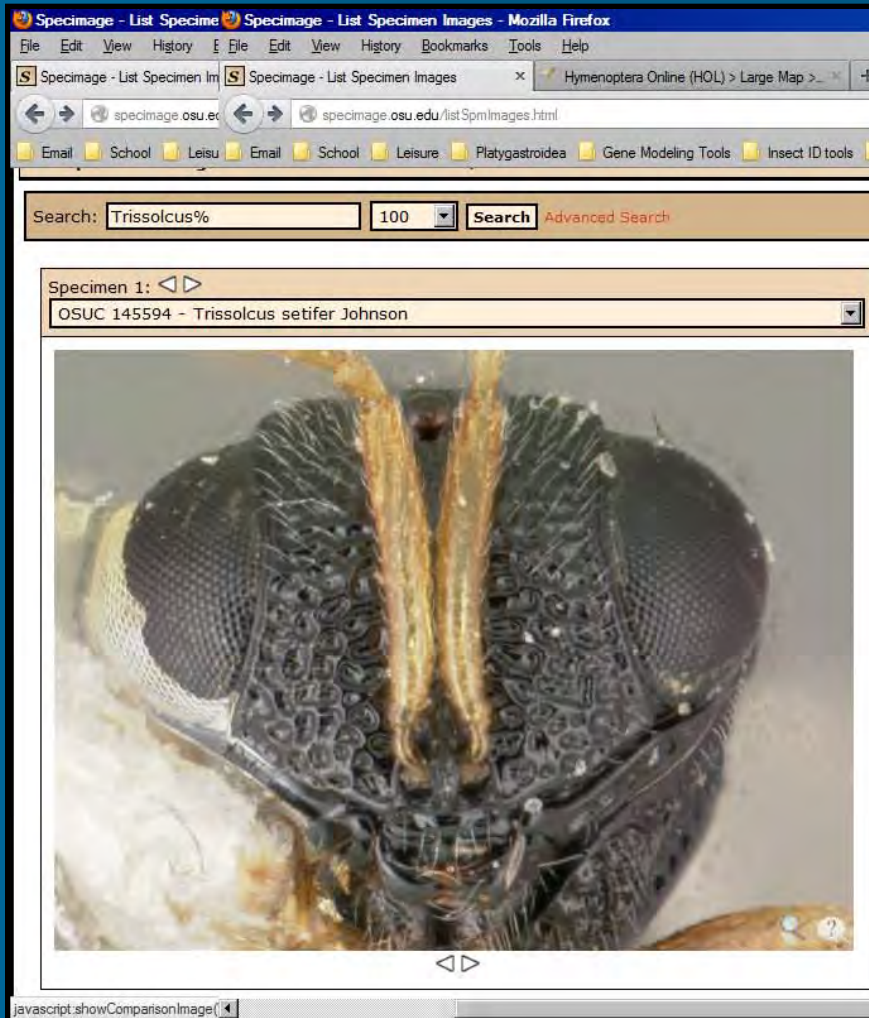
Specimen 2: OSUC 265259 - *Trissolcus* Ashmead



5:00 PM

javascript.showComparisonImage()

# Image Database specimage.osu.edu



Searchable by:

taxon name

geographical area

CUID

morphological structure



# vSysLab

vSysLab: a virtual Systematics Laboratory, v. 1.5 > PBI: Revision of the Genus Trichoteleia - Phylogenetic > Data Matrix - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://vsyslab.osu.edu/show\_matrix.html?project\_id=62

Specimage - List Specimen Images vSysLab: a virtual Systematics La...

### Project Data Matrix

OTU Name	10193	10185	10187	10188	10181	10182	10180	10175	10079	10078	10081	10331	10077	693	9708	10019	9709	9710
1. [Anteris 1]	0	2	0	0	0	1	1	1	1	0	1	0	2	add	1	0	3	4
2. [Xanteris minimus]	add	add	add	add	add	add	add	add	add	add	add	add	a	add	add	add	add	add
3. [Xanteris magnus]	0	2	0	0	0	0	add	1	1	1	0	0	0	add	add	add	add	add
4. <i>Tuora blaze</i> (MS) [Tuora blaze (MS)]	add	0	1	0	0	0	1	1	0	0	0	0	1	add	add	add	add	add
5. [Tuora brachyterous]	add	2	0	0	0	0	1	1	0	0	0	0	1	add	add	add	add	add
6. [Tuora buddha]	add	0	0	0	0	0	1	1	0	0	0	0	1	add	add	add	add	add
7. <i>Tuora crinis</i> (MS) [Tuora crinis (MS)]	0	add	0	add	add	add	1	1	0	0	0	2	1	add	add	add	add	add
8. [Tuora darky]	add	add	1	0	0	0	1	1	0	1	0	0	1	add	add	add	add	add
9. <i>Tuora gigantor</i> (MS) [Tuora gigantor (MS)]	add	0	1	0	0	0	1	1	0	0	0	3	1	add	add	add	add	add
10. [Tuora laotian smoothifrons]	add	2	0	0	0	0	1	1	0	1	0	3	1	1	0	1	1	add
11. <i>Tuora metaspine</i> (MS) [Tuora metaspine (MS)]	add	2	0	0	0	0	1	1	0	1	0	0	1	0	0	1	1	add

Ventral Limit Of Occipital Carina [edit character](#)

OTU Name: [Tuora darky]

Category: Head

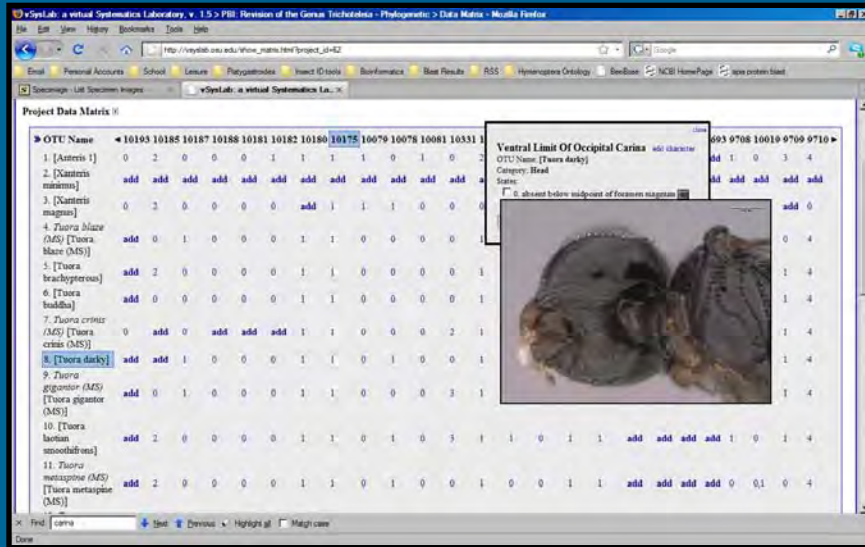
States:

0. absent below midpoint of foramen magnum

Find: carina    Next    Previous    Highlight all    Match case

Done

# vSysLab



The screenshot shows the vSysLab interface. On the left is a 'Project Data Matrix' table with columns for OTU IDs and rows for species. Row 8, '[Tuora darky]', is highlighted. On the right is a 'Species Descriptions - Material Examined' window for '[Tuora darky]', showing a photograph of the specimen and a description: 'Ventral Limit Of Occipital Carina: add (darky)'. The OTU Name is '[Tuora darky]', Category is 'Head', and State is 'add add add add add'.

OTU Name	10103	10185	10187	10188	10181	10182	10180	10175	10079	10078	10081	10331	693	9708	10019	9709	9710
1. [Asteris 1]	0	2	0	0	0	1	1	1	1	0	1	0	2				
2. [Xantaris malmgreni]	add	add	add	add	add	add	add	add	add	add	add	add					
3. [Xantaris magnus]	0	2	0	0	0	0	add	1	1	1	0	0	0				
4. Tuora blaze (MS) [Tuora blaze (MS)]	add	0	1	0	0	0	1	1	0	0	0	0	0				
5. [Tuora brachypterus]	add	2	0	0	0	0	1	1	0	0	0	0	1				
6. [Tuora budha]	add	0	0	0	0	0	1	1	0	0	0	0	1				
7. Tuora crinita (MS) [Tuora crinita (MS)]	0	add	0	add	add	add	1	1	0	0	0	2	1				
8. [Tuora darky]	add	add	1	0	0	0	1	1	0	1	0	0	1				
9. Tuora gigantea (MS) [Tuora gigantea (MS)]	add	0	1	0	0	0	1	1	0	0	0	3	1				
10. [Tuora laetum unsmoothfrenis]	add	2	0	0	0	0	1	1	0	1	0	3	1	1	0	1	1
11. Tuora metaspina (MS) [Tuora metaspina (MS)]	add	2	0	0	0	0	1	1	0	1	0	0	1	0	0	1	1

Species Descriptions  
- Material Examined

Matrix for phylogenetic analysis

Lucid key



- Host Associations
- Emergence Data
- Parasitoid Diversity



- Taxonomic Data
- Distributional data for Parasitoids and Hosts

## Hymenoptera Online Database



### Ecological Questions

How do parasitoid assemblages change following introduction of biocontrol species?

How do temperature/biogeographical gradients affect parasitoid assemblages?

# The Near Future

- Lucid Key to species of North America
  - each species/character system illustrated with high resolution images
  - freely available online