Great Lakes Indian Fish and Wildlife Commission. This brochure was created with the assistance and support of the following:

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Water Clarity/Color:
Clear water is preferred, as very dark or muddy water is not very productive for wild rice. The depth, weather, and other factors can increase water clarity and reduce algae blooms. Wild rice is an ecological treasure.

Wild rice can also help maintain water quality by binding loose soils, tying-up nutrients and slowing winds across shallow wetlands. These facts can increase water clarity and reduce algae blooms. Wild rice is an ecological treasure.

Ecology

Wild rice is important in the ecology of many lakes and streams. Its numerous seeds have long been recognized as a valuable watershed food. Within its core range in Minnesota and northern Wisconsin there may be no food more important to watershed being readily and heavily consumed by mallards, blue-winged teal, ring-necked ducks, wood ducks and other species. Wild rice also benefits breeding waterfowl, providing roosting and landing areas to adults, and essential brood cover for the young.

Wild rice’s other ecological contributions are often less appreciated. From the muskrat that feeds on a tender spring shoot, to the invertibrate that lives on the fall’s dying straw, wild rice benefits a wide range of species because of the food, cover, or physical structure it adds to the environment. The habitat it provides species ranging from moths to moose and snails to rails adds to the biological diversity of the wetlands where it is found.

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Management

Rice abundance can vary widely from year to year, especially on lakes that have been treated with herbicides. Typically a four year period will include a bumper year, two fair years, and two poor years. Some lakes may have exceptionally bad years due to extreme weather, disease, or other factors. Most seed will usually germinate the first spring, some may remain dormant in the mud until spring when warming water levels stimulate germination. The seed remains dormant in the mud until spring when warming water levels stimulate germination. Although rice is fairly tolerant and beds exist on a wide range of water depths, too much stability in water level over a long period of time can uproot or drown entire beds. Wild rice is an important foodstuff for humans and wildlife alike.

Cultural Significance

Manoomin, a term derived from “Manitou,” meaning Great Spirit and “meenum,” meaning delicacy. It is the “food that grows on water,” whose presence fulfilled the prophecies foretold in the story of the Anishinaabe’s migration from the east. Considered a special gift from the Manitou, this “spirit food” has been a central component of Native American culture in the rice region for hundreds of years, featuring in the lives of the Dakota and the Menominee (who took their name from this plant) as well as the Ojibwa. The August, or Rice Making Moon, signaled the harvest season, which was a time for celebrations of Thanksgiving. Its distribution influenced inter-tribal battles and the placement of Indian reservations.

Manoomin had great importance to early European explorers as well. Their journals contain many references to the plant they found growing on the lakes and rivers they traversed. As a staple food of the voyageurs, it helped the regional fur trade flourish.

Because of its significance, wild rice’s presence in Wisconsin and Minnesota is well documented. Current maps of the historic rice range are dotted with names originating from this plant. Numerous lakes, rivers or streams are named Rice or Manoomin, or bear related names such as “Poygan,” derived from the Menominee word for gathering rice. It is believed that no other plant has contributed to more geographic names in all of North America.
A Historic Decline

Unfortunately, many historic rice beds have been lost. Rice can be hurt by pollution, large boat wakes, exotic species, and other factors. Especially damaging are changes in water levels. The lakes and rivers which support rice have frequently been dammed, and even small increases in depth can destroy the habitat for this species. Although it is impossible to measure exactly how many acres of rice have disappeared, it is clear the loss has been substantial.

Habitat Requirements

Water Flow: Rice does best in the presence of flowing water, with rivers and flowing streams being optimal examples. Rice also does well in lakes that have an inlet and outlet. In lakes with relatively little flow, rice may persist, but will typically vary more in abundance from year to year.

Water Depth: This is perhaps the most critical element. Rice grows in about 0.5-3 feet of water, with 1-2 feet being optimal.

Water Clarity/Color: Clear water is preferred, as very dark or stained waters, particularly where water depths are limited to about 2 feet or less.

Sediment Type: Several inches of soft organic muck is considered optimal. However, rice is fairly tolerant and beds exist on a wide variety of bottom types including sand and gravel. Extremely soft or flocculent bottoms may be unsuitable, but moderately flocculent sites may be a preferred habitat niche.

Water Fluctuations: Generally annual fluctuations should not be too great, and water levels during the growing season should be stable or gradually receding. However, too much stability in water level over many years may be detrimental. The loss of year-to-year fluctuations, as may occur where water levels are artificially controlled, may lead to perennial plants out-competing rice. Some natural fluctuations should be maintained, even if it means an occasional poor year for rice.

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Wild rice is an annual aquatic grass. Its life cycle is fairly simple: The seed drops off the plant in August or September and usually sinks rapidly into the sediment near the mother plant. The seed remains dormant until the next spring when it begins to germinate. Although most seeds will usually germinate the first spring, some may remain dormant for 1-2 years. This extended dormancy allows wild rice to survive occasional crop failure.

Next the plant goes through several distinct growth phases. By late May and early June the plant is in the submerged leaf stage during which a cluster of 1-4 underwater basal leaves form. By mid-June the plant is in the floating leaf stage when ribbon-like leaves lay flat on the water's surface. This generally considered the most critical stage, the plant is buoyant and high winds or a rapid increase in water levels can uproot or drown entire beds.

By the end of June one or more aerial shoots have began to develop. These shoots will continue to grow into August, reaching a height of 2-8 feet above the water. Multiple shoots, up to 10 or more, are most common where the water is shallow and the plant density is low.

As early as late July flowering begins. Both male and female flowers develop on the same stalk, the female above the male. The female flowers open first, followed 3-4 days later by the male flowers. The pollen is wind borne. This timing difference in flower opening promotes cross pollination.

In August and September the seeds develop and mature. Seeds on a single stalk reach maturity over a 10-14 day period, with the highest seeds maturing first. Ripening is also affected by sediment type, water depth, weather, and other factors. Rice seed drops into the sediment, unless harvested by humans or wildlife. An acre of good rice beds can yield over 500 pounds of seed.

This gradual, uneven opening means rice can be harvested repeatedly during the season, which may extend for up to 3-4 weeks on a particular lake. Different water bodies will also ripen at slightly different times, so the harvest season may last six weeks if fair weather holds.

Rice abundance can vary widely from year to year, especially on the more "lake-like" beds. The rule-of-thumb for lake beds: A typical four year period will include a bumper year, two fair years, and a bust (see photos left and right).

Cultural Significance

Wild rice, or manoomin, as it is called in Ojibwe, has been an important food source for indigenous peoples for centuries. It is considered a gift of the earth and is valued for its nutritional value, cultural significance, and ecological benefits. Wild rice is harvested using traditional methods that have been passed down through generations, and it continues to play a significant role in the lives of many Native American communities.

Wild rice is not only a source of food, but also holds a deep symbolic significance for many indigenous peoples. It is often associated with strength, wisdom, and healing, and is considered a symbol of the sacred connection between people and the land. In many cultures, wild rice is used in ceremonies and rituals, and is believed to have spiritual and medicinal properties.

Wild rice is a versatile food that can be cooked in a variety of ways, including boiling, roasting, and grilling. It can be served as a side dish, added to soups and stews, or used in traditional Ojibwe dishes like wild rice porridge. Wild rice is also a valuable source of nutrition, providing a good amount of protein, fiber, and essential nutrients like iron and calcium.

Wild rice production is closely tied to the health of the environment. The presence of wild rice in a lake or river is often an indicator of healthy water quality, as it requires clean, clear water to thrive. Additionally, wild rice is an important habitat for a variety of wildlife, including waterfowl, fish, and other aquatic species. Wild rice beds can also play a role in water quality management, as they help to filter out nutrients and stabilize the water's chemistry.

Wild rice is a crop that requires a lot of care and attention to detail to ensure its success. The planting and harvesting processes are labor-intensive, and require a deep knowledge of the local environment and the biological needs of the plant. Despite the challenges, wild rice farmers are committed to preserving this valuable resource and sharing it with future generations.

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Ecology • Harvest • Management

Human Harvest

Harvesting wild rice can be a deeply rewarding experience. A fall day spent gathering this grain can yield a year’s worth of memories to be relived each time the harvest is savored. The grain is nutritionally rewarding as well. Loaded with protein, fiber, B vitamins and minerals, manoomin is nutritionally higher than white rice, oats, barley, wheat or rye. Gatherers of the wild crop often enjoy knowing their harvest hasn’t been treated with commercial fertilizers, herbicides or insecticides.

Harvest typically begins in mid to late August and peaks 2-3 weeks later. The timing of the peak will vary from site to site. However, there is consistency from year to year, with river beds generally being earlier than lakes, and with the same lakes being relatively early or late each season.

Harvest methods haven’t changed much in the last century. Allowable harvest techniques vary slightly from state to state, but all reflect traditional tribal methods, requiring the rice to be harvested from canoes or small boats with the use of smooth, wooden ricing sticks.

Generally, two people rice as a team. One moves the canoe through the rice bed using a long push-pole while the other “knocks” the grain. The knocker uses one ricing stick to bend the rice stalks over the boat, and the second to lightly stroke the seed heads, dislodging the ripe grain. It’s important to knock gently. If the seeds don’t drop with a gentle stroke, the rice isn’t sufficiently ripe. Try a different site, or come back in a couple of days. Excessive force will only break the stems, preventing them from being harvested again.

Seed size, like ripening dates, varies by location but is quite consistent from year-to-year at each site. Seed size does not affect the flavor or quality of the rice.

A riceing trip may yield anywhere from a few pounds of rice to more than 200! But since even intensive hand harvesting removes only about 15% of the annual yield, abundant seed remains for wildlife and to reseed the bed.

Delicious Yet Easy to Cook

The unique, nutty flavor of wild manoomin is unmatched. It cooks in only 30-40 minutes, and since cooked rice yields 3-4 times its dry weight, a little goes a long way. Manoomin is highly versatile. You can start your day with it cooked as a breakfast cereal or in muffins or pancakes. Have it for dinner in soups, side dishes or casseroles, or “pop” it for a nutritious and tasty bed-time snack. Hundreds of recipes can be found in general or specialty cookbooks, or even on the Internet! Explore various cooking techniques and recipes, or come up with your own!

Management

Although wild rice has declined in abundance from historic levels, there is hope this trend may be reversed. A growing interagency effort is underway to manage and restore wild rice. Tribal, state, federal and private natural resource organizations and interested individuals are working to promote this special resource. Public support is essential for these efforts to succeed. With your help, we can try to ensure that manoomin remains a viable part of our wetland ecosystems.

Wild Rice Management Can Take Several Forms:

Abundance Monitoring is important to determine whether or not rice is continuing to decline in abundance. Because of the high variability in abundance from year-to-year, only long term studies will answer this question. Abundance monitoring can also be used to direct harvesters to the most productive stands and save unnecessary trips to waters with poor stands.

Restoration and Enhancement includes seeding rice at historic sites and introducing rice to sites with suitable habitat, such as artificial impoundments. It can also involve restoration of historical habitat conditions (such as water levels) or protection of rice beds from negative environmental impacts.

Harvest Monitoring can occur on individual waters or across broad areas. It can help biologists determine if wild rice abundance is adequate to meet the human demand or be used to monitor the effectiveness of restoration efforts. In Wisconsin, a sample of state and tribal harvesters are surveyed each year to estimate harvest. Contemporary annual harvest estimates from off-reservation waters within the state have varied from 34,000 to over 110,000 pounds.

Research can increase our understanding and appreciation of this unique plant. It may also improve our ability to restore lost beds or increase the likelihood of success when introducing rice at new sites. Current research includes efforts to understand the genetic variability of wild rice.