

MINNESOTA'S NATURAL HERITAGE PROGRAM 1982 REPORT

Department of Natural Resources
Section of Wildlife

A Modest Investment that Returns Many Benefits. . .

Minnesota is an ecological crossroads. Here the northern conifer forests, the eastern deciduous woodlands and the western prairies converge, each bring with them an array of specialized plant and animal species. Now after more than a century of settlement and human impact, only remnants of our original forests, grasslands and wetlands still exist. Given their scientific and educational values, and the human need to interact with diverse natural systems, an effort is needed to protect these original components of Minnesota's natural diversity.

Why preserve diversity? — In 1980, the Council on Environmental Quality produced the *Global 2000 Report to the President*. Among its conclusions was that "...15-20% of all species on earth could be extinguished by the year 2000, mainly because of loss of wild habitat. Extinction of species on this scale is without precedent in human history."

By reducing biological diversity, humanity is eliminating the storehouse of organisms upon which we depend for food, medicine, industry, recreation, and countless other benefits. Science is discovering the unique values of

own species with amazing
For example, a close relative
a diploperennis, was recently
in Mexico. Unlike corn, it is a
Hybridization between corn
species, known on only three
sites in the world, could
variety of corn with increased

virus resistance or the ability to grow in wet soils. Disease-resistant barley has been created in the same way. We could fill pages with success stories of this kind.

But why protect all species simply because some have proven invaluable? Since no one can predict which species will provide benefits in years to come, it is only prudent to protect the full range of living things. Who could have predicted that a life-saving drug would be found in foxglove, *Digitalis purpurea*? Of course, material benefits are only one reason for preserving species diversity. Public sentiment in favor of nature conservation reflects a philosophical commitment to valuing the quality of all life.

The Natural Heritage Program — With the goal of identifying important natural areas, the Natural Heritage Program (NHP) conducts inventory and research, manages data in a computer-based system, and provides technical expertise on Minnesota's native habitats and rare species. The challenge of the NHP is to create an information system that locates the plants, animals and natural communities most in need of special protection. In this way, Minnesotans can plan responsibly for future development and economic growth.

Within the Division of Fish and Wildlife, the NHP staff works closely with the Scientific and Natural Areas Program (SNA) and the Nongame Wildlife Program. Together they represent the Department's commitment to protect those plants, animals and plant

communities not managed by the traditional resource disciplines.

NHP Staff Botanists currently provide technical expertise to the Department's SNA staff, Nongame Specialists, Wildlife Managers and Researchers, Foresters and Park Naturalists. The responsibilities of the NHP staff include administration of all plant-related projects: the Ginseng Harvest Program (MS 84.028); the Native Prairie Tax Credit Program (MS 273.116); and the designation of State Endangered Plants (MS 97.488).

In addition to working directly with DNR staff, the NHP staff regularly provides information to the private sector and local governments for use in planning development projects. The NHP provides objective analysis of rare and unique ecological resources. A centralized data base allows efficient retrieval of this information, thus providing a service not available to Minnesotans in the past. This type of biological data can play a critical role in the land use planning process.

In 1982, the NHP responded to more than 240 requests for information and technical expertise including: assistance on a forestry-soils project, evaluation of proposed hazardous waste sites, routine review of land exchange proposals and development projects, and survey of potentially significant native habitats. For a comparatively modest investment, the state of Minnesota in supporting the NHP, provides vital information and services to the public on some of Minnesota's most threatened non-renewable resources.

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INVENTORY/EVALUATION: Minnesota's biotic communities and the rare species they support are the focus of the Programs ongoing statewide inventory.



**NATIVE
PLANT
COMMUNITIES**

The NHP continuously gathers and refines information on the location and status of Minnesota's natural vegetation types. An ongoing statewide inventory provides the baseline data necessary for a better understanding of Minnesota plant communities as they occur in relatively undisturbed environments. This information allows the Program to identify the state's vulnerable biotic communities and set priorities for their protection. In addition, these data can be used as the basis for further studies on the state's natural communities and for management decisions on the maintenance and enhancement of these areas. Fundamental information of this type is of value to ecologists, foresters, land planners and others who work with the vegetation of Minnesota. In 1982, the NHP focused inventory efforts on the following three community types.

"Big Woods" – The "Big Woods" was once an extensive forest of sugar maple, basswood and elm which covered over 3000 square miles of south-central Minnesota or 4% of the state. Today, remnant "Big Woods" forests occur only as small isolated tracts ranging from 5 acres to 200 acres in size. Many of these woodland "islands" have been severely degraded by grazing and logging. In 1982 the NHP began an inventory of the "Big Woods" region to locate undisturbed, old-growth tracts of this forest. Four sites of high ecological quality were located and described. Efforts are underway to preserve these tracts as examples of the original "Big Woods" forest.

Algific Talus Slopes – In summer 1982 a survey was conducted in the "Driftless Area" of S.E. Minnesota (the land area untouched by Pleistocene glaciers). The purpose was to locate and describe a peculiar community type unique to the region – Algific (cold producing) Talus Slopes. This community occurs at the base of steep, north facing, limestone talus slopes where cold air continuously drains downslope out of fissures formed in the jumbled talus. This microclimate supports an unusual assemblage of boreal plants and rare endemic land snails. Five sites of this unique habitat were located along the

South Branch of the Root River in Fillmore County. Efforts are being made to protect a viable example of this community which is found only in the "Driftless Area" of the Midwest.

Northern Hardwoods – This forest type extends across New England, through the upper Great Lakes states reaching its westernmost extent in north-east Minnesota. Here, between Duluth and the Canadian border, sugar maple, yellow birch, and basswood occur in a restricted band parallel to the Lake Superior Shore. Because of logging, especially selective removal of yellow birch, virgin stands of Northern Hardwoods are quite rare in Minnesota. In 1982, the NHP surveyed this part of the Northern Hardwoods region, locating and describing 6 forest stands of high natural area quality. Because some of these remnant tracts occur on public lands, efforts are underway to encourage these land managers to maintain the ecological features of these old-growth forest ecosystems for research and education use.



**RARE AND
ENDANGERED
PLANTS**

Data on rare and endangered plants in Minnesota are either very old and out-of-date, or non-existent. An understanding of this component of our natural systems, however is important to a statewide inventory of natural vegetation. Field inventory efforts have focused on those plant species that are most in need of protection. Guided by these priorities, inventory efforts in 1982 produced some exciting new discoveries and valuable data for the compilation of Minnesota's first official rare plant list.

New Discoveries – Field work in 1982 resulted in the discovery of three plant species new to Minnesota. One of these is Nuttall's Violet (*Viola nuttallii*), a Great Plains species that was discovered on a series of gravel hill prairies in Lac Qui Parle County. The second is Green Milkweed (*Asclepias hirtella*) an eastern prairie species first seen at Cartney Wildlife Area by the Wildlife Manager and later verified by NHP staff. The third species is a wild onion (*Allium cernuum*) that has long been suspected of occurring

in Minnesota, but was not actually found until this year in a woodland habitat in Lake Louise State Park.

In addition, a population of Tubercled Orchid (*Platanthera flava*) that was discovered in Mower County is the first record of that species in Minnesota since 1909. The plant, considered threatened throughout much of its range, was thought to be extinct in Minnesota. Another species of orchid, the Autumn Coral-root (*Corallorhiza odontorhiza*) was thought to be endangered in Minnesota. However, field inventory results of 1982, indicate that this species is expanding its range in the state and need no longer be considered endangered.

Official State Plant List – A change in the Minnesota Endangered Species Law gives the DNR Commissioner authority to list and protect plants as well as animals. The designation process calls for the appointment of a technical advisory committee. Over the past year, the NHP botanist, using data collected from field inventory efforts, has provided this committee with recommendations on the appropriate designation of plant species. These recommendations have been accompanied by detailed status reports which provide information on the relative abundance, distribution and management needs of each species.



**PUBLIC LANDS
INVENTORY**

The need for adequate information on natural features occurring on public lands directed some of the field season activities of NHP staff in 1982.

The shortage of comprehensive information on significant natural areas occurring on public lands is a roadblock to ensuring that these areas are managed to protect the natural values present. The NHP recognizes this data-gap and has initiated a statewide inventory. Because conducting a public lands inventory in Minnesota is a large task, the NHP limited inventory efforts this season to several counties in the prairie region of the state. In addition, by using existing inventory data (e.g. data available from the inventory of Wildlife Management Areas) the number of acres that needed to be field checked were greatly reduced. In

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RESEARCH AND MANAGEMENT: Technical expertise of Natural Heritage Staff is used cooperatively on joint projects.

VEGETATION – SOILS – FORESTRY PROJECT

The NHP is involved in an interdisciplinary effort to test the feasibility of developing a habitat type classification system for northcentral Minnesota forest land. Habitat typing has been developed and used in other states to provide land managers with a practical tool for accurately predicting a given land's potential for timber production. In Spring 1982, a team of soil scientists, foresters, and plant ecologists studied 14 forest stands dominated by pine in northcentral Minnesota. In each stand: 1) vegetation was sampled using a modified releve plot; 2) a complete soil profile description was taken; and 3) two trees were felled for conducting stem analysis. Field work was completed in late summer. Future work will involve compilation and analyses of field data to determine correlations between soils, timber productivity as measured by stem analysis, and vegetation.

MONITORING ACTIVITIES

Intensive monitoring activities, during the summer of 1982, concentrated on the nationally threatened plant species prairie bush clover (*Lespedeza leptostachya*) and

the commercially harvested ginseng (*Panax quinquefolius*).

The prairie bush clover occurs in only four midwestern states in less than thirty surviving populations. The population under study in Minnesota contains more than 2,000 individuals, and is believed to be the largest population in existence. The study area, which is in the process of being designated as a SNA, is a tract of native prairie within Kilen Woods State Park. The goal of the project is to define parameters that assess the health and status of the population and to monitor these parameters on an annual basis. The data collected will be used to identify appropriate management activities for the species in response to the needs of the local park manager and SNA staff.

Research designed to monitor the impact of harvesting pressure on ginseng was also initiated in 1982. The research effort is staffed by NHP personnel and volunteers from the Minnesota Native Plant Society. Monitoring stations have been established in five counties. They include populations of ginseng which are protected from exploitation because they occur in state parks and populations which are exposed to unrestricted harvest pressure. A total of 48 colonies are currently being monitored and additional colonies will be added in 1983. In addition, the size and weight of ginseng

roots that dealers are exporting from Minnesota are being monitored. This procedure is designed to detect any significant change in the age distribution of the plants being harvested.

NATURAL FEATURE RANKING

In 1982, the NHP was contracted by The Nature Conservancy, a non-profit land conservation organization, to test a new method of assessing the relative endangerment of those natural features in Minnesota that are considered ecologically sensitive. The new method is based on a ranking form that requires an assessment of 12 factors (including total range, distribution, number of protected occurrences...), that, when completed represent a digest of critical information on the biology and ecology of each plant, animal or plant community evaluated. An assessment of these factors is then used to assign an overall priority rank for each species and/or community.

This rank is not intended to be a final or static classification, as new information is added to the NHP data-base the ranks and associated conservation priorities will change. Until new data become available, the ranks assigned in 1982 are being used to guide the conservation efforts of both The Nature Conservancy and the SNA Program.

DATA MANAGEMENT: The Natural Heritage biological data base provides a unique source of technical information to private and public organizations.

During the past year, NHP staff have responded to over 240 requests. Requests for information come from a wide variety of groups and individuals: programs within the Department of Natural Resources, other state agencies, universities throughout the state, federal agencies, private consulting companies, and individuals.

The information in the system which is stored in an integrated data management system of map files, computer files and manual files is well organized and easily accessible. In addition, the system is compatible with the Minnesota Land Management Information System (MLMIS), which provides access to a wide variety of land-use variables.

Information from the system is most frequently requested for: evaluating natural area protection alternatives; expediting the environmental assessment and review process; and providing biological information for use in developing land

management strategies. These requests range from site-specific projects, such as the impact of a residential development, to regional and statewide projects such as review of the candidate hazardous waste

sites. By providing information on rare and unique natural resources the NHP has developed a cost-effective mechanism for early notification of potential natural resource conflicts.

TABLE 1: DATA SERVICES SUMMARY

Number of Requests – 1982

	Private	DNR	Other Gov't	Total
Jan – June	15	83	16	114
Oct – Dec	17	102	10	129
Total Requests	32	185	26	243

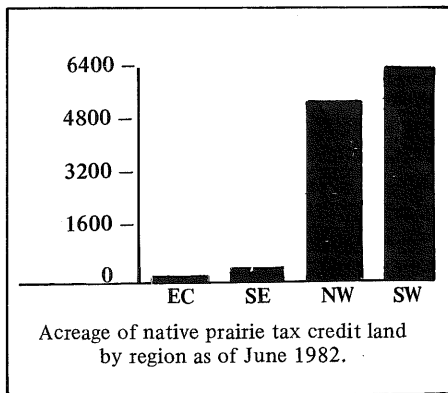
SPECIAL PROGRAMS: The Natural Heritage Program administers special programs that relate to Minnesota's native habitats.

NATIVE PRAIRIE TAX CREDIT PROGRAM

Over 10,000 acres of Minnesota prairie are protected through the Native Prairie Tax Credit Program. This Program authorized by the legislature in 1980 is administered by the NHP in cooperation with the Department of Revenue. During the first two years over 1300 landowners applied for the tax credit; of these 327 applications were approved. The Prairie Tax Credit Program thus plays an important role in protecting one of Minnesota's most endangered resources; only .1% of Minnesota's original prairie remains unplowed and this is currently threatened by conversion to cropland.

In 1982, NHP revised the Prairie Tax Credit application forms and procedures to reflect a major change in the Prairie Tax Credit Law. The new law stated that prairie tracts used for livestock grazing were no longer eligible to receive tax credit. The no grazing criterion will no doubt result in a decreased number of new applications. However the no grazing provision insures that relatively high quality prairies are qualifying for the tax credit.

Since 1980, the number of approved applications has steadily decreased. It is expected that the total acreage in the tax credit will level off at around 15,000 acres.



GINSENG HARVEST PROGRAM

An estimated 1100 pounds of ginseng will be harvested in 1982 by about 600 diggers in Minnesota. Harvest of wild ginseng in Minnesota is administered by the NHP, under guidelines set by the U.S. Department of the Interior.

Each state exporting ginseng is required to maintain an on-going research program. In 1982 such a program was initiated including: a mail survey of ginseng diggers, the monitoring of wild ginseng populations and the random sampling of exported ginseng roots. The results of the ginseng questionnaire have provided valuable information on associated problems and the future of ginseng harvesting in Minnesota. Research on the monitoring and sampling of roots is described in the research/management section of this report.

The NHP, through its Ginseng Harvest Program, hopes to increase the understanding of ginseng biology and appropriate harvesting techniques so that ginseng can once again be found commonly in our woods and be managed for future generations of Minnesotans.

NATURAL HERITAGE REGISTER

The Minnesota Natural Heritage Register is a new program designed to recognize tracts of public land which contain natural features of special significance. The NHP initiated this Program in 1981. In the first year, eleven sites have been registered and four more are awaiting final approval.

The Register is a mechanism for recognizing and informing agencies and individuals that a tract of land of high natural value occurs within the boundaries of their management unit. If possible, a tract of land with high natural value is designated as a SNA which gives the area the highest possible protection. However, in many cases it is not possible, for legal reasons, to designate an area as an SNA. In these cases, it is still important to recognize the areas and encourage appropriate management through a more informal process - The Minnesota Natural Heritage Register.

Registering a site involves several steps. The NHP staff first describes the natural feature of significance to the local land manager and then discusses appropriate management to ensure the preservation of the feature (e.g. rare plant, sensitive plant community). If the land manager agrees a memorandum of understanding is written describing how the area will be managed. The agreement is voluntary and legally nonbinding; however, the local land manager does agree to notify the NHP when management activities affecting the natural area are planned.

During this first year, Register agreements have been negotiated for DNR lands, the Cities of Bloomington and Maplewood, the University of Minnesota, the Department of Transportation and Hubbard County.

The Program has just begun and there are still many significant natural features on public lands that should be recognized and managed appropriately. By working together with the SNA Program, the goal of identifying and protecting all significant natural areas in Minnesota can be attained.

PUBLIC LANDS INVENTORY

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1982, inventories were initiated in four counties and completed in one county. Important features such as virgin prairies and calcareous fens were discovered.

Site inventories were conducted in response to a specific request from the SNA Program. In 1982, NHP staff inventoried two designated SNAs, Wild Indigo Prairie and Racine Prairie. These inventories involved collecting data on species composition, mapping plant communities and describing other important ecological features. Together with the SNA staff planner, NHP staff are using the data collected to help define the management needs of each site.

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