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People and the Land: Making Connections

The mission of the UW-Madison Arboretum and its outreach with the Earth Partnership for Schools Program is to help nurture a positive relationship with the land through restoring native ecosystems. We can also nurture such relationships through a greater understanding of how past and present cultures have utilized the land.

While today we may simply go to the supermarket to buy food, preceding cultures depended on the land for survival and used natural materials for all their needs. Knowledge of the local plants, animals, and other resources was critical. Today, our dependence on the land is different from earlier times, but a need for a positive relationship and respect for the natural land community remains critically important. People have developed relationships with the land throughout history. Some relationships have been mutually beneficial while others may have been harmful or neutral. Aldo Leopold (1949) called for the establishment of a land ethic in *A Sand County Almanac* and wrote, "When we see the land as a community to which we belong, we may begin to use it with love and respect" (p.viii). For Leopold, "the land ethic simply enlarges the boundaries of the community to include soils, waters, plants, animals, or, collectively: the land." (p.204). While times have changed, Leopold's perspective mirrors previous cultures' close ties to the land.

Most likely, people from a different culture and time lived on the land where you live today. In Wisconsin, people have interacted with the land since the time of the glaciers at least 10,000 to 12,000 years ago. The Paleo-Indians lived in the upper Midwest from 10,000 to 8,500 BC. These hunters and foragers lived a nomadic lifestyle where they followed large migrating game animals such as mastodons and mammoths. Archaeological studies suggest the Paleo-Indians actually hunted these animals on top of the receding glaciers.

Archaic Indians lived on the land from 8,500 to 1,000 BC. These people were not completely nomadic but rather lived a hunting and gathering lifestyle that focused on the cycle of the seasons. The Archaic peoples moved from place to place as the seasons changed. For instance, in the spring and summer they may have lived near water for fish and wild rice; as the weather cooled, they moved into the woods. After the maple syrup harvest in early spring they would move on to a new location. The Archaic period was a time of great climatic change. As temperatures warmed, oak trees and prairie plants replaced coniferous forests.

The Woodland Indians lived on the land from approximately 1,000 BC to 1,200 AD. This was a time of great social change and experimenting with different ways of life. Over time these people began to cultivate crops and build earthen mounds

that resembled animals. Some archaeologists theorize these mounds may have helped mark the seasons and times for harvest or celebrations.

Around 1,250 AD Oneota and Mississippian cultures settled the land. They lived in permanent villages and raised such crops as beans, corn, and squash. Much of southern Wisconsin was covered in open oak savanna grassland. Natural lightning strikes and burning by the indigenous people maintained the grassy open landscape.

When the Europeans began to settle in the area, they met Native American tribes such as Winnebago, Ojibwa, and Menominee. Europeans learned which plants provided food or medicine to treat injuries, pain, illnesses, and diseases from the local tribes.

European settlement threatened the hunter-gatherer culture of these tribes. An associated lack of respect for indigenous ways of life contributed to a loss of knowledge and appreciation for first peoples' connections to the natural world.

What information that is available about cultures living before European contact comes from such sources as archeologists or indigenous oral traditions passed down from one generation to the next. Written documents since the 1700's (in the Midwest) discuss Native American ways of life and record names of tribes.

The field of ethnobotany also explores uses of native plants among past and present cultures around the world. For instance, the ethnobotanical collection of the Hock (HoChunk or Winnebago)—an important tribe in the Great Lakes Region—contains 199 plant species used for medicine, food and beverages, fiber and other material uses (Kindscher & Hurlburt, 1998).

Historians believe the central aspect of many traditional Native American cultures is living in balance based on cycles in the natural world. This balance means maintaining a respectful relationship to plants, water, animals, birds, and the cycle of life that sustains human life on earth.

Living in harmony with their local environment, traditional Native American cultures considered the long-range effects of their actions on the land. The wisdom of their years of experience living on the land allowed them to recognize how to live in the balance of nature.

In many ways, our modern culture has severed its connection to the natural cycles of life. We can learn from different cultural perspectives as we investigate ecological restoration processes through the Earth Partnership for Schools Program and beyond. The activities, extensions, and suggested resources in this newsletter offer ideas teachers and students may use to nurture a positive relationship with the land, while also gaining an understanding of how other peoples have utilized the land.

Resources Cited:

Kindscher, K. & Hurlburt, D.P. (1998). Huron Smith's ethnobotany of the Hocak (Winnebago). *Economic Botany*, 52(4): 352-372.

Leopold, A. (1949). *A sand county almanac*. New York: Oxford University Press.

Turning New Ground Among Earth Partnership Staff

Earth Partnership for Schools welcomes a new Program Manager, Libby McCann, to our staff. Libby comes to the program with a wealth of experience in adult, youth, and community education, as well as workshop development, promotion, and facilitation. Before coming to the Earth Partnership Program, she was the Wisconsin Coordinator for National Project WET (Water Education for Teachers) and Adopt-A-Lake. Libby launched both of these programs which provide teacher professional development and youth-adult leadership opportunities through local water education and lake protection projects. Some of you may also know Libby as past chair of the Wisconsin Association for Environmental Education.

Libby's duties will involve overseeing all program activities, staff management, helping to secure grants and other funding, and program evaluation, among other responsibilities. Libby received her master's degree from the University of Michigan in natural resources and is currently a PhD student in Continuing and Vocational Education. She will be focusing her research on the Earth Partnership for Schools Program and adult learning processes. Libby is excited to be working with teachers and students in developing restoration sites and looks forward to learning along with them. Feel free to give her a call or e-mail if you have any questions or would just like to chat and get acquainted. She can be reached at 608/262-9925 or e-mail: epmccann@facstaff.wisc.edu

While Libby has come on board as the Earth Partnership for Schools Program Manager, **Molly Fifield Murray** will remain connected to the program as the Outreach Manager for the UW-Arboretum. Libby's arrival has freed Molly to manage and integrate other Arboretum educational programs with those of the Earth Partnership Program. In addition to new responsibilities for the overall interpretive program, she is chairing the staff committee for construction of a new education wing onto the visitor center. Ground breaking will be this coming spring. Look for updates on these and other related projects in future issues of *Earthteaching News*.

Two staff members who have made invaluable contributions to the evolution of the Earth Partnership Program have moved on and will be sorely missed. **Robin and John Greenler** have left to coordinate Science House, a science education initiative at UW-Madison. Through Science House they are involved in the Wisconsin Fast Plant Program and other projects of interest to our readership.

Wisconsin Fast Plants go through their life cycle in a short time and are easily used for student-led inquiry in the classroom.

If you are interested, feel free to contact John and Robin at Science House, (608) 263-2634, rjgreenle@facstaff.wisc.edu or jgreenle@facstaff.wisc.edu. We wish them the best of luck on their future endeavors!

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The Earth Partnership Program welcomes our new evaluation team member, **Sandy Ludeman**. Sandy is presently a Faculty Associate in the Department of Educational Administration at UW-Madison and is a former Director of Curriculum, Instruction, and Staff Development in the New Berlin School District. Sandy is a member of the Quantum Learning Dynamics consulting group, which is committed to collaborating with people to create learning organizations. QLD is also helping school-based communities demonstrate responsibility for—and evidence of—continuous improvement and accountability for student achievement. Sandy will be assisting participating schools with student and teacher assessment, as well as overall Earth Partnership program evaluation processes. We look forward to learning from Sandy's expertise as we continue to strengthen the Earth Partnership for Schools Program.

Teachers Take to the Prairie!

This year, over 85 teachers from 30 schools participated in Earth Partnership for Schools' summer workshop series to learn about the ecological restoration process through various interdisciplinary activities, inquiry-based research, and hands-on restoration experiences and curriculum planning processes. One workshop was held in Milwaukee in collaboration with the Urban Ecology Center. Another was offered in the northwestern region of the state in partnership with UW-Stout and Standing Cedars/Philadelphia Farms. A third workshop took place in Madison at the UW Arboretum. Some participant comments included:

"...a very effective introduction to an exciting topic and a very promising approach to instruction."

". . .the great variety of hands-on activities that we did can be adapted to various grade levels and integrated into the existing curriculum."

"We certainly got to know our own school staff better and bonded with each other--finding and building a stronger commitment to help our students at our local school. Also, I loved the outdoor hikes and activities! They were all SUPER!"

Many thanks to participating teachers and schools for a fun and inspiring learning experience!

Prairie Journaling Inspires Creative Reflections

Observations from a Single Spot is an Earth Partnership for Schools activity shared during the summer workshop series. This activity provides teachers with an opportunity to practice their observation skills, create expressive writing, and examine what their special "single spot" means to them in whatever forms their explorations may take. The following piece was written by DeForest Middle School teacher, Bill Porter, who was inspired to write about his workshop experiences while sitting in his single spot. Bill's descriptions illustrate the power and challenges of ecological restoration and quality educational experiences for students of all ages.

"I am struck by the similarities between prairie restoration and the work we do every day. The variety and diversity of the prairie is mirrored in that of the young people we teach and nurture. Like a prairie, our students are always changing. Each day brings forth different aspects and attributes. In the middle school, of course, the changes can come and go with unpredictable swiftness, making hummingbirds seem slow.

"As in prairie restoration, we plant seeds, we nurture, and we try to weed our misconceptions and misbehaviors without stunting growth. Sometimes we get to see our students blossom. Other times, we must be satisfied with growth. We struggle to revive our dormant ones. We mourn for the ones we lose.

"Unlike most prairie restorations, our students move on. In our struggle to grow this year's students, we often lose track of last year's. We need to remember that like prairie plants, our students are not annuals. Their growth and learning continue through the years. It is both inspiring and frightening to realize that our works and deeds this year will continue to affect our students for longer than we know. For our students, as with prairies, most of the important growth is hidden from our view."

Plant Power!

Activity Overview:

Students will research Native American uses of plants and look for plant specimens in their ecosystem restoration. Students will identify, examine and draw the plants they find using a field sheet.

Objectives:

Students will:

Learn about the role plants play in Native American cultures

Conduct research using multiple sources of information

Identify native plants in the field

Utilize their senses to enhance their research of plant usage

Subjects Covered: Science, language arts, social studies, art

Grades: 4 - 12

Time: 1 hour in field use (Part I)

1 hour in classroom (Part II)

Season: Any season, though spring or fall are best for plant identification in the field.

Materials: Informational resources (see accompanying bibliography for suggestions), field guides, clipboards, worksheets and writing implements

Vocabulary: Biodiversity, ethnobotany, observation, phenology, indigenous knowledge

State Standards:

*English Language Arts: A.4.1, A.8.1, A.12.1; A.4.4, A.8.4, A.12.4; B.4.1, B.8.1, B.12.1; C.4.1, C.8.1, C.12.1, C.4.2, C.8.2, C.12.2; E.4.1, E.8.1, E.12.1; F.4.1, F.8.1, F.12.1

*Science: A.4.1, A.8.1, A.12.1; B.4.1, B.8.1, B.12.1; C.4.2, C.8.2, C.12.2

*Social Studies: A.4.4, A.8.4, A.12.4; A.12.8; B.4.1, B.4.3, B.4.4, B.4.10; B.8.1, B.8.11; B.12.2, B.12.3, B.12.8, B.12.10, B.12.12; E.4.4, E.4.8, E.4.11, E.4.13, E.4.14; E.8.3, E.8.9, E.8.10, E.12.5, E.12.8, E.12.10

* See: Governor's Council on Model Academic Standards. (1998). Wisconsin's Model Academic Standards. Madison, WI: Wisconsin Department of Public Instruction for detailed descriptions.

BACKGROUND:

Understanding plant uses helps to preserve the heritage of different cultures, provides an appreciation of how humans use plants, and shows how native plants fit into different ecosystems. Various peoples throughout time depended upon native plants for medicinal, food and other purposes. Many Native Americans used naturally growing plants for food, supplies, and medicine. For example, the Great Lakes Ojibwa (Ojibwa is what other tribes called the "Anishinabe," which is the name these people used to describe themselves. "Chippewa" is what non-Indians called the Ojibwa. For more information, see Benton-Benai, E., *The Mishomis Book*, pp. 94 -102.) made use of nearly 400 plant species and still do so today. About 123 species of prairie plants alone were consumed as food. Many of the same plants were used for medicine and food, though preparation techniques varied, and different parts of the plant were

utilized. Although not every person knew how to use each plant, knowledge of native plant uses was handed down from one generation to the next through oral traditions and with great respect shown to all plants.

Ethnobotany is the study of how plants have been utilized by various peoples and cultures around the world, both in the past and present. Such studies help us gain an understanding of the value of plants, while also establishing their value as potential sources for future medicines. Aspirin, cortisone, and novocaine all come from native plants. Indigenous people utilized the natural curative properties from the plants for centuries before modern day equivalents were created. For example, Native Americans chewed willow bark or steeped willow stems in boiling water for tea as a pain reliever. Since the late 1800's, salicin, a derivative of native willows, was officially listed as a pharmaceutical product in the United States. Today, synthetic substitutions of salicin are manufactured for pain relief. Unfortunately, much of the indigenous knowledge and related plant names were lost over time and replaced by English and scientific names. Nevertheless, we can still gain a better understanding about relationships between people and plants that will also increase awareness about the need to preserve the biodiversity of ecosystems.

In addition to understanding and researching native uses of plants, this activity provides an opportunity for students to use their senses in a natural setting. Students can feel the rough or smooth leaves of a native plant, smell the strong scent of a plant from the mint family (Labiatae), and hear insects buzzing around a prairie. A variety of different shapes and sizes can be touched and explored, which provides another perspective on plants' medicinal characteristics and identification.

ACTIVITY DESCRIPTION:

PART I (In the classroom)

As a class, determine what resources to use for researching native plant uses. Work in teams of two to investigate 5 prairie or other native plants growing in your region. For each plant, furnish the following information:

- Scientific name
- Description of plant
- References Used
- Common name(s)
- Description of plant use(s)

Compile information from all teams to use as a resource in the school restoration site. Students can also develop a computer database to file this information for later use.

PART II (In the school prairie or other ecosystem)

Before entering the school restoration, review the five senses (touch, smell, sight, sound, and taste). Discuss how you use these senses in your daily lives and how native peoples may have relied on their senses when searching for plants. For this activity, use your sense of touch, sight, smell, and sound in the field. The sense of taste will not be used. When investigating native plants in the field, proper precautions must be taken before picking or tasting any plants. Be sure you can identify plant irritants like poison ivy and wild parsnip to avoid an unpleasant field experience.

In teams, search for examples of plants growing in your school restoration that were traditionally used for food, beverages, and medicinal remedies for illness or injury. Once you locate a plant specimen, use your sense of smell, touch, hearing, and sight to examine the plant more closely. Notice if you smell, feel, or observe any characteristics such as a strong fragrance or a thick sap that may indicate how the plant was used. Is there anything unique about the plant that might indicate a use for medicinal or food purposes? Draw each plant that you identify, and indicate how the plant might be used.

EXTENSIONS:

Search out native plants growing in your school area that may have biologically active chemicals. Test plants to find which ones might inhibit bacterial growth in petri dishes.

Prior to researching plant uses, go out to your school restoration and hypothesize about various plant uses based on your observations.

Create a menu for a balanced diet using plants and animals native to the prairie.

Make natural dyes and dye your own cloth. (See *North American Dye Plants* by Anne Bliss (1980)).

Create photos or drawings with accompanying text of plants in your prairie for a school display and/or for your school website.

Prepare a list of native plants and their uses according to the time of year they can be used or harvested. Create a phenological calendar based on this information and related pictures or photographs of the plants.

Learn about plants brought to North America for food and medicine by Europeans in "A Seed's Journey" Activity. See the Winter 1999 issue of *Earthteaching News* for a copy of the activity or visit the Earth Partnership for Schools website: <http://wiscinfo.doit.wisc.edu/arboretum>

Research what modern-day medicines originally came from native North American plants.

ASSESSMENT:

- Compare and contrast past and present uses of native plants
- Research a native wild plant; describe its characteristics, history, and uses over time; and make an oral report to the class. Conduct peer reviews of these reports.
- Describe three important uses of native plants
- Describe two safety measures that should be taken if collecting native plants
- Create a mobile that includes the plants identified, their uses, and how the senses might help to identify the plant

REFERENCES:

Bliss, A. (1980). *North American dye plants*. New York: Charles Scribner's Sons.

Benton-Benai, E. (1991). *The Mishomis book*. Hayward, WI: Indian Country Communications.

Densmore, F. (1974). *How Indians use wild plants for food, medicine, and crafts*. New York: Dover.

Foster, S. (1990). *Field guide to medicinal plants: Eastern and central North America*. Boston: Houghton Mifflin.

<http://www.gene.com/ae/atg/released/0179-JohnNorton/index.html>

Kindscher, K. (1987). *Edible wild plants of the prairie: An ethnobotanical guide*. Lawrence, KS: University Press of Kansas.

Meeker, J.E., Elias, J.E., & Heim, J.A. (1993). *Plants used by the Great Lakes Ojibwa*. Odanah, WI: Great Lakes Indian Fish & Wildlife Commission.

Vogel, V. (1970). *American Indian medicine*. Norman, OK: University of Oklahoma Press.

A special thanks to Dr. Dennis Yockers, Wisconsin Center for Environmental Education (UWSP), for his comments and suggestions on this activity.

Native American Medicinal Uses of Plants

Andropogon gerardi, Big Bluestem. Used as medicine to treat indigestion and stomach pains. The lower leaves were boiled in water to make a decoction. To reduce fevers, a small cut was made on the head and then it was bathed with the decoction.

Baptisia leucophaea, Prairie False Indigo. The seeds were ground up and mixed with bison fat to make an ointment to rub on the bellies of colicky babies. Children used the seedpods as rattles.

Ceanothus Americanus, New Jersey Tea. Native Americans called this plant "kituku manito" meaning "spotted snake spirit." This plant had many uses including treatment for sore throats, gonorrhea, dysentery, eye troubles, and high blood pressure. The roots and bark were used to tan hides.

Eryngium yuccifolium, Rattlesnake Master. Roots were used as an expectorant and emetic, to induce perspiration, and to treat snakebite.

Liatris pycnostachya, Gayfeather. The Corm, an underground, thick fleshy stem, was chewed then blown into horse's nostrils to increase its endurance. The corms taste somewhat like carrots and were dug up and stored for winter meals.

Monarda fistulosa, Beebalm. Leaves were boiled for the minty oil to treat pimples. A tea was used for fevers, sore throats, colds and headaches.

Resources

Kindscher, Kelly. (1992). *Medicinal wild plants of the prairie*. Lawrence, KA: University Press of Kansas.

Runkel, Sylvan & Roosa, Dean M.. (1989). *Wildflowers of the tallgrass prairie*. Ames, IW: Iowa State University Press.

Suggested Student Reading

The following books are suggested as supplemental readings because they deal either with Native American uses of plants or with teaching the traditional value of respect for all life. For a more complete listing, please contact the Earth Partnership for Schools Office at 608/262-9925.

***Bieder, Robert E. 1995. *Native American communities in Wisconsin, 1600-1960: A study of tradition and change*. Madison: University of Wisconsin Press.

*Bouchard, Dave. (Metis). (1998). *The meaning of respect*. Winnipeg, MB: Pemmican Publications, Inc.

(A young Cree [related to Ojibwa] boy, sent home from school to his grandfather to learn respect, expects to have a holiday but learns, instead, what respect for life means through the traditional ways of hunting, trapping, and fishing on the reserve.)

**Erdrich, Louise. (Turtle Mountain Ojibwa). 1999. *The birchbark house*. NY: Hyperion.

(Detailed portrait of 19th century Ojibwa life that is being called the Native American equivalent to Laura Ingalls Wilder's *Little House* series.)

*Regguinti, Gordon. 1992. *The sacred harvest Ojibway wild rice gathering*. Minneapolis: Lerner Publications.

(Photo essay of a family ricing in the traditional manner.)

*Wittstock, Laura Waterman. 1993. *Ininatig's gift of sugar: Traditional native sugarmaking*. Minneapolis: Lerner Publications Co.

(Photo essay of elder Porky White at Leech Lake reservation in Minnesota teaching young people how to make maple sugar in the traditional way.)

*=Elementary Level **=Middle School Level ***=High School Level

Grants & Awards

EPA Environmental Education Grants

The purpose of the EPA Environmental Education Grants program supports environmental education projects that enhance the public's awareness, knowledge, and skills to make informed decisions that affect environmental quality. Grants of \$25,000 or less are awarded, but the EPA is especially interested in receiving applications for grants of \$5,000 or less. The fiscal Year 2000 solicitation notice will be published in late August/early September. To be added to the mailing list, contact Mary Lee Adams at adams.marylee@epa.gov, call 913/551-7495, or download EPA's solicitation notice at <http://www.epa.gov/enviroed>

Captain Planet Foundation

The Captain Planet Foundation encourages innovative programs that empower children and youth around the world to work individually and collectively to solve environmental problems in their neighborhoods and communities. Projects must

promote understanding of environmental issues, focus on hands-on involvement, involve K -12 children and young adults, promote cooperation, help develop planning and problem solving skills, involve adult supervision, and a commitment to follow-up communication with the Foundation. Generally, the range of grants awarded are between \$250 - \$2,500. Award of grants are on-going. For more information contact: Captain Planet Foundation, One CNN Center, 6 North Atlanta, GA 30303, 1/877/KIDPOWER, <http://www.turner.com/cpf>

Youth Service Learning/Serve America

Youth Service learning is an initiative to encourage schools to integrate community service activities within the K-12 curriculum. Limited federal dollars are available to provide training, leadership development, and mini-grants for CESAs (Cooperative Educational Service Agencies), schools, and community-based non-profits. Contact your local CESA for more information.

Wisconsin Environmental Education Board (WEEB) Grants

The Wisconsin Environmental Education Board annually awards grants for the development, dissemination, and implementation of environmental education programs. The WEEB grant proposal process is fairly easy to follow. The funding period is up to 18 months, from July 1 through December of the following year. Awards are available as small grants requesting up to \$5,000 and for large grants requesting \$5,001 to \$20,000. All proposals must be postmarked to the WEEB office by January 15, 2000. For information contact: WEEB, 110 College of Natural Resources, UW-Stevens Point, Stevens Point, WI 54481, <http://weeb.uwsp.edu>

Wal-Mart Small Grants Program for Schools

The Wal-Mart Foundation will donate up to \$2000.00 of matching funds to a school for environmental education projects, recycling projects, and for plantings on school grounds. For guidelines and more information, contact your local Wal-Mart store, or call 1-800-530-9935, <http://pipeline.walmart.com/programs/foundation/grant.htm>

The Lorrie Otto Seeds for Education Fund of the Wild Ones

Milwaukee Foundation gives small monetary grants to schools, nature centers, or other educational organizations whose efforts best reflect the message of creating natural landscapes using native plants and appreciating humankind's proper place in the web of life. Established by the Wild ones in 1996, the fund honors their 'philosophical compass," Lorrie Otto. Grants are awarded to child-involved projects like creating native plant landscapes and developing outdoor classrooms. Applications for the 2001 awards will be due November 15, 2000.

For more information write to Wild Ones Natural Landscapers, Ltd., P.O. Box 1274, Appleton, WI 54913.