

*Barking Up the Right Tree: An Educational Needs Assessment for the  
Forestry Education and Awareness Center*

***Barking up the Right Tree***  
***An Educational Needs Assessment***  
***for the Forestry Education and Awareness Center***



For the Wisconsin Department of Natural Resources,  
Division of Forestry

Submitted by  
The University of Wisconsin-Milwaukee  
Center for Mathematics and Science Education Research  
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## **Introduction**

At this writing, a new resource is taking shape. The need for Southeast Wisconsin people to understand the ways they depend on Wisconsin forests and the opportunity to make use of woodlands on the Milwaukee County Grounds prompted state and local officials to cooperate to create a Forestry Education and Awareness Center. The new Center will help people from all walks of life appreciate the benefits they receive from Wisconsin trees and understand the purposes and practices of sustainable forestry.

Among the people who will explore and learn at the Forestry Education and Awareness Center are students and teachers. Schools draw upon limited resources to address a myriad of priorities. Thus, a new facility with goals of its own must further the goals of schools in order to count them among its audience.

Southeast Wisconsin schools are served by many successful education centers. Milwaukee teachers have over 160 field trip programs to choose from on the topic of ecology alone. In order to make the field of informal education in Southeast Wisconsin better, the Forestry Education and Awareness Center must not duplicate existing programs but build upon their contributions in a way that complements them and provides new opportunities for learners.

The pages that follow reflect honest input and experienced insights of the area's teachers, school administrators and field trip education providers that were shared to guide the Forestry Education and Awareness Center in finding a successful niche. The Educational Needs Assessment for the Forestry Education and Awareness Center was conducted on behalf of the Wisconsin Department of Natural Resources Forestry Division by the University of Wisconsin-Milwaukee Center for Mathematics and Science Education Research. Close to two hundred Southeast Wisconsin teachers and curriculum administrators participated in the research and over thirty representatives of informal education centers in the area contributed. The Research Team combined backgrounds in formal and informal education, market research and education research.

The Educational Needs Assessment aims to help the Forestry Division build understanding for the value of Wisconsin's forests among the children and teachers in Southeast Wisconsin that enhances the existing services of the area's many nature centers, museums and other field trip destinations. It is hoped that the findings of this research will help many community educators reach their goals.

## SOUTHEAST WISCONSIN SCHOOLS AND STUDENTS

Knowing a community involves conversations and working relationships with its members, organizations, and institutions. Familiarity with the community's needs grows as a new facility becomes involved in the locality. General information about the population of the nine Southeast Wisconsin counties can provide direction for educational services targeting the region. Information provided in this section draws upon surveys and interviews conducted in the region, and data available from school districts and the State of Wisconsin. Data from the surveys and interviews are described further in other sections of this report.

The counties of Milwaukee, Waukesha, Jefferson, Washington, Ozaukee, Walworth, Racine, Kenosha, and Dodge are considered. From the furthest point in each county, they are all within 60 miles of the proposed Forestry Education Center. 2,092,826 people reside in this area, 39 percent of the state's population. Twenty-two percent of the area's residents are of school age (aged 5-19 years old).

The population of the area is economically and ethnically diverse, although school districts within the area differ widely with consideration for ethnicity and economic status of students enrolled. Seventy percent of the people reside in urban areas.

The two largest public school districts in the area are Milwaukee Public Schools and Waukesha Public Schools. Almost a fourth of the children in the nine Southeast Wisconsin counties are enrolled in the Milwaukee Public Schools, a district that operates 165 school sites. The School District of Waukesha includes 24 school buildings. The proposed Forestry Education and Awareness Center will be located within the area served by the Wauwatosa Public

### VITAL STATISTICS

*(quantities are in round numbers unless otherwise indicated)*

#### WAUKESHA COUNTY

**Population** – 360,767  
White – 95.8%  
Black – .7%  
Asian – 1.5%  
Hispanic – 2.6%  
American Indian - .2%  
**School-Age Children** – 94,903  
**Economically Disadvantaged School-Age Children** \* – 2,122  
**Bilingual People over age 5** \* - 14,970  
**School Districts** – 19  
**Schools** – 107  
**Students in Public Schools** \* – 46,469  
**Students in Private Schools** \* – 9,517  
**Home-Schooled Students** \* – 1,841

### VITAL STATISTICS

*(quantities are in round numbers unless otherwise indicated)*

#### MILWAUKEE COUNTY

**Population** – 940,164  
White – 65.6%  
Black – 24.6%  
Asian – 2.6%  
Hispanic – 8.8%  
American Indian - .7%  
**School-Age Children** – 247,825  
**Economically Disadvantaged School-Age Children** \* – 43,350  
**Bilingual People over age 5** \* - 84,057  
**School Districts** – 25  
**Schools** – 326  
**Students in Public Schools** \* – 132,689  
**Students in Private Schools** \* – 31,124  
**Home-Schooled Students** \* – 4,808

## VITAL STATISTICS

(quantities are in round numbers unless otherwise indicated)

### RACINE COUNTY

**Population** – 188,831

White – 83%

Black – 10.5%

Asian – .7%

Hispanic – 7.9%

American Indian - .4%

#### School-Age

**Children** – 50,951

#### Economically

**Disadvantaged**

**School-Age**

**Children** \* – 4,568

#### Bilingual People

**over age 5** \* - 11,237

**School Districts** – 12

**Schools** – 58

**Students in Public**

**Schools** \* – 27,017

**Students in Private**

**Schools** \* – 5,145

**Home-Schooled**

**Students** \* – 988

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Schools. Approximately 7,092 students attend this district, which operates 15 schools. Many rural and suburban districts consist of two to five elementary schools, and one or two middle and high schools.

An estimated 64,459 students attend private schools in the region. These include parochial schools and nonreligious private schools. The Milwaukee Archdiocese is composed of 80 Catholic schools and is in the process of standardizing its curriculum. All private schools outside of the archdiocese are individually operated, each with standards and curricula of their own. The Missouri Synod of the Lutheran Church has 72 schools in the local four county area including five high schools. The Wisconsin Synod of the Lutheran Church has 74 schools including three high schools. There are nine schools operated by the Jewish Faith Community. They serve students from preschool through 8<sup>th</sup> grade. A number of other schools are operated by the Baptist Church and other Christian Churches, and there are many private schools with non-religious guiding philosophies as well.

Approximately 10,690 children in the area are home-schooled. There are many home-based parent associations to contact for further information about home schooling. In Wisconsin, two of the largest are the Wisconsin Parents Association and the Wisconsin Christian Home Educators Association.

## VITAL STATISTICS

(quantities are in round numbers unless otherwise indicated)

### KENOSHA COUNTY

**Population** – 149,577

White – 88.4%

Black – 5.1%

Asian – .9%

Hispanic – 7.2%

American Indian - .4%

#### School-Age

**Children** – 40,502

#### Economically

**Disadvantaged**

**School-Age**

**Children** \* – 3,403

#### Bilingual People

**over age 5** \* - 10,417

**School Districts** – 13

**Schools** – 53

**Students in Public**

**Schools** \* – 19,783

**Students in Private**

**Schools** \* – 2,826

**Home-Schooled**

**Students** \* – 786

Appendix C provides a complete listing of a wide variety of organizations that may be useful to help promote the Forestry Education Center, ranging from professional teacher organizations to youth-serving groups.

Most schools in the area use curricula adopted to align with standards. National, state, or local standards are used. A survey of 172 local schools showed that sixty-eight percent use the Wisconsin Model Academic Standards, either with or without modifications. Thirty-six percent use locally written standards, and sixteen

percent use national standards. Local standards for the two largest districts, Milwaukee Public Schools and the School District of Waukesha, are currently undergoing revisions and can be requested later this year. Correlations made between national, state, and local standards revealed that the documents are well aligned and the Wisconsin Model Academic Standards (WMAS) are supported through many programs used in the area. The WMAS are the basis of assessments that all publicly funded schools must administer. Seven percent use other standards, such as Montessori and Milwaukee Archdiocese standards. Three percent have not adopted standards. It should be noted that private schools do not always measure achievement using state tests and may have goals that differ from those of public schools. More information on the WMAS is provided later in this report.

A number of colleges, universities, technical colleges, and career-training institutions exist throughout the region. Although some belong to common systems, such as the University of Wisconsin system, efforts to serve college students are not easily directed to combined audiences. Contacting post-secondary students and faculty and addressing their needs requires direct communication and highly tailored programs. Many field trip providers work with college students enrolled in schools of education. Anthropology departments conduct museum studies and exhibit assessments serving informal educators. Appendix C contains a listing of accredited colleges and universities in Southeast Wisconsin.

**VITAL STATISTICS**  
*(quantities are in round numbers unless otherwise indicated)*

**WALWORTH COUNTY**

**Population** – 93,759  
White – 94.5%  
Black – .8%  
Asian – .7%  
Hispanic – 6.5%  
American Indian - .2%  
**School-Age Children** – 22,657  
**Economically Disadvantaged School-Age Children \*** – 1,074  
**Bilingual People over age 5 \*** - 4,514  
**School Districts** – 15  
**Schools** – 43  
**Students in Public Schools \*** – 10,818  
**Students in Private Schools \*** – 1,201  
**Home-Schooled Students \*** – 440

**VITAL STATISTICS**

*(quantities are in round numbers unless otherwise indicated)*

**WASHINGTON COUNTY**

**Population** – 117,493  
White – 97.7%  
Black – .4%  
Asian – .6%  
Hispanic – 1.3%  
American Indian - .3%  
**School-Age Children** – 31,330  
**Economically Disadvantaged School-Age Children \*** – 726  
**Bilingual People over age 5 \*** - 3,558  
**School Districts** – 9  
**Schools** – 35  
**Students in Public Schools \*** – 14,810  
**Students in Private Schools \*** – 3,033  
**Home-Schooled Students \*** – 608

## VITAL STATISTICS

(quantities are in round numbers unless otherwise indicated)

### DODGE COUNTY

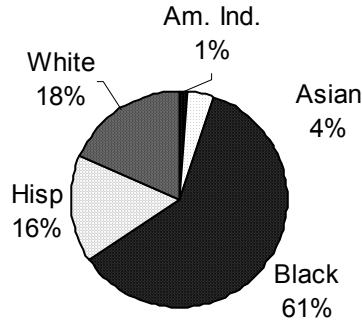
Population – 85,897  
 White – 95.3%  
 Black – 2.5%  
 Asian – .3%  
 Hispanic – 2.5%  
 American Indian - .4%  
**School-Age Children** – 22,263  
**Economically Disadvantaged School-Age Children** \* – 1,153  
**Bilingual People over age 5** \* - 3,230  
**School Districts** – 9  
**Schools** – 29  
**Students in Public Schools** \* – 11,366  
**Students in Private Schools** \* – 2,494  
**Home-Schooled Students** \* – 432

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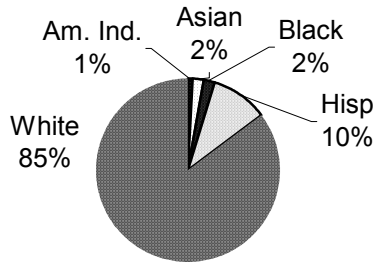
**Starred items (\*) in fact boxes represent information based on census data collected in 1990. Results of year 2000 census are not yet available online but will likely be available by the end of 2002. Visit <http://factfinder.census.gov/> for most recent data available. Non-starred information was based on information that was available from the 2000 census, also from [factfinder.census.gov/](http://factfinder.census.gov/).**

## STUDENT ETHNICITIES

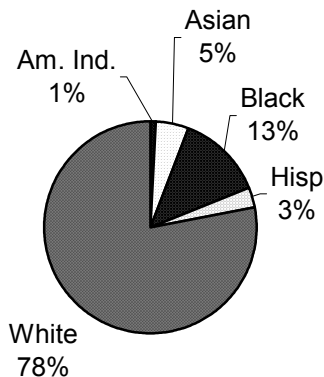
### Milwaukee Public Schools



### Waukesha Public Schools



### Wauwatosa Public Schools



## VITAL STATISTICS

(quantities are in round numbers unless otherwise indicated)

### JEFFERSON COUNTY

Population – 74,021  
 White – 96.3%  
 Black – .3%  
 Asian – .4 %  
 Hispanic – 4.1%  
 American Indian - .3%  
**School-Age Children** – 18,657  
**Economically Disadvantaged School-Age Children** \* – 758  
**Bilingual People over age 5** \* - 2,589  
**School Districts** – 7  
**Schools** – 39  
**Students in Public Schools** \* – 10,818  
**Students in Private Schools** \* – 1,201  
**Home-Schooled Students** \* – 440

## VITAL STATISTICS

(quantities are in round numbers unless otherwise indicated)

### OZAUKEE COUNTY

Population – 82,317  
 White – 96.7%  
 Black – .9%  
 Asian – 1.1%  
 Hispanic – 1.3%  
 American Indian - .2%  
**School-Age Children** – 21,931  
**Economically Disadvantaged School-Age Children** \* – 300  
**Bilingual People over age 5** \* - 3,004  
**School Districts** – 5  
**Schools** – 25  
**Students in Public Schools** \* – 10,672  
**Students in Private Schools** \* – 2,342  
**Home-Schooled Students** \* – 425

## **CURRICULUM**

There is no universal use of any science textbook or publisher in the studied region. The greatest variety exists at the high school level where different texts are used for each branch of science. Many middle and elementary schools use curricula compiled from a variety of sources. Some parochial schools used religious based texts. The Milwaukee Public Schools began using Harcourt Science Series in its 116 elementary schools in September 2002. Three districts use the McMillan publications and three use FOSS (Full Option Science System). Other publishers mentioned by individual districts or schools were FTC Project, Scott-Foresman, Holt, Prentice Hall, Glencoe, and Addison-Wesley.

All districts and schools use a variety of teaching approaches. Most interview participants agreed that a hands-on approach is used in science. Direct instruction is also used in the area's school districts and private schools. Administrators indicate that curricula need support of the kind that community education organizations could provide. Thirty-six percent of the suburban and rural districts are satisfied with their curriculum. Milwaukee Public Schools administrators feel they need support in all areas. This refers to the need for teacher training, materials, equipment and enrichment opportunities for students. In some cases, these needs are expressed by members of the district and in some cases they are implied by assessment of student performance. Seventy-eight percent of the private and parochial school representatives need support in science. These schools also lack equipment and technological resources. They attribute the needs to a lack of money and teacher training.

## ACADEMIC PERFORMANCE

Public schools and private schools that receive public funds are subject to assessments and accountability measures. Many private schools have defined assessments and measures to gauge progress towards meeting their objectives. Teacher practices, district initiatives, and the scope and sequence of curricula are influenced by the need to show achievement as measured on statewide or districtwide tests.

Public schools in Wisconsin participate in the Wisconsin Student Assessment System to evaluate proficiency in selected subjects. According to the Wisconsin Department of Public Instruction,

**Subjects  
tested in  
WSAS  
Examinations**

*Language Arts*

MATHEMATICS

Reading

Science

SOCIAL  
STUDIES

*Writing*

“The Wisconsin Student Assessment System includes testing in grades four, eight, and ten in language arts, mathematics, reading, science, social studies, and writing. In February 2001, approximately 200,000 fourth-, eighth-, and tenth-graders took Wisconsin Knowledge and Concepts Examinations, administered by the DPI. Assessments included multiple-choice and short-answer questions that required students to demonstrate their academic subject knowledge.

Scores from the Wisconsin Knowledge and Concepts Examinations are reported in proficiency categories of "advanced," "proficient," "basic," and "minimal" based on standards for mastery of academic content. “  
(dpi.state.wi.us)

Scores in the advanced category show in-depth understanding in the academic content area tested. Proficient scores show evidence that students have the skills necessary to progress in the academic content area tested. Students who score in the basic category are considered somewhat competent, but their scores show evidence of at least one major flaw in understanding the academic content area tested. Scores that are in the minimal category indicate major misconceptions or gaps in the knowledge and skills tested. (dpi.state.wi.us/)

The following table illustrates the range of proficiency in several subjects for a selection of the largest public school districts in the area.

**AVERAGE PERCENTAGE OF STUDENTS WHO OBTAINED  
PROFICIENT OR HIGHER SCORES FOR TESTED SUBJECTS,  
2001-2002**

<b>SCHOOL DISTRICT</b>	<b>SCIENCE</b>	<b>SOCIAL STUDIES</b>	<b>MATH</b>	<b>LANGUAGE ARTS</b>	<b>READING</b>
MILWAUKEE	26	40	20	38	40
KENOSHA	54	70	46	64	68
RACINE	45	61	38	55	58
WEST ALLIS	60	79	56	72	75
WAUKESHA	69	82	58	73	77
WAUWATOSA	72	86	67	80	83
WEST BEND	66	84	56	73	77
FRANKLIN	69	86	63	77	80
GLENDALE- RIVER HILLS*	79	88	66	81	85
HAMILTON	70	84	64	78	79
GRAFTON	79	88	67	84	86
MEQUON- THIENSVILLE	79	89	76	86	86
ELMBROOK	79	89	73	83	84

*Results listed were derived from accumulation of proficient and advanced percentages and are an average of the results given for the 4<sup>th</sup>, 8<sup>th</sup>, and 10<sup>th</sup> grade scores in these two categories. \*Glendale-River Hills did not have 10<sup>th</sup> grade percentages.*

Most area school districts' test results are above the national average in the majority of the subjects. Results of Statewide assessments are used to evaluate programs and performance of schools. They may determine the focus of assistance programs and further scrutiny in low performing schools. Results are used as school accountability measures and are made public. Beginning in fall 2002, low performing schools will be required to notify parents of the option to enroll their children elsewhere.

Schools are under a great deal of pressure to attain sufficiently high test scores. As a consequence, many schools conduct practice tests, teach test-taking strategies and focus instruction on information likely to be covered in the assessments. Schools offer incentives to students to promote high attendance on test days. Although intended as a tool for measuring attainment of school goals, performing well on state standardized tests has become a goal in itself.

# **RESULTS AND INTERPRETATIONS OF THE SCHOOL REPRESENTATIVES' FORESTRY EDUCATION SURVEY**

*Note: The survey instrument and percent of responses listed in order of frequency, are provided in Appendices A and B: "Forestry Education Center Survey for School Representatives", and "Results of the Forestry Education Center Survey for School Representatives."*

## **Introduction**

The Forestry Education Survey for School Representatives was mailed to 1700 learning coordinators, science department chairs, and vocational-agriculture teachers in the nine-county area surrounding the proposed Forestry Education and Awareness Center in late May, 2002. The survey was sent with the request that the survey be completed to represent the views of the teachers in the school. The survey offered many opportunities for open-ended responses, thus allowing for individual expression of topics important to the respondent. 172 surveys were returned, comprising a 10 percent sample of the potential school audience for the proposed Forestry Education and Awareness Center. The sample includes representation of public and private schools in urban, suburban and rural locations.

## **Results and Interpretations**

Many factors were presented as options that affect the decision to take a field trip. 78% identified support of academic standards and/or curricula as a top priority. 51% selected a lack of equipment or materials available at the school as a reason; similarly, 42% cited that difficulty presenting the material in a classroom setting as a factor for choosing a field trip. This shows that teachers look for sites that easily relate to their curricula, and have better features and capabilities for in-depth studies than are provided in their classrooms. This confirms that the pressure to meet standards guides teachers' decisions about the use of limited time and funds. 30% of the teachers choose field trips based on positive past experiences and/or personal enthusiasm for a topic. Therefore, educating the teachers about the ease and benefits of using the Forestry Education and Awareness Center and creating excitement for it will likely result in repeat visits.

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Teachers were particular about specific factors of the field trip experience. 40% felt the ideal group size was 31-60, although several people wrote about either catering to very small groups (less than 20 for hands-on activities) or very large groups (over 100), when entire grade level outings or all-school trips occur. Typically, about 25 to 30 students belong to a class and two classes fill the capacity of a school bus. Many early childhood and primary students and teachers participate in a class size reduction program that limits the number of students to fifteen per teacher.

Survey responses about the desired lengths of field trips were not conclusive; most (47%) felt that the length should vary with the age of the students, and responses were vague. Most indicated that bus travel often dictates the length of a trip. Acceptable fees to charge for admission and programs were also ambiguous. 44 percent said a fair price varies with duration, take-home materials, et cetera. Other responses (40%) were evenly distributed between \$3-\$5 per student, not including bus cost. As far as willingness to travel, the majority of the participants are willing to travel a distance to a quality field trip site. 79 percent were willing to travel between 20 minutes and an hour (45% for 40 minutes to an hour, 34% would travel 20-40 minutes). Only 5% were unwilling to travel more than 20 minutes.

Survey participants named existing field trip destinations that reflect the desire to expose students to resources and experiences not available in schools. Nature centers, museums and the Milwaukee County Zoo were named frequently. Experiences with forestry are also likely to be viewed as difficult to replicate in a classroom setting. Survey responses show high utilization of nature center field trips. The abundance and popularity of nature centers can allow the proposed Forestry Education and Awareness Center to complement existing programs by defining a narrow scope and may allow for more in-depth study of specific topics.

**TOP 10  
FIELD TRIP  
DESTINATIONS**

- Milwaukee Public Museum
- Milwaukee County Zoo
- Milwaukee Museums (unspecified)
- Milwaukee Art Museum
- Schlitz Audubon Nature Center
- Wehr Nature Center
- Old World Wisconsin
- Performing Arts Center
- Havenwoods
- Discovery World

Costs and transportation were identified as obstacles to greater use of field trips. While transportation imposes costs, it also restricts schedules and influences group size. 83 percent of the survey participants felt that offering funds for bus fees would increase the use of field trips. 59 percent thought that the field trip site should offer scholarships for program fees, and 38 percent felt that the field trip site should arrange for transportation (i.e. having its own van or bus to bring students to the site) in order to increase field trip use.

Several questions related to curriculum links between schools and the topic of forestry. 50 percent indicated that forestry concepts are valuable for students to learn (37% rated forestry as “very important” and 13% selected “somewhat important”). 45 percent saw forestry as an important tool for building important skills and concepts that may or may not be directly related to

forestry. In fact, only 3 percent felt that forestry was unlikely to have a place in the curriculum or was interesting but not important. The teachers viewed science, environmental education, and social studies as the subjects most useful for field trips (94, 91, and 84 percent, respectively,) and also the subjects best supported by the topic of forestry (96, 91, and 59 percent, respectively.)

Participating teachers indicated that mid-level grades were the best supported by forestry topics, with 43-64 percent selecting 4<sup>th</sup>, 5<sup>th</sup>, 6<sup>th</sup>, 7<sup>th</sup>, 8<sup>th</sup>, and 3<sup>rd</sup> grades, in that order of frequency. Fourth grade involves a unit of study about Wisconsin, so a strong link to curriculum goals is a likely explanation for this result. Other levels may have been chosen based on developmental levels of children that allow connections and relationships between natural resources and the activities of people to be understood, or it may have been assumed that the study of forestry would build on prior learning about plants and ecosystems. Students learn about plants, trees and ecosystems in many grades; the scope and sequence of topics varies with schools and districts.

A few of the questions dealt with issues of underservice; that is, grade levels or subject areas that are not adequately served by existing field trip providers. 31 percent indicated that environmental education is underserved by existing field trip programs in Southeast Wisconsin, followed closely by a 30 percent response to science. Math and technology education were two subjects thought to be underserved by many survey participants (52% and 39%, respectively). However, this response is not a clear indicator of potential demand for new programs. Of the participants who counted math and technology

education as underserved, very few selected those subjects as useful to support with field trips. This suggests that low demand for such field trips accounts for the shortage. Several programs incorporating math and technology currently exist in the community. Since math and technology are used within contexts, teachers may more readily associate field trips with the science, art, or social studies contexts rather than with skills applied, such as math, technology, or communication skills.

The topics the Forestry Education and Awareness Center could include that were most frequently selected by survey participants deal with ecology and history. Most teachers indicated that a hands-on approach to teaching these topics is preferred.

Participants were asked to identify grade levels that are underserved by existing Southeast Wisconsin field trips. 31 percent felt that middle grades (6-8) were underserved and 22 percent felt that high school was underserved, especially the high school science classes of biology, chemistry, and physics. Moderate numbers of participants indicated that these levels make frequent use of field trips. The data is important because the middle grades were among the most frequently

chosen as having curricula that can be supported by the topic of

### **TOPIC PREFERENCES**

- Ecosystems and Ecological Value of Forests (73%)
- Components of Forest (including Water Cycle, Soil, Trees) (58%)
- Animals and the Forest (51%)
- History of Wisconsin Forests (44%)
- Protecting Forests and What You Can Do (41%)
- Forest Economic Uses, Products and Industry(40%)
- Human Impact on Forests (40%)
- Tree Identification (37%)
- Forest Sustainability and Management (23%)
- Professions in Forestry (23%)
- Urban Forests (17%)
- Demands on Forests Today(17%)
- Succession (13%)
- Forest and Tree Measurement (12%)
- Indigenous Landscape (11%)
- History of Current Site (6%)
- Forestry Policies and Issues(5%)
- Other \* (2%)

*Choices were presented as options to rank from 1-5 in order of preference. Percentages indicate amount of responses where topic was chosen as a "top" choice.*

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forestry. Middle and high schools are typically departmentalized, meaning students meet with many teachers as they move from classroom to classroom during days divided into class periods. The nature of the departmentalized school day makes field trips difficult to schedule at the middle and high school levels. The survey results suggest that it is worthwhile to invest effort in overcoming this difficulty. Case studies provided in this report describe ways that field trip providers can effectively serve secondary students.

A large number of teachers showed interest in activities or resource materials to use in classrooms before and after field trips. 87 percent responded that instructions for activities for teachers to use before and after the trip would be useful to support what is learned on the trip. 73 percent indicated they would like to use a kit of materials and activities to support a unit about the field trip topic. 55 percent identified Internet activities and online interaction with the field trip organization useful, while 49 percent would like classroom presentations. Only 8% indicated that existing classroom activities in the school's curriculum adequately support what is learned on field trips. Open-ended responses to this question indicated that teachers would like to use anything that the field trip site can offer to prepare students for the trip and that some would pay extra for these services. Such materials help teachers build continuity to relate field trips to classroom work. Connections between school work and field trip experiences fosters the use of field trips to address curriculum goals, reinforce what was learned and instill a sense of relevancy among the students.

The survey responses show that existing forestry education resources are not well utilized in the schools surveyed. 44 percent said that they did not use existing forestry education resources at all. Project WILD, Project Learning Tree, and Ranger Rick's NatureScopes were used by 24, 17, and 16 percent, respectively. 12 percent selected the option for "other" resources and wrote in varied names of resources. Several indicated that they did not know what resources were used in their schools and a number of participants indicated that they would like more information about forestry education resources. The responses may relate to teachers' view that forestry education supports broader curriculum goals. When planning instruction in these areas, teachers may seek resources focusing on the broad subjects of social studies, science, or the environment rather than forestry in particular. For example, teachers may be more likely to use forestry activities and information presented in a social studies curriculum guide than social studies activities presented in a forestry guide unless efforts to raise awareness for resources and their uses are made.

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The participating teachers indicated that they would use a web site (72%), teacher workshops (69%), audio-visual materials for loan (66%), and a person to answer questions and provide assistance to teachers (61%) if available from the Forestry Education and Awareness Center. Other responses chosen were a curriculum resource library (39%) and a research library (20%). Written comments suggested that a catalog to buy materials and a kit to check out for camping trips be provided.

A survey question asked which features teachers would use during field trips to the proposed Forestry Education and Awareness Center. Responses showed that the most popular features are those difficult to replicate in school settings, including guided hikes, hands-on laboratories and exhibits. Nearly all options presented were selected by substantial numbers of teachers. Most participants checked several options, including features to create unique experiences for students and features to ease field trip logistics and offer comfort. Write-in comments included suggestions for adequate bathroom facilities, outdoor lab stations, a camping area or dorms for overnight trips, observatory with dark skies, inclement weather provisions, opportunities to make paper or saw wood, and a gathering place where indigenous ceremonies or pow wows could be held.

The survey inquired about potential use of the Forestry Education and Awareness Center outside of school hours. There were fewer responses to this question than to others. 20-33% felt that summer school field trips, incentive or reward trips outside of school hours, field trips for after school clubs (including science and FFA clubs and scouts), activities for students and parents during evenings or weekends, summer camps, and facilities for independent student projects would be used. Teachers who completed the survey may have limited involvement with after school and weekend activities so further inquiries about demand for these types of programs should be made.

**DESIRED FEATURES:**

- ❑ Trails with presenter-guided hikes and activities - 85%
- ❑ Hands-on lab guided by a presenter - 82%
- ❑ Outdoor marked trails with signs, booklets, or recordings to guide explorations – 80%
- ❑ Exhibit area guided by a presenter - 79%
- ❑ Exhibit hall with learning stations for students to explore independently - 73%
- ❑ Indoor lunchroom with lunch storage facilities - 73%
- ❑ Shows or presentations in a theater setting - 72%
- ❑ Picnic areas - 67%
- ❑ Welcoming area for orientation and coat removal - 61%
- ❑ Outdoor recreation facilities and programs - 57%
- ❑ Hands-on art studio directed by presenter - 51%
- ❑ Hands-on lab for teacher guided activities - 50%
- ❑ Outdoor amphitheater or gathering space - 48%
- ❑ Exhibit area with a booklet or recording to guide teacher and student explorations - 41%
- ❑ Carpentry workshop directed by a presenter - 38%
- ❑ Book store/gift shop - 37%
- ❑ Space for experiments and long-term projects - 32%
- ❑ An art gallery - 27%
- ❑ Lunchroom with meals available for purchase - 26%
- ❑ Other -7%

Questions relating to ways the Forestry Education and Awareness Center could serve high schools revealed no clear trends, other than the view that high school science courses are not adequately served by existing field trip programs. A number of high school educators offered to advise the Forestry Division and participate in creating its programs.

78% of the survey participants indicated that arrangements to take field trips were made on an ongoing basis, while 32% indicated that arrangements are made in the fall. Existing field trip providers have varied procedures and deadlines for accepting registrations and all currently used methods seem to function effectively.

78% of the teachers felt that contacting them with a printed announcement addressed to the individual teacher was the most effective way to reach them with information. Maintaining current lists of teacher contacts requires administrative support within field trip provider organizations. Another popular response was sharing materials at teacher workshops, conferences, or meetings (56%). 46% also valued recommendations given from co-workers, and 41% preferred to receive e-mail

notices. Also chosen were printed announcements directed to the principal or school implementor (27% and 22%, respectively) and school district web sites (15%).

## **About the Sample**

The input gathered through the use of this survey likely reflects the views of educators who favor the creation of a Forestry Education and Awareness Center and are interested in making use of it. As the survey was voluntary and somewhat lengthy, it was foreseeable that educators disinterested in the topic would likely disregard the survey. Although the results are therefore less representative of the entire formal education community of Southeast Wisconsin, they provide targeted insights about the initial school audience for the Forestry Education and Awareness Center. The size of the sample implies that a substantial audience exists for field trip services and forestry programs.

It is clear that participants put much time and thought into their responses, as indicated by the high number of replies written for each open-ended question. For example, a question asked participants to enter the names of field trip facilities currently in use by the schools. 94% of participants responded to this question, and 20% responded to the closing request for any additional comments or suggestions.

Participants' replies to many of the survey questions were based on their existing perceptions of forestry education. Initial services designed to meet typical expectations will help teachers identify with new program offerings and their educational uses. As educators become more aware of Forestry, additional educational needs that can be served by the topic may become more evident. Ongoing communication with teachers and school officials allows field trip providers to expand their services to reflect educational needs.

## **RESULTS OF DISTRICT ADMINISTRATORS' INTERVIEWS**

*The interviews of district administrators were conducted between May 9, 2002 and May 30, 2002. Administrators were chosen to be interviewed based on a number of factors that would represent a broad range of curriculum needs. These factors included the size and type of district, such as urban, suburban, or rural; location and distance from the Forestry Education and Awareness Center; and representation of various private, parochial, and charter schools in the area. Twenty-two interviews were conducted; two from Milwaukee Public Schools, eleven from suburban and rural districts, and nine from private, parochial and charter schools. A total of 253 schools are represented with a combined student enrollment of over 150,253 students.*

*The eighteen questions in the interview were open-ended. Administrators spoke from the perspective of their district or school. The number of students represented by each interview participant varied widely. Results are reported in terms of percentages of interview participants, not amounts of schools or students represented. Complete results are provided in Appendix B of this report.*

While the district administrators from all types of districts or schools, Milwaukee Public Schools, suburban or rural, and private, parochial, or charter, made many common recommendations, some individual needs were apparent. Private and parochial schools were more likely to have needs not mentioned by the suburban and rural districts.

92% of the public school district representatives stated that their districts rely heavily on state and national standards to drive their curriculum, but 50% of private and parochial schools write their own standards based on their philosophy or religion.

Both Milwaukee Public Schools representatives, 27% of the suburban and rural district representatives, and 78% of private and parochial school representatives see a Forestry Education and Awareness Center as being most beneficial in helping support science and social studies. 45% of all three groups saw forestry connections across the curriculum. Writing poetry, creative writing, doing art projects, and making math connections were also mentioned. Many said that most

of their students had never been in a forest and wanted them to have that experience.

### **NEEDS**

- Science
- Social Studies
- Natural Connections
- Poetry
- Creative Writing
- Art

Almost all of the respondents wanted the Center to have hands-on activities, with a combination of outdoor and indoor experiences. 72% of the suburban and rural administrators wanted students to understand that forests are natural resources and that forests are directly connected to many state industries. 67% of private and parochial

school representatives saw a need for students to understand the balance between man and nature and their role in environmental issues. Other activities mentioned were long-term, in-depth studies, training future teachers, and understanding the role of state and federal governments in forest management.

Only one administrator interviewed was familiar with the study of forests and most felt the majority of teachers in their districts were also unfamiliar in the field. Some of the districts use *Project Learning Tree*, the Trees for Tomorrow Program, or area nature centers for support in this area. Answers indicate that educators would need to have the purpose of a Forestry Education and Awareness Center clearly explained to them. Most see it as teaching ecology or environmental issues. While all administrators thought that the topic of forestry was touched upon in the 4<sup>th</sup> grade Study of Wisconsin, all also said it was not covered in depth. Some mentioned that it might be touched upon in history and land use classes, biology, technology education classes when careers and uses for wood are discussed, ecology at the high school level, and economics classes. One suburban district does have a K-12 economic curriculum that examines how land use affects people and work in Wisconsin. All administrators agreed that forestry topics could be used to teach all subject areas if carefully integrated into the curriculum.

All Milwaukee Public Schools have a business partner and some schools have relationships with nature centers and other field trip providers. 72% of the suburban and rural districts have partnerships with businesses, city departments, hospitals, nature centers, camps,

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and organizations like the Kiwanis. These relationships can take on many forms. For example, the Milwaukee Academy of Science has a strong relationship with the Medical College of Wisconsin Center for Science Education. The Center does presentations at the school, and holds classes for students at the Medical College. The partnership provides professional development classes for the teachers, and technology resources for the school. The Milwaukee Academy of Science also has a partnership with Discovery World and other schools, providing a summer camp for students.

78% of private and parochial schools have partnerships that provide financial and educational support. Administrators noted that schools utilize programs for their students that are either cost effective or provide something that they cannot afford to duplicate such as the summer camp at Discovery World or Milwaukee Public Schools' nature sites or planetariums. One example of this is Urban Day's partnership with Harley-Davidson and Time Warner Cable. In addition to financial help, both firms provide volunteers for the school. However, some partnerships are very limited and on a casual and infrequent basis. They may supply a special treat once a year, or make the school the recipient of used equipment or extra office supplies.

Milwaukee Public Schools administrators want field trips that support their curriculum and give students real life experiences that can't be replicated in the classroom. 72% of the suburban and rural districts represented look for field trips that support the standards or their curriculum or have real life applications. They also look for trips that have preparation ideas and follow-up activities for the classroom. They want students to learn something that can be sustained over time. 78% of private and parochial want trips that align with what they are teaching and have hands-on activities. They want trips that are of interest to students and expand their horizons. Pre- and post-activities, information for teachers, knowledgeable guides, and minimal travel time are also important to them.

Because the Study of Wisconsin is covered in 4<sup>th</sup> grade, most administrators saw that grade as benefiting the most from a Forestry Education and Awareness Center. Representatives of the Milwaukee Public Schools, 45% of suburban and rural schools and 44% of private and parochial schools all indicated that grades Kindergarten through 12<sup>th</sup> grade would use the Center. Some respondents mentioned grades in which plants, ecology, and biology were taught. One respondent could visualize it serving all grades through post-graduate work.

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The Milwaukee Public Schools administrators and three of the suburban and rural administrators think that the Center would be a great place to hold professional development sessions or retreats for teachers. Other responses included using the new facility for family activities to provide information and recreation for the public, such as maple sugaring, festivals, enrichment camps, and summer activities. Guided or self-guided tours for the public with marked trails with labeled trees and plants and astronomy classes at night were also suggested.

All participating administrators feel there is value in learning about Wisconsin forests. They see forests as important assets that need to be understood and protected. They all recognize that forests have an economic value and are an important part of the natural world. They feel that if students can understand the relationship of forests to Wisconsin, they can make connections to how we are all connected in a global community. 44% of private and parochial administrators said the study of forestry was valuable because it would teach students about man's responsibility to care for our environment.

When asked to make suggestions for planning a Forestry Education and Awareness Center, administrators overwhelmingly responded with their primary concern, helping teachers directly with their curriculum and addressing standards. Even the private and parochial school representatives made this their first recommendation. Hands-on activities, investigations, pre and post materials, knowledgeable guides, technology applications, and having a building with adequate bathrooms, a lunchroom and storage facilities were mentioned by many of the administrators.

Some suggestions made by individual administrators should be noted. These include looking at models of other forestry centers, forming a co-op between other areas in the state and Midwest, working closely with the Department of Public Instruction, and gathering input from the public and teachers. It was suggested that the Forestry Education and Awareness Center invite teachers to tour the facility and hear overviews of the programs. Others requested having a convenient reservation system and summer workshops for teachers to create units for their classrooms.

Some single suggestions were specific to a Forestry Education and Awareness Center. These included keeping the area natural, having viewing areas for birds and wildlife, having exhibits that show change over time, such as the re-growth of forests or the effects of our actions, having live creatures on display, and models of ecosystems. A few made repeated mention of keeping the cost reasonable and help with

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transportation. One administrator said the facility should help students feel that it is “my forest, my state.”

## **Trends and Their Meanings for the Forestry Education and Awareness Center**

While there was a diversity of ideas and needs indicated by the interviews, a number of trends that are relevant to the proposed Forestry Education and Awareness Center stand out. These are:

- School and district administrators are in favor of the proposed Forestry Education and Awareness Center and anticipate using it to meet educational needs.
- To effectively serve the area schools, the center's programs should be based on Wisconsin and National Standards.
- The center should give students real life experience or application.
- The program should align with classroom teaching and should provide what cannot be duplicated in the classroom.
- Science and social studies are the subject areas that could be best supported by a Forestry Center.
- A hands-on, inquiry approach should be used.
- Most administrators and most teachers lack understanding of the topic of forestry
- The Study of Wisconsin in 4<sup>th</sup> grade is the place most educators see a forestry connection fitting in with the curriculum.
- Educators see a value in teaching about forestry if it is integrated into the curriculum and used to support existing goals.
- All schools represented visit nature centers and other field trip sites.
- Most schools have partnerships with businesses, field trip providers, camps and nature centers.
- Cost of field trips, transportation, and scheduling affect a school's use of field trips.
- Most schools would promote the center for family, club, and professional development activities.
- Most see value in teaching that forests are an important part of our environment and a valuable natural resource in our state.
- Knowledgeable guides and easy-to-use pre- and post-field trip activities are important.

## **FORESTRY GOALS AND THE WISCONSIN MODEL ACADEMIC STANDARDS**

Information gathered from teachers, administrators, and field trip providers in Southeast Wisconsin show that if a Forestry Education and Awareness Center in Milwaukee County is to be successful, it must provide programs that address education standards. Addressing the Wisconsin Model Academic Standards (WMAS) will be easy to accomplish as the goals and concepts of forestry education align with many of the Wisconsin State Standards. Teachers surveyed saw many strong correlations between forestry in the Social Studies, Science, and Environment Education Standards. They also saw a Forestry Education and Awareness Center as a place where other areas of the curriculum could be supported through an integrated approach. Reading and writing about forests or experiences at the center, doing art activities to express concepts learned, and having physical education experiences would incorporate other curriculum goals.

The Wisconsin Department of Public Instruction has published model academic standards for English, Language Arts, Mathematics, Science, Social Studies, Agricultural Education, Art and Design Education, Business, Dance, Environmental Education, Family and Consumer Education, Foreign Languages, Health Education, Information and Technology Literacy, Marketing Education, Music Education, Physical Education, Technology Education and Theatre Education. Suggested uses of Forestry topics to address selected standards are given in this section.

Wisconsin's Model Academic Standards are available from the Wisconsin Department of Public Instruction in printed form or on a CD-ROM. Contact:

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