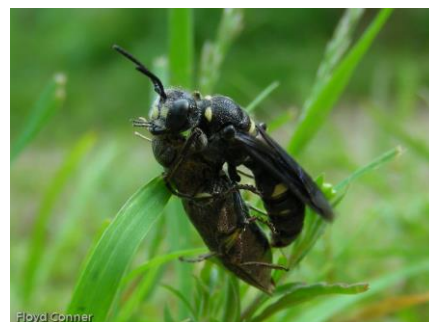


WASP WATCHERS PROGRAM

How Do We Detect Emerald Ash Borer Using This Native Wasp?

WHAT IS BIOSURVEILLANCE?

- Use of one species to monitor another species.
- The Smoky winged beetle bandit wasp (*Cerceris fumipennis*) hunts and captures metallic wood boring beetles (buprestids) including EAB and carries them back to provision their ground nests.
- Each wasp colony provides a site to monitor for the presence of Emerald Ash Borer (EAB).



Cerceris fumipennis with prey
© Floyd Conner

NESTS ARE MONITORED TO SEE WHAT TYPE OF BEETLE ARE BROUGHT BACK BY THE WASP.

- Beetles can be intercepted by netting the foraging wasp before their beetle prey are taken down into the nest.
- When netted, the wasp drops its beetle prey.
- Dropped or abandoned beetles are collected by volunteers and sent to the University of Minnesota for identification.



Non-EAB Buprestids ©MN Dept. of Ag

IDENTIFICATION OF THE SMOKY WINGED BEETLE BANDIT, CERCERIS FUMIPENNIS



Body markings of female *Cerceris fumipennis*
©Philip Careless



Face of female *Cerceris fumipennis*
© Philip Careless



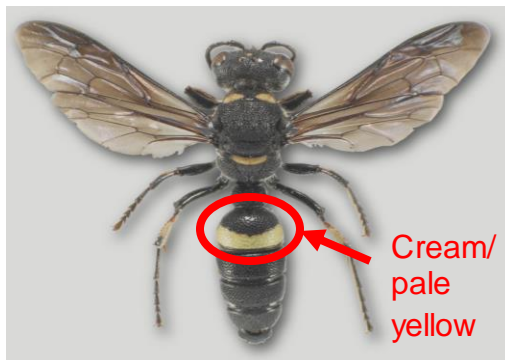
Face of male *Cerceris fumipennis*
© Philip Careless

OTHER DIGGER WASPS COMMONLY FOUND NEAR *CERCERIS* NESTING SITESInsects Commonly Mistaken for *Cerceris fumipennis*, the smoky winged beetle bandit

When searching for *Cerceris fumipennis* nesting sites, you often find other similar insects present. They are all taking advantage of similar soil and light conditions. All of the below wasp species are non-aggressive solitary, ground-nesting wasps that capture other insects, haul their prey back to their burrows and place them in nest cells as food for their young. The adults themselves feed on flower nectar.

THE REAL THING: *CERCERIS FUMIPENNIS*, THE SMOKY WINGED BEETLE BANDIT

©Elliotte Rusty Harold



© Philip Careless



©Philip Careless

Left photo: Male (top) and female *Cerceris fumipennis* wasps. The male has some yellow markings below the primary abdominal yellow band. The male is much smaller than the female. The males are typically found immediately following emergence in late June for a very short time.

BEE WOLF, *PHILANTHUS* SPECIES

Photo credit: Jeff Hahn



Photo credit: Jeff Hahn



Photo credit: Jennifer Schultz

The bee wolf has more abdominal bands (bright yellow) and the wing color is rusty orange instead of brown. The bee wolf excavates its nest much like a dog and the dirt outside the nest opening is spray off to one side. The bee wolf captures and paralyzes small bees to deposit in their underground burrows as food for their offspring.

SAND WASP, BEMBIX SPECIES



Photo Credit: Sean McCann, 2008



Photo credit: Jennifer Schultz, University of Minnesota Extension

Bembix species (sand wasp family of Bembix). Right photo: Sand wasp looking out of its nest opening.

Note: Sand wasps often have red or green eyes while Cerceris wasp eyes are typically brown in color. Bembix wasps are often found nesting in loose sand (sand boxes). Preys on flies.

CICADA KILLER, SPHECIUS SPECIOSUS



Photo credits: University of Minnesota Extension, Jeffrey Hahn (middle and right photos), Jennifer Schultz (left)

The Cicada Killer, *Specius Speciosus*, is a large digger wasp (.6-2.0 inches long). Note the trail of excavated dirt in front of the nest on the left photo. Preys on cicadas.

GREAT GOLDEN DIGGER WASP AND GREAT BLACK WASP



Photo credit: U of MN Extension

Great Golden Digger, *Sphex ichneumoneus*

Both species can be found in yards and gardens and prey upon katydids and crickets.



Photo credit: John Ascher

Great Black Wasp, *Sphex pensylvanius*

HOPLISOIDES GENUS

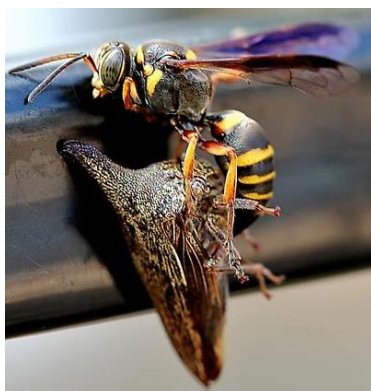


Photo credits: Ken Wolgemuth (left) and Anthony Rodgers (middle) and Lynn Burns (right): *Hoplisoides* species are also in the family Crabronidae (along with *Cerceris* and *Philanthus*). *Hoplisoides* wasps have tell-tale spots on their wings. They are also sand wasps, but prey on Homoptera, specifically treehoppers.

TIGER BEETLE



Photo credits: Jeff Hahn, University of Minnesota Extension. While not a wasp, tiger beetles are often found at ballfields. When you see one stationery on the ground, they do not look like a wasp. However, when they are flying, they can easily be mistaken for a *Cerceris* wasp.

JAPANESE BEETLE



Like tiger beetles, Japanese beetles are commonly found at ballfields. Again, while they look vastly different from a wasp when stationery, but they can be confused with *Cerceris* when they are flying.



WASP WATCHERS PROGRAM

Where to find Smoky Winged Beetle Bandit wasp colonies

BALLFIELDS



Photo credit: U of MN Extension

Researchers have found that ballfields—especially partially overgrown or less maintained fields—are good habitat for smoky winged beetle bandit wasps, *Cerceris fumipennis*. Even on fields that are moderately maintained (groomed approximately once a week), *Cerceris fumipennis* can often be found on the periphery of the infield (where the sandy infield meets the grassy outfield).

OTHER HABITATS

- Ground should be hard-packed with relatively fine, sandy soil.
- NOT loose sand like beaches or sand boxes.
- Sparse vegetation (50% bare, hard-packed sand and 50% short herbaceous vegetation is best)
- Areas disturbed by humans
 - Informal parking spots
 - Infrequently used roads
 - Foot paths
 - Soil around fire pits or open campsites
- Full sun exposure
- Within 200-300 yards of a wooded area



Photo credit: U of MN Extension



WASP WATCHERS PROGRAM

Possible Nesting Sites for the Smoky Winged Beetle Bandit Wasp (*Cerceris fumipennis*)

PREFERRED HABITAT

- Hard packed sandy soil
- Areas of human disturbance
- Full exposure to sunshine
- Sparse vegetation
- Near a wooded area, 500 yards or less
- Dirt/sand trail or road
- Informal parking lots
- Campsites, often in clearings around fire rings
- Infrequently used, less maintained baseball or softball fields. Often nests are found along the line where the grass (outfield) meets the sand (infield).



Dirt road in a regional park. ©Philip Careless



Ballfield. Photo credit: University of Minnesota Extension



Exposed dirt/sand in grassy field in a park. ©Philip Careless



Exposed dirt/sand circling a fire pit in a park. ©Philip Careless



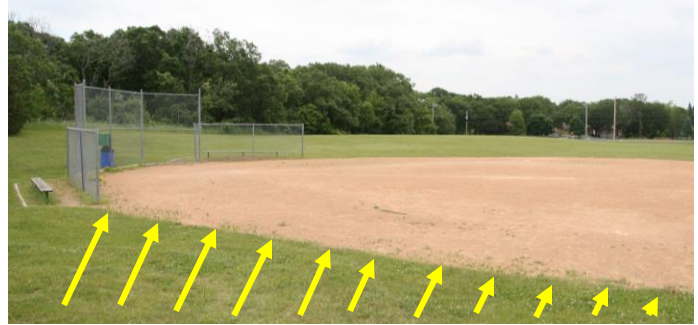
Farm road. ©Mike Bohne

WASP WATCHERS PROGRAM

How to search for the Smoky Winged Beetle Bandit wasp at a ballfield

SEARCHING FOR THE SMOKY WINGED BEETLE BANDIT (*CERCERIS FUMIPENNIS*) AT YOUR LOCAL BALLFIELD IS SIMPLE. FOLLOW THESE STEPS:

- Search your site between 11am-3pm. The beetle bandit wasp is most active around the middle of the day.
- Walk around the ballfield following the line where the grass (outfield) meets the sand (infield). Ballfields with encroaching vegetation tend to be better habitat for this wasp species. The beetle bandits prefer a small amount of plant cover for shade and nest orientation.
- There can be 5-100 nests in a ballfield.
- Nest openings are round with a diameter of a pencil.
- Holes typically go straight down, not angled.
- Nest openings are sometimes tucked beside or partially under a clump of grass or plant.
- Nest openings are usually surrounded by a mound of excavated soil, much like an anthill.
- Differing from anthills: the opening is larger and the beetle bandit wasp nests has a mound surrounding the opening with larger sand particles. The mound around an anthill is typically comprised of finer (smaller) pieces of sand.
- If you are uncertain, watch the nest opening for a few moments. Ant hills are typically busy with ants coming and going frequently.



Ant Hills

All photo credits: U of MN Extension



WASP WATCHERS

How to Carry Out Biosurveillance: Looking for Emerald Ash Borer with the *Cerceris* Wasp

THE UNIVERSITY OF MINNESOTA WILL PROVIDE THE FOLLOWING EQUIPMENT:

- ✓ Insect Net (aerial mesh)
- ✓ Plastic vials for the collection and storage of beetles
- ✓ A sheet of adhesive vial labels
- ✓ A postage-paid box or envelope
- ✓ Wasp Watcher training binder

1. VISIT YOUR SITE 2-3 TIMES A WEEK IN JULY AND EARLY AUGUST

1. Wasps hunt best on sunny days when the temperature is above 70 degrees F.
2. The peak flight time is 11am to 3pm, so visit your site during that time. The wasps are most actively hunting beetles between 12noon-2pm.
3. Wait a day after moderate/heavy rain. Wasps will dig out after rain events, but it make take a day for the soil to dry out and for the wasps to re-excavate their nest tunnels.

2. COUNT NESTS

1. At your site, walk around and roughly count the number of nests.
2. Record this on your data sheet.
3. This information will let us know how the wasps are doing over time.

3. GATHER ABANDONED BEETLES

1. Pick up all abandoned beetles lying on the ground around the colony.
2. Look through the sand mounds surrounding the holes, too. Often discarded beetles are dropped near the nest and covered by the mound.
3. Abandoned beetles may be dry and brittle so handle carefully.
4. Place these in a vial and fill out the label, being sure to mark them as abandoned.



Photo credit: Jeff Hahn, U of MN Extension, Smoky winged beetle bandit, *Cerceris fumipennis*



Aerial mesh insect net



Photo credit: U of MN Extension, *Cerceris fumipennis* nest opening



Photo credit: Philip Careless
Dropped beetle near nest opening

4. MONITOR NESTS FOR RETURNING WASPS

1. Observe as many nests as you can watch.
2. Watch for wasps coming in with prey. You will soon be able to recognize the bottom-heavy silhouette and slow, heavy flight of a wasp with prey.
3. Gently net the wasp returning with prey. Use a lightweight mesh net so you do not hurt the wasp. The shock of netting will usually cause the wasp to drop her prey.
4. If you see a beetle in the bottom of the net, open the net and let the wasp crawl out or fly away. If she has not released the beetle, set the net face down on the ground and walk away. Usually the wasp will drop her prey within 5 minutes.
5. Place the “net captured” beetles in a separate vial from the abandoned beetles and fill out the label.



Photo credit: Mike Bohne, *Cerceris fumipennis* with native beetle prey

5. BEETLES SHOULD BE PLACED IN VIALS AND LABELED

1. Affix label to vial and write down information when collecting. You can place multiple beetles together in the same vial as long as the date, site, and collecting method (captured vs. abandoned) are all the same.
2. Each day of collection, you can have two vials per site:
 - ✓ One vial for captured beetles (w/net)
 - ✓ One vial for abandoned beetles found on the ground.

Date: Weather:
Site: City:
Abandoned or Captured (circle one)
Collector's name:



6. FILL OUT DATA SHEET/ENTER DATA

1. Fill out a “Biosurveillance Beetle Collecting Data Sheet” (found at the back of the binder). Use this data form to help when entering you data online.
2. Enter your data at www.minnesotamasternaturalist.org
3. Use the Data Entry handout (Handout 8) to navigate the website and process.

7. PLACE THE LABELED VIALS OF BEETLES IN THE FREEZER UNTIL THE END OF SUMMER.

1. **VERY IMPORTANT:** Beetles will develop a fungus if not frozen on the collection day, a.s.a.p.
2. Use the postage paid box or envelope to send the collected beetles and data sheets to the University of Minnesota at the end of the summer. **Send to: Jennifer Schultz, 219 Hodson Hall, 1980 Folwell Ave. St. Paul, MN 55108**
3. **If you suspect that you have found EAB, contact the University immediately!**

For more information visit: <http://z.umn.edu/waspswatchers>
Contact: Jennifer Schultz, Wasp Watchers Coordinator
Email: schultzj@umn.edu OR Phone: 612-301-8310



WASP WATCHERS PROGRAM

Common Buprestids (Metallic Wood Boring Beetles)

COMMON BUPRESTIDS CAPTURED THROUGH BIOSURVEILLANCE IN MINNESOTA (2014-2016).

Buprestids captured in Minnesota through biosurveillance utilizing the hunting behavior of the smoky winged beetle bandit wasp (*Cerceris fumipennis*) fall into six genera: *Actenodes*, *Agrilus*, *Buprestis*, *Chrysobothris*, *Dicerca*, *Poecilonota*,

Actenodes



Actenodes acornis
Copyright © 2011 Mike Quinn
(bugguide.net)



Actenodes simi
Copyright © 2016 Mike Quinn
(bugguide.net)

Buprestis



Buprestis consularis
Copyright © 2011 Jason Hansen
(bugguide.net)



Buprestis maculativentris
Copyright © 2011 Jason Hansen
(bugguide.net)

Agrilus



Two lined chestnut borer
Agrilus bilineatus
Copyright © 2011 Mike Quinn
(bugguide.net)



Agrilus quadriguttatus
Copyright © 2008 Joshua Basham
(bugguide.net)



Bronze birch borer
Agrilus anxius
Copyright © 2012 Tom Murray
(bugguide.net)



Agrilus difficilis
Copyright © 2016 Jennifer
Shaughney (bugguide.net)



Agrilus politus
Copyright © 2008 Tom Murray
(bugguide.net)



Agrilus obsoletoguttatus
Copyright © 2017 Kim Fleming
(bugguide.net)

Poecilonota



Poecilonota cyanipes
Copyright © 2014 Stuart Tingley (bugguide.net)

Chrysobothris



Flatheaded Appletree Borer
Chrysobothris femorata
Copyright © 2010 JC Jones
(bugguide.net)



Chrysobothris sexsignata
Copyright © 2014 Betsy Betros
(bugguide.net)



Chrysobothris rugosiceps
Copyright © 2011 Mike Quinn
(bugguide.net)

Dicerca



Flatheaded Hardwood Borer
Dicerca divaricate
Copyright © 2011 Tom Murray
(bugguide.net)



Flatheaded Conifer Borer
Dicerca tenebrosa
Copyright © 2011 Jason Hansen
(bugguide.net)



Flatheaded Poplar Borer
Dicerca tenebrica
Copyright © 2014 Dave McShaffrey
(bugguide.net)

WASP WATCHERS PROGRAM

Entering Your Data


The Wasp Watchers database is embedded in the Minnesota Master Naturalists program. Go to: www.minnesotamasternaturalist.org

If you have a Minnesota Master Naturalists account already, you may use your current username and password. However, your account will need to be flagged by an administrator as a Wasp Watcher in order for you to have access to the Wasp Watcher Data Entry screens. Contact Jennifer Schultz, schultzj@umn.edu or 612-301-8310, if you cannot view the Wasp Watcher box at the bottom of your Master Naturalist Dashboard.

If you do not currently have an account with Minnesota Master Naturalists, you will need to create a new account. This takes about 2 minutes.

CREATE AN ACCOUNT:

Create an account username and password and enter your information to create an account.



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MY ACCOUNT ABOUT US COURSES EXPLORE STORE CONFERENCE DONATE

Create an Account

Your Minnesota Master Naturalist / Wasp Watcher account is used to access customized features of the program, including the ability to register for course offerings, enter service hours, and find volunteer opportunities. Required fields are in **bold**.

Account Username ✓

Password Strong password

Verify Password ✓

Email Address ✓

First Name

Last Name

Address

City

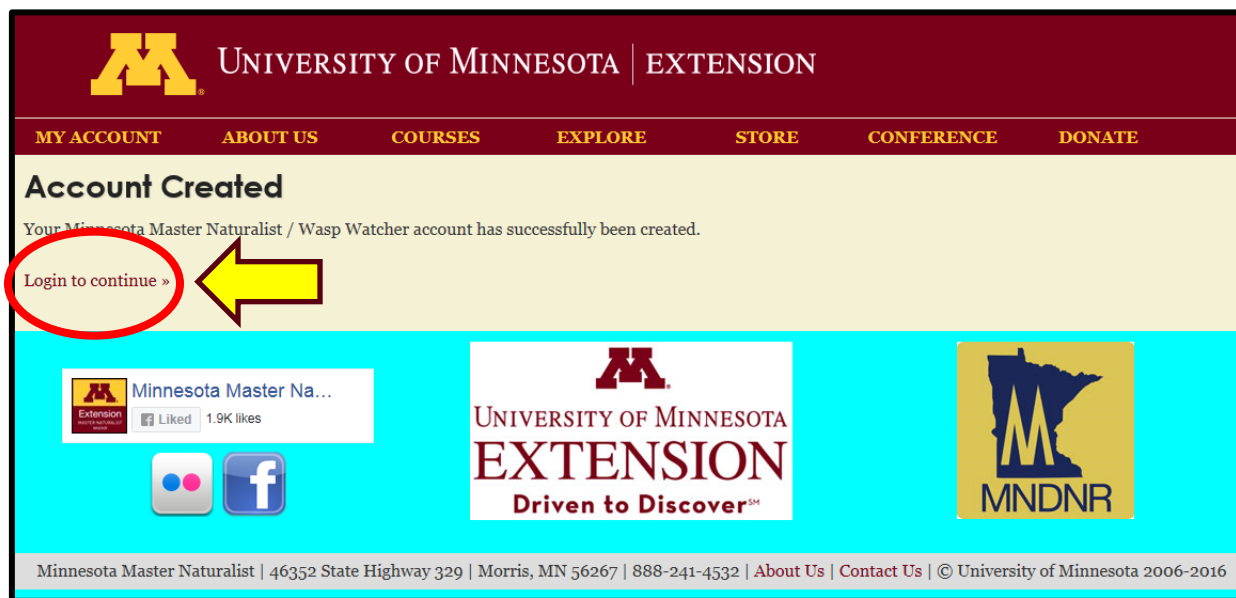
State

Zip Code

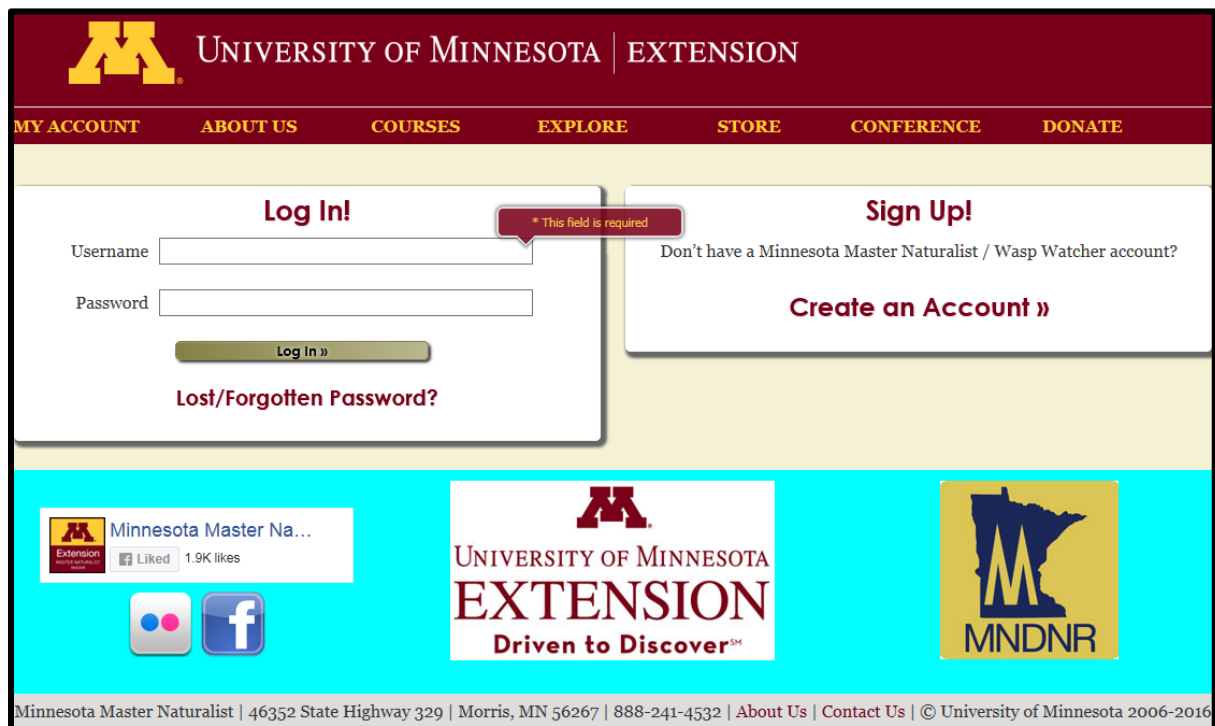
Phone

Your Anti-Spam Code: **5E66DB97**

ACCOUNT CREATED SCREEN. CLICK **LOGIN TO CONTINUE**. THIS WILL BRING YOU TO THE LOG IN SCREEN



ENTER YOUR NEW USERNAME AND PASSWORD.



AFTER LOGGING IN YOU WILL BE AT YOUR DASHBOARD. SCROLL DOWN TO THE WASP WATCHER DASHBOARD. LOOK AT THE UPPER LEFT CORNER BOX LABELED: WASP WATCHER VISITS IN 2017. CLICK ON **RECORD VISIT**.



Jennifer Schultz's Wasp Watcher Dashboard

Wasp Watcher visits in 2016

Total Hours	# Cerceris sites searched	Total # of visits	# of beetles collected
0.00	0	0	0

Record Visit

Your Cumulative Service

Calendar Year	Service Hours	Prep Hours	Travel Hours	Miles Traveled	Service Impact
Service Total	0.00	0.00	0.00	0	\$0.00

Review Service Hours

Account Overview

Username: jenschultz
Email: jenschultz19@gmail.com
Chapter:

Edit Account Details **Edit Interest Survey**

Change Password **Log Out**

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MNDNR

BOTH TYPES OF VISITS ARE RECORDED ON THE SAME DATA FORM:

- CHECKING FOR THE PRESENCE OF CERCERIS FUMIPENNIS
- COLLECTING BEETLES (BIOSURVEILLANCE)

IF YOU COLLECT BEETLES AT A NEW SITE, YOU WILL NEED TO ENTER THE SITE INFORMATION (SITE NAME, ADDRESS, ETC.) KNOWN SITES WILL AUTOFILL WITH THE ADDRESS. AFTER YOU'VE REPORTED A NEW SITE, ADMINISTRATORS WILL ADD THAT INFORMATION TO THE LIST. THEN IF YOU COLLECT BEETLES THERE AGAIN, YOU CAN SELECT THE SITE FROM THE DROP DOWN MENU.

Cerceris Wasp Presence/Absence Reporting Data Entry

THESE ARE THE INSTRUCTIONS FOR REPORTING A NEW SEARCH AT A SITE. THIS CAN INCLUDE SEARCHING ANY OF THE FOLLOWING:

- PREVIOUSLY UNKNOWN AND UNSEARCHED SITE
- PAST CERCERIS SITE THAT HAS NOT BEEN ACTIVE FOR A YEAR OR MORE
- UNCONFIRMED SITE WHICH WAS REPORTED TO HAVE CERCERIS BUT HASN'T BE CONFIRMED

ON THE REVIEW WASP WATCHER VISITS PAGE, LOOK AT THE BOTTOM BOX LABELED WASP WATCHER RECORDS. CLICK ON ADD WASP WATCHER VISIT.

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MY ACCOUNT ABOUT US COURSES EXPLORE STORE CONFERENCE DONATE

Review Wasp Watcher Visits

Select Visit Year

Jennifer Schultz's visits in calendar year 2016.

Printer-friendly version

To review other years, use the drop-down below.

Year: 2016

Visits for 2016

Total Hours	# Cerceris sites searched	Total # of visits	# of beetles collected
0.00	0	0	0

Your Service Impact in 2016: \$0.00

Wasp Watcher Records

No service recorded for the selected reporting period.

[+ Add Wasp Watcher Visit](#)

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Minnesota Master Naturalist | 46352 State Highway 329 | Morris, MN 56267 | 888-241-4532 | About Us | Contact Us | © University of Minnesota 2006-2016

DATA ENTRY SCREEN:

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MY ACCOUNTABOUT USCOURSESEXPLORESTORECONFERENCEDONATE

Enter Wasp Watcher Visit

Date Of Visit	<input type="text"/>	Site	<input type="text" value="SELECT A SITE"/>
Type Of Visit	<input type="text" value="Select a visit option"/>	Site Name	<input type="text"/>
Prep Hours	<input type="text"/> :00	Site Address	<input type="text"/>
Travel Hours	<input type="text"/> :00	Site City	<input type="text"/>
Miles Traveled	<input type="text"/>	Site County	<input type="text"/>
Service Hours	<input type="text"/> :00	Latitude	<input type="text"/>
Num. others participating	<input type="text"/>	Longitude	<input type="text"/>
		Colony Size	<input type="text"/>

Observations

Submit, Return to Overview

Submit, Add Another

Cancel this entry

UNDER “TYPE OF VISIT” SELECT CERCERIS FUMIPENNIS PRESENCE SITE CHECK. FOR THE QUESTION, WAS CERCERIS FOUND YOU HAVE SEVERAL OPTIONS IN THE DROP DOWN MENU:

- **CERCERIS NESTS FOUND, CERCERIS WASP OBSERVED**
- **CERCERIS NEST FOUND, NO CERCERIS WASPS OBSERVED**
- **NO CERCERIS NESTS FOUND, CERCERIS WASP OBSERVED**
- **NESTS AND WASPS FOUND, UNSURE IF CERCERIS**
- **NESTS FOUND, UNSURE IF CERCERIS NESTS**
- **WASPS FOUND, UNSURE IF CERCERIS WASPS**
- **NO WASPS OR NESTS FOUND**
- **OTHER: PLEASE WRITE IN OBSERVATION SECTION**

ENTER THE DATA FOR THE WASP WATCHER VISIT. FREE WRITE ANY QUESTIONS OR PERTINENT DATA OR INFORMATION IN THE OBSERVATION SECTION.

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MY ACCOUNT ABOUT US COURSES EXPLORE STORE CONFERENCE DONATE

Enter Wasp Watcher Visit

Date Of Visit: 2016-07-05 Site: Other/New Site

Type Of Visit: *Cerceris fumipennis* presence site check Site Name: Garlough Elementary School

Prep Hours: 0 :00 Site Address: 1740 Charlton Street

Travel Hours: 0 :15 Site City: West St. Paul

Miles Traveled: 10 Site County: Dakota

Service Hours: 0 :30 Latitude:

Num. others participating: 1 Longitude:

Was *Cerceris* Found? Colony Size: 9-10

Cerceris Nests found, *Cerceris* Wasp observed State of ballfield: 1-25% overgrown, some vegetation

Evidence of grooming: No grooming lines present

Observations: 9-10 nests found, between home plate and 3rd base. Most of the nests are within the home/3rd baseline. Watched one wasp enter a nest.

Submit, Return to Overview Submit, Add Another Cancel this entry

CLICK "SUBMIT, RETURN TO OVERVIEW" OR "SUBMIT, ADD ANOTHER"

WHEN YOU RETURN TO THE OVERVIEW, YOUR WASP WATCHER RECORDS SHOULD BE UPDATED WITH THE NEW ENTRY.

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MY ACCOUNT ABOUT US COURSES EXPLORE STORE CONFERENCE DONATE

Review Wasp Watcher Visits

Select Visit Year

Jennifer Schultz's visits in calendar year 2016.

Printer-friendly version

To review other years, use the drop-down below.

Year: 2016 Update

Visits for 2016

Total Hours	# <i>Cerceris</i> sites searched	Total # of visits	# of beetles collected
0.75	1	1	0

Your Service Impact in 2016: \$18.62

Wasp Watcher Records

Showing 1 to 1 of 1 entries

Date	Site Name	Total Hours	Description	<i>Cerceris</i> wasp found?	Were beetles collected?	Actions
07-05-2016	Garlough Elementary School	0.75	9-10 nests found, between home plate and 3rd base. Most of the nests are within the home/3rd baseline. Watched one wasp enter a nest.	Yes	No	Copy Edit
Totals:		0.75				

+ Add Wasp Watcher Visit

Beetle Collecting Data Entry

ON THE REVIEW WASP WATCHER VISITS PAGE, LOOK AT THE BOTTOM BOX LABELED WASP WATCHER RECORDS. CLICK ON ADD WASP WATCHER VISIT.

Review Wasp Watcher Visits

Select Visit Year
Jennifer Schultz's visits in calendar year 2016.
Printer-friendly version
To review other years, use the drop-down below.
Year: 2016

Visits for 2016

Total Hours	# Cerceris sites searched	Total # of visits	# of beetles collected
0.00	0	0	0

Your Service Impact in 2016: \$0.00

Wasp Watcher Records
No service recorded for the selected reporting period.

[+ Add Wasp Watcher Visit](#)

UNDER "TYPE OF VISIT" SELECT BEETLE COLLECTION SITE CHECK.

ENTER DATA, INCLUDING THE # OF BEETLES COLLECTED. "NET COLLECTED BEETLES ARE BEETLES YOU CAPTURED IN YOUR AERIAL NET. "CERCERIS DROPPED BEETLES" ARE ANY BEETLES YOU FIND ON THE GROUND ABANDONED BY THE WASP.

WHEN YOU SELECT A SITE, THE ADDRESS INFORMATION SHOULD AUTOFILL FOR YOU.

Enter Wasp Watcher Visit

Date Of Visit: 2016-06-08

Type Of Visit: Beetle collection site check

Prep Hours: 0 :00

Travel Hours: 0 :15

Miles Traveled: 10

Service Hours: 0 :30

Num. others participating: 1

Weather: Sunny

Net Collected Beetles:

Site: Pocahontas Park

Site Name: Pocahontas Park

Site Address: 2540 Pascal St.

Site City: Roseville

Site County: Ramsey

Latitude: 45.018279

Longitude: -93.16076

Colony Size: 3

Wind Speed: Light

Cerceris Dropped Beetles: 1

Observations
Found 1 abandoned beetle next to a nest hole

WHEN DONE, CLICK "SUBMIT, RETURN TO OVERVIEW" OR "SUBMIT, ADD ANOTHER" WHEN YOU RETURN TO THE OVERVIEW, YOUR WASP WATCHER RECORDS SHOULD BE UPDATED WITH THE NEW ENTRY.



Cerceris fumipennis wasp Presence/Absence Data Sheet

Please fill out a data sheet for each ballfield/site that you check for *Cerceris fumipennis* nests. Please either enter your data into the Wasp Watchers website (<http://z.umn.edu/waspwatchers>) or mail the data sheet to the University of Minnesota within a week of checking the site so we can update our online map. Thank you very much for your help.

Your name:

Your e-mail or phone #:

Name of site: (park or school name, etc.)

Site Street Address:

Name of city:

Name of county:

Latitude/Longitude (if known)

Date:

Time:

Number of Minutes spent at site:

***Cerceris fumipennis* wasp found? (check one)**

- ☐ *Cerceris fumipennis* nests found and wasp was observed.
- ☐ *Cerceris fumipennis* wasp observed, but no nests found.
- ☐ Nest found, but unsure if it is *Cerceris fumipennis*.
- ☐ No wasps or nests found at site.
- ☐ Other: _____

If *Cerceris fumipennis* is found, please give details about where the nests were located at site. (For example: on Northeast field between home plate and 3rd base.):

Other site visit notes (note status of fields—well groomed, encroaching vegetation, etc.):

Return to: Jennifer Schultz, Entomology
219 Hodson Hall, 1980 Folwell Ave.
University of Minnesota
St. Paul, MN 55108



Emerald Ash Borer Biosurveillance Beetle Collecting Data Sheet

Please fill out a data sheet each day you collect beetles at your colony. Return the data sheets to us at the end of the season with your beetles. Thank you very much for your help!

Your name:

Name of site: (park or school name, etc.)

Name of city:

Name of county:

Date:

Time:

Temperature (if known):

Sunny / partly sunny / mostly cloudy / cloudy (circle one)

Wind speed: Light / moderate / strong (circle one)

Number of nests in your colony today:

Number of people carrying out biosurveillance today:

Time spent at site today:

Total Number of beetles collected today:

- Number of beetles collect by net:
- Number of abandoned/dropped beetles collected:

Comments/observations:

Return to: Jennifer Schultz, Entomology
219 Hodson Hall, 1980 Folwell Ave.
University of Minnesota
St. Paul, MN 55108