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Jackson, Lenawee and Washtenaw Cooperative Invasive Species Management Area Bulletin

Folks, we have officially made it to the end of 2022! This year saw the start of our monthly bulletin, continued education and outreach efforts, the sighting of the elusive Mitchell's satyr butterfly, and the first sighting of live spotted lanternflies in Michigan. Thanks to all of our supporters, volunteers, partners, and well wishers for the support you have given us this year, and we hope you all have a happy and safe holiday season. See you in 2023!

How Some Species are able to Survive Living in Freezing Aquatic Environments!

If you have ever participated in a winter water sampling event such as Adopt-A-Stream or ice-fished, you may have noticed that a variety of insects and fish are active in winter! While some species are able to migrate or lay eggs and die before the cold temperatures arrive, others must make use of freeze avoidance or freeze tolerant strategies to survive frigid conditions. Over-wintering is when organisms look to escape the cold by seeking shelter, hiding, burrowing etc. Caddisflies are generally found as nymphs in winter, and they build cases around their bodies out of materials found in rivers. They spin silk to gather materials such as sand or organic debris, and often will anchor the case to a stable surface such as a rock or tree.

In order to survive freezing temperatures, organisms employ a variety of strategies such as over-wintering, freeze avoidance and freeze tolerance.

Freeze tolerant insects can survive ice formation within their bodily tissues to some degree, but control where that ice forms so it does not cause damage (most restrict to regions outside vital organs). Ice-nucleating agents such as certain proteins and food are accumulated at a designated point where ice will form. Freeze avoiding organisms includes freeze tolerant organisms, and they have the unique ability to replace the water in their body with an anti-freeze like solution called cryoprotectants , which supercools the fluids within the insects body by increasing the solute concentrations within cells. Examples of cryoprotectants include sorbitol, mannitol and ethylene glycol, however, one of the more common ones used by insects is glycerol. One such species are winter stoneflies who produce glycerol, with adults having better ability to supercool compared to nymphs. If you find stoneflies in your river or stream, that is a good sign! They are sensitive species, and their presence is an indicator of good water quality!

Upcoming Events

JLW CISMA Wall Calendar—*If you are interested in purchasing our monthly wall calendar, please see details on our website:* jlwcisma.weebly.com/calendar-ordering-information.html

December 21st—NAISMA webinar: Understanding ISPM 15 to Reduce the Risk of Pests in Wood Packaging, 1pm to 2pm CST. Registration required: naisma.memberclicks.net/webinar-dec-22#!/

January 18th—NAISMA webinar: The Blue Ribbon AIS Commission – Process, Participation and Final Report, 1pm to 2pm CST. Registration required: naisma.memberclicks.net/webinar-jan-2023

Website of the Month

National Science Digital Library is a database for online resources for STEM disciplines. You can find data sets, lesson plans, games, case studies and much more! You can even search according to educational standards.

nsdl.oercommons.org

Invasive Species Spotlight—Eurasian watermilfoil

- *Myriophyllum spicatum* is an emergent herbaceous aquatic plant containing roots and rhizomes
- Greyish-green Leaves are arranged in whorls of 3-6
- Has 12-21 pairs of finely divided leaflets (native milfoil have 12 or fewer)
- Found to photosynthesize under sheets of ice in winter
- Forms large canopies that shade out native plants and impedes recreation

Photo Credit: S. Singh

Native Species Spotlight—Common Winterberry

- *Illex verticillate (L)* is a shrub that can reach 5-15 ft in height, and has a smooth greyish to black bark
- Male and female shrubs should be planted within 40 ft of one another to ensure adequate pollination
- Greenish to yellowish-white flowers
- Fruit is 1/4 inch in diameter with scarlet red to orange coloring
- Fruit is eaten by many small mammals and more than 48 species of birds

Photo Credit: J. McMillian

If you have questions, please contact JLW CISMA Coordinator Dr. Shikha Singh at shikha.singh@macd.org or (517) 395 - 2089.

Visit our website for more events and resources: **jlwcisma.weebly.com**

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