



Arthropod Easy Capture

Signe Valentinsson

Tri-Trophic Thematic Collections Network (tcn.amnh.org)



Digitizing true bugs, host plants,
and parasitoids

Lead PI Randall T. Schuh

With 35 partner institutions
including the New York Botanical
Garden

- 238,486 records across the project
- 929,751 records captured in this database across all projects



Photo by Mathew Bertone

Before Digitization: Pre-Curation



Money was set aside to pay for experts to review collections.

Saving time and increasing confidence by:

- review determinations
- review nomenclature
- pre-stage specimens

Workflow: Staging and Data Capture

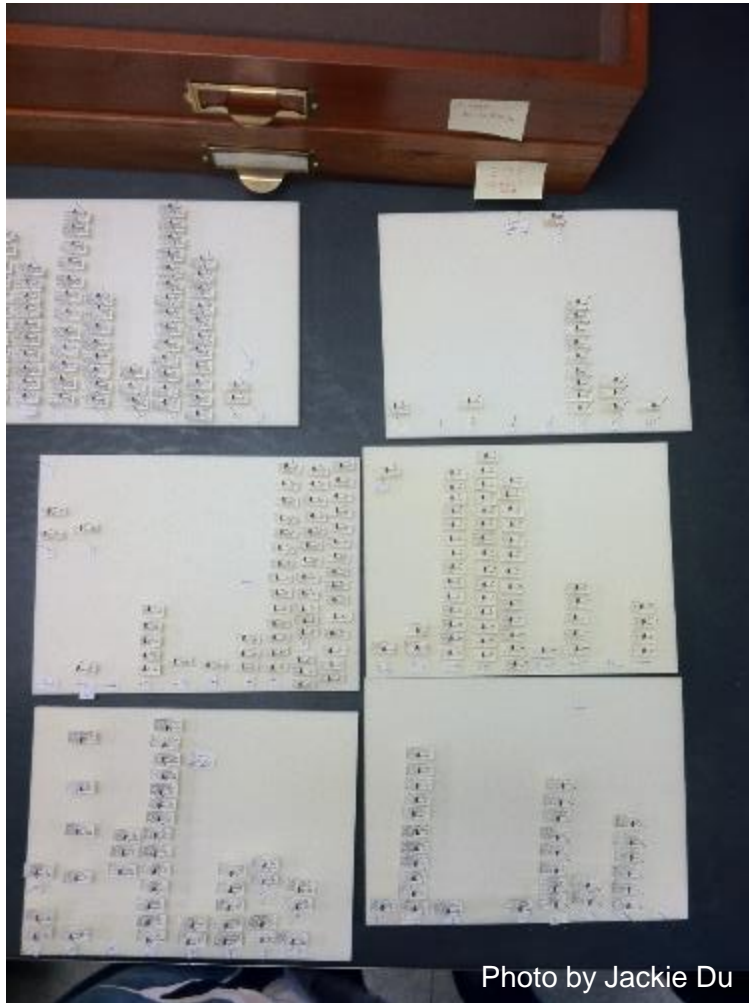


Photo by Jackie Du



Photo by Elaine Guevara

Staging: Before Data Entry



We sort trays by sex and collection event

The database allows long series to be entered together

Ensures that trays are curated properly

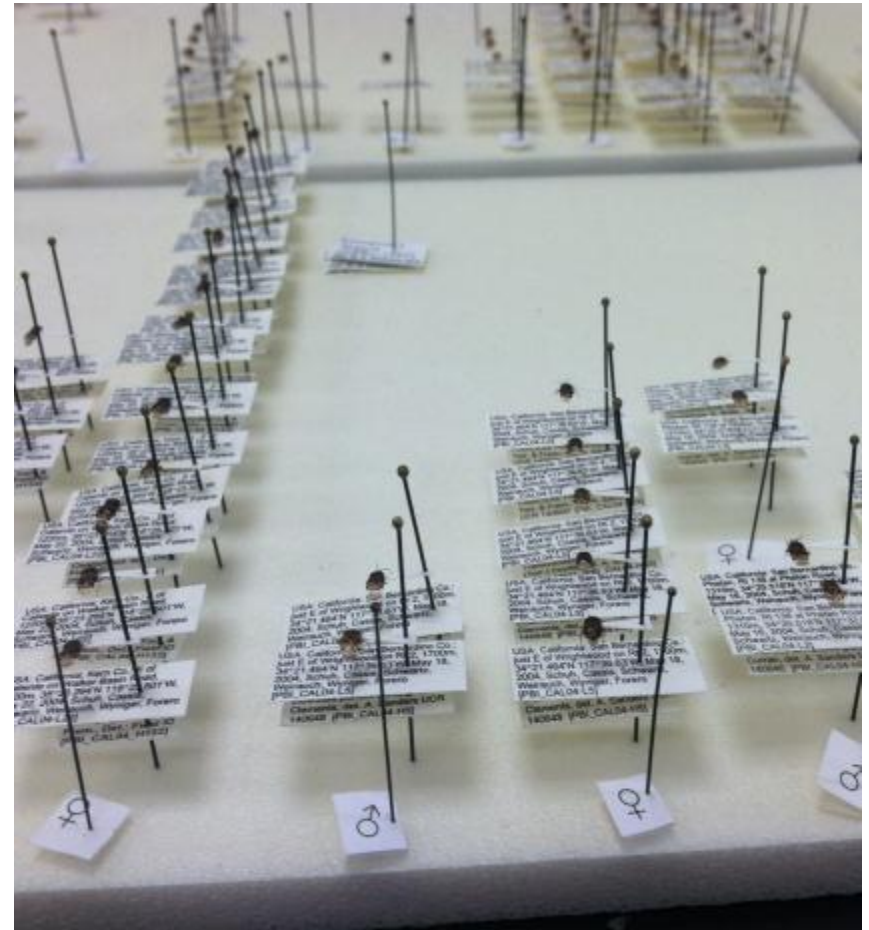
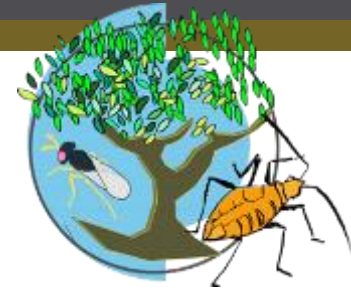


Photo by Jackie Du

Barcodes: A pathway from shared data to specimen



Encoded within matrix:

- Institution code
- Collection code
- Specimen ID

Corresponds with the requirements of Darwin Core Occurrence ID



Photo by Jackie Du

Arthropod Easy Capture

<http://sourceforge.net/projects/arthropodeasy/>

- PHP , MySQL open source application
- Designed by entomologists
- Arthropod specific
- web-based collaborative research
- planetary biodiversity inventory projects
- lightweight solution for rapid data entry



Entering Data



- Enter direct to database, so no excel upload
- Avoids duplicates from spelling errors because entries are tied to authority files
- Interface allows you to tab between fields, avoiding using the mouse
- All data entry fields are on one screen
- Sections can be cleared separately
- Database and collection of record available for research immediately

Museum Mode



PBI: Museum Mode [Change Mode](#) **USI Prefix: AMNH_ENT** [Change Prefi](#)

Taxon information [Find Genus](#) New

Family: SubFamily: Tribe: Genus: Species:

Locality information [Find Locality](#) **USDB**

Country: State/Province: Secondary Subdivision:

Locality: [Change Locality](#)

Collection Event information New

Collection Event:

Specimen information New

Catalog/Lot No: Beginning USI: Ending USI: Coll. Method: Pres. Method:

Sort by: Institution Code Institution Name Country

Depository: No. of Specimens: Sex: Type Status:

Det. History: Determined by: Determination year: Accuracy:

Macro Habitat: [Add](#) Micro Habitat: [Add](#) Data Source: DNA:

Photos Dissections Measurements SEM Illustrations Specimen Notes: Don't Map

Host information [Find Genus](#)

Family: Genus: [Add](#) Species: [Add](#)

Subspecies: [Add](#) Common Name: Condition:

Determined by: Herbarium ID: Host Notes:

* Do not use the Back option to retrieve data
* You can open up multiple interfaces of the database,
allowing you to fix any mistakes you discover during the data entry process

[Save Record](#)

[MP annual report gal...pdf](#)

Taxon Information: Genus Search



← → <https://research.amnh.org/pbi/locality/museumModeFrame.php>

PBI: Museum Mode USI Prefix: AM

Taxon information

Family: SubFamily: Tribe:

Locality information

Country: Locality:

Collection Event

Collection Event:

Specimen information

Catalog/Lot No: Coll. Method: Pre

Sex: Type Status:

Determination year: Accuracy:

Specimen: DNA:

Host information

Family:

Subspecies:

Common Name:

Herbarium ID:

Genus [search]

A

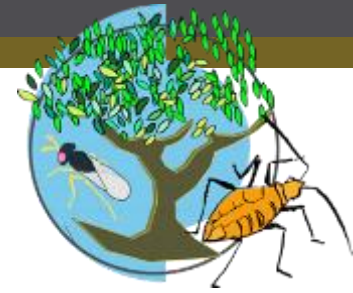
[Apoderaeocoris \[Deraeocorini Deraeocorinae Miridae\]](#)

D

[Deraeocapsus \[Deraeocorini Deraeocorinae Miridae\]](#)

[Deraeocoris \[Deraeocorini Deraeocorinae Miridae\]](#)

Taxon Information: Species



← <https://research.amnh.org/pbi/locality/museumModel/name.php>

PBI: Museum Mode [Change Mode](#) **USI Prefix: AMNH_PBI** [Change Prefi](#) [Clear Form](#)

Taxon information [Find Genus](#) [Need assistance?](#) [Clear Section](#)

Family: Subfamily: Tribe: Genus: Species: [Add](#)

Locality information [Find Locality](#) [Need assistance?](#) [Clear Section](#)

Country: State/Province: Secondary Subdivision:

Locality:

Collection Event information [Need assistance?](#) [Clear Section](#)

Collection Event:

Specimen information [Need assistance?](#) [Clear Section](#)

Catalog/Lot No: Beginning USI: Ending USI: Coll. Method: Pres. Method:

Sort by: Institution Code Institution Name Country

Depository: No. of Specimens: Sex: Type Status:

Det. History: Determined by: Determination year: Accuracy:

Macro Habitat: [Add](#) Micro Habitat: [Add](#) Data Source: DNA:

Photos Dissections Measurements SEM Illustrations Specimen Notes: Don't Map

Host information [Find Genus](#) [Need assistance?](#) [Clear Section](#)

Family: Genus: [Add](#) Species: [Add](#)

Subspecies: [Add](#) Common Name: Condition:

Determined by: Herbarium ID: Host Notes:

• Do not use the Back option to retrieve data.
• You can open up multiple interfaces of the database, allowing you to fix any mistakes you discover during the data entry process.

[Save Record](#)

Logos for the American Museum of Natural History, The New York Botanical Garden, Australian Museum, and PBI.

Search for localities,



Locality [search]

Locality View with PBI Specimens
 (Use commas to separate multiple entries)

Locality	Country	State/Province	Sec. Subdiv	Collection Event	Notes	Spec.
7 mi E of McArthur, Shasta County 41.07700 -121.26300	USA	California	Lassen		corrected to rd.	
38 mi SE of Mount Shasta 41.16300 -121.66224 1250 m (4101 ft)	USA	California	Shasta	• Oman 10 Jul 1972		View
Delta, N end of Shasta Lake 40.68056 -122.36972 30 m (100 ft)	USA	California	Shasta			
Mount Shasta 40.59944 -122.49083	USA	California	Shasta	<ul style="list-style-type: none"> • A. T. McClay 08 Apr 1961 • D. Henry 03 Jul 1975 • G. Franck No date provided • Gilbert and Paddock 03 Jul 1979 • R. H. Beamer 29 Jun 1935 • R. Richards et al. 29 Jun 1966 • Silva and Shaw 09 Jul 1973 • Unknown no date provided 		View
Mount Shasta Ski Area 40.59944 -122.49083 2438 m (8000 ft)	USA	California	Shasta	• J. D. Lattin 31 Aug 1979		View
O's Shasta 40.59916 -122.49083	USA	California	Shasta		Coordinates for the city of Shasta	
Salt Creek Campground near Lake Shasta 40.84333 -122.35305 325 m (1066 ft)	USA	California	Shasta		GNIS coord. for Lower Salt Creek Campground	
Shasta	USA	California	Shasta	• N. W. Frazier 11 Dec 1940		View
Shasta County 40.60140 -122.49240 335 m (1099 ft)	USA	California	Shasta	<ul style="list-style-type: none"> • J. A. Kusche 01 Jul 1921 • J. A. Kusche 28 Jun 1921 • Unknown no date provided • Unknown unknown MAY 1914 	coordinates and elev for Shasta cemetery from Topozone Shasta, USGS REDDING (CA) Topo Map	View
Shasta Lake 40.70182 -122.33778 270 m (886 ft)	USA	California	Shasta	• G. W. Byers 19 Jun 1959	coordinates and elev from GeoNames for Shasta Lake Ranger Station	View

or lookup localities by county.



5 mi SW of Fall River Mills
5 mi S of Redding
6 mi. S of Hat Creek [40.98527, -121.56305]
6 mile South Macdoel
PBI: 6.5 mi E of jct of Hwy 89 on Rt 299, near Burney [40.87212, -121.68994], 914 m (3000 ft)
6mi NW of Whiskeytown
7 mi NE of Burney
7 mi S of Cottonwood [40.28463, -122.27972]
Taxon 7 mi SE of McArthur
7.6 mi N of Manton [40.54515, -121.86889], 1138 m (3733 ft)
Family 8 km NE of Montgomery Creek [40.84900, -121.87600]
8 mi SE of Barile
8 mi W of Fall River Mills [41.09765, -121.55107], 845 m (2772 ft)
9 mi NE of Redding [40.65909, -122.21050], 192 m (630 ft)
9 mi NW of McArthur [41.09421, -121.52266], 1013 m (3325 ft)
Local 9 mi W of Hat Creek Post Office
County Anderson [40.44833, -122.29777], 132 m (433 ft)
Locality Baker Ranch, 20 mi NE of Redding
Burney
Bear Creek, near Whitmore [40.62888, -121.91555]
Brown Butte [40.83472, -121.52861]
Buckhorn Summit, 2 mi S
Burney [40.88240, -121.66080], 952 m (3123 ft)
Burney
Collec Burney Cr Hitchry
Cassel
Collec Castella [41.13900, -122.31700], 594 m (1950 ft)
Castle Crag [41.16278, -122.29083]
Cayton [41.06194, -121.63278]
Coyote Spring [40.70527, -121.37027], 1548 m (5079 ft)
Darrah Springs
Delta, N end of Shasta Lake [40.68056, -122.36972], 30 m (100 ft)
Speci Enterprise
Entrance of Potter Creek Cave [40.78056, -122.28750], 1067 m (3500 ft)
Catcol Entrance of Samwell Cave [40.92028, -122.23778]
French Gulch [40.42030, -122.38180], 425 m (1394 ft)
Hat Creek [40.83047, -121.50891]
Hat Creek [40.49500, -121.30490], 1010 m (3314 ft)
Di Hat Creek [40.83000, -121.51333]
Hat Creek, 994 m (3260 ft)
Det. Hat Creek P.O. [40.83047, -121.50891]
Hat Creek R. S. [41.00377, -121.43720], 987 m (3238 ft)
Hat Creek Valley [40.98528, -121.56333]
Macro Hat Creek, Rt 299 [40.93829, -121.60530], 975 m (3199 ft)
Hat Creek, Rt 89 [40.84890, -121.53059], 994 m (3261 ft)
Ph Hat Mtn
Hazel Creek [41.05416, -122.33916]
Hwy 299 and Descutes Rd., Redding
Hwy 299, 2 mi E of Ingot
Johnson Park
Lake Britton [41.02167, -121.67500]
Host li Lake Elder
Lamoine [40.97688, -122.43108]
Lassen National Park [40.47104, -121.50580]
Lassen Volcanic National Park, base of Summit Trail [40.48111, -121.38222], 2591 m (8501 ft)
Sub Little Bear Flat
Manzanita Lake
McArthur [41.06694, -121.39916], 1009 m (3310 ft)
Determ Millville [40.54944, -122.17417]
Montgomery Creek, Shingletown [40.49222, -121.88888]
Montgomery Falls Off Hwy 299
Moose Camp [40.86666, -121.83333], 1200 m (3937 ft)
Mount Shasta [40.59944, -122.49083]
- Do Mount Shasta Ski Area [40.59944, -122.49083], 2438 m (8000 ft)
- Voi Mt. Lassen
ali NF Battle Creek Hwy 44, E Shingletown
Old Station [40.67528, -121.42972]
Old Station, 3.5 km (2.2 mi) SW of Logan Lake [40.65140, -121.45960], 1385 m (4544 ft)
Old Shasta [40.59916, -122.49083]

Edit Mode



PBI: Edit Mode
[Change Mode](#)

USI Prefix: **AMNH_ENT**

Specimen [search]
 Specimen [by taxon; add USI]

Taxon Names
 Habitat Names
 Host Names

Locality
 Locality [search]

Collection Event
 Field Host
 Field Images

Country
 State/Province
 Sec. Subdivision

Institution
 Collector/Donor

Log Out

Specimen [search] [\[Need assistance?\]](#)

Name: USI Range: - Last Records:

$\Sigma=50$

<input type="checkbox"/>	UID ▲▼	USI ▲▼	Sex ▲▼	Type ▲▼	Depos. ▲▼	Genus ▲▼	Species ▲▼
<input type="checkbox"/>	1126029	AMNH_ENT 00088096	Adult Female	None	AMNH	Dichrooscytus	angustifrons
<input type="checkbox"/>	1126022	AMNH_ENT 00088095	Adult Female	None	AMNH	Dichrooscytus	angustifrons
<input type="checkbox"/>	1126018	AMNH_ENT 00088094	Adult Female	None	AMNH	Dichrooscytus	angustifrons
<input type="checkbox"/>	1126017	AMNH_ENT 00088093	Adult Female	None	AMNH	Dichrooscytus	angustifrons
<input type="checkbox"/>	1126016	AMNH_ENT 00088092	Adult Female	None	AMNH	Dichrooscytus	angustifrons
<input type="checkbox"/>	1126015	AMNH_ENT 00088091	Adult Female	None	AMNH	Dichrooscytus	angustifrons
<input type="checkbox"/>	1126014	AMNH_ENT 00088090	Adult Female	None	AMNH	Dichrooscytus	angustifrons
<input type="checkbox"/>	1125986	AMNH_ENT 00088089	Adult Female	None	AMNH	Dichrooscytus	angustifrons
<input type="checkbox"/>	1125857	AMNH_ENT 00088088	Adult Female	None	AMNH	Dichrooscytus	angustifrons
<input type="checkbox"/>	1125856	AMNH_ENT 00088087	Adult Female	None	AMNH	Dichrooscytus	angustifrons
<input type="checkbox"/>	1125855	AMNH_ENT 00088086	Adult Female	None	AMNH	Dichrooscytus	angustifrons
<input type="checkbox"/>	1125854	AMNH_ENT 00088085	Adult Female	None	AMNH	Dichrooscytus	angustifrons
<input type="checkbox"/>	1125853	AMNH_ENT 00088084	Adult Female	None	AMNH	Dichrooscytus	angustifrons
<input type="checkbox"/>	1125852	AMNH_ENT 00088083	Adult Female	None	AMNH	Dichrooscytus	angustifrons
<input type="checkbox"/>	1125851	AMNH_ENT 00088082	Adult Female	None	AMNH	Dichrooscytus	angustifrons
<input type="checkbox"/>	1125850	AMNH_ENT 00088081	Adult Female	None	AMNH	Dichrooscytus	angustifrons
<input type="checkbox"/>	1125849	AMNH_ENT 00088080	Adult Female	None	AMNH	Dichrooscytus	angustifrons
<input type="checkbox"/>	1125848	AMNH_ENT 00088079	Adult Female	None	AMNH	Dichrooscytus	angustifrons
<input type="checkbox"/>	1125847	AMNH_ENT 00088078	Adult Female	None	AMNH	Dichrooscytus	angustifrons
<input type="checkbox"/>	1125846	AMNH_ENT 00088077	Adult Female	None	AMNH	Dichrooscytus	angustifrons
<input type="checkbox"/>	1125845	AMNH_ENT 00088076	Adult Female	None	AMNH	Dichrooscytus	angustifrons
<input type="checkbox"/>	1125844	AMNH_ENT 00088075	Adult Female	None	AMNH	Dichrooscytus	angustifrons
<input type="checkbox"/>	1125843	AMNH_ENT 00088074	Adult Female	None	AMNH	Dichrooscytus	angustifrons
<input type="checkbox"/>	1125842	AMNH_ENT 00088073	Adult Female	None	AMNH	Dichrooscytus	angustifrons

Modify multiple records at once



Σ=50

Toggle All

Update

	UID ▲▼	USI ▲▼	Sex ▲▼	Type ▲▼	Depos. ▲▼
<input type="checkbox"/>	1126029	AMNH_ENT 00088096	Adult Female	None	AMNH
<input type="checkbox"/>	1126022	AMNH_ENT 00088095	Adult Female	None	AMNH
<input checked="" type="checkbox"/>	1126018	AMNH_ENT 00088094	Adult Female	None	AMNH
<input checked="" type="checkbox"/>	1126017	AMNH_ENT 00088093	Adult Female	None	AMNH
<input checked="" type="checkbox"/>	1126016	AMNH_ENT 00088092	Adult Female	None	AMNH
<input type="checkbox"/>	1126015	AMNH_ENT 00088091	Adult Female	None	AMNH
<input type="checkbox"/>	1126014	AMNH_ENT 00088090	Adult Female	None	AMNH
<input type="checkbox"/>	1125986	AMNH_ENT 00088089	Adult Female	None	AMNH
<input type="checkbox"/>	1125857	AMNH_ENT 00088088	Adult Female	None	AMNH

Query Mode



Queries

Family	--Choose--	Subfamily	--Choose--	Tribe	--Choose--		
Genus	Deraeocoris [Derar]	Species	mutatus	Type	--Choose--	Sex	--Choose--
Country	--Choose--	State/Prov.	--Choose--	Subdivision	--Choose--		
Collector			Trip Code				
Det. By	--Choose--			Det. Year		History	--Choose--
Macro Habitat	--Choose--	Micro Habitat	--Choose--	Additional Info	--Choose--	Specimen Notes	
Host Family	--Choose--	Host Genus	--Choose--	Host Species	--Choose--	Host Subspecies	--Choose--
Depository	--Choose--			Sort by:	USI	Search	Count
				Download	Clear	Σ=45	

USI	Taxon (G. sp.)	Locality/Coll. Event	Sex/Type	Dep.	Det. By/Year	Specimen Notes	Additional Info	Host (G. sp.)
AMNH_ENT 00024111	<i>Deraeocoris mutatus</i>	USA; California; Riverside; San Jacinto Mts, jct of Poppet Flat Rd and Rt 243; 33.86040, -116.83880; 1270 m (4178 ft); 20 May 2000; M.D. Schwartz; PBI_CAL00_L23;	Adult Male/None	AMNH		Voucher specimen for DNA sample, S411		
AMNH_ENT 00024115	<i>Deraeocoris mutatus</i>	USA; California; Riverside; San Jacinto Mts, jct of Two Pines Rd and Rt 243; 33.87530, -116.84170; 1200 m (3947 ft); 20 May 2000; M.D. Schwartz; PBI_CAL00_L24;	Adult sex unknown/None	AMNH		Voucher specimen for DNA sample, S417		
AMNH_ENT 00085677	<i>Deraeocoris mutatus</i>	USA; Oregon; Hood River; T2S R9E Sec10; 45.40918, -121.60808; 1301 m (4270 ft); 05 Sep 1979; G. Stonedahl	Adult Female/None	AMNH	V. Razfimahatratra, 1980			<i>Pinus ponderosa</i>
AMNH_ENT 00085678	<i>Deraeocoris mutatus</i>	USA; Oregon; Hood River; T2S R9E Sec10; 45.40918, -121.60808; 1301 m (4270 ft); 05 Sep 1979; G. Stonedahl	Adult Female/None	AMNH	V. Razfimahatratra, 1980			<i>Pinus ponderosa</i>
AMNH_ENT 00085679	<i>Deraeocoris mutatus</i>	USA; Oregon; Hood River; T2S R9E Sec10; 45.40918, -121.60808; 1301 m (4270 ft); 05 Sep 1979; G. Stonedahl	Adult Female/None	AMNH	V. Razfimahatratra, 1980			<i>Pinus ponderosa</i>
AMNH_ENT 00085680	<i>Deraeocoris mutatus</i>	USA; Oregon; Willows; Wallowa-Whitman National Forest, T3N R44E Sec 10, Falls Creek on Hurricane Creek; 45.30761, -117.30688; 1554 m (5100 ft); 20 Aug 1979; M. D. Schwartz	Adult Male/None	AMNH	V. Razfimahatratra, 1980		Dissections	<i>Pinus ponderosa</i>
AMNH_ENT 00085681	<i>Deraeocoris mutatus</i>	USA; Oregon; Willows; Wallowa-Whitman National Forest T3N	Adult Male/None	AMNH	V. Razfimahatratra		Dissections	<i>Pinus ponderosa</i>

Discover Life



Zoom level: [Globe](#) [sat](#) [s](#) [s](#) [s](#) [s](#) [map](#) [m](#) [topo](#) [topo](#) [topo](#) [photo](#) [p](#)
Map center: NAD83 **Lat-long** 42°N 120°W **UTM** 11 251535E 4654131N **Resolution** 0.05 degrees/pixel

 **target** 40.75°N 117.75°W

[Discover Life](#) | [Global Mapper](#)
[Help](#) | [About](#) | [Find place](#) | [Menu](#) | [Demo](#)

[Customize this map](#) (add species, change resolution, filter points, etc. -- [See all options](#)).

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● [Tuxedo](#) @ American Museum of Natural History Entomology (2); Plant Bug (1564); BOLD (3); University of California, Insect Survey (48); University of California, Riverside, Entomology Research Museum (1); University of California, Riverside, Entomology (178)

Staten Island Museum



Photos by Katja Seltmann

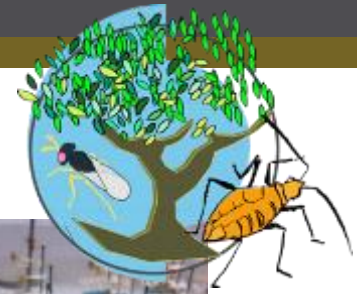
In Summary

Arthropod Easy Capture

- Intuitive
- Minimal Training
- Individualized Workflows and adaptable
- Web Accessible



Photo by Elaine Guevara



Thank you



Arthropod Easy Capture

<http://sourceforge.net/projects/arthropodeasy/>

Tri-Thematic Collection Network

<http://tcn.amnh.org/>

Feel free to email with further question

svalentinsson@amnh.org

kseltmann@amnh.org