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GREETINGS OF THE SEASON



Whatever you celebrate in December, Grass River Natural Area wishes you happiness, joy, and peace in this festive season. The wreath in the center represents the natural world we all love. That world unites us, whatever our beliefs, and provides a place of peace for all.

We also send wishes for

A HAPPY AND HEALTHY NEW YEAR

NATURE'S WONDERFUL NETWORK

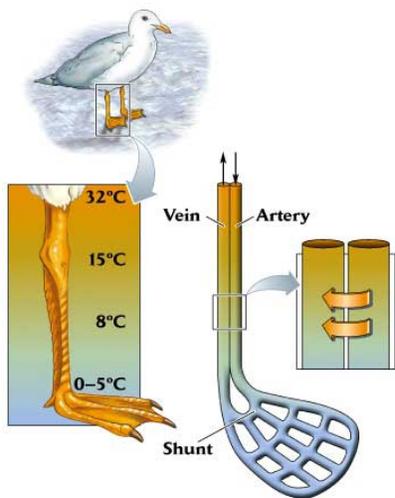
by

Arlene Westhoven

GRNA naturalist



Why don't animals' feet get numb or freeze? We humans wouldn't think of walking around on snow and ice in our bare feet or wading in near-icy water. Our feet would certainly be numb, even if they didn't actually freeze. But think about it! Squirrels, mice, raccoons, otters, and many other animals are active on snow and ice and in near-freezing water yet their feet don't freeze. Fur or feathers on the legs and feet help insulate the extremities against the cold, as in Snowshoe Hares and River Otters. Birds, such as Ruffed Grouse, Snowy Owls, and Rough-legged Hawks are feathered down to or over their toes to preserve heat. Another strategy is 'tucking'. A bird alternates standing on one leg and tucking the other up into its body feathers. Perching birds tuck by lowering their bodies so the breast and belly feathers cover their feet.



Some animals, however, have another strategy that prevents their extremities from numbing or freezing, even on ice and snow or in icy cold water. The physical "secret" is known as *counter-current exchange*. This phenomenon occurs in many warm-blooded or endothermic animals. Temperature counter-current exchange takes place between the arteries pumping warm blood from the heart to the extremities and the veins returning the cooled blood back to the heart. The veins and arteries lie next to each other in an arrangement called the "rete mirabile" or wonderful network. As the warmed blood goes to the extremities it transfers some of its heat to the cool blood returning to the heart. This keeps the feet from freezing and prevents shock to the body's core which makes it possible for the heart to continue beating.

Otters, squirrels, wolves, coyotes, and even our pet dogs have this network. Just one degree



above freezing prevents frostbite. Birds, such as ducks and gulls, that spend their time in icy waters have this artery-vein arrangement also. Penguins not only have the "rete mirabile", their legs (except for their feet) are embedded within the body. Loons, including our Common Loon, also have body-enclosed legs.

As with so many things in nature, humans have made use of this counter-current principle for heating (and cooling) that makes use of the steady temperature underground. You will be pleased to know the heat exchange system in the Grass River Center makes use of this energy-saving principle.

It's a Winter Wonderland at Grass River Natural Area, where you can watch the miracles of nature in action.

GRNA BOARDWALK RECONSTRUCTION PROJECT RECEIVES GRANT FROM MI NATURAL RESOURCES TRUST FUND

And speaking of major gifts...

On Wednesday, December 1, Gov. Gretchen Whitmer and the Michigan Natural Resources Trust Fund (MNRTF) board recommended to the Michigan Legislature, approval of a \$300,000 development grant to Antrim County to support the reconstruction of a section of the boardwalk at the Grass River Natural Area.

This grant will help us improve the existing .39-mile section of the boardwalk that connects the Grass River Center with the Grass River. GRNA has 1.24 miles of boardwalk that allow visitors the opportunity to immerse themselves in the natural area's unique, high-quality wetlands without disturbing its ecology. In 2018, GRNA



replaced .21 mile of boardwalk with a new, more environmentally sensitive structure. These projected improvements will include expanding the width of the boardwalk to six feet to make it accessible to all, construction of new observation platforms that are ADA ramped for access, enlargement of the

dock, and an ADA accessible kayak launch at the Grass River. Jenn Wright, GRNA, Inc's Executive Director, explained, "We are excited for this opportunity to complete these much-needed repairs on the GRNA boardwalk. A majority of our 40,000 annual visitors utilize this section of boardwalk to experience the beauty of the Grass River. Funding from the MNRTF will allow us to expand that access to users with all abilities."

The total for the phase of the project funded by this grant is slated at \$1.1M and as of now over \$940,000 has been raised toward that goal without a formal capital campaign. Antrim County Administrator Pete Garwood said, "With the Michigan Natural Resources Trust Fund grant, along with matching funds from Antrim County and many individuals and businesses, a much broader range of the population will be able to enjoy this very special place in a comfortable and safe manner. GRNA, Inc. has done a great job of pulling all the partners together and the Antrim County Board of Commissioner is excited that one of the County's premier parks will soon be more accessible to all." Construction is expected to begin in Fall 2022.

In addition to this grant, we have funding from the County, the recently received Impact 100 TC grant, some foundation grants, and individual donations totaling nearly a half-million dollars that have been sent by visitors who experienced the need to replace our boardwalks. Another grant request is pending for \$50,000. If it is awarded we will be just \$110,000 away from our goal.

This is certainly a happy way to end 2021!

To read more about the MI Natural Resources Trust Fund or to see other projects supported in our state, go to:

<https://content.govdelivery.com/accounts/MIDNR/bulletins/2fef28d>

 **YOU PUT YOUR
"STAMP" OF APPROVAL
ON *GIVING TUESDAY*
AND WE CAN'T THANK YOU ENOUGH!**



On Giving Tuesday this year, we asked for donations of stamps or donations so that we could purchase these perfect-for-GRNA Otters in Snow limited edition stamps. Apparently, this request was popular, as we have 70 books of stamps and donations of over \$1,000 to purchase more Otters in Snow stamps now. That could cover up to two years of postage with Forever stamps that will protect us from future price increases.

This is a wonderful example of the difference a \$25 gift can make to a nonprofit. Major gifts are nice, but lots of smaller gifts make a major difference, too!

THANK YOU TO EVERYONE WHO DONATED!

PROGRAMS ON THE HORIZON



Night Ski and Snowshoe in the New Year

Friday, January 7, 2022

7:00 pm - 9:00 pm

\$5 per person

Start the new year off right with an evening self-guided ski on GRNA's groomed ski trails or a snowshoe to the river. Fire and hot cocoa will be available at the pavilion and the Center will be open while the night ski and snowshoe is open. Bring your own headlamp to light your way. [Register here.](#)



Moon-lit Guided Snowshoe

Friday, January 14, 2022

7:00 pm - 8:30 pm

\$10 per person

Moonlight reflecting off of freshly fallen snow is a great way to enjoy the forest in January. Join a naturalist on a guided snowshoe through Grass River's forests at night to look for signs and sounds of nocturnal animals. Snowshoes

are available for rent for an additional \$5 rental fee during the program or bring your own. Meet at the Grass River Center. Bring a flashlight or headlamp. If it is clear, there may be moonlight. [Register here.](#)



Winter Fungi Walk

Saturday, January 22, 2022

10:00 am - 12:00 pm

\$10 per person

Fungus is all around, even in the wintertime! Go on a winter walk in search of the fungi of winter, like shelf mushrooms on fallen logs, bark, and standing trees! Along the way, we will likely see a lot of lichens as well. We will collect some for identification and discuss some of their medicinal qualities with long-time mushroom hunter and naturalist, Franny Bluhm. Snowshoes will be available for rent if there is deep

snow. [Register here.](#)

GRASS RIVER CENTER HOURS

The Center will be closed December 23 - 25 and reopen on Sunday, December 26 from 10:00 am - 4:00 pm and Thursday, December 30, 2021. It will be closed again on December 31 and January 1, 2022.

Regular winter hours will resume on Sunday, January 2, 2022

Winter hours: 10:00 am - 4:00 pm, Saturdays and Sundays

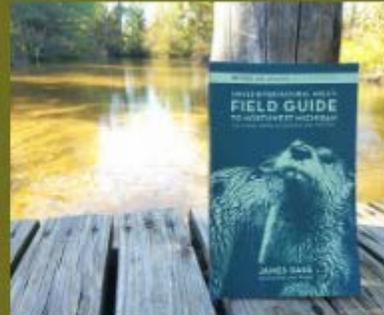
GET READY FOR COLD TEMPERATURES

Purchase a shirt or hat for yourself or as a gift and GRNA benefits



Choose from any of the logos featured above, printed on a variety of styles, colors, & sizes from youth to adult. Order online by clicking on this box. A portion of the sale comes back to GRNA as a donation.

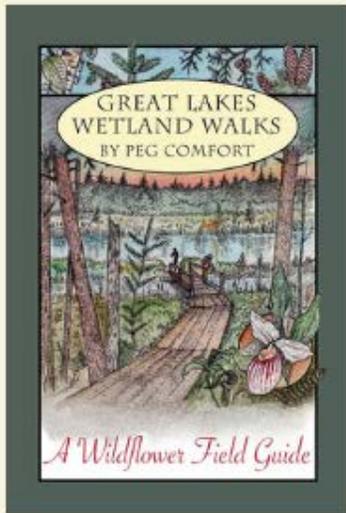
**The 2nd Edition of
Grass River Natural Area's
FIELD GUIDE
to Northwest Michigan
is now available.**



This guide is written and compiled by GRNA Education Director James Dake. It features several new and expanded sections and a new Foreword by Executive Director Jenn Wright.

Cost is \$18.87 plus tax

Order online by clicking on this box or available at the Grass River Center Gift Shop



This beautiful and
informative book
is available online and in the
Grass River Center Gift Shop.

It is perfect for hikers, gardeners, and
nature enthusiasts.
Artistic illustrations and photographs
add to the book's appeal.

[Click here to order](#)

Grass River Natural Area is a nonprofit organization that has flourished for fifty-two years because of the generous support of people who value our mission "to manage the Grass River Natural Area, conserve and protect its watershed, and provide opportunities that increase knowledge, appreciation, and community-wide stewardship of the natural environment".

If you believe in our mission and want to help us fulfill it for many years to come, please click on the Donate button below. Your support is greatly appreciated.

DONATE



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