

Aquatic Resources Education Association

AREA



October 26 - 30, 2014 ♦ Traverse City, Michigan

The Headwaters: Improving Aquatic Education at the Source





The great
OUTDOORS start with
the great **ONLINE.**

LEARN ABOUT THE FISH IN YOUR AREA, WHERE TO FIND THEM AND TIPS TO HELP YOU CATCH 'EM. IT'S ALL HERE.



TAKEMEFISHING.org

Aquatic Resources Education Association



AREA

Special Notes

Michigan Fishing Licenses

Will be sold on site at the hotel by a DNR fishing license representative. Steve Freeman, will be available from the opening of registration Sunday through Tuesday at noon. You will have ample time to talk to Steve and purchase a license if you have not done so in advance.

Departure for Outdoor Learning Sessions,

Sessions Tuesday, Wednesday, Thursday, will depart from the parking lot behind the Park Place hotel (see map for exact location). All transportation will be marked with the title of the appropriate session and loosely "supervised" by a DNR Captain of the Watch! Don't forget your ticket!

A MAP of downtown Traverse City is included in your registration bag. Use it to explore the town and find your way home.

Important Phone Numbers

If you have a question or seek a solution that the front desk cannot assist with, track down one of the following host state coordinators:

Kevin Frailey: 517-974-7941

Natalie Elkins: 517-290-0687

Shana Ramsey: 269-377-1322

AREA conference hospitality

Begins with two complimentary drink tickets to be used either Monday evening at the Grand Traverse Bayscape Social at the Top of the Park or Wednesday evening at the Bowers Harbor Estates Sunset Social. In addition the AREA Conference Hospitality Suite (room 209) opens each evening from the following times:

Sunday: 9:00 p.m. – 11:30 p.m.

Monday: 10:00 p.m. - 11:30 p.m.

Tuesday: 8:00 p.m. - 11:30 p.m..

Wednesday: 10:00 p.m. – 11:30 p.m.

Please drink responsibly!

Hotel Check-out Thursday, October 30th is 11:00 a.m.

If you are participating in one of the optional outdoor learning sessions and have not extended your stay through Friday, you will have to move out of your room and store your luggage in Minerva's Board Room located off the main Lobby.

Aquatic Resources Education Association



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Conference-at-a-Glance

Sunday October 26

2:30 PM	3:00 PM	Conference Committee Meeting
3:00 PM	6:30 PM	Registration
6:45 PM	9:00 PM	<i>Dinner Honoring New Members - All Welcome (Dutch Treat)</i>
9:00 PM	11:30 PM	Open Social - Hospitality Room

Monday October 27

7:00 AM	8:00 AM	<i>Breakfast</i>
7:00 AM	5:00 PM	Registration
8:30 AM	8:45 AM	Welcome: Doug Darr, AREA President
8:45 AM	9:15 AM	Welcome to Michigan: DNR Fisheries Chief Jim Dexter
9:15 AM	10:00 AM	Icebreaker: Charting our Course, Embarkation States and Roll Call
10:00 AM	10:15 AM	<i>Break</i>
10:15 AM	11:15 AM	Outdoor Recreation Adoption Model (ORAM) - A Framework for Aquatic Education Program Review and Refinement: Matt Dunfee, Wildlife Management Institute
11:15 AM	11:30 AM	<i>Break</i>
11:30 AM	Noon	RBFF Sponsor Presentation - Stephanie Hussey
Noon	1:00 PM	<i>Lunch-Provided by RBFF</i>
Noon	5:45 PM	Silent Auction Open For Bids!
1:00 PM	3:00 PM	Diving into ORAM
3:00 PM	3:15 PM	<i>Moomers Ice Cream Social</i>
3:15 PM	5:15 PM	Diving into ORAM
5:30 PM	6:30 PM	AREA Membership Meeting
7:00 PM	8:30 PM	<i>Dinner and Pure Michigan with Kevin Frailey</i>
8:30 PM	10:00 PM	Grand Traverse Bayscape Social
10:00 PM	11:30 PM	Open Social - Hospitality Room

Tuesday October 28

7:00 AM	7:45 AM	<i>Breakfast with a View - Top of the Park</i>
8:00 AM	Noon	Registration
8:00 AM	1:00 PM	Visit our Exhibitors/Vendors
8:00 AM	1:00 PM	Silent Auction
7:45 AM	8:00 AM	Announcements - Overview of Day, New Arrival Introductions, Questions
8:00 AM	9:30 AM	Concurrent Sessions

The Headwaters: *Improving Aquatic Education at the Source*

Tuesday October 28 *continued*

9:30 AM	10:00 AM	Federal Aid Update
10:00 AM	10:15 AM	Break
10:15 AM	11:15 AM	Regional Meetings
11:15 AM	11:45 PM	Bruce Matthews & Shari Dann - The Evolution of Aquatic "Education" and AREA
11:45 AM	12:15 PM	Pure Fishing Sponsor Presentation - Roxanne Coleman
12:15 PM	1:15 PM	Lunch
1:15 PM	5:00 PM	Concurrent Outdoor Learning Sessions
6:00 PM	8:00 PM	Dinner - On your own
7:00 PM	9:00 PM	AREA Board Strategic Planning
8:00 PM	11:30 PM	Open Social - Hospitality Room

Wednesday October 29

7:00 AM	8:00 AM	Breakfast
8:00 AM	Noon	Silent Auction
8:00 AM	1:00 PM	Visit our Exhibitors/Vendors
8:15 AM	8:25 AM	Announcements
8:30 AM	10:00 AM	Concurrent Sessions
10:00 AM	10:15 AM	Break
10:15 AM	11:45 AM	Concurrent Sessions
11:45 AM	Noon	DNR Director Keith Creagh, AREA Greeting
Noon	12:30 PM	Great Lakes Fisheries Trust Presentation, Mary Whitmore
12:30 PM	1:15 PM	Lunch
1:15 PM	5:00 PM	Concurrent Outdoor Learning Sessions
5:15 PM	9:30 PM	Banquet & Awards Ceremony
10:00 PM	11:30 PM	Open Social - Hospitality Room

Thursday October 30

7:00AM	8:15 AM	Breakfast - on your own
9:00 AM	4:00 PM	Concurrent Outdoor Learning Sessions

Friday October 31

Bon Voyage, see you in 2016!

Aquatic Resources Education Association

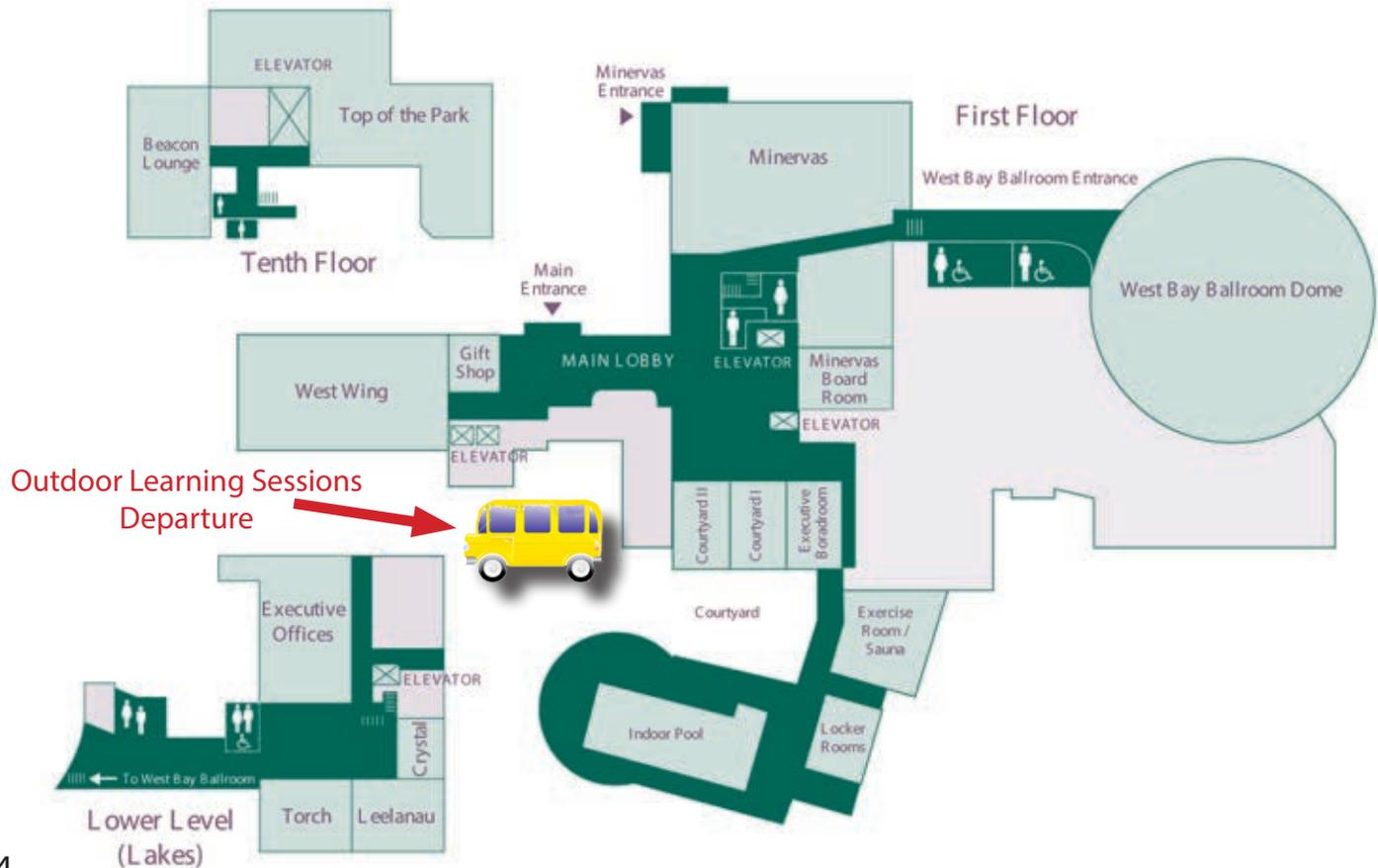
AREA



Sunday at-a-Glance
Sunday, October 26

Start Time	End Time	Activity	Room/Detail
Sunday Oct. 26			
2:30 PM	3:00 PM	Conference Committee Meeting	Executive Board Room
3:00 PM	6:30 PM	Registration	Lobby
5:30 PM	6:30 PM	AREA Board Meeting	Executive Board Room
5:00 PM	6:45 PM	Exhibitor/Vendor/Silent Auction Set Up	West Bay Ballroom Dome
6:45 PM	9:00 PM	Dinner Honoring New Members - All are Welcome - (Dutch Treat)	Meet in Lobby for a walk to North Peak Brewery
9:00 PM	11:30 PM	Open Social	Hospitality Room #209

A Peek at the Hotel





greatlakes place-based education conference 2014

Join us for our **4th annual Great Lakes Place-based Education Conference** (November 6–8 in Grand Rapids, MI). This meeting brings together educators, community groups, and regional and statewide organizations, all of whom are working to develop environmental stewards of the Great Lakes and their ecosystems.

★ **Kickoff Field Trips/Workshops** (Thursday, November 6)

There is an additional fee to attend the preconference field trips/workshops. Sessions are from 9:00 AM to 3:00 PM and include lunch; cost is \$70 unless otherwise noted. **Space is limited so register early!**

- Geology of the Great Lakes—An exclusive, all-access tour of the Grand Rapids Gypsum Mines exploring ways that stewardship education works into an earth science curriculum.
- Project WET and Project Learning Tree Training—A double feature of two nationally known programs, complete with training and curriculum materials to take back to your school for classroom use.
- Using Design Thinking in Stewardship Education—Learn from Grand Valley State University College of Education and Kendall College of Art and Design faculty members about how design thinking integrates with place-based stewardship education. Discover how you can use design thinking to improve your community projects and increase your students' engagement in those projects.
- Mapmaking with Children (K–8) Workshop with David Sobel—This workshop combines theory with practice by exploring integrated curricula and engaging participants in mapmaking, problem solving, and hands-on education. (Fee: \$89, includes a book)

★ **Conference Sessions** (Friday–Saturday, November 7–8)

Two full days of conference sessions including numerous concurrent presentations by and for people who are passionate about place-based education. This year's keynote presenters will be David Sobel and Teresa Weatherall Neal.

Keynote Speakers



David Sobel is the director of the Center for Place-based Education at Antioch University New England in Keene, New Hampshire. He has written numerous books, including: *Children's Special Places*; *Mapmaking with Children: Sense of Place Education for the Elementary Years*; and *Place-based Education: Connecting Classrooms and Communities*. Much of his work focuses on the relationship between child development, authentic curricula, and environmental education.



Teresa Weatherall Neal has worked for Grand Rapids Public Schools for 35 years, taking the reins as superintendent in 2012. She is especially committed to helping children in need. Ms. Weatherall Neal holds a BS in Public Administration from Grand Valley State University and an MA in Educational Leadership from Western Michigan University. She is a graduate of the Michigan Leadership Institute's Superintendent Leadership Academy.

Conference Rates and More!

\$150 (2 days) | \$100 (1 day)

There is an additional fee to attend one of the preconference kickoff field trip/workshop.

Earn SCECHs!

SCECHs (formerly SB-CEUs) offered by Kent County ISD. (Additional fee may apply.)

Register online today!

glstewardship.org



Aquatic Resources Education Association



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Monday at-a-Glance Monday, October 27

Start Time	End Time	Activity	Room/Detail
Monday Oct. 27			
7:00 AM	8:00 AM	Breakfast	West Bay Ballroom Dome
7:00 AM	5:00 PM	Registration	West Bay Ballroom Dome Lobby
8:00 AM	Noon	Silent Auction Set-up	West Bay Ballroom Dome
8:00 AM	5:00 PM	Exhibitor/Vendor Set Up	
8:30 AM	8:45 AM	Welcome: Doug Darr, AREA President	
8:45 AM	9:15 AM	Welcome to Michigan: DNR Fisheries Chief Jim Dexter	
9:15 AM	10:00 AM	Icebreaker: Charting our Course, Embarkation States and Roll Call	
10:00 AM	10:15 AM	Break	
10:15 AM	11:15 AM	Outdoor Recreation Adoption Model (ORAM) - A Framework for Aquatic Education Program Review and Refinement: Matt Dunfee, Wildlife Mgmt. Institute	
11:15 AM	11:30 AM	Break	
11:30 AM	Noon	RBFF Sponsor Presentation - Stephanie Hussey	
Noon	1:00 PM	Lunch-Provided by RBFF	
Noon	5:45 PM	Silent Auction Open For Bids!	West Bay Ballroom Dome
1:00 PM	3:00 PM	Diving into ORAM: Matt Dunfee, WMI	
3:00 PM	3:15 PM	Traverse City Moomer's Ice Cream Social	
3:15 PM	5:15 PM	Diving into ORAM (continued): Matt Dunfee, WMI	
5:15 PM	5:30 PM	Break	West Bay Ballroom Dome
5:30 PM	6:30 PM	AREA Membership Meeting	
6:30 PM	7:00 PM	Open Social with Exhibitors and Vendors	
7:00 PM	8:30 PM	Dinner and Pure Michigan w/Kevin Frailey	
8:30 PM	10:00 PM	Grand Traverse Bayscape Social	Top of the Park
10:00 PM	11:30 PM	Open Social	Hospitality Room

The Headwaters: Improving Aquatic Education at the Source

Monday Highlights

Welcome to Michigan

*Jim Dexter,
Michigan DNR, Fisheries Division Chief*



A native Michigander, Jim has a real appreciation of the extent of public passion for aquatic resources. He lives in Plainwell and enjoys fly fishing small trout streams and BBQ.

Outdoor Recreation Adoption Model (ORAM)

A Framework fo Aquatic Education Program Review and Refinement

Matt Dunfee, Wildlife Management Institute

Aquatic educators struggle with getting people outdoors and engaged in fishing and related activities. How do your programs engage and support angler development? Who do you reach versus who you need to reach? Is what you provide what your customers need? How do your efforts link to others interested in similar outcomes? Where can you have the most impact? This session will explore the process of developing anglers (and other outdoor enthusiasts) and how your organization can better focus your time and money to achieve the outcomes you desire.



RBFF Lunch Presentation



Moomers Ice Cream Social



Featuring

Great Lakes Glacial Till

and

Grand Traverse Bay Berry Blitz

Pure Michigan with Kevin Frailey

PURE MICHIGAN



**DON'T BE AFRAID TO
STAND OUT
IN A CROWD**

TROUT DOUGH

**COMBO
SERIES**



DESIGNED SPECIFICALLY FOR TROUT

The Berkley® Trout Dough Series delivers actions specifically designed to cast Berkley® dough baits farther and with more accuracy. These uni-directional fiberglass engineered rods are now paired with a 6 stainless steel ball bearing, graphite frame, aluminum spool spinning reel suited for the application. Stainless steel guides and inserts are the final touch on this well-balanced, lightweight combo that will help you *Catch More Fish.*



www.facebook.com/berkleyfishing



www.youtube.com/berkleyfishing08



Catch More Fish.
berkley-fishing.com

Aquatic Resources Education Association



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Tuesday at-a-Glance

Start Time	End Time	Activity	Room/Detail		
Tuesday, October 28					
7:00 AM	7:45 AM	Breakfast with a View	Top of the Park		
8:00 AM	noon	Registration	West Bay Ballroom Dome Lobby		
8:00 AM	1:00 PM	Visit our Exhibitors/Vendors	West Bay Ballroom Dome		
8:00 AM	5:00 PM	Silent Auction			
7:45 AM	8:00 AM	Announcements - Overview of Day, New Arrival Introductions, Questions			
8:00 AM	9:30 AM	Concurrent Sessions	Torch Room	Leelanau Room	Courtyard Room
8:00 AM	8:30 AM	Concurrent Sessions	Hooking New Constituents: Social Media Best Practices at TPWD - Tom Lang and Karen Marks	The Michigan Clean Marina Program: Productive Partnerships in Best Practice Implementation - Mark Breederland	The Art of Conservation is Fishing for Art - Karen R. Hollingsworth
8:30 AM	9:00 AM	Concurrent Sessions	Survey of ARE Programs in SEAFWA - Doug Darr	Oklahoma Fishing in the Schools & Outdoor Education - Daniel Griffith	Aquatic Invasives: An Uninvited Challenge - Luci Cook-Hildreth
9:00 AM	9:30 AM	Concurrent Sessions	Analysis of Adult Sport Fishing Lesson Choices and Their Application to Post-Secondary Curriculum Development - Shann Jones	A New kind Of "Electro" Fishing (Module That Is) - Shannon Hafner	USFWS and ARE: More than SFR, Maria Arnold
9:30 AM	10:00 AM	General Session: Federal Aid Update	West Bay Ballroom Dome		
10:00 AM	10:15 AM	Break			
10:15 AM	11:15 AM	Regional Meetings	Torch Room	Leelanau Room	Courtyard Room
			Pacific , Southwest and Far West	North Central and Midwest	Southeast, Mid-Atlantic and Northeast
11:15 AM	11:45 AM	Bruce Matthews and Shari Dann - The Evolution of Aquatic "Education" and AREA	West Bay Ballroom Dome		
11:45 AM	12:15 PM	Pure Fishing Sponsor Presentation: Roxanne Coleman			
12:15 PM	1:15 PM	Lunch			
1:15 PM - 5:00 PM		Concurrent Outdoor Learning Sessions	Meet in Lobby with Outdoor Learning Session Ticket		
			Platte River Hatchery	Fishtown	DNR Charlevoix Research Station
			Hunting and Fishing Center	Angling Education, Boardman River	
6:00 PM	8:00 PM	Dinner	On your own, walk around town or eat at Minerva's in the Park Place		
7:00 PM	9:00 PM	AREA Board Strategic Planning	West Bay Ballroom Dome		
8:00 PM	11:30 PM	Open Social	Hospitality Room #209		

Aquatic Resources Education Association

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Tuesday, October 28 - Concurrent Session Details

8:00 – 8:30 AM

**Hooking New Constituents:
Social Media Best Practices at TPWD**
*Tom Lang and Karen Marks,
Texas Parks and Wildlife Department*

This presentation will discuss all of the social media efforts being undertaken at Texas Parks and Wildlife. However, it will focus on the Wichita Falls Fisheries District and Texas Angler Educators Facebook efforts. This effort will discuss lessons learned, best practices, promotion, education, and growing your audience.

**The Michigan Clean Marina Program:
Productive Partnerships in Best Practice
Implementation**

Mark Breederland, Michigan Sea Grant
Participants in Michigan's Clean Marina Program voluntarily pledge to maintain and improve Michigan's waterways by reducing or eliminating releases of harmful substances and phasing out practices that can damage aquatic environments. Academic, State-agency and private-sector coastal and boating groups coalesced to design and implement this peer-reviewed innovative program.

The Art of Conservation is Fishing for Art
*Karen R. Hollingsworth,
Wildlife Forever - State Fish Art Contest*

Wildlife Forever's State-Fish Art is celebrating 17 years of bringing kids, art & aquatic conservation education together by integrating science and art in the FREE Fish On! Lesson Plan. Students K-12 study fish, their habitat, behaviors, & conservation needs – then paint, draw and write their way to national recognition! Entry Deadline is always March 31st . Visit www.statefishart.org

8:30 – 9:00 AM

Survey of ARE Programs in SEAFWA
*Doug Darr, Alabama Wildlife and Freshwater
Fisheries Division*

The first step in best practices is to see what programs are being used. The next step is to evaluate the programs. This survey looks at the best programs in eleven states, including both fresh and saltwater programs.

**Oklahoma Fishing in the Schools &
Outdoor Education**

*Daniel Griffith,
Oklahoma Department of Wildlife Conservation*
Oklahoma has created and introduced its own Fishing in the Schools Program (OKFITS), and done so by building off the success of other Outdoor Education Programs. With the creation of the program in 2010 Oklahoma now has nearly 200 schools across the state participating and introducing students to the sport of fishing. Presentation will demonstrate how Oklahoma has built the OKFITS program from our relationship with schools doing our other Outdoor Ed programs. Schools are provided a kit worth approximately \$500, along with the signing of an agreement to stay involved with the program.

**Aquatic Invasives:
An Uninvited Challenge**
*Luci Cook-Hildreth,
Texas Parks and Wildlife Department*

The Mississippi River Basin Panel on Aquatic Invasives (MRBP) will share how we do education and outreach for Aquatic Nuisance Species (ANS) issues. We will discuss how we can integrate key ANS messages into aquatic education programs and delivery mechanisms.

The Headwaters: Improving Aquatic Education at the Source

Tuesday, October 28 - Concurrent Session Details

9:00 – 9:30 AM

Analysis of Adult Sport Fishing Lesson Choices and Their Application to Post-Secondary Curriculum Development *Shann Jones, University of Alaska*

To refine my University of Alaska fly-fishing classes, I developed and distributed a questionnaire gauging the public's educational desires. After analyzing the survey results, I included more science-based angler knowledge and skills training. Subsequently, enrollments doubled from 2003 to 2008. Students also made measurable advances in understanding the sciences behind sport fishing.

A New Kind of "Electro" Fishing (Module that is)

Barb Gigar and Shannon Hafner, Iowa Department of Natural Resources

Fish Iowa! - including our award-winning basic spincasting module, instructional videos, and fly-fishing and ice-fishing modules - has gone electronic. During 2013 we worked with long-time educators to overhaul every unit, including overall organization and teaching approaches. We added teaching tips and tricks that address education reforms and best practices, as well as links to a host of online resources including instructional videos and websites. Related topics in the module are cross-referenced and hyperlinked too. We'll discuss benefits and challenges of this new format, and future professional development opportunities that are possible with this platform.

USFWS and ARE: More Than SFR

Maria Arnold, US Fish and Wildlife Service

Maria will share information about aquatic resource education (ARE) efforts in the US Fish and Wildlife Service (USFWS) - beyond the administration of Sport Fish Restoration (SFR) funds for state and territory Aquatic Education Programs.

Tuesday Highlights

The Evolution of Aquatic "Education" and AREA

Bruce Matthews and Shari Dann, AREA Founding Members



In order to plan for the future we need to learn from the past. As AREA plans to address new

challenges in AREA and looks forward to the future, we explore our roots and the building of our foundation as a profession and organization.

Lunch

Pure Fishing Speaker,
Roxanne Coleman



Aquatic Resources Education Association

AREA



Tuesday, October 28 - Outdoor Learning Session Details

1:15 – 5:00 PM

Boardman River Angling Education

A state designated Natural River and Blue Ribbon trout stream, the Boardman River is considered to be one of the most outstanding natural features of the Grand Traverse Bay Region. The Boardman River is one of the top ten trout streams in Michigan and its 287 square mile watershed is enjoyed by anglers, boaters, hunters, hikers, and wildlife watchers alike. Here is your chance to spend an afternoon angling for brown trout and pike. Cast a fly or bounce a bobber, either will likely get you a bite. Bring your own gear or equipment can be provided. Fishing License required (24 hour license = \$10, 72 hour license = \$30)

Carl T. Johnson Hunting and Fishing Center

The Carl T. Johnson Visitor Center is located in Cadillac, Michigan's gateway to the north community. Nested between two large inland lakes in Mitchell State Park, the Carl T is a popular site for fishing and aquatic education. The Visitor Center itself features exhibit halls on both Michigan's hunting and fishing heritage. Learn how the Carl T. staff teaches summer camping families, school children and even college students about fishing and hunting heritage through many creative programs. Take a brief hike to a popular wetland, and if time allows, fish for walleye or test your archery skills.

Charlevoix Research Station

Charlevoix, Michigan is a picturesque lake town that is home to both DNR research and a United States Coast Guard Station. This is a tremendous chance to get out on a Great Lake with DNR fisheries biologists on the research vessel Steelhead (weather permitting). Learn what kind of research is being done on the planet's largest freshwater ecosystem and identify fish hauled aboard the ship. An additional visit with the US Coast Guard will also allow you to understand the scope of the Great Lakes from an emergency management perspective.

Fishtown

Located on Lake Michigan in the beautiful Leelanau Peninsula, the town of Leland has drawn people for more than a century. Within Leland is Fishtown, a historically preserved waterfront with shanties, ice houses and fish tugs. Fishtown is not a museum but rather a working community of commercial fishermen still mending nets, smoking fish and talking to visitors about the importance of their craft, their livelihood and their experiences on the Great lakes. If you value history as an important component to aquatic education, this session is for you.

Platte River Fish Hatchery

How did a non-native, salt water fish from the Pacific Ocean save the Great Lakes freshwater ecosystem from ruin? Come hear this amazing tale, tour a freshwater hatchery raising Pacific salmon, and assist biologists in a hands-on salmon egg-take operation. Weather permitting, this session will conclude with a 45 minute canoe/kayak experience from the Lower Platte River weir to Lake Michigan at the southern tip of Sleeping Bear Dunes National Lakeshore.

Special Note:

AREA Strategic Planning

Interested members are invited to participate in facilitated brainstorming, discussions, and prioritization for AREA direction followed by development of an action plan for 2014-2016. We will meet from 7-9 pm Tuesday.

Aquatic WILD Expanded!



New Features At a Glance

- **Field Investigations:** The *Aquatic WILD K-12 Curriculum and Activity Guide* provides new field investigation activities, such as “Gone Fishing,” that introduce students to the methodologies used for scientific field research and guide them through the process of conducting field studies.
- **WILD Work:** Each Aquatic WILD activity features new content on careers in conservation and wildlife management. Additional resources, including WILD Work career videos, are now available through www.projectwild.org.
- **In Step with STEM:** The expanded Aquatic WILD activity guide will feature new extensions and links to apps and cloud based resources that engage students in meaningful, hands-on opportunities to apply and reinforce science technology, engineering, and mathematics concepts.
- **Get Training:** The *Aquatic WILD K-12 Curriculum and Activity Guide* is provided as part of Aquatic WILD professional development training. Contact a Project WILD Coordinator in your state or go online to www.projectwild.org to find Aquatic WILD and Project WILD professional development opportunities.

A LOOK INSIDE Are You Me?



Grade Level: Lower Elementary

Content Areas:
Science, Environmental Education

Method:
Using picture cards, students match pairs of juvenile and adult aquatic animals.

Materials:
Cardboard for making cards, art supplies

Activity Time:
one or two 20-minute sessions, preparation time for students to bring family pictures to class

People Power:
small groups of three or four students each

Setting:
indoors

**Conceptual Framework
Topic Reference:**
WPIB

Terms to Know:
aquatic animals, grow, change, adult, young, metamorphosis, pupae, larva, nymph

Students investigate magnificent metamorphosis!

Objectives

Students will recognize various young stages of aquatic animals and match them with corresponding adult stages.

Background

Many animals look significantly different in their earliest stages of development when compared to adulthood.

This difference is especially apparent for some aquatic insects. Many aquatic insects undergo metamorphosis, which means change during growth. Some insects experience simple metamorphosis while others undergo complete metamorphosis. In simple metamorphosis, the insect egg develops into a nymph. Nymphs resemble adults but can vary considerably from their adult form in coloration or appendages like wings. Insects that experience complete metamorphosis begin as eggs that develop into larvae. The larvae grow through several stages and then change into pupae. Pupae are usually encased in a protective cover for their next stage of growth. From the pupae emerge the soft-bodied, often pale-colored adults. They differ remarkably in appearance from their earlier forms but are not yet completely formed. Gradually, the soft pale bodies develop firmness and color. In complete metamorphosis, there is little resemblance between adult and earlier forms.

There are also remarkable similarities and differences between other aquatic animals in different life stages. The eggs of many animals hide their eventual form (e.g., alligators, turtles, birds). Pelican hatchlings, for example, closely resemble miniature dinosaurs. Aquatic mammals often are easier to recognize. In general, they do not change as dramatically as other animals in overall appearance as they grow from young to adult stages.

The major purpose of this activity is for students to recognize differences in the life stages of aquatic animals. Students will increase their appreciation of the diversity of wildlife as well as their understanding of growth and change in animals.

2

Are You Me?

© Council for Environmental Education (CEE)

WILD Work



Ask students to discuss the types of things a **Wildlife Biologist** might do each day. Encourage them to share stories of people they may have seen on television who work with animals. What do they think these jobs might be called?

Research the answers to these questions with students by going to www.projectwild.org/aquatic.

In Step with STEM



- Students can photograph stages of a butterfly, from caterpillar to adult.
- Students can use rulers to measure changes in their height over an extended time period. Graph and compare results.
- Create a scatter-plot diagram to post as a wall chart that allows students to analyze the relationship between a person's height (on the vertical axis) and age (on the horizontal axis). Each individual in the classroom plots his or her height using an adhesive dot. Expand the data over time and keep the diagram updated by plotting the height/age of classroom visitors.

Aquatic Resources Education Association



AREA

Wednesday at-a-Glance

Start Time	End Time	Activity	Room/Detail		
Wednesday, October 29					
7:00 AM	8:00 AM	Breakfast	West Bay Ballroom Dome		
8:00 AM	noon	Silent Auction	West Bay Ballroom Dome		
8:00 AM	1:00 PM	Visit our Exhibitors/Vendors			
8:15 AM	8:25 AM	Announcements			
8:30 AM	10:00 AM	Concurrent Sessions	Torch Room	Leelanau Room	Courtyard Room
8:30 AM	9:00 AM	Concurrent Sessions	A Partnership That Works: Fishing's Future - Shane Wilson, Kevin Reich	Project Based Aquatic Ed - Cindy Fitzwilliams-Heck	Explore Bowfishing: Workshop and Discussion - Emily Beach, Jennifer Mazur
9:00 AM	9:30 AM	Concurrent Sessions	Bringing Warriors Home through the Outdoors: Heroes on the Water - Jim Dolan	Salmon in the Classroom / Trout in the Classroom Share Fair - Kevin Frailey, et.al.	
9:30 AM	10:00 AM	Concurrent Sessions	Engaging Youth in Great Lakes and Aquatic Stewardship through School and Community Partnerships - Brandon Schroeder		
10:00 AM	10:15 AM	Break			
10:15 AM	11:45 AM	Concurrent Sessions	Torch Room	Leelanau Room	Courtyard Room
10:15 AM	10:45 AM	Concurrent Sessions	Angler Recruitment and Retention Initiatives in Connecticut - Justin Wiggins	Engaging Methods for Program Evaluation - Cindy Fitzwilliams-Heck	Real World Fisheries Data and Research Examples to Address STEM Practice & NGSS - Shannon Hafner
10:45 AM	11:15 AM	Concurrent Sessions	It's all Local: Addressing the Social Side of Angler Education - Holly Schulte	Science Institute For Educators: Combining EE, Research and Scientists - Nadine Meyer	Using Skill Based Programs for Recruitment and Retention - Kris Smith
11:15 AM	11:45 AM	Concurrent Sessions	The Customer's Journey: Recruitment and Retention of Anglers in Oregon - Shahab Farzanegan		Scouts and the State: Working Together - Bill Pepito
11:45 AM	noon	MI DNR Director Keith Creagh's AREA Greeting	West Bay Ballroom Dome		
Noon	12:30 PM	Great Lakes Fisheries Trust Sponsor Presentation- Mary Whitmore (noon-silent auction last bids and closing)			
12:30 PM	1:15 PM	Lunch			

The Headwaters: *Improving Aquatic Education at the Source*

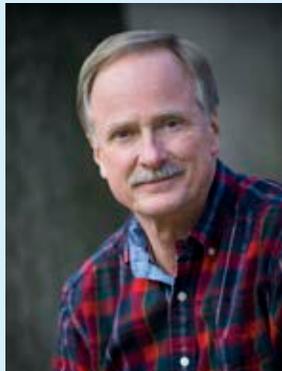
Wednesday at-a-Glance

Start Time	End Time	Activity	Room/Detail
Wednesday October, 29			
1:15 PM - 5:00 PM		Concurrent Outdoor Learning Sessions	Meet in Lobby with Outdoor Learning Session Ticket
			Inland Seas Education Center
			Great Lakes Water Studies Institute
5:15 PM	9:30 PM	Banquet & Awards Ceremony	Meet in Lobby-bus leaves at 5:15 PM, arrival at 5:45 PM, Bowers Harbor Estates for Sunset Social, enter through front door at Mission Table.
10:00 PM	11:30 PM	Open Social	Hospitality Room #209

Wednesday Highlights

DNR Director Welcome to Michigan *Keith Creagh, DNR Director*

Keith Creagh brings a vast amount of experience and love of the outdoors to his position as director of the Michigan Department of Natural Resources. He has a robust background in policy development, strategic planning and relationship building, and avidly pursues his lifelong interests in outdoor recreation, such as hunting, fishing, camping, and hiking.



Lunch Great Lakes Stewardship Initiative *Mary Whitmore*



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Wednesday, October 29 - Concurrent Session Details

8:30 – 9:00 AM

A Partnership That Works: Fishing's Future *Shane Wilson and Kevin Reich, Fishing's Future*

Establishing an outside Partnership the "WORKS" is now possible. Fishing's Future has a proven record in aquatic education with multiple states. When two organizations work as one, they can accomplish exponentially more than working independently. Fishing's Future is an organization of volunteers trained by your agency to assist and share angling education to all families in your state. Come, listen, and ask questions.



Project Based Aquatic Education

Cindy Williams-Heck, Ferris State University

Learn a fun way to engage your audience in a meaningful and educational project. A watershed program framework for formal and non-formal educators will be introduced in this session. Discover place-based and social-ecological principles to accomplish objectives and help build partnerships between natural resource agencies and citizens. Project ideas and templates will be provided to get you started right away!



8:30 – 10:00 am

Explore Bowfishing: Workshop and Discussion *Emily Beach and Jennifer Mazur, Archery Trade Association*

Add a new dimension to fishing and aquatic programs with Explore Bowfishing. This new and exciting program teaches archery, invasive species control, and fish ID to introduce students to the basics of bowfishing. Added bonus: Students clean-up the shoreline while practicing. A discussion about program obstacles and implementation will occur afterwards.



The Headwaters: *Improving Aquatic Education at the Source*

Wednesday, October 29 - Concurrent Session Details

9:00 – 9:30 AM

Bringing Warriors Home Through the Outdoors: Heroes on the Water

Jim Dolan, Heroes on the Water

How can the outdoor community use outdoor resources to help the military warriors unwind and reengage with family, job, and education? Using Heroes on the Water as an example, I will show how there are no barriers to participation - physical or mental.



9:00 – 10:00 AM

SIC/TIC Activity Share Fair

Kevin Frailey, Michigan DNR

Many states now manage Trout in the Classroom or Salmon in the Classroom Programs. In this session, participating states will share their favorite activity, teaching resource and/or extension of the program. Participants can take these new ideas back to their states and look incredibly creative.



9:30 – 10:00 AM

Engaging Youth in Great Lakes and Aquatic Stewardship Through School and Community Partnerships

Brandon Schroeder, Michigan Sea Grant

Michigan Sea Grant promotes Great Lakes literacy and learning, fosters school-community connections, and supports youth-led aquatic stewardship projects in partnership with scientists, schools, and 4-H youth programs. Explore programs and strategies by which student aquatic stewardship investments are coordinated with community conservation partners' resource management plans, project grants, and community awareness efforts on important aquatic resource stewardship issues.



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Wednesday, October 29 - Concurrent Session Detail

10:15 – 10:45 AM

Angler Recruitment and Retention Initiatives in Connecticut

Justin Wiggins, CT Dept. of Energy and Environmental Protection, Inland Fish

The CT Bureau of Natural Resources developed a 5-year strategic plan in 2011, with the goal of increasing fishing participation 30% by 2016 as the SINGLE MOST IMPORTANT OBJECTIVE FOR THE INLAND FISHERIES DIVISION (IFD). While gratifying to have this support from administration for outreach and education, this is a heavy task. This presentation will take a glance at the angler recruitment and retention initiatives that the Inland Fisheries Division has developed to attempt to accomplish this goal; specifically the expansion of our Community Fishing Waters program, development of a Connecticut Fish and Wildlife Facebook page, our free Family Fishing Courses, surveys to Connecticut anglers, and the development of our Youth Fishing Passport.

Engaging Methods for Program Evaluation

Cindy Fitzwilliams-Heck, Ferris State University

How do you know if your audience actually uses the information they get from your classroom, workshop or angling clinic? In what capacity has your instructional material been used? Methods and results from a case study involving participants from a popular and successful natural resource education program will be shared to provide insight to these questions. You will also discover various engaging opportunities to implement to help ensure your participants apply the knowledge and skills learned. Handouts will be provided to get you started on creating a more meaningful education program.



10:15 – 10:45 AM

Real World Fisheries Data and Research Examples to Address STEM Practice & NGSS **Shannon Hafner, Iowa Department of Natural Resources**

Don't miss the STEM boat. Teachers are hungry for good resources to connect students to real world science. The Iowa Aquatic Education Program is working with our field biologists to share their work, including data packages and field methods, with educators to engage students in STEM practice. Our goal is to provide professional development to improve educator competencies in field investigations and to connect classrooms to local aquatic resources.

10:45 – 11:15 AM

It's All Local: Addressing the Social Side of Angler Education

Barb Gigar, Iowa Department of Natural Resources

Research has shown "social support" is huge influence on fishing participation, but agencies have struggled with how to address it. Fish Iowa! is working with Multistate Conservation Grant partners to develop and test holistic approaches engaging audiences in angling, hunting, and other outdoor recreation pursuits. We will share our work in four pilot communities.

Using Skill Based Programs for Recruitment and Retention

Kris Smith, North Carolina Wildlife Resources Commission

To assist with the NC Wildlife Resources Commission's Recruitment and Retention of Anglers, staff at the Fishing Education Center have developed a series of Skill Based Fishing programs. The Fly-Tying, Lure Making, Rod Building, and Lanyard Making programs have become key programs for re-engaging adult anglers back into the sport of fishing.

The Headwaters: *Improving Aquatic Education at the Source*

Wednesday, October 29 - Concurrent Session Detail

10:45 – 11:45 am

Science Institute for Educators: Combining EE, Research and Scientists
Nadine Meyer, Minnesota Department of Natural Resources

The Science Institute for Educators (SIE) developed from a partnership of organizations wanting to provide professional development focused on engaging students in hands-on activities based on current research. SIE partners collaborated on lesson plans that translate research on the Great Lakes and the NE MN Lake Superior watershed into science activities for grades 6-12. Professional development incorporates the hands-on lessons and a presentation by the scientists conducting the research. This presentation will highlight development of SIE and showcase lessons developed by the SIE team.

11:15 – 11:45 AM

The Customer's Journey: Recruitment and Retention of Anglers in Oregon
Shahab Farzanegan and Mark Newell, Oregon Department of Fish and Wildlife

The angler's customer journey is the process customers go through from when they first become aware of fishing as an activity through when they have gone fishing and beyond. This presentation focuses on strategies developed with models from the National Conservation Training Center and implemented over the last 2 years by Oregon Department of Fish and Wildlife (ODFW) to engage the customer from awareness to avidity. We will discuss marketing strategies, developing partnerships, targeted programming, and evaluation through the ODFW Outdoor Skills Program's angling workshops and events.

Scouts & the State: Working Together
Bill Pepito, Boy Scouts of America

Scouting and aquatic resources education are a natural fit. Merit badge requirements parallel expectations for angler education skill development and agency information supports Scouts' exploration of fisheries habitat. We'll review the best practices we've developed to fit the pieces together and form a strong partnership that enhances the Scouting experience.



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Wednesday, October 29 - Outdoor Learning Session Detail

Boardman River Dam Removal Project

The largest dam removal project in Michigan history has changed this watershed forever. A state designated Natural River and Blue Ribbon Trout Stream, the Boardman River is considered to be one of the most outstanding natural features of the Grand Traverse Bay Region. The Boardman River and its 287 square mile watershed is enjoyed by anglers, boaters, hunters, hikers, and wildlife watchers alike. This session will take you from the Brown Bridge dam removal site all the way to the mouth on Grand Traverse Bay with several stops in between.

Great Lakes Water Studies Institute

A short drive from Traverse City, along the eastern side of the bay, lies a small village defined by its water front. Elk Rapids depends on a citizenry "all in" for the protection and the promotion of its aquatic resources. We will visit the Harbormaster for a brief educational tour before returning to the Traverse City waterfront and a stop at the Great Lakes Water Studies Institute (GLWSI) Part of Northwestern College, GLWSI offered the first associate degree in Freshwater Studies in the United States. It is world renowned for its work with ROVs and hydrographic sonar. This session will give you an overview of seafloor mapping and the amazing discoveries made by this sophisticated technology including demonstrations of this equipment in the harbor.

Inland Seas Education Center

For 25 years students of all ages, within the Traverse City area and state of Michigan, have been exposed to tremendous educational programs from Inland Seas Education Association (ISEA). The Schoolship program promotes hands-on, experiential learning primarily onboard their 77' double-masted schooner the Inland Seas. Their Education Center and museum, located in beautiful Suttons Bay, offers hands-on



interactive exhibits, a constructed wetlands and aquariums with Great Lakes species. AREA's session will introduce you to the exotic species of the Great Lakes (mostly live specimens), identify Great Lake fish with dichotomous key and, weather permitting, board the Lake Sturgeon (a small motorized vessel) for some water quality testing in Grand Traverse Bay.

Platte River Angling Education

Although the AREA conference is a bit too late for the peak salmon run, there are always some fish in the sea (and the river). Coho salmon and some steelhead will still wander the waters not far from the Platte State Fish Hatchery. Here is your chance to spend an afternoon angling along the Platte on a late Michigan autumn day. Cast a fly or bounce a bobber, either will likely get you a bite. Bring your own gear or equipment can be provided. Fishing License required. (24 hour license = \$10, 72 hour license = \$30)



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Thursday at-a-Glance

Start Time	End Time	Activity	Room/Detail
Thursday, October 30			
7:00AM	8:15 AM	Breakfast	On your own, walk around town or eat at Minerva's in the Park Place
9:00 AM - 4:00 PM		Concurrent Outdoor Learning Sessions	Meet in Lobby with Outdoor Learning Session Ticket
5:00 PM			7:30 PM
			On your own, walk around town or eat at Minerva's in the Park Place

Thursday, October 30 Outdoor Learning Session Detail

9:00 AM – 4:00 PM

Fishing the Au Sable River

Fifty-five years ago, sixteen fishermen gathered along the banks of the Au Sable River. United by their love of trout fishing and concerns for the aquatic resources of Michigan they formed Trout Unlimited. Now you can see the birthplace of TU and fish the same Holy Waters, the Au sable River, one of the finest trout streams in North America. Browns , brookies and rainbow (plus a snapping turtle or two) all reside in the river and members of TU chapters will be on hand for historical perspectives as well as fishing tips. Don't miss this chance to see where stream conservation started and the principle "take care of the fish and the fishing will take care of itself" carries on today. Fishing gear provided.

Grand Traverse Bay Fishing Charter

Fishing the Great Lakes is the experience of a life time. Here is your opportunity to go on a charter in Grand Traverse Bay and fish for whitefish, Lake Trout or whatever else is hitting that day. True Blue Charters and Captain Brian Springstead have fished the bay for 30 years and is knowledgeable not only about the fishing but about the Grand Traverse Bay area, its resources and history. This trip is weather dependent on the seas but plan ahead if you would like to share

Sleeping Bear Dunes National Lakeshore

Good Morning America Viewers voted it The Most Beautiful Place in America! Sleeping Bear Dunes is a can't miss natural resources destination in America. Towering dunes and tremendous scenic vistas align 35 miles of Lake Michigan coastline. This trip will begin with a stop at the Phillip A. Hart Visitor Center with a brief welcome and overview of the park. Next, we drive the Pierce stocking scenic drive for exceptional views of Lake Michigan and Glen Lake. A 30 minute hike from the here will lead through the dunes and down the 100' dune climb. A few other historic stops and finally ending at the town of Glen Arbor for a well deserved lunch (on your own) and a walk through this quaint Up-North town.



DNR Education Programs: *Connecting Educators to Nature*

Interpretive programs are offered at 10 locations statewide, offering educational exhibits, natural history programs and surrounding trails.

Salmon in the Classroom takes students to stewardship beginning with Chinook salmon eggs in fall to their eventual release as smolts in May.

Academy of Natural Resources is a week-long immersion into natural resources education and fieldwork for educators each July.



The Michigan DNR salutes two of our state's finest educators:

Natalie Elkins, Michigan DNR Education Services

2014 CEE Rudolph J. H. Schafer Outstanding Coordinator Award
(National Project WILD Coordinator of the Year)

and

Ada Takacs, Michigan DNR Forest Resources

2014 Project Learning Tree's Gold Star Award
(National PLT Coordinator of the Year)



Aquatic Resources Education Association

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AREA Conference Planning Committee *2014 Traverse City, Michigan*

Kevin Frailey

Natalie Elkins

Shana Ramsey

Barb Gigar

Ti Piper

Doug Darr

Lorianne Riggins

Justin Wiggins

Michigan Department of Natural Resources

Michigan Department of Natural Resources

Michigan Department of Natural Resources

Iowa Department of Natural Resources

Consultant, New Mexico Department of Game and Fish

Alabama Department of Conservation and Natural Resources

South Carolina Department of Natural Resources

Connecticut Department of Energy and Environmental Protection



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Save the Date

2016 AREA Conference
October 23 - 27
Shepherdstown, West Virginia



The National Conservation Training Center (NCTC) in Shepherdstown, West Virginia
This nationally renowned facility that serves to support the mission of the US Fish and Wildlife Service, which in turn supports the work we do.

The board is currently working with the professional training staff, before finalizing details.



The Michigan state motto is a great reminder of two things Michiganders hold dear: the Great Lakes that literally shape our state and the beauty found within those peninsulas.



AT THE HEART OF THE GREAT LAKES

If you seek a pleasant peninsula, look about you.
— Michigan Motto

The Great Lakes and their connecting channels form the largest surface fresh water system on earth.

Michigan Sea Grant is at the heart of that system. We are dedicated to the protection and sustainable use of the Great Lakes and coastal resources.

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