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EDUCATIONAL USES OF  
SCIENTIFIC AREAS, 1977

DEPARTMENT OF NATURAL RESOURCES

# RESEARCH

~~John W. Mason~~

~~Madison Area~~

## REPORT 97

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### INTRODUCTION

The Wisconsin Scientific Areas program has grown steadily in its scope, accomplishments and responsibilities since its legislative beginning in 1951, when the appropriate uses of scientific areas were set forth as ... "for research and the teaching of conservation and natural history." Educational use of scientific areas has rapidly increased since the early years of the program when Professor John T. Curtis and his students pioneered the classification and description of Wisconsin plant communities. Today the scientific areas system, containing 140 scientific areas and some 19,000 acres, is used by a wide variety of educators, researchers, and naturalists for purposes nearly as diverse as their numbers.

The Scientific Areas Preservation Council has always been keenly aware of the potential use conflicts on scientific areas, the chief rationale being that natural features must be protected from unauthorized or over-use in order to continue as useful components of the system. Legitimate educational, research-oriented or nature study uses are encouraged, but intensive recreational uses are discouraged, for many, more appropriately developed parks are available for general recreation. To discourage recreational use and protect fragile ecosystems, the Council has felt it necessary to maintain scientific areas in a "low key" profile.

To provide opportunities for educational and research use of scientific areas is one of the stated objectives of the Council. It is not viewed as a shortcoming, however, that some scientific areas currently have little or no documented use. As research needs and future priorities change, these areas will be available, and in the interval, will be performing other important functions.

#### Educational Use Inventory

Previous educational use inventories of scientific areas were conducted in 1971 and 1974 to determine 1) the amount and type of educational or research use, 2) the number, identity and educational institution of the users, and 3) the type and number of publications resulting from research conducted on scientific areas. The 1977 survey, conducted and evaluated primarily by David Younkman, a graduate student in the University of Wisconsin Department of Landscape Architecture, inventoried in depth

these three needs and addressed other aspects of the scientific areas program as well.\* A copy of Younkman's thesis is maintained in Council files.

To obtain educational use information, a questionnaire was sent to 183 persons late in 1977. These people were selected chiefly as known users of scientific areas, educators, or naturalists. In addition, 55 questionnaires were sent to scientific area property managers not included by the initial mailing. As a follow-up method, numerous responses were obtained by telephone from those who did not return the questionnaires. In total, 186 responses (78%) were received.

### Inventory Limitations

To put the inventory findings into proper perspective, it is necessary to briefly mention some of the inventory limitations. The sample used was biased toward known users and those who managed scientific areas in order to elicit the most data on educational use. Many of the returns (about 50%) came from people affiliated with colleges or universities, while less than 2% came from high school teachers. The under representation of this last segment, combined with our not knowing who many of the users are, were responsible for the educational use figures being significantly lower than actual use.

Several other factors are pertinent in evaluating the inventory limitations. Most significantly, many scientific area property managers are located remotely from the scientific area under their management, and thus in some instances, were unable to account for more than a token share of the known educational use compiled from the responses of the various users for the same area. This discrepancy between what use the property managers recorded and the documented use levels varied greatly from area to area. If the use data supplied by the property manager had been nearly identical to the documented use provided by the various users, we would have felt confident that the majority of use was recorded. This was almost never the case, thus as expected, the inventory actually falls short of documenting total scientific area use.

In contrast, there are several scientific areas where educational use levels bear little relationship to the scientific area designation. For example, some scientific areas were designated because significant scientific use was concentrated there. A second example is where the scientific area is a part of a larger, more widely used natural feature or combination of features, but use of the site is reported as use of the scientific area. In summary, despite these inventory limitations, which were similar for all previous inventories, total educational use documented is considerably less than the actual use.

### INVENTORY FINDINGS

Total use of state scientific areas--including the educational and passive recreational (nature observation) segments--was estimated at 250,000 visitor-area contacts for 1977. The bulk of this use comes from trail use by hikers and other visitors, and it also includes canoers, hunters and skiers.

\*Younkman, D. K. 1978. Use patterns and user perceptions of Wisconsin's scientific areas. M.S. Thesis, Univ. Wis. 208 pp.

Documented educational use of scientific areas for 1977, including research, class or group use, and individual nature study, amounted to 15,000 person-area contacts. All recreational use was excluded from the total. Comparable use statistics for 1974 were 10,000 person-area contacts; for 1971, 4,260 person-area contacts. The 1977 educational and research use level increased 50% over the 1974 level.

A small portion of the use increase is due to the greater number of scientific areas available for use, but a much larger share of the increase is due to elevated use levels of scientific areas established for many years. In fact, of the twenty areas for which significant gains in educational use were documented, only one (Waubesa Wetlands) was designated as a scientific area since 1973.

Documented use was first compiled by scientific area as shown in the Avoca Prairie example (Table 1) and later categorized as to educational, research, or recreational use. Educational use amounted to 12,800 person-area contacts coming from 100 of the 140 scientific areas. More than half of all the educational use occurred on thirteen scientific areas. Table 2 lists those scientific areas with the most combined educational and recreational use, those with the most educational use, and those with the most research use. Of the scientific areas utilized most frequently for educational use, six occur within state parks or state forests while five are areas maintained by the University of Wisconsin, and all but one are located less than a one hour drive from Madison or Milwaukee.

Research use documented for 1977 amounted to 2,200 person-area contacts coming from 94 scientific areas. Fourteen scientific areas accounted for slightly more than half of all the research use (Table 2), with the two scientific areas in the University of Wisconsin-Milwaukee Field Station receiving the most research use. During 1977 there were some 90 research projects underway on scientific areas.

Total scientific area use for each area (Table 4), taken from Younkman's thesis, was updated with data received following its publication.

#### Use Patterns and User Characteristics

Fifteen individuals reported using more than ten scientific areas in 1977. Examples of the research projects of several of these individuals include: determining spider communities in forested scientific areas, Lepidoptera collecting, taxonomic research related to the Flora of Wisconsin project, Panicum research and individual ornithological study.

Some instructors utilized a broad spectrum of scientific areas for field exercises. Classes from the following institutions visited more than ten scientific areas each, the number of areas visited in parentheses: Lawrence University, ecology and taxonomy (45-50); University of Wisconsin Department of Landscape Architecture (16-20); Milwaukee Area Technical College, botany (10-12).

Analysis of educational use by discipline (Table 3) indicates that 75% of all use occurred in the biological sciences (botany, zoology, ecology, biology), 13% in physical sciences (geology), with lesser amounts in landscape architecture and general nature study. Conspicuously absent were uses from such common disciplines as soil science, forestry or hydrology.

Table 1  
 AVOCA PRAIRIE SCIENTIFIC AREA  
 Educational Use Survey Results, 1977

Name	Institution	User Title	Use Type	Discipline	No. of People	Trips/Year	Sub-total	Comments
1. anon.	--	Teacher	Class	Botany	10	1	10	Study composition of native wet prairie. Visited prairie on way to Prairie Conference.
2. anon.	from Ohio, Mich.	Private	Prairie obser- vation	--	5	1	5	
3. Ahren- hoerster	Hartford	Private	Nature study	Botany	3	1	3	Looking at species diversity.
4. M. Dibben	Mil. Museum	Private	Personal	--	1	1	1	Familiarization with scientific area. Prairie observation.
5. J. Diekel- man	UW	L.A. Prof.	--	Botany	30	1	30	
6. B. Freckman	UW-St. Pt.	Biol. Prof.	Prairie workshop	Botany	5	1	5	Vegetation analysis; insect trapping.
7. M. Green- field	UW	Grad.	Research	Entomology	2	12	24	
8. D. Gruenau	--	Private	Personal	--	1	1	1	Wild flower photography.
9. R. Hirschy	UW-Rich. Ctr.	Prof.	Class	Biology	25	1	25	Plant community structure.
10. T. Klitzkie	--	--	Research	Biology	2	1	2	Looking at tree structure.
11. D. Kopitzke	Wright Museum, Rich. Ctr.	Naturalist	Personal	--	1	1	1	Prairie flora observation.
12. R. Kuehn	--	Naturalist	Personal	Entomology	1	1	1	Butterfly collecting.
13. N. Maravolo	Lawrence U.	Prof.	Class	Botany	1-5	2	8	Taxonomy, ecology of native prairie.
14. D. Morrison	UW	Prof.	Class	Land. Arch.	24	2	48	Prairie structure, pattern, diversity, form. General plant community studies.
15. R. Reich	Mil. Area. Tech. Col.	Instructor	Class	Botany	30	1	30	
16. B. Swartz	UW	Grad.	Research	Land. Arch.	1	1	1	Reptile-amphibian class teaching. Document herp. populations.
17. R. Vogt	UW	Instructor	Class	Zoology	20	1	20	
18. R. Vogt	UW	Grad.	Research	Zoology	3	1	3	Breeding bird census.
19. E. Werner	--	Naturalist	Research	Ornithology	1	1	1	
Total person-area contacts:							219	

TABLE 2. Scientific areas with the greatest use (use in person-area contacts) by category, 1977.

Educational and Recreational Use	Educational Use Only	Research Use Only*
Ridges Sanctuary - 25,000+	Parfrey's Glen - 1,460	Cedarburg Bog - 184(10)
Parfrey's Glen - 17,500	Kohler Dunes - 869	Cedarburg Beech Forest - 115(10)
Natural Bridge - 11,827	Brady's Bluff - 722	Blue Hills Felsenmeer - 100(1)
Mt. Pisgah - 11,000	Oliver Prairie - 561	Faville Prairie - 98(3)
Blackhawk Island - 8,689	Abraham's Woods - 500	Abraham's Woods - 90(3)
Milwaukee River - 5,450	Goose Pond - 464	Scuppernong Prairie-76(6)
Pine Cliff - 5,011	Baxter's Hollow - 442	Spring Green - 75(9)
Goose Pond - 3,000+	Cedarburg Bog - 428	Kettle Moraine Fen and Low Prairie - 75(6)
Brady's Bluff - 2,700+	Kohler Pines - 400	Eagle Oak Opening - 75(3)
Crex Meadows - 2,547	Scuppernong Pr. - 386	Necedah Oak Pine Forest - 70(6)
Chiwaukee Pr. - 2,400	Ableman's Gorge - 360	Chiwaukee Prairie - 61(9)
Devil's Lake Red Oak Forest - 2,350	Devil's Lake Red Oak Forest - 348	Blue River - 51(5)
Castle Mound - 2,015	Chiwaukee Prairie - 337	New Observatory Woods - 56(3)
Sander's Park - 2,000+		Pine Hollow - 50(8)

\*Number of research projects indicated in parentheses.

TABLE 3. 1977 total educational use of scientific areas by discipline expressed as person-area contacts.

Biological Sciences		11,400
Botany	4,800	
Zoology	2,700	
General	1,000	
Wildlife Ecology	900	
Entomology	500	
Ornithology	300	
Ecology	3,400	
Biology	500	
Physical Sciences (Geology)		2,000
Landscape Architecture		900
General Nature Study		700
		<u>15,000</u>

### Use Values of Scientific Areas

Wisconsin scientific areas have played a very important role in our understanding of the natural environment. In the interval since John Curtis, Norman Fassett and other outstanding Wisconsin naturalists began training students using outdoor laboratories, thousands of students have visited scientific areas to evaluate undisturbed ecosystems and gain insights into their functioning. In a significant way, scientific areas have been instrumental in shaping and honing ecological perceptions.

One tangible way to measure the impact of scientific areas on the scientific community was to compile a list of publications resulting from research done wholly or partially on scientific areas. A bibliography containing more than 100 of the most significant entries was published in the 1977 Wisconsin Scientific Areas booklet, and to that, Younkman added 80 more, including theses, plus another 20 citations currently in press or being prepared.

Publications have resulted from research work completed on many scientific areas, but nowhere more than at Cedar Grove Hawk Refuge, where migrating birds (chiefly raptors) are trapped and banded, and as a result, more than 30 publications have originated from that work. From Abraham's Woods, an old growth remnant forest, at least eleven major publications have originated; from Parfrey's Glen, 10 publications; Two Creeks, 8; Cedarburg Bog, 7. At least three publications have originated from each of twenty other scientific areas.

### Conclusion

Documented educational use of state scientific areas has more than tripled in the last six years. Although many reasons can be put forth to explain this dramatic rise, certainly a renewed interest in the many values of our vegetational heritage on the part of educators, naturalists, and outdoor enthusiasts forms the basis of this increase.

The Scientific Areas Preservation Council considers it very important to continually monitor educational use, and has developed a research permit system to both monitor and help evaluate potential research projects. In addition, the Council requests that all users notify scientific area property managers of intended use, and that property managers record educational uses as they occur so that information can be made available for the next educational use inventory.

Note: The data from tables 1-4 are taken from Younkman's compilations and thesis supplemented with additional information from the files of the Scientific Areas Preservation Council.

Scientific Areas Section  
Department of Natural Resources  
Madison, Wis.



TABLE 4. Annual Use of Wisconsin Scientific Areas for 1977 in person-area Contacts. Based on 1977 Use Survey. Dashed Line Indicates Unknown Quantities. Unk. = Unknown.

Scientific Areas	Total Use (Including DNR Estimates)	Educational Use (1977 Survey)	Re-search Use (1977 Survey)	Recre-ational and Other Use (1977 Survey)	Property Manager Use Estimate
Ableman's Gorge	369	360	9	--	--
Abraham's Woods	660	500	90	70	--
Aurora Lake	12	12	--	--	--
Avoca River Bottom Prairie	266	222	29	15	--
Avon Bottoms	71	44	12	15	--
Bark Bay	Unk.	--	--	--	--
Baxter's Hollow	497	442	20	35	--
Bean Lake	50	32	18	--	--
Beulah Bog	28	25	--	3	--
Bear Creek Cave	30	30	--	--	--
Bittersweet Lakes	2	--	1	1	--
Black Tern Bog	67	54	1	12	--
Blackhawk Island	8,689	53	36	25	8,600
Blue Hills Felsenmeer	100	--	100	--	--
Blue River Cactus & Dunes	217	154	51	12	--
Bose Lake Hemlocks	Unk.	--	--	--	--
Brady's Bluff Prairie	2,700+	722	1	335	thousands
Browntown Oak Forest	64	28	36	--	--
Buena Vista Prairie & Meadow	851	840	11	--	--

Scientific Areas	Total Use (Including DNR Estimates)	Educational Use (1977 Survey)	Re-search Use (1977 Survey)	Recre-ational and Other Use (1977 Survey)	Property Manager Use Estimates
Cactus Rock	118	75	6	37	--
Castle Mound Pine Forest	2,015	--	15	--	2,000
Cedar Grove Hawk Refuge	5	--	5	--	--
Cedarburg Beech Woods	293	178	115	--	--
Cedarburg Bog	640	428	184	28	--
Charles Pond	12	9	--	3	--
Cherokee Marsh	18	--	3	15	--
Cherry Lake Sedge Meadow	1	--	1	--	--
Chiwaukee Prairie	2,400	337	61	266	2,000
Comstock Marsh	17	13	1	3	--
Council Grounds Pine Forest	13	--	13	--	--
Crex Meadows Prairie	2,547	42	5	--	2,500
Dells of the Eau Claire River	5,198	158	40	--	
Devil's Lake Red Oak Forest	2,350+	348	3	300	thousands
Dewey Heights Prairie	12	9	3	--	--
Dory's Bog	Unk.	--	--	--	--
Douglas County Grouse Area	105	102	3	--	--

Scientific Areas	Total Use (Including DNR Estimates)	Educational Use (1977 Survey)	Re-search Use (1977 Survey)	Recre-ational and Other Use (1977 Survey)	Property Manager Use Estimates
Dunbar Sharptail Barrens	38	34	4	--	--
Durst Rockshelter	7	--	7	--	--
Eagle Oak Opening	243	168	75	--	--
Endeavor Marsh	159	34	39	86	--
Escanaba Lake Hemlocks	39	39	--	--	--
Fairy Chasm	51	50	1	--	--
Faville Prairie	243	53	98	92	--
Finnerud Pine Forest	132	112	20	--	--
Five Mile Bluff Prairie	39	39	--	--	--
Flambeau River Hemlock-Hardwood Forest	49	30	15	4	--
Flora Lake	26	25	1	--	--
Fountain Creek Prairie	49	25	24	--	--
Fourmile Island	31	--	31	--	--
Frog Creek	Unk.	--	--	--	--
Giant White Pine Grove	59	9	--	--	50
Gibraltar Rock	16	--	1	15	--
Cobler Lake	Unk.	--	--	--	--
Goose Pond	2,923+	464	9	450 thousands along roadway	
Gullickson's Glen	500	--	--	2	500

Scientific Areas	Total Use (Including DNR Estimates)	Educational Use (1977 Survey)	Re- search Use (1977 Survey)	Recre- ational and Other Use (1977 Survey)	Property Manager Use Estimates
High Lake Spruce- Balsam Forest	51	39	12	--	--
Holmboe Conifer Forest	50	--	--	17	50
Honey Creek Natural Area	843	125	18	153	700
Hub City Bog	481	231	3	39	200-300
Jackson Harbor	300	--	--	--	300
Johnson Lake Barrens	11	10	--	1	--
Jung Hemlock-Beech Forest	74	70	1	3	--
Karcher Springs	Unk.	--	--	--	--
Kettle Moraine Fen & Low Prairie	98	15	75	8	--
Kewaskum Woods	8	--	8	--	--
Kohler Park Dunes	869	862	7	--	800
Kohler Park Pine	851	434	17	--	800
Koshawago Springs	541	38	3	--	500
Lake of the Pines Conifer-Hardwoods	200	--	--	--	200
Lawrence Creek	18	17	1	--	--
Lodde's Mill Bluff	123	101	20	2	--
Lulu Lake Fen	54	--	4	2	50
Mt. Pisgah Hemlock- Hardwoods	11,000	25	1	10	11,000
Maribel Caves	5,056	55	1	--	--

Scientific Areas	Total Use (Including DNR Estimates)	Educational Use (1977 Survey)	Re-search Use (1977 Survey)	Recreational and Other Use (1977 Survey)	Property Manager Use Estimates
Marinette County					
Beech Forest	23	21	1	--	--
Midway Prairie	208	90	18	--	100
Milwaukee River and Swamp	5,450	--	--	--	5,450
Miscauno Cedar Swamp	10	10	--	--	--
Moose Lake Hemlocks	Unk.	--	--	--	--
Moquah Barrens	79	62	17	--	--
Mud Lake-Door Co.	33	10	8	15	--
Mud Lake-Waupaca Co.	Unk.	--	--	--	--
Muir Lake Natural Area	5,156	25	10	131	--
Muralt Bluff Prairie	143	125	--	18	--
Muskego Park Hardwoods	505	40	--	465	--
Natural Bridge & Rockshelter	11,827	--	--	--	11,827
Cedar Oak-Pine Forest & Natural Area	100	30	70	--	--
Nelson-Trevino Bottoms	49	46	3	--	--
Newark Prairie	78	36	2	40	--
New Munster Bog Island	1	--	1	--	--
New Observatory Woods	145	77	56	12	--
Newport Conifer-Hardwoods	2,131	81	30	20	trail use

Scientific Areas	Total Use (Including DNR Estimates)	Educational Use (1977 Survey)	Re-search Use (1977 Survey)	Recre-ational and Other Use (1977 Survey)	Property Manager Use Estimates
Haskell Noyes Memorial Woods	1,000	182	--	2	820
Oliver Prairie	605	561	--	44	--
Ottawa Lake Fen	454	279	7	168	--
Parfrey's Glen	17,500	1,464	44	--	16,000
Peat Lake	Unk.	--	--	--	--
Peninsula Park Beech Forest	6	--	2	4	--
Peninsula Park White Cedar Forest	1,064	50	14	7	1,000-trail
Pine Cliff	5,011	10	1	--	5,000-trail
Pine Glen	240+	30	10	--	several hundred
Pine Hollow	165	111	48	6	--
Plagge Woods	Unk.	--	--	--	--
Plum Lake-Star Lake Hemlock Forest	160	58	2	100	--
Point Beach Ridges	1,290	65	25	3	1,200
Powers Bluff Maple Forest	35	--	20	15	--
Putnam Park	10,000	--	--	--	--
Renak-Polak Woods	100	--	--	--	100
Rice Lake-Thunder Lake Marsh	25	10	--	15	--
Ridges Sanctuary	25,000+	110	42	--	25,000
Ripon Prairie	32	25	7	--	--

Scientific Areas	Total Use (Including DNR Estimates)	Educational Use (1977 Survey)	Re-search Use (1977 Survey)	Recre-ational and Other Use (1977 Survey)	Property Manager Use Estimates
Sanders Park Hardwoods	2,000+	--	--	--	thousands
Schmidt Maple Woods	1	--	1	--	--
Scott Lake-Shelp Lake	627	27	--	--	600
Scuppernong Prairie	592	396	76	71	120
Seagull Bar	16	16	--	--	--
Silver Lake Bog	20	20	--	--	--
Sister Islands	Unk.	--	--	--	--
Spring Green Reserve	354	155	75	124	--
Spring Lake	Unk.	--	--	--	--
Spruce Lake Bog	2,092	2,000	13	--	140
Swenson Prairie and Oak Opening	80	--	--	--	80
Tamarack Creek Bog	2	--	2	--	--
Tellock's Hill Woods	16	15	1	--	--
Tiffany Bottoms	10	10	--	--	--
Toft Point	141	55	40	46	--
Tower Hill Bottoms	175	156	13	6	--
Trenton Bluff Prairie	30	30	--	--	--
Trout Lake Conifer Swamp	90	75	15	--	--

Scientific Areas	Total Use (Including DNR Estimates)	Educational Use (1977 Survey)	Re-search Use (1977 Survey)	Recreational and Other Use (1977 Survey)	Property Manager Use Estimates
Two Creeks Buried Forest	16	15	1	--	--
VanderBloemen Bog	327	220	2	105	--
Washburn County Pines	2	--	--	2	--
Waterloo Fen & Springs	46	20	6	20	--
Waubesa Wetlands	272	200	32	40	--
Waupun Park Maple Forest	1,513	13	--	--	1,500
Wilderness Ridge	5,000	--	--	--	--
Wyalusing Walnut Forest	1,617	100	14	3	1,500-trail
Wyalusing Wilderness Area	117	100	17	--	--
Young Prairie	106	100	6	--	--



