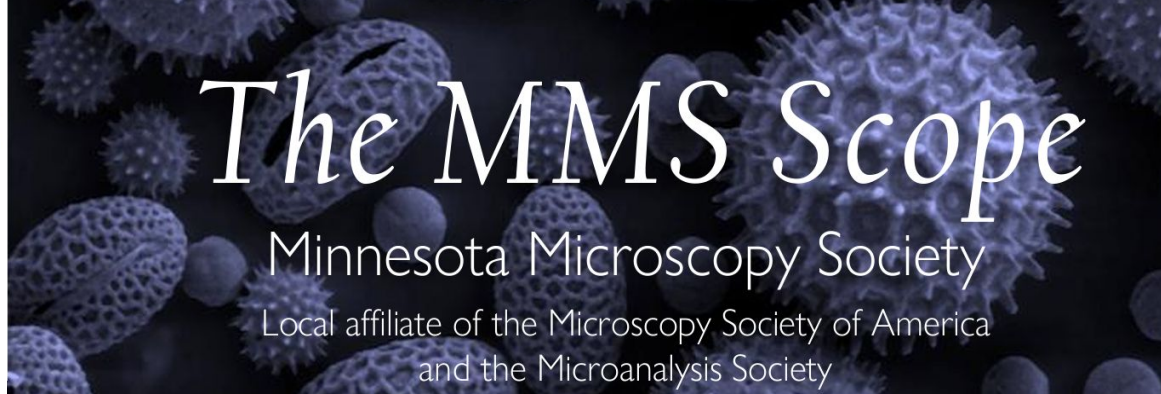




The MMS Scope

Minnesota Microscopy Society

Local affiliate of the Microscopy Society of America
and the Microanalysis Society

Fall 2025 Issue

About this issue &
quick links:

MMS Events

Click [HERE](#) to go to MMS
Events page

Upcoming Events

MMS Fall Kickoff

Nov. 13, 5:15-7:45 pm

Urban Growler Brewing

→ Storm Kettelhut,
Fisheries Specialist

January Virtual Event, TBA

Inside this edition

- A Letter from the President
- M&M Summary
- Election Results
- Project Micro Update
 - ◆ Volunteers Needed!
- Cash Flow Summary
- MMS Corporate Sponsors

MMS Member Dues

Please remember to submit
your membership dues for 2025
calendar year.

Click [HERE](#) to submit

MMS Fall Kickoff

SPEAKER

Storm Kettelhut

Fisheries Specialist with the
Minnesota Department of Natural Resources

TOPIC

"Fisheries Management Under a Microscope: The
Applied Science of Otolith Aging"

DATE

Thursday, Nov. 13, 2025

LOCATION

In person at

[Urban Growler Brewing Company](#)

2325 Endicott St., St. Paul, MN 55114



REGISTRATION

[MMS Events](#)

Registration required. Deadline: Wed, Nov 5th

COST

\$30 for members, \$40 non-members, \$15 for students
(fee includes dinner and talk, but does not include
beverages)

SCHEDULE

5:15-6:00 pm Check-in and Social

6:00-6:45 pm Dinner (Tomato Pasta Cavatappi
and baked potato bar)

6:45-7:45 pm Speaker: Storm Kettelhut

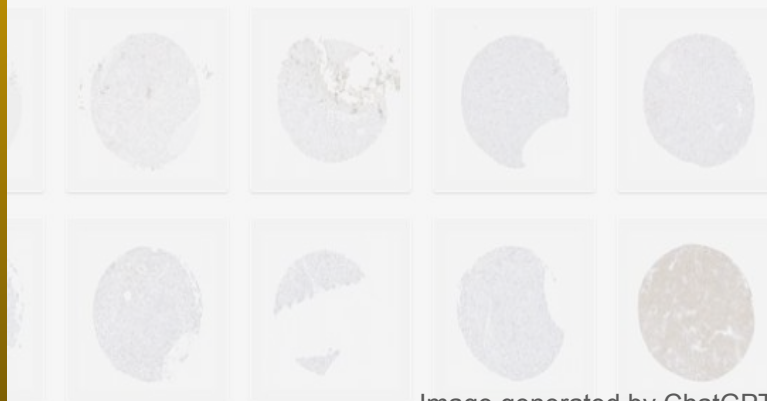


Image generated by ChatGPT



Storm Kettelhut, MN Dept. of Natural Resources

“Fisheries Management Under a Microscope: The Applied Science of Otolith Aging”

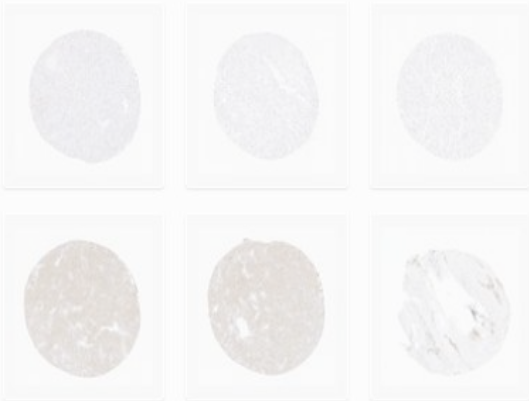
ABSTRACT

Angling in Minnesota is a multibillion-dollar industry comprised of over 1.7 million recreational and commercial users. Sustainable management of the nearly 4,500 lakes and 16,000 miles of rivers and streams this fishing industry is reliant on has long been entrusted to the Minnesota Department of Natural Resources (DNR). Some of the earliest fisheries management techniques, such as population monitoring, fish stocking/removal, habitat enhancement, and harvest/use regulations, are still imbedded in the fundamentals of Minnesota’s fisheries management for those waters; however, the ever-evolving science guiding these practices has drastically changed the implementation and effectiveness of said techniques. One of the most significant advancements resulting in improved management practices, has been the adoption of fish aging via otoliths, a calcium carbonate structure located within the inner ear of bony fish. When prepared and viewed under a microscope, otoliths provide markedly more accurate age assignments than previously employed methods. An increase in aging accuracy has had far reaching implications for how fisheries biologists manage a wide range of species in Minnesota.



SPEAKER BIO

Storm Kettelhut is a Fisheries Specialist with the Minnesota Department of Natural Resources. He has worked for the DNR for over six years with a broad range of fisheries management experience. His work extends from leading Walleye fingerling production in the Glenwood area to providing perspective on navigating the potential effects of angling-related technology on Minnesota’s recreational fisheries as a member of the DNR’s Technology Workgroup. Prior to pursuing a career in fisheries, Storm served three years active duty as an infantryman with the U.S. Army, including a combat deployment to Afghanistan. Upon completing his military service, he attended North Dakota State University, earning a B.S. in biology with an emphasis on conservation biology and fisheries management. He later attended graduate school at the University of Illinois before starting a career with the Minnesota DNR.



A Letter from our MMS President

By Rachel Heussner

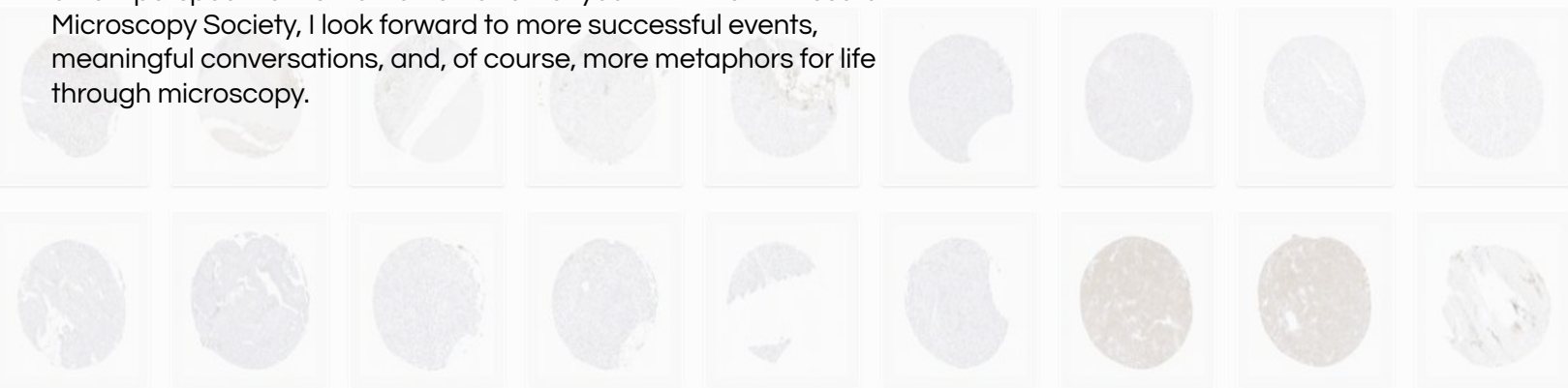
Prior to being elected president of the Minnesota Microscopy Society, I had spent nearly four years completely immersed in the world of microscopes: discussing them, installing them, training others on them, and, admittedly, just playing with them. From everyday phase microscopes used for counting cells to advanced multiphoton microscopes for observing active processes in living tissue, my experiences with these instruments have taught me more than I could have imagined.

One lesson stands out: every decision involves trade-offs. One choice isn't always better than another, but it is important to be intentional about priorities. In microscopy, there is a fundamental compromise between resolution, sensitivity, and speed. No system can maximize all three at once. The same is true in life: we constantly balance work, rest, and fun. While each factor is important, what matters most is being aware of the trade-offs and optimizing for the values that matter most to us.

Another lesson of microscopy: complexity exists at every scale, and no single perspective reveals the whole picture. By utilizing instruments with different levels of resolution, we can appreciate that protein structures at the nanoscale are just as fascinating and informative to a system as cell behaviors at the microscale. Similarly, in life, developing an appreciation for the unique challenges and dynamics at each scale - whether individual, community, or global - helps us build context, perspective, and empathy.

And finally: when in doubt, try turning it off and back on again. With microscopes, as with life, sometimes issues can't be solved by overthinking or excessive troubleshooting. The best solution is often to unplug, step away, and reset, clearing the metaphorical cache before trying again.

I hope each of you found time this summer to rest, reflect, and discover a new perspective. As we kick-off another year with the Minnesota Microscopy Society, I look forward to more successful events, meaningful conversations, and, of course, more metaphors for life through microscopy.



M&M 2025 Summary

By Gail Celio, MSA representative

The 2025 Microscopy & Microanalysis (M&M) meeting was held in Salt Lake City, Utah from July 27-31. The surrounding mountains were an impressive sight as the convention center was located in a relatively lower area of the city. With a nickname like "The Beehive State", it's a miracle that I didn't return home with pints of honey-related treats.

Monday's first Plenary speaker, Juan Carlos Iodrobo from the University of Washington and the Pacific Northwest National Laboratory, discussed his lab's efforts to use EELS combined with cryogenic STEM to characterize materials. He was followed by Bridget Carragher from the Chan Zuckerberg Institute for Advanced Biological Imaging. She briefly covered the development of cryo-TEM and cryo-electron tomography over the last decade, and presented advances in automation and machine learning to make those modalities even more informative.

This year's M&M also hosted the 18th Interamerican Congress on Microscopy with the Interamerican Committee of Societies for Electron Microscopy (CIASEM). It was a great opportunity to learn more about research going on in Central and South America. In addition, some of my favorite presentations at the conference covered volume-EM with plants, data preservation and ethical image handling, increasing engagement in science education, and mental health in microscopy.

It was a good time in the dry heat of SLC, and I'm looking forward to the 2026 meeting that's just a hop, skip, and jump away in Milwaukee!



The 2025 M&M welcome sign.



Plenary speaker Bridget Carragher gives her presentation.



Gail's favorite sticker from the event.



Badge ribbon culture remains strong at M&M!



MSA President Paul Voyles passes the Grand Poobah hat to President-Elect Grant Jensen.

Election Results and Upcoming Events

MMS officer election results from the 2025 Spring Symposium:

- President Elect – Elise Imbertson
- Secretary – Patti Sanft
- Treasurer – Dave Burleson

Upcoming Events:

- January Virtual Event, TBA
- MMS Annual Spring Symposium, May 1st, 2026

2026 MMS Spring Symposium

Date: May 1, 2026

Location: Minnesota Landscape Arboretum, Chaska, MN

Save
the
Date

Why did the scientist break up with the microscope?
Answer: They just couldn't see eye to eye.





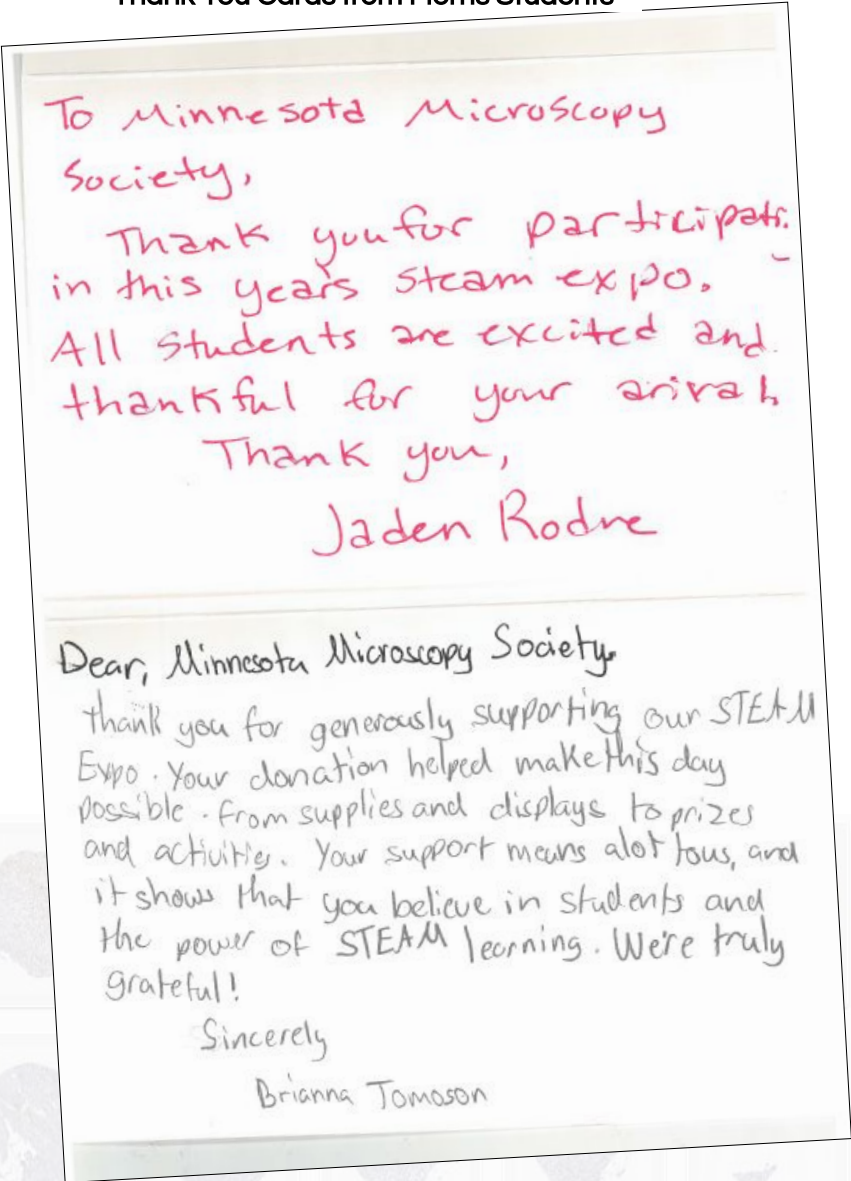
Project MICRO Update

By Jeff Payne

Morris Area Science Expo (April 17)

Project MICRO participated for a second time at the Morris (MN) Area Science Expo in Morris, MN. Jeff Payne, Rachel Heussner, and Patti Sanft hosted the booth. Rachel brought a Zeiss Primostar 3 compound microscope to complement our standard array of microscopes. Approximately 175 potential microscopists in grades 3-12 stopped by throughout the day. It was a very fun event!

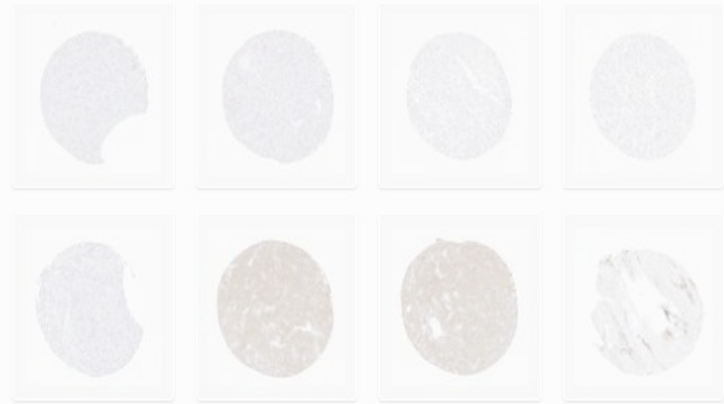
Thank You Cards from Morris Students



Jeff Payne at Morris Science Expo



MMS tables at Morris Science Expo





Project MICRO Update

Bell Museum (June 14)

The University of Minnesota Bell Museum held their SciPride event that highlights scientific research by members of the LGBTQIA+ community at the university. Gail Celio, Mary Brown, and Laurel Schuck from the UMN University Imaging Centers hosted a table that included demonstration kits and microscopes loaned by Project MICRO. Over 300 people attended the event, and many of them solved the mysteries of pirate treasure and kitchen powders!

Lake Maria State Park (June 14)

Jeff Payne led activities at Lake Maria State Park. About 25 very engaged attendees spent time investigating specimens provided by MMS as well as items found in the park. A brother/sister combo also "took the reins" in printing images from the stereoscope.

Cellula - Sabathani Community Center (October 23, 24, 25)

MMS will provide microscope activities at Z Puppet Rosenschnoz's production of *Cellula* at Sabathani Community Center in Minneapolis. Activities run 30 minutes *before* and *after* each show on all days.

Cellula is a glow-in-the-dark performance of mitosis through the lens of mother and child. If you have kids or are a kid at heart, you will enjoy this show. For more info: <https://zpuppets.org/cellula-2>

Performance times:

October 23 (5:30 p.m.)

October 24 (7:00 p.m.)

October 25 (11:00 a.m., 7:00 p.m.)

**Future
Event**

Volunteers needed! If you are interested in volunteering to help with the microscope activities for any of the Ceullula dates, please contact Jeff Payne (jeffrose.payne@gmail.com). No prior experience needed.



SciPride attendees use microscopes to look at unknown sands and powders.



Mary Brown guides a visitor through the display at SciPride.



Moss at Lake Maria State Park



Kids swarming the MMS tables at Lake Maria State Park

MMS Cash Flow Summary

1/01/2025 through 10/15/25

Financial Update

MMS Cash Flow Summary 01/01/2025 through 10/15/2025

INCOME

Donations to MMS		200.00
Dues		
Corporate	2100.00	
Patron	450.00	
Regular	300.00	
Sustaining	500.00	
Total Dues		3,350.00
Interest Income		406.98
Miscellaneous Income		0.00
Meeting Income		0.00
Spring Symposium Income		<u>6,870.00</u>

TOTAL INCOME **10,826.98**

EXPENSES

Credit Card Fees		287.69
MMS Sponsored Donations		400.00
Insurance		146.12
Meeting Expenses		
MMS Regular Meeting Expenses	559.88	
Total Meeting Expenses		559.88
Miscellaneous		100.00
Newsletter		200.00
Website		99.73
Project Micro		52.25
Spring Symposium Expenses		<u>9,850.28</u>

TOTAL EXPENSES **11,695.95**

OVERALL TOTAL **-868.97**

MMS Corporate Sponsors

Corporate Sponsors are the backbone of financial support for MMS. These Members make it possible for the Society to support Project Micro and cover many expenses of regular meetings and the Spring Symposium. MMS gratefully acknowledges the corporate sponsorships provided by the following companies. To become a Corporate Sponsor, complete and return the MMS membership form at the end of the newsletter or go to <https://mnmicroscopy.org/membership>.

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Ebatco

Esi (Crane Engineering now part of Esi)

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If any sponsors are missing from this list, please contact Jason Heffelfinger (jason.r.heffelfinger@medtronic.com).

MMS Sustaining Members and Patrons

The Minnesota Microscopy Society sincerely thanks our Sustaining and Patron Members. These Members provide financial support to the organization above the standard membership. This additional support makes it possible for MMS to maintain financial well-being. To become a Patron or Sustaining Member, complete and return the MMS membership form at the end of the newsletter or go to <https://mnmicroscopy.org/membership>.

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Hyunwook Lee	The Hormel Institute	Daniel Westholm	The College of St. Scholastica

MMS Board & Officers 2025-2026

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Past President: Erik Stephenson, 3M Transportation & Electronics Business Group, St. Paul, MN; ehstephenson@mmm.com

President Elect: Elise Imbertson, 3M Corporate Research Analytical Laboratory, eimbertson@mmm.com

Secretary: Patricia Sanft, Georg Fischer, Apple Valley, MN; patricia.sanft@georgfischer.com

Treasurer & Website: David Burleson, Ecolab, St. Paul, MN; david.burleson@ecolab.com

MSA Representative: Gail Celio, University Imaging Centers, U of MN, St. Paul, MN; celio001@umn.edu

Project MICRO Director: Jeff Payne, retired, St. Paul, MN; jeffrose.payne@gmail.com

Corporate Liaison: Jason Heffelfinger, Medtronic, Brooklyn Center, MN; jason.r.heffelfinger@medtronic.com

Newsletter Editor: Danielle Westholm, Duluth, MN; dmwestholm@gmail.com

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Cristina Foley, 3M
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Jeff Salisbury, Mayo Clinic
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Doug Stauffer, Bruker
Eden Prairie, MN; douglas.stauffer@bruker.com

Dan Westholm, The College of St. Scholastica,
Duluth, MN dwesthol@css.edu

Join Or Renew Your Membership

Annual membership follows the January 1 to December 31 calendar year. To join or renew your membership, please visit <https://mnmicroscopy.org/membership>. There is also a membership information form on the webpage that we ask everyone complete once per year to ensure we have your latest contact information. If you would rather renew your membership via check, please complete the form below and mail it to our Treasurer.

All microscopists are urged to support their society at one of the membership levels below. Often supervisors will support MMS memberships out of department budgets because they recognize it is an inexpensive way to maintain and increase the skills of their microscopists. If you have been a member for a while and recognize the value of MMS to the microscopist community, consider upgrading your membership to Patron or Sustaining.

MINNESOTA MICROSCOPY SOCIETY | MEMBER INFORMATION FORM

__ Dr. __ Mr. __ Mrs. __ Ms. First Name _____ Last Name _____

Business Affiliation _____ Phone _____

Street Address _____

City _____ State _____ Zip _____

Email _____ (newsletters will be emailed to this address)

Membership Level
☐ Student (free) ☐ Basic (\$10-24) ☐ Patron (\$25-99) ☐ Corporate/Sustaining (≥ \$100)

Professional Memberships
☐ MSA Member ☐ MAS Member

Payment
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David Burleson, MMS Treasurer
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St. Paul, MN 55117
Email: treasurer@mnmicroscopy.org