

That Wild, Wild Rice

Hi, I'm Jesse Schomberg and today on The Sea Grant Files I'm going to talk about wild rice.

Scientists call it *Zizania aquatica*, the Ojibwa call it manoomin. I call it part of a Minnesota dinner.

Really, "wild rice" is a misnomer. Yes, it's often wild, but it isn't actually a species of rice. Calling it "wild annual aquatic grass seed" would be more accurate. Other than corn, wild rice is the only grain consumed by humans that is native to the United States.

70% of the wild rice sold in the U.S. is from California. There in the Golden State it is grown, harvested, and processed commercially. However, Minnesotans can proudly say that, in this state, wild rice is still harvested in the tradition of the Anishinaabeg and other native peoplesby hand.

Harvesting wild rice by hand requires two people, one canoe and a 25-dollar license for the season. The person in front crouches in the bow, and gently taps ripe kernels into the canoe with knocking sticks called "bawa'iganaakoon" (bah wah eegah NAH koon), which are made of lightweight cedar. The other harvester stands in the stern and pushes the canoe with a long pole. The kernels that fall outside of the canoe are left to produce a future harvest. Sure, it's labor intensive, but it's still a tradition for many families.

After harvesting, there's more work. Wild rice can be stored for years; but first it must be parched. Parching involves drying the moist grain by tossing several handfuls into a kettle called "okaadatik" (oh KAH duh kik) which sits over a hot fire. The wild rice is stirred with a wooden paddle to prevent scorching.

Next the grain needs to be thrashed to remove the outer, inedible hulls. After "jiggling" or dancing the grains around to help detach the hulls from the seeds, they are poured a little at a time into a large wooden trough, a "bootaagan" (boe TAH gun). Traditionally a young man wearing clean moccasins treads lightly on the wild rice; crushing the hulls with his feet.

Once the wild rice is thrashed, it's winnowed. Winnowing separates the kernels completely from the hulls. As the wild rice is tossed into the air from a birch bark tray called a "nooshkaachinaagan" (nosh KAH chee NAH gun), the wind blows the broken bits of hull away and the skillful thrower catches the falling grain.

By law uncultivated Minnesota wild rice must be harvested by hand, and only by those licensed to do so during the season that, this year, started in mid August and ends on September 30. In areas governed by tribes like the Mille Lacs Band of Ojibwe, wild rice can only be lawfully harvested by reservation residents.

Years ago, local Native American tribes and the DNR noticed that wild rice was rarely found in waters where sulfate concentrations were elevated. Sulfate comes from natural sources as well as from humans in the form of such things as farm runoff, sewage treatment discharge, mining, and acid rain. Proposals to increase copper-nickel mining in northern Minnesota and consequently the probability that additional sulfate will enter natural waterways raised more questions about how sulfate and sulfide may affect wild rice beds downstream.

Earlier this week, Minnesota Sea Grant's communication assistant Rachel Kuntz sat down with John Pastor, a professor of biology at the University of Minnesota Duluth. Dr. Pastor studies how wild rice fares in water that has elevated sulfate and sulfide concentrations. He does this in tubs that are about the size of kiddy wading pools.

He explained that sulfur, when it is bound to iron, nickel, and copper in ore bodies, is in a sulfide form. When exposed to the atmosphere, this sulfide oxidizes ... becoming sulfate, which dissolves in water and can be transported downstream. When sulfate enters wetlands where oxygen levels are typically low, the sulfate-reducing bacteria that live there strip off the oxygen, creating sulfide again ... only this time, because it is not bound to a metal, the sulfide is biologically harmful. As the levels of sulfide increase, wild rice seedlings have lower survival rates and mature plants produce fewer viable seeds, and those seeds are smaller than what is considered normal.

Minnesota is the only state that has a standard for protecting wild rice from excessive sulfate. Dr. Pastor thinks the current standard is adequate at 10 milligrams of sulfate per liter of water or less, finding that that wild rice in his experimental pools becomes less productive at 50 milligrams of sulfate per liter.

Dr. Pastor's research team, which has been partially funded by Sea Grant, has been investigating whether adding iron, as well as sulfate, to aquatic systems precipitates the sulfide in sediments and perhaps renders it harmless to plants. However, they found the iron-sulfide precipitate ended up on the wild rice roots to a much greater extent than in the sediment. Preliminary results suggest that the precipitate on roots blocks nitrogen, an essential plant nutrient, from being taken up by the plants.

Proposals for new mines have brought extra attention to the Minnesota standard, to which wastewater treatment plants and other industries are also accountable. People anticipate significant rate increases and price hikes on some products if Minnesota becomes more rigorous about enforcing the standard.

What can you do? The main ways you can contribute to a more sustainable society is to stay informed, support science-based solutions and work to manage your consumption of the electronics in which copper and nickel are used.

Prior to this year's ricing season, Minnesota Sea Grant published the "Wild Rice Monitoring Field Guide" and the "Wild Rice Monitoring Handbook" by Dr. Pastor's graduate student Tonya

Kjerland. The books help resource managers track the annual productivity of wild rice beds. Nancy Schuldt, Water Project Coordinator for the Fond du Lac Environmental Program commented that these publications are important for standardizing wild rice monitoring in this region. “They set the benchmark not only for us at Fond du Lac, but for other tribes who are just beginning to monitor their populations,” she said. These publications, wild rice recipes and a video about harvesting wild rice are available on the Minnesota Sea Grant website at www.seagrants.mn.gov.

This episode of the Sea Grant Files was produced by Rachel Kuntz, Olivia Dehler, Sharon Moen, Mariah Schumacher and, me, Jesse Schomberg. For more information, or to listen to other episodes of the Sea Grant Files visit the Minnesota Sea Grant website at www.seagrants.mn.gov. You can also follow the Minnesota Sea Grant on Facebook or Twitter. Thanks for listening!



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