MinnAqua Moments with Fishing: Get in the Habitat!

August 2009

Minnesota DNR
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Inside this issue:

MinnAqua Workshops - 2
Species Profile - 3
Fishing Equipment & Tips - 4
Piers & Places - 5
Featured Lesson - 6
Community Connections - 7
School Spotlight - 8
Book Reviews - 9
Mentoring & MinnAqua - 9
NEW Thinking Inside-Out! - 10
NEW Angling for a Laugh - 11

MinnAqua Welcomes New Southern MN Specialist

By Jenifer Matthees & Scott Moeller

We have a new member to our MinnAqua team, so I open the e-floor to Scott Moeller to introduce himself to you. If you are in southern Minnesota you may bump into Scott, so help us welcome him to our MinnAqua community.

My name is Scott Moeller and I am the new MinnAqua Education Specialist for southern Minnesota. I joined the MinnAqua team and moved my family to the New Ulm area last February. This was something of a homecoming for my wife and I, as we were both raised in southern Minnesota (my folks still operate a dairy farm in the Fairmont area), but have been living in Iowa for the past 12 years.

Prior to joining MinnAqua, I was an interpretive Naturalist for the Kossuth County Conservation Board near Algona in north central Iowa. I had the unique opportunity to help design, promote and construct a new nature center for the people of Kossuth County.

I received my bachelor's degree in biology at Augustana College in Sioux Falls, and my master's degree in ecology at Iowa State University in the field of prairie restoration ecology. I am passionate about aquatic education, water quality issues, prairie restoration, and environmental education in general.

My greatest passion, of course, is for my family. My wife, Rachel, is also an educator and has just begun her new job as a fourth grade teacher at Washington Elementary in New Ulm. We have been married for 12 years and have three young children (Calvin-6, Olivia-4 and Will-1) who help make me feel younger (but look older) every day. My greatest claims to fame include delivering my own baby daughter on our bathroom floor (not by choice, by the way), and having met President Obama one-on-one (a fact I share selectively in today's political climate).

My greatest concern is the trend that we are seeing regarding young people and the outdoors. As the pace of life moves faster and faster, parents have less and less time to get their kids outside. At the same time, technology has provided so many attractive indoor entertainment options (TV, internet, cell phones, video games, etc.). If we allow each successive generation to grow up increasingly separated from the natural world, we risk create a society that has no real connection with the environment.

That's why I am so delighted to be part of a team working with educators who are committed to halting and reversing that trend. I'm glad to join the quality folks of MinnAqua and work with the many dedicated Minnesota educators who are committed to keeping the environment as an integral part of education.

Remember Us?

MinnAqua is sending you this newsletter because you have received the new leader's guide, *Fishing: Get in the Habitat!* either through a training workshop or you have requested information about the leaders guide. If you would like to be removed from our mailing list please let Jenifer Matthees know by contacting her at 651-259-5217 or jenifer.matthees@state.mn.us.

MinnAqua Training Workshops by Nadine Meyer

Educator Support - New Facebook Fan Page*

The MinnAqua Program staff are working on providing a strong support system for educators who are trained on ***Fishing: Get in the Habitat!*** Recently a Facebook Fan Page* has been developed for educators and participants in the MinnAqua Program. To access the fan page go to: **http://www.facebook.com/pages/MinnAqua-Program/80122121044** You do not need to be a member of Facebook to view the page and read about the MinnAqua Program's current activities.

This page was developed to provide:

- easy access to current events
- educators a space to share ideas
- opportunities to post your photos and articles about activities and events you've lead based on the MinnAqua Program
- a social outlet for educators who share your passion about environmental education, fishing, and/or aquatic resources.

Your activities and events are important to us - we enjoy seeing photos and reading about how you are putting your MinnAqua training to work. We hope this new on-line resource will provide you with an outlet to easily share your success stories, ask questions, receive answers, and stay updated on current events and news about the MinnAqua Program.

Please spread the word to your colleagues and keep the wave going! We are dedicated to providing educators in Minnesota top-quality professional development and on-going support for your efforts to teach environmental science and connect youth to the natural world by hooking them on fishing.

**MinnAqua's Facebook Fan Page is provided as an educational service and is not an endorsement by the MN Department of Natural Resources for Facebook or its policies.*

Educators Jumped For the Workshop Fishing Packages

In our May 2009 newsletter the MinnAqua Program offered an incentive fishing package to have educators spread the word about *Fishing: Get In the Habitat!* by hosting a workshop and having at least 10 people attend. And you responded! As of publication 6 out of the 8 fishing packages were claimed by educators eager and willing to help other educators receive training on the MinnAqua *Fishing: Get in the Habitat!* Leader's Guide.

This package included:

- 24 Rod/Reel combos
- 3 Rod Bags (holds 8 rods each)
- Tackle box (hooks, sinkers, bobbers, casting plugs)
- Safety Bag (first aid kit, throwable floating cushion, Life jacket)
- Fishing vest (Nail clipper, retractable lanyard, forceps, small tackle box, whistle)

Currently educators in northern MN and southern MN still have an opportunity to receive a fishing package for hosting a MinnAqua workshop. Contact Nadine Meyer for northern MN and Scott Moeller for southern MN to set up a workshop in your area. (See contact information below.)

Thank you to the educators who stepped up to the challenge of motivating other educators to attend a MinnAqua Workshop. Here's what some of the educators had to say after receiving their training:

Our program will benefit greatly because we now have the equipment we need for actual fishing field trips. ~ Sara Grover, Project GO, Fishing Package Recipient

Our students will benefit from this training because I am more confident and I have the curriculum. James Harper, Riverway Learning Community

Check our website periodically for updates on the Leader's Guide and other MinnAqua activities.
www.mndnr.gov/minnaqua

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Species Profile** - Close-up on the Brook Trout

By Scott Moeller

Brook Trout:

Salvelinus fontinalis; Salvelinus (sal-veh-lynn-uss) = a little salmon; Fontinalis (fahn-tin-al-iss) = living in springs

As their scientific name implies, brook trout are members of the salmon family that inhabit small spring-fed streams and spring ponds. They prefer cool and clear water with sandy and gravelly bottoms and moderate vegetation. In Minnesota, they are native to the headwaters and small streams of eastern Minnesota. Other common names for brook trout are: speckled trout, squaretail trout, coaster, and brookie.

Most trout streams are located in the southeastern part of the state and along the north shore of Lake Superior. The northern streams contain primarily brook trout, while the southeastern streams contain mostly browns and rainbows (both introduced species for sports fishing, see Piers & Places on pg. 5), with the native brook trout inhabiting the cold, clean headwaters. **Lesson 1:5 Habitat Hideout** can help teach youth how to "read the water" and find suitable habitat for trout.

Identification

The brook trout is a medium-sized (achieving lengths of 8 to 10 inches on average), dark fish with light spots, a black-spotted dorsal fin, and a squarish tail. Its scales are so tiny that it almost looks like it doesn't have any. Male brook trout grow a hook-like protuberance on their lower lips in the fall. The brook trout has a light belly and sides. Its back is dark green to nearly black with light wavy lines and speckles. Some of its spots are red with blue rims.

Handling

To avoid damaging the trout's protective slime coating, wet your hands before handling, and keep the fish in the water as much as possible as you remove the hook. Consider using barbless hooks to make hook removal easier. If the hook is swallowed, simply cut the line and release the fish immediately.

Food

Young brook trout eat small aquatic and terrestrial invertebrates such as mayfly and damselfly larvae, flying insects, water beetles, snails, worms and many others. They have a reputation for having a voracious appetite. Larger brook trout also feed on minnows and other small fishes.

Reproduction

Most brook trout achieve sexual maturity in their first year of life; typically living for 3 to 4 years. Spawning season is approximately October and November. In streams, brook trout spawn in gravelly riffles that are spring-fed. The female thrashes above the gravel bottom to hollow out a concave nest (called a "redd"). The male defends the area while the female creates the nest. Once the nest is complete, the male and female simultaneously release eggs and

sperm into the nest, and then cover the fertilized eggs with the surrounding gravel.

The nest location must be carefully chosen so the water flow from the spring seeps through the gravel keeping the eggs clean and oxygenated. Eggs hatch 2 to 5 months later (depending on water temperatures – cooler water makes for slower development). Brook trout continue to live after spawning and spawn each year of their adult life.

Predators

Because few fish-eating (piscivorous) fish live in their habitat, brook trout have few natural predators. Where they coexist, small brook trout may be eaten by larger brown trout. Aside from humans, however, brook trout are most likely to be eaten by herons, snapping turtles and river otters. One of the biggest threats to the long-term survival of brook trout populations continues to be water quality and temperature. They are highly susceptible to stream degradation and climate change, including low oxygen levels due to sediments from run off and warm waters.

Tackle & Fishing Tips

Search out small headwater streams in southeastern Minnesota, North Shore creeks in the north, or lakes stocked with brook trout. Use small flies and very small spinners or jigs. **Lesson 5:6 Fool Fish with Flies** is a good introductory lesson about tackle used for trout fishing. Brook trout are aggressive eaters, and are relatively easy to catch. As such, they are vulnerable to overfishing. The season for brook trout generally runs from April 18 to September 30, and possession limit is generally 5 (not more than one over 16 inches). Specific possession limits vary with time of year, in southeastern Minnesota. As always, it is a good idea to consult a current fishing regulations book to know your limit to protect the fish populations. **Lesson 4:1 Fishing Regulations and Sportsmanship** can be adapted to focus on trout stream regulations. Also, don't forget your Trout Stamp & fishing license.

Fun Facts

- Back in Minnesota's lumberjack days, logging outfits used to transport brook trout in milk cans and stock them in north woods streams. The fish would then provide meals for the loggers.
- Remote lakes in northeastern Minnesota are stocked with splake (a cross between male brook trout and female lake trout) using a float plane and are dropped from about 300 feet above the lake!

***Species highlighted in this section will be aquatic (fish, plants or bugs) or semi-aquatic in the case of shoreline plants. We'll try to rotate through the various fauna and flora of our aquatic ecosystems in order to help you to become familiar with some amazing organisms from our state!!*

Fishing Equipment & Tips - Fly Fishing "Fun-damentals"

by Michelle Kelly

"Fly-fishers are usually brain-workers in society. Along the banks of purling streams, beneath the shadows of umbrageous trees, or in the secluded nooks of charming lakes, they have ever been found, drinking deep of the invigorating forces of nature - giving rest and tone to over-taxed brains and wearied nerves - while gracefully wielding the supple rod, the invisible leader, and the fairy-like fly."
~by James A. Hensall, MD, 1855~

Perhaps you are a teacher or youth program leader who is looking to develop respect and admiration for fish and wildlife, and a sense of wonder about the environment fish and wildlife inhabit. If so, then try introducing your young charges to a unique style of fishing that allows an angler to become familiar not only with the fish they seek, but the foods, habitat, and water-quality needs of those fish. Try some fly-fishing!

Basic fly-fishing equipment

Flies are small, lightweight artificial lures that are too light to cast with spinning tackle. Trying to cast most types of flies with a spinning reel would be something like trying to throw a leaf! Flies can be made from a variety of materials including feathers, yarn, animal hair, tinsel, pieces of rubber and foam, etc. and they are constructed to imitate the foods that various fish eat in size, color, and shape. The type of flies you choose will depend on the types of fish you want to catch, and what they are eating at the time you will be fishing.

Fly-line is a heavier and thicker than monofilament line. It's covered with plastic so that it floats on the water. The weight of the fly-line propels the light-weight fly forward during the cast.

A piece of clear monofilament line called ***leader*** connects the fly-line to the fly. The leader is less visible to fish than the heavy-weight fly-line. And, because it's lighter, it splashes less on the water, allowing the fly to land with a more natural presentation.

The leader is tapered, thicker where it attaches to the fly-line and thinner where it connects to the fly. The thinner end of the leader is called the ***tippet***. As you tie on new flies the tippet gets shorter. When this happens you can tie on a new tippet length.

Fly rods are longer and more flexible than spinning rods. The fly rod must bend enough to propel the heavy fly-line forward.

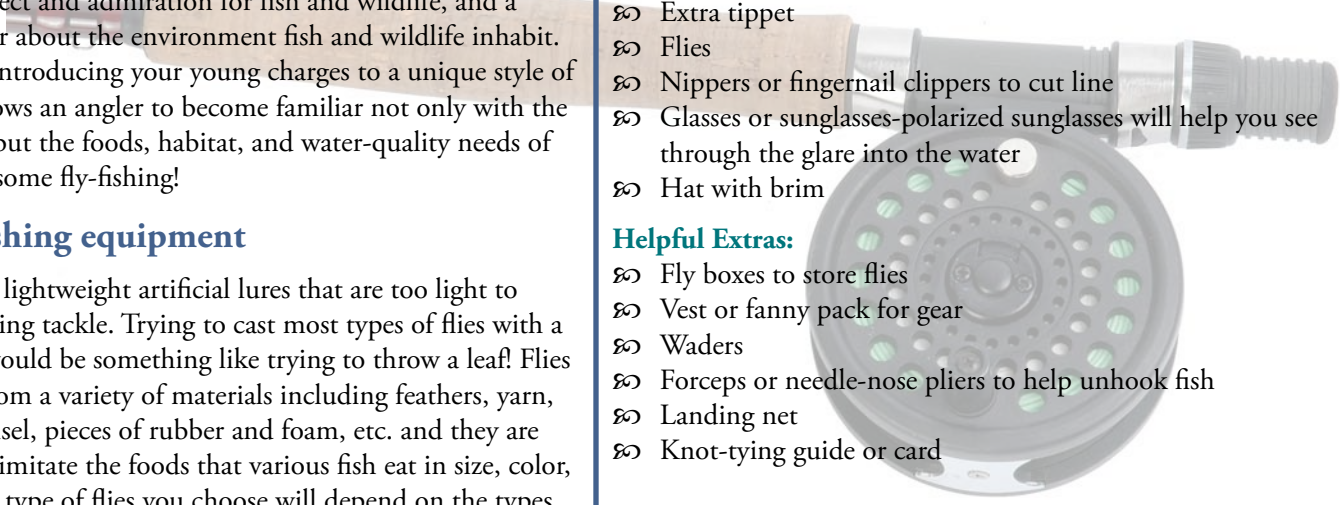
Unlike a spinning reel, a ***fly reel*** isn't used for casting; its main purpose is to store extra line. Lengths of line are hand fed through the rod while casting.

Tips for purchasing the equipment

The weight of the line will need to match the "weight" specifications of your rod for the most effective casting. We recommend you start with a mid-weight (5 or 6 weight) fly rod, fly-line of the same weight, and a fly reel. You can look for a beginner's package that includes a rod, reel, weight-forward floating line, and leader. Introductory fly-fishing equipment packages are available at sporting goods stores and can work quite well. Specialty fly-shops also offer beginner setups in a range of prices and the store owners and employees are usually very enthusiastic about answering questions and providing helpful advice.

Basic equipment that will get you started:

- Mid-weight fly rod (5 or 6 weight) and fly-line to match
- Reel
- Leader
- Extra tippet
- Flies
- Nippers or fingernail clippers to cut line
- Glasses or sunglasses-polarized sunglasses will help you see through the glare into the water
- Hat with brim



Helpful Extras:

- Fly boxes to store flies
- Vest or fanny pack for gear
- Waders
- Forceps or needle-nose pliers to help unhook fish
- Landing net
- Knot-tying guide or card

Once you have the basic equipment, next steps include practice casting and learning to read the water to locate the fish species you wish to catch. There are many ways to learn these skills.

Building Blocks for Skills

Look for fly-fishing courses offered through community education, angler groups, or sporting goods stores. The DNR's Becoming an Outdoor Woman (BOW) program offers fly-fishing classes, too. Check libraries, video rental, or outdoor stores for instructional videos. Several books, some for beginners, have been written about fly fishing basics. Outdoor newspapers and magazines regularly feature fishing and casting tips. There are many websites, including You-Tube that have helpful information about fly-fishing. Websites can also help you locate a fly-angler group in your area.

Sharing the Joy of Fly Fishing

With these "fun-damentals", your students will have a great start on a life-long journey of fly-fishing fun. A journey that connects them to the habits and habitat of the fish they try to fool into taking their flies and one that may provide some respite in this ever more complex and harried world in which they are growing up.

Piers & Places - Finding Trout

by Roland Sigurdson

> ***Eventually, all things merge into one, and a river runs through it. The river was cut by the world's great flood and runs over rocks from the basement of time. On some of the rocks are timeless raindrops. Under the rocks are the words, and some of the words are theirs.***
> ***I am haunted by waters.***
> ~ from *A River Runs Through It* by Norman McLean.

As I sit here on a day approaching 90 degrees (F) my mind drifts to something cool and refreshing. A tall, cold glass of water… ah…just the kind of water where one might find a beautiful, sleek brook trout. But where to go in this big state? Perhaps near a natural spring with ground water bubbling up that hasn't seen the sun in a thousand years. Or to a prairie meadow where you suddenly see a ribbon of clear, cold water that you hadn't noticed before, almost hidden by the grasses bent over its narrow width. Yet another adventure might find you carefully picking your way through shards of basalt torn from the bedrock along Lake Superior by the power of ice and waves, creating a spectacular waterfall that adds oxygen and life for a newly hatched salmon or steelhead.

The trout streams of Minnesota are as varied as the landscape through which they flow. While most of us are tempted to think of trout streams as only existing in the Southeast or Northeast corners of the state, truth be known, you can find one almost anywhere in Minnesota. They may not all be 'blue ribbon waters', but they have what it takes to support these clean water loving, oxygen rich water dependent animals.

North Shore creeks are great scenery but are only fair trout streams because they depend on runoff. Their flows are unstable, surging after a rain, dwindling to a trickle during drought and the winter season. In the summer some stretches get warmer than is best for trout. Despite these shortcomings, North Shore streams have two things in their favor. First is their cool, northern, Lake Superior-moderated climate. Second is the deep-forest bank cover, which shades the streams and keeps them cool. These influences keep these streams just cool enough to support trout.

The streams of southeastern Minnesota are very different from North Shore streams. Most rise from springs and so are cold all year long. The limestone and alluvial soils make the streams very productive. Whereas the North Shore streams have relatively few aquatic insects, the southeast streams produce frequent hatches of mayflies, caddis flies and midges-all providing food for trout. Nonetheless, southeast trout streams do have problems, most related to agriculture. Fence-to-fence grain farming on the uplands and pasturing of the river bottoms contribute land erosion and sedimentation of the streambeds. This fine sediment covers the gravel runs and riffles that trout need to spawn and invertebrates need to survive.

So what can you catch on a trout stream? The species of trout and salmon that occur across Minnesota are a blend of native and introduced species. The streams of the state were historically populated with the native brook trout, a species that is inclined to waters of the most pristine nature, while its bigger cousin, the lake trout, was king in the icy waters of Lake Superior. Over time, fisheries managers have worked to provide high quality trout fisheries in systems that are being impacted by increased human activity on the landscape. In order to meet this need, DNR turned to some additional species of trout that were better adapted to survive in streams that were not as pristine as they had been historically. Rainbow trout and brown trout were introduced to most streams that had become too marginal for the sensitive brook trout to survive. Additionally, salmon species were introduced to Lake Superior when the native lake trout populations spiraled downward as a result of over harvest by commercial anglers and parasitism by the invasive sea lamprey.

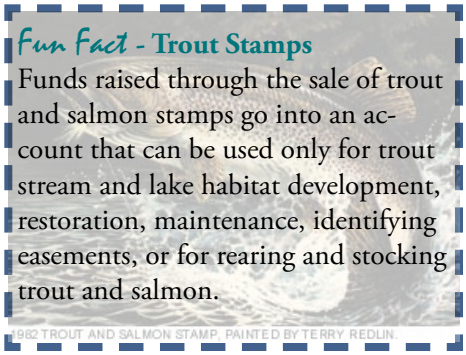
Minnesota also has many lakes that support trout populations. The best place to locate one near you is on the MN DNR website at: http://www.mndnr.gov/fishing/trout_lakes/index.html

But are these places to take kids fishing? Absolutely!! You no longer have to wear tweed jackets and dapper hats to fish for trout! Most of these streams and lakes are very kid friendly and accessible to the public. There are tremendous resources available on trout streams and lakes to be found at: http://www.mndnr.gov/fishing/trout_streams/index.html

Catching trout can be a challenge, but kids have been doing it for centuries. Should yours be any different? *I don't think so.*

Fun Fact - Trout Stamps

Funds raised through the sale of trout and salmon stamps go into an account that can be used only for trout stream and lake habitat development, restoration, maintenance, identifying easements, or for rearing and stocking trout and salmon.



1982 TROUT AND SALMON STAMP, PAINTED BY TERRY REDLIN.

Preparing and Cooking Your Trout

Trout can be prepared and cooked in countless different ways according to your taste.

- Trout can be filleted, or served whole.
- Because trout scales are very small, it is generally not necessary to remove the scales.
- Leaving the skin intact while cooking will provide a richer flavor.

One common way of preparing is to split and remove the entrails, scrub and clean the outside of the trout, dry the skin and remove the head. The two halves of the trout may be stuffed with a variety of seasonings and the trout may be baked, broiled, poached, sautéed, smoked, fried or grilled (the use of foil can help retain moisture).

Featured Lesson - Lesson 6:3 - Planning a Fishing Trip

by Nadine Meyer

Chapter 6 of the ***Fishing: Get in the Habitat!*** Leader's Guide contains five of the 39 lessons, all of which pertain to safety and fishing. Fishing can be as simple or as complex as the angler chooses to make it, yet even the angler with the cane pole, hook and bobber must have some basic understanding of how to fish safely and find areas for fishing that fit an individual's or group's needs. **Lesson 6:3 – Planning a Fishing Trip** is designed to guide students through the process of choosing a safe place to fish using resources found online.

Lesson Summary – *There are many things to consider in planning a safe, successful fishing trip. Students will gather information from a variety of sources, including the Minnesota DNR website, plan a fishing trip and make a poster illustrating how they planned for a safe, successful trip.*

Tips & Tricks

- Be sure to schedule enough computer time in your computer lab to allow students to fully explore the online resources integrated into this lesson.
- You may want to schedule time with your Media Specialist to go through the online resources, like the Lake Finder pictured below, and make sure all elements are supported by your schools computer systems.

- Give yourself enough time to order maps and other visuals from the DNR Information Center and have them delivered to your school before you start this activity. You can order classroom sets of all maps and other visuals for free.
- If you have a local site for fishing already established, you can append this lesson to researching the existing site and utilize digital cameras and GPS units to create a detailed description of your fishing site.

Diving Deeper

Students can add other topics to their research such as invasive species, special regulations, historical fishing and commercial fishing. A follow-up project could include developing a website or brochure dedicated to the fishing areas the students researched that includes all of the information they gathered and images of the fishing area, fish species found in the fishing area, and more.

MinnAqua Lesson Connections

The safety checkoff list and activities found in **Lesson 6:1 - Safety and Fishing at the Water's Edge** can be used in conjunction with this lesson. Safety should always be integrated into all fishing activities, using Lesson 6:1 for guidance can help when creating the posters for **Lesson 6:3 Planning a Fishing Trip**.

Resources to Support Environmental Education

Environmental Learning in MN Grant Program
http://www.naaee.org/maee/
Application Deadline: Oct. 1, 2009

NSTA Toyota TAPESTRY Grant Program
http://www.nsta.org/pd/tapestry/
Application Deadline: Jan. 18, 2010

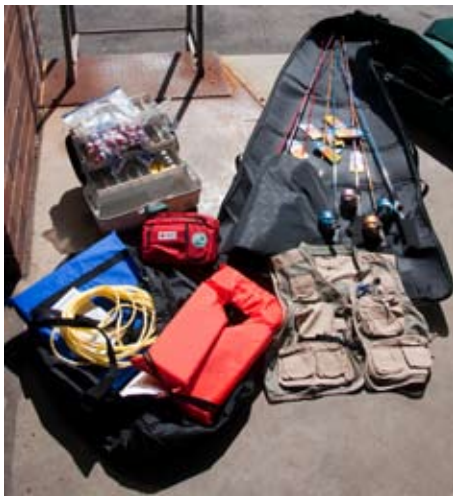
Wildlife Forever Fish-Art Contest
http://www.StateFishArt.com
Submission Deadline: March 31, 2010

Community Connections - Pay it Forward - a Huge Success

by Scott Moeller

As the new school year gets underway across Minnesota, there are some very excited educators with some very new tools, ready to make a very big impact. Thanks to a unique project from MinnAqua, many qualified Minnesota educators and community leaders now have the fishing equipment they need to introduce their students and community groups to fishing.

Dubbed the "Pay it Forward" project, MinnAqua launched the first-of-its-kind project last spring, offering a limited number of complete fishing equipment kits to educators across the state.



MinnAqua Program Pay it Forward Fishing Package

The project was open to the hundreds of classroom teachers, scout leaders, 4H leaders, and fishing enthusiasts who are already familiar with MinnAqua's "Fishing: Get in the Habitat" Leader's Guide. This national award-winning angling and aquatic education curriculum consists of 39 complete lessons as well as scores of other useful features and appendices.

"The intent of this initiative was to keep empowering educators," says MinnAqua coordinator Jenifer Matthees. "In addition to giving educators the curriculum resources they need through the Fishing: Get in the Habitat! leader's guide, MinnAqua is making it a priority to help get fishing equipment into the hands of those educators who are in the best position to introduce fishing to young people."

One such educator is McLeod County 4H coordinator Jill Grams. As a grant recipient, she now has fishing equipment consisting of rod bags filled with complete rod and reel combos, a tackle box with starter tackle, a pair of leader's fishing vests, and a safety bag complete with personal floatation devices, a rescue bag, and first aid kit.

"We are so excited to have this equipment here in McLeod County," says Grams. "We are going to use these rods and reels at so many 4H events, and make them available to other community groups who don't have access to such equipment. This is a great idea for giving educators the tools they need to get kids hooked on fishing and improve their communities."

In exchange for this equipment, eligible educators were asked to submit a web-based description of how they intended to make use of the equipment and extend their gift through additional fishing education or community outreach projects – to "pay it forward."

Among the top 20 qualified grant applicants who were recently awarded their fishing kits, the "pay it forward" project ideas included such things as: partnering older students with younger students in and out of the classroom, involving students in working towards the construction of new fishing piers and other lake access projects, developing youth fishing day camps, matching retired seniors with youth on fishing excursions, training 4H and scout leaders, as well as making the rods and reels available to underserved community members.

Many of the fishing kits have already been put to use at 4H camps, community education events, and scout gatherings across the state this summer. Other kits are ready to be used by hundreds of school children as the new school year starts up.

"We are very excited to make use of our fishing equipment," says Mary Jo Taintor, a first grade teacher at William Kelley Elementary in Silver Bay. "With all of the economic troubles going around, this is GOOD news!"

Due to its success, the program was even extended to an additional round of 13 applicants. In all, a total of 976 new rods and reels are now in the capable hands of energetic youth educators throughout the state as a result of MinnAqua's "Pay it Forward" program.

Above: Jaime Noyes (right), Minnesota River Valley Special Education Cooperative receives her package from MinnAqua Education Specialist Michelle Kelly.

Right: Mary Jo Taintor, Silver Bay Schools, receives her package from Nadine Meyer, MinnAqua Education Specialist.

Program Spotlight - letter from a Pay-it-Forward recipient

by Emily Hane - Playground Supervisor, City of Vadnais Heights

This is my fifth summer with the program and never before have we had such a successful and fun-filled summer. This summer brought about many changes and challenges for our summer Playground Program due to some construction and space issues. We switched sites and changed many things about our program to better accommodate the 60+ children that attend in the summer time. One of the major changes was that we were close enough to a lake that we had the capability of expanding our program beyond the park. Our children not only got the experience of a summer outdoors, but also gained valuable skills such as patience and social bonding in an outdoor setting, brought on by the opportunity to fish with friends.

City of Vadnais Heights Playground Program youth participants fishing with the new Pay-it-Forward Fishing Package equipment received from the MinnAqua Program

Our fishing experience was split into two different days. As a group, we rode our bicycles to the lake together. This presented some challenges as our age range is 5 to 10 years old. The different abilities in bike-riding led to some great leadership displays from the older children. The excitement of the activity ahead really seemed to lead them to be more responsible and caring for one another. Everyone wanted to get there and get started as quickly and safely as possible.

Once we reached the lake, the children were overcome with excitement, and with a quick review/tutorial of the way the fishing poles worked the children were spreading out along the shoreline and casting their lines into the water. Within a few minutes, the excitement grew more intense as some children were shouting out that they got bites, or that they felt something.

When the first fish was reeled in by one of our youngest fishers (the girl in the photo that made it into our local paper - attached), the other children all looked on in amazement. The experience was made all the more wonderful when they realized that this was actually a possibility; that they really could catch a fish! The rest of the afternoon was full of excitement, anticipation, and celebration when another child caught yet another fish. That day brought us a total of 5 catches in a two hour span.

One of many successful catches.

Youth and an adult volunteer

The second day went relatively the same. A new group of children had a fresh start to the experience, while others brought fishing poles of their own and previous knowledge from fishing with parents or other family members. As a staff member, it was incredible to watch the camaraderie of the children as well as the incredible patience it took for many of these kids to sit and wait for a bite (when we were used to seeing them run and jump from activity to activity on a daily basis). This day even brought a little lesson in other creatures of the lake when the children discovered a crayfish that was hidden under one of the rocks near the shore. It had scuttled out when a child dropped some of their corn bait into the water, and the children were fascinated by what they had found.

In the days following this incredible experience many questions came up about different kind of fish, invasive species from signs posted in the park, and other nature-related questions that would not have been brought up had we never been able to have this experience. Thanks to the DNR and the Pay it Forward program, the children were able to gain valuable experience with fishing, but also in patience, kindness, and nature conservation.

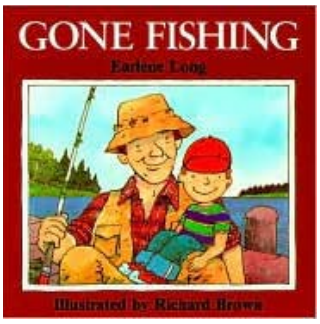
Thank you once again for providing us with the supplies for such a wonderful opportunity. The children of Vadnais Heights thank you!

Family arrives to event - only a short bike ride away from home.

Book Reviews* - Safety & Fishing at the Water's Edge

by Nadine Meyer

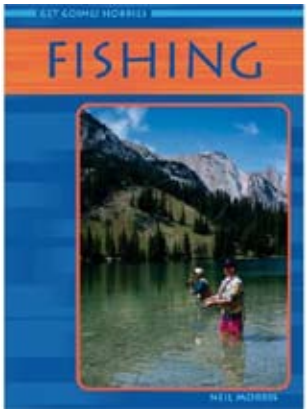
Gone Fishing, 1987
by Earlene R. Long, Ill. by Richard Brown
Grades: PreK-3 ISBN: 0395442362



A young boy is excited to go fishing with his father. A simple story that tells about a fun day fishing with family.

Available in hardcover & paperback.

Fishing, 2004
By Lisa Klobuchar
Grades: 3-6 ISBN: 1403461244

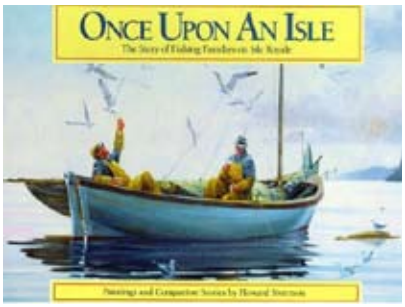


Part of the fun of fishing is the mystery As your line disappears into the water, you try to imagine what's going on under the surface. Is your hook and bait just dangling unnoticed in deep water? Or is a hungry fish eyeing it and getting ready to snap it up?

A\vailable in hardcover

Once Upon an Isle: The Story of Fishing Families 1992
by Howard Sivertson
Grades: 3 & up ISBN: 0962436933

This nonfiction book contains beautiful paintings and stories, including: "Winter on the North Shore" (families wait for the ice-out on the lake); "Picking Baits" (a woman helps her husband prepare for a day of picking 500 herring from nets to use for bait); "The Fish House" (a flurry of activity as men and boys pack fish into boxes of ice and grandmother selects fish for supper); and "Emergency Repairs" (a fisherman fears the worst as winds pound his small boat).



2003 edition available in paperback, 1993 edition available used.

**Book reviews are provided as an educational service and are not an endorsement by the MN Department of Natural Resources.*

Mentoring and MinnAqua

by Mike Kurre

One of life's little pleasures is sharing our experiences and memories.

In a recent adventure with some friends and one of their sons, we followed my dad's old canoe route back from the late 1930s and early 1940s when he was a fishing guide in the Boundary Waters Canoe Area (BWCA) around Ely and the Canadian border. I was taken aback by all the sheer beauty, immense power of nature and the many outdoor memories we shared as a family back then.

Dad was kind of the quiet type when it came to his past. World War II, his work in iron ore mines in Ely, the tough old days of the "Depression" era, his vocation as a high school guidance counselor and his guiding days in the Boundary Waters were somewhat off-limits to talk about at the dinner table. I deeply regret not knowing as much about his formative years; however, he was egger to share his knowledge and "how to" of his experiences with anybody who wanted to know, whether it was life's career choices or packing for a canoe trip.

Military Family Fishing Event

A wave of nostalgia hit me as I stood on the granite ledge by powerful Curtain Falls. The breeze from that roaring water blew memories experienced with Dad, Mom, my brother and other family members encountered in the great outdoors through my mind. I remembered the swimming picnics and BBQs by the lakes and river banks, the admiring of the first trophy smallmouth of this young angler's life, the stories around the campfire about the crafty loon trying to steal one of our walleyes from the stringer and the trophy pike that got away (which probably was a five-pounder but remains a monster in this kid's eyes).

I recalled as a youngster the boat rides on bench seats and long bumpy portages on the way to Basswood Lake in the newly formed BWCA. I'll never forget fishing 'till dark, playing cards as long as we could keep our eyes open (and had gas in the lanterns), long hikes in the woods, visiting with all the portage users, fresh fish and fried potatoes over an open flame, snagging my hat/pants/body parts with lures and listening to all the sounds the woods have to offer after dark (including my cousin's snoring).

Another such memory as a high school junior and soon to be senior was a canoe trip with some classmates into the BWCA. A few highlights included trying to keep a trophy smallmouth alive for four days until we could take it to Fisherman's Headquarters in Ely for a photograph, weigh-in and the certificate of achievement; the alleged short-cut portage that was a half-mile of thigh-

Continued on Page 10

Thinking Inside-Out! - New Column for MinnAqua Moments

by Michelle Kelly

This new column will be presenting a variety of short discussions related to learning and the brain. We welcome your suggestions and feedback!

> Most of the research from neurology, psychology and education is suggesting that teachers (at all grade levels) implement more **student-centered, differentiated instructional models.**

Summer will soon be coming to a close, and it's likely you are gearing up for a new school year. How would it affect your teaching/youth programming if everyone truly believed that the human brain could change structurally and functionally as a result of learning and experience--for better or worse? How would it affect how we teach and how students learn if everyone believed that the kinds of environments we create for learning, how we teach, and the learning strategies we offer students could result in better or worse mental equipment they will use throughout life?

These questions are not as far-fetched as they would certainly have been thirty or forty years ago. In fact, new findings in psychology are suggesting that all areas of the brain are "plastic" even after childhood. According to the theory of neuroplasticity, thinking, learning, and action actually change both the brain's physical structure (anatomy) and functional organization (physiology) from top to bottom. A substantial paradigm shift is now under way: Canadian psychiatrist Norman Doidge has stated that neuroplasticity is "one of the most extraordinary discoveries of the twentieth century.

Many different kinds of activities and conditions can influence brain development. As educators and youth program leaders one way we can "set the stage for discovery and development" is to facilitate learning environments and experiences that will literally shape your students'/youths' brains as well as shape their futures. Expand your learning environment this fall beyond the four walls of your classroom, meeting space, recreation center, etc. and get your kids outside! Give your students/youth groups the permission and space to make observations, discover, try new things, fail, and try again… and to engage in their communities and connect with the natural world.

Everyone's ability to learn is affected by the environment he/she learns in, and everyone has a different optimal learning environment. By providing your students/youth with a variety of opportunities to discover their optimal learning environment(s), whether it might be sitting in a quiet room at a desk, working within a group of peers, or while baiting a hook, listening to the birds overhead and breathing in fresh air you will help them to learn how they learn best and you'll be expanding and enriching their experiences.

MinnAqua's ***Fishing: Get in the Habitat!*** can help you expand your classroom beyond those four walls with lessons and activities for the classroom, the gym, the playground, in the local community, or outside at the water's edge. The lessons also provide opportunity for self-reflection, cooperative group work, observation, discovery, investigation, physical activity, and more. Every child can find success in school and/or with their youth program as well as in life if we begin to focus on identifying their individual strengths, how each child learns best rather than fitting them all "in the same box" – within four walls!

We can do more than "think outside the box." We can "Think Inside-Out!", and physically spend some time outside those four walls with our students/youth groups exploring and engaging in the surrounding community and environment. We can ***Get in the Habitat!*** - where the kids live, and where each of their hearts and minds are… and positively shape each and every brain – for life.

ATTENTION MinnAqua Moments Readers

Send in your answer to the following question to receive a handsome MinnAqua Lapel Pin and be entered in a drawing for one MinnAqua Fishing Package.

What is the species featured in this issue's Species Profile? (See page 3)

Email your response to **nadine.meyer@state.mn.us** with your mailing address. Everyone who responds receives a pin.

Responses received by October 2 will be put in a drawing for a MinnAqua Fishing Package.

Mentoring - ***continued form page 9***

high muck and swarms of mosquitoes which doubled the time we spent getting back to civilization; and even the plate-sized fish that was later identified as a two-pound plus sunfish we caught and pan fried over hot coals. Talk about memories!

Stirring up those memories is good for the soul! I can't believe it took so long to reminiscence about days gone by. Are you stirring up those memories? What will your children remember from their youth -- texting, video games and computers? How about slipping away and making time afield with your family in a state park, on a lake, the beach, a walk along the river or paddling in the Boundary Waters? Now is the time to "Stock Up on Memories" before it's too late!

Angling for a Laugh - Opening a Can of Worms

by Scott Moeller

When you're fishing with kids, there's no shortage of surprises. I was reminded of this on a recent fishing excursion, where I found myself in the midst of a tense ethical debate about, of all things, worms.

I was in the process of cutting a nightcrawler and skewering one half of its writhing body onto a hook, when I noticed one thoroughly disgusted young lady giving me a look that made me feel like Ghengis Kahn, Heinrich Himler and the guy who shot Bambi's mom all rolled into one. She spoke up and implied that I was being cruel and barbaric to the worms.

I was shocked. I thought TV and video games were supposed to have desensitized kids to this kind of carnage and rendered them incapable of compassion for other living creatures. It apparently didn't take with this girl.

I'd never pondered the ethical ramifications of baiting a hook before, and I was momentarily speechless. How should I respond to her charge? In a perfect world, I should seize the moment as an opportunity to teach the child an important life lesson about how all things die and the importance of the food chain.

As a parent of young children, however, I have had this brutal honesty backfire on me on multiple occasions, each time leading to a long line of complex questioning about the meaning of life, followed by a dicey inquiry into where babies come from, and concluding with me singing the theme to the Lion King.

"You are helping them fulfill their destiny," I said, trying to put a positive, Zen-like spin on things. "These worms want to help us catch a fish in order to feel like their life was worthwhile."

The kid wasn't buying it.

"Look how they wiggle with anticipation when we tear them apart," I added.

Still nothing. So, I went to plan B and distracted her with useless worm facts.

"Actually," I said, "if I only use the back half of the worm, the front half will go on living."

It was true. If you cut a nightcrawler in half, the head end will continue to live while the tail end will eventually die. The long-standing belief about both ends living is only true with a very select group of earthworms.

The head end goes on living because their simple brain, five hearts, mouth, esophagus, crop and gizzard are all found there. The tail end can actually go on living for a while as well, because brain-like ganglia and heart-like portions of the blood vessels extend the entire length of the worm's body. Still, it's tough to eat without a head or mouth, so the tail end is ultimately doomed.

"So which end is that," she challenged, pointing to the portion of worm already impaled on my hook.

Luckily, and by complete coincidence, it was the tail end, and I confidently told her so.

"How do you tell a worm's head from its rear end?" she asked, her disgust finally giving way to curiosity.

My mind raced at the countless politician and lawyer jokes I could make if only I were surrounded by a more mature crowd. I shook it off and told her that you can tell the head from the tail by finding the thick, light-colored band around the worm. This band, called the clitellum, is located closer to the head and is used for reproduction.

Here's where worms really get weird. A worm, it turns out, is neither male nor female. A worm is a hermaphrodite and, as such, has both male and female parts. (I can only assume that the "puberty talk" between worm parents and adolescent worms must be awkward at best.) Any mature worm can mate with any other mature worm by simply touching clitellum and exchanging goodies. Both worms then shed the skin from their clitellum, which forms a fertilized worm cocoon which will hatch several weeks later.

Of course, I didn't actually tell the young girl all of the worm sex stuff, but I did throw in a few more useless tidbits to seal the deal. I handed out rods and reels as I talked about how worms have no eyes, but can sense light through their skin and can also sense vibrations in the ground. They have tiny little bristles along their body that help them move through the soil. There are about 150 different kinds of earthworms in North America. They come out of the ground when it rains, but no one is quite sure if it's because they don't want to drown or if it's a cue for mating.

As I fiddled with a tangled line, I concluded with the fact that, as amazing as nightcrawlers are, they aren't actually supposed to be here. They are an exotic invasive species and, while they do help decompose organic matter and aerate the soil, they are harming our forests by breaking down too much leaf litter and allowing some invasive plants to move in and take over.

I looked back to see how the young girl was responding to my litany of worm factoids. But she was gone. She had grabbed the head end of the worm and was headed for the water's edge.

I can't be sure, but I think there was a look of fulfillment on the worm's little face.

I know there was on mine.

To find out more on harmful effects of earthworms on hardwood forests please go to:
http://www.mndnr.gov/invasives/terrestrialanimals