

Wisconsin scientific areas 1977: preserving native diversity. No. 102 1977

Germain, Clifford E.; Tans, William E.; Read, Robert H.
Madison, Wisconsin: Wisconsin Department of Natural Resources,
1977

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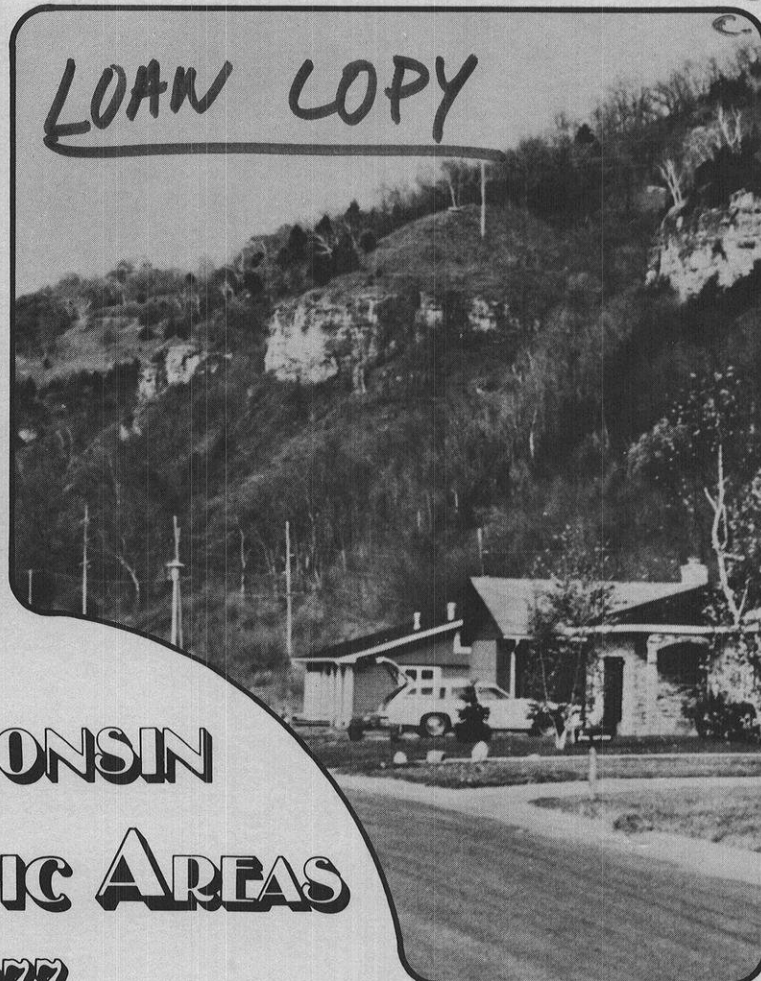
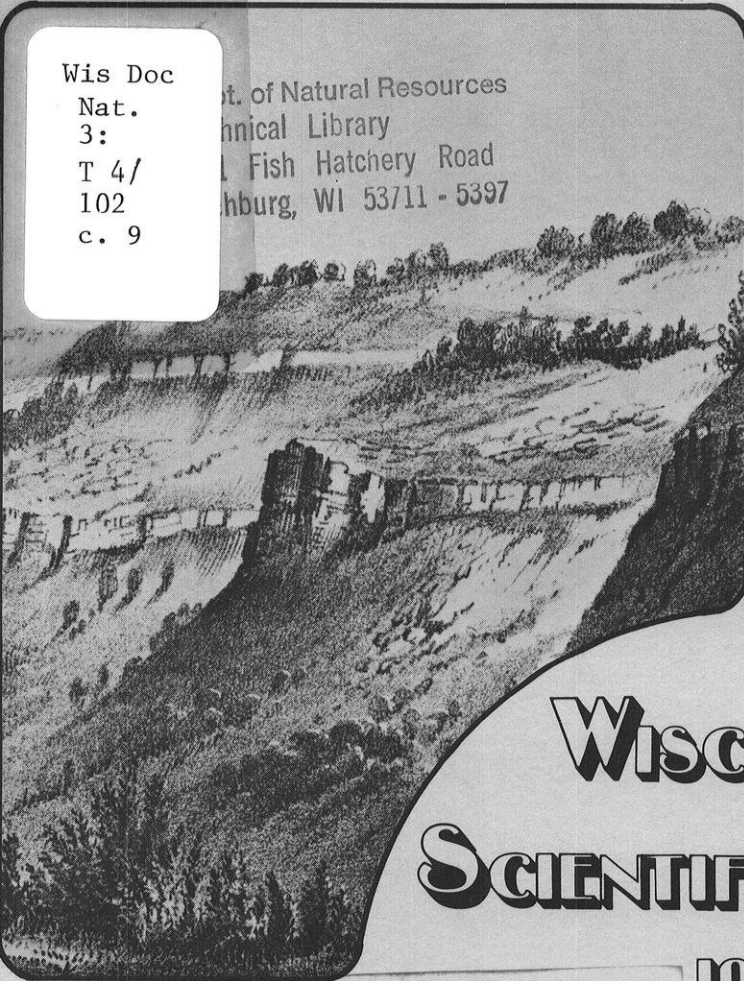
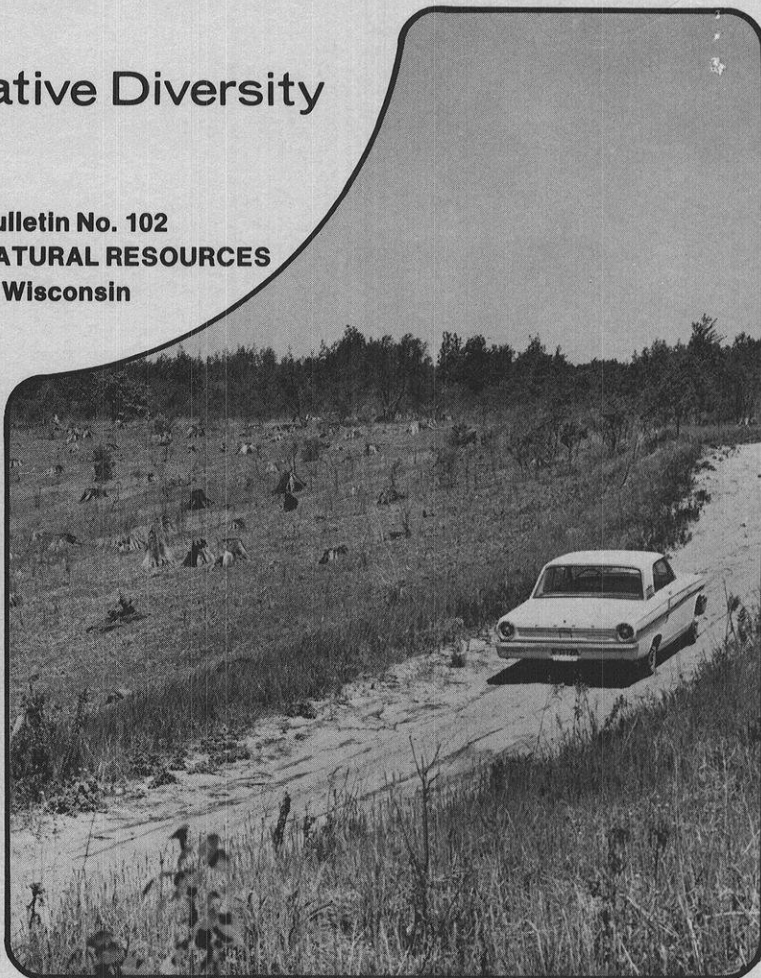
WISCONSIN SCIENTIFIC AREAS

1977

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Preserving Native Diversity

Technical Bulletin No. 102
DEPARTMENT OF NATURAL RESOURCES
Madison, Wisconsin



SCIENTIFIC AREAS PRESERVATION PROGRAM

Preservation of scientific areas in Wisconsin began in 1951, with legislation establishing the State Board for the Preservation of Scientific Areas. This Board, later renamed the Scientific Areas Preservation Council, is advisory to the Department of Natural Resources. Since 1966 the Department has provided a small budget to employ staff for evaluating, delineating, and maintaining scientific areas and assisting the Council in fulfilling its duties.

The Council's eleven members represent the University of Wisconsin, the private colleges, the Milwaukee Public Museum, the Department of Natural Resources, the Department of Public Instruction, and the Wisconsin Academy of Sciences, Arts, and Letters.

This report highlights program activities and provides a directory to all scientific areas through June 1977.

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COVER: "The native vegetation...merits careful consideration, none the less because it is rapidly disappearing, and a record of it will be valuable historically," wrote early Wisconsin natural historian T.C. Chamberlain in 1877. Artistic and photographic images are two ways which have recorded the wholesale change from a native to a largely man-made environment in the past century since settlement. Top (left): Mississippi River bluffs near Prairie du Chien in the 1840's, as depicted in D.D. Owen's *Report of a Geological Reconnaissance of the Chippewa Land District of Wisconsin*, (top, right): same bluffs, 1976. Bottom (left): Virgin white pine stand in Antrim County, Michigan, in 1905, as impressive as many of Wisconsin's famed "pineries"; (bottom, right) same location in the late 1950's after removal of all pines (bottom photos courtesy of Michigan Department of Natural Resources).

WISCONSIN SCIENTIFIC AREAS 1977
Preserving Native Diversity

By
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Technical Bulletin No. 102
DEPARTMENT OF NATURAL RESOURCES
Box 7921, Madison, WI 53707
1977

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What are Natural and Scientific Areas?

Wisconsin's landscape has experienced dramatic changes in the century and a half since intensive settlement began. Today, little remains of the original natural communities of plants and animals which formed following the retreat of the last glaciers about 10,000 years ago. The scattered areas which have escaped most if not all of white man's exploitation, or those which have sufficiently recovered and show few traces of former disturbance are called natural areas. These contain the complex associations of native plants and animals that are rapidly disappearing from our state.

Scientific areas are natural areas which have been dedicated for preservation, and are formally designated by the Scientific Areas Preservation Council and added to the official state list. They are selected from the best remaining natural areas that contain nearly intact plant and animal communities, or unique and significant geological or archaeological features. Many scientific areas contain features that remain essentially unchanged from presettlement conditions in Wisconsin.

Scientific areas provide outdoor laboratories for scientific research and teaching of conservation and natural sciences, and reservoirs of diversity where natural features are preserved for the future. As such, scientific areas are not intended for intensive recreational uses like picnicking or camping as are parks and other recreational facilities in the state.

Why Are They Important?

Native plant and animal communities are uniquely adapted to their particular environment, and although we understand little about their long-term associations, they are successful since they

have survived over long periods of time. Thus, they serve as benchmarks against which the impacts of man's alterations to the landscape can be assessed.

They are also vital as sanctuaries for the threatened or endangered species which should not be discarded even before their importance in the complex biological community is known. Our responsibility to protect these sanctuaries is not only an obligation to future generations, but also a recognition of the biotic right of the species.

How Areas Are Preserved

Natural areas are identified through special inventories or in some instances through recommendations from Council members, naturalists or educators. They are evaluated by the scientific areas staff and brought to the attention of the Council for their preliminary approval. For tracts already in public ownership, dedications through management agreements are negotiated. For privately owned areas, the Council encourages acquisition by either public or private agencies.

Finally, designation is accomplished when the Council adds the dedicated tract to the official list of state scientific areas.

General Goals

The general goal of the scientific areas program is preservation of sufficient scientific areas and other natural areas in each region of the state to provide examples of all types of biotic communities and other significant natural features native to the region. This will insure both their preservation for the future, and their availability for research and educational use at all levels of instruction.

HIGHLIGHTS OF 1973-1977

New Scientific Areas

During the past four years, the scientific areas staff investigated some 400 natural areas as potential scientific areas, and several hundred additional sites were screened through systematic natural area inventories. Frequently the investigation of a site included more than one visit to observe it during different times of the year.

In this interval, the Council designated 34 new areas as state scientific areas, bringing the total to 138 areas encompassing 19,200 acres. Recent additions to the scientific area system average nearly 100 acres in size, and most include several biotic types or natural features. Dedication of these areas is a forward step in filling gaps where certain biotic community types were not previously represented or were under-represented.

Department of Natural Resources Areas. The continued screening of lands managed by the Department of Natural Resources for recreation, wildlife, and forestry purposes accounted for 12 of the new additions. These include a considerable diversity of types, including Mud Lake, a 1,060-acre scientific area (Scientific Area 125) adjacent to Moonlight Bay, Door County, which encompasses nearly the entire watershed for Mud Lake; Kewaskum Woods (135), 50 acres of southern mesic and dry-mesic forest situated on the abruptly rolling topography typical of the Northern Unit Kettle Moraine State Forest, which was selected because of its outstanding herbaceous flora complement; Ottawa Lake Fen (128), in the Southern Unit of the Kettle Moraine State Forest, with its complex of bubbling springs, seepage slopes, and marl flats harboring many obligate calcareous-loving plants occurring alongside typical bog species; Aurora Lake (127), Vilas County, a

shallow, soft water lake whose emergent flora is dominated by wild rice; and Bean Lake (111) in Jefferson County within the Lake Mills Wildlife Area, a shallow bog lake surrounded by tamarack and shrub marsh with a wild setting.

It is particularly noteworthy that four scientific areas in this time span have come as donations to the Department of Natural Resources for protective management. Included are Peat Lake (106), Kenosha County, donated to the Wisconsin Chapter of The Nature Conservancy and transferred to the Department; Plagge Woods (121), an 80-acre old growth forest donated by the Plagge Brothers; Irvin L. Young Wet-Mesic Prairie (132), the largest of its type in the Kettle Moraine State Forest (Walworth County) region; and Gullickson's Glen (133), a rockshelter and petroglyph site of considerable archeological significance near Black River Falls. Donations of high quality natural areas have reached a significant level, and are welcomed by many educators, resource managers and naturalists alike.

Scientific Area Acquisition. Direct acquisition by the Department of priority sites identified and recommended by the Council is an increasingly important preservation tool. Acquisition of scientific areas by the Department of Natural Resources accounted for eight scientific areas encompassing 725 acres. Examples of these acquisitions are Moose Lake Hemlocks (124), Iron County, and Jung Hemlock-Beech Forest (129), Shawano County, both featuring old-growth northern mesic hardwoods. Other acquisitions feature a southern Wisconsin

Sphagnum-tamarack bog, Beulah Bog (122); one of the most westerly located bluff prairies in the state possessing numerous Great Plains prairie elements, Trenton Bluff Prairie (136); a Lake Superior beach, baymouth bar, and bog complex, Bark Bay (137); and a spring and fen complex, Lulu Lake Fen (138), Walworth County.

Since 1971, when acquisition money was first earmarked for scientific areas, eleven tracts encompassing 865 acres have been purchased at a cost of about \$350,000.

Dedication by Cooperating Agencies. The fundamental strength of Wisconsin's scientific area program continues to be the cooperative effort involving a variety of public and private agencies. Five of the additions to the Scientific Area System resulted from agreements with Marathon, Oneida, Waukesha, Green, and Wood Counties for dedication of park and forest lands as state scientific areas. The agreements used to effect scientific areas establishment—a Memorandum of Understanding between the Counties and the Council—lists the responsibilities of each party and sets forth management guidelines, but it is not a legally binding agreement.

In a cooperative effort between the Council and the U.S. Forest Service, three outstanding natural areas on the Nicolet National Forest in Forest County were dedicated. The areas are Scott Lake-Shelp Lake (117), Giant White Pine Grove (118), and Bose Lake Hemlocks (119).

The Wisconsin Chapter of The Nature Conservancy is particularly effective and active. During the four-year period, The Nature Conservancy acquired Newark Prairie (113), and Bear Creek Cave (126), protecting both from pending destruction. Bear Creek Cave is one of the best decorated, undeveloped caves known, and it is the first cave to be designated as a scientific area. The Wisconsin Chapter was also actively involved as a temporary recipient of Peat Lake (106) prior to turning it over to the Department, and has secured additional marshland acreage adjacent to the Waubesa Wetlands (114) scientific area.

The most important activity of The Nature Conservancy is its role as an intermediary in preserving high priority natural areas through advance acquisition of sites which suddenly become available. Through the quick and decisive actions of the Conservancy, Beulah Bog (122), Jung Hemlock-Beech Forest (129), and Comstock Marsh (123) were acquired as advance acquisitions.

Through cooperation with various land managing groups, the Council designated scientific areas at Jackson Harbor (110), purchased by the Town of Washington as a natural area, and in Cherokee Marsh (130), managed by the City of Madison. Agreements were also reached with the National Audubon Society for dedication of Dory's Bog (116) and with the University of Wisconsin-Eau Claire for Putnam Park (134).



R. Bier.

The Wisconsin Chapter of the Nature Conservancy, a private non-profit preservation organization, purchased the outstanding Jung Hemlock-Beech Forest at a public estate auction in January, 1976. The tract was later sold by the Conservancy to the state as a scientific area (Shawano County; scientific area 129).

National Natural Landmarks

In an analysis of potential natural landmarks in the state conducted by the National Park Service, the National Registry of Natural Landmarks in the state was expanded. These scientific areas were added: Abrahams Woods (38), Cedarburg Bog (2), Chippewa River Bottoms (Nelson-Trevino Bottoms, 81), Chippewa Prairie (54), Endeavor Marsh (42), Finnerud Forest (31), Flambeau River Hemlock-Hardwood Forest (4), Spruce Lake Bog (59), and Wyalusing Hardwood Forest (5). The designation of the Ridges Sanctuary (17) as a landmark, previously the sole natural national landmark in the state, was expanded to include the adjacent Toft Point (57) and Mud Lake



R. Read.

Not all valuable natural areas are within the scientific areas system, but finding and examining outstanding native plant and animal communities—like this magnificent and vast wetland complex on the Bad River near Lake Superior—through natural area inventories has been one of the important staff activities of the Scientific Areas Section.

(125) scientific areas. Currently, several additional scientific areas are being evaluated as potential National Natural Landmarks.

Selecting Natural Areas for the Scientific Areas System

Identification of scientific areas from the initiation of the program in 1951 to the mid-1960's consisted primarily of examining Department of Natural Resources lands to locate outstanding natural areas. These early efforts, resulting from contributed time and volunteer cooperators, were necessarily less intense than current investigations conducted by specialists assigned to this task.

The techniques of natural area selection are becoming increasingly systematic as we reach a more thorough understanding of the native biota and what remains in the state. Better answers are available to the questions: Which plant and animal communities have been most seriously reduced? For which types must we preserve the few remaining small examples to save the type from extinction? Which types are more abundant and thus have a lower priority for preservation? Complete and systematic

inventories of natural areas for each county, eventually covering the entire state, can provide some answers to these questions. The natural area inventories which have been completed for 22 counties and the Coastal Zone have played important roles in setting preservation priorities.

Scientific Areas staff have developed a system for priority ranking biotic natural areas which emphasizes the evaluation of vegetational characteristics as the basis for comparing areas and establishing priorities, and it is founded upon careful examination of each tract considering these criteria:

1. Natural Area Quality - The excellence of an area's features measured by the diversity of native plant species, plant community integrity, the extent of historical disturbance, and the degree to which it corresponds to our concept of the natural community as it existed before settlement.

2. Degree of Commonness - The importance of a type or feature according to its extent in the original landscape, its restricted nature of occurrence, the degree to which the type was converted, and the presence of threatened and endangered species.

3. Community Diversity - The number of different community types or other natural features which the tract encompasses.

4. Threat - All the facets of an area which will contribute

toward encroachment or destruction of its features.

5. Use Value - The amount of formalized class use, research use and casual nature appreciation a tract receives or potentially will receive. A history of research is particularly important.

6. Size and Buffer - The minimum size necessary to maintain the original quality of the community and the presence of buffer zones to reduce the influence of noncompatible, adjacent land use.

A thorough discussion of these criteria was published as "Priority ranking of biotic natural areas" by William Tans in *Michigan Botanist* 13:31-39 (1974).

Natural Area Inventories

A high priority has been placed within the scientific areas program on completing the natural area inventories for all of the counties in the state. These inventories, usually completed on a county basis, identify, delineate, and evaluate native biotic communities and other natural features. Features included in the inventory are (1) terrestrial and aquatic plant communities in an essentially undisturbed state, or communities which have recovered from past disturbances so that they reflect the presettlement landscape of Wisconsin; (2) significant geological and archeological features, and (3) sites which provide habitat for endangered plants or animals.

Natural area inventories have been completed for 22 counties located in southern and west central Wisconsin. In addition, the 6-mile deep coastal zone of Lakes Michigan and Superior has been inventoried. Inventories are currently underway in Washington, Ozaukee, Vernon and Crawford Counties.

Funds for natural area inventories have come primarily from the operating budget of the Scientific Areas Section, Department of Natural Resources. However, in several instances they have come from various regional planning commissions and the Coastal Zone Management Development Program. Most recently, several counties in the Driftless Area have been inventoried as a spinoff of the contract between the Council and the U.S. Army Corps of Engineers to inventory specific flora in the Driftless Area.

The natural area inventory process—locating natural areas—is the first step in their protection and preservation. Then it is necessary to incorporate inventory data into the land use planning process of local, state and federal agencies. In this manner, inadvertent destruction of many natural features through highway or utility right-of-way construction, for example, can be avoided. Inventories provide lists of natural areas that may be available to schools and the general public for nature study, and they also identify potential natural park acquisitions and wild areas. Most important, the inventory process provides potential additions to the state scientific area system and insures that the selections are the best available.

Because of the large area of the state remaining which has not been intensively inventoried for natural areas, the Council is promoting additional funding to accelerate this activity. Though an intensive statewide inventory may be out of reach, an overview inventory designed to delineate types that are most threatened and those of statewide significance is possible. Preservation efforts could then be directed toward the greatest resource need.

Data Storage and Retrieval

The increasing amount and diverse nature of information collected on natural areas throughout the state—along with the need to make these data available to planners and resource

managers—have necessitated the development of an automated data storage and retrieval system. When completed, the system will contain information on an estimated 1,500 natural areas presently in the Council's manual files.

Information stored for each natural area or feature includes site name, an identification of the site's primary type, the significance of the site, and designation information. Physical data include name of the drainage basin, physiographic region, land-controlling agency, quadrangle name, latitude-longitude and legal description, and size.

In addition, data stored for each natural area include (1) a listing of the natural community or feature types for the area with the acreage and natural area rating for each category; (2) reference information available such as a plant species list, breeding bird census, established photographic points, or other; (3) applicable designations: these include National Natural landmark, Federal Research Natural Area, or Society of American Foresters Type; (4) endangered species present; and (5) a narrative section.

Natural area investigations are oriented toward gathering botanical and ecological data. Thus information on the presence of vascular plants has been accumulated for many areas. To facilitate accurate and rapid preparation of plant species lists that can be readily updated, a computer capability has been developed.

The printout for each plant species list can be presented alphabetically by genus or family or in evolutionary sequence by family. Species present of threatened or endangered status are indicated, and the plant community modality of most species, taken from *Vegetation of Wisconsin*, is listed for each species present. With a short statistical summary, the system permits a rapid analysis of the composition, diversity and significance of plant species at a particular natural area, and is a source from which copies can be made for distribution.

Scientific Areas Management

Management of state scientific areas is based on specific plans recommended by the Council and agreed to by the land-managing agency.

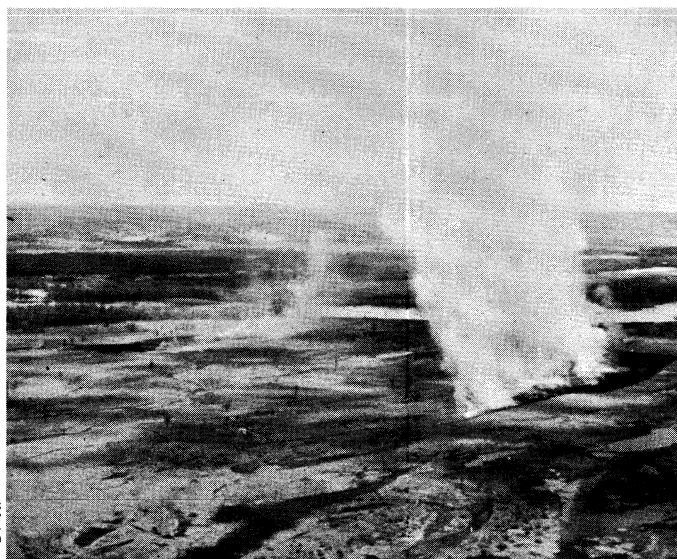
In most instances, the best management for scientific areas is to do nothing except protect them from human disturbance. This can be accomplished by limiting access and avoiding developments such as campgrounds and picnic sites close to scientific areas. Boundary markers and signs delineating scientific areas are often purposely omitted to discourage unnecessary publicity.

The usual conservation practices of timber harvest, water level manipulation, application of herbicides, insecticides or other chemicals, and introductions of plants or animals, while useful in managing many public forests or wildlife areas, are not considered to be compatible with scientific area objectives.

Generally the plans restrict tree cutting to that essential to the safety of property users, and insect and disease control is permitted only to prevent damage to lands outside the scientific area. However, in some cases management is required to maintain early successional vegetation types and meet the goal of preserving the entire spectrum of biotic communities associated with the presettlement condition in Wisconsin.

For example, prairies, sedge meadows, oak openings, pine barrens and other savannas were important components of the presettlement vegetation. Managed burns are used now to maintain these open types which were developed and maintained previously by wildfires.

Similarly, scientific areas should not be subjected to abnormally high populations of browsing animals such as deer. Since the large predators have long since been eliminated, some control of deer



Management burns on prairies and savannas simulate the wild fire conditions of presettlement times that maintained the open conditions of these native communities (Avoca River Bottom Prairie, Iowa County; scientific area 68).

populations is necessary to preserve the vegetational composition of presettlement forest communities. Hunting is generally permitted except where prohibited by property designation such as state parks, refuges, or arboretums.

There are numerous considerations in formulating a specific site management plan: the characteristics of the scientific area, including its biotic character, the adjacent land use, and the entire spectrum of public use including educational, scientific and recreational. Natural areas with water-logged soils or fragile vegetation are easily damaged by even occasional use. Local attitudes of undeveloped areas being "wasteland" or of little economic importance contribute to dumping, littering and incompatible recreation uses. Scientific areas with unique or highly prized plants such as orchids, pitcher plants or cacti sometimes fall prey to the amateur wild plant gardener.

The objective of scientific areas management is to preserve the scientific area in a natural condition, with the least possible man-induced disturbance. Property managers are requested to follow this guideline when management decisions are required concerning problems not covered in the plan.

Educational and Scientific Use

Use of scientific areas by the public, through informal nature tours and by structured class and research activities, is increasing annually. While scientific areas serve primarily as outdoor laboratories for classes in the natural sciences, the Council encourages conservation tour and group use, and research use if compatible with site preservation.

A survey of scientific area use for calendar year 1974 tallied approximately a quarter million people-scientific area contacts. This is an all-encompassing estimate; it counts separately one person in the same area on different days and includes casual uses of scientific areas. The bulk of this use is by visitors to state parks using hiking trails.

Excluding all trail use and other incidental uses, it is estimated



D. Mickelson

Class use at Point Beach Ridges Scientific Area (No. 87), Point Beach State Forest, Manitowoc County. Great Lakes coastal natural areas are of particular interest because of their specialized flora containing numerous geographically restricted species, many of which are of threatened or endangered status in Wisconsin.

that there were at least 10,000 person-area contacts for the purpose of research, class teaching or demonstration, bird or plant inventory or similar natural science-oriented educational use in all scientific areas for 1974. This is nearly double the comparable 1971 estimated use of 4,260 people-area contacts. Actual educational and passive recreational use of scientific areas is very difficult to measure, and it is probable that actual use of scientific areas is somewhat greater than these data indicate.

In part, the reason for the higher recorded use stems from the greater number of high schools reported to be using scientific areas. At least a dozen scientific areas had high school class use during 1974. Educational use was also reported by three technical colleges in Appleton, Milwaukee and Rhinelander.

A second trend resulting in increased educational use of scientific areas stems from the renewed interest in studying the diversity of natural area types in the state, particularly terrestrial types. Several institutions have organized classes to view and study the spectrum of Wisconsin vegetation, much as Professor Curtis did in the 1950's. The University of Wisconsin-Oshkosh offered a "Plant Ecogeography" course and participating students visited 12 scientific areas. The University of Wisconsin-Madison Department of Landscape Architecture visited 18 scientific areas with about 25 students for "Field Study of Native Plant Communities," offered during the summer. A third group from the Milwaukee Area Technical College viewed 10 scientific areas throughout the state.

While certain scientific areas get practically no educational visits, others are heavily used to the point of creating a management problem. Such an area is Parfrey's Glen (Scientific Area 1), which received about 16,000 visitors in 1974. Its extreme topography, easily read erodible soils, restricted area available to visitors, and wetland areas mark Parfrey's Glen as being particularly susceptible to overuse.

Scientific areas are utilized by diverse groups for numerous purposes. At Mt. Pisgah Hemlock Hardwoods (15), it was estimated that 11,000 people canoed past or hiked through the scientific area which lies along the Kickapoo River near Ontario. The great popularity of the Kickapoo River north of LaFarge for

canoeing is due, in part, to its unequaled scenic beauty, its outstanding scientific value, and the publicity the area has received from the controversial dam proposal by the U.S. Army Corps of Engineers.

On Blackhawk Island (77), which is utilized for 4-H hikes and other tours from the adjacent Camp Upham Woods, nearly 8,600 people-area contacts were recorded in 1974; at the UW-M Cedarburg Bog field station (2, 61), some 6,300 man-hours of educational use were recorded and 42 research projects were in process. At Crex Meadows (32), 2,300 grade school, high school and college-university level students were given tours of the wildlife area, including the scientific area.

Two additional scientific areas which received a significant amount of educational use include Goose Pond (86), and the Cedar Grove Hawk Refuge (8). A total of 700 visitors observed waterfowl and shore birds primarily during the migratory flights at Goose Pond; at Cedar Grove, about 90 days were spent trapping and banding raptors during spring and fall migrations.

Continuing educational use of scientific areas on a class use and group tour basis results from University of Wisconsin Extension courses under the guidance of several naturalists. A number of Nature Conservancy, Wisconsin Botanical Club and Audubon tours were also conducted to state scientific areas similar to past years.

Each year some out-of-state visitors stop at several scientific areas. Abelman's Gorge (75) and vicinity (Sauk County) received the most known out-of-state use. Classes from the University of Iowa and Indiana University stopped there, and probably additional classes and groups from northern Illinois and southeastern Minnesota and other midwestern college-universities utilized state scientific areas, particularly in the Baraboo Hills region, where textbook examples of geological features and landforms can be viewed. Another out-of-state class came from Miami University, Ohio, to visit Wisconsin prairies.

Use of scientific areas for observation or demonstration purposes requires no special permits except that advance permission must be obtained prior to using non-public scientific areas. A written permit must be obtained for research projects involving specimen collecting or other activities normally prohibited in scientific areas.

Review of Applications For Waterway Modification Permits

Section 165, Wisconsin Statutes, created the Office of Public Intervenor within the Attorney General's Office and further provided that notices of all applications to modify navigable waters under Chapters 30, 31 and 144 of the Wisconsin Statutes be given to the Scientific Areas Preservation Council. The Council's interpretation is that this legislation requires the screening of applications for direct or indirect impact on potential and existing scientific areas as well as other objectives of the scientific area program.

Since other Department of Natural Resources units have major responsibilities in review of permit applications and much greater field staff capability, they will in most cases be in the best position to protect the public interest. However, in some cases Council members and scientific areas staff can provide valuable assistance to the Department's decision-making process.

During the past four years, Council members and scientific areas staff have reviewed nearly a thousand applications for permits to construct ponds, channels, or other alterations involving dredging or filling of lands adjoining navigable waters. Twenty of

these applications were deemed potentially damaging to scientific area interests and required field evaluation and review with other Department interests and the applicant. In most cases, the Council's concern caused either a modification or withdrawal of the application.

However in four cases, lack of agreement led to Council involvement in public hearings. Following hearings, two of these permit applications were denied and two were granted in amended form. Though the Council's role in this area is limited, it is nonetheless important in broadening protection of natural areas.

Endangered Species Program

Passage of state legislation in 1972 called for the identification of endangered species of fish and wildlife and urged the preservation of whole native plant-animal communities. More comprehensive legislation sponsored by the DNR—which would give limited protection to both animals and plants, plus provide funds for research into state endangered species problems—is still pending.

The Scientific Areas program has been represented on the DNR's Endangered Species Committee since its inception in 1971. This endangered species activity meshes well with the natural area inventory efforts of the Scientific Areas program, for one of the purposes of the inventories is to identify the critical habitats of rare, native organisms. To this end, the Scientific Areas section contracted with the U.S. Army Corps of Engineers in late 1975 for an 18-month study to provide detailed inventory information on the distribution and ecology of several proposed state and federal endangered/threatened plant species. Such funding has helped to promote natural area inventories for a number of counties in southwestern Wisconsin.

To further the dissemination of basic information on the state's endangered and threatened native flora for use especially in inventory and environmental impact functions, the Council co-sponsored authorship in 1976 of DNR Technical Bulletin No. 92, **Endangered and Threatened Vascular Plants in Wisconsin**. The publication, compiled with the collaboration of the University of Wisconsin-Madison Herbarium, gives the advisory status (extirpated, endangered or threatened) on over 250 native, higher plants in Wisconsin. In addition, scientific areas staff botanists have cooperated with the Federal endangered species program by providing information on the status of the several rare species growing in Wisconsin which are on the proposed U.S. Endangered or Threatened list.

Breeding Bird Census Program

The most significant advance in knowledge of animal populations on scientific areas in Wisconsin has resulted from the breeding bird census program initiated in 1971. This highly successful effort results entirely from the cooperative effort of a number of ornithologists under the auspices of the Wisconsin Society for Ornithology. In total, 65 designated and proposed scientific areas have been censused, many in successive years.

The values of bird surveys have long been recognized by public agencies and private groups, and the Scientific Areas Preservation Council felt it would be advantageous to annually survey select natural areas for the following reasons: (1) to supply basic inventory information on the species and numbers of birds present; (2) to monitor breeding bird populations over the long term on natural areas which are now or are expected to be subjected to



DNR.

Scientific areas sometimes are refuges for plants and animals whose loss of habitat has caused them to become endangered. The prairie white fringed orchid (*Habenaria leucophaea*) has nearly disappeared from the landscape as a result of the conversion of its habitat—moist

prairie—into farmland. The species is proposed as an endangered species at both the state and federal levels. Fortunately, this rare orchid can be found in several southern Wisconsin scientific areas.

environmental stress; (3) to provide information permitting the correlation of bird species with habitat type; (4) to provide additional information on threatened and endangered species; and

(5) to aid the Scientific Areas Preservation Council in evaluating specific natural areas as well as to identify additional natural areas which may be worthy of inclusion in the scientific area system.

PROGRAM STATUS AND FUTURE CHALLENGES

New scientific areas are being added to the state system at nearly the same rate reported in previous years. However, there has been some reduction in dedications of areas by land-managing agencies, balanced by some increase in areas acquired by direct purchase. Some staff time has been diverted to direct land acquisition activity and other programs such as endangered species,

reducing the time available for negotiating dedications and management agreements. Furthermore, the dedications on DNR parks, forests and wildlife areas has been temporarily slowed by the new master planning process.

Scientific areas staff and the Council have participated in the development and review of a number of master plans being

prepared for Department properties and have frequently recommended that increased acreages be classified as scientific areas, natural areas or other elements of the wild resources policy.

As more master plans are completed, dedications of Department properties, should increase. The number of areas that can be added to the system through this process, however, depends on identification of undisturbed natural area types. For some large Department properties, such as the Northern Highland-American Legion State Forest, natural area inventories are still incomplete.

The Council believes that inventory and screening of the public lands in Wisconsin under guidelines of the Wild Resources Policy or similar policies for federal and county lands could provide the core of a complete scientific area system. Other minimum management lands classified as natural areas, wild areas and wilderness areas would provide the larger acreages required to maintain a natural diversity of plants and animals not possible on the small scientific areas alone.

Some natural areas types and features are simply not available in sufficient quantity or quality on public lands. The State ORAP and Federal LAWCON funding, provided specifically for acquisition of choice natural areas, is becoming increasingly important in acquiring new scientific areas. Use of these funds is restricted to purchases of high priority sites which for a variety of reasons do not fit into the acquisition programs of other public and private agencies. Thus, though some new scientific areas will result from public agency purchases for conservation uses, the fund is being used to preserve sites that fall outside of park, forest and wildlife boundaries but are nonetheless important in completing the state system of scientific areas.

In fiscal 1976-77, \$175,000 of ORAP and LAWCON funding was available for scientific areas acquisition and this level of funding is expected to continue or increase slightly in the next biennium. Yet the 1981 goal of 210 scientific areas will not be met, even with this increased support. Spiraling land costs and increasing demands for natural lands as residential sites or other uses are hindering achievement of this modest goal.

Increased public recognition and acceptance of the objectives of the scientific area program are essential. This could result in better land use regulations, which would at least temporarily defer destruction of natural areas until acquisition could be achieved. It could also result in increased donations of land by individuals and corporations for natural area preservation and scientific area use. Present tax laws recognize the value of land preservation and make it attractive to donate land for conservation purposes.

An increasing number of donors are finding that they can best fulfill their hopes to preserve choice natural areas by donating these tracts to a public agency for scientific area use or if preferred to the Nature Conservancy or other private preservation organizations. Usually, the tax advantages of a gift or partial gift sale result in only a small financial sacrifice, and in some cases, perhaps even a gain over sale at appraised value.

Since pristine natural areas cannot really be replaced once they are lost, the number of acres set aside in the next decade or two, before they are greatly altered for other uses, will have to meet the need for generations to come. While it is not possible to predict the actual need in the next century, the number of areas protected will most certainly fall somewhat short of human needs.

The most important needs of the next few years are summarized as follows:

1. A statewide natural area inventory, at least a low intensity overview type, is vital not only to the scientific area program,

but many other natural resource conservation programs. It should begin immediately and be completed as rapidly as possible, but at least by 1981. At the present rate, the county-by-county state inventory will not be completed until

1992. How many priceless areas will be lost before they are even identified?

2. The inventory process, if coupled with a more aggressive land acquisition effort at all levels from scientific area staff to district and area land agents and administrators, should effectively expedite acquisition. Each year of delay will only result in an eventual system of fewer areas and of likely lower quality.

Furthermore, since universities and other educational institutions find scientific areas important in research and class teaching, program success could be enhanced if educational institution budgets contained funding for the purchase of natural areas as "outdoor classrooms."

Some outstanding remnants of natural vegetation possessing high educational value have been located on the 100,000 acres of land held in trust for the educational system of the state. Funds generated from timber harvest or sale of State Trust Lands provide low interest loans to school districts. Through the cooperation of Trust Lands staff and the State Land Commission, several significant tracts have been brought to the attention of the Council and purchased for scientific area use.

Statutes require that schools benefit from these lands either through timber harvest or land sales. Perhaps retention of those lands containing natural areas and dedication for scientific area purposes would fulfill the legislative intent and spare the use of the limited scientific areas acquisition funds.

3. One of the greatest challenges of the future is balancing protection and use of scientific areas. Although those areas large enough and otherwise able to withstand some public recreation can and should be made available for nature study and similar passive and nonmechanized uses, scientific areas generally are too fragile for extensive public use. For example, the recent boom in development and use of off-the-road vehicles is a major problem facing the program objective of long-term preservation. Nearly every scientific area is available to these new machines because it is very difficult to stop them, and serious misuse has developed already on several areas. Each new technology poses a new threat since there is a considerable lag in the development of defense mechanisms.

4. As encroachments become more threatening, it will be necessary to devote more energy to protect existing areas rather than acquiring new ones. Already the program is aiming towards the inclusion of larger scientific areas and more extensive buffer zones. Subdivisions and interstate highways must not be built on the margins of natural areas. Hopefully natural areas will soon be recognized in legislation as critical natural resources deserving strict regulation of land use, not only of the remnant but also the buffer area needed to maintain an area's integrity.

5. Finally, though Wisconsin has a long and good record in preserving natural areas, too much rests on informal memorandums of understanding. Scientific areas are too vital to risk a procedure that has worked well to date but must constantly be restated by successive administrators. Legislation declaring these areas as permanent reserves not to be violated except in time of gravest need is an eventual goal.

COUNCIL MEMBERSHIP

Professor Forest Stearns, an ecologist from the University of Wisconsin-Milwaukee, was elected Chairman of the Council in January, 1975 and continues as Chairman. He replaces Henry Kolka, a geographer at University of Wisconsin-Eau Claire, who held the position from 1970-75. Professor Kolka, now an emeritus professor at Eau Claire, remains an active member of the Council as one of the four University of Wisconsin representatives. For the past two years Professor Kolka has served as the Council's representative on the Department's Wild Resource Advisory Council.

Milwaukee Public Museum representative Mr. Emil Kruschke retired from the Council in January, 1973, and was replaced by Kenneth MacArthur, an entomologist. Mr. MacArthur remained on the Council until September, 1975, when he was replaced on his retirement from the museum by Dr. Martyn Dibben, a lichen taxonomist and new Head of the Botany Division at the Museum.

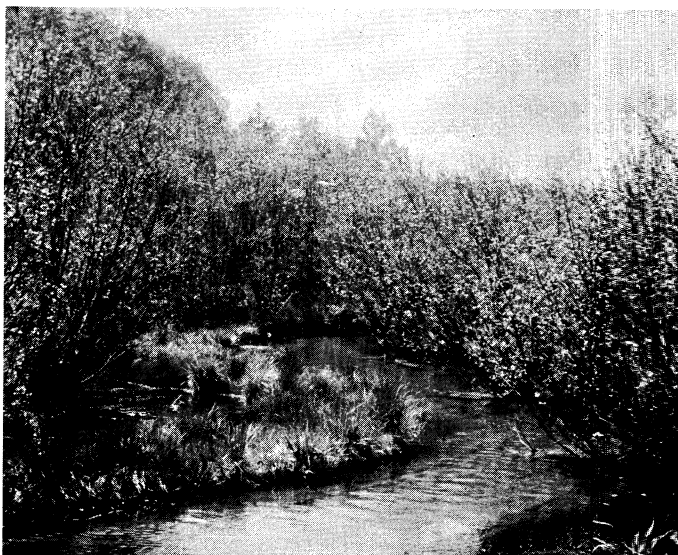
Dr. Sumner Richman of Lawrence University, Appleton, representing the private colleges of the state, took a leave of absence from the Council in late 1974 to September, 1975, and his position was filled for that time by Professor Nicholas Maravolo, also of Lawrence University. In 1976, Dr. Richman resigned from the Council and Professor Richard Newsome, Beloit College, was appointed by the Wisconsin Academy of Sciences, Arts, and Letters to represent the private colleges.

Mr. David Engleson, environmental education coordinator, has been on the Council since December, 1972, representing the Department of Public Instruction. Council Secretary Cyril Kabat has served as representative of the Department of Natural Resources since 1971. Mr. Kabat is Director of the Bureau of Research for the Department.

In March, 1976, new legislation providing for the expansion of the Council from six to eleven members was passed. Expansion of the Council came as a recommendation of the Community Relations Committee, an ad hoc committee appointed by the Council to evaluate the Council's program. Two additional Council members representing the University of Wisconsin system were appointed by the Board of Regents: Professor Orie Loucks, an ecologist and systems modeller from the University of Wisconsin-Madison (a former Council member, 1964-1972), and Dr. Robert

Engelhard, a professor of Forestry from University of Wisconsin-Stevens Point.

Professor Francis Hole, University of Wisconsin-Madison Department of Soil Science, Mr. Al Krampert, a Board Member of the Wisconsin Chapter-The Nature Conservancy, and Dr. Richard Newsome, Plant Ecologist, Beloit College, were appointed by the Wisconsin Academy of Sciences, Arts and Letters. The latter represents the private colleges. Mr. Boye Ladd, Native American Coordinator with the Department of Natural Resources, was appointed by the Department as its additional representative.



R. Reid.

Aquatic areas provide special problems in preservation. To protect a stream or lake adequately, the watershed should also be protected. One of the few cases where this is possible is on the headwaters of the south fork of Bean Brook, a proposed scientific area on Washburn County forest land.

PROGRAM COORDINATION

A considerable amount of the progress in designating scientific areas is due to the cooperative support which the program receives from many individuals and both private and public agencies. Land managers and administrators, especially in the Department of Natural Resources but also other public agencies, have assisted in identification of choice natural areas on lands under their control. Individuals have brought many new areas to the Council's attention and supplied biological information on these sites. In many instances, local residents help by being watchdogs over nearby scientific areas. Others, who are particularly familiar with the natural features of a county or region, have been very helpful in making natural area inventories more complete. In several important cases, The Nature Conservancy saved natural areas from

threatening development or logging through advance acquisition of potential scientific areas for the Department of Natural Resources.

Cooperation of personnel in the Department of Natural Resources is expected to continue at previous high levels. In 1976 the Department delegated an additional assignment of scientific areas representation to a staff specialist in each of the six administrative districts. These representatives are performing an important liaison role between Scientific Areas staff and the property managers primarily to improve maintenance of the growing number of scientific areas.

All participants in the program recognize that continuing cooperation is indispensable to the present and future success of the program.

Relation to Plant Community Types

Representatives of all of the 32 terrestrial community types in Wisconsin, including the various kinds of forest, savanna, prairie and wetland, and of the 29 aquatic types, including lakes and streams of varying physical and chemical conditions, should be preserved in at least one location in each region where they occur naturally. Efforts are underway not only in Wisconsin, but in many other states and at the federal level, to preserve native biotic communities. Thus the preservation of a complete representation of Wisconsin's natural diversity will fill the state's needs, and also will eventually become an integral part of a national system of ecological preserves.

In spite of the more systematic approach through the natural area inventory process and increasing thoroughness in natural area identification, obvious gaps exist in the scientific area system. Three notable examples of terrestrial community types poorly represented are oak opening, prairie, and southern sedge meadow, which occupied 5.5 million, 2.1 million and 1.1 million acres respectively in the presettlement vegetation (Curtis 1959)*.

The present landscape shows nearly a complete conversion of these easily exploited communities. The mesic deep-soil prairie and oak opening are rarest, with only a few hundred acres at best surviving in a natural condition. Similarly, sedge meadows have been seriously reduced by agricultural drainage, grazing and filling. Furthermore, with the reduction of fires since settlement, many sedge meadows as well as oak opening and prairies have grown into shrub-carries and forests.

For these reasons, the Council places a high priority on those natural areas which contain sizable examples of native prairie, intact oak savannas or meadow communities, as well as other under-represented types. One such area is the Avoca Prairie in Iowa County, which contains representative examples of prairie, oak savanna and sedge meadow encompassing nearly 1,000 acres and rated as perhaps the best of its type east of the Mississippi River.

Two forest community types in particular are in need of better representation. Only a few remnants of southern mesic forest (hard maple-basswood-white ash) have been located in southwestern Wisconsin in spite of intensive searches in the past. Boreal forest occurred in presettlement vegetation almost exclusively along or near the Lake Superior shoreline, but with a disjunct outlier at the north portion of the Door Peninsula. An intensive search to locate and preserve the best remaining examples of boreal forest is justified.

The scientific area system also shows gaps for such plant community types as Lake Superior beach, tall shrub communities, and floodplain forests. These types exist in the present landscape and in most cases will be found on public lands when systematic county inventories are more complete.

One example of a plant community type with a nearly complete representation in the scientific areas system and with diverse geographical representation is the pine barrens. Scientific areas which include pine barrens are Crex Meadows (32), Douglas County Grouse Area (65), and Moquah Barrens (83) in the northwest portion of the state, Johnson Lake Barrens (107) in north central Wisconsin, Dunbar Sharptail Barrens (104) in

northeastern Wisconsin, and the two Necedah (14, 14a) scientific areas in central Wisconsin. An additional site has been identified as a potential scientific area in the west central portion of the state being purchased as part of the St. Croix River State Forest.

Preservation of aquatic types has been difficult, not only in locating undisturbed examples, but also in controlling the land use of headwaters and even entire watersheds. The great expense of frontage on lakes and streams plus the competition of aquatic recreational activities and development have also had a negative effect on preservation efforts, especially in southern Wisconsin. A greater acquisition effort will be directed toward aquatic types as funding increases.

Unique geological features and land forms also need preservation as scientific areas. Geologic features are more resistant to destruction than biotic communities, but nonetheless will require more attention as land exploitation increases. In many cases, geologic features are included in areas selected primarily as desired biotic community types.

Preservation of the complete variety of archeological features is beyond the scope of the scientific area program. However, the most significant features identified by state archeologists are being preserved. The most recent addition of an archeological feature into the scientific area system was Gullickson's Glen (133), Jackson County, a rock shelter with petroglyphs depicting several different types of animals. The site was donated to the Department of Natural Resources by the Jackson County Historical Society. Other major archeological features previously designated as state scientific areas include Durst Rockshelter (44) and Natural Bridge and Rockshelter (Radditz Rockshelter) (105), Sauk County.

Scientific Areas - Important Statistics

Overall progress in selection and delineation of natural area types has resulted in the preservation of approximately 280 discrete biotic communities and other natural features within the 138 scientific area designated as of June 1977. See Figure 1 for the location and distribution of scientific areas in the state.

The total acreage in Wisconsin under scientific area designation is 19,200 acres. This is only 0.3 percent of the nearly 5 million acres of public land and only 0.05 percent of the total acreage of Wisconsin.

Ownership of scientific areas is vested primarily in a number of public agencies as well as several private groups whose goals are land preservation oriented. The Department of Natural Resources owns 60% of the state scientific areas, colleges and universities-12%, private land preservation groups-12%, counties-10%, federal, city or township-6%. Figure 2 gives a more complete breakdown of scientific ownership categories.

Scientific areas range in size from Ripon Prairie, only 1.5 acres, to Nelson-Trevino Bottoms, encompassing 3,740 acres at the confluence of the Chippewa and Mississippi Rivers. Although the average size is 140 acres, the median size is 40 acres. When possible, new scientific areas will be as large as feasible to reduce the threat of encroachment and improve the chances of survival for small remnants. Figure 3 shows the distribution of scientific areas in size classes of 20-acre intervals.

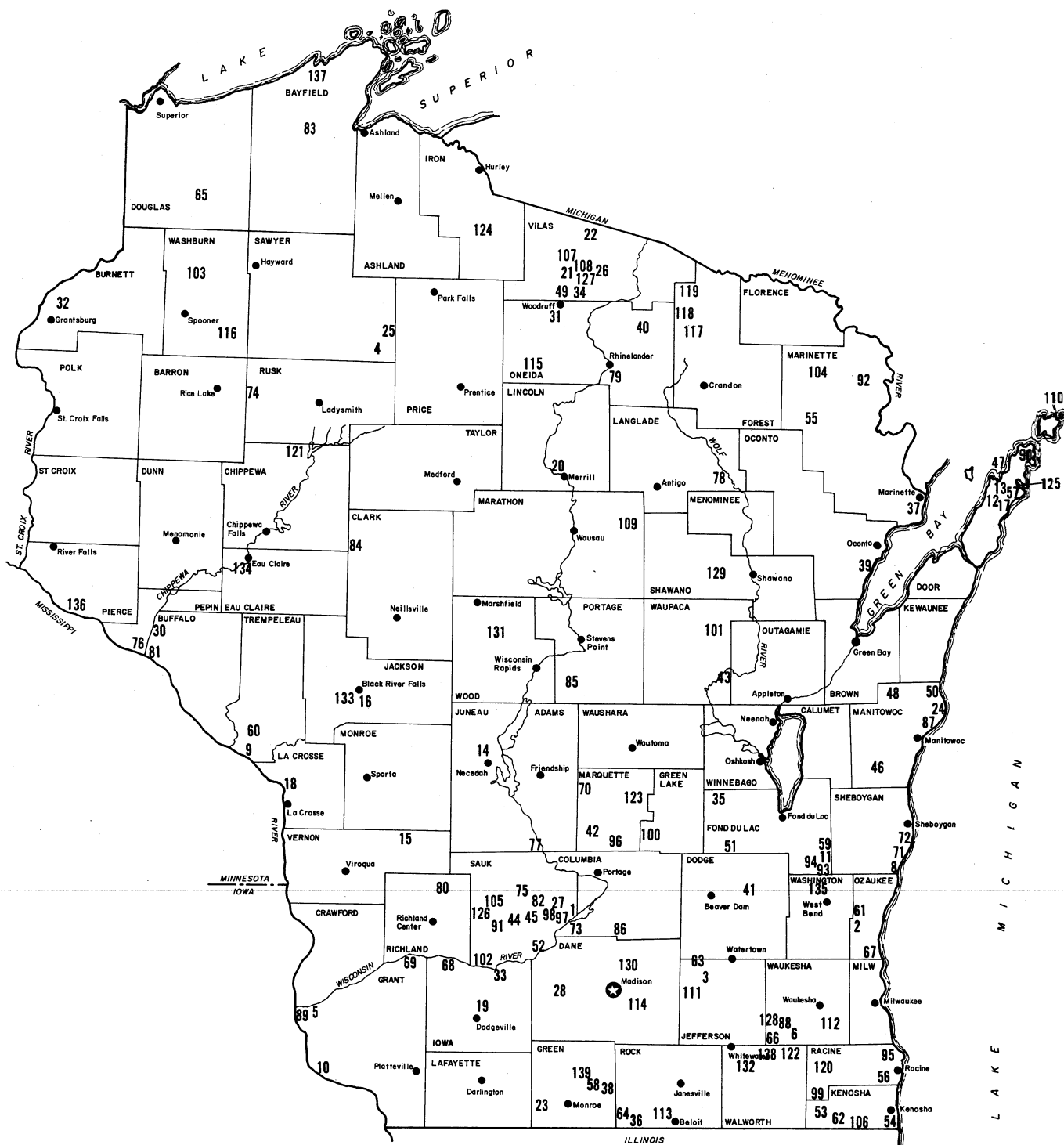


Figure 1. Locations of Wisconsin state scientific areas, June 1977. For more detailed information on each area, see the scientific area summaries following in numerical order.

Biotic Types and Features

Tables 1 and 2 list the terrestrial, aquatic, and special community types and features (animal species preserves, geological features and archeological sites) in Wisconsin recognized by the Council. The terrestrial community classification was developed by John Curtis. Examples of these within the scientific area system are

listed by region. Dividing the state into four regions facilitates the selection of areas as features most conveniently located for potential researchers. Note that all community types do not exist in each region. For example, the boreal forest type occurs only in portions of the two northern regions which are significantly moderated by the Great Lakes; the absence of boreal forest from the southwest and southeast regions is indicated by a dashed line.

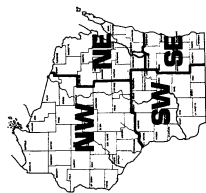


TABLE 1
TERRESTRIAL PLANT COMMUNITIES
Scientific Areas in Each Region Containing Examples of the Plant Community Types

Plant Community Type	Indicator Species*	SW Region	SE Region	NW Region	NE Region
S. Dry Forest	Black Oak-White Oak-Bur Oak	Wyalusing (5), Browntown (23), Devil's Lake (27), Observatory Woods (28), Wyalusing Walnut (89)	Noyes Woods (11), New Munster (53), Sanders Park (56), Muskego Park (112)		
S. Dry-Mesic Forest	Red Oak-White Oak-Basswood	Wyalusing (5), Browntown (23), Devil's Lake (27), Wyalusing Walnut (89)	Waupun (51), Cedarburg (61), Renak-Polak (95), Kewaskum (135)	Schmidt (84), Plagege (121), Powers Bluff (131)	
S. Mesic Forest	Sugar Maple-Basswood-Beech	Wyalusing (5), Abrahams (38), Blackhawk (77)			
S. Wet-Mesic Forest	Am. Elm, Sil. Maple, Grn. Ash	Wyalusing (5), Tower Hill (33), Avon (36), Wyalusing (89)	Noyes Woods (11), Milwaukee River (93)	Tiffany (30), Nelson-Trevino (81), Putnam (134)	Charles Pond (39)
S. Wet Forest	Sil. Maple, Bl. Willow, Cottonwood	Tower Hill (33), Avon (36)		Tiffany (30), Nelson-Trevino (81)	
N. Dry Forest	J. Pine, R. Pine, W. Pine, Aspen	Necedah Natural Area (14), Pine Cliff (19)		Castle Mound (16), Moquah (83)	
N. Dry-Mesic Forest	W. Pine, Red Maple, Red Oak	Blackhawk (77), Baxter's Hollow (82), Pine Glen (97)	Fairy Chasm (67), Kohler Pines (72)	Castle Mound (16), Council Grounds (20), Finnerud (31), Washburn Pines (103)	Toft (57)
N. Mesic Forest	Sugar Maple, Hemlock, Y. Birch	Pine Hollow (45), Blackhawk (77), Koshawago (98)		Flambeau (4), Lake of the Pines (25), Plum Lake (26), Holmboe (79), Escanaba Lake (108), Moose Lake (124), Frog Creek (140)	Marinette (55), Toft (57), Point Beach (87), Newport (90), Tellock's (101), Scott-Shelp L. (117), Giant Pines (118), Bose L. (119), Jung (129)
N. Wet-Mesic Forest	W. Cedar, Balsam, Black Ash		Cedarburg Bog (2), Spruce Lake (59), Milwaukee River (93)	Trout Lake (21), Washburn Pines (103), Frog Creek (140)	VanderBloemen Bog (46), Toft (57), Newport (90), Miscoano (92), Mud Lake (125)
N. Wet Forest	Tamarack, B. Spruce, W. Cedar	Endeavor Marsh (42), Hub City (80), Honey Creek (91)	Cedarburg Bog (2), Spruce Lake (59), Bean Lake (111), Beulah (122)	Tamarack Creek (60)	Ridges (17), Mud Lake (125)
Boreal Forest	Balsam, White Spruce			High Lake (22)	Ridges (17), Toft (57), Newport (90), Jackson Harbor (110)
Dry Prairie	L. Bluestem, Grama, Silky Aster	Dewey Heights (10), Oliver (58), Muralt (139)	Ripon (35), Eagle Oak Opening (66)		Brady's Bluff (9), Crex (32), Five-Mile Bluff (76), Trenton Bluff (136)

*See appendix for scientific names
-- -- -- Type not native to region

TABLE 1. (cont.)
TERRESTRIAL PLANT COMMUNITIES — Continued.

Plant Community Type	Indicator Species*	SW Region	SE Region	NW Region	NE Region
Dry-Mesic Prairie	Bluestems, Whorled Milkweed	Midway (18), Avoca (68)	Chiwaukee (54)		
Mesic Prairie	Big Bluestem, Needlegrass				
Wet-Mesic Prairie	B. Bluestem, Bluejoint, Cordgrass	Swenson (64), Avoca (68), Muir Park (96), Cherokee (130)	Faville (3), Scuppermong (6), Chiwaukee (54), Kettle Moraine (88), Newark (113), Young (132)		
Wet Prairie	Bluejoint, Cordgrass	Fountain Creek (100)			
Bracken Grassland	Bracken Fern, Sweetfern			Johnson Lake Barrens (107)	
Sand Barrens	L. Bluestem, June Grass	Blue River (69)			
Pine Barrens	Jack Pine, Hill's Oak	Necedah Managed (14)		Douglas County Grouse (65), Moquah (83), Johnson Lake (107)	Dunbar (104)
Oak Barrens	Black Oak, Hill's Oak	Necedah (14), Blue R. (69)			
Oak Opening	Bur Oak, White Oak	Avoca (68)	Eagle Oak Opening (66)		
Cedar Glade	Red Cedar, Basswood	Wyalusing (5), Lodde's (52), Gibraltar (73), Muralt (139)		Brady's Bluff (9)	
Bog-Muskeg	Sphagnum, Leather Leaf	Endeavor Marsh (42)	Cedarburg Bog (2), Spruce Lake (59), Silver Lake (62), Beulah Bog (122)	Finnerud (31), Black Tern (49), Gobler Lake (115), Dory's Bog (116), Bark Bay (137)	VanderBloemen Bog (46), Toft (57), Scott-Shelp L. (117)
Alder Thicket	Alder, Spiraea	Necedah Managed (14), Lawrence Creek (70), Honey Creek (91)	Kohler Pines (72)	Rice Lake-Thunder Lake (40), Bark Bay (137)	Ridges (17), Scott-Shelp L. (117)
Shrub-Carr	Willows, R. Osier Dogwood	Necedah Managed (14), Cherokee Marsh (130)	Cedarburg Bog (2), New Munster (53), Milwaukee River (93), Cherry Lake (120), Ottawa Lake (128)		
N. Sedge Meadow	Sedges, Bluejoint			Rice Lake-Thunder Lake (40)	Toft (57)
S. Sedge Meadow	Sedges, Cordgrass	Endeavor Marsh (42), Avoca (68), Waubesa (114), Comstock (123), Cherokee (130)	Cherry Lake (120)		
Fen	Bluejoint, Manna Grass	Endeavor Marsh (42), Muir Park (96), Cherokee (130)	Waterloo (63), Kettle Moraine (88), Karcher (99), Ottawa Lake (128), Lulu Fen (138)		
Exposed Cliff	Columbine, Cliff Brake	Devil's Lake (27), Lodde's (52), Ableman's Gorge (75)		Dells of Eau Claire (109)	
Shaded Cliff	Polypody, Fragile Fern	Parfrey's Glen (1), Mt. Pisgah (15), Pine Hollow (45), Loddes (52), Blackhawk (77), Hub City (80), Honey Creek (91), Natural Bridge (105)			Maribel Caves (48)
Lake Dunes	Beachgrass, Beach Pea		Kohler Dunes (71)		Wilderness Ridge (24), Point Beach (87), Jackson Harbor (110)
Beach	Sea Rocket, Bugseed, Seaside Spurge		Kohler Dunes (71)		Seagull Bar (37), Toft (57), Point Beach (87), Jackson Harbor (110)

*See appendix for scientific names
-- --Type not native to region

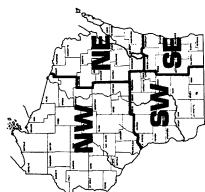


TABLE 2
AQUATIC COMMUNITIES AND SPECIAL TYPES
Scientific Areas in Each Region Containing Examples of the Aquatic Communities and Special Types

	SW Region	SE Region	NW Region	NE Region
AQUATIC TYPES				
Flowing Water				
Spring & Spring Runs	Hub City (80), Honey Creek (91), Koshwago (98), Waubesa (114)	Waterloo (63), Milwaukee River (93), Karcher (99), Ottawa Lake (128), Lulu Fen (138)	Trout Lake (21)	Flora Lake (78), Miscoano (92)
Rapidly Flowing: Cold Water	Parfrey's (1), Lawrence (70), Hub City (80), Baxter's Hollow (82)		Gullicksons Glen (133)	
Rapidly Flowing: Warm Water				
Slow Meandering		Milwaukee River (93)	Tiffany (30), Tamarack Creek (60), Nelson-Trevino (81)	Mud Lake (125)
Delta Areas				
Backwater Slough			Tiffany (30), Nelson-Trevino (81)	
Non-Flowing Water (Lakes)				
Deep, stratified	Muir Park (96)		Bittersweet Lakes (34)	
Shallow, usually unstratified	Goose Pond (86)	Cedarburg Bog (2), Peat L. (106)	Rice Lake-Thunder Lake (40), Aurora L. (127), Bark Bay (137)	Scott L.-Shelp L. (117)
Bog Lakes		Spruce L. (59), Silver L. (62), Spring L. (94), Bean L. (111), Cherry L. (120), Beulah (122)	Black Tern (49), Gobler Lake (115)	
Unique Lakes (Spring Pond, Oxbow, Meromictic)	Avon (36) and Swenson (64), (oxbow) lakes		Tiffany (30) and Nelson-Trevino (81) (oxbow)	Flora L. (78) (Spring Pond)
Shallow Water Environments				
Ephemeral Ponds	Avoca (68)	Chiwaukee (54), Eagle (66)	Tiffany (30)	Ridges (17), Wilderness Ridge (24)
Emergent Aquatics	Waubesa (114), Comstock (123)	Cedarburg Bog (2), Spring L. (94), Peat L. (106), Ottawa L. (128)	Rice L.-Thunder L. (40), Nelson-Trevino (81), Aurora L. (127)	Seagull Bar (37), Toft (57), Mud L. (125)

TABLE 2. (cont.)

	SW Region	SE Region	NW Region	NE Region
ARCHAEOLOGICAL SITES	Durst Rockshelter (44), Natural Bridge (105)		Gullickson's Glen (133)	
SIGNIFICANT GEOLOGICAL FEATURES & LANDFORMS				Two Creeks (50)
Glacial Features				
Buried Forests				
Terminal, Interlobate Moraines	Devil's Lake (27)	Eagle (66)		
Eskers, Drumlins, Crevasse Fills		Karcher Springs (99)	Gobler Lake (115)	
Periglacial Features	Devil's Lake (27)		Blue Hills Felsenmeer (74)	
Great Lakes Coastal Features				Point Beach (87), Jackson Harbor (110)
Beach and Dunes		Kohler Dunes (71)		
Bars and Spits			Bark Bay (137)	Seagull Bar (37)
Abandoned Beach Ridges				Ridges (17), Point Beach (87)
Ravines, Gorges, Dells	Parfrey's Glen (1), Ableman's Gorge (75), Blackhawk Island (77), Baxter's Hollow (82)		Dells of the Eau Claire (109)	
Sedimentary Bedrock Exposures				
Escarpments, Outliers, Bluffs	Gibraltar Rock (73)		Castle Mound (16)	
Natural Bridges	Natural Bridge (105)			
Igneous and Metamorphic Bedrock Exposures	Devil's Lake (27)		Blue Hills Felsenmeer (74), Power's Bluff (131)	Cactus Rock (43)
Caves and Mines	Bear Creek Cave (126)			
ANIMAL SPECIES PRESERVES				
Invertebrate	Parfrey's Glen (1), Baxter's Hollow (82), Spring Green (102)			
Reptile and Amphibian	Blue River (69), Spring Green (102)			
Bird	Goose Pond (86), Honey Creek (91)	Cedar Grove (8), Four Mile Is. (41)	Douglas Co. (65), Nelson-Trevino (81), Buena Vista (85), Washburn Pines (103)	Seagull Bar (37), Sister Islands (47), Dunbar (104)
Mammal				

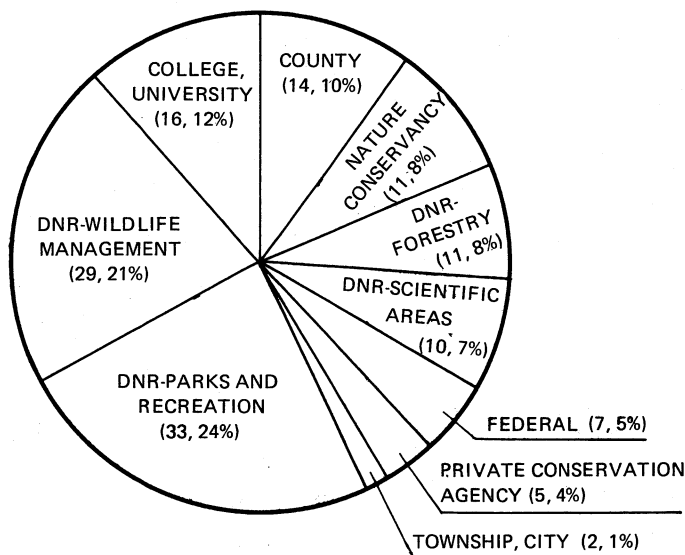


Figure 2. Ownership and management classification of the 138 Wisconsin state scientific areas, June 1977. The number and percent of areas are shown in parentheses.

Community types and features are listed in the tables according to the following two criteria: (1) if the inclusion of the community or feature in the natural area was the primary reason for establishing the scientific area; (2) if the community or feature is sufficiently well developed and preserved such that it would be utilized by scientists as a representative example of that type. Only the most well known and significant geological features are included in the geological features analysis by region.

The tables also indicate those community and feature types that are not currently represented within scientific areas in certain regions. The Council would especially appreciate information from property managers, educators, naturalists and others concerning

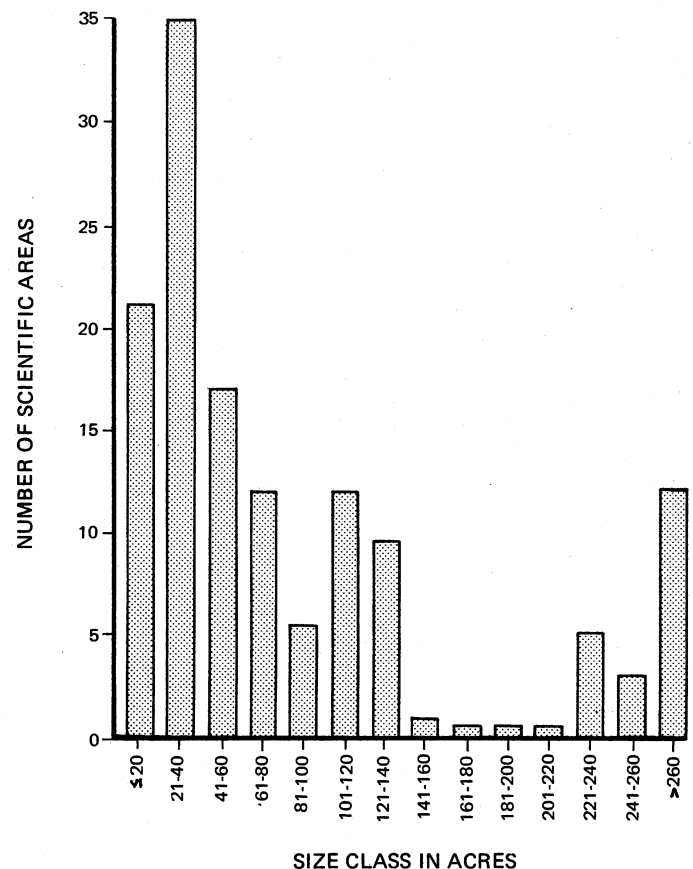


Figure 3. Number of Wisconsin state scientific areas in size class categories of 20 acres.

the location of potential scientific areas containing those communities as yet unrepresented. Suggestions for new scientific areas should be submitted to Council members or staff.

SCIENTIFIC AREA SUMMARIES

Presented on the following pages are summaries of all of the scientific areas. They are numbered and arranged in order of designation by the Scientific Areas Preservation Council and include numbers 1-139 (excluding numbers 7 and 29). Locational information such as Town, Range and Section (Figure 4, back cover) serves to approximately locate the scientific area but not describe its boundaries. The five geographical provinces of the state are located on Figure 5 and are described in detail in Martin (1965). Designation date refers to the date of action taken by the Council.

Included for some scientific areas are selected references of a significant research, historical, or interpretive nature pertinent to that scientific area. In addition, highly specific research projects which utilized one or more scientific areas but which contribute little information on the nature of the scientific area used are merely included in the list of references which follows the scientific area descriptions. Very few references of a general nature (i.e. ecology of southern forests, Wisconsin prairies) are included unless

specific scientific areas are known to have been used. For scientific areas which have been intensely utilized as research sites (e.g. Cedarburg Bog and Beech Forest, Two Creeks Buried Forest, Lawrence Creek), only the primary interpretive publications are listed, and reference is made to additional publications in Council files. Information such as the presence of vascular plant species lists, breeding bird censuses, or University of Wisconsin Plant Ecology Lab data is not included.

Scientific areas within state parks, state forest and wildlife areas are under the management of the Department of Natural Resources (DNR) and are open to public use, as are most federal and county-owned lands. This does not mean, however, that the lands can sustain any type or amount of use. On the contrary, each agency manages its scientific areas following guidelines compatible with maintaining the area's natural quality. Some areas are especially sensitive and can stand very little use, while special circumstances at certain other scientific areas—e.g., nesting birds at rookeries or bird banding sites during migration—dictate that

there be absolutely no disturbance at these critical times.

Several nonpublic agencies in Wisconsin own scientific areas. The Nature Conservancy, a nonprofit conservation agency, and others including the Wisconsin Society for Ornithology, Audubon Society and the Ridges Sanctuary manage their properties for preservation and protection of native biota. In addition, the

University of Wisconsin owns and manages several scientific areas, while others are controlled by private colleges or corporations. Permission to use the areas owned by the University of Wisconsin and private agencies should be obtained from the owners prior to use.



Figure 5. The five geographical provinces of Wisconsin based on bedrock characteristics and dominant landform features. For explanations of each province, see Martin (1965). (Map courtesy of Hammond Incorporated, Maplewood, N.J.)

1 PARFREY'S GLEN, SAUK COUNTY

Location; Geographical Province: Five miles southeast of Baraboo off Parfrey's Glen Road (T11N R7E Section 22, 23); Western Upland.

Major Features: A narrow, deep gorge cut through Cambrian sandstone and conglomerate in the Baraboo Hills. The glen is well known for its scenic beauty, exposed geological formations, and shaded cliff plant communities containing several rare northern species. The high-gradient, cold water stream in the gorge contains an unusual assemblage of aquatic invertebrates.

Size: 89 acres (36 ha); 231-acre (93 ha) buffer zone.

Owner; Custodian: DNR; Devil's Lake State Park; contact Park Manager, Devil's Lake State Park, Route 4, Box 36, Baraboo 53913.

History of Preservation; Designation Date: Purchased from the Parfrey family in 1947 with funds specifically allocated for natural area preservation by the Conservation Commission. Dedicated as the first scientific area in 1952 and later dedicated to the memory of Norman C. Fasset, member of the Natural Areas Committee that identified Parfrey's Glen.

Management, Use Considerations: Heavily overused by visitors. The current management policy is aimed at reducing user impact (by gravel trails and boardwalk) and lowering overall use.

Interpretive & Research References: Dalziel & Dott, 1970; Hilsenhoff, 1974; Webb, 1974; Wynn & Loucks, 1976.

2 CEDARBURG BOG, OZAUKEE COUNTY

Location; Geographical Province: Five miles northwest of Cedarburg in west-central Ozaukee County (T11N R21E Sections 29-32) off CTH 'Y' on Cedar-Sauk (public access) or Blue Goose Road (UW-Field Station); Eastern Ridges and Lowlands.

Major Features: One of the largest and least disturbed bogs in eastern Wisconsin, containing an extensive swamp conifer forest, open bog, and a shallow, hard-water drainage lake. A portion of the area is the type of bog known as a string bog (characterized by noticeable ridges running perpendicular to water flow) and is the most southerly known example. A number of rare and unusual plant species inhabit the bog.

Size: 1,415 acres (573 ha).

Owner; Custodian: DNR (1,315 acres); UW-Milwaukee (100 acres); for best access via field station contact Manager, UW-Milwaukee Field Station, 3095 Blue Goose Road, Saukville 53080.

Designation Date: February, 1952.

Management, Use Considerations: The bog receives extensive compatible educational and research use through UW Field Station activities. Additional acquisition is desirable to secure preservation of bog from urbanizing activities.

Interpretive & Research References: Grittinger, 1970, 1971; Germain, 1975. See the more than 40 publications and thesis titles resulting from research at the UW-Milwaukee Field Station in Council files.

3 FAVILLE PRAIRIE, JEFFERSON COUNTY

Location; Geographical Province: Four miles north of Lake Mills at the end of Lang Road off of CTH 'G' (T8N R14E Section 19, S½NE¼); Eastern Ridges and Lowlands.

Major Features: One of the best remnant wet-mesic prairies in the state, the tract contains a number of rare prairie species, such as prairie white fringed orchid and prairie milkweed. Although the tract includes 60 acres, only 17 acres are prairie, the rest being sedge meadow (14 acres) and shrub-carr (29 acres). The Crawfish River runs along the eastern boundary.

Size: 60 acres (24 ha).

Owner; Custodian: University of Wisconsin; contact Arboretum Director, University of Wisconsin Arboretum, 1207 Seminole Highway, Madison 53711.

History of Preservation; Designation Date: In 1945, this virgin prairie

was donated to the UW by Eleanor and Phillip Miles, and dedicated to Stoughton W. Faville, a local botanist; February, 1952.

Management, Use Considerations: Surrounding agricultural lands are drained, causing some drying of the soil. Fire management is being utilized to check shrub invasion in eastern portion.

Interpretive & Research References: Leopold, 1940, 1941; Partch, 1949; Ricker, 1944.

4 FLAMBEAU RIVER HEMLOCK-HARDWOODS, SAWYER COUNTY

Location; Geographical Province: Seventeen miles southeast of Winter along east bank of the North Fork of the Flambeau River (T37N R3W Sections 5, 6, 8), CTH 'M' south 3 miles from Conner Lake to Big Block Road, west ½ miles to sign; Northern Highland.

Major Features: Part of the 2,600-acre "Big Block" of impressive old-growth northern mesic forest composed of hemlock, yellow birch and sugar maple. In 1969 a 150-acre deer enclosure was constructed to study the regeneration of hemlock and other species heavily browsed by deer. The area has been designated both a National Natural Landmark and a Society of American Foresters forest type.

Size: 360 acres (145 ha).

Owner; Custodian: DNR; contact Superintendent, Flambeau River State Forest, Winter 54896.

History of Preservation; Designation Date: Spared from cutting through State Land Commission ownership. Preservationists succeeded in passing special legislation for state to buy the "Big Block" for \$.5 million in early 1950's; February, 1952.

Management, Use Considerations: Deer enclosure requires periodic inspection to insure fence condition; photo stations established in 1971.

Interpretive & Research References: Anderson, 1968.

5 WYALUSING HARDWOOD FOREST, GRANT COUNTY

Location; Geographical Province: Within Wyalusing State Park, east of Immigrant Trail and south of Wisconsin River (T6N R6W Section 16); Western Upland.

Major Features: North-facing wooded bluff rising more than 400 feet above the Wisconsin River near its confluence with the Mississippi. The Driftless Area dolomite and sandstone cliffs and steep slopes contain a variety of forest vegetation types, ranging from floodplain forest to moist sugar maple woodland to droughty forests on the summit and south slope. The area is a recognized National Natural Landmark.

Size: 186 acres (75 ha).

Owner; Custodian: DNR; contact Park Superintendent, Wyalusing State Park, Box 144, Bagley 53801.

History of Preservation; Designation Date: The area was dedicated in 1966 to Wisconsin plant ecologist John T. Curtis, who realized its outstanding quality and recommended its preservation as a natural feature; May, 1952.

Management, Use Considerations: Rugged topography makes access difficult, even from trails.

Interpretive & Research References: Curtis, 1959.

6 SCUPPERNONG PRAIRIE, WAUKESHA COUNTY

Location; Geographical Province: One and a half miles northwest of Eagle at the southeast corner of the junctions of CTH's 'GN' and 'N'; Eastern Ridges and Lowlands.

Major Features: A small but rich wet-mesic prairie remnant located on the east edge of the 3,000-acre Scuppernong Marsh. On a low rise in the center of the prairie are scattered, young open-grown bur oaks, typical of

this region in presettlement times. Several rare plant species occur in the prairie, and the uncommon upland sandpiper may still be seen at times here.

Size: 25 acres (10 ha); buffer size 20 acres (8 ha).

Owner; Custodian: DNR; contact Superintendent, Southern Unit Kettle Moraine State Forest, Route 1, Box 87, Eagle 53119.

History of Preservation; Designation Date: Recognized and utilized by John T. Curtis; May, 1952.

Management, Use Considerations: Periodic burning needed to control woody vegetation; small size precludes heavy educational use.

8 CEDAR GROVE HAWK REFUGE, SHEBOYGAN COUNTY

Location; Geographical Province: One mile east of Cedar Grove northwest of the junction of Mariene Drive and Barr Creek (T13N R23E Section 30); Eastern Ridges and Lowland.

Major Features: Cedar Grove Ornithological Station is an important research facility where raptor migrations along the Lake Michigan coastline are studied. Trapped and banded birds caught at the station over the last 30 years have provided data for research papers on a large number of topics such as navigation mechanisms, longevity of birds, migration destinations, etc.

Size: 31.5 acres (12 ha).

Owner; Custodian: DNR; contact Wildlife Manager, Box 308, Plymouth 53073. Facilities maintained by Dan Berger, 1328 N. Jefferson, Apt. 311, Milwaukee 53202.

History of Preservation; Designation Date: Hawk banding at this site was begun in the 1940's by the Milwaukee Public Museum and has continued uninterrupted to the present; November, 1952.

Management, Use Considerations: The primary use of the station—trapping and banding—requires a minimum of outside visitation. Visits should be coordinated through manager.

Interpretive & Research References: H. Mueller et al., 1966, 1967, 1968, 1969, 1976; N. Mueller, 1969.

9 BRADY'S BLUFF PRAIRIE, TREMPLEAU COUNTY

Location; Geographical Province: Within Perrot State Park (T18N R9W Section 20), access by foot via Brady's Bluff Trail; Western Upland.

Major Features: An exceedingly steep dry prairie and cedar glade on the limestone and sandstone bluffs some 460 feet above the Mississippi River. Typical xeric prairie species are present as well as a number of uncommon western plants. The view from access trail affords an excellent vista of the historic Trempealeau Mountain and extensive Mississippi River wetlands.

Size: 10 acres (4 ha); buffer zone 30 acres (12 ha).

Owner; Custodian: DNR; contact Superintendent, Perrot State Park, Trempealeau 54661.

Designation Date: November, 1952

Management, Use Considerations: Periodic fire is utilized to control encroaching woody vegetation.

Interpretive & Research References: Anderson, 1954.

10 DEWEY HEIGHTS PRAIRIE, GRANT COUNTY

Location; Geographical Province: Two miles northwest of Cassville, within Nelson Dewey State Park (T3N R6W Section 13), at the end of road to the top of Dewey Heights Bluff; Western Upland.

Major Features: A dry bluff prairie overlooking the Mississippi River, Dewey Heights Prairie consists of a diverse number of prairie grass and forb species: northern dropseed, hairy and side-oats grama, compass plant, downy yellow painted cup, etc. The outcropping of dolomite on the prairie provides a limey substrate for the prairie species as well as cliff habitats for nesting birds and xeric ferns. The bluff is a good bird observation area.

Size: 7 acres (2 ha).

Owner; Custodian: DNR; see #5 for custodian's address.

Designation Date: November, 1952.

Management, Use Considerations: Due to road access with picnic area nearby and hiking trail through scientific area, prairie gets high visitation; periodic fire management necessary to keep prairie open.

11 HASKELL NOYES MEMORIAL WOODS, FOND DU LAC COUNTY

Location; Geographical Province: Six miles north of Kewaskum at the southwest corner of the junction of CTH 'GGG' and 'SS' (T13N R19E Section 12); Eastern Ridges and Lowlands.

Major Features: Old-growth red oak forest transitional to sugar maple, located on the irregular topography of the interlobate moraine formed between the Green Bay and Lake Michigan lobes of Wisconsin glaciation. A small portion (14 acres) on the north edge is a swamp forest composed of tamarack, yellow birch and red maple.

Size: 67 acres (27 ha).

Owner; Custodian: DNR; contact Superintendent, Northern Unit Kettle Moraine State Forest, Box 426, Campbellsport 53010; Forest Headquarters at Mauthe Lake.

History of Preservation; Designation Date: Area was purchased in 1947 to prevent imminent logging, and was commemorated to Haskell Noyes, Milwaukee conservationist, in 1956; November, 1952.

Management, Use Considerations: Moderate to heavy use by schools and forest visitors, including incompatible use by equestrians.

Interpretive & Research References: Black, 1969.

12 PENINSULA PARK BEECH FOREST, DOOR COUNTY

Location; Geographical Province: Within Peninsula State Park, along both sides of Highland Road (T31N R27E Section 22 NE¼); Eastern Ridges and Lowland.

Major Features: Sugar maple, American beech, and hemlock co-dominant mesic forest selected by J. T. Curtis because of its apparent undisturbed qualities.

Size: 30 acres (12 ha).

Owner; Custodian: DNR; contact Superintendent, Peninsula State Park, Fish Creek 54212.

Designation Date: November, 1952.

Management, Use Considerations: Because the location of the scientific area as described by Curtis is obviously erroneous, a substitute site is being sought.

13 PENINSULA PARK WHITE CEDAR FOREST, DOOR COUNTY

Location; Geographical Province: Within Peninsula State Park, east of Shore Road from beginning of Sunset Trail, and west of cliff summit (T31N R27E Sections 28, 29); Eastern Ridges and Lowland.

Major Features: This scientific area features a diverse number of plant community types within its boundaries: open marsh and calcareous meadow occupy an abandoned beach, a white cedar-black and white spruce forest marks the transition between lower and upper beach, low dolomitic cliffs and a northern dry-mesic woodland occur above and to the east of the cliffs. A number of rare plant species are known to occur in this scientific area.

Size: 53 acres (21 ha).

Owner; Custodian: DNR; see #12 for custodian address.

Designation Date: November, 1952.

Management, Use Considerations: Use occurs mainly from hikers utilizing Sunset Trail, which should be maintained as the sole access point.

14 NECEDAH OAK-PINE NATURAL AREA, JUNEAU COUNTY

Location; Geographical Province: Access by permission at refuge headquarters. Scientific area is two miles north of Necedah on Hwy. 80 to Becker Road, then west 0.8 miles to east boundary (T19N R3E Section 34); Central Plain.

Major Features: Set aside to preserve, in an unmanipulated condition, the pine and oak barrens community. Associated with the relatively mature Hill's oaks is a cover of jack pine with a prairie species groundcover. Because the last fires occurred here in the 1930's, the original barrens has grown into a closed forest, with remnants of prairie vegetation persisting only in small openings. Listed as a Society of American Foresters' type and Research Natural Area.

Size: 100 acres (40 ha).

Owner; Custodian: U.S. Fish & Wildlife Service; contact Refuge Manager, Necedah National Wildlife Refuge, Necedah 54646.

Designation Date: November, 1952.

Management, Use Considerations: Since the area is managed to maintain the oak vegetation type, there is no fire management desired for this tract; compare with area 14a.

14a NECEDAH OAK-PINE MANAGED AREA, JUNEAU COUNTY

Location; Geographical Province: Access by permission at refuge headquarters. Seven miles northwest of Necedah, Sprague Mother Road west from Hwy. 80 two miles to Bewick Trail, south ¼ mile to NE corner of area (T19N R2E Section 12); Central Plain.

Major Features: Established to be managed with fire to restore the species composition and savanna aspect of presettlement times. Jack pine-oak open forest with scattered grassland openings occur on the uplands, while the lowland contains shallow peat deposits and aspen-brush-marshland vegetation. The topography is flat to gently rolling, and the soils are sandy and acidic.

Size: 240 acres (97 ha).

Owner; Custodian: Same owner and custodian as area 14.

Designation Date: Established as a comparison area to the nearby 100-acre scientific area protected from fire; September 1966.

Management, Use Considerations: Periodic fire management designed to maintain semi-open condition. Photo stations have been installed into the area.

Interpretive & Research References: Blewett, 1977.

15 MT. PISGAH HEMLOCK-HARDWOODS, VERNON COUNTY

Location; Geographical Province: Two miles south of Ontario, within Wildcat Mountain State Park, south of Kickapoo River picnic area and boat launch (T14N R2W Section 14); Western Upland.

Major Features: Damp sandstone cliffs along the Kickapoo River support a number of rare species, and are topped by a relic hemlock-yellow birch-white pine forest. Between the river and Little Mt. Pisgah is a steep northwest facing slope with a rich deciduous forest of sugar maple, basswood, and oak.

Size: 30 acres (12 ha).

Owner; Custodian: DNR; contact Superintendent, Wildcat Mountain State Park, Ontario 54651.

Designation Date: November, 1952

Management, Use Considerations: Use comes mainly from hikers along Mt. Pisgah trail running through area, and by canoers on Kickapoo River which runs at the base of the cliffs. Heavy deer browsing has reduced hemlock reproduction greatly.

16 CASTLE MOUND PINE FOREST, JACKSON COUNTY

Location; Geographical Province: Within Castle Mound State Roadside Park, one mile south of Black River Falls on Hwy. 12 (T21N R4W Sections 23, 24), east of picnic area via nature trail; Central Plain.

Major Features: Weathering Cambrian sandstone butte rising about 180 feet above the surrounding sand plain. The NW-SE trending mound contains steep slopes of different exposure, resulting in contrasting forest communities on opposite sides: a mixed pine-oak dry-mesic forest on the northeast, compared to xeric jack pine woods on the southwest.

Size: 80 acres (32 ha), 20-acre (8 ha) buffer zone.

Owner; Custodian: DNR; contact Superintendent, Black River Forest, Route 3, Box E11, Black River Falls 54615.

History of Preservation; Designation Date: Original 20 acres established November, 1952 (northeast side of mound); expanded to present size December, 1975.

Management, Use Considerations: Major use comes from hikers on nature trail to observation tower at summit of mound.

17 THE RIDGES SANCTUARY, DOOR COUNTY

Location; Geographical Province: Just east of the town of Baileys Harbor (T30N R28E Sections 3, 4, 9, 10, 16, 17), trail access from CTH 'Q' at Nature Center; Eastern Ridges and Lowlands.

Major Features: The Ridges Sanctuary consists of parallel, abandoned beach ridges and swales of former Lake Michigan levels, deposited over dolomitic bedrock. Some swales are wet and open, while others are forested with swamp conifers. Boreal forest occurs on some of the ridges, far disjunct from the Lake Superior region. A unique rich flora of many local, rare, and endangered plants make the tract world famous; Wisconsin's first National Natural Landmark.

Size: 708 acres (286 ha).

Owner; Custodian: The Ridges Sanctuary, Inc.; contact Roy Lukes, resident manager, Box 152, Baileys Harbor 54202.

History of Preservation; Designation Date: Preserved largely through the early efforts of Albert M. Fuller, former botanist at the Milwaukee Public Museum, who in 1937 helped found the Ridges Foundation, Inc.; land acquisition continues today; designated a scientific area November, 1953.

Management, Use Considerations: Over 30,000 visitors come to The Ridges Sanctuary yearly; well-planned nature trails, guided tours, and trail guide booklets point out that educational activities are an important part of the sanctuary's mission.

Interpretive & Research References: Fuller, 1950, 1962; Korling, 1973.

18 MIDWAY PRAIRIE, LA CROSSE COUNTY

Location; Geographical Province: Two miles north of Onalaska, on slope between CTH 'OT' and railroad tract (T17N R7W Sections 29, 30); Western Upland.

Major Features: Small dry-mesic prairie remnant lying on the steep edge of a Mississippi River sandy terrace, with a west-southwest exposure overlooking the wide river valley's wetlands. Although the area was originally established to preserve the spring show of pasque flowers, the remnant also contains over 60 species of prairie plants.

Size: 3 acres (1 ha).

Owner; Custodian: La Crosse County Park Commission, Courthouse, La Crosse 54601.

History of Preservation; Designation Date: Preserved through the efforts of the La Crosse Garden Club in 1951, spearheaded by Katherine Martindale; July, 1955.

Management, Use Considerations: Periodic fire management advised to burn off litter and inhibit woody vegetation.

Interpretive & Research References: Thomson, 1940.

19 PINE CLIFF, IOWA COUNTY

Location; Geographical Province: Within Governor Dodge State Park, on the south shore of Cox Hollow Lake (T6N R3E Section 11) from White oak Hiking Trail; Western Upland.

Major Features: Driftless Area pine relic occupying the summit and steep slopes of a St. Peter sandstone bluff. Until recently, this area was the only such relic known to contain all three native species of pine (red, white and jack). Both exposed and shaded sandstone cliffs are present, as well as a good example of southern dry (oak) forest.

Size: 20 acres (8 ha).

Owner; Custodian: DNR; Superintendent, Governor Dodge State Park, Dodgeville 53533.

Designation Date: November, 1953.

Management, Use Considerations: White oak hiking trail runs through area.

Interpretive & Research References: McIntosh, 1950.

20 COUNCIL GROUNDS PINE FOREST, LINCOLN COUNTY

Location; Geographical Province: Within Council Grounds State Park, adjacent to the western boundary of the City of Merrill (T31N R6E Section 9); Northern Highland.

Major Features: Old-growth, but apparently even-aged stand of majestic white pines 20-26" in diameter, growing along the north bank of the Wisconsin River. Associate forest species include red pine, paper birch and large-toothed aspen. Ground layer herbs are typical of northern dry-mesic conditions.

Size: 20 acres (8 ha).

Owner; Custodian: DNR; contact Superintendent, Council Grounds State Park, Ranger Station, Merrill 54452.

Designation Date: November, 1953.

21 TROUT LAKE CONIFER SWAMP, VILAS COUNTY

Location; Geographical Province: One quarter mile north of junction of CTH 'N' and 'M' on the west side of the latter (T41N R7E Section 19 SE¼SE¼), near the southeast side of Trout Lake; Northern Highland.

Major Features: Small acreage, but old-growth swamp dominated by white cedar, and with black spruce, tamarack, and balsam fir as other common tree species. The ground flora is very diverse, in a sphagnum moss carpet. At the northwest corner, a series of springs flow northward into nearby Trout Lake.

Size: 15 acres (6 ha); buffer size 10 acres (4 ha).

Owner; Custodian: DNR; contact Superintendent, Northern Highland State Forest, Route 1, Box 45, Boulder Junction 54512.

Designation Date: November, 1953.

Management, Use Considerations: Heavy deer browsing on cedar in this area, which is closed to deer hunting. A 200-foot no-cut buffer zone of aspen and birch surrounds the scientific area.

22 HIGH LAKE SPRUCE-BALSAM FOREST, VILAS COUNTY

Location; Geographical Province: From Boulder Junction north on CTH 'M' about 5 miles to CTH 'B' then east 1.25 miles to slight curve in road, walk north into area (T43N R7E Section 35 NE¼NE¼); Northern Highland.

Major Features: Second-growth woods selected by J. T. Curtis to represent the boreal forest vegetation type in this region. Important tree species include balsam fir, red maple, paper birch, white spruce, red and

white pine, aspen and hemlock. It has been estimated that logging took place in 1880, followed by fire about 1900.

Size: 40 acres (16 ha).

Owner; Custodian: DNR; see area #20 for custodian's address.

Designation Date: November, 1953.

Management, Use Considerations: The tract's major value is as a benchmark area where natural succession can continue without the forestry practices that occur on adjacent land.

Interpretive & Research References: Maycock, 1957; Maycock & Curtis, 1960.

23 BROWNTOWN OAK FOREST, GREEN COUNTY

Location; Geographical Province: One mile east of Browntown on Hwy. 11 to town road, south one-quarter mile on town road to the eastern boundary of tract (T1N R6E Section 3); Western Upland.

Major Features: Oak forest on a north-facing slope of a sandstone ridge. The variation in soils and topography fosters a moisture gradient, from moist oak forest on the upper slopes to dry oak forest on the rocky outcrops and lower sandy plain. The dominant red oaks of largest size have been aged at 120-150 years old.

Size: 40 acres (16 ha).

Owner; Custodian: DNR; contact Superintendent, Cadiz Springs State Park, Green County Agricultural Building, Monroe 53566.

Designation Date: November, 1953.

24 WILDERNESS RIDGE, MANITOWOC COUNTY

Location; Geographical Province: Within Point Beach State Forest, south of east-west road leading to headquarters, the lighthouse and campgrounds (T20N R25E Section 16 NE¼NW¼); Eastern Ridges and Lowlands.

Major Features: The scientific area consists of two perpendicular transects (marked by posts), each 66 feet wide, and located on and across abandoned beach lines of Lake Michigan. The north-south transect follows a ridge wooded with white pine, hemlock and hardwoods, while the east-west transect crosses the pronounced ridge and swale topography.

Size: 8 acres (3 ha).

Owner; Custodian: DNR; contact Superintendent, Point Beach State Forest, Route 3, Box 183, Two Rivers 54241.

Designation Date: November, 1953. Point Beach Ridges (Scientific Area 87), located nearby to the south and encompassing the range of variation from open beach to stabilized ridge-swale topography, was subsequently established as a much larger companion scientific area.

Management, Use Considerations: Proximity to visitor use facilities is a limitation to the long-term research intent for this unique transect scientific area.

Interpretive & Research References: Van Denack, 1961.

25 LAKE OF THE PINES CONIFER-HARDWOODS, SAWYER COUNTY

Location; Geographical Province: About 20 miles west of Phillips and 15 miles east of Winter, on the east shore of Lake of the Pines (T38N R3W Section 14); Northern Highland.

Major Features: Old-growth hemlock and yellow birch possessing a majestic canopy occupies the flat upland on the east side of Lake of the Pines. Occasional red oak, basswood, white pine, and white ash are mixed throughout the tract. Because of the very dense canopy, there is little variation in the understory. Second-growth forest to the east and south offers an excellent contrast to the tract.

Size: 156 acres (63 ha).

Owner; Custodian: DNR, see area #4 for custodian's address.

Designation Date: October, 1954.

26 PLUM LAKE-STAR LAKE HEMLOCK FOREST, VILAS COUNTY

Location; Geographical Province: On the south shore of Star Lake and the northeast shore of Plum Lake (T41N R8E Sections 21 and 22); Northern Highland.

Major Features: Large acreage, old-growth hemlock hardwood stand on rolling topography between the two lakes. Pine stumps suggest a selective cutting of this species in the late 1800's, while the large hemlocks are virgin with an estimated origin about 1810. A tornado in the mid-1950's toppled much timber and twenty acres (SWNE21) were maintained in a no-salvage zone.

Size: 200 acres (81 ha).

Owner; Custodian: DNR; see area #21 for custodian's address.

Designation Date: November, 1953.

Management, Use Considerations: Use of area as a deer yard has led to over-browsing and a resultant change in the understory reproductive layer despite hunting in the tract since the 1950's.

27 DEVIL'S LAKE RED OAK FOREST, SAUK COUNTY

Location; Geographical Province: About three miles south of Baraboo, east of the large south shore campground within Devil's Lake State Park (T11N R6-7E Sections 24, 19, 30); Western Upland.

Major Features: Outstanding even-aged red oak forest (originating between 1856 and 1872 by core data) with a nearly pure understory of red maple and some white oak. North of the forest lies the quartzite boulder talus slope rising some 400 feet to vertical cliff faces above. The forest lies on part of the terminal moraine which plugs the preglacial Wisconsin River gorge.

Size: 122 acres (49 ha).

Owner; Custodian: DNR; see area #1 for custodian's address.

Designation Date: Original designation of portion south of South Shore Road was November, 1953; boundary expanded to north of road in March, 1972.

Management, Use Considerations: Hiking trails run through area to top of bluff and are used by thousands of park visitors. A park road bisects the oak forest near the base of the slope.

Interpretive & Research References: Armstrong, 1968; Black 1964, 1968, 1974; Dalziel & Dott, 1970; Larsen, 1953.

28 NEW OBSERVATORY WOODS, DANE COUNTY

Location; Geographical Province: One and a half miles northwest of Pine Bluff (seven miles west of Middleton) off the west side of Observatory Road and 500 ft. north of Pine Bluff Observatory (T7N R7E Section 16); Western Upland.

Major Features: An area exhibiting a diagrammatic continuum, from moist red oak woods to dry forest to oak savanna and dry prairie in the northwest corner. The preserve is located just a few miles west of the Johnstown terminal moraine in the rugged topography of the driftless area.

Size: 13 acres (5 ha).

Owner; Custodian: University of Wisconsin; see area #3 for custodian's address.

History of Preservation; Designation Date: In 1940, John Barton purchased the woods to preserve the timber, and in 1956 the University of Wisconsin bought the tract; May, 1956.

Management, Use Considerations: Oak opening and prairie managed with periodic fire; tract used extensively by UW ecology classes.

Interpretive & Research References: Burgess, 1959.

30 TIFFANY BOTTOMS, BUFFALO COUNTY

Location; Geographical Province: Between railroad tracks and Buffalo Slough in the Chippewa River floodplain near its confluence with the Mississippi (T24N R14W Sections 25, 26, 35, 36), access difficult; Western Upland.

Major Features: Portion of the 9,000-acre state wildlife area in the lower Chippewa River valley, composed of extensive swamp hardwood forest, sedge meadows and sloughs. Distinctive wildlife species within this area possessing a great wild character include such species as beaver, otter, wood duck, pileated woodpecker, and swamp rattlesnake.

Size: 402 acres (162 ha).

Owner; Custodian: DNR; contact DNR Wildlife Manager, Courthouse, Alma 54610.

History of Preservation; Designation Date: Originally designated in 1958, but expanded to present acreage in November, 1967.

Management, Use Considerations: Maintain wild character of this area by not improving access or managing timber; bottomland was grazed and selectively logged prior to 1935.

31 FINNERUD PINE FOREST, ONEIDA COUNTY

Location; Geographical Province: On the southern shore of Lake Kawagagesaga (T39N R6E Section 21), entrance by advance permission of custodian only; Northern Highland.

Major Features: Large acreage red pine stand about 130 years old mixed with white pine, red oak, white birch and red maple is the major



Through the benevolence of people like Dr. Clark Finnerud, who donated this old-growth, northern dry-mesic forest near Minocqua to the University of Wisconsin, future generations will be able to feel the grandeur of walking through a 130-year old red pine grove (Oneida County; scientific area 31).

feature of the area. The largest red pines are 18-22 inches in diameter, while those 12-16 inches dominate this forest with a dense shrub layer. Lowland portions of the scientific area contain open bog with stunted spruce and tamarack.

Size: 120 acres (48 ha).

Owner; Custodian: University of Wisconsin; see area #3 for custodian's address.

History of Preservation; Designation Date: Donated in portions from 1957 to 1963 to the University for preservation purposes by Dr. and Mrs. Clark Finnerud; December, 1958.

Management, Use Considerations: Visitation and research use must be coordinated with UW Arboretum Director.

Interpretive & Research References: Anderson et al., 1969.

32 CREX MEADOWS PRAIRIE, BURNETT COUNTY

Location; Geographical Province: Seven miles north-northeast of Grantsburg along North Refuge Road (T39N R18W Section 7 N ½ SE ¼); Central Plain.

Major Features: Gently undulating sand prairie reclaimed from jack pine forest. Prairie plants, which had been suppressed by shade, gained dominance after clearing. Few trees still remain, although oak grubs are dense. The scientific area occupies part of an extensive sand plain of what was once the bottom of glacial Lake Grantsburg.

Size: 79 acres (31 ha).

Owner; Custodian: DNR; contact Wildlife Area Manager, Crex Meadows, Box 337, Grantsburg 54840.

History of Preservation; Designation Date: Crex Meadows is largely a wetland restoration project initiated in 1945, following detrimental land uses of drainage, logging, and cultivation; December, 1958.

Management, Use Considerations: Annual burns maintain a nearly treeless aspect. The wildlife area receives extensive visitation by people throughout the region.

Interpretive & Research References: Murphy, 1931; Vogl, 1964a.

33 TOWER HILL BOTTOMS, IOWA COUNTY

Location; Geographical Province: Two miles southeast of Spring Green within the floodplain forest of Tower Hill State Park (T8N R4E Section 20 N ½ Gov. Lot 3); Western Upland.

Major Features: Undisturbed examples of wet and wet-mesic forest types in the Wisconsin River floodplain north of Mill Creek. The scientific area consists of large silver maple, green ash, cottonwood, American elm, swamp white oak, river birch and basswood. Sandbars along the river and sloughs also occur in the area.

Size: 25 acres (10 ha).

Owner; Custodian: DNR, contact Superintendent, Tower Hill State Park, DNR Ranger Station, Spring Green 53588.

Designation Date: December, 1958.

Management, Use Considerations: Large amount of poison ivy and mosquitoes may preclude some educational use.

34 BITTERSWEET LAKES, VILAS COUNTY

Location; Geographical Province: About three miles east of Arbor Vitae north of Highway 70 (T40N R7E Sections 15, 22, 27); Northern Highland.

Major Features: Four (Prong, Bittersweet, Oberlin, Smith) oligotrophic, high clarity, seepage lakes ranging in surface acreage from 30 to 104. Except for old logging roads and a nearby snowmobile trail, the lakes are wilderness in character. Surrounding uplands are primarily second growth maple-birch-aspen woodland managed as part of the Northern Highland State Forest.

Size: 223 acres (90 ha); 275-acre (111 ha) buffer zone.

Owner; Custodian: DNR; see area #21 for custodian's address.

Designation Date: December, 1958.

Management, Use Consideration: Management consists of 500-foot no-timber-cutting zone around lakes, no fish stocking or chemical treatment, maintenance of wilderness character of lakes; sport fishing and hunting permitted.

Interpretive & Research References: Stamm, 1977.

35 RIPON PRAIRIE, FOND DU LAC COUNTY

Location; Geographical Province: Two miles northeast of Ripon on Highway 44 to Locust Road, west to railroad tracks, walk south on tracks to prairie on north side (T16N R14E Section 14); Eastern Ridges and Lowlands.

Major Features: Small remnant dry prairie occupying two low gravelly knolls adjacent to railroad tracks and agricultural lands. Though many prairie species are found in the remnant in very small numbers, the area is an important preserve representing the only known dry prairie in the region.

Size: 1 acre (0.4 ha).

Owner; Custodian: Ripon College; contact Biology Department, Ripon College, Ripon 54971.

History of Preservation; Designation Date: Tract discovered by Dr. George Conant of Ripon's Triarch Co.; leased in 1940 by the Ripon Yard and Garden Club from Milwaukee Railroad; in 1961 it was deeded to Ripon College; November, 1961.

Management, Use Considerations: Control of woody vegetation, especially the exotic black locust, is a major management problem.

36 AVON BOTTOMS, ROCK COUNTY

Location; Geographical Province: Thirteen miles west of Beloit, west of Nelson Road bridge over Sugar River and north of the river (T1N R10E Section 28 N ½ SE ¼ north of river); Western Upland.

Major Features: Portion of an extensive floodplain forest along the Sugar River, forested with silver maple, green and white ash, swamp white oak and basswood. A number of plant species reach their natural northern range limits near or within the Sugar River bottomland, including sycamore and hop tree. Numerous temporary ponds occupy old stream meanders, attracting a variety of wildlife.

Size: 40 acres (16 ha).

Owner; Custodian: DNR; contact Wildlife Manager, Newville Fish Management Station, Route 2, Box 152, Edgerton 53534.

Designation Date: December, 1958.

Management, Use Consideration: Dutch Elm Disease has somewhat changed the forest and groundlayer species composition.

37 SEAGULL BAR, MARINETTE COUNTY

Location; Geographical Province: Along the Green Bay shoreline within the City of Marinette, at the south end of Red Arrow Beach off Leonard St. (T30N R24E Sections 9, 16); Eastern Ridges and Lowland.

Major Features: Seagull Bar is a system of sand ridges and low dunes in Green Bay just south of the Menominee River mouth. The sand spit shelters a lagoon of shallow water with mud flats and emergent vegetation which changes from year to year according to water levels. During spring and fall, thousands of migrating birds can be observed on the shore and in the shallows.

Size: 20 acres (8 ha).

Owner; Custodian: DNR, contact DNR Wildlife Manager, Industrial Parkway, Box 16, Marinette 54143.

Designation Date: November, 1962.

Management, Use Considerations: Receives use from picnickers and bird watchers.

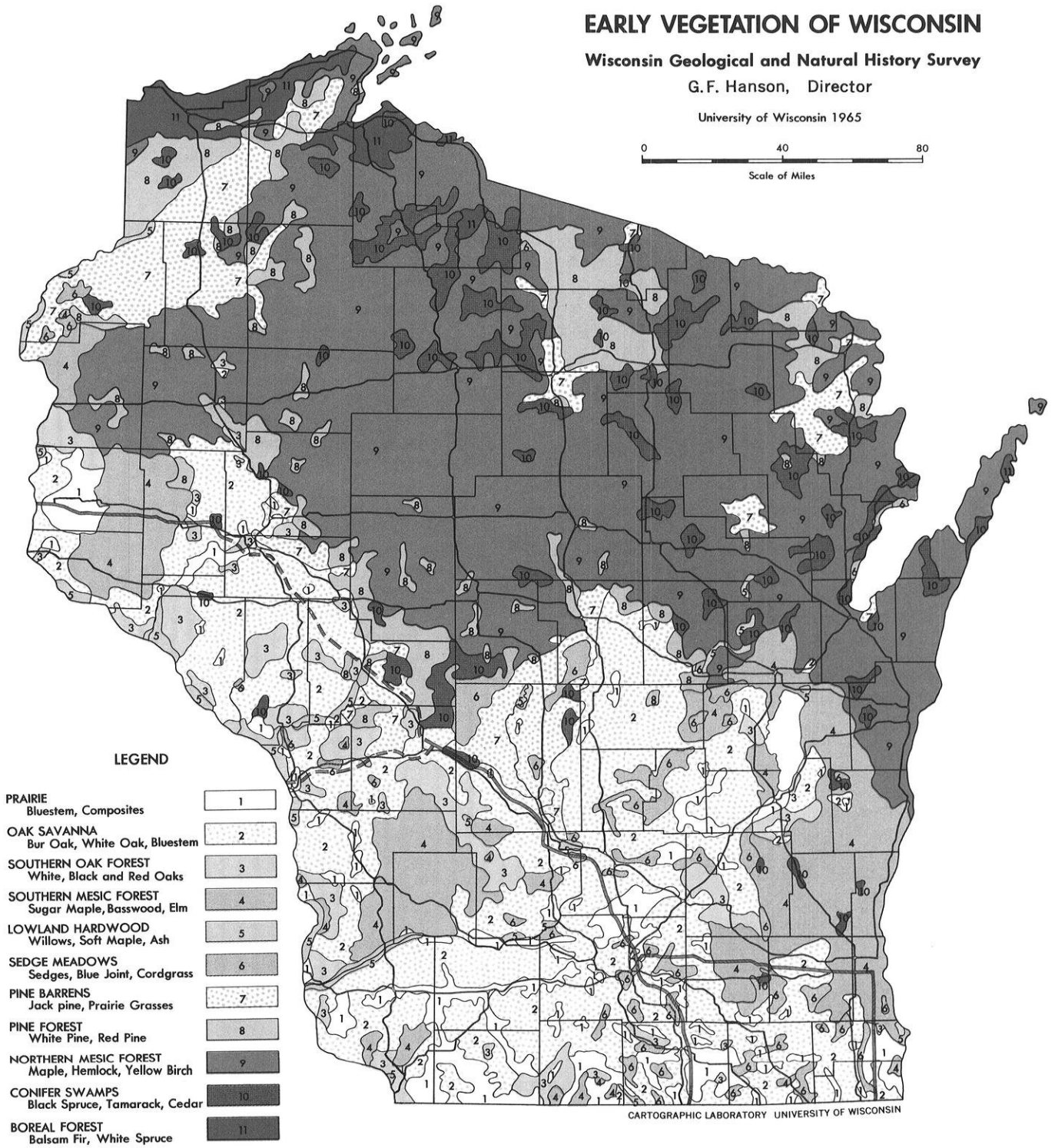
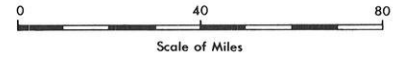
Interpretive & Research References: Lintreuer, 1966.

EARLY VEGETATION OF WISCONSIN

Wisconsin Geological and Natural History Survey

G.F. Hanson, Director

University of Wisconsin 1965



INTERPRETATION OF THE VEGETATION OF WISCONSIN

This map is based on the original land survey conducted about the middle of the last century. Surveyors were required to place a stake each half mile, identified by notation of nearby trees, and to note briefly the general plant cover of each quarter section. These records have been used to reconstruct the presettlement distribution patterns of plant communities shown on the map.

The plant communities recognized, however, are based on systematic studies of present-day vegetation. The results of these studies are summarized in a recent book (J. T. Curtis, *The Vegetation of Wisconsin*, University of Wisconsin Press, 1959) in which each community, with its history, location, and relationship to other communities and to the environment, is considered in detail. Since some of the factors determining vegetation vary gradually, the vegetation itself varies gradually and boundaries on the map are somewhat arbitrary.

The vegetation of the state is divided into northern and southern floristic provinces by a line that runs in a S-curve northwest from Milwaukee to Hudson. North of this line the vegetation is a broadleaf forest containing conifers—pines, hemlock, spruces, and fir. Southwest of the line, conifers are much less important and are replaced by forests with several species of oaks, and by the prairie—areas dominated by grasses and tall herbs.

Fire has been important in determining almost all of the plant communities and their location. Before the coming of white man, the prairies (1) and the open woodlands burned almost every year.

Thus most of the southern part of the state was covered with prairie or oak savanna (2), an orchard-like community with a few large bur or white oaks growing in fields of grass. Only in the more protected places did forests survive. Some of these were oak (3) but many were sugar maple-basswood-slippery elm forests (4). The lowlands were occupied by river bottom forest (5), and sedge meadow (6). With settlement, the fires were stopped, and the oak savannas grew up to the dense white oak-black oak forests found today. Most of the prairies have been cultivated, and at present, with the oak savannas, they are among the rarest of our plant communities.

In the northern part of the state, a combination of fire and poor soil resulted in the development of the pine barrens (7) on the sandy soils, and pine forests (8) on somewhat better soils. In the absence of fire, the white pine forests gradually changed to the northern equivalent of the sugar maple-basswood forests, a community containing sugar maple, yellow birch and hemlock, with beech added in the eastern counties (9). Also present in the north were large tracts of lowland, with tamarack and black spruce bogs in the wetter areas, and white cedar swamps in drier, but still very moist habitats (10). In the extreme north are local occurrences of the northern conifer forest (11) dominated by fir and spruce.

A comparison of this map with maps of climate, soil, and glacial deposits shows many correspondences, indicating many relationships between vegetation and the environment. The original vegetation was thus determined by the distribution of both climatic and soil factors, modified by fire. —G. Cottam, O. L. Loucks, Department of Botany, The University of Wisconsin.

38 ABRAHAM'S WOODS, GREEN COUNTY

Location; Geographical Province: Two miles southwest of Albany, one quarter mile west of Highway 59 on south side of Oliver Road (T3N R9E Section 31 SW¼SW¼); Western Upland.

Major Features: Old-growth mesic forest located on the east and north sides of a sandstone ridge, where it escaped periodic presettlement prairie fires from the west. The woodland contains a diverse spring flora, while the mid-summer flora is dominated by wood nettle and jewelweed. Adjacent to the south is unprotected woodland and remnant prairie subject to grazing but providing an ecological contrast to the ungrazed woods.

Size: 40 acres (16 ha).

Owner; Custodian: University of Wisconsin; see area #3 for custodian's address.

History of Preservation; Designation Date: First acquisition of the Wisconsin Chapter of The Nature Conservancy in early 1960's, subsequently deeded to University of Wisconsin; November, 1961.

Management, Use Considerations: Considerable use by ecology classes and individual nature study.

Interpretive & Research References: Cottam, n.d.; Hett & Loucks, 1971.

39 CHARLES POND, OCONTO COUNTY

Location; Geographical Province: On the shore of Green Bay about 8 miles south of the City of Oconto (T26N R21E Section 3), off CTH'S; Eastern Ridges and Lowlands.

Major Features: A wetland complex on Green Bay subject to the influences of water fluctuation of Green Bay. The hardwood swamp forest (second growth) on lacustrine deposits is one of the few of its kind. The bay-mouth bar lake, extensive shallow marsh, and shrub zones vary in extent according to the level of Green Bay.

Size: 110 acres (44 ha).

Owner; Custodian: DNR; see area #37 for custodian's address.

Designation Date: April, 1965.

40 RICE LAKE-THUNDER LAKE MARSH, ONEIDA COUNTY

Location; Geographical Province: Twelve miles northeast of Rhinelander, or three miles north of the Village of Three Lakes, west of Highway 32-45 (T38-39N R10E Sections 3, 34); Northern Highland.

Major Features: Shallow, soft-water drainage lake periodically producing substantial amounts of wild rice. The lake is surrounded by northern sedge meadow composed of bluejoint grass, sedges, cattail and scattered shrubs. Attempts to drain the marsh through ditching in the early part of the century failed.

Size: 250 acres (101 ha).

Owner; Custodian: DNR; contact DNR Wildlife Manager, Ranger Station, Box 576, Rhinelander 54501.

History of Preservation; Designation Date: DNR acquisition began in 1952 and totals over 2,000 acres in this wildlife area; April, 1965.

Management, Use Considerations: Controlled burning of marsh is part of management. Wild rice is harvested from the lake in good years.

41 FOURMILE ISLAND ROOKERY, DODGE COUNTY

Location; Geographical Province: Within Horicon Marsh Wildlife Area (T12N R16E Section 19); see personnel at state refuge headquarters for access information; Eastern Ridges and Lowlands.

Major Features: A narrow wooded island surrounded by marsh containing a very large rookery of black-crowned night herons, great blue herons and common egrets. The number of nesting birds is being monitored from year to year by DNR personnel and cooperators.

Size: 15 acres (6 ha).

Owner; Custodian: DNR; contact Refuge Manager, Box D, Horicon 53032.

History of Preservation; Designation Date: State ownership in Horicon Marsh exceeds 10,000 acres (4,000 ha), by the federal government to the north ownership exceeds 20,000 acres; November, 1965.

Management, Use Considerations: Entry to the island between 15 March and 1 September is prohibited to minimize disturbance to the nesting birds and fledglings.

Interpretive & Research References: Scientific Areas Preservation Council, 1975.

42 ENDEAVOR MARSH, MARQUETTE COUNTY

Location; Geographical Province: Three miles northeast of Endeavor, south of Freedom Road (T15N R8E Section 26); Central Plain.

Major Features: A complex of wetland types, including most importantly fen, tamarack swamp, shrub-carr and sedge meadow. The marsh is a refuge for many plants and animals, such as at least nine species of orchids, sundew, pitcher plant, sandhill cranes, and warblers. The scientific area includes a small upland island in the marsh wooded with oaks.

Size: 40 acres (16 ha); total acreage preserved by TNC exceeds 250.

Owner; Custodian: The Nature Conservancy; contact Mr. Russell Morris, 2309 Chamberlain Avenue, Madison 53705.

History of Preservation; Designation Date: Preserved largely through the volunteer efforts of Russell Morris, as a Nature Conservancy project; February, 1966.

Management, Use Consideration: Wet, mucky soil precludes heavy human traffic; ditching and conversion of the privately held portions to agricultural land threatens integrity of entire marsh.

Interpretive & Research References: Anon., 1966.

43 CACTUS ROCK, WAUPACA COUNTY

Location; Geographical Province: Two miles south of New London on Bean City Road, between CTH 'W' and 'D' (T22N R14E Section 26); Central Plain.

Major Features: A small outcrop of precambrian crystalline rock which emerges from sandstone bedrock. Crevices of the bare rock support such unusual species as brittle prickly pear cactus, farnflower and sand club-moss, as well as numerous prairie plants, mosses and lichens.

Size: 20 acres (8 ha).

Owner; Custodian: Lawrence University; contact Biology Department, Lawrence University, Appleton 54911.

History of Preservation; Designation Date: Preserved through The Nature Conservancy and deeded to Lawrence University; February, 1966.

Management, Use Considerations: Heavily overused and littered, since control of access is difficult.

44 DURST ROCKSHELTER, SAUK COUNTY

Location; Geographical Province: One and a half miles north of Leland (T10N R4E Section 12); Western Upland.

Major Features: The very large rockshelter—about a 50-foot length of sandstone overhang—is an important archeological site from which excavation has uncovered distinctive side-notched points of Archaic times. Evidence of use by later cultures (middle and late Woodland) have been found in upper layers of the 3-foot thick deposits. Additionally, the selectively logged woodland in the vicinity harbors a number of unusual forest plants.

Size: 40 acres (16 ha).

Owner; Custodian: The Nature Conservancy; contact Mr. Harold Kruse, Hickory Hill Farm, Loganville 53943.

While most scientific areas are selected for their native vegetation examples, some areas are also chosen for their significant animal populations. Such an area is the heron-egret rookery at Four-mile Island in Horicon Marsh, the largest of its kind in Wisconsin. (Dodge County; scientific area 41).



History of Preservation; Designation Date: Purchased by TNC in 1965; February, 1966.

Management, Use Considerations: Extensive archeological excavation took place in 1954-55. Access through private property.

Interpretive & Research References: Loucks, n.d.; Wittry, 1959b.

45 PINE HOLLOW, SAUK COUNTY

Location; Geographical Province: One and two-tenths miles west of Denzer on CTH 'C', then north on Pine Hollow Drive 1.3 miles to southeast corner of property (T10N R5E Section 4); Western Upland.

Major Features: Located on the south flank of the Baraboo Hills, Pine Hollow features a narrow valley cut by a small stream into sandstone, conglomerate and quartzite. Because of cold air drainage and the cool, shaded cliffs, many northern ranging species such as yellow birch, hemlock and pines make up much of the cliff and gorge vegetation, with maple-oak-basswood found on the drier exposures.

Size: 100 acres (40 ha).

Owner; Custodian: The Nature Conservancy; see area #44 for custodian's address.

Designation Date: February, 1966.

Management, Use Considerations: High deer population has curtailed hemlock reproduction.

Interpretive & Research References: Barnes, 1968; Kopitzke, 1966; Loucks, n.d.

46 VANDERBLOEMEN BOG, MANITOWOC COUNTY

Location; Geographical Province: One and a half miles southeast of St. Nazianz, east of town road (T18N R22E Section 32, within NW¼); Eastern Ridges and Lowlands.

Major Features: Bog featuring a range of plant succession from open mat to coniferous and deciduous forest. Tamarack, black spruce and white pine surround the bog, while the periphery is wooded with black ash, red maple and white birch. The site lies within the end moraine of the Valder's stage of the Wisconsin glaciation.

Size: 24 acres (9 ha); 22-acre (8 ha) buffer zone.

Owner; Custodian: Silver Lake College; contact Biology Department, Silver Lake College, Manitowoc 54220.

Designation Date: September, 1966.

Management, Use Considerations: Class and research use must be approved by custodian prior to entry.



Artifacts from different cultures ranging back as far as 6,000 years before present were found during the meticulous excavation of Durst Rockshelter Scientific Area. Distinctive arrow points from the late Archaic Period bear the name of this site (Sauk County; scientific area 44).

47 SISTER ISLANDS, DOOR COUNTY

Location; Geographical Province: Within Sister Bay, about two miles northwest of the public launch in the Village of Sister Bay (T32N R28E Section 30).

Major Features: Two low-lying dolomite-gravel islands in Green Bay considered to be important gulleries. An estimated 1350-1650 breeding pairs of herring gulls were present in 1964. Bird banding and several research projects on gulls have taken place on the islands. Vegetation is primarily composed of pioneering herbs and shrubs.

Size: Variable, depending on lake level, from 2 acres exposed at high water level, to 15 acres (6 ha) at low level.

Owner; Custodian: DNR; contact Wildlife Manager, 812 South Fisk Street, Box 3600, Green Bay 54303.

History of Preservation; Designation Date: Purchased in 1962 from U.S. Bureau of Land Management; September, 1966.

Management, Use Considerations: Access by boat.

Interpretive & Research References: Friend & Trainer, 1969; Hickey & Anderson, 1968; Keith, 1966.

48 MARIBEL CAVES, MANITOWOC COUNTY

Location; Geographical Province: Two miles northeast of Maribel, just east of Highway 141 (T21N R22E Section 13, within SE¼); Eastern Ridges and Lowland.

Major Features: This limestone cliff on the west bank of the West Twin River supports several very large white cedars along its rocky base. The "caves" in the side of the 50-foot tall bluff are really shallow indentations caused by gaps in the blocky dolomite. Young beech-maple woodland at the cliff summit contains a showy spring flora, including the rare snow trillium.

Size: 8 acres (3 ha).

Owner; Custodian: Manitowoc County; contact County Park and Planning Director, 1701 Michigan Ave., Manitowoc 54220.

History of Preservation; Designation Date: Preservation through county acquisition as a park was promoted by Silver Lake College (then Holy Family College); January, 1967.

Management, Use Considerations: Public use has increased considerably in the last several years, resulting in such problems as litter and trampling of vegetation at the cliff base.

49 BLACK TERN BOG, VILAS COUNTY

Location; Geographical Province: Five miles north of Woodruff along the east side of U.S. 51 and is visible from this highway (T40N R6E Section 11, within NE¼); Northern Highland.

Major Features: Situated in a pitted outwash plain, this bog consists of a large quaking mat surrounding two small seepage lakes. The bog is rich in bog plant species, with showy displays of three species of pink orchids, and also offers nesting habitat to a number of birds, such as black terns, killdeer, black ducks, and mallards.

Size: 26 acres (10 ha).

Owner; Custodian: DNR; see area #21 for custodian's address.

Designation Date: January, 1967.

Management, Use Considerations: 200-foot no-cut timber zone surrounds the floating bog.

50 TWO CREEKS BURIED FOREST, MANITOWOC COUNTY

Location; Geographical Province: About twelve miles north of Two Rivers along the east side of Highway 42 at the county line (T21N R24E Section 2, within NE¼NE¼); Eastern Ridges and Lowlands.

Major Features: Internationally famous site for the interpretation of vegetation and glacial events during the Wisconsin glaciation. The numerous deposition layers, revealed by the wave-cut banks along Lake Michigan, have recorded the advances of Valdres and Cary glacial substages. Interstage boreal forest vegetation remnants have been dated at 11,200 years old.

Size: 12 acres (4 ha).

Owner; Custodian: DNR; see area #24 for custodian's address.

History of Preservation; Designation Date: Purchased in 1967 by the Nature Conservancy and subsequently donated to the DNR; March, 1967.

Management, Use Considerations: As a unit of the Ice Age National Scientific Reserve, some interpretive development is anticipated.

Interpretive & Research References: There have been many research publications on this internationally famous site; a partial list is in Council files. See: Black, 1974.

51 WAUPUN PARK MAPLE FOREST, FOND DU LAC COUNTY

Location; Geographical Province: One mile north of Waupun off north side of CTH 'MMM' (T14N R15E Section 31 NW¼ of NE¼); Eastern Ridges and Lowlands.

Major Features: Old-growth southern mesic forest with a history of ecological research followed by selective logging in portions and intensive public use. The woods retains a rich spring flora and good natural integrity.

Size: 40 acres (16 ha).

Owner; Custodian: Fond du Lac County; contact Park and Development Committee, Courthouse, Fond du Lac 54935, or resident park manager.

Designation Date: March, 1967.

Management, Use Considerations: A park road bisects the woods, and trails receive incompatible use from trail bikes, horses, and snowmobiles.

52 LODDE'S MILL BLUFF, SAUK COUNTY

Location; Geographical Province: Three and a half miles west of Sauk City, just northwest of the intersection of Honey Creek and Highway 60 (T9N R6E Section 17, within NW¼NE¼); Western Upland.

Major Features: Rising nearly 300 feet above Honey Creek near its confluence with the Wisconsin River, this bluff consists of sheer Cambrian sandstone walls capped with Prairie du Chien dolomite. In the crevices and pocked sandstone grow a number of unusual cliff species. Other plant communities present include cedar glade, oak-opening and dry to dry-mesic forest.

Size: 15 acres (6 ha).

Owner; Custodian: University of Wisconsin; see area #3 for custodian's address.

History of Preservation; Designation Date: Purchased by The Nature Conservancy in 1962 and subsequently deeded to the University of Wisconsin; March 1967.

Management, Use Considerations: Steep slopes at base of bluff preclude heavy human traffic without damage to forest floor; incompatible camping and partying takes place on open bluff summit.

Interpretive & Research References: Iltis, n.d. (b)

53 NEW MUNSTER BOG ISLAND, KENOSHA COUNTY

Location; Geographical Province: Three miles west of Silver Lake, west of Lily Lake (T1N R19E Sections 2, 3, 10, 11, at junction of these sections); access west from parking lot across Palmer Creek; Eastern Ridges and Lowlands.

Major Features: Lowland tract containing a diversity of southern Wisconsin shrub and timber swamp types, surrounding an upland knoll wooded with a dry-mesic forest. Yellow birch occurs in the swamp at the southern edge of its range. The vegetational diversity supports a wide array of nesting birds, as evidenced by breeding bird censuses.

Size: 55 acres (22 ha).

Owner; Custodian: DNR; contact Wildlife Manager, DNR, 109 East Washington Street, Burlington 53105.

Designation Date: July, 1967.

Management, Use Considerations: Primary use by hunters and fishermen.

54 CHIWAUKEE PRAIRIE, KENOSHA COUNTY

Location; Geographical Province: In extreme southeastern Kenosha County south of Tobin Road and east of Chicago and Northwestern Railroad tracks (T1N R23E Sections 31, 32); Eastern Ridges and Lowlands.

Major Features: Exceedingly rich prairie and marsh on swell and swale topography created by glacial Great Lakes levels. Over 350 plant species have been noted as growing on the prairie—some of which are very rare in the state—such as chestnut sedge, prairie white fringed orchid, pink milkwort, and round-stemmed false foxglove. Scattered oaks in portions give a savanna aspect to the tract.

Size: 83 acres (33 ha).

Owner; Custodian: University of Wisconsin; contact Department of Life Sciences, University of Wisconsin-Parkside, Kenosha 53140.

History of Preservation; Designation Date: Significance as a natural area was recognized since at least the early 20th century, but subdivision (which finally failed) blocked early preservation attempts; finally purchased by The Nature Conservancy, deeded to UW; July, 1967.

Management, Use Considerations: Receives many incompatible uses due to its semi-urban location, but also receives wide-ranging educational and nature study use.

Interpretive & Research References: Gates, 1912; Hester & Fraser, 1973; Korling, 1972.

55 MARINETTE COUNTY BEECH FOREST, MARINETTE COUNTY

Location; Geographical Province: Eighteen miles west of Wausaukee, on Goodman Parkway Road four miles north of CTH 'C' (T34N R17E Section 11 NE¼NE¼); Northern Highland.

Major Features: Best known example of beech-dominated forest in a western outlying area of Marinette County, isolated from the species' main range near Lake Michigan. Other important tree species in this northern mesic type are sugar maple and hemlock. The topography is undulating to rough.

Size: 40 acres (16 ha).

Owner; Custodian: Marinette County; contact County Forester, Courthouse, Marinette 54143.

Designation Date: September, 1967.

Management, Use Considerations: Although the tract has seen some logging (as late as 1948), timber harvest is no longer allowed in the scientific area.

56 SANDER'S PARK HARDWOODS, RACINE COUNTY

Location; Geographical Province: Four miles southwest of Racine between Wood Road and CTH 'Y' (Meachem Road) ½ mile north of Kenosha-Racine County line (T3N R22E Section 36); Eastern Ridges and Lowlands.

Major Features: Dry-mesic forest on two low ridges separated by a wet forest of American elm and cottonwood. The forest lies on one of Lake Michigan's ancient terraces and has calcareous, well-drained lacustrine soils.

Size: 30 acres (12 ha).

Owner; Custodian: Racine County; contact County Parks Department, Route 1, Box 226A, Sturtevant 53177.

History of Preservation; Designation Date: Purchased in 1930 by Racine County and later dedicated to Ed Sander, local biology teacher; September, 1967.

Management, Use Considerations: Some cutting near trails and roads is necessary for safety; park heavily used by day visitors and by adjacent residents.

57 TOFT POINT, DOOR COUNTY

Location; Geographical Province: One mile east of Baileys Harbor on Ridges Drive (T30N R28E Sections 15, 16); Eastern Ridges and Lowlands.

Major Features: Part of a peninsula jutting into Lake Michigan, consisting of northern mesic hardwood forest with old-growth hemlock and white pine, more than a mile of rocky frontage on Lake Michigan, conifer forest, and open bog and marsh. Adjoins Ridges Sanctuary to the west and UW-Green Bay's Lighthouse Point property to the south.

Size: 340 acres (137 ha).

Owner; Custodian: University of Wisconsin; contact College of Environmental Sciences, University of Wisconsin, Green Bay 54305.

History of Preservation; Designation Date: The Emma Toft estate was sold to the University for preservation purposes in 1960's with the aid of The Nature Conservancy; September, 1967.

Management, Use Considerations: Closed to hunting; use should be coordinated in advance with UW-Green Bay to avoid disruption of ongoing research projects.

58 OLIVER PRAIRIE, GREEN COUNTY

Location; Geographical Province: Two miles southwest of Albany, ¾ mile west of Highway 59 on south side of Oliver Road (T3N R8E Section 36); Western Upland.

Major Features: Dry limey prairie on a ridge of sandstone capped with a thin layer of dolomite. More than 100 species of prairie plants have been identified on the tract, despite the small size. Because of its steep, rocky slope and ownership pattern, this prairie remnant escaped destruction. Green County's Muralt Prairie occupies the same ridge ½ mile to the north.

Size: 4 acres (1.5 ha).

Owner; Custodian: University of Wisconsin; see area #3 for custodian's address.

History of Preservation; Designation Date: Purchased by The Nature Conservancy in 1960's and deeded to UW; November, 1967.

Interpretive & Research References: Iltis, n.d. (a), Riechert & Reeder, 1972.

59 SPRUCE LAKE BOG, FOND DU LAC COUNTY

Location; Geographical Province: One and a half miles northwest of Dundee, north of Airport Road and west of Vista Drive (T14N R19E Sections 22, 23); Eastern Ridges and Lowlands.

Major Features: Undisturbed shallow bog lake with a very narrow, open bog mat. The surrounding swamp forest of tamarack, white cedar, black spruce (here at its southern limit in Wisconsin), and bog shrubs is rich in acid bog plants and has the appearance of a northern bog. The tract has been designated a National Natural Landmark.

Size: 117 acres (47 ha).

Owner; Custodian: DNR; see area #11 for custodian's address.

Designation Date: January, 1968.

Management, Use Considerations: A boardwalk on the southeast edge has been constructed to facilitate access.

60 TAMARACK CREEK BOG, TREMPLEAU COUNTY

Location; Geographical Province: Six miles north of the junction of Highways 54-35 and 93 (Centerville), between Highway 93 and CTH 'F' (T19-20N R9W Sections 3, 34); Western Upland.

Major Features: Largest known tamarack swamp in Wisconsin's Driftless Area, and an important site for studies of periglacial flora from peat cores taken in the bog. Early botanical finds in the area included northern species such as balsam fir which are believed to be relics of the region's flora during glacial times.

Size: 130 acres (52 ha).

Owner; Custodian: DNR; see area #30 for custodian's address.

Designation Date: January, 1968.

Management, Use Considerations: Drainage, land clearing and agricultural use on adjacent lands have reduced both the size and integrity of the remnant; more buffer acquisition is desirable.

Interpretive & Research References: Hansen, 1933.

61 CEDARBURG BEECH WOODS, OZAUKEE COUNTY

Location; Geographical Province: Four miles west of Saukville, on St. Augustine Road, ¾ mile east of CTH 'Y' (T11N R21E Section 30); Eastern Ridges and Lowlands.

Major Features: A southern mesic forest, situated on abrupt morainal topography, composed of sugar maple, beech, white ash, red oak and basswood. Despite selective logging in the past, the forest canopy is intact. Northeastern portion of property grades into a small pocket of yellow birch, tamarack, white cedar and swamp hardwoods.

Size: 60 acres (24 ha).

Owner; Custodian: University of Wisconsin; see area #2 for custodian's address.

Designation Date: February, 1968.

Management, Use Considerations: Area receives considerable class and research use; use must be coordinated with UW Field Station Manager.

Forest sustained heavy damage in March, 1976, ice storm.

Interpretive & Research References: Carlsen, 1971; see also the list of more than 40 publication and thesis titles in Council files resulting from research at the UW-M Field Station.

62 SILVER LAKE BOG, KENOSHA COUNTY

Location; Geographical Province: On CTH 'F' 0.3 miles east of junction with CTH 'SA', 1½ miles east of the Village of Silver Lake (T1N R20E Section 16, E½NW¼NE¼); Eastern Ridges and Lowlands.

Major Features: A southern bog lake lacking many of the typical species of its type farther north, but with well-defined zones of succession and a number of unusual species for the region. Poison sumac and a quaking sphagnum bog mat make visitation to the open water center a challenge. Under the shade of tamaracks grow such typical bog species as pitcher plant, round-leaved sundew, cranberry and Michigan holly.

Size: 20 acres (8 ha).

Owner; Custodian: Silver Lake Sportsman's Club; contact president of club, Silver Lake 53170.

History of Preservation; Designation Date: Purchased in 1959 by Silver Lake Sportsman's Club; March, 1968.

Management, Use Considerations: Spontaneous invasion of the exotic European buckthorn and incompatible adjacent land use (bog drainage, agricultural use) threaten integrity of the bog. Access by permission only.

63 WATERLOO FEN AND SPRINGS, JEFFERSON COUNTY

Location; Geographical Province: 1-3/4 miles east of Waterloo, on the east side of Stony Creek, 1/8 mile south of Highway 19 (T8-9N R13E Sections 4, 33); Eastern Ridges and Lowlands.

Major Features: Waterloo Fen features a perched fen, moist meadow and wet seepage slopes along several springs entering Stony Creek along the area's west boundary. The hummocky, black peat of the fen supports numerous rare and geographically restricted plant species.

Size: 78 acres (31 ha).

Owner; Custodian: DNR; contact Wildlife Manager, Courthouse, Jefferson 53549.

Designation Date: May, 1968.

Management, Use Considerations: Large groups are not encouraged to visit this area due to possible trampling damage to mucky soils; management includes use of fire to curtail woody vegetation.

64 SWENSON PRAIRIE AND OAK OPENING, ROCK COUNTY

Location; Geographical Province: Five miles south of Brodhead, ¼ mile east of CTH 'T' on the south side of Smith Road (T1N R10E Section 18 SE¼NW¼); Western Upland.

Major Features: Remnant low prairie and adjacent woodland composed of oaks, basswood, and aspen. Fire management is being used to restore the savanna aspect of the woods and prairie. Wetland openings in the woods are old channels of the nearby Sugar River.

Size: 40 acres (16 ha).

Owner; Custodian: DNR; see area #36 for custodian's address.

Designation Date: May, 1968.

Management, Use Considerations: Periodic fire management is used to restore the oak opening degraded by grazing and lack of occasional burning.

65 DOUGLAS COUNTY GROUSE AREA, DOUGLAS COUNTY

Location; Geographical Province: Four miles north of Gordon on Highway 53, then ½ mile west on town road to RR tracks and southeastern corner of area (T44N R12W Section 11); Northern Highland.

Major Features: Pine-oak-aspen savanna, or barrens, located on rolling outwash sands. The open condition, with widely scattered clumps or individual trees, is characteristic of the presettlement vegetation and is maintained by periodic fire management. Though the sandy podzolic soils are low in nutrients, a very diverse herbaceous and shrub flora exists on the tract.

Size: 240 acres (97 ha).

Owner; Custodian: DNR (leased); contact Wildlife Manager, Ranger Station, Box 80, Brule 54820.

Designation Date: July, 1968.

Management, Use Considerations: The area is managed for sharp-tailed grouse; scattered food patches are maintained. The tract is utilized as a pointing dog training and trial area.

Interpretive & Research References: Murphy, 1931.

66 EAGLE OAK OPENING, WAUKESHA COUNTY

Location; Geographical Province: Four miles southwest of Eagle, on the east side of CTH 'Z' two miles south of junction with Highway 59 (T5N R17E Section 30); Eastern Ridges and Lowlands.

Major Features: An outstanding example of interlobate morainal topography, including ephemeral ponds in the deep kettle holes. Originally the area was vegetated with oak savanna, but grazing and the lack of fire have allowed forest vegetation to become more dominant. Large open-grown oaks remain, along with dry prairie remnants containing numerous pasque flowers.

Size: 55 acres (22 ha).

Owner; Custodian: DNR; see area #6 for custodian's address.

Designation Date: July, 1968.

Management, Use Considerations: Periodic fire management is planned to restore savanna conditions; permanent photographic points established in 1971.

67 FAIRY CHASM, OZAUKEE COUNTY

Location; Geographical Province: On Lake Michigan shore ½ mile north of Milwaukee County line (T9N R22E Section 33, within N½SW¼); Eastern Ridges and Lowlands.

Major Features: Wooded ravine 80-100 feet deep cut through unconsolidated till and extending 1¼ miles west from its mouth on Lake Michigan. A steep north-facing slope supports many more northern plants such as white pine, yellow birch and white cedar, while the more exposed southern-facing slope is wooded with a xeric hardwood forest. The chasm bottom contains a permanent stream.

Size: 20 acres (8 ha).

Owner; Custodian: The Nature Conservancy; contact Hal or Hildy Liebherr, 321 E. Cedar Lane, Mequon 53092.

History of Preservation; Designation Date: Preservation has continued since the 1870's; the Fish Creek Park Company, organized to preserve the area, donated it to the Nature Conservancy.

Management, Use Considerations: Educational use is made of the area, and there are a number of well-used hiking trails through the chasm to facilitate use. Access by permission.

Interpretive & Research References: Oehmcke, 1937.

68 AVOCA RIVER BOTTOM PRAIRIE, IOWA COUNTY

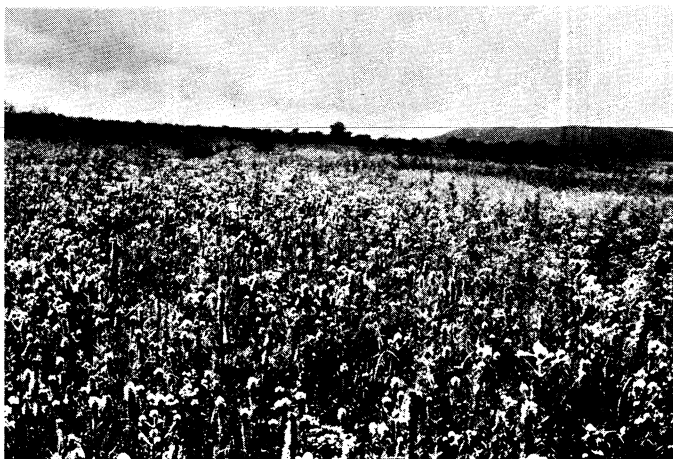
Location; Geographical Province: 1½ miles east of the Village of Avoca, ½ mile north of Highway 133 via Haylane Road (T8N R2E Section 6 W½E½ and E½W½); Western Upland.

Major Features: Expansive sandy terrace between the Wisconsin River and Marsh Creek consists of dry and moist prairie interspersed with small



C. Germain.

Jack pine-aspen savanna or "barrens" dominate the rolling, sandy topography in the extreme northwest portion of the state at Douglas County Grouse Area. Fire is used to control woody vegetation and promote sharp-tailed grouse habitat (Douglas County; scientific area 65).



R. Read.

Rich prairie flora and sweeping vistas are seen by the many yearly visitors to Avoca River Bottom Prairie Scientific Area, located on a low, sandy outwash terrace of the lower Wisconsin River. The 320-acre scientific area is situated in the nearly 900-acre prairie which is managed by the DNR's Bureau of Wildlife Management (Iowa County; scientific area 68).

linear wetlands. Annual flooding has patterned a braided drainage system through the prairie, and kept the area from being converted to farmland. One of the best remnants of an oak savanna exists on the northwestern portion of the tract. This prairie is one of the largest and least disturbed in a several-state area east of the Mississippi River.

Size: 320 acres (129 ha).

Owner; Custodian: DNR; contact Wildlife Manager, Route 1, Dodgeville 53533.

History of Preservation; Designation Date: Used as a mowing meadow and occasional pasture from the 1860's until purchased by the Department; October, 1968.

Management, Use Considerations: Avoca receives extensive and widespread educational use from many midwestern schools. Management consists of periodic burning and mowing.

69 BLUE RIVER CACTUS AND DUNES, GRANT COUNTY

Location; Geographical Province: Four miles west of Muscoda and 2 miles east of Blue River, ¼ mile north of Highway 133 on Wright Road (T8N R1W Section 6 SE¼); Western Upland.

Major Features: Flat sand prairie, large blow-outs with dune formations, and an oak barrens occur on this low, but dry, terrace above the Wisconsin River. Although perhaps farmland at one time, the poor sandy soil supports an unusual xeric, native flora of such species as cactus, flameflower, lichens and mosses. The barrens offers excellent habitat for six-lined racers and nesting turtles.

Size: 130 acres (52 ha).

Owner; Custodian: DNR; contact Wildlife Manager, Wilson Nursery, Route 3, Box 65, Boscobel 53805.

Designation Date: October, 1968.

Management, Use Considerations: The once-frequent use of the dunes by off-road-vehicles has been reduced, but not eliminated by signing the area.

70 LAWRENCE CREEK, MARQUETTE COUNTY

Location; Geographical Province: Four miles west of Westfield and ¼ mile east of Adams County line, just north of Eagle Avenue (T17N R8E Section 31, 200 foot zone along stream in S½); Central Plain.

Major Features: This portion of Lawrence Creek is about 1½ miles from its origin in the Central Plain ground moraine. The stream is an important spawning area for brook trout, and due to the research done here by DNR biologists on trout ecology, life history and management, the stream has received international recognition. Seepage springs and short spring runs contribute high quality water to the stream.

Size: 25 acres (10 ha).

Owner; Custodian: DNR; contact Bureau of Research, Hartman Creek State Park, Route 1, Box 203, Waupaca 54981.

Designation Date: December, 1968.

Management, Use Considerations: Research has been conducted on stream since 1952; stream is heavily fished, but no management to bank cover or in stream is allowed on this section.

Interpretive & Research References: See the extensive research bibliography in Council files. Most of the research conducted on this nationally known trout stream has been conducted by the Department of Natural Resources.

71 KOHLER PARK DUNES, SHEBOYGAN COUNTY

Location; Geographical Province: Within Kohler-Andrae State Park north of nature center and south of north beach access road (T14N R23E Section 23, within N½NW¼); Eastern Ridges and Lowlands.

Major Features: Uncommon Great Lakes habitats of sand beach (¼ mile), open and stabilized dunes, plus small area of white pine forest. Rich in plant species restricted to such coastal communities, including sand reed, dune thistle, beach pea, and dune wheatgrass.

Size: 25 acres (10 ha); 10-acre (4 ha) buffer zone on west boundary.

Owner; Custodian: DNR; contact Superintendent, Kohler-Andrae State Park, Route 3, Sheboygan 53081.



R. Read.

Wisconsin's Great Lakes coastlines have only a few ecologically well-developed sand beaches and dunes. Kohler Park Dunes Scientific Area, within Kohler-Andrae State Park, is one of the best examples of beach-dune features (Sheboygan County; scientific area 71).

Designation Date: February, 1969.

Management, Use Considerations: Area receives a very high amount of visitor use from adjacent park access points.

72 KOHLER PARK PINES, SHEBOYGAN COUNTY

Location; Geographical Province: Three miles south of Sheboygan, between the Black River and Lake Michigan at the north end of Kohler-Andrae State Park, by foot access only (T14N R23E Section 14); Eastern Ridges and Lowlands.

Major Features: A section of Lake Michigan shoreline and adjacent forest located on stabilized dunes between the lake on the east and the Black River on the west. The sand beach and narrow zone of dunes give way inland to a mixed conifer-hardwood forest composed of white and red pine, sugar maple, beech, paper birch and red oak. The woods has the characteristics of both a northern and southern forest. Shrub and wooded wetlands occur near the river.

Size: 95 acres (38 ha).

Owner; Custodian: DNR (leased); see area #71 for custodian's address.

Designation Date: February, 1969.

Management, Use Considerations: Leased to the state by the Kohler Company; established snowmobile trails run north-south through area.

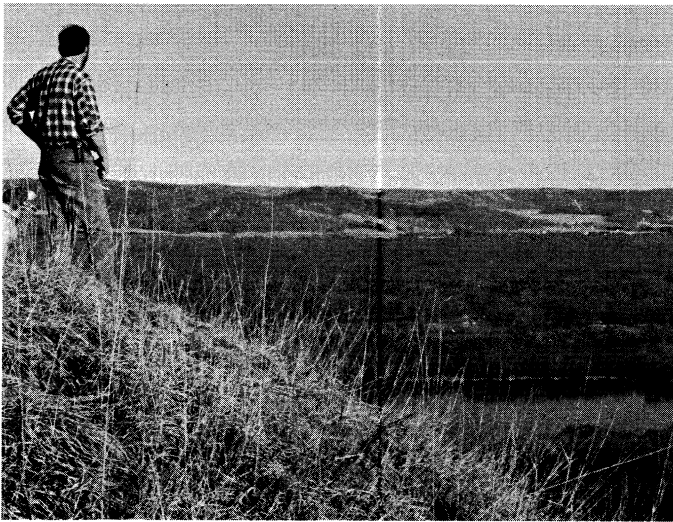
73 GIBRALTAR ROCK, COLUMBIA COUNTY

Location; Geographical Province: Three miles northwest of Lodi, one mile west of junction of Highway 113 and CTH 'V' on the south side of 'V' (T10N R8E Section 18); Central Plain.

Major Features: Landmark bluff rising some 400 feet above the Wisconsin River to the north, capped with layers of dolomite and sandstone which are outliers from the escarpments to the east and south. The area contains a diversity of plant communities, from sheer open cliffs to oak-basswood hardwoods, to open prairie and cedar glades on the steep south-facing slopes. Glacial till has been found on the north side of the bluff, suggesting that the last glacier terminated there.

Size: 35 acres (14 ha).

Owner; Custodian: Columbia County; contact County Extension Resource Agent, County Administration Building, Portage 53901.



High above the lower Chippewa River is Five-Mile Bluff Prairie Scientific Area, one of the few prairie openings remaining in the valley. Two lowland river forest scientific areas (Tiffany Bottoms and Nelson Trevino) are located in the vast bottomlands seen in the background (Pepin County; scientific area 76).

History of Preservation; Designation Date: In 1927, Friends of Our Native Landscape purchased bluff and access from the Richmond family and deeded it to Columbia County for use as a natural park; 20 acres added in 1968, including the cedar glade; March, 1969.

Management, Use Considerations: As a popular county park, the bluff edges receive heavy visitation.

Interpretive & Research References: Martin, 1965.

74 BLUE HILLS FELSENMEER, RUSK COUNTY

Location; Geographical Province: Twelve miles west of Bruce in extreme western Rusk County (T35N R9W Section 31 N½SW¼ and S½NW¼), overland foot access only; Northern Highland.

Major Features: Of geological significance for the spectacular talus slopes composed of angular quartzite blocks along several small valleys on the south side of the Blue (Barron) Hills, a Precambrian monadock. The rocks are covered with a profuse growth of lichens and mosses. The adjacent forest type is second growth birch-maple-oak, with charred pine stumps remaining as evidence of the former forest type.

Size: 75 acres (30 ha).

Owner; Custodian: Rusk County; contact County Forest Administrator, Courthouse, Ladysmith 54848.

Designation Date: March, 1969.

Management, Use Considerations: A 200-foot wide no-cut zone extends along the cliffs and talus slopes.

75 ABLEMAN'S GORGE, SAUK COUNTY

Location; Geographical Province: 0.8 mile north of Village of Rock Springs on Highway 136, northeast of the road (T12N R5E Section 28 within SW¼NW¼); Western Upland.

Major Features: A small portion of the 200-foot deep gorge cut by the Baraboo River, displaying a cross section of the Baraboo syncline. The exposures of ancient quartzite and overlying sandstones are well-known to the many students of geology who visit the site. Vegetation consists of scattered bur and white oak, red cedar, white pine, hemlock and red pine. Small patches of prairie are also present.

Size: 7 acres (2 ha).

Owner; Custodian: The Nature Conservancy; see area #44 for custodian's address.

History of Preservation; Designation Date: Purchased by The Nature Conservancy in 1969; April, 1969.

Management, Use Considerations: More acquisition desirable on both sides of the highway; area gets widespread educational use from midwestern schools for geology instruction.

Interpretive & Research References: Dalziel & Dott, 1970.

76 FIVE-MILE BLUFF PRAIRIE, PEPIN COUNTY

Location; Geographical Province: Four miles northeast of the Village of Pepin along the edge of the Chippewa River Valley (T23N R14W Section 15, within SW¼SW¼, SE¼SW¼), foot trail access; Western Upland.

Major Features: Three small, dry, limey prairie openings on the summit and very steep slopes of a bluff 300 feet above the Chippewa River and five miles upstream from the Mississippi River. The prairies have southwestern, southern and southeastern exposures, but encroachment by woody species is closing the openings. Typical xeric prairie species are present, and timber rattlesnakes have been reported in the area.

Size: 10 acres (4 ha).

Owner; Custodian: DNR; see area #30 for custodian's address.

Designation Date: June, 1969.

Management, Use Considerations: Periodic prescribed burning management is necessary to keep prairie from becoming overgrown.

77 BLACKHAWK ISLAND, JUNEAU COUNTY

Location; Geographical Province: From Wisconsin Dells west on Highway 23 to just across the Wisconsin River, then north on CTH "A" ("N" in Juneau County) 1.5 miles to Camp Upham Woods (T14N R6E Sections 32,33), access by boat necessary; Central Plain.

Major Features: Wooded, upland island in the Dells of the Wisconsin River, featuring a great diversity of forest types, including hemlock-yellow birch, oak, maple, and mixed pine. The many sandstone cliffs around the island have a particularly uncommon flora, with a number of rare plants present.

Size: 245 acres (99 ha).

Owner; Custodian: University of Wisconsin; contact Naturalist, Upham Woods, Route 1, Box 292, Wisconsin Dells 53965.

History of Preservation; Designation Date: Island purchased by Horace Upham in 1905 just before the Wisconsin Dells dam flooded the abandoned channel in 1907; timber harvested and grazed as late as 1932; given to University in 1941 for preservation; September, 1969.

Management, Use Considerations: Hiker use by 4-H participants at Camp Upham Woods is heavy, but compatible; non-camper use should be cleared with resident naturalist prior to entry.

Interpretive & Research References: Williams, 1957.

78 FLORA LAKE, LANGLADE COUNTY

Location; Geographical Province: Two miles northwest of White Lake in southeastern Langlade County (T31N R13E Section 1 NE¼), access from west via woods road and trail; Northern Highland.

Major Features: Spring pond lake at the headwaters of Evergreen Creek, with high quality water and native brook trout. The surrounding conifers (white cedar, black and white spruce, and hemlock) show no signs of recent cutting. Maintenance of Flora Lake in a natural state will provide a control to compare management and long-term succession of other ponds being rejuvenated by dredging.

Size: 40 acres (16 ha); 120-acre (48 ha) buffer zone.

Owner; Custodian: Langlade County; contact Forestry Agent, Langlade Forestry Department, Box 310, Antigo 54409.

Designation Date: September, 1969.

Management, Use Considerations: Fishing allowed but access is difficult into this wild area. Recently, beavers have plugged outlet, flooding the shoreline and killing many surrounding conifers.

79 HOLMBOE CONIFER FOREST, ONEIDA COUNTY

Location; Geographical Province: On the south bank of the Pelican River, a few hundred feet southeast of the Highway 17 bridge in Rhinelander (T36N R9E Section 7, Gov't Lot 4); Northern Highland.

Major Features: Old-growth remnant of a variety of northern forest types on abrupt moraine topography: a hemlock forest occupies the north-facing and lower ridge slopes; white and red pine, paper birch and a mixture of northern hardwoods are found on drier sites; a small spruce-tamarack closed bog is located in the tract's north-central portion. Canada yew occurs along a seepage area located between the moraine hills on the south and the swamp conifer near the river.

Size: 32 acres (12 ha).

Owner; Custodian: The Nature Conservancy; contact Dr. Johanna Clausen, Nicolet College and Technical Institute, Rhinelander 54501.

History of Preservation; Designation Date: Donated to The Nature Conservancy about 1960 by the Holmboe family; October, 1969.

Management, Use Considerations: Gravel pit operations have progressed close to the east side, and proposed highway construction near the southwest corner are continuing threats to the area's integrity.

80 HUB CITY BOG, RICHLAND COUNTY

Location; Geographical Province: North of Hub City on Highway 80 ¼ mile, then east ¼ mile on Soules Creek Road to parking area (T12N R1E Section 34); Western Upland.

Major Features: This bog is one of the few of its type in the driftless area, and was formed in an oxbow lake of the meandering Pine River. A 75-foot tall sandstone cliff above Soules Creek contains a number of rare and unusual plants, such as the northern-bog species Labrador tea. Many small springs are present in the tamarack stand which is surrounded by open marsh and shrub-carr.

Size: 55 acres (22 ha).

Owner; Custodian: University of Wisconsin; see area #3 for custodian's address, or contact Robert Hirsch, UW-Richland Center 53581.

History of Preservation; Designation Date: Purchased in late 1960's by The Nature Conservancy from the Spencer family, subsequently deeded to the University of Wisconsin in 1972; March, 1970.

Management, Use Considerations: The bog is valuable for the peat borings and pollen analysis which have been made in an attempt to interpret the past vegetation and climate in this unglaciated part of the state.

Interpretive & Research References: Hansen, 1933.

81 NELSON-TREVINO BOTTOMS, BUFFALO COUNTY

Location; Geographical Province: At the confluence of the Chippewa and Mississippi Rivers, bounded on the west and south by the rivers, on the north by railroad, on the east by Highway 25 (T22-23N R14W Sections 1-4, 10-12, 33-35); Western Upland.

Major Features: An extensive roadless area of river bottom wetland types, with silver maple, river birch, elm, cottonwood, swamp white oak, and ash dominating the floodplain forest. Shrubby areas, open marshes, ponds and open water are scattered throughout. The area supports a substantial beaver population and is attractive to waterfowl. A heron-egret rookery is also present in the interior.

Size: 3,740 acres (1,513 ha).

Owner; Custodian: U.S. Fish and Wildlife Service; contact Refuge Manager, 405 Exchange Building, Winona, Minnesota 55987; District Manager at Trempealeau 54661.

History of Preservation; Designation Date: Refuge established in 1924; some logging and grazing prior to that; April, 1970.

Management, Use Considerations: Roadless condition and numerous sloughs make the best access by canoe or flat-bottom boat; open to fishing, hunting and trapping.

82 BAXTER'S HOLLOW, SAUK COUNTY

Location; Geographical Province: Seven miles north on Highway 12 from Sauk City to CTH 'C', west 1½ miles to Stone's Pocket Road, north 2 miles to southeast edge of area (T11N R6E Section 32 SE¼NE¼ and east to road in Section 33); Western Upland.

Major Features: The scientific area is a portion of a gorge cut into the south flank of the Baraboo Hills by Otter Creek. White pine is present on the lower and cooler slopes, while oaks predominate on the progressively drier and higher slopes. The boulder-strewn Otter Creek has a moderately steep gradient and very soft spring-fed water.

Size: 51 acres (20 ha).

Owner; Custodian: The Nature Conservancy; contact Dr. Donald Kindschi, Prairie du Sac 53578.

History of Preservation; Designation Date: The scientific area is part of a 170-acre parcel purchased in the 1960's by The Nature Conservancy; May, 1970.

Management, Use Considerations: Entomologists utilize Otter Creek as a teaching site, for its pure waters contain an outstanding aquatic insect fauna.

Interpretive & Research Reference: Narf & Hilsenhoff, 1975.

83 MOQUAH BARRENS, BAYFIELD COUNTY

Location; Geographical Province: From the Village of Ino on Highway 2 13 miles west of Ashland, go north 7 miles on forest road 236 which traverses the area (T48N R7W Section 23); Northern Highland.

Major Features: Moquah Barrens lies near the eastern edge of an extensive outwash sand plain in northwestern Wisconsin. The primary vegetation type is pine barrens, and although the vegetation varies from large openings to dense even-aged forests of jack pine and aspen, little true savanna exists. To the south of the scientific area, fire management has dramatically restored a barrens area.

Size: 640 acres (259 ha).

Owner; Custodian: U.S. Forest Service; contact Forest Supervisor, Chequamegon National Forest, Park Falls 54552.

History of Preservation; Designation Date: The Forest Service established Section 23 in the early 1930's as a Research National Area to undergo natural succession; July, 1970.

Management, Use Considerations: Management objective is to allow natural vegetation succession without human manipulation except to prevent fire in the section; photographic stations were created in 1972 to monitor vegetation changes.

Interpretive & Research References: Murphy, 1931; Vogl, 1970.

84 SCHMIDT MAPLE WOODS, CLARK COUNTY

Location; Geographical Province: In northwestern Clark County 5 miles southwest of Thorp and one mile east of the Chippewa County line (T28N R4W Section 18 SE¼NE¼); Central Plain.

Major Features: Situated on gently undulating topography of Illinoian glacial drift, the woods is one of the best known examples of mesic forest in the west-central portion of the state. The woods is ecologically well-structured, containing a closed canopy, variously leveled sub-canopy, and a diversity of both herbaceous and woody plant species. Largest dominant trees are sugar maple, basswood and elms.

Size: 40 acres (16 ha).

Owner; Custodian: University of Wisconsin-Eau Claire Foundation;

contact Biology Department Chairman, University of Wisconsin, Eau Claire 54701.

History of Preservation; Designation Date: The woods is a memorial to the Franklin Schmidt family, who lost their lives in a night fire on the site in 1935. Donated to The Nature Conservancy in 1970 by the Schmidt family, subsequently deeded to UW-Eau Claire Foundation; August, 1970.

Interpretive & Research References: Clausen, 1972.

85 BUENA VISTA PRAIRIE AND MEADOW, PORTAGE COUNTY

Location; Geographical Province: From the junction of CTH 'F' and Highway 54 west of Plover, go 6 miles south on 'F', then east 3/4 mile to area north of road; to other tract go 8 miles south on 'F' from 54, then east on town road 3/4 mile to area north of road (T21-22N R7E Sections 2, 26); Central Plain.

Major Features: The scientific area is composed of two separate sites within a large management zone aimed at maintaining prairie chicken habitat. Buena Vista marsh has a long history of drainage, agricultural use (including growing sod), and destructive peat fires, but now the use has stabilized and the land is kept in an open condition. Some native plant species are reinvading the Quarry Prairie tract in Section 2.

Size: 120 acres (48 ha).

Owner; Custodian: DNR (leased); contact Wildlife Manager, Route 1, Box 179, Plainfield 54966.

History of Preservation; Designation Date: Much of the area is under long-term lease to the DNR from the Prairie Chicken Foundation, which has been active in acquiring land for prairie chickens since 1958; August, 1970.

Management, Use Considerations: Management objective is to maintain an open habitat—mainly through the use of periodic fire—suitable for the prairie chickens; visitation during spring display and mating period by reservation only.

Interpretive & Research References: McKee, 1974; Munn, 1974; Zedler, 1966; Zedler & Loucks, 1969.

86 GOOSE POND, COLUMBIA COUNTY

Location; Geographical Province: From Arlington south and east on Highway 51-60 one mile, then south on Goose Pond Road about one mile to pond on west (and east) side of road (T10N R9E Section 25); Eastern Ridges and Lowlands.

Major Features: A small "prairie pothole" or landlocked lake in a marshy basin of ground moraine, noted for its spectacular displays of migrating waterfowl. Whistling swans, Canada, blue and snow geese, and many species of ducks and waders seek temporary refuge there in the spring and fall. Fluctuating water levels periodically expose mudflats, where shorebirds may be observed by the hundreds.

Size: 40 acres (16 ha).

Owner; Custodian: Madison Audubon Society; contact Mrs. Ruth Wynn, Goose Pond Wildlife Refuge, Arlington 53911.

History of Preservation; Designation Date: Bought in 1968 by Madison Audubon Society; October, 1970.

Management, Use Considerations: Pond receives excessive enrichment from Arlington canning plant effluent; prairie restoration is ongoing on uplands to recreate prairie pothole aspects; receives widespread educational and bird study use.

Interpretive & Research References: Tessen, 1976.

87 POINT BEACH RIDGES, MANITOWOC COUNTY

Location; Geographical Province: From the town road leading to the State Forest Headquarters, go one mile northeast from the City of Two Rivers to 3/4 mile south of Molash Creek, walk east into area (T20N R25E



DNR

An oblique aerial photograph of Point Beach Ridges Scientific Area (No. 87) within Point Beach State Forest, Manitowoc County, on the shore of Lake Michigan, showing the narrow zone of beach and low dunes.

Sections 31 (E1/2NE1/4), 32 (part of NW1/4)); Eastern Ridges and Lowlands.

Major Features: Ridge and swale topography formed by former Great Lakes levels, and paralleling the present Lake Michigan shoreline. Except for a strip of sand beach and low dunes, the 11 ridges and swales are forested with a variety of conifers and hardwoods, such as white pine, hemlock, white cedar and yellow birch. Some of the swales are open and wet year round. The beach and dunes are vegetated with a unique and specialized flora characteristic of undisturbed coastal beaches.

Size: 175 acres (70 ha).

Owner; Custodian: DNR; see area #24 for custodian's address.

Designation Date: February, 1971.

Management, Use Considerations: Management goals are to retain foot access into area, and keep the tract's secluded and semi-wild characteristics.

Interpretive & Research References: Hansen, 1949; Van Denack, 1961.

88 KETTLE MORaine FEN AND LOW PRAIRIE, WAUKESHA COUNTY

Location; Geographical Province: Two miles north of Eagle on Highway 67, then west on dead-end road to parking lot, walk west 1/4 mile to areas on north and south of lane (T5N R17E Section 9, within NE1/4); Eastern Ridges and Lowlands.

Major Features: A rich combination of low prairie, sedge meadow and fen located on the eastern edge of the huge Scuppernong Marsh. The many prairie and fen species, including a number considered to be threatened or endangered in the state, make this remnant a valuable research and class study area for many regional schools and Kettle Moraine Forest visitors.

Size: 50 acres (20 ha).

Owner; Custodian: DNR; see area #6 for custodian's address.

Designation Date: May, 1971.

Management, Use Considerations: Periodic fire management and manual removal of invading woody vegetation is necessary to maintain the open conditions.

89 WYALUSING WALNUT FOREST, GRANT COUNTY

Location; Geographical Province: Within Wyalusing State Park north

and west of the campground (T6N R6W Sections 17, 18), foot access by Immigrant Trail; Western Upland.

Major Features: North-facing slope overlooking the Wisconsin River, and containing two areas where black walnut trees contribute a significant amount to the forest canopy. A continuum of forest types—from the river to the vertical cliffs some 500 feet above—is the second major feature. The walnut forest occupies rich soil sites with red oak, basswood and elm. There is little walnut reproduction.

Size: 140 acres (56 ha).

Owner; Custodian: DNR; see area #5 for custodian's address.

Designation Date: May, 1971.

Management, Use Considerations: Only management consists of trail maintenance; no development is planned for area.

90 NEWPORT CONIFER-HARDWOODS, DOOR COUNTY

Location; Geographical Province: Within Newport State Park, via hiking trails to south from main parking lot (T32N R29E Sections 28 (within W½), 29 (within E½)); Eastern Ridges and Lowlands.

Major Features: The variety of forest types in this scientific area include 60 acres of northern mesic forest (sugar maple, beech, paper birch and ash), about 20 acres of hemlock-hardwood (hemlocks to 16" DBH), balsam fir-white cedar-spruce, and swamp hardwoods. Other features in the area are a former lake beach line marked by dolomite boulders, and a ¼ mile beach zone of present Lake Michigan.

Size: 140 acres (56 ha).

Owner; Custodian: DNR; contact Superintendent, Newport State Park, Ellison Bay 54210.

Designation Date: June, 1971.

Management, Use Considerations The forest is a recovery type from early logging and fire; park use is non-intensive, with hiking and a few wilderness camping sites adjacent to the scientific area.

91 HONEY CREEK NATURAL AREA, SAUK COUNTY

Location; Geographical Province: In south-central Sauk County, 14.3 miles west along CTH 'PF' from junction with Highway 12 near Prairie du Sac, then west ½ mile on Lins Road to area (T10N R4E Sections 11, 12, 14); Western Upland.

Major Features: Along the upper portion of the north branch of Honey Creek, this scientific area offers an extreme diversity of vegetation types within its limited acreage. Open water and creek areas, sedge meadow, cattail marsh, alder thicket, shrub-carr, conifer-hardwood swamp, lowland hardwood forest, hemlock-yellow birch cliff communities, upland oak forest and dry prairie remnants may all be found here. Nearly 500 plant species and 102 birds have been noted in the area.

Size: 130 acres (52 ha); 72-acre (29 ha) buffer zone.

Owner; Custodian: Wisconsin Society for Ornithology; contact Mr. Harold Kruse, Hickory Hill Farm, Loganville 53943.

History of Preservation; Designation Date: Purchased as a nature preserve by WSO; July, 1971.

Management, Use Considerations: Management is limited to fencing, trail maintenance and occasional removal of woody vegetation for safety; main uses are nature study, hiking, photography.

Interpretive & Research References: Tessen, 1976.

92 MISCAUNO CEDAR SWAMP, MARINETTE COUNTY

Location; Geographical Province: From junction of Highway 141 and CTH 'Z' in Village of Beecher in northeastern Marinette County, east on 'Z' 1½ miles, then south on access road ¼ mile to north edge of area (T36N R20E Sections 14, 23); Northern Highland.

Major Features: A large acreage white cedar swamp located at the headwaters of Miscauno Creek, a small trout stream. Timber type varies from nearly pure white cedar to mixtures of cedar, balsam fir and black spruce, with some black ash and elm. The area was logged in the late 1800's, but has retained its natural integrity. A rich area for mosses and lichens.

Size: 155 acres (62 ha); 480-acre (194 ha) buffer zone.

Owner; Custodian: DNR; contact Wildlife Manager, Industrial Parkway, Box 16, Marinette 54143.

History of Preservation; Designation Date: Purchased by DNR in 1946 to preserve deer cover; July, 1971.

Management, Use Considerations: Several forest plots have been fenced to exclude deer, and vegetation response is being monitored by Lake States Forest Experiment Station.

Interpretive & Research References: Foltz & Johnston, 1968; Johnston, 1972; Skilling, 1959.

93 MILWAUKEE RIVER AND SWAMP, FOND DU LAC COUNTY

Location; Geographical Province: Within Kettle Moraine State Forest, ¼ mile south of Mauthe Lake (T13N R19E Sections 13, 14), access best by boat on Milwaukee River or foot trail southeast of lake; Eastern Ridges and Lowlands.

Major Features: A ¾ mile stretch of the Milwaukee River with a succession of lowland vegetation types to the east of the river. Both swamp conifer (mainly white cedar, but including black spruce and tamarack) and lowland hardwood forest are present. Also within the scientific area are a large spring run 1,000 feet long, a small bog lake, and a well-developed shrub zone along the river.

Size: 230 acres (93 ha).

Owner; Custodian: DNR; see area #11 for custodian's address.

Designation Date: December, 1971.

Management, Use Considerations: The area is completely surrounded by state ownership and little used except for occasional canoe trips and hiking through trail in eastern portion.

94 SPRING LAKE, FOND DU LAC COUNTY

Location; Geographical Province: Within Kettle Moraine State Forest 4 miles east of Campbellsport (T13N R19E Sections 14, 15), foot access from north off access road to Lake Fifteen; Eastern Ridges and Lowlands.

Major Features: A 10-acre, alkaline bog lake with high transparency and a marl bottom. Many plant species typically found in acid bogs and calcareous fens occur together on the surrounding bog mat. Although the lake has a maximum depth of only 2 feet, a diverse fish population is reportedly present. East of the lake, the surrounding bog mat gives way to a tamarack forest, beyond which is a swamp forest of elm, yellow birch, red maple and tamarack.

Size: 47 acres (19 ha).

Owner; Custodian: DNR; see area #11 for custodian's address.

Designation Date: December, 1971.

Management, Use Considerations: Woody vegetation, including abundant poison sumac, adequately protects this area from all casual use. Access is quite easy and the area lends itself to botanical and zoological class use and research.

95 RENAK-POLAK MAPLE-BEECH WOODS, RACINE COUNTY

Location; Geographical Province: Five miles northwest of Racine, east of River Road, ¾ mile south of CTH 'G' (T4N R22E Section 14), foot trail right-of-way access into area from River Road; Eastern Ridges and Lowlands.

Major Features: A very rich southern mesic forest remnant on the east side of the Root River. The dominant forest trees are sugar maple, red oak, white ash, beech, and basswood. In spring, the ephemeral flora is striking and diverse in species. Though the topography is almost level, an intermittent stream runs diagonally through the tract.

Size: 46 acres (18 ha).

Owner; Custodian: University of Wisconsin-Parkside; contact Professor Eugene Gasioriewicz, Department of Life Sciences, Kenosha 53140.

History of Preservation; Designation Date: Acquired by The Nature Conservancy from the Renak and Polak families, who used the woods mainly as a firewood source and appreciated its beauty; transferred to UW-Parkside in 1973; February, 1972.

Management, Use Considerations: Permission for group visitation and research use must be secured from custodian prior to entry.

96 MUIR PARK NATURAL AREA, MARQUETTE COUNTY

Location; Geographical Province: In southern Marquette County on the east side of CTH 'F' about 9 miles south of Montello (T14N R9E Sections 14, 23); Central Plain.

Major Features: The scientific area consists of the 30-acre Ennis Lake, a small fen on the west side, and mosaic of vegetation types (low prairie, tamarack, sedge meadow, shrub-carr) on the north and east shores. The lake occupies a marshy pocket in the ground moraine, and has spring and seepage-fed water contributing to its high water clarity. A large number of rare native species may be found in the wetland communities adjacent to the lake.

Size: 65 acres (26 ha); 70-acre (28 ha) buffer zone.

Owner; Custodian: Marquette County; contact County Agricultural Agent, Marquette County Courthouse, Montello 53949.

History of Preservation; Designation Date: The land was purchased by Marquette County to honor naturalist John Muir, whose boyhood home was nearby; March, 1972.

Management, Use Considerations: Park development is limited to the lake's west side. Motorboats are prohibited on the small lake, which has been chemically treated.

Interpretive & Research References: Iltis, 1957.

Western Upland.

Major Features: A small wooded valley opening onto Devil's Lake in which several springs form the headwaters of Messenger Creek. Many uncommon plant species are present along the cool rocky stream, which is shaded by sugar maple, red oak and yellow birch. The ancient valley was cut into the Baraboo quartzite and later partially covered with sandstone sediments. The valley is rich in breeding birds.

Size: 40 acres (16 ha).

Owner; Custodian: DNR; see area #1 for custodian's address.

Designation Date: March, 1972.

Interpretive & Research References: Dalziel & Dott, 1970.

99 KARCHER SPRINGS, RACINE COUNTY

Location; Geographical Province: Four miles south of Burlington, just north of the Kenosha County line (T2N R19E Section 21, within SE¼); Eastern Ridges and Lowlands.

Major Features: A wooded, curving esker forms the point of origin of Karcher Creek, which flows southeast into Kenosha County. A calcareous habitat prevails along the stream's boggy banks, with fen and sedge meadow plants dominating on both sides. While the springs and stream are not considered trout habitat, the water is cold, fast-running, clear, is not disturbed in its upper reaches. Disturbed sedge meadow and overgrown low prairie are found adjacent to the stream.

Size: 32 acres (12 ha).

Owner; Custodian: DNR; see area #53 for custodian's address.

Designation Date: May, 1972.

Management, Use Considerations: Fire management should be used periodically to restore sedge meadow-prairie communities, and enhance game habitat in this wildlife area.

100 FOUNTAIN CREEK PRAIRIE, GREEN LAKE COUNTY

Location; Geographical Province: In southwestern Green Lake County two miles east of the Marquette County line, on the east side of Belle Fountain Creek, north of CTH "B" (T14N R11E Sections 8, 17); Central Plain.

Major Features: Wet prairie composed of cordgrass, big and little bluestem, bluejoint, marsh timothy, plus a variety of forbs. Slight rises in the generally flat topography contain a number of characteristic fen species, such as valerian and Riddell's goldenrod. Prairie grades into a pure cordgrass stand to the north, with the Grand River Flowage beyond.

Size: 50 acres (20 ha).

Owner; Custodian: DNR; contact Wildlife Manager, Ranger Station, Box 400, Wautoma 54982.

History of Preservation; Designation Date: Land ownership was divided into many small parcels prior to state acquisition, indicating use as a mowing meadow; May, 1972.

Management, Use Considerations: Periodic fire management is needed to control invading woody plants and to provide prairie nesting cover for waterfowl on Grand River Marsh Wildlife Area adjacent to north.

101 TELLOCK'S HILL WOODS, WAUPACA COUNTY

Location; Geographical Province: Six miles southeast of Clintonville, one mile east of the junction of CTH's 'O' and 'OO' off Tellock Road (T24N R13E Section 13, within SE¼NE¼); Central Plain.

Major Features: Old-growth northern mesic forest composed of sugar maple, American beech, basswood, and hemlock. The woods is situated on the north-facing slope of an east-west ridge described as a drumlin by early geologists, but with an unusual sandstone core that is exposed in a deep ravine. Many glacial erratics—some as large as 12 feet in diameter—occur on the forest floor.

97 PINE GLEN, SAUK COUNTY

Location; Geographical Province: Located in the southwest corner of Devil's Lake State Park (T11N R6E Section 35), south 1-3/4 miles on old Highway 12 from South Shore Road, then west by foot into glen; Western Upland.

Major Features: A deep and spectacular wooded gorge in the south flank of the Baraboo Hills termed by geologists as a narrow gorge incised in a broad hanging valley. Unlike many similar gorges in the region, it lacks younger sediments over the quartzite. An intermittent stream flows through the glen, which contains many large white pines, sugar maple, yellow birch, red oak, and basswood. Cold air drainage into the glen allows a number of northern species to exist here.

Size: 120 acres (48 ha); 40-acre (16 ha) buffer zone.

Owner; Custodian: DNR; see area #1 for custodian's address.

Designation Date: March, 1972.

Management, Use Considerations: Tract is removed from the park's high use areas, and is ideal for nature study, bird watching, etc.

Interpretive & Research References: Dalziel & Dott, 1970.

98 KOSHAWAGO SPRINGS, SAUK COUNTY

Location; Geographical Province: At the southwest side of Devil's Lake within the state park (T11N R6E Section 23, within SE¼), follow Messenger Creek upstream from where it crosses South Shore Road;

Size: 32 acres (12 ha).

Owner; Custodian: DNR; contact Forester, Box 169, Waupaca 54981.

History of Preservation; Designation Date: In 1972, this area became the first to be acquired with the DNR's scientific areas acquisition budget; October, 1972.

Management, Use Considerations: Only a fraction of the contiguous woodland on the hill has been purchased for preservation, and additional acquisition is desired to insure the long-term protection of this fine woodland.

102 SPRING GREEN RESERVE, SAUK COUNTY

Location; Geographical Province: One mile north of the Village of Spring Green, north of Jones Road on the south-facing valley slope of the Wisconsin River (T8-9N R4E Sections 5, 32); Western Upland.

Major Features: Limestone bluffs grading to sandy plain of the Wisconsin River on the exposed south-facing valley edge. Sand prairie, blow-outs, and oak barrens occur at the bluff bases, and the area is known for its diverse and unusual fauna.

Size: 140 acres (56 ha); 100-acre (40 ha) buffer zone.

Owner; Custodian: The Nature Conservancy; contact Mr. Frank Terbilcox, Route 1, Baraboo 53913.

History of Preservation; Designation Date: This joint project of the Head Foundation and The Nature Conservancy started in the late 1960's, and acquisition is only partly completed for the entire reserve; October, 1972.

Management, Use Considerations: An abandoned turkey farm with its assorted debris, offers habitat for the reptiles; due to the large amount of ongoing research, visits and use should be cleared with custodian.

Interpretive & Research References: Cormons, 1971; Lange, 1974.

103 WASHBURN COUNTY PINES, WASHBURN COUNTY

Location; Geographical Province: Ten miles north of Spooner and one mile east of CTH 'K' on Pierce Road (T40N R12W Sections 4 (SW $\frac{1}{4}$ SW $\frac{1}{4}$), 5 (SE $\frac{1}{4}$ SE $\frac{1}{4}$), 9 (NW $\frac{1}{4}$ NW $\frac{1}{4}$)), walk north $\frac{1}{4}$ mile from Pierce Road into area; Northern Highland.

Major Features: Seven acres of old-growth red pine (commonly to 24" DBH), with occasional white pine and mixed pine over another twelve acres, are the main features. The remaining land is dominated by second-growth white cedar swamp. A great blue heron rookery, said to have been occupied for over 20 years, has recently been abandoned.

Size: 120 acres (48 ha).

Owner; Custodian: DNR; contact Northwest District Headquarters, Box 309, Spooner 54801.

History of Preservation; Designation Date: Purchased in 1973 by the DNR for scientific area purposes from State Trust Lands; March, 1973.

Management, Use Considerations: The tract does not have access onto a town road, and users must cross $\frac{1}{4}$ mile of private land to reach the south boundary.

104 DUNBAR SHARPTAIL BARRENS, MARINETTE COUNTY

Location; Geographical Province: Located in northwestern Marinette County two miles west of the Junction of CTH 'U' and Highway 8 (T37N R18E Section 21, within W $\frac{1}{2}$), unimproved road access north from Highway 8; Northern Highland.

Major Features: The scientific area is a portion of a large opening of nearly 1,000 acres located on a pitted outwash plain. Aspen, oak, and jack pine comprise the forest trees on the surrounding gently rolling topography. The dominant herbaceous vegetation on the strongly podzolized, sterile sandy soils is xeric in nature, consisting of strongly rhizomatous grasses and

sedges. The barrens offer broad, sweeping vistas and panoramas.

Size: 240 acres (97 ha).

Owner; Custodian: DNR (leased); see area #37 for custodian's address.

History of Preservation; Designation Date: Area logged in the late 1800's, grazed years ago under the ownership of Kohler (hence the local name of Kohler Flats), with periodic fire aiding in maintaining the barrens aspect; April 1973.

Management, Use Considerations: Management for sharp-tailed grouse has necessitated the periodic use of fire, which promotes the barrens community.

Interpretive & Research References: Vogl, 1964b.

105 NATURAL BRIDGE AND ROCKSHELTER, SAUK COUNTY

Location; Geographical Province: Ten miles northwest of Prairie du Sac-Sauk City, along CTH 'C' west from Highway 12 (T10N R5E Section 17), foot trail from highway into area; Western Upland.

Major Features: The largest natural bridge in Wisconsin, carved by wind erosion and weathering of the sandstone. The arch measures 25 feet wide and 15 feet tall on its inside dimensions, and the top stands 35 feet above ground level. At the base of the natural bridge is the rockshelter, some 60 feet in width and with a maximum depth of 30 feet. Excavations in 1955 found artifacts and animal remains dating back to 8,000-9,000 BC, the time of earliest inhabitation.

Size: 60 acres (24 ha); 40-acre (16 ha) buffer zone.

Owner, Custodian: DNR; contact Superintendent, Natural Bridge State Park, Route 4, Box 36, Baraboo 53913.

History of Preservation; Designation Date: Over 500 acres were purchased by the DNR in 1972 to be managed as a limited development state park; April, 1973.

Management, Use Considerations: Hiking trail with interpretive features makes access easy.

Interpretive & Research References: Black, 1959; Parmalee, 1959; Wittry, 1959a, 1959b.

106 PEAT LAKE, KENOSHA COUNTY

Location; Geographical Province: Immediately north of the Illinois state line and one mile southeast of Wilmot (T1N R20E Section 32), access from southeast of lake through Illinois; Eastern Ridges and Lowlands.

Major Features: Shallow, slightly alkaline lake about 12 acres in size, located in ground moraine. The muck-bottom lake is surrounded by a wide belt of sedge meadow and cattail marsh, making it a valuable nesting and resting area for a variety of wetland bird species. This is one of the few undeveloped lakes in Kenosha County which is isolated from roads and homes.

Size: 116 acres (46 ha); 55-acre (22 ha) buffer zone.

Owner; Custodian: DNR; see area #53 for custodian's address.

History of Preservation; Designation Date: Donated in 1972 by the James Anderson family to The Nature Conservancy, which deeded the tract to the DNR to be used as a wildlife area; May 1973.

Management, Use Considerations: Land surrounding the lake is recovering from long-term grazing terminated in 1973; closed to hunting.

107 JOHNSON LAKE BARRENS, VILAS COUNTY

Location; Geographical Province: Six miles east of Boulder Junction, bounded on the west by Johnson Lake-Garland Creek and on the south by Siphon Creek (T42N R8E Sections 8, 9), access from north on woods roads; Northern Highland.

Major Features: Open communities of pine barrens and bracken grassland on a sandy outwash plain. One of the largest "barrens" remaining in the north-central region, most others having converted to forest either

successionally or through planting. Dominant trees scattered across the barrens are jack pine, Hill's oak and aspen; the groundlayer is dominated by sweet fern, blueberry, poverty oat grass, and barrens strawberry.

Size: 105 acres (42 ha).

Owner; Custodian: DNR; see area #21 for custodian's address.

History of Preservation; Designation Date: The barrens is a semi-natural community resulting from removal of the presettlement forest cover, followed by fire. Natural revegetation to forest is extremely slow and results in barrens type; September, 1973.

Management, Use Considerations: Periodic fire maintenance will be necessary to retain barrens characteristics, with its high wildlife value.

Interpretive & Research References: Dawes & Maravolo, 1973; Levy, 1970; Vogl, 1964b.

108 ESCANABA LAKE HEMLOCKS, VILAS COUNTY

Location; Geographical Province: Within Northern Highland State Forest on the southeast side of Escanaba Lake (T41N R7E Sections 1, 2), best access is by boat from public landing on Escanaba Lake; Northern Highland.

Major Features: A 25-acre "island" of old-growth hemlock forest surrounded on three sides by swamp conifer forest of balsam fir, black spruce, and tamarack. Hemlocks range in size from 12-24" DBH, and while there are no trees less than 4" DBH, recent sapling reproduction up to 2 feet tall is present. Other dominant canopy trees include yellow birch and paper birch. Large white pine are also present, but most were removed by early logging.

Size: 130 acres (52 ha).

Owner; Custodian: DNR; see area #21 for custodian's address.

Designation Date: September, 1973.

109 DELLS OF THE EAU CLAIRE RIVER, MARATHON COUNTY

Location; Geographical Province: Within county park 15 miles east of Wausau, 1½ miles north of CTH 'Z' on CTH 'Y' (T29N R10E Section 7, within SW¼ south of river); Northern Highland.

Major Features: The scientific area on the south bank includes about 1,000 feet of the Eau Claire River where it cascades over the very resistant metamorphic bedrock (rhyolite schist). In this dalles, the bedrock has been tilted to a near vertical position, and the river cuts across the rock's cleavage planes. The rocky gorge and adjacent land to the south are wooded with sugar maple, hemlock, yellow birch and mountain maple. Canada yew is abundant in dense patches.

Size: 40 acres (16 ha).

Owner; Custodian: Marathon County; contact Marathon County Parks Department, Courthouse, Wausau 54401.

Designation Date: October, 1973.

Management, Use Considerations: The park is managed for a variety of recreational pursuits, and receives an intense amount of seasonal use. Hiking trails run through woods and along river.

Interpretive & Research References: Thresher, 1974; Weidman, 1907.

110 JACKSON HARBOR, DOOR COUNTY

Location; Geographical Province: On the northeast side of Washington Island, south of the developed harbor at Jackson Harbor (T34N R30E Section 28, within N½SE¼); Eastern Ridges and Lowlands.

Major Features: Wet, calcareous, sandy beach and swales, plus low dunes landward, harbor an outstanding diversity of rare and restricted plants of coastal areas, such as bird's-eye primrose and dwarf lake iris. Behind the dunes is a mixed conifer-hardwood forest with red and white pine, white cedar, balsam fir, and American beech. The transition from Lake Michigan beach through dunes to forest over a distance of only 300

feet in part accounts for the great species diversity the area possesses.

Size: 27 acres (10 ha).

Owner; Custodian: Washington Island Township; contact Naturalist, Center for Creative Arts and Nature Study, Washington Island 54246.

History of Preservation; Designation Date: Purchased by the township for preservation purposes in 1973; October, 1973.

Management, Use Considerations: Washington Island Center for Creative Arts and Nature Study at Washington Island employs a naturalist-caretaker who leads interpretive tours of the area throughout the summer.

Interpretive & Research References: Erickson, 1971.

111 BEAN LAKE, JEFFERSON COUNTY

Location; Geographical Province: Two miles southwest of Lake Mills, ½ mile east of CTH 'S' off dead-end access road (T7N R13E Section 22, center); Eastern Ridges and Lowlands.

Major Features: An alkaline seepage lake in a wild setting of extensive swampland on all but the west side. The lake's shoreline consists of a narrow zone of swamp loosestrife, sedge and bulrush. One of the interesting features of the lake is its paucity of aquatic macrophytes, despite its common use by nesting and migrating waterfowl. An upland island wooded with basswood, oaks, and ash, and with yellow birch nearby, occurs in the swamp's northeast portion.

Size: 120 acres (48 ha).

Owner; Custodian: DNR; see area #63 for custodian's address.

Designation Date: December, 1973

Management, Use Considerations: Lake is open to waterfowl hunting and fishing.

112 MUSKEGO PARK HARDWOODS, WAUKESHA COUNTY

Location; Geographical Province: Within the corporate limits of the City of Muskego, one mile west of CTH 'Y' on Highway 24 (T5N R20E Section 17, within E½NW¼); Eastern Ridges and Lowlands.

Major Features: Primarily an upland forest on a gentle southeast slope, dominated by oaks but containing a variety of dry to mesic canopy trees. The spring flora is exceptionally rich; more than 100 species of plants occur in the woods. Of particular interest is the presence of Kentucky coffee tree and blue ash. Two small upland pools occur in the woods. High populations of several native plants common to grazed sides suggest some pasturing in former years, but the woods has retained its natural integrity.

Size: 60 acres (24 ha).

Owner; Custodian: Waukesha County; contact County Naturalist, Retzer Nature Center, W284- S1530, Waukesha 53186.

Designation Date: December, 1973.

Management, Use Considerations: Hiking trails run through woods, and interpretive brochures are available through the Waukesha County Naturalist (see address above.).

Interpretive & Research References: Schwarzmeier, 1975.

113 NEWARK ROAD PRAIRIE, ROCK COUNTY

Location; Geographical Province: Located about 5 miles northwest of downtown Beloit, 2½ miles west of Highway 213 and ½ mile east of the Smythe School Road on Newark Road (T1N R11E Section 13, within SE¼SW¼); Western Upland.

Major Features: Remnant low prairie crossed by a moisture gradient which has resulted in a mesic situation on the west and wet prairie-sedge meadow on the east. Dominant grasses include cordgrass-bluejoint in the wetter portions, and big and little bluestem, Indian grass and switchgrass on the more mesic sites. Of special significance is the presence of several rare and unusual prairie forbs.

Size: 23 acres (9 ha).

Owner; Custodian: The Nature Conservancy; contact Dr. Richard Newsome, Department of Biology, Beloit College, Beloit 53511.

History of Preservation; Designation Date: Discovered through a natural area inventory of Rock County in the late 1960's, which was followed by Nature Conservancy acquisition in 1973; January, 1974.

Management, Use Considerations: Occasional burning and manual shrub removal is necessary to keep prairie open.

Interpretive & Research References: Tans, 1974.

114 WAUBESA WETLANDS, DANE COUNTY

Location; Geographical Province: South of Madison on the southwest corner of Lake Waubesa (T6N R10E Sections 7, 18), access by water or from Lalor Road; Eastern Ridges and Lowlands.

Major Features: The scientific area is part of a 350-acre wetland adjoining Lake Waubesa. Many springs and spring runs occur throughout, especially at the marsh edge, and feed Swan and Murphy's Creeks. Most of the wetland is southern sedge meadow, with emergent aquatic and fen species also common. A great diversity of waterfowl utilize the marsh, which is also a valuable fish spawning portion of Lake Waubesa.

Size: 129 acres (52 ha).

Owner; Custodian: DNR; contact Wildlife Manager, Madison Area Headquarters, Route 4, Madison 53711.

History of Preservation; Designation Date: Donated to the DNR by two landowners over the past few years. Adjacent land is owned by The Nature Conservancy through recent purchase and donation; March, 1974.

Management, Use Considerations: Closed to hunting via land access; best access is by canoe.

Interpretive & Research References: Bedford et al., 1975.

115 GOBLER LAKE, ONEIDA COUNTY

Location; Geographical Province: In western Oneida County about 25 miles west of Rhinelander, just north of Burrows Lake Road (T36N R5E Sections 5 (N½), 6 (east of Little Rice River); Northern Highland.

Major Features: Extensive and desolate-appearing muskeg dominated by sedges, sphagnum and scattered stunted black spruce, tamarack and white pine. Gobler Lake, a 20-acre, slightly acidic lake, lies on the southern edge of the muskeg, just north of a spectacular esker. Burrows Lake Road runs along the top of this glacial feature. Several small islands in the muskeg are forested with red pine.

Size: 470 acres (190 ha).

Owner; Custodian: Oneida County; County Forest Administrator, P.O. Box 400, Rhinelander 54501.

Designation Date: July, 1974.

Management, Use Considerations: A good view of the lake and muskeg is available from the esker, but there is no trail or boardwalk into the area itself.

116 DORY'S BOG, WASHBURN COUNTY

Location; Geographical Province: Five miles east of Sarona, ½ mile east of CTH 'M' on the north side of Bogvill Road (T38N R11W Section 34); Central Plain.

Major Features: Small bog lake containing good examples of successional stages, including a floating sedge mat, ericaceous shrub zone, tamarack-black spruce forest and a wet forest of red maple, white birch and white pine. More than 40 bird species have been noted in the bog area during summer months.

Size: 40 acres (16 ha).

Owner; Custodian: National Audubon Society; contact Mr. Edward Brigham III, North Midwest Representative, Audubon Society, Route 4, Red Wing, Minnesota 55066.

Designation Date: July, 1974.

Management, Use Considerations: Used by Hunt Hill Audubon Camp as a teaching area; boardwalk has been constructed into the bog. Non-Audubon Camp use should be coordinated with camp director at camp two miles to west.

Interpretive & Research References: Sordahl, 1973.

117 SCOTT LAKE-SHELP LAKE NATURAL AREA, FOREST COUNTY

Location; Geographical Province: Eight miles east of the Village of Three Lakes, one and a half miles east of Oneida County line (T38N R12E Section 17), access from Forest Road 2183; Northern Highland.

Major Features: Two boggy drainage lakes possessing wilderness characteristics. Old growth hemlock and pine are found on the west shore of Shelp Lake and between the two lakes. Fir-spruce, mixed conifer swamp, and lowland brush provide a diversity of vegetation types.

Size: 272 acres (110 ha).

Owner; Custodian: U.S. Forest Service; contact Forest Supervisor, Nicolet National Forest, Rhinelander 54501.

Designation Date: October, 1974.

Management, Use Considerations: A boardwalk has been constructed to Shelp Lake to facilitate walking access through the boggy swamp forest; beaver activity along the outlet has caused some water level changes.

118 GIANT WHITE PINE GROVE, FOREST COUNTY

Location; Geographical Province: Nine miles east of the Village of Three Lakes and one mile east of Woodbury Lake (T38N R12E Section 10,



The pitcher plant (*Sarracenia purpurea*)—a fascinating species which traps insects in its unique, hollow leaves at the plant's base—may be seen in profusion in a number of bog and fen scientific areas throughout the state.

within N½ NW¼); walking access only north from Forest Road 2414; Northern Highland.

Major Features: Sugar maple-hemlock forest overtopped by very large white pines. The pines are in the 30-36" DBH size class, and have a density in the tract of 10-20 trees per acre. Heavy deer use has speeded up conversion of the understory to maple, and past cutting has been designed to spare the pines.

Size: 30 acres (12 ha); 205-acre (82 ha) buffer zone.

Owner; Custodian: U.S. Forest Service; see area #117 for custodian's address.

Designation Date: October, 1974.

Management, Use Considerations: There are plans to develop nature interpretation hiking trails in the future, but protect the forest type as it is.

119 BOSE LAKE HEMLOCK-HARDWOODS, FOREST COUNTY

Location; Geographical Province: Thirteen miles east of Eagle River in northwestern Forest County between McKinley and Bose Lakes (T40N R12E Section 22, within SE¼); Northern Highland.

Major Features: An original stand of old-growth hemlock, sugar maple, basswood and yellow birch, with no evidence of cutting or other disturbance. The forest floor has an accumulation of fallen trees and many cradle knolls. Hemlock reproduction is evident on the stand margins and along the shores of Bose and McKinley Lakes. Due to the surrounding lakes and swamp, the site was protected from fires.

Size: 25 acres (10 ha); 23-acre (9 ha) buffer zone.

Owner; Custodian: U.S. Forest Service; see area #117 for custodian's address.

History of Preservation; Designation Date: This tract has been reserved from cutting by the Forest Service for many years; October, 1974.

Management, Use Considerations: Continue preservation of this old-growth type in an unaltered condition.

120 CHERRY LAKE SEDGE MEADOW, RACINE COUNTY

Location; Geographical Province: One mile south of Rochester on CTH 'W', and ½ mile west-southwest of Honey Creek Wildlife Area parking lot (T3N R19E Sections 10, 15); Eastern Ridges and Lowlands.

Major Features: Located in a serpentine basin in glacial till, Cherry Lake is really a deep sedge bog with irregular openings of water. The sedge meadow contains a diverse complement of both alkaline and acid-loving plants, and affords nesting and escape cover for waterfowl. A north-south trending esker more than one mile in length lies within the west edge of the area.

Size: 80 acres (32 ha).

Owner; Custodian: DNR; see area #53 for custodian's address.

Designation Date: January, 1975.

Management, Use Considerations: Within high public use wildlife area with seasonal hunting, thus there is a potential problem of overuse.

121 PLAGGE WOODS, CHIPPEWA COUNTY

Location; Geographical Province: Seven and a half miles north of Cornell, three miles north of CTH 'M' and one mile south of Rusk County line (T32N R7W Section 11, N½ NE¼); Northern Highland.

Major Features: An old-growth forest located on the southeastern edge of Flambeau Ridge, a quartzite monadnock. The area straddles the top of the ridge, giving it both northern and southern exposures, each with a slightly different species composition. The dominant trees are sugar maple, basswood, red oak, white oak, and occasional hemlock and white pine. Canopy trees range mostly 24-30 inches in diameter.

Size: 80 acres (32 ha).



R. Read

A recent scientific area acquisition in the rugged kettle moraine topography is Beulah Bog, one of southern Wisconsin's finest bog lakes. A treacherous natural moat on the bog's periphery and quaking moss mat makes visitation difficult (Walworth County; scientific area 122).

Owner; Custodian: DNR; contact Superintendent, Brunet Island State Park, Route 2, Box 67, Cornell 54732.

History of Preservation; Designation Date: Donated for preservation to the state in 1973 by long-time owners August and Henry Plagge; May, 1975.

Management, Use Considerations: A deed restriction stipulates that no timber be cut and the area be used for scientific and recreational purposes.

122 BEULAH BOG, WALWORTH COUNTY

Location; Geographical Province: Two and a half miles north of East Troy, just north of the west end of Lake Beulah (T4N R18E Sections 7, 8); Eastern Ridges and Lowlands.

Major Features: One of the best remaining bogs in southern Wisconsin, occupying a series of kettle holes in the Kettle Moraine region of Wisconsin. It possesses classical successional stages from open water to tamarack forest, and has the aspect of a northern bog, including a large number of plants reaching their southern limits here. Around the bog's periphery is a treacherous moat.

Size: 64 acres (25 ha).

Owner; Custodian: DNR; see area #53 for custodian's address.

History of Preservation; Designation Date: Purchased as a state scientific area in 1975 with advance acquisition by The Nature Conservancy; June, 1975.

Management, Use Considerations: Since the sphagnum mat is quaking and susceptible to breakthrough, the area cannot tolerate intensive use, and large group visitation is discouraged.

Interpretive & Research References: Read, 1975.

123 COMSTOCK MARSH, MARQUETTE COUNTY

Location; Geographical Province: Six miles north of Montello and two miles southwest of Germania (T16N R10E Sections 10, 11, 14, 15); Central Plain.

Major Features: An extensive wetland complex lying in a shallow basin of about 1,000 acres in size. The south end of the basin lies on a drainage divide and is a quaking sedge bog. Northward the species composition

changes to more closely resemble a sedge meadow. Sandhill cranes nest in the marsh, and during migration others seek temporary refuge there.

Size: 240 acres (97 ha).

Owner; Custodian: DNR, see area #100 for custodian's address.

History of Preservation; Designation Date: Purchased in early 1975 by The Nature Conservancy as an advance acquisition for the DNR's scientific area system; June, 1975.

Management, Use Considerations: Management goal is to retain the marsh in its natural condition without manipulation; lack of boardwalk trails makes walking on marsh difficult and sometimes treacherous.

Interpretive & Research References: Tans, 1975.

124 MOOSE LAKE HEMLOCKS, IRON COUNTY

Location; Geographical Province: Seven miles northwest of Mercer, one mile south of Moose Lake, on the west side (and adjacent to) Moose Creek (T43N R2E Section 11, SE¼SW¼); Northern Highland.

Major Features: Unaltered old-growth hemlock, yellow birch and red elm forest surrounded by industrial forest. The tall canopy, old-growth aspect and the scattered decomposing trees strewn on the forest floor give the tract a magnificent virgin appearance. Dominant trees are in the 22-28 inch diameter class. Ground flora is representative of northern mesic-boreal element.

Size: 40 acres (16 ha).

Owner; Custodian: DNR; contact the Forester, Ranger Station, Mercer 54547.

History of Preservation; Designation Date: Prior to DNR acquisition in 1975, the tract was owned by State Division of Trust Lands and Investments; July, 1975.

Management, Use Considerations: Natural forest dynamics are to be allowed to continue on the tract, without stand improvement or salvage cutting.

125 MUD LAKE, DOOR COUNTY

Location; Geographical Province: Three miles north of Bailey's Harbor, north of Moonlight (Mud) Bay (T30-31N R28E Sections 3, 4, 28, 33, 34); Eastern Ridges and Lowlands.

Major Features: An estuarine lake connected to Moonlight Bay and Lake Michigan to the south. The spring-fed lake is surrounded by an extensive shrub and timber swamp, giving the area an outstanding wilderness character. Waterfowl and fish spawning use of the lake and wetlands is heavy. Periodic, natural fluctuation of Lake Michigan changes the vegetative composition of the wetland.

Size: 1,060 acres (428 ha).

Owner; Custodian: DNR; see area #47 for custodian's address.

Designation Date: September, 1975.

Management, Use Considerations: In 1974, 960 acres surrounding Mud Lake were established as a National Natural Landmark by the National Park Service.

126 BEAR CREEK CAVE, SAUK COUNTY

Location; Geographical Province: Six miles northwest of Plain along CTH 'G' (T10N R3E Section 3), access strictly controlled; Western Upland.

Major Features: With about 950 feet of passages, Bear Creek Cave is the state's ninth largest cave and is one of the better decorated (that is, containing natural mineral formations). The cave is formed in Prairie du Chien Dolomite, one of only three caves in the state found in this formation.

Size: 45 surface acres (18 ha).

Owner; Custodian: The Nature Conservancy; contact Director, University of Wisconsin Zoology Museum, Birge Hall, UW-Madison 53706.

History of Preservation; Designation Date: The cave was opened by

quarrying operations in 1954, and later, when the cave was threatened by blasting operations, The Nature Conservancy purchased it at the request of the Wisconsin Speleological Society and UW-Zoology and Geology Departments; September, 1975.

Management, Use Considerations: Access is controlled by gated entrance; only one or two explorations of the cave are made each year.

Interpretive & Research References: Ehr, 1976.

127 AURORA LAKE, VILAS COUNTY

Location; Geographical Province: In south-central Vilas County, two miles north of Sayner (T41N R8E Sections 18, 19), access road on east side of lake; Northern Highland.

Major Features: Fertile drainage lake with slightly acidic, light brown water. Depth is 4 feet, and muck in the primary bottom substrate. Dense stands of wild rice dominate the shallow lake and numerous submersed and emergent aquatic species occur. Surrounding forest land consists of tamarack-black spruce swamp forest and second-growth hardwood forest dominated by paper birch.

Size: 250 acres (101 ha).

Owner; Custodian: DNR; see area #21 for custodian's address.

Designation Date: April, 1976.

Management, Use Considerations: Manual wild rice harvest is compatible.

128 OTTAWA LAKE FEN, WAUKESHA COUNTY

Location; Geographical Province: On the north side of Ottawa Lake four miles north of Eagle (T6N R17E Section 34, within W½ NW¼); Eastern Ridges and Lowlands.

Major Features: Ottawa Lake Fen, situated in the Kettle Moraine region, consists of a deep marsh, bubbling and seepage springs, and unique marl flats along the north edge of Ottawa Lake. Of particular interest on the marl flats are a number of calcareous-loving plants, plus some acid bog plants such as pitcher plant, all growing together in an unusual association. The lake and marsh are rich in animal life, and are good bird observation areas.

Size: 50 acres (20 ha); 6-acre (2 ha) buffer zone.

Owner; Custodian: DNR; see area #6 for custodian's address.

Designation Date: April, 1976.

Management, Use Considerations: A boardwalk on the northwest side, with canoe access from the lake, and a bird observation tower on the northeast side, allow easy viewing of the marl flats.

Interpretive & Research References: Tans & Read, 1975.

129 JUNG HEMLOCK-BEECH FOREST, SHAWANO COUNTY

Location; Geographical Province: Two miles south of Gresham, ¼ mile east of CTH 'U' on town road one mile south of CTH 'A' (T27N R14E Section 23, E½ NW¼); Central Plain.

Major Features: Among the best remaining examples of a northern mesic forest which once covered millions of acres in presettlement Wisconsin. The old-growth forest is composed of hemlock, American beech and sugar maple, with yellow birch and clusters of white pine. Hemlock regeneration is present under the closed canopy.

Size: 80 acres (32 ha).

Owner; Custodian: DNR; contact Forester, Courthouse, Shawano 54166.

History of Preservation; Designation Date: Formerly owned by Albert Jung family, who preserved it through many generations prior to The Nature Conservancy's acquisition at auction in January, 1976, as an advance purchase for the DNR's scientific area system; May, 1976.

Management, Use Considerations: The forest will be allowed to remain in its natural condition.

130 CHEROKEE MARSH, DANE COUNTY

Location; Geographical Province: On the northeast side of Madison, north and west of CTH 'CV' (T8N R10E Sections 7, 8, 17, 18), access difficult due to ditches and adjacent private property; Eastern Ridges and Lowlands.

Major Features: The scientific area is part of a 2,000-acre wetland complex lying east of the Yahara River. Due to subsurface water upwelling and species composition, much of the marsh can be called a fen although it contains species of low prairies, shrub-carries, bogs and sedge meadows.

Size: 130 acres (52 ha).

Owner; Custodian: City of Madison; contact Madison City Parks and Recreation Department, 704 East Gorham Street, Madison 53703.

Designation Date: May, 1976.

Management, Use Considerations: Ditching of portions of the marsh has probably had a minimum effect due to high water table; management of shrubs in some portions with periodic burning desirable.

131 POWERS BLUFF MAPLE WOODS, WOOD COUNTY

Location; Geographical Province: One mile southeast of Bethel, on town road one mile south of CTH 'N' (T24N R4E Section 30, E½ SE¼), along east border of the park; Northern Highland.

Major Features: Located on the north slope of a Precambrian quartzite monadnock, the maple woods is a good regional representative of southern mesic woods. Dominant tree species include sugar maple, yellow birch, basswood and red oak. From the top of this peak, which was scraped, but not leveled by glacial ice, the Marshville-Neillsville Moraine is visible to the north, and the basin of Glacial Lake Wisconsin can be seen to the south.

Size: 70 acres (28 ha).

Owner; Custodian: Wood County; contact County Parks Department, Courthouse, 400 Market Street, Wisconsin Rapids 54494.

Designation Date: March, 1977.

Management, Use Considerations: The woods is not old growth, and has been selectively logged until recently. However, a good canopy and flora remain. A hiking trail runs through a portion of the woods.

Interpretive & Research References: Thresher, 1974; Weidman, 1907.

132 YOUNG PRAIRIE, WALWORTH COUNTY

Location; Geographical Province: Five miles east of Whitewater, off Bluff Road ½ mile south of County Line Road (T4N R16E Section 5, within NW¼); Eastern Ridges and Lowlands.

Major Features: Approximately 25 acres of wet-mesic prairie of high quality, plus 20 acres of old field reverting to prairie. A small stream and associated wetland vegetation of 10 acres are located in the northeastern section of the tract. Over 80 species of native plants have been found in a preliminary inventory of the prairie, including a number considered endangered or threatened in the state.

Size: 52.6 acres (21 ha).

Owner; Custodian: DNR; see area #6 for custodian's address.

History of Preservation; Designation Date: Donated to the state in October, 1976 in memory of Irvin L. Young; March, 1977.

Management, Use Considerations: Accepted by the state to be maintained in its natural condition as a state scientific area. Periodic fire management is necessary.

133 GULLICKSON'S GLEN, JACKSON COUNTY

Location; Geographical Province: Six miles southwest of Black River Falls, on CTH 'X' two miles south of junction with CTH 'C' (T20N R5W Section 5); Western Upland.

Major Features: Wooded gorge cut about 40 feet deep by Trout Run Creek through soft sandstone, forming steep banks, cliffs, and overhangs. Under the main overhang numerous prehistoric carvings in the soft stone can be seen; these petroglyphs depict deer, birds, elk, fish, and a person. The site has been fully excavated by archeologists. Other features include the pine-oak-maple-butternut forest and a clear stream in the gorge floor.

Size: 4 acres (1.6 ha).

Owner; Custodian: DNR; see area #16 for custodian's address.

History of Preservation; Designation Date: Donated in 1958 by the late Florence Gullickson to the Jackson County Historical Society; deeded to the DNR in 1976 as a scientific area; October, 1976.

Management, Use Considerations: Natural erosion of overhang surfaces and vandalism of the petroglyphs threaten their preservation; steep-sided glen is very fragile.

Interpretive & Research References: Bayer, 1971; Ritzenthaler, 1950.

134 PUTNAM PARK, EAU CLAIRE COUNTY

Location; Geographical Province: Within the City of Eau Claire on the campus of UW-Eau Claire, on the south bank of the Chippewa River (T27N R9W Sections 28-30); Central Plain.

Major Features: South valley slope and bottomland of the Chippewa River featuring a steep, north-facing woodland composed of old-growth white and red pines, yellow birch, oak, maple and basswood; a lowland forest of elm, silver maple, hackberry, and river birch; seepage springs and a portion of Niagara Creek; and sandstone cliff exposures. Over 400 species of higher plants, including a number of rare species, are known from this urban natural area.

Size: 105 acres (42 ha), in two units 45 and 60 acres.

Owner; Custodian: University of Wisconsin; contact Department of Biology, University of Wisconsin, Eau Claire 54701.

History of Preservation; Designation Date: Henry Putnam donated the land to Eau Claire in 1909 to be used as a natural park; city transferred the park to the University in 1957; December, 1976.

Management, Use Considerations: Putnam Drive, a limited-access gravel drive, runs through the eastern unit at the base of the slope; an interpretive trail runs through the western unit.

Interpretive & Research References: Fay, 1976.

135 KEWASKUM WOODS, WASHINGTON COUNTY

Location; Geographical Province: From Kewaskum, one mile east on Highway 28, then south one mile on dead-end town road, walk west into woods (T12N R19E Section 15, within NE¼); Eastern Ridges and Lowlands.

Major Features: An extremely rich (over 125 plant species reported) southern mesic woods located just east of the Milwaukee River on undulating morainal topography. Old-growth timber is common in the northernmost of the two tracts making up the scientific area (separated by an open field and pine plantation), with many trees in excess of 18" DBH. Kettle holes in the woods contain ephemeral ponds.

Size: 50 acres (20 ha); 30-acre (12 ha) buffer zone.

Owner; Custodian: DNR; see area #11 for custodian's address.

Designation Date: March, 1977.

Management, Use Considerations: Snowmobile trail runs between two scientific area tracts in open field; no salvage timber cutting allowed.

136 TRENTON BLUFF PRAIRIE, PIERCE COUNTY

Location; Geographical Province: One and a half miles northwest of Hager City, east of CTH 'E' (T25N R18W Section 28, within SE¼); Western Upland.

Major Features: Dry, steep prairie on the southwest-facing slope of the Mississippi River Valley, about one mile distant from the river. Included are two prairie openings separated by the wooded draw. The bluff summit rises some 300 feet above the valley floor, and vertical bedrock exposures show sandstone capped by limestone. The prairie contains a number of plant species at or near the eastern edge of their range.

Size: About 30 acres (12 ha); 16-acre (6 ha) buffer zone on summit. Acquisition continues.

Owner; Custodian: DNR; contact West Central District Headquarters, 1300 West Clairemont Avenue, Eau Claire 54701.

History of Preservation; Designation Date: Purchased in 1977 with DNR funds earmarked for scientific areas acquisition; June, 1977.

Management, Use Considerations: Buffer zone at summit is protected from development through restrictive easement. Infrequent management burns will be used to maintain natural vegetation.

Interpretive & Research References: Tans & Read, 1975.

137 BARK BAY, BAYFIELD COUNTY

Location; Geographical Province: Three miles northeast of Herbster, north of CTH 'A' (T51N R7W Section 35, Gov't. Lots 2, 3), best access via boat from public landing on Bark Bay slough; Lake Superior Lowland.

Major Features: The scientific area consists of a portion of the large wetland slough and frontal barrier beach on Lake Superior. On the narrow, sandy beach spit grow large red and white pines, below which grow boreal forest elements. Toward the north end, the sand gives way to pebble and cobblestone beach. The slough consists of sphagnum bog with many acid-loving plants, emergent and submergent aquatic plant communities. The extensive wetland is valuable fish spawning and waterfowl use habitat.

Size: 113 acres (45 ha).

Owner; Custodian: DNR; contact Northwest District Headquarters, Box 309, Spooner 54801.

History of Preservation; Designation Date: Purchased in 1977 with funds from DNR's scientific areas acquisition budget; June, 1977.

Management, Use Considerations: Best access to slough and sand spit is via boat, since private ownership blocks access on both ends of the spit.

138 LULU LAKE FEN, WALWORTH COUNTY

Location; Geographical Province: Four miles northwest of East Troy and one mile west of Lulu Lake on one of its tributary streams (T4N R17E Section 3 NW¼SE¼), walking access west from town road; Eastern Ridges and Lowlands.

Major Features: Undisturbed small spring pond and seepage springs situated at the base of glacial deposits in the abruptly rolling topography of the interlobate moraine. The springs form part of the headwaters of the main tributary to Lulu Lake to the east. Along the stream, which is 6-12 feet wide and has a muck bottom, is a zone of calcareous marsh (fen) of about 20 acres. The remainder of the tract is rolling upland, an open forest of red, white and bur oaks that received intensive former grazing.

Size: 40 acres (16 ha).

Owner; Custodian: DNR; contact Southeast District Headquarters, 9721 Watertown Plank Road, Milwaukee 53226.

History of Preservation; Designation Date: Purchased in 1977 with scientific area acquisition funds; June, 1977.

139 MURALT BLUFF PRAIRIE, GREEN COUNTY

Location; Geographical Province: Three miles west of Albany, on the south side of Highway 39, 1½ miles west of junction with Highway 59 (T3N R8E Sections 25 (within S½), 36 (within N½NW¼)); Western Upland.

Major Features: The scientific area is a dry prairie occupying a long, sweeping ridgetop of sandstone thinly capped with limestone. Although the tract received some grazing pressure in past years, the xeric conditions have helped retain the prairie's integrity and species diversity. In addition to the outstanding spring displays of such showy plants as pasque flower and prairie violets, a number of rare prairie species still survive here in large numbers, such as the threatened Hill's thistle. Oliver Prairie (area #58) lies one mile to the south.

Size: 62 acres (25 ha).

Owner; Custodian: Green County; contact County Clerk, Courthouse, Monroe 53566.

History of Preservation; Designation Date: Purchased as a natural area in 1976 by Green County utilizing County Conservation funds and ORAP money; June, 1977.

Management, Use Considerations: Management (such as periodic fire, brush removal) is being performed by members of the Green County Conservation League with cooperation from Scientific Areas section.

SUPPLEMENTAL LIST OF NEWLY ESTABLISHED STATE SCIENTIFIC AREAS
(Established Since Publication of Technical Bulletin 102)

140. Frog Creek Hemlocks, Washburn County, 160 acres (July 1977)
141. Mud Lake-Bog, Waupaca County, 156 acres (Sept. 1978)
142. Mazomanie Bottoms, Dane County, 160 acres (Feb. 1978)
143. Mayville Ledge Beech-Maple Woods, Dodge County, 60 acres (Aug. 1978)
144. Neda Mine, Dodge County, 46 acres (Aug. 1978)
145. Apple River Canyon, St. Croix County, 54 acres (Nov. 1978)
146. Westport Drumlin Prairie, Dane County, 15 acres (June 1979)
147. Sterling Barrens, Polk County, 168 acres (June 1979)
148. St. Croix River Swamp Hardwoods, 254 acres (June 1979)
149. Brant Brook Pines and Hardwoods, Burnett County, 190 acres (June 1979)
150. Ekdall Brook Conifer Swamp, Burnett County, 253 acres (June 1979)
151. Kohler-Peet Swamp Hardwoods, Burnett County, 330 acres (June 1979)
152. St. Croix River Barrens and Cedar Swamp, Burnett County, 690 acres (June 1979)
153. Genesee Oak Opening and Fen, Waukesha County, 59 acres (Nov. 1979)
154. Port Wing Boreal Forest, Bayfield County, 47 acres (Nov. 1979)
155. Oshkosh-Larsen Trail Prairies, Winnebago County, 6 acres (Jan. 1980)
156. Big Bay Sand Spit and Bot, Ashland County, 440 acres (Feb. 1980)
157. Olson Oak Woods, Dane County, 90 acres (May 1980)
158. Keller Whitcomb Creek Woods, Waupaca County, 97 acres (May 1980)
159. Mukwa Bottomland Forest, Waupaca County, 160 acres (May 1980)
160. Bois Brule Conifer Bog, Douglas County, 110 acres (May 1980)
161. Upper Brule River, Douglas County, 190 acres (May 1980)
162. Kinnickinnic River Gorge and Delta, Pierce County, 100 acres (Sept. 1980)
163. Oxbow Rapids, Upper Wolf River, Langlade County, 50 acres (Sept. 1980)
164. Dalles of the St. Croix River, Polk County, 50 acres (Nov. 1980)
165. Interstate Lowland Forest, Polk County, 90 acres (Nov. 1980)
166. Sohlberg Silver Lake, Adams County, 174 acres (Nov. 1980)
167. Belmont Mound Woods, Lafayette County, 60 acres (Feb. 1981)
168. Snapper Prairie, Jefferson County, 30 acres (May 1981)
169. Kurtz Woods, Ozaukee County, 30 acres (May 1981)
170. Rush Creek, Crawford County, 440 acres (May 1981)
171. Sajak Springs, Bayfield County, 40 acres (June 1981)
172. Puchyan Prairie, Green Lake County, 120 acres (November 1981)

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Common and Scientific Names of Plants Mentioned in Text

Alder	<i>Alnus rugosa</i> (Du Roi) Spreng.	Columbine	<i>Aquilegia canadensis</i> L.
American elm	<i>Ulmus americana</i> L.	Compass plant	<i>Silphium laciniatum</i> L.
Aspen	<i>Populus</i> spp.	Cordgrass	<i>Spartina pectinata</i> Link.
Balsam fir	<i>Abies balsamea</i> (L.) Mill	Cottonwood	<i>Populus deltoides</i> Marsh.
Barren strawberry	<i>Waldsteinia fragarioides</i> (Michx.) Tratt.	Cranberry	<i>Vaccinium macrocarpon</i> Ait.
Basswood	<i>Tilia americana</i> L.	Downy yellow painted cup	<i>Castilleja sessiliflora</i> Pursh
Beach grass	<i>Ammophila breviligulata</i> Fern.	Dune thistle	<i>Cirsium pitcheri</i> (Torr.) T. & G.
Beach pea	<i>Lathyrus maritimus</i> (L.) Bigel.	Dune wheatgrass	<i>Agropyron dasystachyum</i> (Hooker) Scrib.
Beech	<i>Fagus grandifolia</i> Ehrh.	Dwarf lake iris	<i>Iris lacustris</i> Nutt.
Big bluestem	<i>Andropogon gerardi</i> Vitman	European buckthorn	<i>Rhamnus cathartica</i> L.
Bird's-eye primrose	<i>Primula mistassinica</i> Michx.	Fameflower	<i>Talinum rugospermum</i> Holzinger
Black ash	<i>Fraxinus nigra</i> Marsh.	Fragile fern	<i>Cystopteris fragilis</i> (L.) Bernh.
Black locust	<i>Robinia pseudo-acacia</i> L.	Gramma	see Side-oats grama
Black oak	<i>Quercus velutina</i> Lam.	Green ash	<i>Fraxinus pennsylvanica</i> Marsh. var. <i>subintegerrima</i> (Vahr.) Fern.
Black spruce	<i>Picea mariana</i> (Mill.) BSP.	Hackberry	<i>Celtis occidentalis</i> L.
Black walnut	<i>Juglans nigra</i> L.	Hairy grama	<i>Bouteloua hirsuta</i> Lag.
Black willow	<i>Salix nigra</i> Marsh.	Hemlock	<i>Tsuga canadensis</i> (L.) Carr.
Blue ash	<i>Fraxinus quadrangulata</i> Michx.	Hill's oak	<i>Quercus ellipsoidalis</i> E. J. Hill
Blueberry	<i>Vaccinium angustifolium</i> Ait.	Hill's thistle	<i>Cirsium hillii</i> (Canby) Fern.
Bluejoint	<i>Calamagrostis canadensis</i> (Michx.) Nutt.	Hop tree	<i>Ptelea trifoliata</i> L.
Bracken fern	<i>Pteridium aquilinum</i> (L.) Kuhn var. <i>latiusculum</i> (Desv.) Underw.	Indian grass	<i>Sorghastrum nutans</i> (L.) Nash
Brittle prickly pear cactus	<i>Opuntia fragilis</i> (Nutt.) Haw.	Jack pine	<i>Pinus banksiana</i> Lamb.
Bugseed	<i>Corispermum hyssopifolium</i> L.	Jewelweed	<i>Impatiens capensis</i> Meerb.
Bur oak	<i>Quercus macrocarpa</i> Michx.	June grass	<i>Koeleria macrantha</i> (Ledeb.) Schultes
Butternut	<i>Juglans cinerea</i> L.	Kentucky coffee-tree	<i>Gymnocladus dioica</i> (L.) K. Koch
Canada yew	<i>Taxus canadensis</i> Marsh.	Labrador tea	<i>Ledum groenlandicum</i> Oeder
Chestnut sedge	<i>Fimbristylis puberula</i> (Michx.) Vahl.	Large-toothed aspen	<i>Populus grandidentata</i> Michx.
Cliff-brake	<i>Pellaea glabella</i> Mett.	Leatherleaf	<i>Chamaedaphne calyculata</i> (L.) Moench

Little bluestem	<i>Andropogon scoparius</i> Michx.	Sand clubmoss	<i>Selaginella rupestris</i> (L.) Spring
Manna grass	<i>Glyceria striata</i> (Lam.) Hitchc.	Sand reed	<i>Calamovilfa longifolia</i> (Hook.)
Marsh timothy	<i>Muhlenbergia glomerata</i> (Willd.) Trin.	Sea rocket	Scribn. var. <i>magna</i> Scribn. & Merr.
Michigan holly	<i>Ilex verticillata</i> (L.) Gray	Seaside spurge	<i>Cakile edentula</i> (Bigel.) Hook.
Mountain maple	<i>Acer spicatum</i> Lam.	Sedges	<i>Euphorbia polygonifolia</i> L.
Needlegrass	<i>Stipa spartea</i> Trin.	Side-oats grama	<i>Carex</i> spp.
Northern dropseed	<i>Sporobolus heterolepis</i> Gray	Silky aster	<i>Bouteloua curtipendula</i> (Michx.) Torr.
Northern monkshood	<i>Aconitum noveboracense</i> Gray	Silver maple	<i>Aster sericeus</i> Vent.
Paper birch	see White birch	Snow trillium	<i>Acer saccharinum</i> L.
Pasque flower	<i>Anemone patens</i> L. var. <i>wolfgangiana</i> (Bess.) Koch	Sphagnum	<i>Trillium nivale</i> Riddell
Pink milkwort	<i>Polygala incarnata</i> L.	Spiraea	<i>Sphagnum</i> spp.
Pitcher plant	<i>Sarracenia purpurea</i> L.	Sugar maple	<i>Spiraea alba</i> Du Roi
Poison sumac	<i>Rhus vernix</i> L.	Sullivantia	<i>Acer saccharum</i> Marsh.
Polypody	<i>Polypodium virginianum</i> L.	Sundew	<i>Sullivantia renifolia</i> Rosend.
Poverty oat-grass	<i>Danthonia spicata</i> (L.) Beauv.	Swamp loosestrife	<i>Drosera</i> spp.
Prairie Indian plantain	<i>Cacalia tuberosa</i> Nutt.	Swamp white oak	<i>Decodon verticillatus</i> (L.) Ell.
Prairie milkweed	<i>Asclepias sullivantii</i> Engelm.	Sweet-fern	<i>Quercus bicolor</i> Willd.
Prairie violet	<i>Viola pedatifida</i> G. Don	Sycamore	<i>Comptonia peregrina</i> (L.) Coult.
Prairie white-fringed orchid	<i>Habenaria leucophaea</i> (Nutt.) Gray	Tamarack	<i>Platanus occidentalis</i> L.
Red cedar	<i>Juniperus virginiana</i> L.	Valeriana	<i>Larix laricina</i> (Du Roi) K. Koch
Red elm	<i>Ulmus rubra</i> Muhl.	White ash	<i>Valeriana edulis</i> Nutt. var. <i>ciliata</i> (T. & G.) Cronquist
Red maple	<i>Acer rubrum</i> L.	White birch	<i>Fraxinus americana</i> L.
Red oak	<i>Quercus rubra</i> L.	White cedar	<i>Betula papyrifera</i> Marsh.
Red-osier dogwood	<i>Cornus stolonifera</i> Michx.	White oak	<i>Thuja occidentalis</i> L.
Red pine	<i>Pinus resinosa</i> Ait.	White pine	<i>Quercus alba</i> L.
Riddell's goldenrod	<i>Solidago riddellii</i> Frank	White spruce	<i>Pinus strobus</i> L.
River birch	<i>Betula nigra</i> L.	Whorled milkweed	<i>Picea glauca</i> (Moench) Voss
Round-leaved sundew	<i>Drosera rotundifolia</i> L.	Wild rice	<i>Asclepias verticillata</i> L.
Round-stemmed false foxglove	<i>Gerardia gattingeri</i> Small	Willow	<i>Zizania aquatica</i> L.
		Wood nettle	<i>Salix</i> spp.
		Yellow birch	<i>Laportea canadensis</i> (L.) Wedd.
			<i>Betula alleghaniensis</i> Small

Scientific Areas of Wisconsin

Ableman's Gorge, 35
 Abraham's Woods, 28
 Aurora Lake, 44
 Avoca River Bottom Prairie, 33
 Avon Bottoms, 25
 Bark Bay, 46
 Baxter's Hollow, 36
 Bean Lake, 41
 Beulah Bog, 43
 Bear Creek Cave, 44
 Bittersweet Lakes, 25
 Black Tern Bog, 30
 Blackhawk Island, 35
 Blue Hills Felsenmeer, 35
 Blue River Cactus & Dunes, 34
 Bose Lake Hemlock-Hardwoods, 43
 Brady's Bluff Prairie, 21
 Browntown Oak Forest, 23
 Buena Vista Prairie & Meadow, 37
 Cactus Rock, 28
 Castle Mound Pine Forest, 22
 Cedar Grove Hawk Refuge, 21
 Cedarburg Beech Woods, 32
 Cedarburg Bog, 20
 Charles Pond, 28
 Cherokee Marsh, 45
 Cherry Lake Sedge Meadow, 43
 Chiwaukee Prairie, 31
 Comstock Marsh, 43
 Council Grounds Pine Forest, 23
 Crex Meadows Prairie, 25
 Dells of the Eau Claire River, 41
 Devil's Lake Red Oak Forest, 24
 Dewey Heights Prairie, 21
 Dory's Bog, 42
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 Dunbar Sharptail Barrens, 40
 Durst Rockshelter, 28
 Eagle Oak Opening, 33
 Endeavor Marsh, 28
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 Faville Prairie, 20
 Finnerud Pine Forest, 24
 Five-Mile Bluff Prairie, 35
 Flambeau River Hemlock-Hardwoods Forest, 20

Flora Lake, 35
 Fountain Creek Prairie, 39
 Fourmile Island Rookery, 28
 Giant White Pine Grove, 42
 Gibraltar Rock, 34
 Gobler Lake, 42
 Goose Pond, 37
 Gullickson's Glen, 45
 Haskell Noyes Memorial Woods, 21
 High Lake Spruce-Balsam Forest, 23
 Holmboe Conifer Forest, 36
 Honey Creek Natural Area, 38
 Hub City Bog, 36
 Jackson Harbor, 41
 Johnson Lake Barrens, 40
 Jung Hemlock-Beech Forest, 44
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 Kewaskum Woods, 45
 Kohler Park Dunes, 34
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 Koshawago Springs, 39
 Lake of the Pines Conifer-Hardwoods, 23
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 Plum Lake-Star Lake Hemlock Forest, 24
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 Renak-Polak Maple-Beech Woods, 38
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 Waterloo Fen & Springs, 32
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 Waupun Park Maple Forest, 30
 Wilderness Ridge, 23
 Wyalusing Walnut Forest, 37
 Wyalusing Hardwood Forest, 20
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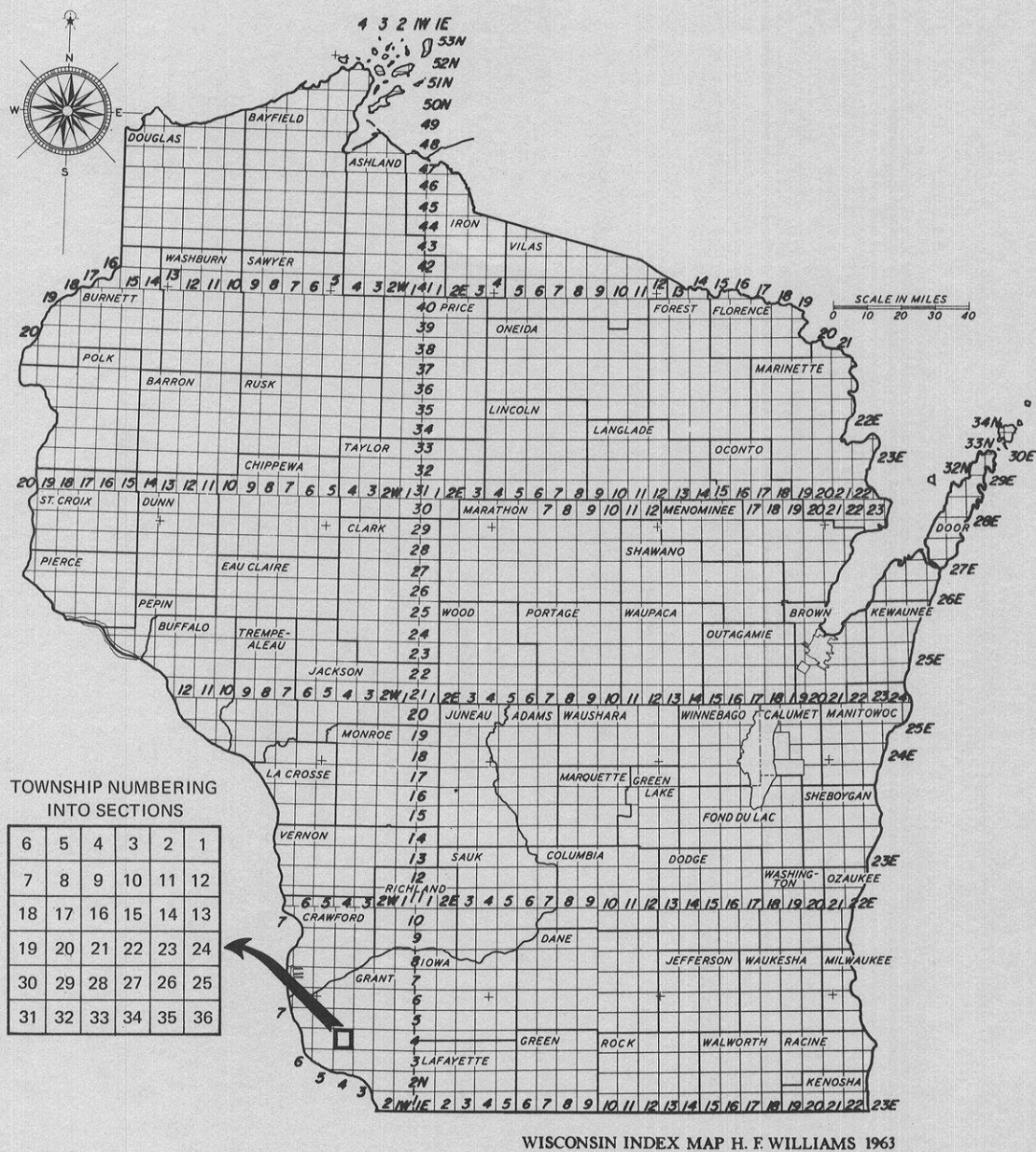


Figure 4. Base map of Wisconsin Congressional townships which are numbered according to their position either east or west of the Fourth Principal Meridian and north of the state's southern boundary. The inset map illustrates the numbering sequence of each township's 36 one-mile-square sections.

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