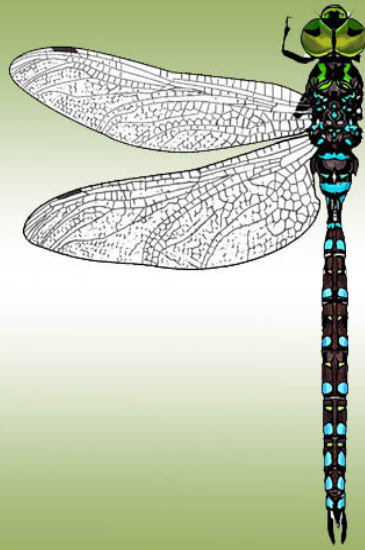


Ensuring the conservation of Minnesota's dragonflies and damselflies through research and education

Summer 2019



Minnesota Dragonfly Society

TAMARACK NATURE CENTER: FOUR REMAINING DROP-IN DISCOVERY DATES

Tamarack Nature Center's Discovery Hosts will be on-hand Saturday mornings with nature's most wonderful surprises! Participants can experience up-close visits with live animals, touchable artifacts, drop-in activities, and outdoor explorations. This is a drop-in education program geared toward families. There will be an info/touch table, dragonfly activities, and monitoring. Free for all on the below-listed Saturdays. If you would like to volunteer, contact Amy Jo at: amy.forslund@co.ramsey.mn.us.

The remaining dates are:

- Saturday, June 29 from 10am to noon
- Saturday, July 13 from 10am to noon
- Saturday, August 3 from 10am to noon
- Saturday, September 7 from 10am to noon

DSA SWAG AVAILABLE ONLINE

If you want to get a t-shirt for this year's DSA, they are only being sold online. You can get to the store from the meeting registration page or the direct link below. FYI there is all sorts of other DSA swag you can get now as well; it's like Christmas in July! [www.zazzle.com/store/dragonfly society](http://www.zazzle.com/store/dragonfly+society)

DSA IN AUSTIN, TX BEGINS JULY 8TH

The annual Dragonfly Society of the Americas meeting will be July 12-14 with a pre-meeting trip to east Texas from July 8-11. Texas has the most diverse odonate fauna within the U.S. with 247 species. There are more than 120 species just in the Austin area. Target specialties of the meeting include the Blue-faced Ringtail (*Erpetogomphus eutainia*), Broad-striped Forceptail (*Aphylla angustifolia*), Four-striped Leafaftail (*Phyllogomphoides stigmatus*), Five-striped Leafaftail (*Phyllogomphoides albrighti*), Thornbush Dasher (*Micrathyrja hagenii*), Carmine Skimmer (*Orthemis discolor*), Jade-striped Sylph (*Macrothemis inequiunguis*), Neotropical Bluet (*Enallagma novaehispaniae*), and Leonora's Dancer (*Argia leonorae*). Details and registration can be found at www.dragonflysocietyamericas.org.

Please register in advance of the meeting for lunch during the business meeting and the meeting dinner.



DRAGONFLIES ARE COOL & BENEFICIAL!

...and they could use your help.

by Curt Oien

Dragonflies are cool!

Dragonflies and Damselflies are primarily aquatic insects that belong to the order Odonata. Odonata live anywhere from two months to seven years in the water before emerging as the adults that most of us are familiar with. Their adult lifespan can be from just a couple of weeks to a few months.

Baby damselflies, also known as nymphs, have three gills at the tip of their abdomen. They swim like a minnow with their tail wagging from side to side. This allows oxygenated water to flow past the damselflies' gills when they need it the most.

Dragonfly nymphs, on the other hand, have gills inside their rectum and shoot water out of their rear ends to swim with jet propulsion, allowing oxygenated water to flow past their internal gills when they need it the most.

When pursued by a predator, damselflies can drop one or all of their gills, hoping that the predator will go after the gills while allowing the damselfly to escape. If a damselfly loses all of its gills, it can no longer swim as fast and will change its main predator avoidance strategy from swimming away to hiding. If population densities are too high and resources are low, damselflies will cannibalize each other. The gills are the first thing they will eat and if conditions improve soon enough, the damselflies will survive and regrow their gills.

Did we say that baby dragonflies are butt breathers??? What if you had to defecate out of your lungs? Think about the filth and

disease! When food waste passes through a dragonfly, the digestive system sheds its lining and the turds come out looking like they are wrapped in plastic. These fecal pellets allow waste to be excreted without contaminating the gills.

Remember how we said they can shoot water out of their butts to swim? Well, they can also shoot these fecal pellets rather forcefully out of their butts. It's called ballistic defecation and someone actually measured how far they go. If a human could do this, it would be the equivalent of someone getting down on all fours, launching one off, and having it go 100 feet in the air and landing 150 feet away. That is half the length of a football field!

If you look at the shed skin (exuvia) that a dragonfly leaves behind when it molts into an adult, you will notice something that looks like white threads.

These threads are tracheal linings from the spiracles in the thorax that adult dragonflies breathe through. Air is pumped in and out of these spiracles by powerful muscles as they fly, giving them oxygen when they need it the most.

Humans have two eyes, each with a single lens and proteins that allow us to see three colors: red, green, and blue. Dragonflies have five eyes. Three eyes are fairly simple eyes that they use to track the horizon when they are flying. The other two eyes are called compound eyes that can contain as many as 30,000 lenses! Some species have proteins in their eyes that allow them to see up to 30 colors! They see ultraviolet and into the near infrared. Odonata can see things that we can only imagine.

Dragonflies are amazing flyers. Their muscles are attached directly to their wings, allowing them to fly better than other insects. They can fly forwards, backwards, and upside down. Dragonflies can also hover and pivot in place. If you were to ride a roller coaster that subjected you to 5 times the force of gravity (5 G's), you would pass out. Our fighter

pilots can pull 9 G-forces if they wear special suits and use special breathing techniques. Tethered dragonflies have been measured pulling 15-20 G's!

Dragonflies' superior eyesight, targeting, and flying abilities make them up to 95% effective predators in some studies and are why roboticists and the military are studying them.

Dragonflies are beneficial!

Despite old stories and superstitions, dragonflies will not sew your lips shut if you tell a lie. They do not sting and they cannot hurt you! One might try to bite you if you held it with its mouth against your skin, but it would be like you trying to bite an elephant. Could you hurt the elephant? Maybe, if it let you and if you bit it in a very tender spot. But that is unlikely.

Odonata are both predator and prey. They are generalist predators and will eat almost anything that they can catch and kill, but the majority of their diet consists of Diptera which includes things like deer flies, mosquitoes, and gnats. They eat these both in the water as nymphs and in the air as adults.

Dragonflies and damselflies are a great food source for many other critters. Fish, frogs, spiders, and birds all love to eat them.

Did you know that at least seven species of Minnesota's dragonflies migrate? The Common Green Darner is the best known of these. The American Kestrel is a bird that has been seen migrating with Common Green Darners and eating them on the way! Depending on the timing of migration and early spring weather, Common Green Darners' arrival can be the difference

between survival or death for birds like Tree Swallows and Purple Martins.

What are some threats to MN Dragonflies?

More than 90% of Minnesota's prairie wetlands were drained to make agricultural land and 40-60% of the wetlands in the deciduous forest region of the state were drained. The remaining wetlands in the agricultural areas tend to be polluted due to poor farming practices and do not support healthy numbers or good diversity of Odonata.

Odonata need an upland habitat away from their aquatic breeding sites where they can hunt for food and reach sexual maturity. Most of the upland habitat in the agricultural region is gone and pesticides sprayed on the crops can be fatal.

Invasive plants like hybrid cattails can destroy the aquatic microhabitats needed by different species of Odonata to successfully reproduce. The Zebra Mussel is an example of an invasive animal that may be a huge threat to some Odonata species. They have been observed almost completely covering some nymphs.

Excessive nutrients, erosion, road salt, chemical & oil spills, mining disasters, and irresponsible pesticide use are just a few of the many threats to our dragonflies.

Many of Minnesota's bogs have also been drained or have had their hydrology altered to the point of completely changing the habitat. Rare habitats like spring fen channels or calcareous fens can easily be destroyed. The surrounding watershed needs to be protected too!

It can take thousands of years for peat to build up in a bog. Mining peat destroys habitat that might never come back. There are wild rice farms built in bogs, then the surrounding bogs are drained to water the

rice fields. Something as simple as a road through a bog can do irreparable damage to the hydrology and things like crushed limestone can ruin the pH of the bog. There are bogs being destroyed and drained even today.

The possible negative effects of climate change are huge; completely changing phenology not just for Odonata but also for their predators and prey. Some habitats could disappear completely.

What can you do to help?

Do your part to prevent the spread of invasive species!

If you live on a lake, pond, river, or stream, encourage growth of native vegetation both in the water and as an upland buffer. The upland vegetation will help prevent nutrient runoff and erosion. It will also give adult Odonata shelter from the wind, rain, and sun and make habitat for their prey. Damselflies and Darner dragonflies oviposit into aquatic vegetation and many nymphs will use the same vegetation for shelter from predators and a place to hunt. When it's time to emerge, many dragonflies and damselflies need to crawl out of the water and attach themselves to these plants so they can pull free from their exuvia.

Storm drains lead to wetlands! Minimize the amount of salt you use for melting winter ice and sweep up any excess to use it again. If you must fertilize or use other lawn chemicals, keep it to a minimum. Sweep up any that gets on your driveway or sidewalk and put it back on your lawn. Pick up pet waste. Compost your leaves and keep them out of the storm drains. Mow your lawn in a

way that you do not shoot grass into the road where it will go down the storm drains. Keep lawn clippings on your lawn when possible. Fix oil leaks in your car and if you change your own oil, dispose of it properly. Wash your car in a way that the soap and dirt don't go down the storm drain. Better yet, wash it at a commercial car wash. Never dump things down the storm drain!

Don't flush medications or other chemicals down the toilet! Your county or city should be able to tell you where to dispose of them.

Vote! Write letters, email, and call your government representatives.

Volunteer! There are many organizations that can use your help like Minnesota Dragonfly Society, MN DNR Adopt-a-River, Minnesota Pollution Control Agency, and your local watershed organization. You can survey dragonflies, enter data, organize a river cleanup, monitor water quality, and many other things! National, state, county, and local parks would love to have your help.

Resources available

MDS's website (<https://www.mndragonfly.org>) has lots of information, news, events, and links to other resources like recommended ID books.

MDS also has a Facebook group page where you can post pictures, get ID help, see other people's photos, learn of events, and even plan outings with other like-minded people.

Odonata Central (<https://www.odonatacentral.org>) has range maps, county lists, identification help, and many other resources. If you have a photo that is good enough to ID the species and it is a county record or other significant find, you can submit your record [here](#).

Any questions? Email info@mndragonfly.org



NEW MDS HATS ARE AVAILABLE

Our new hat order has arrived, including our first-ever bucket hat. All of our hats include the popular “nymph on the back”. and are now being sported by many of our members and volunteers. Check them out at some of our upcoming events, found on our events page at mndragonfly.org.

Cost: \$25 each/\$20 for MDS members

Color options:

- Bucket hats: navy, light gray, charcoal, red, khaki, and royal blue.
- Baseball caps: pale pink, hot pink, army green, tangerine, teal, mustard, khaki, hot chocolate, midnight blue, charcoal, forest green, caribbean blue, dark teal, & wild plum.

Stay tuned for new MDS shirts and tank tops, available soon!

AUGSBURG UNIVERSITY GROUP SECURES DSA ODONATE RESEARCH GRANT

An investigation of the phenology and life-history strategies of *Aeshna canadensis* (Canada Darner) dragonflies in the St. Croix River Valley from Assistant Professor E. Schilling along with M. Crews-Erjavec, and H. Kundel was awarded a \$1000 grant from the Dragonfly Society of the Americas to help pay expenses for odonate research in the DSA focal region.



MDS AT LANDSCAPE REVIVAL EXPO 6/8/2019

It was a busy Saturday with both this program and the MN Dragonfly Society Gathering at the Minnesota/Wisconsin border of Interstate State Park, so I left the MDS tablecloth at the St. Croix Falls Library. Knowing our table at the Expo was going to be inside, I created a Powerpoint on “What Are Dragonflies and Damselflies and How to Attract Them to Your Garden”. I also had a handout of basic ode info, recommended websites, social media sites, and reference books. We were fortunate to be in the City Council Chambers with an electrical outlet right behind us to keep my laptop running. Being a dragonfly fanatic, I knew I had plenty of stuff to display on our table, but what to cover it with. Then it came to me...my cloth shower curtain was ferns and dragonflies...perfect! My story to the others nearby was met with thunderous laughter, but it worked! I don't think a single one of the 1,000 visitors had a clue.



TROUT BROOK'S DRAGONFLY BONANZA 6/19/2019



Thanks to Jacki Morrison, MDS again had a presence at Trout Brook's Dragonfly Bonanza. Our volunteers included Dave Doyle, Curt Oien, Cathy Perkins, Marti Starr and Bev Blomgren. There were several species on the wing, including Common Green Darners, Twelve-spotted Skimmers, Common Whitetail, Hagen's Bluet, Marsh Bluet, and a spreadwing that I didn't catch an ID for. This event is so much fun due to all the kids. They are so anxious to catch odes and see them up close. Curt spoke with one young girl who said she wants to grow up to be a naturalist. Such awesomeness!

THERE IT IS!

By Kat Dickerson

Without questions of what "it" was, my foot hit the brake hard. The old white work truck came to a sudden halt on the sandy trail. Thankfully, the early spring dampness was enough to hinder any dust clouds from forming and clouding our vision. Years of field experience had taught me to stop immediately and start looking before asking for clarification. I moved into the familiar yet awkward stance of bracing myself on the middle console so I could look over the shoulder of the passenger, who at the moment was a very excited Angela. "What is...?" My question remained unfinished. Faster than the eye could follow, yet slow enough for me to catch a mental snapshot, the first Common Green Darner of the year swooped past Angela's window. I could see her eyes trying to follow, but to no avail. The swift predator was gone. "It was a Common Green Darner! The first of the year!" Angela chatted excitedly before yanking out her phone and calling Mitch, who was only a few fields away. I crept the old vehicle forward, trying to find the Common Green again, but alas it had vanished. Beside me, Angela was describing the situation to Mitch. The conversation was one-sided from where I sat, but the tone was clear. At Three Rivers Park District, she had claimed the title of "First Dragonfly of the Year".



MINNESOTA NATURALISTS' ASSOCIATION WORKSHOP 6/3/2019

Dianne Rowse put on a great presentation for this workshop at Lebanon Hills Nature Center. There was an in-depth dragonfly/damselfly biology 101 slideshow with detailed discussions of the families found in Minnesota. Once the classroom presentation was behind us, we grabbed nets and ID books and it was out to the field we went. Curt Oien and Dave Doyle donned their waders and swooped for nymphs. Those were hard to come by, but better luck was had for flying odes. Naturalists are great to hang with as all the wildlife seen got an ooh-ah, whether it was a dragonfly, frog, or crayfish.

Our volunteers included Barbara Heenan Anderson, Leah Darst, Dave Doyle, Curt Oien, Cathy Perkins, and MDS Lead Volunteer Dianne Rowse. Odes seen included: Marsh Bluets, Eastern Forktails, Ebony Jewelwings, Dot-tailed Whitefaces and a Dusky Clubtail.



UPCOMING EVENTS: JULY 2019

7/9/19 - Dragonfly Survey: Tamarack Nature Center, 5287 Otter Lake Rd, White Bear Township
5-6:30pm

7/13/19 - Drop In Discovery: Tamarack Nature Center, 5287 Otter Lake Rd, White Bear Township
10am-noon

7/20/19 - Dragonfly Festival: Eastman Nature Center, 13351 Elm Creek Rd, Osseo 10am-1pm

7/23/19 - Dragonfly Survey: Tamarack Nature Center, 5287 Otter Lake Rd, White Bear Township
5-6:30pm

7/28/19 - Explore Dragonflies: Coon Rapids Dam Regional Park West, 10360 W River Rd, Brooklyn
Park 1-4pm



UPCOMING EVENTS: AUGUST 2019

8/3/19 - Drop In Discovery: Tamarack Nature Center, 5287 Otter Lake Rd, White Bear Township
10am-noon

8/6/19 - Dragonfly Survey: Tamarack Nature Center, 5287 Otter Lake Rd, White Bear Township
5-6:30pm

8/10/19 - Dragonfly Survey: Como Woodland Outdoor Classroom, 1170-1198 Hamline Av N, St Paul
10am-noon