Getting to the root of wild rice to help restoration

Big Rice Lake, northeast of Virginia, Minn., could be called Pickereel Weed Lake. The wild rice stands that likely gave the lake its name are thin and scattered. Large portions of the lake are thick with pickereel weed. "I assume the water level has been altered at some point, giving the pickereel weed an opportunity to get established," said NRRI plant ecologist Carol Reschke. "There are still areas of wild rice on the lake, but it's sparse. Not enough get out there and harvest."

Efforts in Minnesota to restore wild rice haven't been consistent. In some lakes it came back beautifully, in other places competing perennial plants — mainly pickereel weed and narrow-leaf cattails — have won out. Why? That's what Reschke and NRRI environmental engineer Chulan Chu are trying to figure out.

"What makes a healthy environment for an annual plant like wild rice to outcompete perennial plants?" Reschke asked. "Wild rice has to produce seeds and start over each year, while the weeds have big root systems and just grow back each year."

To get a better understanding, the science team heads out by air boat or canoe to six sites — some with healthy wild rice stands, some with sparse stands. University Water Resources Science graduate student Tyler Unizid is charged with gathering sediment around root systems of both the competing plants and the wild rice plants at each site. The chemistry of the sediment and microbes associated with the roots are carefully analyzed, along with water quality.

"Microbes have dynamic relationships with plants," explained Chu. "They're studied extensively for their roles in agriculture, for instance. But little is known about microbes' role in aquatic native and invasive plants."

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