

M.A.P.S *Digest*

Official Publication of
Mid-America Paleontology Society
<http://www.midamericapaleo.org>

Volume 45, Number 1
Jan.-April 2022



“A LOVE OF FOSSILS BRINGS US TOGETHER”

Calendar

NOTE: Until further notice, all MAPS monthly meetings will be held virtually via ZOOM, NOT in-person in Trowbridge Hall. Check the website and watch for e-mails for further information.

2022

March 19 & 20 (Tentative)

ESCONI Gem, Mineral, & Fossil Show

Location: DuPage County Fairgrounds, Wheaton, IL
Sat. 10:00 am-5:00 pm; Sun. 10:00 am-4:00 pm

Info: www.esconi.org

March 26 & 27

CVRMS Show

Location: Hawkeye Downs, Cedar Rapids
Sat. 8:30 am-6:00 pm; Sun. 9:30 am-4:00 pm

Theme: Iowa's Industrial Minerals

Info: www.cedarvalleyrockclub.org

October 21-23

MAPS EXPO XLIII

Location: Orr Building
Illinois State Fairgrounds
Springfield, Illinois

Theme: Lagerstätten

Keynote Speaker: Don Bissett

Topic:

Info: www.midamericapaleo.org

****EXPO 2022 Info & Registration will appear in the May Issue of the MAPS Digest****

Contributions to Digest Needed

The Digest editors encourage the members to submit articles for publication in the Digest issues. The Digest is for the members and should reflect their interests. If you have specimens that you collected and would like to share with other members or would like to describe a favorite collecting site, please write an article in Word, Times New Roman size 12 font, single spaced with one inch margins, and send to the editors. Photos and diagrams can be e-mailed separately or incorporated in the article.

John: Fossilnautiloid@aol.com

Chris: CDCozart@aol.com

Call for Papers

The theme for the **2022 EXPO** is **Lagerstätten**. Any paper dealing with fossils, stratigraphy, or site-specific paleontology relating to any Lagerstätten would be appreciated. The papers should be in Word, Times New Roman, size 12 Font, single spaced with one inch margins, and e-mailed to one of the Digest Editors by the **last week of June 2022**. Diagrams/Photos can be sent separately or imbedded in text.

John: Fossilnautiloid@aol.com

Chris: CDCozart@aol.com

DUES INFO

Please send your \$20 2022 MAPS dues to:

Dale Stout
2237 Meadowbrook Drive S.E.
Cedar Rapids, Iowa 52403

About the Cover

Pictured is a crown of the Middle Silurian Waldron Formation crinoid *Eucalyptocrinites crassus* from Shelby County, Indiana. This specimen preserves the inner arms between the more robust partitions. Photographed by John A. Catalani.

Mid-America Paleontology Society Board Meeting June 9 2021, via Zoom

Board members present: Marv Houg, Tom Williams, John Catalani, Jim Preslicka, Tiffany Adrain (scribe).

Also present: Dan Cooper, Mary Boesdorfer

Marv called the meeting to order at 7.37pm.

Minutes of the May meeting were circulated previously by email. John motioned to accept, Jim seconded. Minutes accepted.

Treasurer's Report: Savings: \$2176.94; Checking: \$11,215.28; \$140 in deposits, \$8.48 bank fees; \$100 to reserve room for Live Auction; \$314.34 to Allegra for printing newsletter.

Expo Taxes: Marv confirmed that he will send list of Expo dealers to local tax office within three weeks of Expo. Dan will send list of motel dealers. Tom and Dan have tax forms. Motel show will have a different rate and requires a separate tax form. John will add this information to the next Digest. Dan has the tax number for the motel show. Marv will get one for Expo. Forms set up for prior Expos at Macomb should be submitted with \$0 declared and a new one submitted for Springfield Expo so payment goes to the correct city. A tax ID is required for wholesalers and all sales must be to another wholesaler

Keynote Speaker: room is booked at the Ramada.

Live Auction: will be at the Ramada.

Thursday set up: Dan will ask dealers to assist with set-up.

Advertising:

- Dan is advertising the motel show on Facebook.
- Mary has list of online community calendars and will send Marv details of newspaper contacts. Flyer for school distribution should be submitted in early September, mostly electronic. Marv will send Mary the current flyer. Mary will contact TV stations (e.g., Channel 20) and ask about MAPS when submitting LOESS Club information in early August. Tom will do any TV visit.
- Tiffany has submitted an event to the MyFossil calendar. Marv will send Tiffany the flyer to distribute to MyFossil clubs.
- John sent flyer to all dealers with Expo information Digest.
- Tom suggested a large poster to display at LOESS Club show. Marv will ask Sharon if she has a digital file of the Ordovician poster.
- Everyone to share event on social media.

Tom reported 88 tables sold (80 paid for).

John reported all but one Expo Digest article received. He will contact remaining author in July. Digest is 102 pages now. Final Digest will be just under 130 pages.

Displays: lots of room for displays around the fountain.

Overnight security: not yet confirmed, but personnel can be hired from the local Sheriff's Department. Mary can send contact details to Marv if needed. Fairgrounds police patrol all night.

Show Insurance: with Relion.

New Business:

Reformatted reprints of 2010 Expo Digest (Ordovician) will be \$15 each. There will be an additional Digest prior to Expo.

Next meeting: July 21, 2021 at 7.30pm via Zoom.

Meeting adjourned 8.45pm.

Mid-America Paleontology Society Board Meeting July 21, 2021, via Zoom

Board Members present: Marv Houg, Tom Williams, Karl Stuekerjuergen, Jim Preslicka, John Catalani, Bob Rondinelli, Tiffany Adrain (scribe).

Also present: Ed Wagner, Mary Boesdorfer

Marv called the meeting to order at 7.37pm.

1. Reports

- Minutes of last meeting: Expo Keynote Speaker is at the Ramada Inn, not the Northfield. John motioned to accept Minutes with this correction. Jim seconded. Minutes accepted with correction.
- Treasurer's Report: Jim emailed the report prior to the meeting. Karl motioned to approve, Tom seconded. Report was approved. Jim received a packet of materials for securing the Orr Building for Expo next year (20-22, October, 2022), that must be returned within 30 days. Tom will send him a copy of this year's application.

2. Expo:

- Expo insurance will be issued after August 2nd. \$1 million coverage is required. Insurance certificate must be sent to the Fairgrounds 20 days before the show. Marv will check that insurance amount is correct.
- Tables: c. 135 table booked. Marv is working on the table layout. Extra tables requested during week before show will be an additional \$10/table. John will add this information to the pre-Expo Digest. Marv will determine deadline for ordering extra tables.

- Expo Digest: John has received all the promised articles for 114 pages and will submit for printing in September, based on how many copies were printed last year.
 - Programs: no report.
 - Advertising: Bob Kurdelmeyer created a Facebook post. Please share widely. Mary sent contact information to Marv for community calendars. Mary will forward information for Illinois Times AD pricing to Marv. Tiffany will help Marv with ad submission. Mary will submit school “backpack” advertising. Tiffany will send flyer to all Board members for circulation. Tiffany will forward flyer to clubs listed on MyFOSSIL, inviting new fossil-only dealers with Tom’s contact information.
 - Kids’ Activities: Jed Day, Illinois State University has offered to do the outreach activities and will send students. MAPS members can take Tiffany’s give-away materials to Expo. Tiffany will include free copies of a new kids’ fossil hunt book.
 - TV advertising: Tom will provide talking points and Carol or Mary can do any interviews.
 - Concessions: Ed organizing – under control.
 - Admission table: Jed’s students might help? Ed advised two entrances as one is a long walk from parking. Need to hand stamp people who want to leave and return.
 - Tom is creating dealer badges, 2 per table, spare ones are not free passes.
 - News Release: Dale working on it. No update.
 - Show security: John moved that security from the Sangamon Co. Sheriff’s Office be hired for Friday and Saturday nights from 5pm to 7am (14 hours per night for 2 nights), at a total cost of \$840. Tom seconded. Motion passed. Ed will arrange with Sangamon Co. Sheriff’s Office.
 - Live Auction: at Ramada. Tom will get room dimensions.
 - Cleaning: Ed will mention MAPS EXPO to “All About Cleaning.” Service is required for Sunday night/Monday morning. Tom suggested hiring cleaning during the show, especially in light of Covid, including wiping lunch tables, cleaning restrooms etc. Marv will contact All About Cleaning for a quote. Jim will send him contact details.
3. New Business:
- Extra Digest will be #4 and will be mailed out next week.
 - Dan Cooper gave Marv a list of dealers at the motel show. Tom will compare with MAPS dealers.
 - Covid: possibility of restrictions or cancellations due to Delta variant. MAPS will provide masks and signs if CDC recommends. John suggested getting masks now. Bob will look into that.
 - John motioned to accept Mary Boesdorfer as an honorary MAPS member. Jim seconded. All approved. Welcome Mary!

4. Next meeting: **Wednesday, August 18th at 7.30pm** by Zoom.

Bob motioned to adjourn the meeting. Jim seconded. Meeting adjourned at 8.57 pm.

Mid-America Paleontology Society Board Meeting August 18, 2021, via Zoom

Board members present: Marv Houg, Doug DeRosear, Tom Williams, John Catalani, Dale Stout, Karl Stuekerjuergen, Tiffany Adrain (scribe). Also present: Ed Wagner.

Marv called the meeting to order at 7.37pm and circulated the agenda.

Minutes of the previous meeting were corrected: Additional tables are \$10 *extra* per table: a typo in Bob Rondinelli's name was corrected. Karl motioned to approve the minutes with corrections. Tom seconded. Minutes were approved.

Expo:

Tables: Tom reported that 141 tables are booked, including 132 sold, and the rest complimentary for PRI and Paleo Prospectors. Tom will check in with PRI.

1. Expo Digest: John reported 9 articles received, totaling 114 text pages. Will print 350 copies.
2. Programs: Dale listed program contributors. Needs one more program for Saturday. Marv will invite Dan Cooper. Waiting for speaker info for news release. Dennis Kolata's book "Fossils of the Upper Platteville Formation in the Upper Midwest – An Overview" is now available. Dale will bring projection screen. Marv will bring computer and projector.
3. Advertising: Rock and Gem has a free calendar. Dale will check and get the 2022 date in. Marv will ask Sharon to update flyer (correct location of Live Auction to Ramada). Tom will discuss TV spots with Mary and work with Mary on school advertising. Tiffany will email paleo societies listed on MyFOSSIL.
4. Activities: No displays secured yet. Jed Day asked about support for student helpers. Tiffany will contact him. Dale can pick up outreach materials from Tiffany.
5. Admissions: need volunteers to take admission fee. Hourly rota? Everyone should let Tom know if they are eligible for a free entry badge and how many they want. Karl asked about door prizes. Will have to get tickets if so. Hand stamp is needed for returning visitors.
6. Security: Ed contacted Sangamon County Sheriff's Office with a sign up.
7. Live Auction: Tom to get room dimensions.
8. Insurance: Certificate will be issued within 60 days of show start. Policy increased to \$1-million coverage.
9. Name badges: Dale will organize.
10. Covid update: Ed is monitoring Covid restrictions. The LOESS Club contract for the Orr Building

included a Covid addendum that outlined 18 requirements. Ed will scan and send to Marv. Bob Rondinelli had offered to look out masks. Will need hand sanitizer too. Dealers must bring own masks and sanitizer. Update flyer to reflect mask policy.

Marv discussed email from the Paleontological Society regarding donation.

Date of next meeting is September 22, 2021, at 7.30pm.

John moved to adjourn the meeting; Karl seconded. Meeting was adjourned at 8.30pm.

Mid-America Paleontology Society Board Meeting September 22, 2021, Zoom

Board members present: Dale Stout, John Catalani, Doug DeRosear, Karl Stuekerjuergen, Marv Houg, Tom Williams, Bob Rondinelli, Jim Preslicka, Tiffany Adrain (scribe)

Also present: Ed Wagner.

Marv called the meeting to order at 7.41pm.

Minutes of last meeting were emailed previously. Dale motioned to accept minutes with correct spelling of Karl's last name. Tom seconded. Minutes approved.

Treasurer's Report: circulated prior to meeting. Checking = \$10,943; Savings = \$2176.97. John moved to approve the report, Tom seconded. Treasurer's Report approved.

Expo

1. Marv sent in contract and insurance (Relion). Jim will send payment to Fairgrounds, Relion and All About Cleaning (\$700 + \$75 for tear down).
2. Security – rota posted with Sheriff's Office. Ed will check about Expo. Jim will take checks to pay sign-ups at end of show.
3. Tom reported 43 dealers attending. Requested 125 admit badges to sign and date.
4. Expo 2022 cards needed. Print 10,000.
5. Digest: 350 copies, 114 internal pages (of which 111 are manuscript text pages), 11 papers.
6. Programs: Dale reported some cancellations.
7. Advertising: Carol (Loess Club) is doing a TV spot for Channel 20 after the Loess Club meeting. Need to do school flyer. Ed is printing 200 flyers for local businesses. Tom asked Ed to display a poster at the Loess Club show and add flyers to display/ad table. Tiffany will work with Dale to get information entered into free calendars. Tom suggested taking videos for next year's advertising.
8. Kids' activities. Tom confirmed Jed Day providing activities. Tiffany has give-away fossils and new free fossil hunt book for kids if anyone wants to pick them up.

9. Admissions; Tom and Ed will update entrance plans after Loess Club show. Tom will accompany Ed to Orr Building on October 3 prior to Loess Club show.
10. Live auction: Tom to reserve Friday night dinner room and get dimensions of auction room. Masks will be required for Live Auction, enforced by hotel. Sign needed for door re mask requirement.
11. Sound systems: Tom and Ed will check hook-up at Orr Building, for announcements at main show. Ed will contact Loess Club AV person for advice. No PA required for Live auction or programs.
12. Silent Auction: Jim confirmed Amy will run silent auction if no other commitments.
13. Covid-19: no new applicable restrictions. Bob acquired several hundred masks for use at the show. Signs that masks are required should be posted at hotel and Orr Building.
14. Marv reported that other recent shows have had high attendance and brisk sales.
15. Volunteer needed to take minutes of Expo Board Meeting and Annual General Meeting. John will send minutes from the 2019 Expo to Tiffany.
16. Tom will update Marv re table layout for ESCONI and PRI.

The Paleontological Society enquired about cessation of MAPS donations. Jim reported checks were sent but never cashed. Board discussed restarting regular donation from 2021. Karl motioned to send the Paleontological Society the regular donations of 1) \$750 for General Fund; 2) \$250 for Strimple Award, for 2021. Dale seconded. Motion carried. Tiffany will inform Paleontological Society (as currently in correspondence). Jim will send checks by certified mail once updated address is received.

Next meeting: October 6th, by Zoom, at 7.30pm.

Dale moved to adjourn the meeting; Jim seconded. Meeting adjourned, c. 9pm.

Mid-America Paleontology Society Board Meeting October 6, 2021, via Zoom

Board members present: Marv Houg, Jim Preslicka, Tom Williams, John Catalani, Dale Stout, Karl Stuekerjuergen, Tiffany Adrain (scribe).

Also present: Ed Wagner, Mary Boesdorfer, Dan Cooper.

Marv called the meeting to order at 7.33pm and corrected the date of the agenda.

1. Minutes of the previous meeting were circulated. John motioned to approve, Jim seconded. Minutes approved.
2. Treasurer's Report: Jim confirmed insurance and building rental contracts and checks had been sent by certified mail.
3. Expo registration: Tom reported 150 tables sold plus 9 free tables (for Paleo Prospectors and PRI).

Tom sent an email to vendors reminding them to bring their own carts. Vehicles may be driven into the building and parked in the designated area on Friday and Sunday only.

4. Expo Digest: John reported copy had been sent to the printers and Digest will be ready the week of October 11. Dale will collect and take to Jim. John circulated web version.
5. Report on LOESS Club Show. Mary, Ed and Tom reported that attendance and sales were good (ATM had to be refilled), mandated Covid precautions were followed, and visitor contact was recorded through door prize sign-up. Ed will send a template of the sign-up to Marv. Asks visitors how they heard about the show. We will need door prizes from vendors.
6. Expo Advertising: Mary printed extra Expo flyers and distributed at LOESS Club show. Printing invoices should be sent to Jim. Tiffany submitted information to local calendars. Mary sent flyer for school distribution. Local TV interview on October 18 will cover hotel show too. Jim will update website re admission price, add flyer. Dale will provide Mary and Ed with abbreviated news release.
7. Supplies: Mary has masks and hand sanitizer for EXPO. LOESS Club will provide plastic for food tables. Ed will get 6 dozen donuts for coffee station and will need to be reimbursed. Mary will bring electrical cords and floor covers though may not be required by many vendors.
8. Admissions: Ed agreed to ask LOESS Club to help on the door. Some vendors have offered to help out, maybe students too. Mary advised what change to bring for admissions and in what quantities: \$300/10s; \$100/5s; \$50/1s for each entrance. Use a clicker to record visitor numbers. No tickets needed. LOESS had two tables for admission and two for door-prize sign-up to allow for social distancing. Ed/Mary will bring plastic divider walls.
9. Expo Layout: Ed advised that building should look full. Marv will move Programs to south end. LOESS Club will hang tarps on windows. Dale will bring projector screen. Tom will send images of LOESS Club traffic flow to Marv. Marv will order a few more tables.
10. Programs: Dale reported several cancellations. No fossil ID table needed. ID requests will be directed to relevant vendor or Board member. Dan Cooper agreed to give a program. Dale will check in with Jed Day and students.
11. Hotel show: Dan has facemasks and hand sanitizer for hotel show.
12. P.A. system: Ed will get a quote from the person who runs the LOESS Club system.
13. Activities: Ed offered to bring Rusty the T. rex. Tiffany will give Jim boxes of fossil hunt book to give away. Old Digests will be available for sale.
14. Keynote speaker room has 60-70 people capacity.
15. Vendor ID: Marv proposed to purchase the following ribbons: 100 vendor, 15 Board Member, 25 staff, 5 exhibitor, and 100 badge holders with lanyards for a total of \$110 plus tax and shipping. Dale motioned to approve; Jim seconded. Motion approved. Tom will collect them up again as Expo ends.
16. Auction: Paleo Prospectors dig is for 2023.

17. EXPO 2022: Tom suggested changing information announcement to mid-May rather than mid-February. Remove "Membership in MAPS is not required except for table rental." Print cards in yellow. Marv will ask Sharon to make corrections, will send out for checking. John will send to Allegra for printing.

Old Business: Jim waiting for address from Paleontological Society to send donation.

Next meeting: November 3rd, 7.30pm for EXPO debrief.

Jim motioned to adjourn the meeting. Dale seconded. Meeting adjourned at 9.16pm.

Mid-America Paleontology Society Board Meeting November 3, 2021, via Zoom

Board members present: John Catalani, Jim Preslicka, Karl Stuekerjuergen, Marv Houg, Dale Stout, Tom Williams, Bob Rondinelli, Tiffany Adrain (scribe).

Also present: Mary Boesdorfer, Ed Wagner.

Marv called the meeting to order at 7.39pm.

1. Marv thanked Mary, Ed and Carole for all their help with organizing MAPS EXPO and the LOESS Club for their assistance during the show.
2. Minutes of the last (pre-Expo) Board Meeting were circulated previously. Jim motioned to accept the Minutes, Bob seconded; Minutes approved.
3. Treasurer's Report: Jim read the Treasurer's Report as follows: checking \$13552.87; savings \$2196.98. Recent expenditures: Expo security (\$1,200), Paleontological Society donation (\$1,000), mailing costs (83.02). Marv needs to be reimbursed for speaker's room and dinner, and badges. Dr. Kolata donated his speaker honorarium to MAPS. Entry takings totaled \$879. No outstanding LOESS Club expenses to be reimbursed. Karl asked about the concession takings (to be retained by LOESS Club), still in calculation. Final bill is pending from the Fairgrounds (table hire and associated labor).
4. Donation to LOESS Club: Dale motioned to donate \$500 of the entry takings to LOESS Club in recognition of their assistance. Voting was postponed to the January meeting so that outstanding expenditures can be confirmed. Marv will add to the agenda for the January meeting.
5. Expo feedback:
 - Too warm in building (temperature is uneven in the building, either a/c or heat).
 - Preferred long rows of tables for easier browsing.
 - Signage and local advertising lacking. Will add more signage and local advertising next year. Ed suggested a route to put up signs. LOESS Club has sign holders and cement blocks to put them in. Tom will provide mileage and directions for John to put in Digest.
 - PA system: Dale suggested bringing CVRMS PA system next year in addition to this year's. LOESS could hang on to it if they wanted.

- Attendance complaint (there was heavy rain on Sunday)
 - Open to public slightly later (9am) to give dealers more preparation time (building is open from 7am for dealers).
 - Early Sunday closing excludes morning church attendees. Tom stated that dealers should stay until end on Sunday or leave Saturday night (rather than leaving mid-Sunday during opening times).
 - Thursday night set-up: MAPS Board members need to be present during Thursday set-up for latecomers and liability. John will emphasize 8pm closing for Thursday set-up. Otherwise, set-up was efficient.
 - Dealers like the facility and sales were successful. Lots of interest in coming back next year.
 - Need a wider range of Silent Auction donations to cater for kids. LOESS Club willing to donate spare fossils.
 - Tom will encourage dealers to engage customers.
 - Hotel was good with proximity to good restaurants.
6. Tom asked to be added to the MAPS checking account so he can pay advertising and local reservations directly, rather than having Jim mail checks. Plan for PRI expenses (\$600).
7. Speaker room: ask Dan if room was covered through hotel show (did Dan pay anything?) and can be reserved for speaker next year, plus a smaller room for the auction. Tom will check with the Northfield about costs and 2022 booking.
8. Advertising:
- Ads: Put ad in Illinois Times (split cost with Dan, \$570 for two ads in the Fall Guide (late August) and issue before the show. Also advertise/announce in Rock and Gem and Senior Times. Add to Midwest Federation Calendar of Events.
 - Social media: additional person needed as back-up to run Facebook page. Dale will ask contact. Use dealers' offers of social media assistance and communication with fossil dealers. Tom will contact people who offered.
 - Ed working on the sign-in sheets to provide list of email addresses and cities (lots of visitors from Missouri and Bloomington/Normal area, and smaller town outside Springfield). Send out flyer to email addresses next year. Ed had sent Expo information to LOESS Club show sign-ins.
 - Ed drove dinosaur around with signage.
 - 2022 generic flyer with essential information will be available for distribution to other clubs by January. Include local fossil clubs in distribution.
 - Compile list of fossil clubs and contacts and send info and invite dealers earlier. John reminded Board that Expo was designed for members to meet, exchange, and sell fossils rather than selecting dealers.

Variety provides better sales.

9. Floor plan: layout was well-received. Silent Auction will be moved to the middle, speaker to south corner near front desk. Allow room for expansion and agree a cut-off point, e.g., 50 extra tables. Marv will adjust floor plan accordingly.
10. Kids' activities: Not many kids due to Covid. Tiffany will contact Jed Day for feedback. Two boxes of the Rusty and Dunky's Fossil Hunt Book are available to take to CVRMS show.
11. Old Business: none.
12. New Business:
 - New schedule of MAPS events to accommodate Fall Expo. Regular Member and Board meetings will be January, February, September, and November (2022: January 8, February 12, September 10, November 12). The fieldtrip will take place in April. Expo in October.
 - Election of Board Officers: Nominating Committee: John Catalani, Dale Stout, Karl Stueckerjuergen. Please nominate yourself or others for a position.
 - Expo Manual: Marv will develop a manual for organizing Expo.
 - Member Obituary: Blane "Pappy" Phillips Sr. passed away Oct. 3, 2021. Marv will write an announcement for the Digest.
 - Next Digest issue is in January. Send any Expo photos to John and Marv.

Dale motioned to adjourn the meeting. Jim seconded. Meeting adjourned at 9.30pm.

2021 MAPS EXPO SHOW





2021 MAPS EXPO SHOW AWARD WINNERS

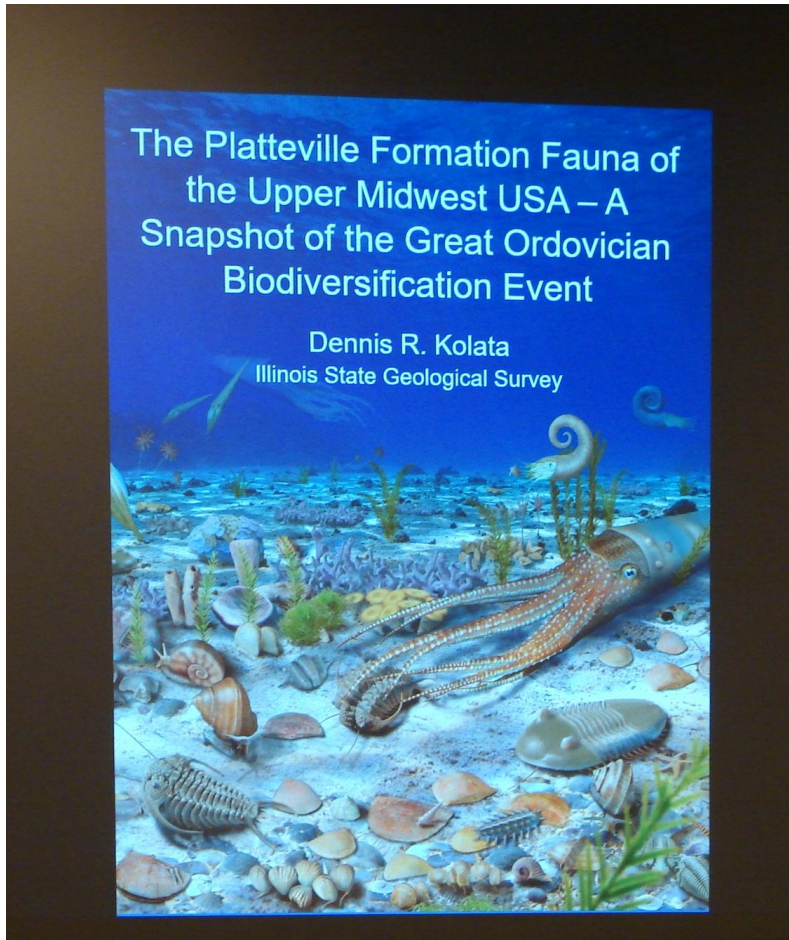


Presentation of the Don Good Award to Don Bissett by MAPS President Marv Houg.



Presentation of the Sharon Sonnleitner Award to Mary Boesdorfer and Ed Wagner by MAPS President Marv Houg.

2021 MAPS EXPO Keynote Address



Title slide of the EXPO XLII keynote talk presented by Dr. Dennis R. Kolata.



Dr. Kolata presenting his keynote talk to the EXPO XLII audience.

An Ephemeral Occurrence of Pyritic Microfossils at Ft. Sheridan, Illinois Andrew Ek

Introduction and Geologic Setting

A transitory lens of black sand was sampled and collected at Ft. Sheridan beach on the north shore of Chicago in late October of 2020. This conspicuous lens occurred just south of where Janes Ravine discharges into Lake Michigan. The coastal bluffs and ravines along this shoreline expose interbedded lacustrine clay, sand, silt and diamicton of the Wadsworth Till member. These glacial and lacustrine sediments were deposited during Late Wisconsin glaciation and accumulated to form the Highland Park Moraine, the face of which is exposed in the vertical bluffs at this locality. This end moraine overlies Silurian dolomitic bedrock. The beach contains glacial till, random slabs of concrete embedded in the sand left over from a century of US Naval operations. Massive Silurian boulders were deposited at the foot of the bluffs to help prevent further natural erosional processes which would eventually level the bluffs to equilibrium with the lake in about a thousand years (Roevy & Borucki, 1994). Anthropogenic interference with the construction of jetties, piers, boat harbors and groins has disrupted the natural process of littoral transport of sediment, sand and gravel along the entire Lake Michigan coastline which was formerly a continuous southward pathway terminating at the Indiana Dunes. It should be mentioned that Ft. Sheridan naval training base closed in 1993 and major cleanup of toxic and radioactive materials in this area have been completed for environmental coastal restoration; however, although highly unlikely, there is still the possibility of unexploded ordnance, particularly in the northeast section (USACE, 2014).

Method of study

Two samples of black sand were collected. The first sample was collected on 10/25/20. This was a densely packed black sand. The second sample was collected a week later, however the lens had shifted and dispersed southward, heavily intermingled with the typical quartz and carbonate sand grains. A subsequent visit revealed the black sand had completely disappeared. Both samples were immersed in 3% H₂O₂ to remove organic matter, and then rinsed. Carbonates were dissolved with 10% HCl. The immediate reaction was vigorous effervescence and foaming a rusty orange color. This is not a typical reaction of “heavy mineral” black sands. The samples were then rinsed with distilled water, dried on a hot plate and sieved to remove pebbles. Magnetic minerals were removed using neodymium magnets. The samples were then examined with reflected light microscopy.

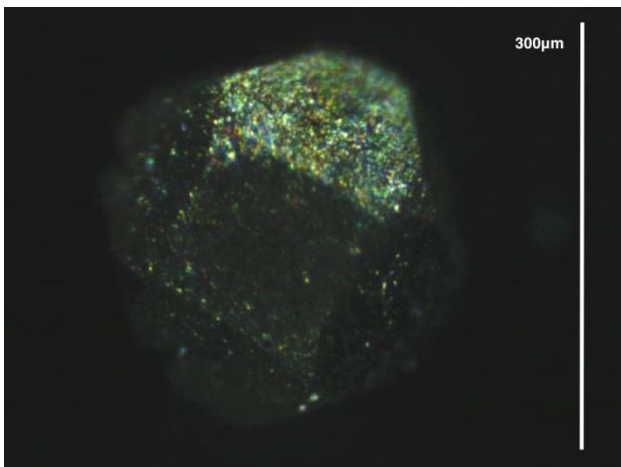


Fig. 1a

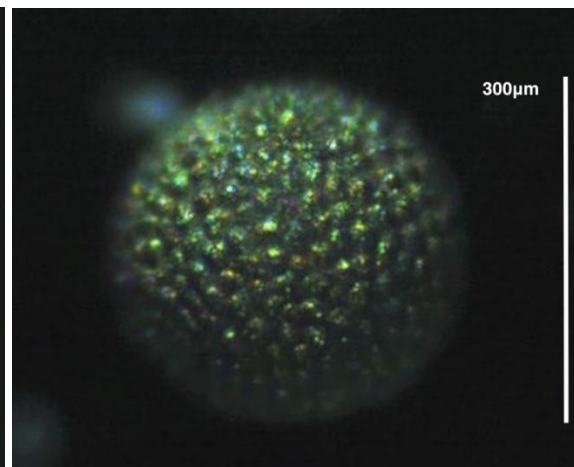


Fig. 1b

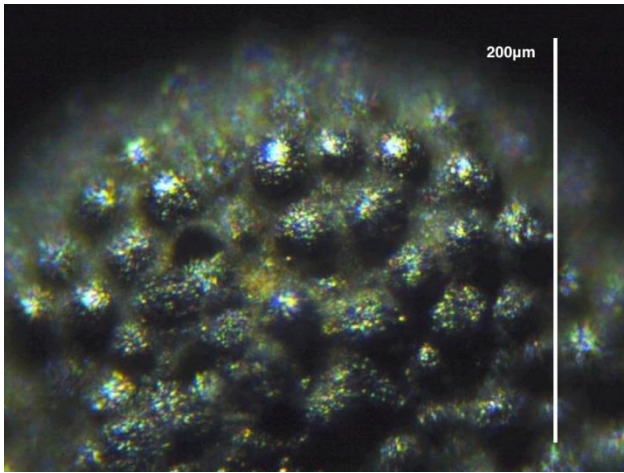


Fig. 1c

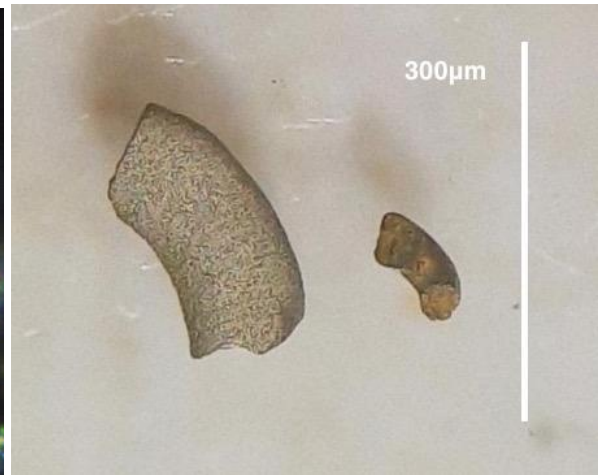


Fig. 2

Observations

Euhedral and polyframboidal pyrite crystals (Fig. 1a-c), pyritized worm tubes of unknown identity, tentaculitids, fragmental spiral shelled microconchid, and/or microgastropod remains (Fig. 2) were recovered from the black sand. The origin of this material likely derived from Devonian glacial erratics. Due to the delicate nature of the framboids and microfossils, the host erratics must have been very recently disaggregated at the time of discovery. Pyrite framboids are defined as microscopic spheroidal to sub-spheroidal clusters of equidimensional and equimorphic pyrite microcrystals (Rickard & Ohfuji, 2005). These are formed mainly in sedimentary rocks via monosulfide precursors mackinawite and greigite. Bacterially precipitated FeS, the precursor of framboidal pyrite, is highly absorbent. Decaying organism remains can lead to localized iron sulfide deposition because they provide food for sulfate reducing bacteria. Mucus produced by polychaete and/or other unidentified burrowing worms may also provide a point of nucleation as seen within some tubes containing pyrite spheroids (Fig. 3). The slime produced by some of these organisms can persist for some time in the burial sediments. Burst nucleation and microcrystal growth of framboids can form within 3-5 days in anoxic environments (Scheiber, 2002, Rickard, 2019).

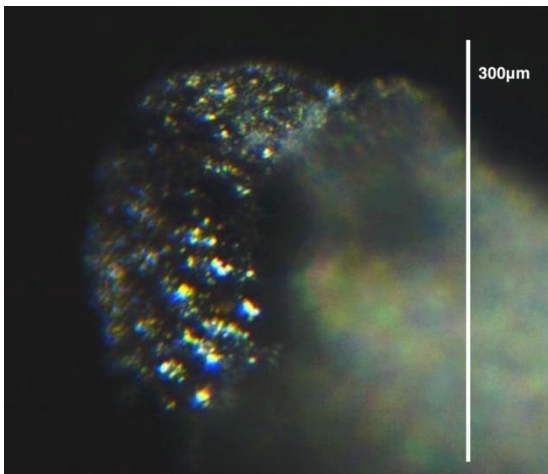


Fig. 3

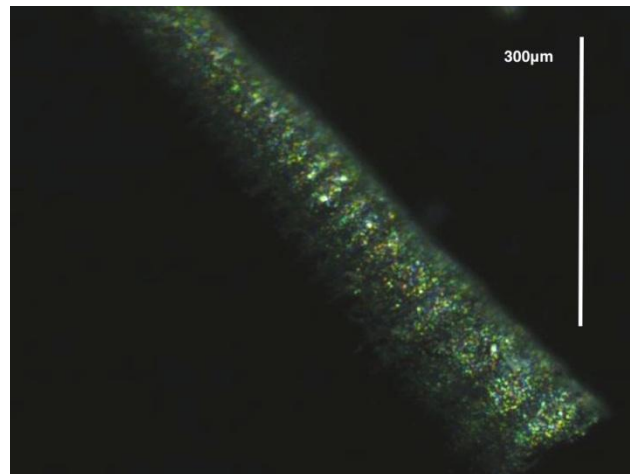
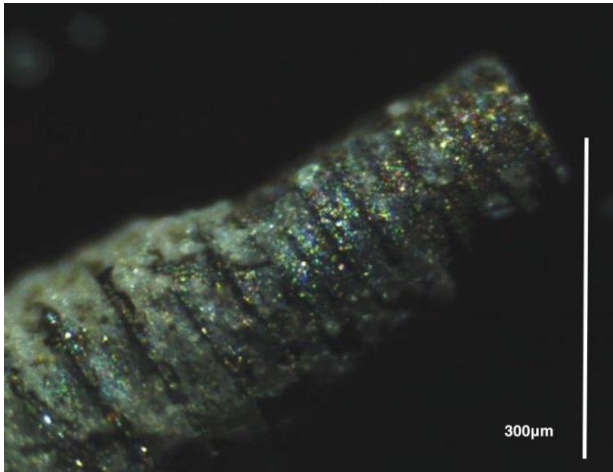
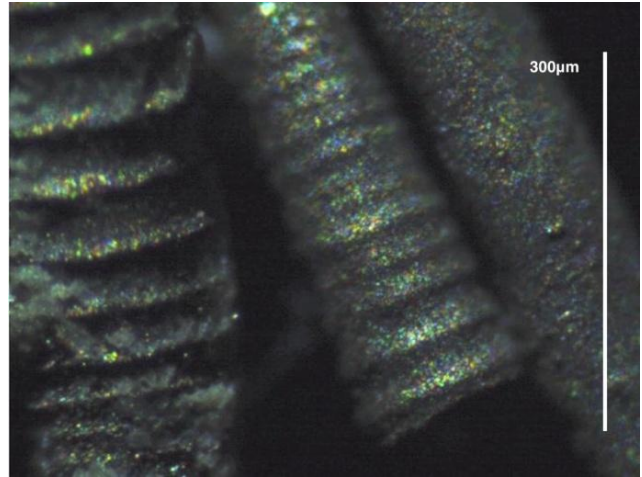


Fig. 4a

**Fig. 4b****Fig. 4c**

Tentaculitids are small marine animals with ringed and gradually tapering conical shells. These enigmatic problematica, having expanded geographically after the Ordovician Radiation, reached peak diversity and abundance of at least 30 genera by the early Devonian, and extinction at the onset of the Kellwasser Event (Wittmer & Miller, 2011). The average size for adult tentaculitids is 5-20mm and features about 40 rings adorning their shells. The tentaculitid specimens found within the pyritic sand measure 500µm (Fig.4a-b). The rings are evenly spaced and the count ranges 17-23 which suggests these are juvenile forms. A larval bulb of a tentaculitid (Fig.5) was also found, although this ID cannot be confirmed 100% due to its poor and unusual preservation; however because it was found in association with other tentaculitid remains makes it a likely candidate.

**Fig. 5**

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