

~~P/ N 16~~  
~~1483~~



# MINNESOTA DEPARTMENT OF NATURAL RESOURCES



# BIENNIAL REPORT

JULY 1, 1968 — JUNE 30, 1970

HC  
107  
.M6  
A33  
1968/70

*N 16*  
*1483*

ADMINISTRATIVE SERVICES - ENFORCEMENT & FIELD SERVICE - GAME & FISH  
LANDS & FORESTRY - PARKS & RECREATION - WATERS, SOILS & MINERALS





STATE OF  
**MINNESOTA**

**DEPARTMENT OF NATURAL RESOURCES**

CENTENNIAL OFFICE BUILDING • ST. PAUL, MINNESOTA • 55101

January 1, 1971

To the Governor and the Legislature  
of the State of Minnesota

Re: BIENNIAL REPORT, Minnesota Department of Natural Resources  
July 1, 1968 through June 30, 1970

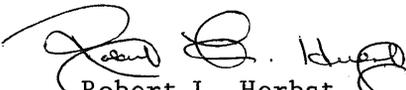
During this past biennium, we witnessed an "environmental renaissance" in Minnesota. Never before has the public shown such great concern for the protection and wise utilization of our natural resources, our lands and forests, game and fish, waters, soils and minerals, parks and recreation.

The dedicated personnel of the Department of Natural Resources helped to spearhead this environmental awakening and then, caught up in the mounting tidal wave of concern, our employees worked long and hard to achieve many of the goals established by earlier legislation.

This report highlights the functions, activities and responsibilities of the Department toward attaining these goals. It also provides an understanding of the complexities of managing our multitude of natural resources.

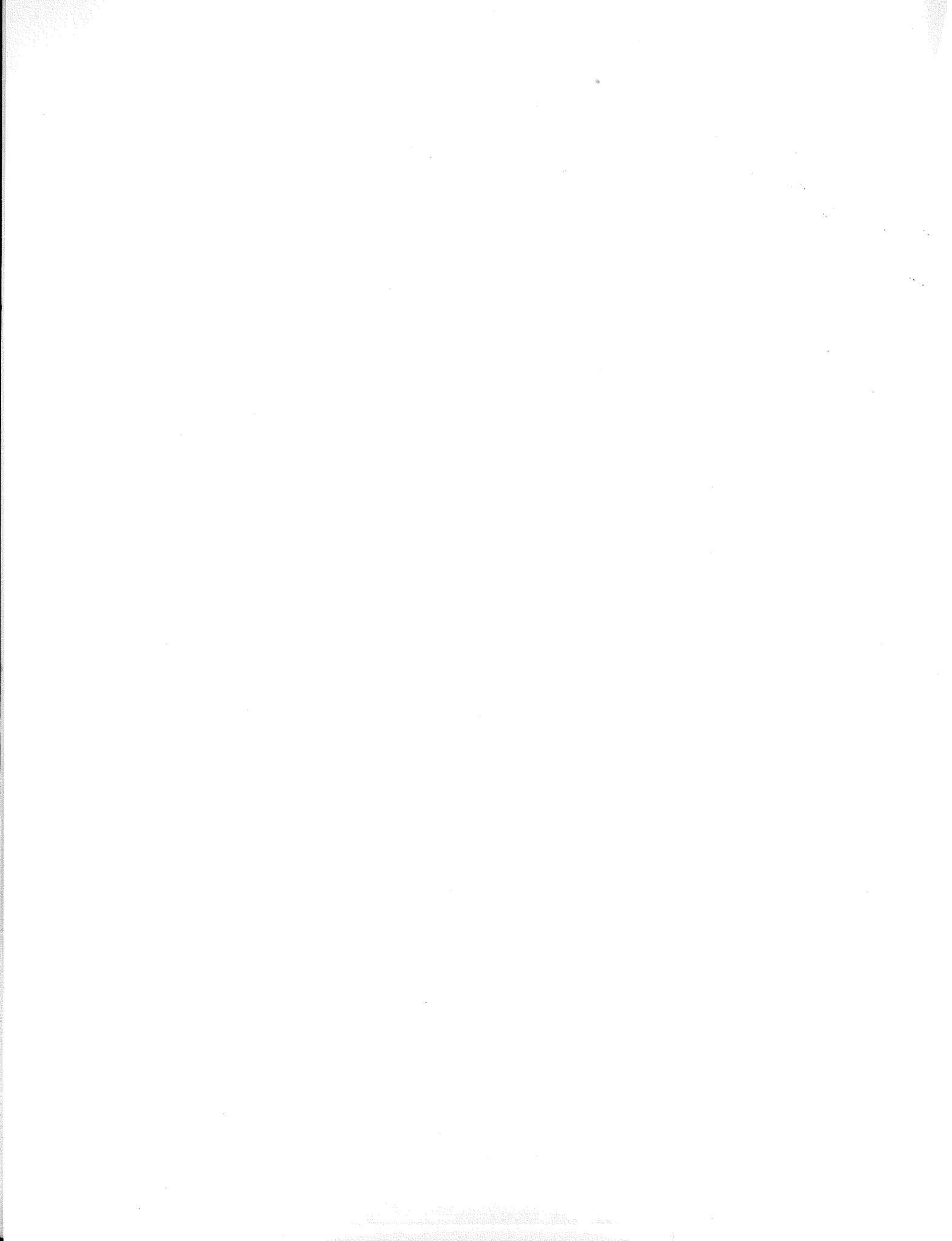
We are proud of our programs and the progress we've made in each. With pride, we now share our accomplishments with you.

Respectfully submitted,



Robert L. Herbst

Commissioner of Natural Resources



# MINNESOTA DEPARTMENT OF NATURAL RESOURCES

COMMISSIONER OF NATURAL RESOURCES - Robert L. Herbst

DEPUTY COMMISSIONER - Clarence B. Buckman

ASSISTANT COMMISSIONER - Administration

ASSISTANT COMMISSIONER - Planning

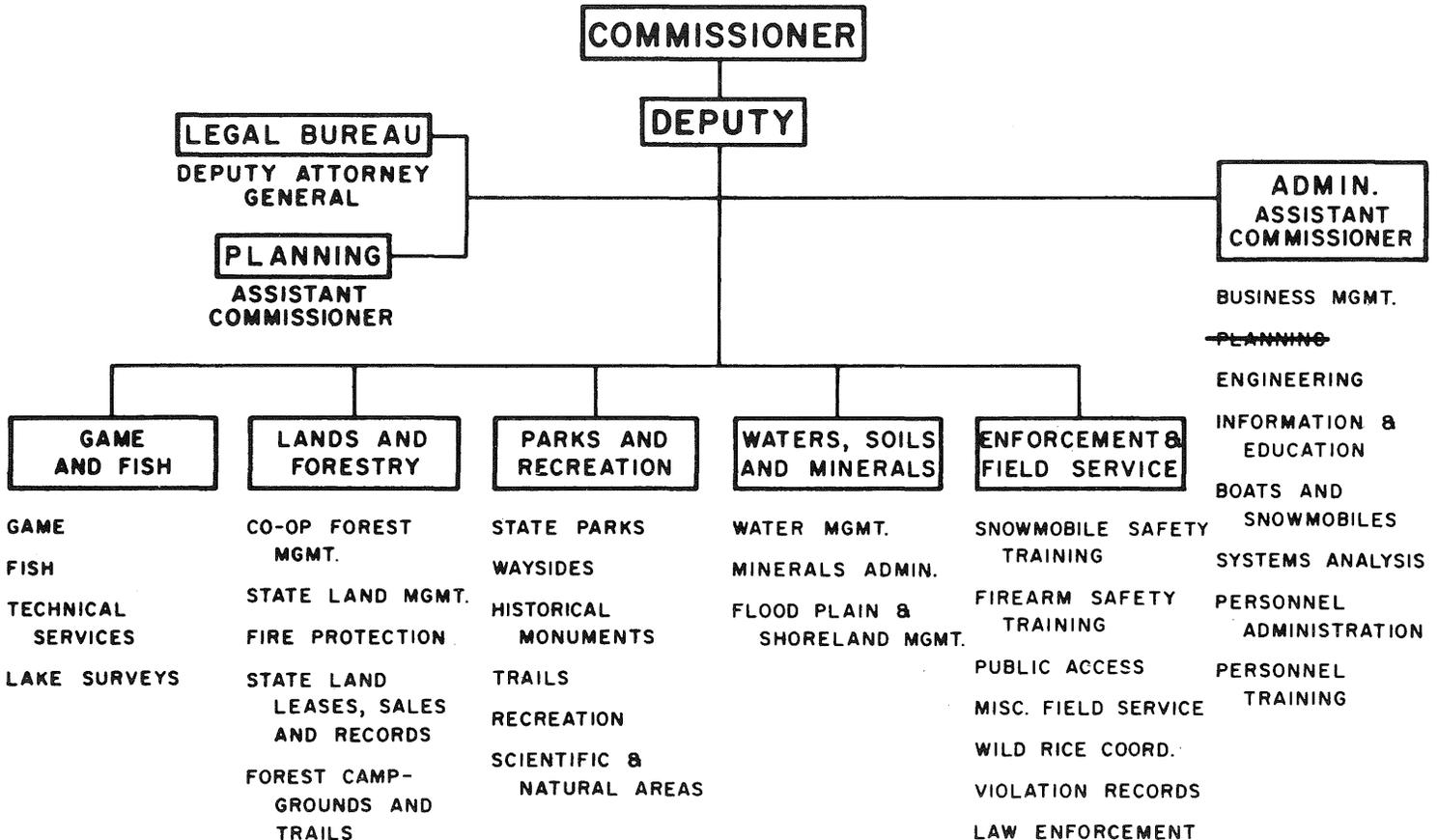
ENFORCEMENT & FIELD SERVICE - Donald Fultz, Chief Natural Resource Officer

DIVISION OF GAME & FISH - Milo Casey, Director

DIVISION OF LANDS & FORESTRY - William Aultfather

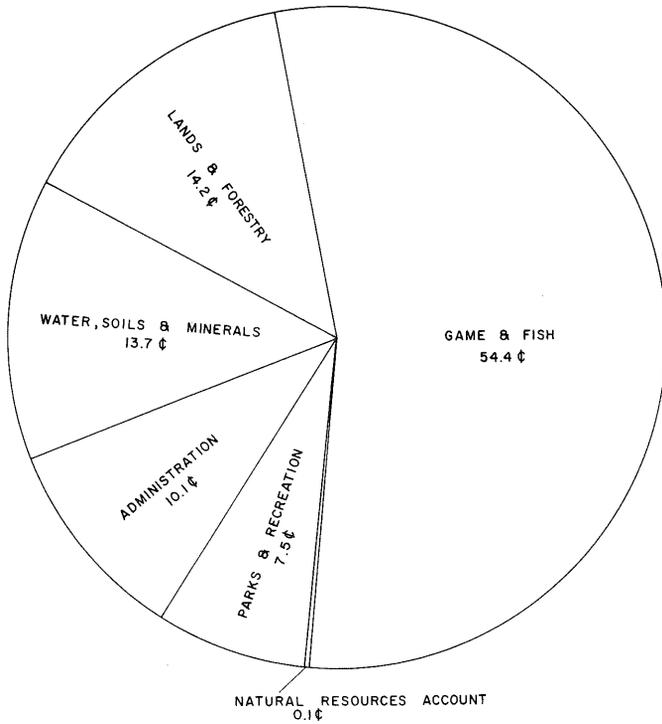
DIVISION OF PARKS & RECREATION - U. W. Hella, Director

DIVISION OF WATERS, SOILS & MINERALS - Eugene R. Gere, Director



(Reorganization Chart Effective January, 1971)

WHERE YOUR NATURAL RESOURCE DOLLAR COMES FROM



RECEIPTS JULY 1, 1967 - JUNE 30, 1968

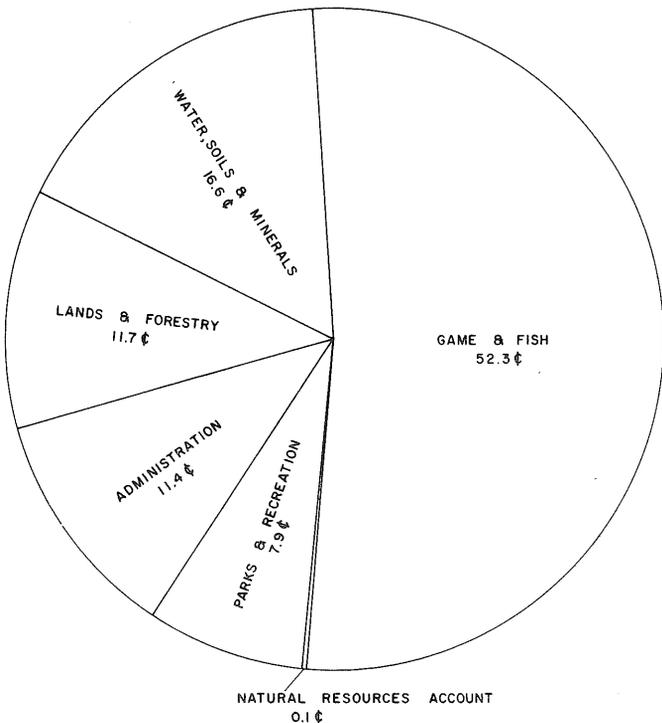
INCOME BY DIVISION

Administration	\$ 1,264,008.22*
Waters, Soils & Minerals	1,707,179.92
Lands & Forestry	1,774,404.07
Game & Fish	6,795,181.66
Parks & Recreation	940,857.59
Natural Resources	1,512.37

Total \$12,483,143.83

\*Includes N.Y.C.-Fed. Aid

\$ 413,091.86
Land & Water Cons.-Fed.Aid
\$ 387,505.89



RECEIPTS JULY 1, 1968 - JUNE 30, 1969

INCOME BY DIVISION

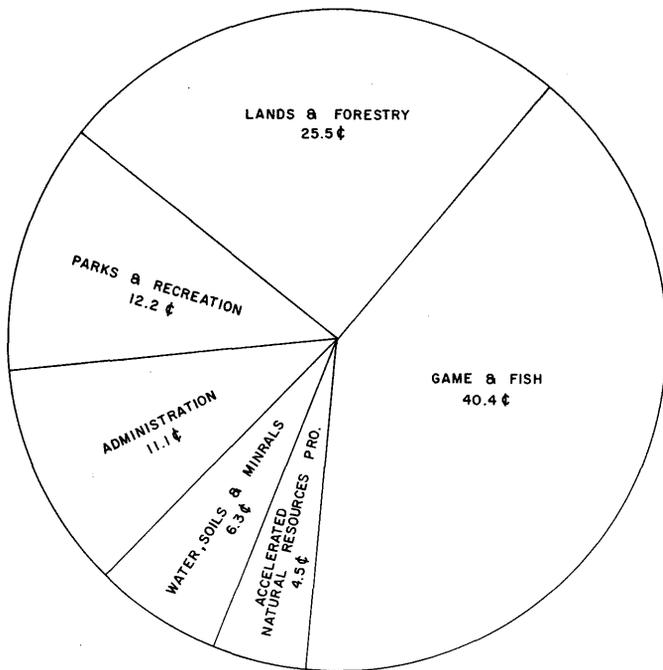
Administration	\$ 1,566,765.32**
Waters, Soils & Minerals	2,294,698.73
Lands & Forestry	1,612,050.46
Game & Fish	7,213,389.74
Parks & Recreation	1,088,799.73
Natural Resources	3,590.36

Total \$13,779,294.34

\*\*Includes Land & Water Cons.-Fed. Aid  
\$ 1,016,594.63

WHERE YOUR NATURAL RESOURCE DOLLAR IS SPENT

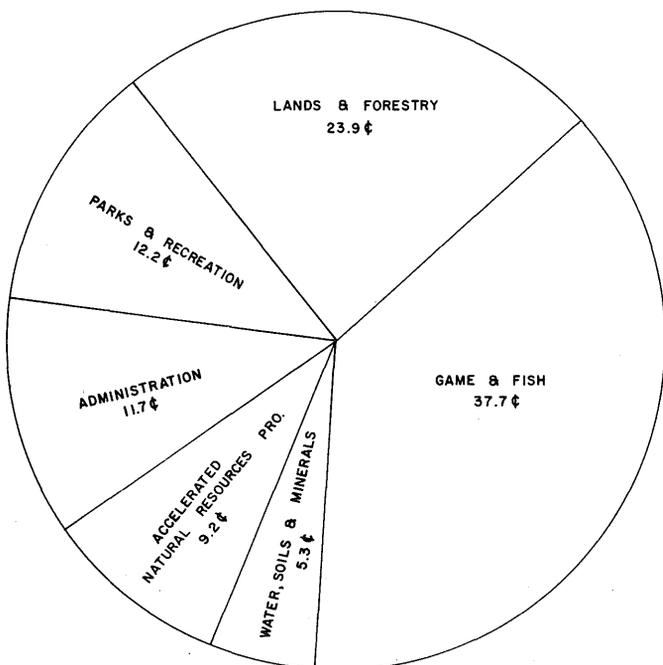
EXPENDITURES JULY 1, 1967 - JUNE 30, 1968



EXPENDITURES BY DIVISION

Administration	\$ 1,879,847.86
Waters, Soils & Minerals	1,068,211.69
Lands & Forestry	4,317,205.45
Game & Fish	6,824,274.41
Parks & Recreation	2,060,185.45
Accelerated Nat'l. Res. Pro.	764,051.72
<b>Total</b>	<b>\$16,913,776.58</b>

EXPENDITURES JULY 1, 1968 - JUNE 30, 1969



EXPENDITURES BY DIVISION

Administration	\$ 2,140,625.28
Waters, Soils & Minerals	966,567.06
Lands & Forestry	4,350,263.22
Game & Fish	6,875,702.94
Parks & Recreation	2,217,801.89
Accelerated Nat'l. Res. Pro.	1,682,273.35
<b>Total</b>	<b>\$18,233,233.74</b>

## DEPARTMENTAL HIGHLIGHTS

GAME & FISH HABITAT IMPROVEMENT PROGRAM - A new statewide fish and game habitat improvement program made possible by special appropriations from the 1969 Legislature was launched during the biennium. Although primary emphasis is on deer habitat, strong efforts are also being directed toward pheasants, waterfowl and fish.

COHO SALMON - The state's first coho salmon were stocked in the French River which flows into Lake Superior where the salmon are expected to grow as heavy as 10 pounds. Spawn taken from returning fish provide eggs for future stocking programs.

HUNTING - Minnesota's first spruce grouse season in 50 years was successfully opened in 1969, and waterfowl numbers returned to the high levels of a decade ago.

FLOOD PLAIN, SHORELAND MANAGEMENT - Comprehensive rules and regulations for statewide standards for flood plain and shoreland management were developed and promulgated after a series of 14 public informational meetings on flood plain rules and 18 meetings on shoreland rules. Public hearings were held on each.

GREENSTONE MINERAL LEASES - Three public sales of State leases (copper, nickel, and associated minerals) were held involving one million acres of state-owned or administered lands in St. Louis, Itasca, Lake of the Woods and Koochiching counties. A total of 567 leases covering 238,827 acres of state-owned lands were issued to eight companies. More than \$3 million has been expended by private mining companies in exploring these state lands.

MINING LAND RECLAMATION - The Iron Range Trail authorized by the 1969 Legislature was opened, stretching 255 miles from Hibbing to Virginia. The trail guides tourists through Minnesota's unique iron range and focuses attention on the contribution of the area to the Nation. The trail further demonstrates how mining lands can be reclaimed for recreational uses.

ENVIRONMENTAL CONSERVATION EDUCATION CURRICULUM - The Department, working in cooperation with the Department of Education, took giant steps toward development and implementation of a kindergarten-through-12th grade environmental conservation education curriculum. Twelve pilot schools were named in June, 1960, to use and evaluate new curriculum and teaching materials.

SNAKE RIVER STATE FOREST - Authorized by the 1969 Legislature, this area in Kanabec County is Minnesota's 55th state forest. A total of 2,984,244 acres now have state forest status.

SNOWMOBILE SAFETY TRAINING - The 1969 Legislature authorized a Snowmobile Safety Training Course making it mandatory for Minnesota youths between the ages of 14 and 18 to have a certificate to operate a snowmobile across state and county highways. The Department developed a comprehensive training program geared for instructing thousands of Minnesota youths.

FIRST CROSS-COUNTRY TRAIL - A 16-mile stretch of country, from Pipestone to Lake Wilson in southwestern Minnesota, became the state's first cross-country trail. Named the Casey Jones Trail since it courses over an old railroad right-of-way, it accommodates hikers and horseback riders and eventually will extend to Lake Shetek -- a total of 35 miles.

SNOWMOBILE LAWS - The 1969 Legislative session saw Minnesota's snowmobile laws and departmental regulations revised and updated to the extent they have become a model for other states and provinces of Canada.

REGIONAL CENTERS - The Department adopted, after considerable groundwork in southwestern and northwestern Minnesota and working with the Building Commission and other Legislative groups, a proposed Regional Plan for Administration to closely integrate the Department's many activities in the field.



*Active stewardship of our land and its valuable resources is a continuing responsibility of DNR.*

## ADMINISTRATIVE DIVISION

In addition to the five operational Divisions in the Department, five service bureaus function under the Administrative Division: Business Management, Engineering, Information and Education, Planning and a Legal Bureau that is staff function to the Commissioner's Office. These services are indispensable to departmental operation.

### *Bureau of Business Management*

This Bureau provides administrative services to the Divisions and is responsible for the development of good business management throughout the Department. The Bureau is organized into two sections: Finance -- responsible for the operation of the Department's accounting system, budget control, internal audits, game and fish license sales and accounting, and all other licenses and permits and preparation of payrolls; and Office Services -- responsible for the operation of a department-wide inventory control system, mail and messenger services, motor pool dispatching and related office services.

The Bureau is responsible for operation of the license and registration center established in the previous biennium. This includes registration of snowmobiles and boats, game and fish license sales and record keeping. Streamlining of registration operation through computerization established in the previous biennium made it possible to speed up processing of applications for boat and snowmobile registrations. Over-the-counter registration of boats and snowmobiles and issuance of game and fish licenses continued to increase in volume.

During the biennium, procedures were developed and approved by the Department of Administration and the Auditor's and Public Examiner's offices for establishment of an imprest cash checking account system which was later installed in the Department's first Regional Headquarters at Brainerd. The system is designed to provide more prompt payments to vendors on local purchases. This is a pilot study which may eventually be adopted by other State agencies to provide more efficient fiscal operations, payment of local claims, and improved public relations with local business establishments.

### *Personnel*

The Personnel Unit is staffed to the Assistant Commissioner and is responsible for personnel policies, records and training, and labor relations.

### *Bureau of Engineering*

During its 12 years of existence within the Department of Natural Resources, the contributions and services of the Bureau of Engineering have been significantly expanded and improved. The Bureau is now in a position to put together a team of professionally trained people able to determine feasibility, plan, design and construct practically any project undertaken by the Department. Its staff of 46 office and field personnel includes professionals in the fields of Civil Engineering, land surveying and landscape architecture, assisted by architectural and engineering draftsmen, technicians, clerical and stenographic personnel. When timing and work load is critical, the staff is augmented by the hiring of professional consulting firms.

During the biennium, the Bureau completed 109 contract construction projects totaling \$1,871,852, and retained 29 professional consultants at a cost of \$171,983. During the same period, the Bureau completed 721 requisitioned projects: 185 engineering; 77 architectural; 85 landscape architectural; 237 surveys and plats; and 137 graphics.

While many projects handled by the Bureau can be completed by individual sections with their specialized fields and abilities, other and more extensive projects such as state park development are handled on a team approach. Planners, engineers and architectural groups collaborate to achieve a total plan for development and construction. This approach has contributed significantly to both quality and quantity of projects.

### *Bureau of Information and Education*

The Bureau of Information and Education carries out three major responsibilities: public information, conservation education and outdoor safety.

Empowered by action of the 1969 Legislature, the Bureau in cooperation with the Department of Education, took giant steps during the biennium toward development and implementation of a kindergarten-through-12th grade environmental conservation education curriculum. In June 1970, 12 pilot schools were named to use and evaluate new curriculum and teaching materials to be used by schools that fall.

Another major information-education effort with which the Bureau is charged is publication (six issues per year) of The Minnesota Volunteer, departmental magazine with a circulation of 65,000.

The Bureau staff gathers information for, prepares and disseminates news, feature stories and photos through a weekly newsletter, periodic releases and news conferences; develops and publishes educational pamphlets and brochures and audio-visual loan

materials (films, photographs and color slides) and carries out an accelerated program of outdoor safety. The Bureau mailed more than 180,000 pieces of literature during the biennium.

The Department's major showcase, The Natural Resource Building at the Minnesota State Fair, continued to draw capacity crowds -- in excess of 800,000 each year for the ten-day exposition.

The Bureau's Film Loan Library now stocks 147 color films on 67 different environmental subjects. More than 350,000 people viewed one or more of these films during the biennium.

### *Bureau of Planning*

The Bureau of Planning in June 1969, published, "Minnesota Outdoor Recreation Plan - 1968", an expanded and improved updating of the 1965 preliminary plan. The new plan continued Minnesota's eligibility for participation in the Federal Land and Water Conservation Fund Act Program. The 1968 Plan is an attempt to review, and objectively analyze the factors and recommend solutions associated with natural resource and outdoor recreation problems.

The Bureau initiated Project 80, "A Study of the Total Environment", as instructed by the 1969 Legislature and an inventory of natural features and historical sites was completed. This information serves as a basis for preparation of a ten-year schedule of acquisition and development of parks, recreation areas, public access, trails and a river system.

To improve coordination of departmental plans with those of other agencies, the Bureau participated in various stages of water resource and land use planning and obtained needed review assistance from the Commissioner's Advisory Committee on Outdoor Recreation Planning.

In addition to its planning functions, the Bureau implements the Outdoor Recreation Plan with the administration of federal grants-in-aid to the outdoor recreation program. This is done cooperatively with the State Planning Agency's Office of Local and Urban Affairs for local units of government grants. This administration of from \$1 to 1.5 million annually involves establishing administration procedures, receiving proposals, processing those selected and inspecting approved projects. There were 294 active projects during the biennium, 64 of which were approved.

Applications for other federal grants such as Housing and Urban Development, Upper Great Lakes Regional Commission, etc. were initiated and processed by the Bureau. A Housing and Urban Development grant of up to \$1 million was received for acquisition of lands for Afton State Park. Fourteen grants totaling \$93,471 were received from Upper Great Lakes Regional Commission covering several state and local projects.

Requests made to the Legislative Advisory Committee for funds from certain special Natural Resource appropriations are reviewed as to their conformance with the State Outdoor Recreation Plan and certified by the Bureau according to existing laws. This involves keeping an accurate record of the balance and anticipated receipts in the Natural Resource Contingent Account recording both withdrawals and LAWCON deposits.

### *Legal Bureau*

Legal matters of the Department are handled by a Deputy Attorney General and his assistants appointed by the State Attorney General. Some of the services provided during the biennium include:

Litigation in courts at all levels (approximately 50 cases); land acquisition for state parks, forests and game and fish activities (360 tracts, 259 of which were for Game & Fish); land exchanges (21); mineral leases covering 179,000 acres (610 leases, income of about \$4,800,000); preparation of Commissioner's Orders (73); timber account problems (143); approval as to form and execution of more than 7,700 contracts, agreements, and other documents; and appearances at claims commission and other public hearings.

Legal assistance in various water permit and water management activities; dam construction, operation, transfer, repair, and grants in aid; lake water level problems; drainage of lands; obstructions of public waters; changes in course or cross-section of public waters; appropriation of water for municipal, industrial and agricultural purposes; utility crossing of public waters; aquifer gas storage; and other matters.

The Bureau also provides legal service for the Water Resources Board, State Soil and Water Conservation Commission, Land Exchange Commission, and Land Exchange Review Board. Also legislative drafting services for the Department (more than 130 bills were drafted for consideration by the 1969 Legislature.

## ENFORCEMENT AND FIELD SERVICE

The law enforcement functions of the Department were assumed by the Division of Enforcement and Field Service with reorganization in 1967 of the Section of Warden Service, Division of Game and Fish. The field organization is composed of five regions and 11 areas.

The Division administers the Youth Firearm Safety Training Program. During the biennium more than 51,000 youths were trained in safe handling of firearms. Immediately after training became mandatory in 1968, the number of youths trained increased significantly, but in the fiscal years ending in 1969 and 1970, enrollment declined indicating the backlog of untrained youths has now passed through the course. An estimated 23,000 youths will be certified annually in future years. Since the program began in 1956, 282,000 Minnesota youths have been trained.

The 1969 Legislature authorized a Snowmobile Safety Training Course making it mandatory for Minnesota youths between the age of 14 and 18 to have a certificate in order to operate snowmobiles across state and county highways. The Commissioner of Natural Resources responded with a comprehensive training program. The Firearms Safety Coordinator was charged with responsibility for developing a training manual and setting up procedures for certifying youths who successfully completed the course. Three Snowmobile Safety Specialists were appointed to organize a volunteer instructor corps and function as field administrators. The first winter, 19,000 youths received training certificates.



*More than 51,000 youths were trained in the safe handling of firearms under the Youth Firearms Safety Training Program of the Division of Enforcement and Field Service.*



*Thousands of Minnesota youths completed the Snowmobile Safety Training Program developed by Enforcement & Field Service.*

There are 600 state-owned accesses to Minnesota lakes under management of this Division. Additional sites are being purchased and developed to the extent that funds are made available.

A predator control program was implemented and is administered by the Division. A total of 1,611 claims were paid in 26 counties in the amount of \$56,630 for predators that had been doing damage on private property.

All area supervisors attended a 60-hour police management and supervisor course in 1969. All Division personnel attended an annual 60-hour in-service training school designed to improve the Division's enforcement program. Eleven new officers completed the 210-hour basic police training course in the mandatory state police training program as established by the Legislature.

The management and administration of the wild rice crop has been reassessed and the four-county wild rice management program enforced in Mille Lacs, Aitkin, Crow Wing and Morrison counties.

The Division was authorized equal authority with county sheriffs for enforcement of boat and water safety laws. About 266 boat and water safety cases were handled by enforcement officers during the biennium with fines totaling \$1,941.

Arrests by officers involved 9,500 persons who paid fines totalling \$235,000 and 415 articles used illegally were confiscated and sold for \$13,122.25.

One of the objectives of the Division is to help people to enjoy the out-of-doors. It assisted in carrying out the Department's public relations and public information programs through radio, television, newspaper columns, county and state fair exhibits, and speaking engagements at sportsmen's clubs, 4H, FFA, and other conservation groups and schools.

## GAME AND FISH

Accomplishment was the theme for the Division of Game and Fish in 1968-1970.

The state's first coho salmon were stocked in the French River tributary to Lake Superior and a new variety of fast-growing rainbow trout were brought into our trout hatchery operations. Minnesota's first spruce grouse season in 50 years was successfully opened in 1969, and waterfowl numbers returned to the high levels of a decade ago.

A most significant development was implementation of a new state-wide fish and game habitat improvement program made possible by special appropriations from the 1969 Legislature. Although primary emphasis has been placed on deer habitat, strong efforts are also being directed toward pheasants, waterfowl, and fish.



*Wild geese raised at Carlos Avery were released at two game refuges.*

in the Division. These include special studies, reports and meetings regarding the Voyageurs National Park, Ham Lake airport, power plant monitoring, pesticide and mercury analyses, snowmobile impact on wildlife, and many more.

Citizen concern over environmental affairs led to considerable citizen cooperation among mutually beneficial programs. Impressive cooperative efforts have been made on private land development or wildlife, for management and designation of waterfowl lakes in southern Minnesota, and for deer habitat improvement, to name a few.

During the biennium the Division's field organization was reorganized in order to place Game and Fish Managers closer to work areas, to provide better public service, and to implement new programs. Concurrent with field organization, the Division consolidated office functions in St. Paul and, working with other Divisions in the Department, consolidated field office operations.

Awakened public interest in environmental concern brought about many special activities

## *Section of Game*

Unusually heavy snowfall in Minnesota's main deer range during the winter of '68 - '69 prompted a \$100,000 appropriation from the Legislature for emergency care of deer. Under the HODS (Help Our Deer Survive) program, 150 men worked at browse cutting and marking trails. Foresters, conservation officers, other Department personnel and sportsmen made significant contributions to the program, resulting in a high degree of success in bringing our deer herd through a most difficult winter and, secondarily, in awakening the public to the need for sound deer management.

Minnesota's first deer habitat improvement program was funded by the 1969 Legislature and got off the ground during the biennium with 195 projects in 21 northern counties approved on 26,500 acres of land. Also approved were 193 miles of fire breaks and access roads. Of this a total of 120 projects were completed on 10,500 acres and 144 miles of fire breaks were built.

Action such as this triggered statewide public recognition that deer habitat has been declining in Minnesota for the past 15 years or longer, and strong corrective action is being taken.

Coincidentally, recent severe winters have aggravated the problem and caused a further decline in the Minnesota deer herd and harvest by hunters. Hunters afield dropped from 302,000 in 1968 to 254,000 in 1969, and the take of deer declined from 100,000 to 68,000 respectively. Restrictive hunting regulations are expected to continue during the next several years to re-establish a more optimal deer population.

Acquisition and development of wildlife wetlands under the "Save Minnesota's Wetlands" program continued to progress.

A total of 204 parcels of land, comprising 31,500 acres, were acquired and brought under management for wildlife production and public hunting. Development included construction of 35 miles of new fence, planting of 123,000 trees and shrubs, and construction of 49 waterfowl impoundments.

Waterfowl hunting on these wetlands, as well as elsewhere in the state, varied considerably during the biennium. Duck stamp sales in 1968 totaled 141,000 and the state-wide take of ducks was 748,000. In 1969, duck stamp sales rose to 147,000 and the state-wide harvest increased to 1,304,000 waterfowl. Minnesota remains near the top of all 50 states in the number of waterfowlers afield and in hunter success.

Considerable emphasis on private land development for wildlife resulted in many accomplishments. Agreements were signed with 653 private landowners involving projects totaling \$139,000. These projects involved planting of winter pheasant cover in the agricultural part of the state, establishing food plots, constructing

waterfowl impoundments, and seeding nesting areas.

The 1969 Legislature also appropriated \$250,000 for the biennium for expansion of upland game and waterfowl habitat improvement programs. During the first year, 165 woody cover plantings, 70 acres of nesting cover, and 60 acres of food plots were established. Ten wetland restoration projects were completed on both state and private lands.

"Operation Pheasant", a pilot project to demonstrate techniques and cost-benefit ratios of habitat improvement for pheasants on private lands showed good progress. Forty percent of the farmers contacted agreed to produce food and cover plots. Work in the six township demonstration areas include monitoring pheasant populations to determine their response to various degrees of development during the anticipated ten-year span of studies in south-central Minnesota.

Pheasant populations remained at a low level. After a harvest of only 220,000 cocks in 1968, the season was closed in 1969. Severe storms during the winter of '68 - '69 devastated the flocks, particularly in western and northern parts of the range. Favorable nesting and wintering conditions will be required during the next biennium before harvest of one-half million or more birds per year are again realized.

Ruffed grouse populations continued at a high level. Deep snows that contributed to reduced deer and pheasant populations resulted in favorable wintering conditions for grouse and maximum seasons were held. Interest in "partridge" hunting increased and along with it, more people discovered the excellent game bird--the woodcock.

Despite somewhat restricted seasons, the Canada goose take in Minnesota remained at a high level. Restrictions were instituted in an effort to reduce the kill and build the Eastern Prairie flock of Canada Geese. Migration patterns, however, have been such that the hunter kill was not reduced. It is anticipated that continued restrictions may be necessary.

In an attempt to establish a free-flying flock of giant Canada Geese which breed, migrate and winter within Minnesota, 63 adult birds were shipped from the Roseau River Wildlife Management Area in the north to a newly-established six-square-mile game refuge on Fox Lake in Martin County in the Fall of '69. A total of 110 goslings raised at Carlos Avery Game Farm in 1969 were released in the vicinity of Fox Lake to improve the breeding population. In 1970, 103 goslings raised at Carlos Avery were shipped to the Red Lake Wildlife Management Area as part of an over-all management program to establish breeding geese in Minnesota.

## *Section of Fisheries*

During the biennium Fisheries Management continued to provide ample fishing opportunities for more than 1.5 million anglers on the state's 2.6 million acres of fishing waters. While angler success is basically determined by a large number of natural factors such as weather, the management program is responsible, at least in part, for 1970 being a record year for fishing of all kinds, especially for walleyes.

Preservation and development of fish habitat is one of the major concerns of fish managers in these times of heavy lakeshore residential development and agricultural expansion. To offset losses from these causes, developments included completion of eight northern pike spawning areas, a complex of structures installed in French River on Lake Superior to obtain eggs from spawning runs of steelhead trout and coho salmon, and maintenance work on stream improvement structures on 17 trout streams (31.7 miles of stream).

Fifty-four tracts of land totaling 1,047 acres were acquired through fee title or easement for fish management purposes -- 31 of the tracts for northern pike spawning areas.

Information on lake conditions and composition of fish populations was obtained on 317 lakes during the biennium. Shoreline seining was completed on 360 lakes each year to assess natural reproduction.

About 554 million fish of various species and sizes from state hatcheries, rearing facilities and from rescue and transfer operations were stocked in Minnesota lakes and streams. Nearly five million of these fish were trout or salmon, which included about 1,235,000 yearlings over the two-year period. The first introduction of coho salmon was made into Lake Superior and inland lakes.

About 15.5 million pounds of rough fish were removed from inland lakes and streams under contract, state crews, permit and licensed commercial fishing operations. About one-third of the take was carp, with bullheads, buffalo and tullibee comprising most of the remainder.

The Fisheries Research program included 17 major projects dealing principally with the development and evaluation of methods for intensive lake management for both warm water and cold water species; development of techniques for assessing fish populations; and studies of factors influencing walleye propagation.

Fish assessment techniques included development of sonar sounding for locating concentrations of rough fish beneath the ice, and the publication of a bulletin describing its application and use for under-ice seiners. Work was initiated on development of electro-

fishing gear for use in assessment and/or harvest of young-of-the-year and yearling fishes, especially bass, northern pike and walleye.

In 1970 a contract was let with consulting engineers to review the Division's cold water hatchery facilities and to make recommendations for modernizing and upgrading these facilities to accommodate future needs of lake trout and salmon. The consultants' report is due early in 1971.

The Division also evaluated fish and wildlife aspects of five major and many smaller Corps of Engineer projects, 29 Public Law 566 small watershed projects, four major State Highway programs, and 447 county highway projects.

Seventeen pollution-caused fish kills were investigated.

Permits to control aquatic nuisances, mostly algae and weeds, were issued to 893 private individuals and groups.

The Division's chemistry laboratory analyzed 682 water and 31 miscellaneous samples. The biology laboratory examined 1,205 biological samples for diseases. A five-year study to determine the effect of the NSP's Allan S. King Power Plant on fish and fishing in the St. Croix River was continued and is scheduled for completion by July, 1971.

Looking ahead, the Division of Game and Fish plans to continue programs currently underway. During the coming biennium, however, specific emphasis will be placed on the following activities:

\*Establish 600 winter cover areas for pheasants as part of a long-range objective of having four such cover areas per township throughout the state's pheasant range by 1980. Much of this work will require cooperation of private landowners.

\*For walleyes, establish eight monospecific lakes, ten artificial spawning areas, and rehabilitate 12 rearing ponds. Establish a permanent monitoring program on the ten most significant walleye lakes in the state.

\*Complete deer habitat improvement work on 50,000 acres in northern Minnesota.

\*For northern pike, acquire 36 new spawning areas and develop 44 others and management of an additional 200 more. Annual rescue and transfer of one-quarter million pounds of northern pike from winter-kill lakes will be continued.

\*Sound and map 350 lakes, 100 of which have not been surveyed.

\*Acquire 20,000 acres of wetlands.

\*Undertake habitat improvement measures on 46 trout streams and rehabilitate 20 small lakes for trout improvement.

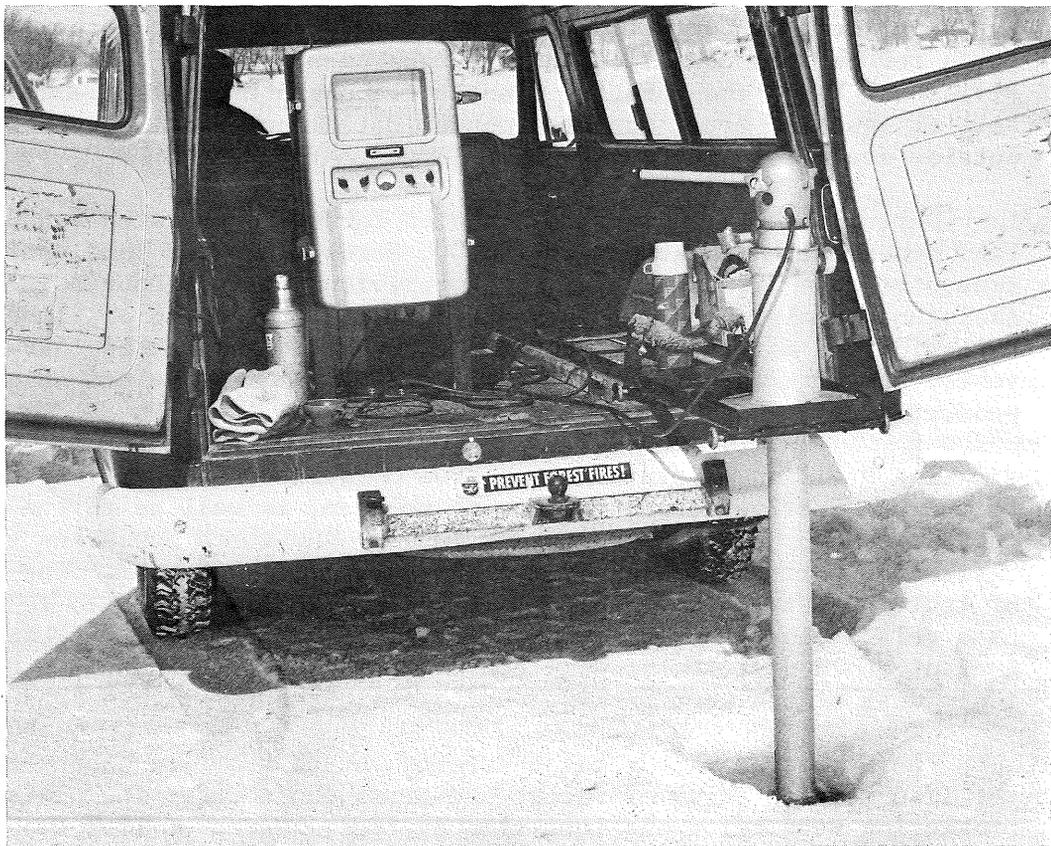
\*Expand and develop Game and Fish laboratories so more analytical work can be carried out in the Department.

\*Assess the fish populations in 200 lakes per year.

\*Prepare management plans and hold hearings for designation of 20 shallow public lakes to be managed primarily for wildlife, especially waterfowl.

\*Reconstruct muskie rearing ponds at Park Rapids for increased capacity, survival, and growth.

\*Establish a permanent state-wide creel census program.



*Sonar sounding for locating large schools of rough fish beneath the ice was developed by the Section of Fisheries of the Division of Game and Fish. The electronic device greatly increases total poundage of rough fish taken in seine hauls.*

## LANDS AND FORESTRY

The Division of Lands and Forestry is responsible for the protection of some 17 million acres of private and public forest land. It manages 55 state forests consisting of nearly three million acres. Among its many functions are: Administration of state timber sales, forest fire prevention and protection, recreation in forests, management assistance to private owners of forest land, production of forest tree nursery stock, and arrangements for land exchange.

In cooperation with other agencies the Division participates in watershed activities throughout the state. It cooperates with the Department of Corrections by providing forestry projects at camps for persons committed to that Department's Youth Conservation Division. Lands and Forestry also is responsible for management, sale or lease of trust fund and consolidated conservation area lands outside state forests.

During the past biennium, Division foresters assisted 7,600 land owners with management of 191,000 acres of forest land, an increase of some 32,000 acres over the previous two-year period. Assistance included advice in management and protection of timber, selection and marking of timber to be cut, aid in marketing harvested products and other services necessary to improve and maintain productivity of small owners' woodlands.

The Division maintains three tree nurseries which are essential to the cooperative forest management program, as well as to the planting program for state-owned forest lands. The three nurseries shipped a total of more than 30 million trees during the biennium. The number of individual tree orders placed with the Division continued to remain at a relatively high level, almost equal in number to years when volumes of stock distributed were considerably greater. Nearly 8,000 individual orders were packaged and distributed to private land owners

The number of fires, total acreage burned and fire losses on the 17.6 million acres of forest and grass lands under the Division's protection were below the long-time average. March of 1968 was the worst on record, with 389 fires burning 33,000 acres. The 1969 fire season had a later than normal beginning, with the first fire day April 11 when fires occurred statewide. The year was somewhat normal until the fall months when conditions south of Mille Lacs Lake were such that considerable trouble was experienced with peat fires.

	No. of fires	Merchant- able acres burned	Reproduct- ion acres burned	Total acres burned	Total damage
1968	1214	487	2805	70,341	\$ 77,376
1969	608	92	187	24,575	10,371
annual average 1948-1957	908	1,297	13,853	51,886	172,895
annual average 1958-1967	979	1,951	4,615	47,491	134,900
20 year annual average 1948-1967	943	1,624	9,234	49,689	153,898

The School Forest program is a dynamic one, especially because of increased public interest in and concern for the environment. There are 45 school forests with 3,798 acres which serve as outdoor laboratories devoted to conservation education.

Thirteen new campgrounds were constructed including eight small units located on canoe routes. The Division now maintains 51 campgrounds of the primitive type.

Campground receipts more than doubled those of the previous biennium. Census figures showed an increase from 84,000 camper days in 1968 to 114,000 in 1969. Boat accesses maintained by the Division increased from 48 in 1969 to 166 in 1970, largely because of departmental reorganization.

During the biennium, work on state land records, sales and leases was largely removed from the State Land Planning and Forest Management Section and transferred to the newly created State Land Records Sales and Leases Section.

Laws affecting the sale of state timber (passed by the last two sessions of the Legislature), made it possible for the sale of additional timber, badly needed for management of timber and improvement of game habitat. About 600,000 cords of timber were cut from state lands.

The trend towards larger volume sales also continued. While the total of timber cut increased considerably, the number of sales decreased by eight percent. Revenue from timber sales decreased about two percent though the volume cut increased. This was due, to a large extent, to an increased cut in aspen and a decreased cut in the higher value species such as spruce.

During the biennium, in closer cooperation with the Division of Game and Fish, more state land was managed to the benefit of wildlife. In the past year, 24,343 acres were given some treatment that improved game habitat.

Forestry inventory continued and management plans were written for 77 of the 92 districts.

Forest planting decreased both in number of trees and acreage. Part of this decrease was the result of greater costs and smaller appropriations. The need for planting is also decreasing in that the needs for both industry and game revolve more around aspen and conifer management. Nine million trees were planted on 10,900 acres; direct seeding was carried out on 3,040 acres, and timber stand improvement on 11,500 acres.

Marketing and utilization advice and assistance to forest producers and forest industry development increased about 11 percent from 1969. A total of 5,150 operators and industries were assisted.



*White Earth State Forest is among 55 Minnesota State Forests managed and maintained by the Division of Lands and Forestry.*

Fire Prevention Education and Law Enforcement are additional responsibilities of the Division. During the biennium about 700,000 pieces of fire prevention and forestry informational material were distributed. Awards were presented to 46 individuals and organizations for outstanding contributions to forestry.

Rural newspapers published a large number of articles furnished by Lands and Forestry field personnel, and weekly articles were included in the Department's Newsletter. Weekly radio programs were continued by many of the stations in the forested areas of the state; fire weather information was broadcast from 39 radio and four TV stations during periods of high fire danger.

Speakers and films were provided for more than 2,000 meetings with a total attendance of more than 100,000. Exhibits were placed at numerous conventions, business places and local fairs. Forest law violation warning tickets were issued to 305 people, and 34 arrests were made.

More than 800 miles of snowmobile trails, 100 miles of hiking trails and 100 miles of equestrian trails were constructed, bringing the present total to 1,134 miles. Many trailside shelters were erected as well as other facilities provided along trails.

The last Legislative session added the Snake River State Forest in Kanabec County. A total of 2,984,244 acres have state forest status. In addition, 6,394 acres are classified as scattered and administrative.

The Section of Land Records, Sales and Leases is in charge of the sale of State Trust Fund Lands and consolidated conservation area lands under the control of the Commissioner of Natural Resources. During the past biennium, nearly 12,000 acres of trust fund lands and 13,800 acres of consolidated Natural Resource lands were sold. The Division also processed about 5,000 leases, of which 2,000 are lakeshore or hunting cabin sites, 1,500 are pole lines and various amounts of agricultural, squatters and other types of miscellaneous leasing. Gross revenue from the sale and leasing of lands during the past biennium was roughly \$658,000.

A number of Federal Forest Service programs are serviced by Division of Lands and Forestry through agreement between the two agencies. The Title IV forestation program, Agricultural Conservation Program, Resource Conservation and Development and Watersheds are the major on-going programs.

## PARKS AND RECREATION

The mission of the Division of Parks and Recreation is to preserve the best examples of the various features that make up our diverse and rich landscape, and to provide recreation for Minnesotans and their out-of-state visitors.

This Division administers state parks, recreational reserves, monument areas and recreational trail systems. It is responsible for state park land acquisition, development, maintenance and operation, including revenue operations such as Douglas Lodge at Itasca State Park, refectories, boat services, tourist and group camps, and camp rentals. Other activities include overall park planning; investigation of additional areas as potential state parks, recreation areas; scientific and natural areas; provision of visitor services, enforcement of rules and regulations, and cooperation with county and local authorities.

In the 35-year period since its establishment, the Minnesota State Park System has grown from the original 34 parks and monuments comprising 39,368 acres and an estimated 600,000 visitors annually to the present 92 parks, monuments and waysides totaling 154,313 acres, with a 1969 attendance estimated at 5,493,000 visitor days.

Lands required and authorized for new parks and enlargement of older established parks must be acquired in the name of the State of Minnesota before any public development and use may proceed. Total park lands authorized for acquisition at the close of this biennium (June 30, 1970) totaled 195,575.64 acres. The current

acquisition program is concerned with 41,262.02 acres of land. The trail system added to the park system in 1969 will require approximately 6,000 additional acres.



A new responsibility established by the 1969 Legislature which will require land acquisition is the Scientific and Natural Areas Program. A number of sites throughout Minnesota which are of unique, natural character and which lie outside of established state land ownership will have to be acquired.

*Casey Jones Trail was dedicated in 1970. The cross-country trail will eventually extend from Pipestone to Lake Shetek, a distance of 35 miles.*

These parcels are to be protected, preserved and restricted to scientific study and research. For the past five years, an advisory committee of qualified persons has been actively engaged in selecting these unique sites and recommending sites for protection, establishment and control. The 1969 Legislature empowered the Commissioner of Natural Resources to carry out this program, including land acquisition.



*Our 92 State Park areas preserve the best examples of Minnesota's rich and diverse landscape.*

Purchase of lands for state parks is now accomplished by the Land Division of the Department of Administration, with the Division of Parks and Recreation establishing priorities. Land

purchase programs are screened by the Department's Bureau of Planning and the State Planning Agency before they are directed to the Department of Administration.

The Land Acquisition Division obtains appraisals and negotiates with owners for options to purchase the desired property. It is the policy to purchase lands by direct negotiation with the owners if possible. It is also policy to give consideration to extended occupancy or even life estate reservations where residential uses are temporarily acceptable and not in conflict with the long range development of the park lands for public use.

Options to purchase tracts of land are again reviewed by the State Planning Agency and prepared for presentation to the Legislative Advisory Committee for release of funds to cover the costs. The Department Planning Bureau simultaneously applies for Federal financial assistance whenever the purchase is eligible. The owner is then notified that the purchase is approved and the legal formalities carried out to complete the transfer of title.

There were 5,390.67 acres of land purchased during the biennium. These lands were in 27 of the state parks and represent 75 individual transactions.

Eminent Domain proceedings are employed in state park land acquisition only in those instances where earnest efforts to negotiate have failed and then only in those parks where such authority is authorized by statute. There were two Eminent Domain proceedings

for park land acquisitions completed during the biennium. In both cases, these were joint condemnation actions with the Minnesota Department of Highways. One was in Fort Snelling State Park involving Interstate Highway 494 and the other involved Interstate Highway 35 adjacent to Helmer Myre State Park. These actions involved eight owners and 538.87 acres of land.

Lands in and for state parks have been available from Federal surplus programs of the United State General Services Administration. There were two instances where detailed documented applications were prepared by the Division requesting transfer of Federal lands to the state without cost under the Federal laws. At this time, title to only one tract has been received, namely 21.5 acres embracing the original walled Fort Snelling. This has been transferred to the jurisdiction of the Minnesota Historical Society by Legislative act.

Two new state parks were established in the 1969 Legislative Session: Afton State Park (612 acres) on the St. Croix River, and Franz Jevne (117 acres) on the Rainy River.

Seven recently acquired state parks were equipped with primitive type tourist camp and picnic facilities. A total of 47 parks now have such facilities. Expansion and modernization of tourist campgrounds in other parks was also carried out with 33 parks now equipped with flush toilets and shower facilities. Total camp sites in the parks now number 3,250 compared to 2,750 in 1968.

Emphasis has been placed on providing adequate sewage and water disposal facilities to serve modern facilities. Comprehensive studies of 12 major parks were completed by consulting engineers to determine the ultimate and most practical sewage waste disposal systems in future development and use of parks.

Construction work began in six parks to carry out the recommendations of these study reports. Sewage system projects will receive priority consideration in the development of public facilities in the other parks where studies were completed. This work was carried out with cooperation of the Minnesota Pollution Control Agency.

Natural forces continued to raise havoc with man-made features in our parks. Spring floods in 1969 resulted in the loss of the Cottonwood River Dam which formed the lake in Flandrau State Park. At the recently created Lake Louise State Park, the historic Mill Pond Dam was severely damaged. These disasters resulted in realignment of development program budgets to cope with such unforeseen problems. The Cottonwood River Dam was abandoned and the site re-landscaped and Flandrau State Park no longer has a lake, but still has riverfront.

The Old Mill Dam at Lake Louise State Park was repaired. This park has the small pond on the Upper Iowa River to authenticate the name of the park. There were three new types of major public service facilities initiated during the biennium.

1. At Itasca a new Mississippi Headwaters visitor complex was completed. This consists of a Museum Building to illustrate geographical and historical significance of this area. A gift shop and a toilet building are arranged around a central plaza. A broad pathway leads over a bridge to the unembellished source of the Mississippi River about 600 feet from the plaza. A new 500-car parking lot flanks the complex on the west.

2. At Mille Lacs Kathio, an Archeologic Museum is under construction. This building will house a display of artifacts derived from archeologic research carried out by the Department of Anthropology of the University of Minnesota. This display will be arranged to tell the story of prehistoric occupation of this park area.

3. Big Stone Lake, long determined to be the oldest known site of human habitation in Minnesota, will be the site of an Archeological Museum. Displays of artifacts will also be arranged by the Department of Anthropology.

The Division of Parks and Recreation has the added responsibilities of directing and coordinating state wide recreational trail systems. Canoe and boating routes comprise 16 rivers established under Minnesota Statute 85.32 which total 2,000 miles.

Overland trails consist of the Casey Jones unit running from Lake Shetek State Park to Pipestone Natural Monument and the Minnesota Valley Trail system from Fort Snelling State Park to Rush River in Sibley County. The Casey Jones Trail is 36 miles in length and the Minnesota Valley Trail is 76 miles.

Access and rest areas are to be acquired together with rights-of-way totaling 6,000 acres of land. About 16 miles of the Casey Jones Trail has been acquired and has been used for bridle trail outings during the past year. The Minnesota Valley Trail was established in the 1969 Legislative Session and is in the land acquisition stage.

In addition to riding and hiking trails, the Division is coordinating development and maintenance of snowmobile trails for winter activities. There has been 1,750 miles of trails designated and marked in state parks, state forests and other state lands to accommodate this sport's spectacular rise in popularity. The snowmobile has been controversial as to its desirability and potential for interfering with wildlife habitat in state parks. Existing trails have been carefully located to insure against any serious encroachment of wildlife sanctuaries. The problem in supervising this activity has been the shortage of manpower needed to patrol and assure that snowmobiles do not stray from designated trails.

## WATERS, SOILS AND MINERALS

### *Section of Waters*

Minnesota has an abundance of water resources - more than 15,000 lakes of five acres or more, 25,000 miles of streams and many billions of gallons of available underground water. The Waters Section of the Division of Waters, Soils and Minerals has the primary responsibility for managing these water resources through a system of:

Flood Plain and Shoreland Management which provides for guiding wise development of flood plains throughout the State and of shorelands of public waters in unincorporated areas of the state. This was accomplished by establishing minimum statewide standards to be implemented through local governmental ordinances and by coordinating



*Managing our valuable water resources is the responsibility of the Division of Waters, Soils and Minerals. The Division also administers to the five million acres of trust fund mineral rights owned by the state.*

and assisting federal, state and local governments in flood plain management activities and county governments in shoreland management.

During the biennium the Waters Section developed comprehensive rules and regulations for statewide standards for flood plain and shoreland management. These rules and regulations were promulgated after a series of 14 public informational meetings on flood plain rules and 18 meetings on shoreland rules and after public hearings were held on each.

The Flood Plain and Shoreland Management Unit has developed technical procedures for evaluating and analyzing flood plain and shoreland management information and has contacted officials of all 87 counties regarding shoreland and flood plain standards and administrative matters, and all cities and villages which have known flood problems.

Preliminary lake classification has been completed for lake basins in every county. Meetings have been held with local officials from 13 counties regarding establishment of local shoreland management ordinances and with representatives of 25 local municipalities concerning implementation of detailed flood plain management programs.

Regulation of activities involving public and private works affecting public waters and appropriation and use of waters resulted in the issuance of 2,755 permits. Of this total, approximately 47 percent were for work in beds of public waters and 34 percent for appropriation and use of ground and surface water mostly for agricultural purposes. The remaining 19 percent was for utility crossings, mining and other permits. Several major permits issued after public hearings included: Abandonment and reconstruction of the St. Cloud-Mississippi River Dam, Anoka-Rum River Dam and Reshanau Lake, Anoka County, a major dredging project.

Preliminary drafts of proposed rules and regulations for permit functions were prepared by the Section with major assistance from the Attorney General's Office. After further review and revision, public hearings will be held to promulgate these rules and regulations.

Several dams were abandoned as a result of discontinuance of hydro power facilities. This created major administrative problems. Funds were authorized by the 1969 Legislature for a study and report on abandonment of dams and suggested legislation to adequately handle future dam abandonment problems.

Basic hydrologic data collection analysis and dissemination programs were thoroughly analyzed. Plans are still being prepared for major changes in the present basic data of ground water and surface water measurement system which is primarily implemented

through a cooperative program with the U. S. Geological Survey. Approximately 3,000 pumping record forms were mailed to water appropriators each year of the biennium and about 1,500 well logs listing new well locations, depths and characteristics were filed.

Investigations and studies of a large number of lake and stream problems and a report on possible water resources effects of the proposed Ham Lake Airport Sites were prepared. An engineering consultant was employed to carry out a study of Lake Benton and Lake Shetek in southwestern Minnesota in order to evaluate lake problems and provide a report to the Legislature and beginning local developmental projects to alleviate some of the problems.

Approximately \$70,000 in state funds were allocated by the Waters Section to local units of Government primarily in the Red River of the North and Minnesota River Basins for local snag clearing projects for channel improvements under legislative authorization.

Water Resource Development study proposals and projects were reviewed and analyzed, including a number of watershed district petitions and reports, preliminary and final county and judicial ditch plans and federal projects and studies of the U. S. Corps of Engineers and U. S. Soil Conservation Service. Technical review and advice was also furnished for several departmental water resources development projects.

Water resources planning efforts were very limited during the biennium due to lack of personnel and funds but the section cooperated in development of plans for regional planning studies (Basin Commission Reports) and the Statewide Water and Related Land Resource Plan.

Looking ahead the Waters Section must:

- \* Provide inventories and informational reports on surface and underground water resources.
- \* Provide long range plans for hydrologic studies and investigations.
- \* Assist local government units in establishing local flood plain and shoreland management ordinances.
- \* Conduct flood plain informational studies.
- \* Provide systematic programs for analyzing and solving alternative water resources supply problems.
- \* Establish a proposed system for collecting funds to defray a portion of costs of water resources administration.
- \* Provide a coordinated water resources management program for the state.

## *Section of Minerals*

The Minerals Section is responsible for the administration of more than five million acres of trust fund mineral rights owned by the State, and approximately five million acres of tax forfeited mineral rights. The revenue from mineral lease rentals and royalties totaled \$4,784,934 for the biennium ending June 30, 1970 -- a 39 percent increase over the previous biennium. Approximately \$828,000 of this amount was returned to the local taxing districts, with the remainder going to the School and University Trust Funds and the General Revenue Fund.

Primary goals of the section are:

1. To promote and regulate, through frequent public lease sale and lease negotiations, exploration and extraction of State-owned minerals.
2. To provide for the orderly development of potential mineral areas and the release of mineral-barren areas for other types of development.
3. To provide equitable rental and royalty income from State-owned mineral lands for the School and University Trust Funds and local governmental units.
4. To improve methods of determining mineral ownerships.

**Taconite Iron Ore Development:** The decline of natural iron ore mining in Minnesota has been largely offset by a tremendous new industry based on taconite. By 1970, there were six large commercial taconite plants treating magnetic taconite. These plants have a combined capacity of approximately 33 million tons of pellets per year. Plant expansion presently underway is expected to increase this production to 40 million tons of pellets per year during the forthcoming biennium.

Studies are currently being conducted by three other companies as to the feasibility of new taconite operations. Because of the location throughout the Mesabi Iron Range of State-owned trust fund mineral lands or mineral rights that have forfeited for taxes, all except one of these operations involve large tonnages of State-owned crude taconite.

**Copper-Nickel and Associated Minerals:** It has been known since 1948 there was a possibility of commercial copper, nickel, and associated minerals being discovered in northeastern Minnesota. Interest in the Minnesota deposits was revived in 1965; and in order to make the State-owned mineral lands available, rules and regulations covering permits to prospect for, and leases to mine these minerals were prepared by the Division and approved by the State Executive Council on November 8, 1966.

Initial interest was in the Duluth Gabbro Complex, which extends through portions of St. Louis, Lake and Cook Counties. A public sale of State leases held in December 1966, resulted in 267 leases, covering 87,635 acres of State-owned mineral lands, being issued to 13 companies. Subsequently, interest in non-ferrous minerals expanded to other areas of the State - particularly to areas containing Greenstone formation. Similar greenstone rock formations in southern Ontario are a major source of Canada's mineral production.

In response to the interest shown, public sales of State leases in the Greenstone areas were held in August and December of 1968, and June of 1970, involving approximately one million acres of State-owned or administered lands in St. Louis, Itasca, Lake of the Woods and Koochiching Counties. They resulted in 567 leases covering 238,827 acres of State-owned lands being issued to eight companies. To date over \$3 million has been expended by private mining companies in exploring these State lands, and it is expected that exploration will be continued and expanded during the forthcoming biennium.

Iron Range Trail and Mineland Reclamation: The 1969 Legislature authorized establishment of an Iron Range Trail and rules and regulations for Mineland Reclamation. The initial Iron Range Trail was inaugurated during the summer of 1970 for the purpose of marking the unique cultural, geological, industrial, historical, recreation and scenic characteristics of Minnesota's three Iron Ranges. This trail is not static. It is proposed that additional sites will be added. Rules and regulations regarding mineland reclamation are currently being drafted.

