DIVISION OF FORESTRY

DIVISION OF GAME & FISH

DIVISION OF LANDS & MINERALS

DIVISION OF STATE PARKS

DIVISION OF WATERS

JULY 1, 1964

BIENNIAL REPORT

JUNE 30, 1966

MINNESOTA CONSERVATION DEPARTMENT

MINNESOTA'S NEW COMMISSIONER OF CONSERVATION

At the time this report was being printed, Governor Harold LeVander appointed Jarle Leirfallom, Commissioner of Conservation, effective January 20, 1967.

JARLE LEIRFALLOM

Mr. Leirfallom, 53, an acknowledged authority in the field of public administration, headed the State Welfare Department for eleven years. When the 22 state institutions were merged with the Welfare Department, he developed and placed in effect a comprehensive organization plan for the greatly enlarged department. During recent years, he has built and administered nursing homes in the Twin Cities. Mr. Leirfallom, a resident of Shoreview, holds a Master's Degree in Public Administration from Syracuse University. He is an ardent conservationist and sportsman.

STATE OF MINNESOTA
DEPARTMENT OF CONSERVATION
ST. PAUL, MINNESOTA 55101

January 1, 1967

To the Governor and the Legislature
of the State of Minnesota

Re: Biennial Report, Minnesota Department of Conservation, July 1, 1964 through June 30, 1966.

We are pleased to present the Eighteenth Biennial Report of the Department of Conservation in compliance with M.S.A. Section 84.03. This report presents factual information concerning the high points of the functions, activities, accomplishments and needs of our Department. This report also provides an understanding of the complexities involved in managing Minnesota's forests, game and fish, lands and minerals, state parks and waters.

We are proud of our accomplishments in this past biennium and know that you share in this pride.

Respectfully submitted,

Robert L. Herbst, Acting
Commissioner of Conservation

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FOREWORD

The mission of the Department of Conservation is to promote the wise use and management of our state's vital resources, - its forests, water, fish, wildlife, minerals and state parks. How we function in this mission is paramount as the well-being of our citizens and our standards of living are directly involved.

Minnesota covers a vast area, some 84,000 square miles. Of this expanse, the Department has direct management responsibilities on approximately 7,800 square miles of land, water and related resources. Taking this into consideration, one can visualize the complexities and challenges involved. Add to this our expanding population, modern means of transportation, increasing income and leisure time, and the job becomes manifold. All these factors increase the need for recreation and the desire to get into the open air, but at the same time, increase the pressures on our priceless resources. The complex conservation challenges underscore the urgency and priority which must be given to public education programs.

Our natural resources form the basis of our economy. The value of forest products harvested in Minnesota annually exceeds $300 million. Another $150 million is expended for hunting and fishing. Camping, boating, and other outdoor recreation activities result in the expenditure of millions of dollars more. Minnesota's billion-dollar mining industry accounts for about 60 per cent of all the iron ore produced in the nation. Present mining production is valued at about $500 million dollars per year and the expansion of taconite operations and the possible development of a new copper-nickel industry could increase this figure substantially. In addition, the multi-million dollar tourist industry relies directly on the appeal of green forests, clear water and an abundance of fish and wildlife.

With this in mind, it is not surprising that the Department has grown to be the complex and widely distributed organization that it is today. But it takes well-trained, diligent and dedicated personnel to do the job, - men like Robert Owens who, until his recent death, was head of the Department's Bureau of Engineering. Outstanding among his contributions was to provide the engineering required for the 1963 Natural Resources "crash program". The remodeling and construction of the Conservation Building and grounds at the State Fair, the star attraction at the 1966 Fair, was the responsibility of his Bureau.

Through the enlistment of quality personnel, the Conservation Department will continue to promote the wise use and management of Minnesota's precious heritage, - its natural resources. True, this is our job, but it is also the duty of every citizen. Conservation was willed by the people and is supported by the people.

ORGANIZATION OF THE

DEPARTMENT OF CONSERVATION

When Minnesota became a state in 1858, the need for protecting and managing our wildlife, forests, minerals, and water was probably only visionary as the supply must have seemed inexhaustible. But, as civilization advanced, the need became evident and through the farsighted efforts of pioneering conservationists, the conservation concept was born.

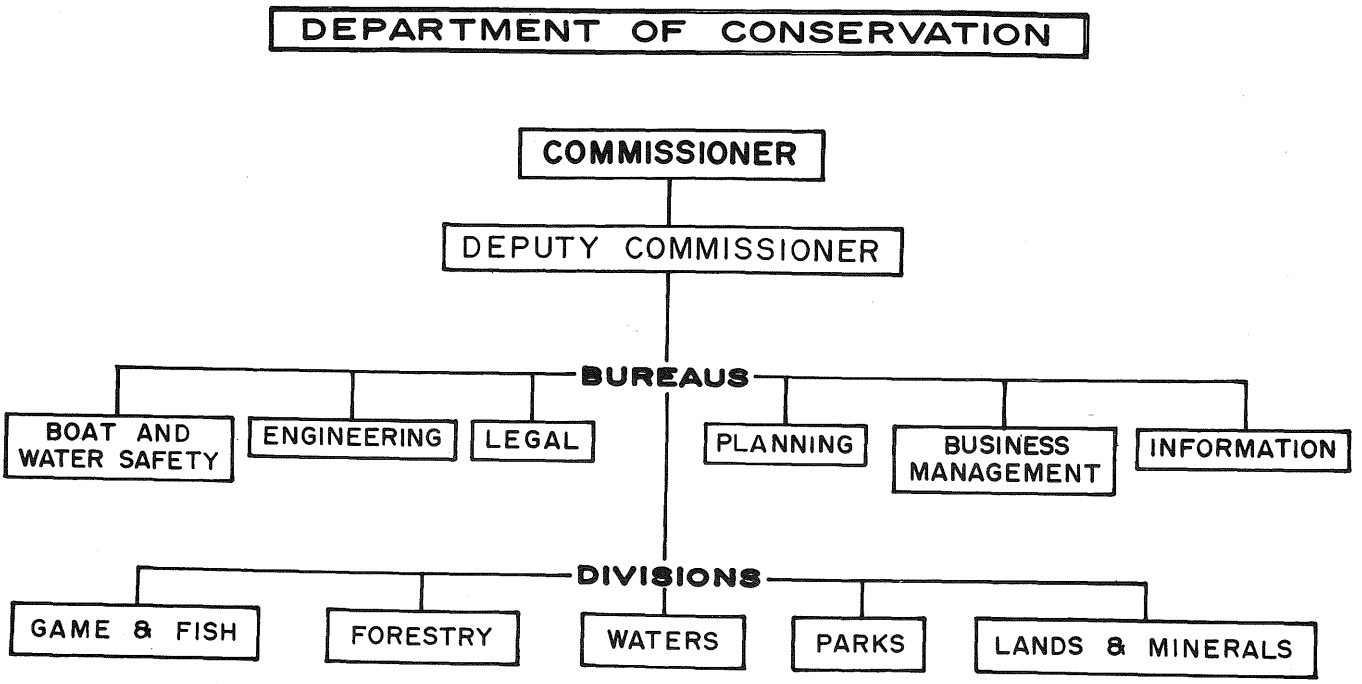
At first there were several natural resource organizations in Minnesota which were independent of each other. Then in 1931, the Department of Conservation evolved as an agency designed to bring together the various areas of resource management. At the onset, the separate organizations of Forestry, Game and Fish, and Waters were combined into the Department of Conservation and later two more organizations - Lands and Minerals, and State Parks - were included. These agencies now comprise the five divisions of the Conservation Department.

When the Department was first established, it was administered by a five member Commission. This system was abolished in 1937 when Chapter 310 vested the authority with a Commissioner of Conservation. In addition to the five divisions, six bureaus have been established by Commissioner's Order and affirmed by the Legislature to assist the Commissioner and the divisions. These are the bureaus of Boat and Water Safety, Business Management, Engineering, Information, Legal, and Planning.

The Commissioner is appointed by the Governor upon the advice and consent of the Senate. The Commissioner appoints a Deputy Commissioner and five technically qualified Division directors when a vacancy occurs. Through the Commissioner's leadership, the activities of the Department of Conservation are governed and the broad policies by which the Department operates are laid down. The functions of the Department are channeled into the divisions and bureaus. From the helm of each Division, the director charts the course of established policy and actions of his respective Division.

While organization charts and administrative lines of authority are essential to the efficient, economic operation of the Department, they must be supported by the basic requirement - quality personnel. Intelligent, capable and dedicated employees are an absolute must and essential to leadership and excellence in any resource management organization.

Working toward a common conservation goal are approximately 2,100 persons at peak employment. This includes 1,100 regular or full-time employees, about 1,000 seasonal and hourly (part-time) personnel and 14 in the state's Natural Resources Program.



Over-all Departmental Reorganization

As in any organization, it becomes necessary to reorganize from time to time to keep pace with the demands of changing times resulting in special problems. During the past two years, the Department has been in a state of improving the internal structure and operational procedures tailored specifically to Minnesota's conservation programs and needs. Some of the changes are in force now while others are planned and will be studied further for later incorporation into Departmental operation.

The purposes of the reorganization plan are three-fold:

1. To facilitate more effective management of Minnesota's natural resources.

2. To promote greater efficiency in operation.

3. To develop the most economic management concept without jeopardizing management policy.

Consolidation of Regional Operations

One major improvement will be the consolidation of regional operations for each Division at a common headquarters location. To achieve this, departmental regional headquarters are recommended at two strategic locations - Brainerd and Bemidji. In addition, sites at New Ulm and Mankato are being considered.

Such new departmental headquarters facilities will house all departmental personnel stationed at these locations and will provide common warehousing and repair facilities. Over the years, each Division has built facilities to take care of its own needs and in several instances has resulted in several branches of the Department having buildings at different locations in the same town. The development plans for regional headquarters include demonstration areas which will expand our conservation education program.

New Salary Plan

The Department of Conservation's new salary plan is one of the most significant steps in reorganization. The plan includes many advanced ideas essential to the organizational structure.

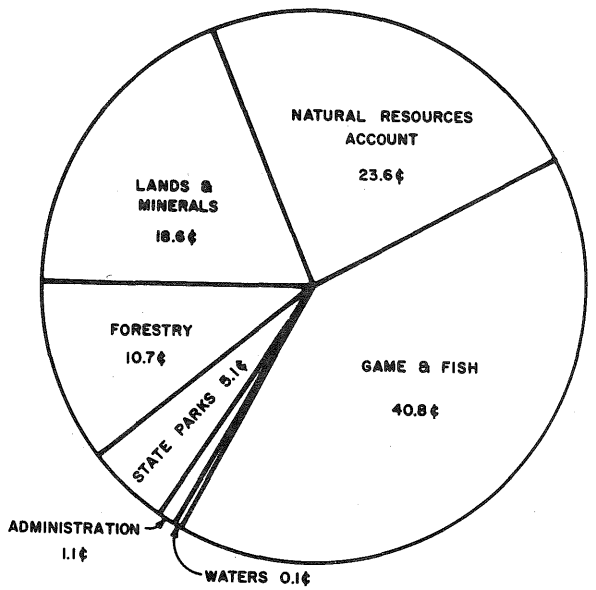
A Conservation Manager series was established to bring all positions of relatively the same assignments into a uniform framework within which organizational needs can be fit with appropriate working titles. It reduces the number of job classifications as necessary for the Department from 75 to 8. Increases in pay of from 20 to 25 per cent are recommended in the salary plan to upgrade many departmental positions which have fallen far short of comparable pay scales in other midwestern states.

The salary proposal was approved by the Civil Service Department and the Department of Administration and is included in the over-all State salary plan to be submitted to the 1967 Legislature. We strongly urge the adoption of this plan.

Organizational changes will be discussed further under each Division and Bureau. All changes made in the Department reflect an adaptation to changing needs in the natural resource field. Whereas at one time emphasis was placed solely on protection and improvement of the resources, now more attention must be given to the socio-economic aspects which in modern times governs the uses of our natural heritage.

Finances

WHERE YOUR CONSERVATION DOLLAR COMES FROM

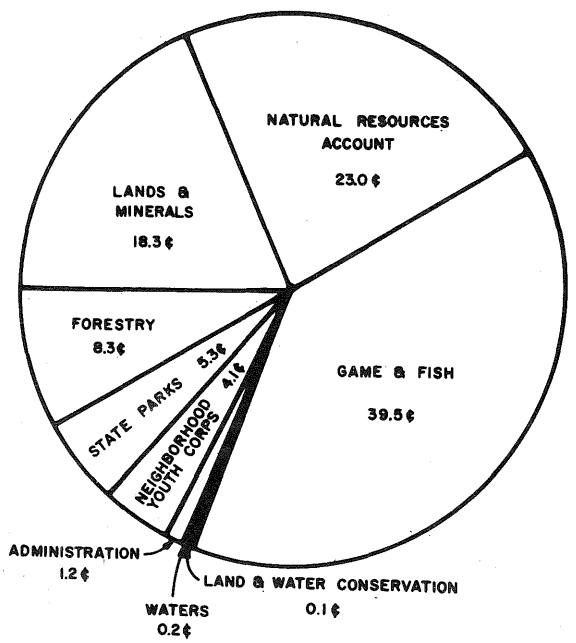


RECEIPTS JULY 1, 1963 - JUNE 30, 1964

INCOME BY DIVISION

Administration	$ 169,404.67
Waters	12,110.73
Forestry	1,591,158.30
Lands & Minerals	2,756,390.22
Game & Fish	6,058,653.20
State Parks	754,566.74
Nat'l. Resources Acc.	3,505,873.49
Total	$14,848,157.35

RECEIPTS JULY 1, 1964 - JUNE 30, 1965



INCOME BY DIVISION

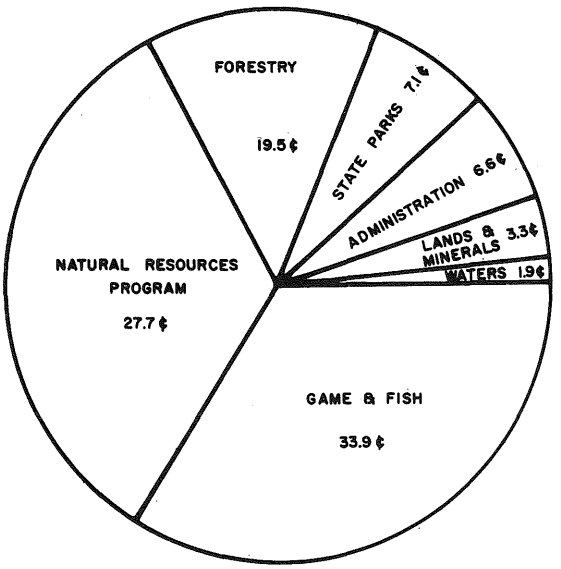
Administration	$ 188,422.05
Waters	27,838.31
Forestry	1,335,598.80
Lands & Minerals	2,920,198.23
Game & Fish	6,318,266.43
State Parks	840,337.90
Nat'l. Resources Acc.	3,683,508.16
Neigh. Youth Corps	661,300.00
Land & Water Cons.	14,017.25
Total	$15,989,487.13

SOURCE OF RECEIPTS - MAJOR ITEMS

Administration - Boat license fees; Waters - Permit fees; Forestry - Timber sales, tree seedling sales & federal aid; Lands & Minerals - Iron ore royalties, land sales & leases; Game & Fish - Game & Fish license fees & federal aid; State Parks - Park permits, refectory sales & camping permits; Natural Resources Act - Special cigarette tax - $.01¢ per pack; Neighborhood Youth Corps - Federal aid; Land & Water Conservation - Federal aid.

WHERE YOUR CONSERVATION DOLLAR IS SPENT

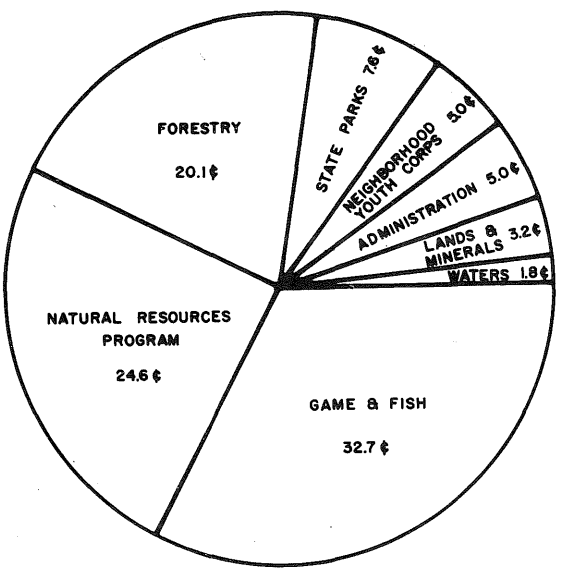
EXPENDITURES JULY 1, 1963 - JUNE 30, 1964



EXPENDITURES BY DIVISION

Administration	
Business Management	$ 280,761.94
Engineering	188,820.66
Legal Affairs	83,385.62
Information	94,851.60
Boat & Water Safety	351,818.01
Other	5,955.15
Total Administration	$ 1,005,592.98
Waters	280,351.06
Forestry	2,940,184.28
Lands & Minerals	493,826.53
Game & Fish	5,116,164.83
State Parks	1,076,507.74
Accelerated Nat'l. Res. Pro.	4,189,004.64
Total	$15,101,632.06

EXPENDITURES JULY 1, 1964 - JUNE 30, 1965



EXPENDITURES BY DIVISION

Administration	
Business Management	$ 270,482.61
Engineering	189,124.79
Legal Affairs	83,885.79
Information	99,092.35
Boat & Water Safety	132,789.59
Other	5,412.60
Total Administration	$ 780,787.73
Neighborhood Youth Corps	767,589.06
Waters	276,074.61
Forestry	3,112,667.56
Lands & Minerals	488,117.55
Game & Fish	5,061,009.25
State Parks	1,172,656.52
Accelerated Nat'l. Res. Pro.	3,814,916.89
Total	$15,473,819.17

Omnibus Natural Resources Act

of 1963 (amended in 1965)

It is generally agreed that the passage of the Natural Resources Act was the biggest step forward in Minnesota's conservation history since the establishment of the Department of Conservation in 1931. During the first two years since it was adopted by the 1963 Legislature, and signed by Governor Rolvaag, over $7,500,000 has been raised by the one-cent-per-pack hike in the cigarette tax provided for in the Act. This money has been wisely reinvested in natural resource study, planning, land acquisition, development, and facilities.

It has provided Minnesota with urgently needed state parks lands, historic sites, wildlife areas, spawning areas, accesses to lakes, trails, roads, scenic areas, improvements to the State's waters and many other facilities.

Stated simply, the purpose of the Act is to make Minnesota a better place in which to live. The money provided in the Act is aimed to both enlarging economic opportunities and increasing the citizen's enjoyment of his leisure time.

The following chart illustrates the impact the Act has had on the Department operations and how the appropriations have been used.

Accomplishments - Omnibus Natural Resources Act
Chapter 790, Laws 1963
1963-65 Biennium

	Total Appropriation	Summary of Major Work Accomplished
Forestry		
Reforestation	$376,000	7,380 acres planted with 7,252,950 trees; 5,682 acres prepared for planting, 432 acres sprayed, 148 acres plantation release or prunning.
Nursery Program	$200,000	Land development, supplies and equipment.
Forest Trails	$383,089	52 miles new forest roads; 26 miles existing forest roads reconstructed; maintenance and development.
Forest Campgrounds	$100,000	7 new campgrounds (165 new camp sites); additions to 7 existing campgrounds (90 more tent sites); 19 wells; miscellaneous campground facilities; 9 campgrounds surveyed; routine maintenance.
Acquisition - Memorial Hardwood Forest	$300,000	Total acres - 10,087, options paid on 4,865 acres, options not complete - 5,221.

	Total Appropriation	Summary of Major Work Accomplished
Game and Fish		
Wildlife Land Acquisition	$400,000	125 tracts purchased, 8,289 acres, 35 counties.
Spawning Area Acquisition	$150,000	19 tracts purchased, 305 acres, 10 counties.
Wildlife Development	$300,000	52 projects completed (36 in economically distressed counties thus qualifying for federal aid reimbursements under APW. Eight qualified for reimbursement under federal P-R and D-J.)
a. Wildlife Lands		19 active projects, 20 counties - development mostly on small wetlands acquired in 1953. Development - major wildlife management areas - Sunrise Addition, Carlos Avery, Chisago County; Morph Meadows, Itasca County; Roseau River, Roseau County.
b. Spawning Areas		Development completed by private contract, 14 areas, 11 counties.
c. Public Accesses		Development completed, 18 sites, 10 counties.
State Parks		
Development and Improvement	$1,671,005	57 parks.
Land Acquisition	$1,651,000	31 parks, 220 parcels optioned, 17,400 acres.
Waters		
Red River Basin Studies	$ 70,000	Allocation to cooperative agreement with U.S.G.S. for water resource reports of 8 watershed units. State funds matched by federal funds.
Hydrologic Studies and Research	$150,000	Allocation to cooperative agreement with U.S.G.S. for water resource reports of watershed units outside Red River Basin. State funds matched by federal funds. Ground water hydrology, Twin Cities area and analog model.
Topographic and Geologic Mapping	$400,000	By U.S.G.S. under cooperative agreement with State - $326,000 plus $50,000 from other sources, matched by federal funds. Aeromagnetic surveys, 17,000 square miles, southern Minnesota, cooperative agreement with U.S.G.S., $60,000, matched

	Total Appropriation	Summary of Major Work Accomplished
		with federal funds. $14,000 for aerial photos, Division of Forestry. 10,300 aerial photos for forest inventory and administration of forest lands; $13,916 State funds used for new photos of Pine County augmented by $1,000 federal A.P.W.
Conservation Works Program	$500,000	Work projects on conservation lands, supplemented by $275,000 federal A.P.W. funds.

Minnesota's Conservation Work Program is designated to offer employment in counties classified as economically distressed. Under the plan, men who have exhausted their employment benefits are eligible for work on various conservation projects such as tree planting, construction of park and campground facilities and access development.

NEIGHBORHOOD YOUTH CORPS PROGRAM

In February, 1965, the Conservation Department entered into a contract with the U. S. Department of Labor to provide job training for youths between the ages of 16 through 21. A new contract was recently approved to continue this activity until October 31, 1967.

This is part of a broad economic opportunity program enacted by Congress to help alleviate poverty in the nation. The Neighborhood Youth Corps (NYC) program was created to help youth from low income families who have dropped out of high school and have been unable to find full-time employment. Under the terms of the contract, the Department employed these youth on various phases of our field work such as maintenance in state parks and wildlife management areas, tree planting, and access road and trail improvements. In addition to learning good work habits, part of each week was set aside for sounseling for the purpose of encouraging the youth to return to school and complete his high school education, or to enroll in a vocational school to learn a skilled trade.

Much good has been accomplished under this program. Since its inception, approximately 4,500 youths have been enrolled and received job training; 318 of this total found full-time employment, 45 went into job corps, 42 went into the armed forces, 40 returned to school, and 20 went into State Civil Service jobs.

The Story of

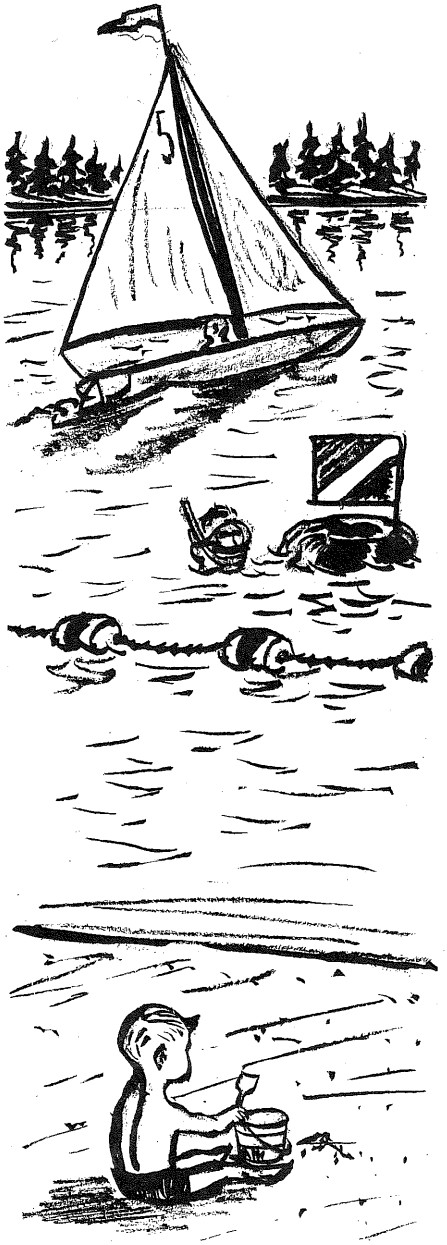
Conservation Operations

Conservation is best defined as a philosophy or way of life; it is a rule and guide for resource management; it teaches the interdependency of all things; it recognizes the aesthetic in Nature and the spiritual in man; and it is manifested in a rewarding economy for today and tomorrow.

Conservation of natural resources today is big business and the organization of the Department of Conservation is equivalent of a large corporation. The following pages cover the operations of the five divisions and six bureaus that comprise this "conservation corporation".

BOAT AND WATER SAFETY

Milton Johnson, Director



The Bureau of Boat and Water Safety came into existence following the passage of the Boat and Water Safety Act in 1959. It was created by the Commissioner of Conservation to carry out the provisions of the Act. The Act is designed to promote the full use and enjoyment of our waters by our people, to provide for the licensing of watercraft, and for the safety of persons and property when using Minnesota's waters. (Relatively few organization changes were made during the biennium in this Bureau.) With the exception of a few counties, the sale of watercraft licenses has been centralized in the offices of this Bureau.

There are now 240,000 registered boats in the State. During the biennium, there has been an average increase of 25,000 each year. Seventy-five per cent of all receipts from boat registrations are allocated to the counties for enforcement of the Boat and Water Safety Act. The Bureau maintains liaison and gives cooperation to the county sheriffs in the enforcement of the Minnesota Boat and Water Safety Act.

With the cooperation of the State Sheriffs' Association and the U.S. Power Squadrons, a training program was initiated for the sheriffs of the state and their water patrol deputies. A refresher course will be held each year.

The Bureau maintains records of all boating accidents in our State.

Boating Accidents

	Number
1965 (calendar year)	49
1966 (calendar year)	63

BUSINESS MANAGEMENT

Howard Munson, Director

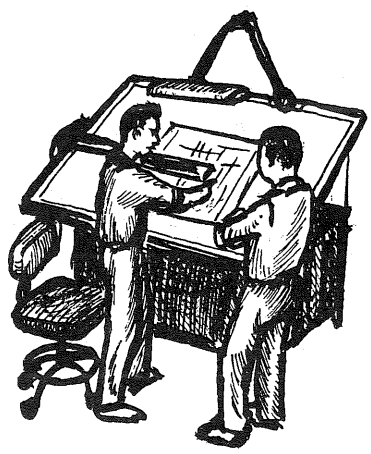
The Bureau of Business Management, created in 1954, provides administrative services to the divisions and is responsible for the development of good business management practices throughout the Department. The Bureau is organized into three sections; Finance, which is responsible for the operation of the Department's accounting system, budget control, internal audits, game and fish license sales and accounting, all other licenses and permits; Personnel, which is responsible for personnel policies, personnel training, labor relations, personnel records and preparation of payrolls, and Office Services which is responsible for the operation of a department-wide inventory control system, mail and messenger services, motor pool dispatching and related office services. An administrative analyst reviews all systems and procedures used throughout the Department.

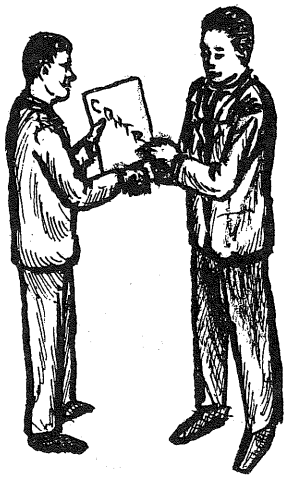
ENGINEERING

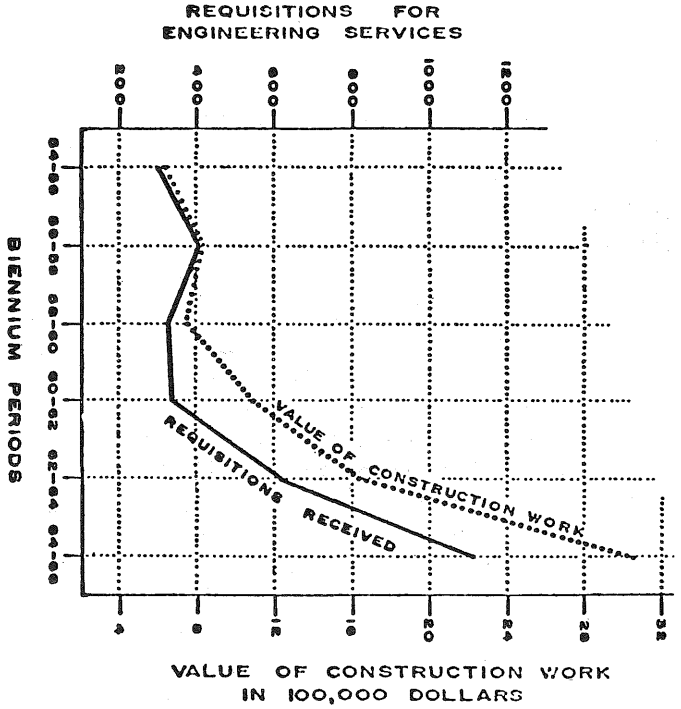
Eugene Gere, Chief Engineer

The Bureau of Engineering, created in 1958, reflects the growing need for coordination of property and project surveys, design and construction supervision related to projects that may be sponsored by the various department Divisions. The Bureau prepares maps, plats, cost estimates, specifications, material lists, engineering data, and determines whether contemplated developments are feasible from an engineering standpoint.

The Bureau completed 1,034 requisitions for engineering services during the past biennium. The Bureau's field survey crews made 500 surveys, mostly property surveys of individual tracts for the various divisions in the process of their land acquisition programs. In addition, private land surveyors were hired to conduct 127 surveys. It has become increasingly necessary to hire consultants for survey and engineering, when funds are available, in order to keep pace with the volume of work. A further breakdown of engineering work completed according to the type of projects is as follows: 9 lake and channel improvements; 70 spawning areas and rearing ponds; 155 public accesses; 44 outlet structures, dams, fish barriers, traps, etc; 98 buildings; and 361 bridges, roads, water and sewage projects. Considerable time and assistance was rendered to remodeling the Conservation Department's building and grounds at the State Fair. The total number of requisitions for engineering services has increased from 353 for the 1958-60 biennium to 1,120 for the 1964-66 biennium. Thus, the total work load has more than tripled over the short span of three bienniums. Likewise, the total value of construction work has increased. However, the authorized complement of personnel during this same period has increased less than 1-1/2 times.







To provide the Divisions with improved engineering service and closer coordination, a field engineer has been assigned by the Bureau of Engineering to each of the five regions of the Division of Game and Fish. Other internal improvements were necessitated by the Department's increasing needs for engineering services. Thus, three supervisory positions were created; 1) a program coordinator, 2) design engineer and 3) a field supervisor.

INFORMATION

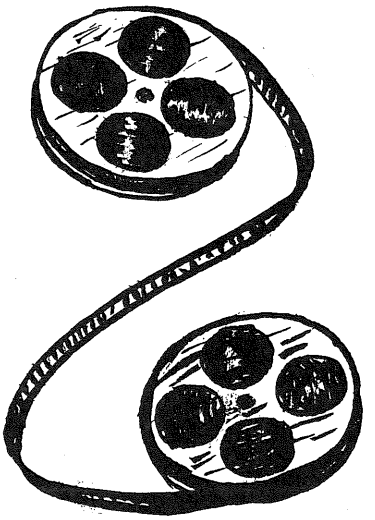
Carl Moen , Director

The Bureau of Information was established in 1941 to carry out the Department's public relations, public information and education programs. This involves a great variety of activities such as publication of the departmental magazine, The Conservation Volunteer. The 1965 Legislature authorized the publication of 50,000 issues which means 15,000 more Minnesotans now receive the magazine free of charge. It is estimated on the basis of a minimal reader index of ten that at least 500,000 Minnesotans have an opportunity of reading this magazine. The Bureau prepares a weekly newsletter which is sent to over 500 newspapers as well as special news releases and feature stories. Informational pamphlets and brochures on various conservation subjects are prepared and approximately 1,700 mailed each month. The Bureau cooperates with the divisions in writing and editing material.

The Bureau's weekly radio program is now in its 18th year. It is produced in cooperation with the University of Minnesota's School of the Air and has added materially to the over 125 sound-tape programs now available to schools. A staff member cooperates with the Department of Education in developing curriculum for elementary grades and carries on a continuing program of conservation education with youth groups, high schools, and college classes.

In the Bureau's film loan library are 70 color films on 50 different conservation subjects. Films are available to the public upon request. Other activities include the annual Arbor Day tree planting program, a program of outdoor safety through the Minnesota Safety Council, a variety of special projects, reports, photographic services, and a broad program involving writing and research.

One of the major accomplishments of the Bureau was the coordination of the construction and remodeling of the Conservation Building at the State Fair. Although the conservation exhibit has traditionally been one of the most popular attractions at the Fair, the new forest fire lookout tower, new wild animal display annex, newly designed interior and the fresh new approach to all the exhibits led to an unprecedented popularity. Approximately 800,000 visitors viewed this year's conservation display.



In 1967, the Department hopes to have completed a natural habitat display with stream and pool and an area planted with native Minnesota trees in the courtyard. A new theater wing is planned where conservation films will be shown. Landscaping and layout of the grounds are also planned. It is proposed to winterize the new addition of a theater, offices for administration, and a basement firing range for our Youth Firearms Safety Program for year around use.

The staff of the Bureau is 11 persons - the same personnel complement it had a quarter of a century ago. Ten new positions are urgently needed. Plans call for the addition of five regional conservation education specialists and the establishment of two sections (1) education to include formal conservation education, visual education, exhibiting, lecture service and specialized services and (2) publications, to handle The Conservation Volunteer, news services, other publications, graphic arts services and special projects.

The Bureau's proposed restructuring is designed to implement and facilitate conservation education emphasis - a major concern in the reorganization of the Department. The name of the Bureau is to be changed to the Bureau of Conservation Education to more accurately reflect the education phase.

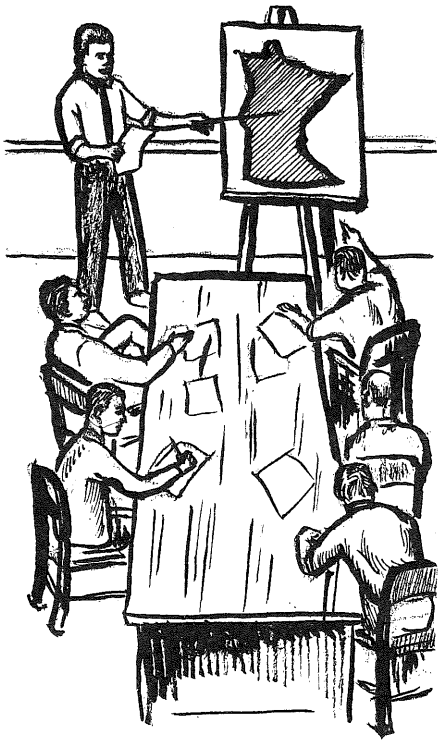
LEGAL

Frank J. Murray , Deputy Attorney General

The Department takes part in many transactions which call for legal services of a highly technical nature. Legal counsel is required in such matters as acquiring property, entering into contracts, negotiating claims, participating in hearings and handling litigations in courts of law. Responsibilities of the legal staff include providing counsel on matters which arise through various Conservation Department procedures and the handling of all legal proceedings in which the Department is involved. Personnel of the legal staff are under the supervision of the State Attorney General's office and are paid and furnished office space by the Department. Additional legal services were required during the biennium to handle the sky-rocketing land acquisition programs attendant with the over-all expansion in State parks, wetlands, spawning areas, etc.

PLANNING

Jerome Kuehn, Director



This newest Bureau of the Department was born in 1964 in the midst of the recreation boom that is sweeping the country. This new bureau is designed to cope with the mounting demand for outdoor space and facilities.

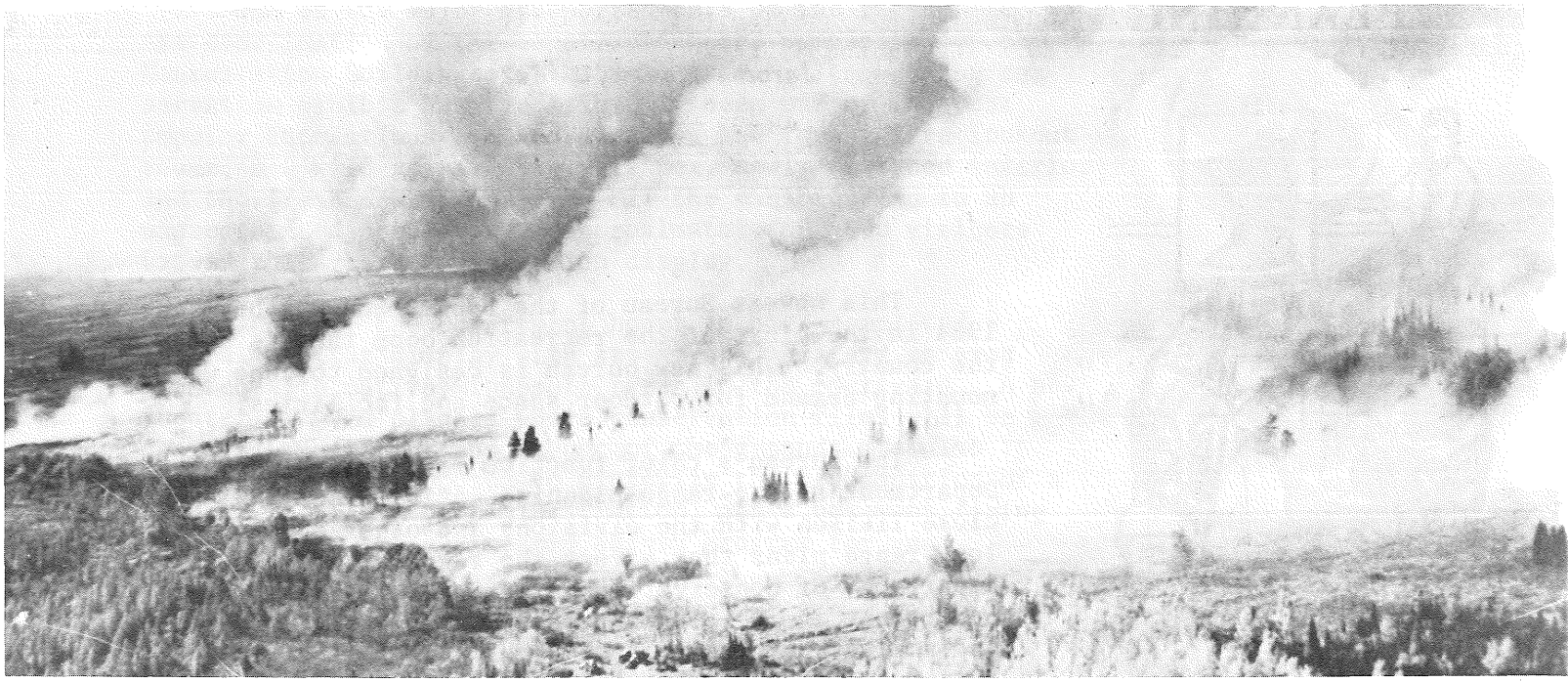
The Bureau's chief function is to coordinate the Department's long-range planning activities. This involves close liaison with the divisions and other agencies making long-range plans that affect the resources for which the Department of Conservation is responsible. To assist the Department in its planning, review and analysis of federal and analysis of federal and local planning programs is a continuing requirement. All programs of the new Bureau are now coordinated with other state planning endeavors by the State Planning Agency established in 1965.

One of the first tasks of the new planning staff was to prepare a state-wide outdoor recreation plan - the first of its kind for Minnesota. A preliminary plan was prepared establishing Minnesota's eligibility for participation in the federal Land and Water Conservation Fund Act Program. An up-dated plan will be required by March 1, 1968 to continue eligibility in this federal aid to outdoor recreation program. The Bureau now faces the problem of handling administrative duties under the Land and Water Conservation Fund Act as well as planning activities within the Department.

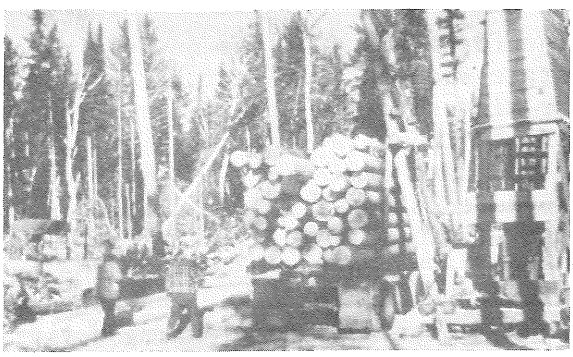
The limited complement of four employees is supplemented by such services as can be financed through federal grants. Additional help is needed both in conducting land use inventories, demand studies and in administering the federal grants to recreation programs to bring about the orderly planning so vital in dealing with our natural resources.

DIVISION REPORT I

MAJOR FORESTRY DIVISION PROGRAMS



Forest Protection



Forest Management and Sales

State Forests and Recreation

Tree Nurseries

Cooperative Forest Management

FORESTRY

Earl J. Adams , Acting Director

Forests, a multiple resource, are essential to Minnesota's wildlife, recreation and industry. The functions of the Division of Forestry are forest management and timber sales, forest fire protection, forest recreation, private land forest management assistance, production of forest tree nursery stock and land exchange.

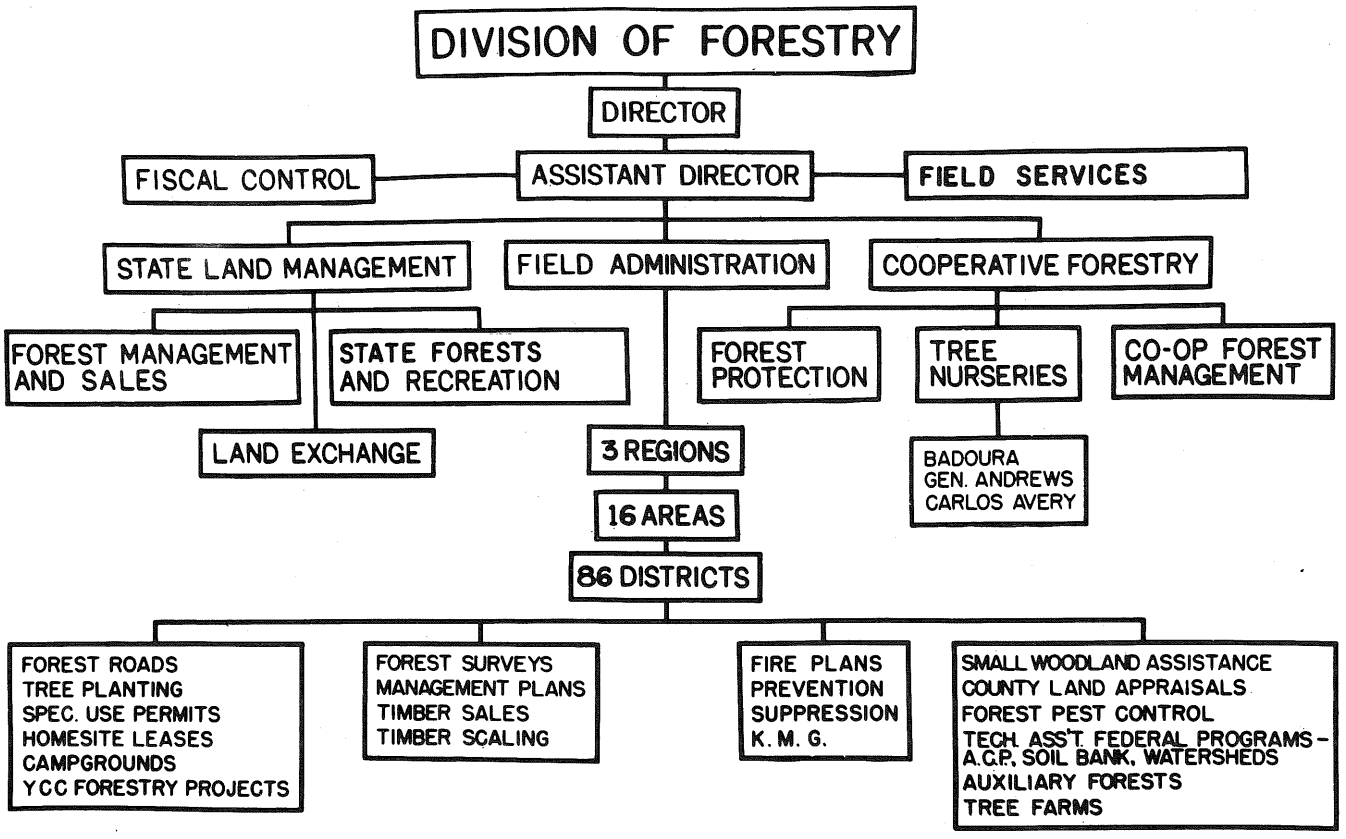
The origin of forestry in Minnesota was the Minnesota Forestry Association created in 1876, the first such organization in the nation. The Association acted as the semi-official forest agency until 1895. Then following the Hinckley fire of 1894 which took the lives of 418, the Legislature named the State Auditor ex-officio Forest Commissioner with the power to appoint a Chief Fire Warden. As the result of other fires, a forestry law was enacted in 1911 which created a Forestry Board to overhaul forestry laws. In 1925, forestry was under the jurisdiction of the Conservation Commission. Next came the Department of Conservation and Forestry was made a Division within the Department in 1931.

Organization of the Division

The Minnesota Division of Forestry is a line and staff organization headed by a Director and his Deputy. The staff is divided into two sections: (1) State Land Management which deals with all activities that involve state lands, and (2) Cooperative Forestry which includes all activities that require work with other agencies such as federal and county governments and private landowners. Programs carried out by the Division are combined into five general programs. Included in the State Land Section are two programs - Forest Management and Sales, and State Forests and Recreation. Included in the Cooperative Forestry Section are three programs, Forest Protection, Cooperative Forest Management, and Tree Nurseries.

It is the responsibility of the staff to develop the programs and the field force to carry them out. This is accomplished through three Regions, 16 areas, and 86 district offices by the regional, area and district foresters and their assistants. The program of Tree Nurseries is accomplished by three nurseries.

In addition, a Field Services Unit provides services, supply and construction. Over-all supervision for field services is provided by a Forestry Field Services Supervisor stationed at Grand Rapids who is under the immediate direction of the Director and his Deputy. The Field Services Unit is responsible for providing access within the state forests for forest management and fire protection. These roads provide access for other uses such as game management, hunting, fishing, and general recreation. Thirty-one miles of new roads were constructed during the biennium at the cost of $187,000. The completed roads bring the total forestry mileage to 1,341. In addition, 26 miles of existing roads were reconstructed and another ten miles contracted to be reconstructed. These projects and maintenance on 1,075 miles of existing roads were financed by Natural Resources funds.



No major organizational changes have been made in the Division since 1962 when many improvements were incorporated. Emphasis in recent years on recreation in state forests and marketing of forest products have resulted in additional staffing in these areas. Other changes have largely been designed to implement the 1962 reorganization.

During the biennium, the Division was given responsibility for Neighborhood Youth Corps (NYC) activities on state forest lands. This program has increased the Division's accomplishments through work performed by the enrollees, but also increased the work of the field personnel.

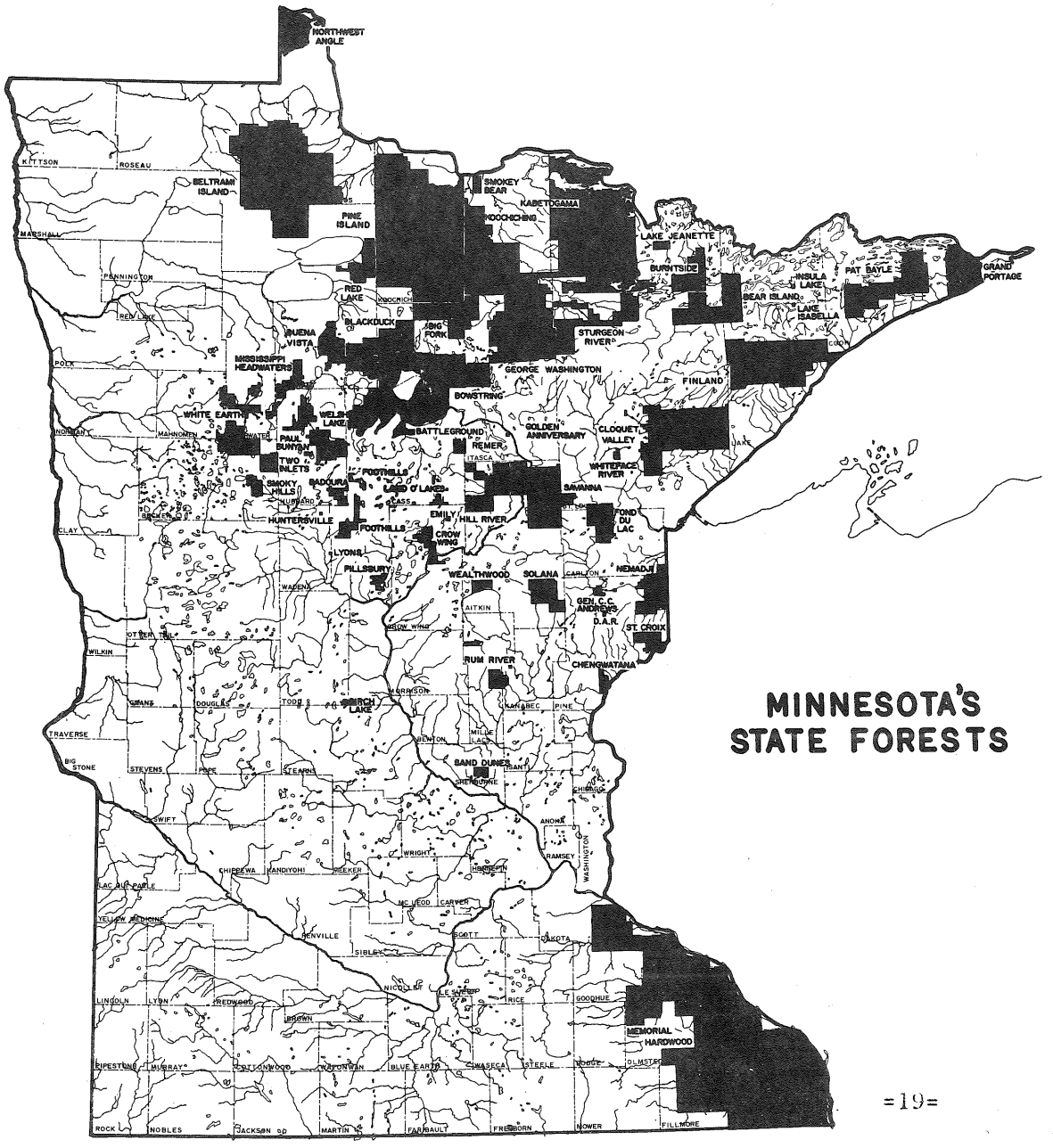
Although the total forestry program has increased, the number of personnel available to perform the work has not increased. Presently there are 293 permanent, two intermittent and 63 seasonal forest guard positions. This is an increase in permanent positions, but not an over-all increase as the number of intermittent positions were reduced accordingly. In addition, 2,000 temporary laborers were needed on various projects such as fire suppression, tree planting, nursery operations, forest road construction and maintenance, and campground construction.

This shortage in manpower becomes increasingly critical as the work load increases and is further aggravated by a number of unfilled positions. (There were about 20 permanent unfilled positions as of June 30, 1966.) Such programs as fire suppression and timber sales demand immediate attention whereas, other programs can be delayed and consequently suffer from the manpower shortage.

State Forests and Recreation

State Forest Administration - Minnesota's Division of Forestry administers 54 state forests. These forests represent a great reservoir of recreation potential - they provide unsurpassed public hunting, primitive camping, picnicking, wooded trails for hiking, nature study, fishing, canoeing, and natural scenery.

There are now 2,888,743 acres of state-owned land within the boundaries of our state forests. In addition, there are 34,567 acres of county tax-forfeited lands which assumed state forest status when accepted for forestry purposes by the Commissioner of Conservation. These lands have not as yet been designated as state forests by the Legislature. Together, these lands comprise 2,923,310 acres of state land with state forest status. Largest acquisition has been within the Memorial Hardwood Forest where 7,040 acres were purchased with Natural Resources Funds during the biennium bringing the total state land in this forest to 12,499 acres. A detailed study report and plan for development of the Memorial Hardwood Forest was completed during the biennium.



Forest Recreation - Outdoor recreation is becoming an increasingly important phase of the multiple use program on state forest lands. To provide for the recreational needs in the state forests, the Division of Forestry leases sites for summer homes and hunting cabins, provides camp and picnic grounds, canoe routes and riding and hiking trails.

In an effort to keep pace with the rising demand for camping facilities, the Division has established nine new campgrounds and reactivated four others for a total of 13 additional campgrounds. This brings the total number of state forest campgrounds to 36. Many of the established campgrounds were enlarged by providing additional facilities. Work has been started on five new campgrounds. State forest campgrounds are of the primitive type providing only the necessary facilities to insure sanitation and safety and to prevent the spread of fires.

Through joint cooperation with other agencies, the Crow Wing River Canoe Route, the Crow Wing Wilderness Saddle Trail, and the Pillsbury Riding Trail were established.

Land Exchange

The Land Exchange Program is designed to consolidate state lands in state forests, parks, wildlife areas or other conservation areas and at the same time consolidate other public and private land for more efficient management. The Division of Forestry acts for the Commissioner of Conservation in investigating land exchange proposals, and in recommending action to the Land Exchange Commission concerning such proposals.

During this biennium, 24 land exchange cases were completed through the Land Exchange Commission and 20 additional exchange cases were partially processed. The completed cases involve 8,828 acres of state land valued at $252,017. These were exchanged for 11,309 acres of private and federal land valued at $255,468.

Of particular significance in recent years has been the completion of land exchanges with mining companies. These exchanges have provided the taconite industry with land needed to expand taconite production facilities, and have provided the state with additional state forest lands. Seven such exchanges have been completed, two during the last fiscal year. The state received 18,041 acres in return for 12,133 acres. It should be especially noted that mineral rights were reserved by the state and not transferred to the mining companies in these exchanges.

Land exchange planning and state-federal land exchange accomplishment in the vicinity of the Superior National Forest were slowed due to the present moratorium imposed by statuate. However, exchanges proceeded normally elsewhere in the state.

—Forest Management and Sales——

State Land Timber Sales - Early and heavy winter snows prevented frost penetration and hampered winter logging. During the remainder of the year wet conditions hindered logging and other work in the woods, especially involving site preparation.

The total timber harvest from state lands was 367,289 cords which is less than the previous biennium due to the unfavorable logging conditions. The uncut surpluses were chiefly in aspen, other hardwoods, tamarack and cedar. Revenue received from timber sales was $1,217,780. Demand for timber showed a definite increase in the later part of the biennium and indications are that the next biennium will show a substantial increase in volume cut and revenue received.

While the total harvest is considerably less than the recommended cut, certain species such as Norway pine, white pine, jack pine, black spruce and black walnut are in good demand. Projections of future needs and supply indicate that in the foreseeable future we will use all the timber we can grow.

Forest Development, Tree Planting - During the biennium, approximately 15,600,000 trees were planted by the Division on state lands. This decrease over the previous biennium is largely the result of adverse weather conditions which hindered the preparation of sites for planting. A total of 18,300 acres were planted which includes 1,250 acres of direct seeding. (Increased emphasis was placed on planting by direct seeding to reduce regeneration costs.)

It was possible to maintain this large planting program through funds made available by the State's Natural Resources Program and federal aid.

Forest Development, Timber Stand Improvement - The N.Y.C. program provided an opportunity to accomplish timber stand work that was too costly under other programs. By the use of enrollees, plantations and natural stands were improved by releasing, thinning, and pruning. Through this program and by aerial spraying with herbicides, over 7,930 acres were thinned and released and an additional 925 acres were pruned.

Forest Development, Forest Management Planning - Good forest management is dependent on good district management planning. Basic field information concerning the resources and needs of the forestry districts must be obtained before plans can be completed.

Field surveys and management planning for 84 districts (total acreage is over 5,000,000 acres of state land) is an important task requiring considerable manpower and time. At the end of this biennium, field surveys had been completed on 3,973,000 acres and management plans completed for 49 districts. It is anticipated that inventory and management plans for the remaining districts can be completed during the next biennium.

—Forest Protection——

Forest Fire Control - With ample rainfall, improved protection and increased fire prevention activities, the average number of fires and acres burned was kept well below the 10-year average. However, there were several critical fire danger periods such as throughout the summer of 1965 in southeastern Minnesota and throughout the State in October of 1965. Throughout the biennium, a total of 1,195 fires burned 29,587 acres. (The 10-year average is 1,800 fires and 86,146 acres burned.) Of the total acres burned, 2,979 were forested acres. This is less than one-fourth the 10-year average.

The National Fire Danger Rating System was put into use at 74 stations in 1965. All stations were supplied with up-dated weather instruments, an instrument shelter, wind vane and electric fan for use with psychrometer, standard rain gauge, anemometer, and wind counter. This danger rating system will provide more accurate information on fire danger conditions and fire build-ups. A standard district fire plan was adopted and all districts now have an up-dated plan for fire action.

Fire Prevention - Over 99 per cent of the forest fires reported by the Division of Forestry are caused by man and are started deliberately or through carelessness. If man-made blazes could be eliminated, fires would be nearly non-existent. In an effort to reduce the number of fires, the Division carries out an intensive fire prevention program.

Personnel of the Division of Forestry take an active part in keeping the public informed about fire hazards and fire prevention. During the biennium, Division personnel took part in over 2,000 fire prevention meetings, distributed 500,000 pieces of fire prevention material, gave 665 radio programs, and 35 television programs. In addition, newspapers were furnished with nearly 1,000 articles. A number of radio and television stations were regularly supplied with fire weather information. The Division presented a number of exhibits at county fairs, conventions, and business establishments.

—Tree Nurseries——

The Division of Forestry maintains and operates three nurseries for the production of tree planting stock. Seedling stock is sold at the cost of production to the citizens of the state for reforestation of their lands, establishment of windbreaks, shelterbelts, and for erosion control and woodlots. Public agencies and local governmental sub-divisions obtain trees free of charge for planting on public lands. The Division of Forestry is the largest single user of the nurseries output. The annual requirement of the Division usually amounts to 1/4 to 1/3 of the total production. These trees are used for reforesting state forests lands.

Within the past few years, the demand for seedlings has decreased and nursery production has been reduced accordingly. It is felt the demand will level off to about 25 to 30 million trees per year. During the biennium, the nurseries shipped 53,500,000 trees to public and private landowners.

—Cooperative Forest Management——

Private Forest Management Services - The goal of this program is to maintain and improve the productivity on private lands. To accomplish this, the Division of Forestry provides forest management assistance to private landowners who have holdings of less than 1,000 acres of forest land.

There are about 150,000 private landowners in Minnesota who hold approximately 7,000,000 acres of forest land with an estimated standing timber value of $70,000,000. This represents almost 40 per cent of all the forested land in Minnesota - it is extremely important to the state that forest resources be managed properly on these lands.

Good management is dependent upon an inventory of the woodland resources. From this inventory, a plan can be formulated to coordinate the needs of the landowner with the multiple use potentials of the woodlot. Multiple use planning considers timber production, recreation, wildlife, and special products such as maple syrup, herbs, water, forage and other forest crops.

Lack of personnel has adversely affected operations of this program during the biennium. However, management services were provided to 6,900 landowners who have holdings on 81,000 acres of forest land.

School and Municipal Forests - The Division of Forestry provides assistance to school districts, colleges, universities and municipalities in establishing forests. Forestry personnel assist in preparing and carrying out management plans and in educational activities for these areas.

The School Forest Program is growing and dynamic. The past two years witnessed the establishment of eight new school forests, the highest number since the program began. There are now 40 school forests throughout Minnesota comprising 3,431 acres.

In addition to the school forests, there are now seven municipal forests with 8,115 acres in the State. Management plans have been prepared and will soon be processed for two additional forests, Big Falls and Menahga.

Forest Tax Laws, Auxiliary Forests - The Auxiliary Forest Law is designed to encourage good forestry practices on private lands through an equitable form of taxation accompanied by enforcement of proper forest practices. It is the responsibility of the Division of Forestry to insure that the contract obligations of proper forest management are fulfilled by the owner. There are now 56 contracts with about 256,000 acres under the Auxiliary Forest Law. (Numerous clauses and amendments have made this Law difficult to administer.)

Forest Tax Laws, Tree Growth Tax Law - The Tree Growth Tax Law is based on the taxation of a portion of the average annual growth. The counties have most of the responsibility under this Law. Division responsibility includes growth rate determination, stumpage rates and forest management advise. There are approximately 250,000 acres of land under the Law.

Tax-Forfeited Lands - The Division is responsible for the approval of timber appraisals and the forestry practices to be followed on approximately 3,700,000 acres of tax-forfeited lands. During the biennium, Division personnel appraised the timber on 375,000 acres of land proposed to be sold by the counties. The sale of these lands has been accelerated through the purchase of large blocks of land by development and other groups.

Some counties are in the process of zoning their lands in order to determine their best use. This is being done in cooperation with private planning corporations and with federal matching funds.

There are about 1,000,000 acres of county tax-forfeited lands in memorial forests. These forests must be more suited for forestry purposes than other uses and are set aside by county resolution. Monies received from these dedicated forests may be used for development and maintenance.

Forest Insects and Disease Control - In the past, fire has been the greatest enemy of our forests. Now, through effective fire prevention and protection, these losses have been drastically reduced, insects and diseases are now the highest destroyers of our forests. It is estimated that these pests destroy 1,000,000 cords of timber annually in Minnesota. In an effort to reduce this loss, the Division of Forestry cooperates with the State Department of Agriculture, Division of Plant Industry, in the identification, survey and control of forest insects and diseases.

Heavy infestations of jack pine budworm occurred in north central Minnesota during the biennium. The forest tent caterpillar outbreak remained in the same general area as in previous years, along the Canadian border. Larch sawfly continued to defoliate tamarack over most of the tamarack range. Oak wilt continued to cause heavy mortality in southeastern Minnesota and no practical control has been found for this disease. Chemicals were applied to control forest tent catterpillar infestations on 5,600 acres of aspen. Chemicals were also used to control jack pine budworm infestations on two small tracts of jack pine.

Watershed Program - The Division of Forestry participates in watershed program activities under Public Law 46 and Public Law 566 through a cooperative agreement with the U.S. Forest Service. Most of the planning and survey work is done by the local district forester with assistance from the U.S. Forest Service.

The major objective of this program is to conserve soil and water in approved watersheds or sub-watershed areas to bring about the greatest possible reduction in flood erosion and sediment damage. The Division is primarily concerned with forest developments in watersheds through tree planting, hydrologic and timber stand improvements, grazing improvements and protection from over-cutting, fire, damaging logging practices, insects and deseases.

Since the program began, field examination have been completed on 53 watersheds. Preliminary investigation has been completed on two additional watersheds. Eight have been approved for operation. Division personnel were active on nine watersheds in ten counties during the biennium.

Marketing and Utilization Program - Statistics show that Minnesota's forest lands are growing wood at a much greater rate than the annual rate of removal. Surpluses of certain species such as aspen, miscellaneous hardwoods, tamarack, and balsam, are rapidly building to a point where considerable losses are expected unless suitable markets are found. As part of an expanded program to utilize more Minnesota-grown wood, a marketing specialist was added to the director's staff in 1964.

A canvas of all the wood processors and users in Minnesota was completed in 1965. With the cooperation of the University of Minnesota, the data was coded, summarized by I.B.M. and published in a "Directoryof Minnesota's Wood Processors and Users" which became available in July, 1966. This directory provides information to help wood users and timber owners when buying and selling timber products.

A Minnesota Forest Products Utilization and Marketing Coordinating Committee was formed to promote markets, study market trends, and to provide resource data. A specific responsibility of the Committee is to assist and encourage Forestry Cooperatives. Agencies represented on this Committee are the U.S. Bureau of Indian Affairs, U. S. Forest Service, the North Central Experiment Station of the University of Minnesota, the State Iron Range Resources and Rehabilitation Commission, the State Department of Business Development and the Minnesota Division of Forestry.

Through exhibits, contacts, and the distribution of educational and technical material, efforts have been made to improve the products of small producers to enable them to better compete in the market. The Division is publishing a Forest Products Bulletin in cooperation with state extension foresters as an aid in bringing buyers and sellers of forest products together. This bulletin has recently been expanded to include the entire state.

Resource Conservation and Development - The Resource Conservation and Development Program was enacted in 1962 and became an active program of the Division of Forestry in 1965. Five counties - Wadena, Ottertail, Swift, Pope and Kandiyohi - are now included in the project work plan.

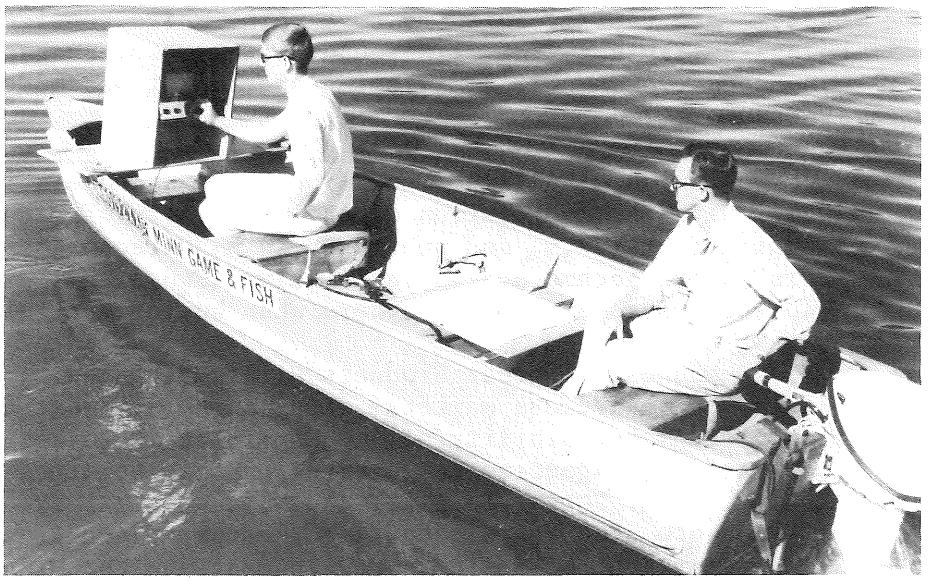
The purpose of this program is to accelerate conservation in these pilot counties through concentrated technical assistance and conservation education. This program is financed by the federal government and is part of a conservation program under the over-all direction of the Soil Conservation Service.

The Division of Forestry administers the forestry phase of this program. Some of the accomplishments were the completion of the Crow Wing Wilderness Saddle Trail, the Crow Wing Canoe Trail, improvement of the Menahga Campgrounds, improvement of Norway pine seed orchards, improvement of the Maple Syrup Cooperative, and assistance to 161 woodland owners.

DIVISION REPORT II

THE FOUR SECTIONS OF THE GAME AND FISH DIVISION

Law Enforcement



Technical Services

Game

Fisheries

GAME and FISH

James T. Shields , Director

In modern-day Minnesota good hunting and fishing coupled with an abundance of wildlife does not come by accident. Up-to-date game management techniques, research and enforcement of game and fish laws are essential to assuring continued sport and other values provided by wildlife.

The Division of Game and Fish has jurisdiction and care of all wildlife, including birds, fish and mammals. This Division has by far the greatest number of followers; the hunters and fishermen of the State give most of their attention to its activities. Through their support, the Division of Game and Fish designs the policies and procedures necessary for maintaining an abundance of fish and game.

Historically, the game and fish program has been financed primarily by sportsmen through their purchase of licenses to hunt, fish, and trap. Over the past two fiscal years, approximately 3,000,000 fishing, 1,000,000 hunting and 72,000 trapping licenses have provided most of the support necessary to perpetuate fishing and hunting in Minnesota. License receipts during the biennium reached $9,800,000. In addition to license revenue, hunting and fishing generates tremendous economic wealth to the entire state. Hunting alone is a $50 million business in Minnesota.

Game and Fish License Sales

Fiscal Years 1964-66

	Year 1964-65	1965-66	Two-Year Total
Fishing Licenses*	1,434,360	1,419,230	2,853,590
Hunting Licenses	593,386	539,579	1,132,965
Trapping Licenses	31,737	40,550	72,287
Commercial Licenses	21,630	21,189	42,819

*Numbers include non-resident combination fishing licenses whereby one license is sold for use by husband and wife. Thus the above figures indicate total number of licensed fishermen.

Organization

The first official organization for the protection of Minnesota's wildlife was a Board of Fisheries consisting of three members appointed by the Governor in 1874. In 1887, the Legislature authorized the appointment of a Chief Game Warden and four

years later, the form of the agency was changed by the creation of a five-member Board of Game and Fish Commissioners. The office of Game and Fish Commissioner was created in 1915, when the agency was generally known as the Game and Fish Department.

In 1925, the Game and Fish Commissioner was made a member of the three-man Conservation Commission and in 1931 the Game and Fish Department was made a Division in the newly created Department of Conservation.

The Game and Fish Division Today

Several changes in the structure of the Division have occurred during this biennium geared primarily to providing closer integration of fisheries and game research and to give more emphasis to the areas of private land development and programming of public access acquisition.

A summary of the major changes follows.

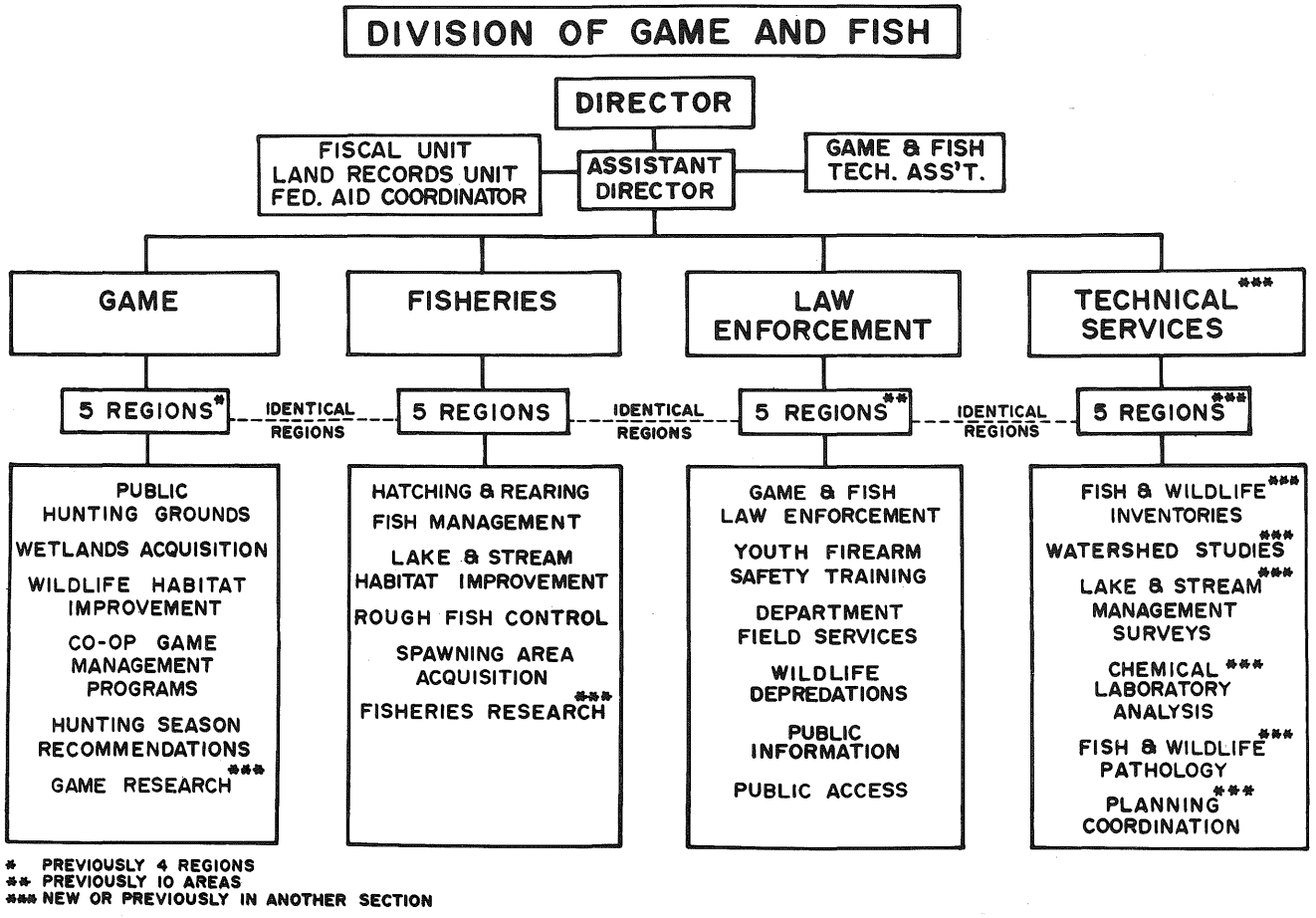
1. Establishment of five geographical regions for all sections of the Division, with a supervisor responsible for the activities of each section in each region.

2. Integration of the Fisheries Research Unit and the Game Research Unit into the Sections of Fisheries and Game, respectively. These research units formerly were a part of the Section of Research and Planning.

3. Establishment of the Section of Technical Services, including a Fish and Wildlife Surveys Unit and a Biological Services Unit. These units, under a somewhat different organizational structure, were formerly included in the Section of Research and Planning. The former Section of Research and Planning no longer exists.

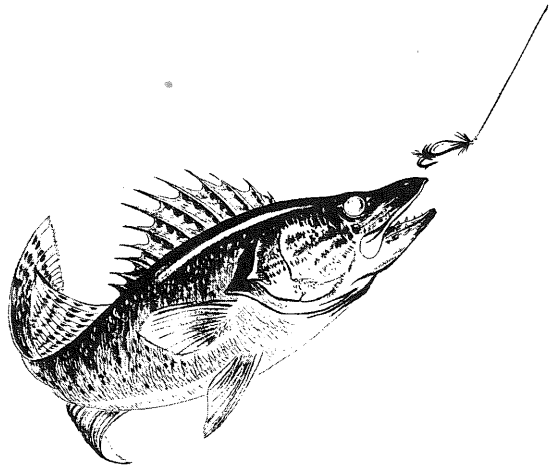
4. Division of each Fisheries Region into two geographical areas, each under the direction of an Area Manager. Each Area Manager has an assistant, and work responsibility at or below this level is more firmly defined.

5. Establishment of the positions of Private Land Development Coordinator in the Section of Game, Public Access Coordinator in the Section of Law Enforcement, and Technical Assistant to the Director (for coordination of all research activities.)



* PREVIOUSLY 4 REGIONS
** PREVIOUSLY 10 AREAS
*** NEW OR PREVIOUSLY IN ANOTHER SECTION

—Fisheries—



The fish crop of Minnesota's lakes and streams is one of the state's most important natural assets. It is a renewable resource and one that, with proper management, can be expected to provide recreation for thousands of people each year. About 30 kinds of sport fish plus many commercial and other species are found in Minnesota's lakes and streams. Altogether, there are 164 different kinds.

The Section of Fisheries has the responsibility of carrying out a state-wide fish management program in accordance with Minnesota laws, Department of Conservation policies, regulations, and available funds. The objectives of the program are two-fold - (1) to provide a maximum sustained yield of fish and, (2) to provide a maximum number of satisfactory sport fishing hours.

Minnesota has approximately 5,051 major fish lakes which have had or are presently under some type of major management. There are 414 rivers in our state and 500 trout streams. To maintain these areas, and to fulfill the objectives of the fisheries program, a variety of facilities is required. The following gives a brief picture of the fisheries facilities and projects during the 1964-1966 biennium:

Buildings	69 (plus rental buildings)
Fisheries stations	17 (permanent) 6 (seasonal)
Managed fish ponds	184 (40 state-owned and 144 cooperative)
Northern pike spawning areas	132 (60 state-owned and 72 in cooperation with state and local groups)
Fish removal sites - rescue and rough fish removal	200
Rough fish removal contracts issued during biennium	28
Carp traps operated	130 (71 state-owned, 59 by permit)
Dams, channels, jetties, etc. requiring continuous maintenance	110

Fish Management Activities

The major fish management activities include:

1. Fish habitat improvement
2. Acquisition, development and management of northern pike spawning and rearing areas.
3. Operation of hatcheries and rearing ponds for fish propagation and distribution
4. Rescue and transfer of fish from lakes which are subject to winterkill
5. Rough fish control
6. Lake reclamation through the use of fish toxicants.
7. Administration of licensed commercial fishing and private fish hatcheries
8. Formulation of regulations governing the harvest of fish (sport and commercial.)

Fish Habitat Improvement

To improve fish habitat and to provide better fishing opportunities, many development projects were completed during the biennium. The major projects included:

Lake Improvement and Maintenance Projects

One water and rough fish control dam
Three carp-control dams
Seven carp-control screens
Eleven channel improvement projects
Nine northern pike spawning areas
Two water control dams

Stream Improvement and Maintenance Projects

Sixteen trout streams (improvement)
Eighteen trout streams (maintenance)

In addition to the above, major maintenance work was done on 19 projects, such as dams, dikes and water supply lines.

The Fisheries Section recently entered into habitat improvement projects involving the development of walleye spawning areas to improve the natural spawning success in lakes where spawning material is lacking. More of this type of work could be done if adequate funds were available for development, maintenance and evaluation.

Major Improvements to Buildings and Other Facilities - Some of the major improvements to buildings and other facilities included:

New equipment storage and service building at Lanesboro.
New hatchery roof and concrete bridge, also at Lanesboro.
Reconstruction of trout raceways at Crystal Springs.

Sanitary sewer system and roof at Grand Rapids Headquarters.
New heating system at Detroit Lakes Headquarters residence.
Remodeling of Regional Fisheries Headquarters at St. Paul, Brainerd, and Grand Rapids. (Office space is provided for the sections of Warden Service and Game at Brainerd and Grand Rapids and for the Warden Service at St. Paul.)

Under the Neighborhood Youth Corps program, additional labor service was provided. Work done by NYC crews included improvement and maintenance to fisheries stations and equipment, fish rescue operations, habitat improvement, rough fish control, and the management of spawning areas. A considerable amount of equipment, materials and tools was made available from U. S. Government surplus property.

Northern Pike Spawning Areas

A vital factor in assuring continued good fishing in Minnesota is the acquisition, preservation and improvement of natural fish spawning and rearing areas, particularly for northern pike. Natural spawning areas and shallow marshes adjacent to lakes and streams are rapidly diminishing. Acquisition, development and management of northern pike spawning areas is of prime importance to Minnesota's fisheries program.

Acquisition - The northern pike spawning area acquisition program is financed by the Natural Resource Program.

A total of 35 northern pike spawning areas (62 tracts) were purchased during the biennium covering 1,171 acres. In addition, 50 tracts comprising 38 areas and totaling 821 acres were optioned for purchase. This will bring the total state-owned northern pike spawning areas to 70 (2,893 acres).

Development - Most northern pike spawning grounds purchased so far have been, or can be, developed to control the water levels in order to facilitate management for maximum production. However, several are being acquired for preservation in their natural state and need no development.

Management - These "natural pike hatcheries" can be managed to produce great numbers of northerns. Management involves installing water level control structures and channel improvements, and, in some cases, pumping units. Brood stock is secured and transferred into some of the spawning areas. Spawning and hatching success and growth rates must be checked and the fingerlings removed at the proper time.

Managed Northern Pike Spawning Areas

	1964		1965	
	Number	Acreage	Number	Acreage
State-owned	46	2,378	60	3,532
Cooperative	76	437	72	527
Total	122	2,815	132	4,059

Fish Stocking

Approximately 400 million game fish were stocked from hatcheries, rearing ponds, and rescue operations during the biennium.

Year	Number	Pounds
1964	189,171,038	663,771
1965	196,618,496	527,646

Fish Rescue Operations

Approximately 2,500,000 fish (700,000 pounds) were rescued from shallow lakes threatened by winterkill and stocked in lakes where they were needed.

Year	Number	Pounds
1964	1,221,904	407,617
1965	1,181,834	283,599

Rough Fish Removal

In many lakes it is necessary to reduce the number of rough fish in order to provide satisfactory conditions for game fish. A total of 18,140,674 pounds of rough fish (mostly carp) were removed through contract, permit, project, and state fishery crew operations.

Lake Reclamation

Complete eradication of fish populations was accomplished on 31 lakes through the use of fish toxicants. The reclamation program adds a bonus to sportsmen by restoring once desirable lakes for fishing. Following eradication of the fish population, the lakes were restocked with species best suited to available habitat.

Eighteen of the reclaimed lakes were cold-water (trout) lakes totaling 902 acres; 13 were warm-water fish lakes totaling 6,898 acres. Ten of these lakes were treated for the second time and two for the third time. (One of the lakes, Lake Christina, is primarily a waterfowl lake comprising 4,000 acres.)

Licensed Commercial Fisheries

Commercial fishing under license in Lake Superior, Lake of the Woods, Lake Namakan, Sand Point Lake, Rainy Lake and the boundary water between Wisconsin and Minnesota produced 9,361,877 pounds of fish. An additional 2,631,180 pounds of fish were taken by the commercial fishery at Redby on Lower Red Lake. This fishery is operated by the Red Lake Fisheries Association as a cooperative venture of the Red Lake Chippewa Indian Tribe.

Permits for Changing Lake Beds

A considerable amount of time is required of the fish management field personnel to investigate requests from individual lakeshore property owners and from lakeshore

developers for permits to change the lake bottom by dredging, filling or both. Many such requests for permits are denied in order to preserve natural spawning and rearing areas.

Cooperation with Other Agencies

The Fisheries Section provides plans and recommendations to the U. S. Forest Service for fish and wildlife habitat work. A good working relationship exists, but the Section is greatly understaffed to carry out the program properly. Cooperation is received from the U.S. Fish and Wildlife Service in connection with fish distribution from the Service and the rescue and transfer of northern pike from federal wildlife areas. With a few additional positions, the Section would be able to do more advanced planning for projects to be undertaken through various federal aid programs.

The Outlook for Future Fisheries Needs

Fish Habitat Acquisition

A moderate increase in funds and personnel would allow acceleration of the fish habitat acquisition program which involves the purchase of marsh areas adjacent to important fishing lakes. The acquisition of stream banks for access and habitat improvement should be accelerated, particularly on trout streams with heavy usage. Other types of acquisition needs include sites for the construction of permanent carp trapping areas and access to large waterfowl and wild rice lakes for the purpose of carrying on northern pike rescue and transfer operations.

Northern Pike Spawning Areas

A moderate increase in personnel is necessary to more intensively manage the increasing number of natural spawning and rearing areas for northern pike. In order to obtain maximum production, these areas must be watched closely; water levels must be controlled and brood stock on spawning runs watched and controlled. Water temperature and oxygen content must be checked regularly and rearing areas drained to avoid loss of fish due to high temperature and loss of oxygen.

Fish Rescue

The fish rescue program also needs substantial expansion. With an increase in manpower and equipment, roads can be developed or improved to provide access to more areas of the wild rice and waterfowl types, which generally are ideal for natural reproduction. Rescue activities include the installation of special traps during summer and fall and construction of channels and operation of pumps to attract fish into the traps before they suffocate from lack of oxygen.

Anadromous Fish Act

It can be expected that federal aid will be allocated to finance additional habitat improvement work on the lower reaches of North Shore streams to provide for more and better trout spawning and fishing areas. Additional state funds should be made available as matching funds to enable other on-going programs to continue in order to make use of this type of federal aid.

—Game—

"WHAT WE HAVE NOW IS LARGELY A MATTER OF CHANCE;

BUT WHAT WE ARE TO HAVE CANNOT BE LEFT TO CHANCE."

-- Durwood Allen, "Our Wildlife Legacy"

If "left to chance", it is certain that in the future the amount of space for both wildlife and recreation will be inadequate. Continually increasing and intensified agricultural practices and the pressures for using land and water for other purposes will have one result on our wildlife - living space will diminish to the point of extinction.

It is for this reason that the Section of Game envisions the urgent need for saving, maintaining and developing living space for wildlife and the values we receive from it.

The Section of Game has the responsibility of managing the state's wildlife resources. The Section plans, develops and promotes a comprehensive game management program throughout the state in the face of an increasing population with more leisure time and increasing competitive demands for land and water uses.

The programs are formulated to maintain, restore and manage wildlife resources on public hunting grounds throughout the state. The Section works with related agencies in an attempt to manage wildlife habitat on private lands as well.

Major accomplishments during the biennium follow.

WILDLIFE MANAGEMENT AREAS

Acquisition

Wetlands

Preserving and managing Minnesota's wildlife wetlands is a priority concern. In fact, the destiny of our waterfowl and the recreation they provide is linked inseparably with these priceless areas.

Drainage of potholes and marshes in Minnesota has been going on at a fantastic rate since the end of World War II. In many counties which were once prime duck producers, the prairie-type wetlands have been eliminated completely.

The most important activity of the Section of Game continues to be the acquisition of wetlands under the "Save Minnesota's Wetlands" program. This valuable program began in 1957 when a dollar surcharge was placed on small game hunting licenses to help speed wetland acquisition.

A total of 287 tracts comprising 20,976 acres were optioned and acquired during this biennium at a cost of $923,726. These tracts were acquired in 152 projects in 49 counties.

Date	No. of Tracts	No. of Acres Acquired	Cost
1964 - 1965	146	12,109.59	$386,877.50
1965 - 1966	141	8,886.87	536,848.93
Total	287	20,976.46	$923,726.43

Additions to Major Wildlife Management Areas

In addition to the acquisition of wetlands, 12 tracts comprising 2,924 acres on 8 major wildlife management areas were acquired at a cost of $69,146.

New Wildlife Management Areas Established

Ninety-three new wildlife management areas were established and brought under management during the two years. An additional 100 have been approved for future acquisition. The Section of Game now has 618 active wildlife management projects located in 77 counties.

Development

All who enjoy the outdoors benefit from the development of Minnesota's wildlife management areas. Development projects provide wildlife with food and shelter and recreationists with sport and many other values. More than 850,000 acres of state wildlife lands are developed and managed specifically for wildlife and public hunting.

To benefit both wildlife and people, various types of development work were carried out. Work included brushing, the construction of islands, hunter access trails, and the creation of potholes for waterfowl. Project boundaries were fenced and posted with "Wildlife Management Area" signs. During the biennium, 76 miles of fence were maintained to protect cover and food patches and to mark boundaries.

Wildlife food and cover were planted to supplement natural habitat and during the two-year period, 300,900 trees and shrubs were planted on both state and private land. Where uplands are available, farmers living near the projects are given agricultural leases. The state's share of the crop is left standing for winter feed for wildlife.

Major Impoundments

Major progress was made in the development of new impoundments primarily to benefit waterfowl. Thirteen projects were completed, nine of which were small impoundments totaling 384 acres. These projects provide fine waterfowl nesting areas and are ideal for hunting and general recreation.

Carlos Avery, Sunrise Addition - The second pool (Pool 1) at the Sunrise Addition to the Carlos Avery Wildlife Management Area was completed. This new 1,500 acre waterfowl impoundment, together with the 1,000 acre pool completed during the 1962-1964 biennium, adds up to a prime 2,500 acre waterfowl production and public hunting area.

The dam itself was built by contract, but much of the work was carried out by Game Section personnel who constructed the dike and the base for the control structure. This new pool will provide exceptional waterfowl hunting, especially for nearby sportsmen in Chisago, Anoka, Hennepin, Ramsey and Isanti counties.

Ann Lake Project, Kanabec County - A water control structure at Ann Lake was completed in November, 1965. The dam improves the lake level and floods 900 acres. About 30 potholes were created by blasting with ammonium nitrate to open the area and to improve waterfowl production.

Twin Lakes Project, Kittson County - On the Twin Lakes Wildlife Management Area, a control structure was completed that floods a 1,200 acre sedge marsh.

Kabekona Wildlife Project, Hubbard County - An example of interagency cooperation was the dam on the Kabekona flowage completed in 1965. The dam was financed by the Game and Fish Division and built by the Department of Highways as part of a highway construction job. It creates an impoundment of about 500 acres.

The total cost of the Ann Lake, Twin Lakes, and Kabekona projects was $26,000 of which $9,800 was paid by the federal government under the Accelerated Public Works (APW) program.

Neighborhood Youth Corps

Twenty-six Neighborhood Youth Corps projects were carried out by the Section of Game during the biennium at a cost of $367,319. (The Section paid $56,282.) These projects included the construction of fences, posting, water impoundments, seeding of trails, land clearing for nesting game species, forest-game hunter access trails, marsh blasting, wood duck nesting boxes, and deer browse cutting.

Management

Modern game management is essentially the business of; (1) maintaining or improving habitat required to produce annual crops of wild animals, and (2) providing for the removal, usually by hunting, of the harvestable surplus in an equitable, orderly and acceptable manner.

Waterfowl Control

Waterfowl depredations are sometimes a serious problem on farmlands especially in eastern Roseau and Marshall counties. To keep waterfowl away from private lands, 32,200 bushels of oats were used as feed at the Thief Lake (Marshall County) and Roseau Wildlife Management areas. During August and September, 1964, as many as 30,000 ducks were using the Roseau area and 10,000 were at the Thief Lake area. The peak number of ducks fed for the same period in 1965 was 60,000 and 45,000 respectively.

Captive Goose Flocks

Captive goose flocks (giant Canada goose subspecies) have been established at the Thief Lake, Roseau, and Lac qui Parle Wildlife Management Areas. These flocks resulted from the transportation of 225 goslings raised at the Carlos Avery Game Farm - 150 went to Roseau, 50 to Lac qui Parle.

Production of wild goslings from free-flying goose flocks on the three units has shown a significant increase as a result of this program. During the peak flight, Thief Lake had 6,000 and Roseau and Lac qui Parle each hosted approximately 10,000 geese.

Wild Turkeys

Thirteen young live-trapped eastern turkeys were flown from Arkansas and released in the Whitewater Wildlife Management Area. These birds will supplement the earlier release in the Whitewater Valley of seven eastern turkeys also from Arkansas and nine Merriam turkeys obtained from Nebraska.

Bag Checks and Census

Ground surveys and hunter bag checks were made on deer, waterfowl, pheasants and grouse. In addition, aerial surveys were made during the biennium on moose, elk, deer and beaver. The results of these censuses are used in management and in setting trapping and hunting seasons.

Cooperative Management

A total of 104,461 day-old pheasant chicks were raised at the Carlos Avery Game Farm and delivered to various cooperative sportsmens' clubs and the Future Farmers of America Clubs throughout the pheasant range. In addition, 73 FFA chapters throughout the state are participating in the habitat improvement program.

As in the past, Section of Game personnel have carried out cooperative planning with federal agencies - namely the Army Corps of Engineers, Fish and Wildlife Service, Forest Service, Soil Conservation Service and Agricultural Stabilization and Conservation Service.

Section personnel actively participated in planning at 29 Public Law 566 watersheds. Most of the participation involved attending various meetings and field inspections concerning proposed watershed measures and the possible effects which they would have on wildlife populations.

Various wildlife habitat development features were promoted. Cooperative planning and work was also carried out with various state and county agencies including the Department of Agriculture, State and County Highway Departments, the University of Minnesota, and others.

New Positions

A new position, Private Land Development Coordinator, was approved by the Legislative Advisory Committee and filled in the Section of Game during the past biennium. The primary responsibility of this position is to promote wildlife habitat improvement programs on private lands.

Future Plans

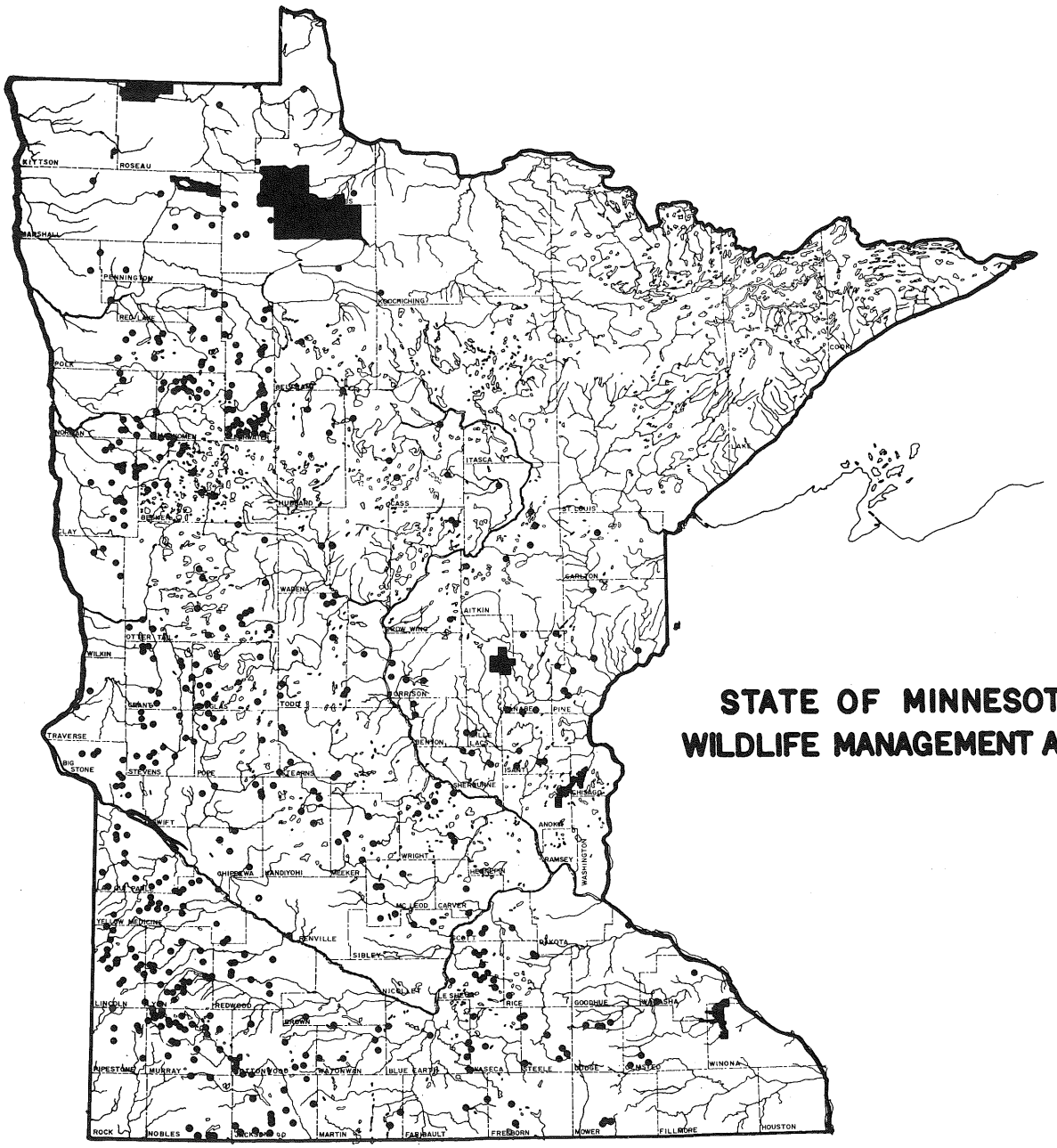
Acquisition

The "Save Minnesota's Wetlands" program needs continued emphasis backed by sufficient funds to make accelerated acquisition possible. The original goal of this program was 250,000 acres. However, recent inventories reveal the existence of 670,000 acres of desirable wildlife wetlands remaining in the agricultural areas. There is no sign of abatement in the rapid rate of drainage of these surface waters. Acquisition of many of these areas must be accomplished as soon as possible in order to prevent their destruction. Conservationists throughout the state agree that additional funds are urgently needed for wetlands acquisition.

It is also planned to continue the approved land acquisition program on the major wildlife management units at the current rate or faster, if funds are available.

Management

Additional area game managers are urgently needed to efficiently carry out the Section of Game program and to give proper service to hunters and landowners. The Section of Game will continue to attempt to handle as many local wildlife management and public relations problems as possible. Multiple use of wildlife management areas will be stressed wherever this is compatible with primary project objectives.



STATE OF MINNESOTA
WILDLIFE MANAGEMENT AREAS

Research and Planning

Progress in game and fish management depends on factual information gathered by careful research. As the human population grows and the amount of wildlife habitat diminishes, better methods of managing game and fish are becoming more and more important.

The activities of the Section of Research and Planning were carried out by four operating units during the biennium.

(1) Fisheries Research
(2) Game Research
(3) Fish and Wildlife Surveys
(4) Biological Services

Note: As part of the reorganization plan, the Fisheries and Game Research Units have now been integrated into the Sections of Fisheries and Game. A Section of Technical Services now encompasses the Fish and Wildlife Surveys and Biological Services Units. However, during the 1964-1966 biennium, activities were carried out under the Section of Research and Planning.

As in the previous biennium, about two-thirds of the work consisted of technical services applicable directly to management and one-third was research whereby basic information was gathered for future use. Some of the more important activities during the biennium are discussed briefly below. More detailed information is available in the fifth Biennial Report of the Section.

Fisheries Research

The Fisheries Research Unit supported and aided the Section of Fisheries by carrying out projects on both cold-water and warm-water fishes.

Cold-water Fish Investigations

Aid was given in management of trout hatcheries, particularly on nutrition and disease control. Work was done on breeding disease-resistant strains of trout and in developing new and improved kinds of trout for Minnesota fishermen.

The Ochrid trout, a native of Yugoslavia, along with the Donaldson and kamloops strains of rainbows were found to have prospect for some Minnesota waters. All three varieties have been stocked and their success is being evaluated along with that of the kokanee salmon.

A study of steelhead rainbows in North Shore streams has resulted in the development of improved spawning areas in these streams. The study revealed that these fish home to natal streams. Improved methods of trout stocking and management of reclaimed trout lakes were found. These methods will help determine whether to plant fingerlings or catchable-size trout, in what numbers and how often.

Other fisheries research included an investigation of the competition between lake trout and suckers, cooperation in the federal Sea Lamprey Control Program and an investigation of the suitability of stocking smelt in inland waters.

Warm-water Fish Investigations

Much of the work on warm-water fishes was concentrated on the walleye. This included studies on development of walleye eggs aimed at producing a higher yield of fry in walleye hatcheries and more desirable fish for stocking. Food and feeding habits of the walleye were investigated, especially as related to competition with other fishes such as the smallmouth bass. Detailed studies of fish population dynamics and catches were made on two large walleye lakes.

Because rearing of fingerlings in ponds is a large operation, research continued on the best methods for producing food crops for the young fish at ten experimental ponds at Waterville. Summer fallowing of pond bottoms and planting them with rye shows considerable promise.

After initial success in about 80 small trout lakes in northern Minnesota, chemical reclamation of larger warm-water lakes in southern Minnesota is being tried and evaluated. This type of operation has been especially successful in Clear Lake at Waseca.

Game Research

The Game Research Unit engaged in many research and technical service projects, including censuses of wildlife populations and hunting take. These censuses help form the basis for setting Minnesota's hunting seasons. Major emphasis was on finding ways to improve the habitat whereby more game can be produced.

Big Game

Deer - During the biennium, deer management has been especially successful. The population was in good condition and the hunting take at an all-time high with 122,000 deer taken in 1964 and 128,000 in 1965. In these years, 44 per cent of the hunters were successful in taking deer. Special studies on deer included investigation of factors influencing regeneration of white cedar in yarding areas and a study of archery hunting at Camp Ripley. The highway kill of deer was determined from data supplied by the Warden Service.

Moose - Aid was given to the Section of Game in censusing our moose herd - there are now at least 7,000 animals concentrated in two general areas, and portions of the range are showing signs of being over-browsed. A parasitic roundworm was found to be the long elusive cause of "moose sickness" and it was discovered that this parasite is commonly carried by deer, but is not damaging to this animal. From the latter finding, it seems evident that on intensively managed areas a choice may have to be made as to whether moose or deer are to be fostered.

Upland Game

Pheasants - Pheasant populations and hunting success were lower than usual during the biennium. Hunters took 758,000 pheasants in 1964 and 218,000 in 1965. The St. Patrick's Day blizzard of 1965 was especially damaging, killing 50 to 60 per cent of our pheasants. However, the pheasant population is generally showing the effect of increasingly intensive agriculture which reduces the amount of nesting and winter cover. For this reason, much effort was put on working with federal agricultural agencies so that more of the lands retired from agriculture are managed to provide better wildlife habitat. This effort was successful and in 1965, Agricultural Stabilization and Conservation Service funds amounting to $193,000 were reimbursed to farmers for wildlife practices.

Grouse - Grouse populations were generally low due primarily to the shortage of snow for winter roosting cover over much of the range in 1965-66. Financing aid was given to the University of Minnesota for ruffed grouse studies at Cloquet.

Studies of sharp-tailed grouse abundance and land use continued in the Red Lake-Warroad area. Controlled burning and/or cutting show promise as a means of maintaining habitat for these prairie-brushland birds.

Waterfowl

Work was done with the Section of Game on the introduction of hand-reared waterfowl. Geese were introduced in several state-owned areas and a specially developed wild strain of mallard ducks was reared and released in cooperation with the Future Farmers of America and the U. S. Bureau of Sport Fisheries and Wildlife.

Methods of improving nesting habitat for ducks in the wooded areas of northern Minnesota were investigated, as was the status of the flock of giant Canada geese at Rochester, estimated to number 7,400 in the winter of 1965.

About 20,000 waterfowl were banded during the biennium to ascertain harvest rates and migrational paths. Where these birds migrate and where they are shot by hunters is extremely important to establishing proper hunting regulations. Waterfowl biologists worked closely with the Mississippi Flyway Council on waterfowl management. An intensive census was made of breeding ducks and a special study conducted to evaluate the results of an experimental teal season held in September of 1965.

Fish and Wildlife Surveys

Surveys

Biological surveys of Minnesota's lakes and streams play a major role in the management of fish and aquatic wildlife and provide a record of the habitat features at a time when rapid development of surrounding lands threatens these natural resources.

Work was started by the Fish and Wildlife Surveys Unit on an accelerated inventory of the 15,291 lakes of the state larger than 10 acres. This inventory is necessary since detailed surveys of the type made in the past cannot be completed rapidly enough to meet the current and future planning needs. The survey program is designed to lead to the orderly classification of all major lakes and streams.

During the biennium, the Fish and Wildlife Surveys Unit surveyed and mapped 26 watersheds as an aid to management sections and to gather data for use in joint watershed management planning with other agencies - federal agencies in particular. There were 271 fish lakes mapped and 158 surveyed; 66 streams and 340 game lakes were surveyed. Most of the game lakes were also mapped. A detailed inventory was made of all the lakes in the Twin Cities Metropolitan Area.

Several game management areas were mapped and biological studies were conducted on the fisheries of the lower Mississippi River as part of a five-state agreement.

Census

A continuing record of angler numbers and their success on key fishing lakes provides a means of evaluating fishing regulations. Angler pressure and success surveys collected from more than 75 lakes provide essential facts on which to base fishing regulations and other management plans.

Cooperative surveys and censuses were made of several border lakes with the Province of Ontario to determine the amount of summer angling and the amount of ice fishing by fishermen using snowmobiles in the winter.

Biological Services

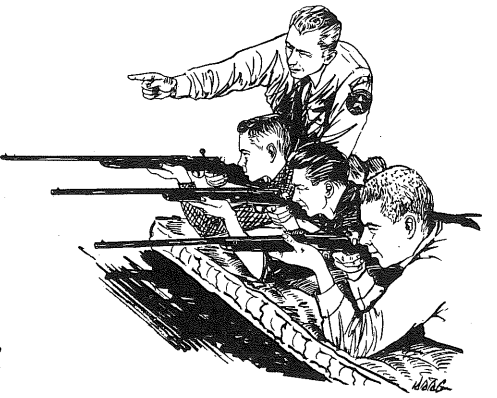
The Biological Services Unit was concerned primarily with supervision of aquatic nuisance control, mostly waterweeds and algae, in public waters and 1,057 permits were issued for such jobs. This is an increase of 17 per cent over the previous biennium.

Twelve cases of pollution of public waters affecting fish and game were investigated, mostly in conjunction with the Minnesota Department of Health, and aid was given that agency in setting water quality standards for streams. Some pesticide investigations were also made.

Summary

Published papers on results of work	47
Papers in press or prepared for publication as of 6-1-66	37
Technical bulletins published	2
Major mimeographed reports	88
Major typewritten reports	235
Watersheds surveyed and mapped	26
Fish lakes surveyed	172
Fish lakes mapped	285
Waterfowl lakes surveyed	345
Waterfowl lakes mapped	330
Streams surveyed	66
Game management areas surveyed	7
Aquatic nuisance control permits issued	1,057
Pollution investigations made	12
Samples analyzed in laboratories	5,900
Scientific and special permits issued	323
Informational leaflets prepared	33
"Latest Word"	24

Law Enforcement



The laws and regulations governing the protection of our wildlife are geared to allowing equitable, but not excessive harvests and to promote safe hunting and fishing.

The Warden Service is the law enforcement branch of the Division of Game and Fish. Proper law enforcement involves as much prevention as it does arresting. Wardens spend much of their time informing the people of the need and purpose of laws and regulations necessary to protect our wildlife resources. In addition to law enforcement and public relations duties, wardens have charge of the public access and firearms safety programs.

Law Enforcement

The best laws and regulations are no better than the enforcement they receive. Wardens enforce conservation laws relating to wild animals, fish, wild rice, protection or control of public waters, water pollution and others. There were 7,573 persons arrested for violations of game and fish laws during the biennium. Violators paid fines amounting to $193,043, half of which is credited to the Game and Fish Fund. The balance is paid to the county where the violation occurred. Articles seized and confiscated were sold and another $41,372 was deposited in the Game and Fish Fund.

Arrests July 1, 1964 - June 30, 1966

Type of Violation	7-1-64 to 12-31-64	1965	1-1-66 to 6-30-66	Total
Fishing	564	1638	914	3116
Transporting Firearms and/or Illegally taken Game	910	807	139	1856
Waterfowl	292	493	23	808
Big Game	277	249	68	594
Shelter or dark house	22	222	119	363
Small Game	107	93	16	216
Wild rice	14	173	10	197
Parks and refuges	41	75	9	125
Trapping	27	41	19	87
Netting (whitefish, tullibee, smelt)	13	23		36
Licenses	15	14	6	35
Division of Waters Laws, including pollution	2	17	11	30
Trespass	17	4	6	27
Minnows	10	11	4	25
Resisting wardens	4	7	7	18

Arrests July 1, 1964 - June 30, 1966 (Con't.)

Type of Violation	7-1-64 to 12-31-64	1965	1-1-66 to 6-30-66	Total
Frogs	2	4	2	8
Commercial fishing		5	3	8
License Agents	2	1	2	5
Bounties		5		5
State property		2	1	3
Fur buyers	1	1	1	3
Protected non-game birds	1	1		2
Fish packers		2		2
Affidavits	1	1		2
Use of radios	1			1
Public Access	1			1
	2,324	3,889	1,360	7,573

Public Relations

The best policies are no better than the publicity and understanding they receive. The Warden Service has continued to publicize the game and fish policies through state and county fair exhibits, television programs, radio, and talks at approximately 2,000 meetings of organizations which have an interest in game and fish.

Firearms Safety

The Warden Service administers, supervises, and enforces all aspects of the Minnesota Youth Firearms Safety Training Program. During the biennium, 1,505 new volunteer instructors were enrolled, trained, and certified. Instructors trained 39,068 youngsters with the assistance of the wardens who attended and instructed each class at least once. To date, 181,000 youngsters between the ages of 12 to 16 have been trained since the program began.

Public Access

An active program of buying access sites began in 1947 primarily to provide access to public waters for hunters and fishermen.

The Warden Service is responsible for this program. There has been an increased public demand for adequate public access to nearly 2,200 lakes that conform to the prerequisite of 150 acres within the meander lines. During the biennium, 103 sites were acquired at a cost of $91,355. In order to be of value, the sites must be developed and maintained. There were 127 sites developed at a cost of $73,005 and agreements were signed with local cooperating agencies to maintain and keep the sites in respectable condition.

Cooperation With Other Agencies

The wardens cooperate with other sections of the Division of Game and Fish by assisting with game and fish censuses, browse cutting, predator control, fish stocking, rescue, etc.

Cooperation with agencies outside the Conservation Department include sheriff's offices, highway patrol, civil defense and fire departments. All wardens have first-aid training. During the biennium, several lives were saved by wardens who were near the scene of accidents; fire departments were alerted to serious fires by wardens with two-way radio equipment, and doctors and ambulances were summoned to persons needing their services. The wardens also worked with Neighborhood Youth Corps crews, particularly in developing public access sites.

In-Service Training

In-service training sessions are held regularly in each region by the Regional Supervisor. A warden school is held each winter to keep the field personnel abreast of the rapidly changing law enforcement picture.

Future Plans

Plans are being made to continue to improve the Section by regional law enforcement schools, regional meetings and in-service training on the entire game and fish program. The public will continue to be informed of the laws and regulations pertaining to conservation. Youngsters will receive Firearms Safety Training at a rate 50 per cent higher than at any previous time. This increased emphasis on this program stems from the passage of the 1965 amendment to the Firearms Safety Law. Beginning January 1, 1968, every youngster between 12 and 16 years will have to have a valid Firearms Safety certificate to hunt small game or unprotected wild animals except on land owned or leased by the parent or guardian which they occupy as their permanent home. Youngsters in this age group will also have to have a Firearms Safety certificate in order to purchase a big game license.

The Section now has a Public Access Coordinator who will develop long range goals, priorities and standards for the acquisition and development of public accesses to lakes as fast as the expanded demand by the public dictates and money is available. Continued cooperation with other agencies will continue to be paramount within this Section.

Firm and just law enforcement will continue - THE BEST LAWS AND REGULATIONS DESERVE THE BEST ENFORCEMENT.

GAME AND FISH PUBLICATIONS

Numerous publications came off the press during the biennium for public distribution. Two new technical bulletins were prepared and are available at a minimum cost from the Department of Administration's Section of Documents. Other publications are distributed free to the public.

Technical Bulletin 1-15 - "Big Game in Minnesota", includes information on deer, moose, elk, caribou and black bear, their history in Minnesota, present status and natural history.

Technical Bulletin 1-16, - "Ducks and Land Use in Minnesota", includes information on the kinds of nesting cover most attractive to ducks, where they nest, and the effects of predation and activities of man on the production of ducks.

"Highlighting the Division of Game and Fish", a 24-page colorful publication pictorially and artistically illustrating programs and activities for the protection and management of our wildlife. This is the first publication of its kind to be printed by the Department.

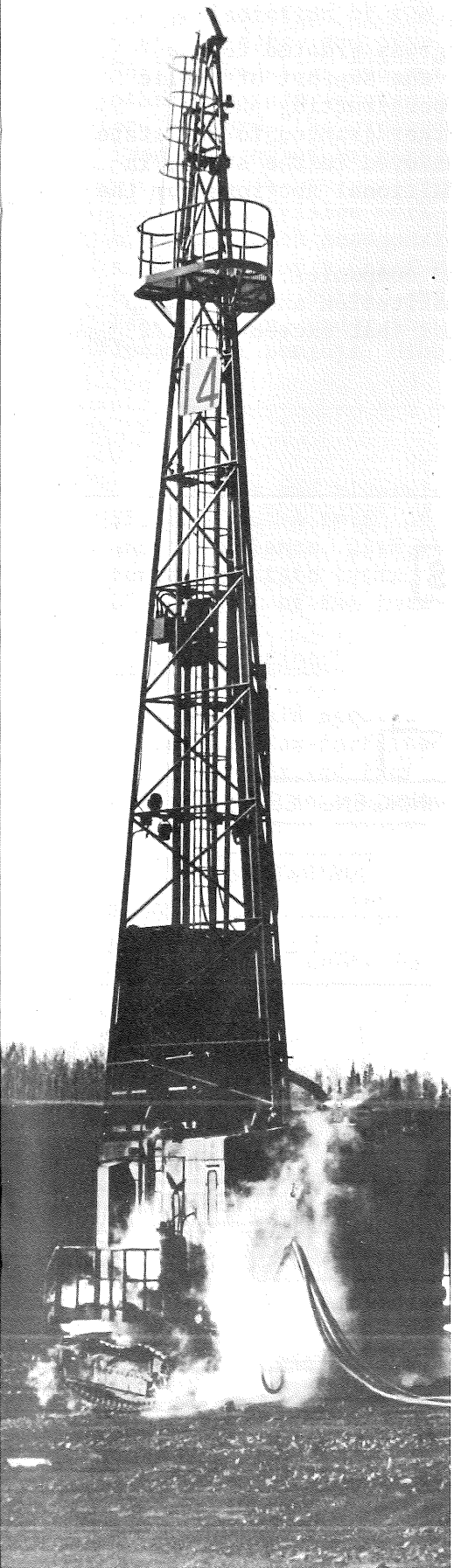
"Minnesota's Firearms Safety Program", includes information on course instruction, how to enroll and other pertinent information on the Firearms Safety Program.

"A Minnesota Guide to Raising and Releasing Canada Geese", includes a description of Canada geese, their range, breeding and food habits, re-establishing a flock, establishing a free-flying flock, hunting and permits to possess Canada geese.

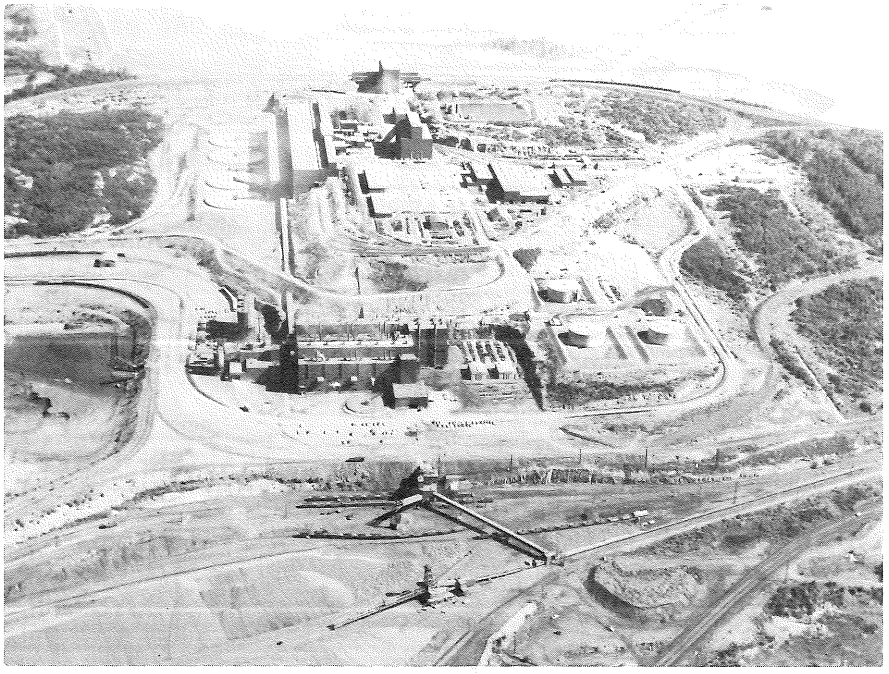
"A Minnesota Guide to Raising and Releasing Mallards", includes a description of wild and domestic mallards, their release, raising and releasing mallard ducklings, establishing a captive flock, permits to possess them and references on waterfowl.

"A Minnesota Plan for Emergency Winter Care of Deer and Deer Yard Improvement", includes a plan for deer habitat improvement and emergency cutting of natural browse, emergency care of deer and general instruction for deer yard improvement.

DIVISION REPORT III



Public Lakeshore Project



Aerial View of a Taconite Concentrating Plant

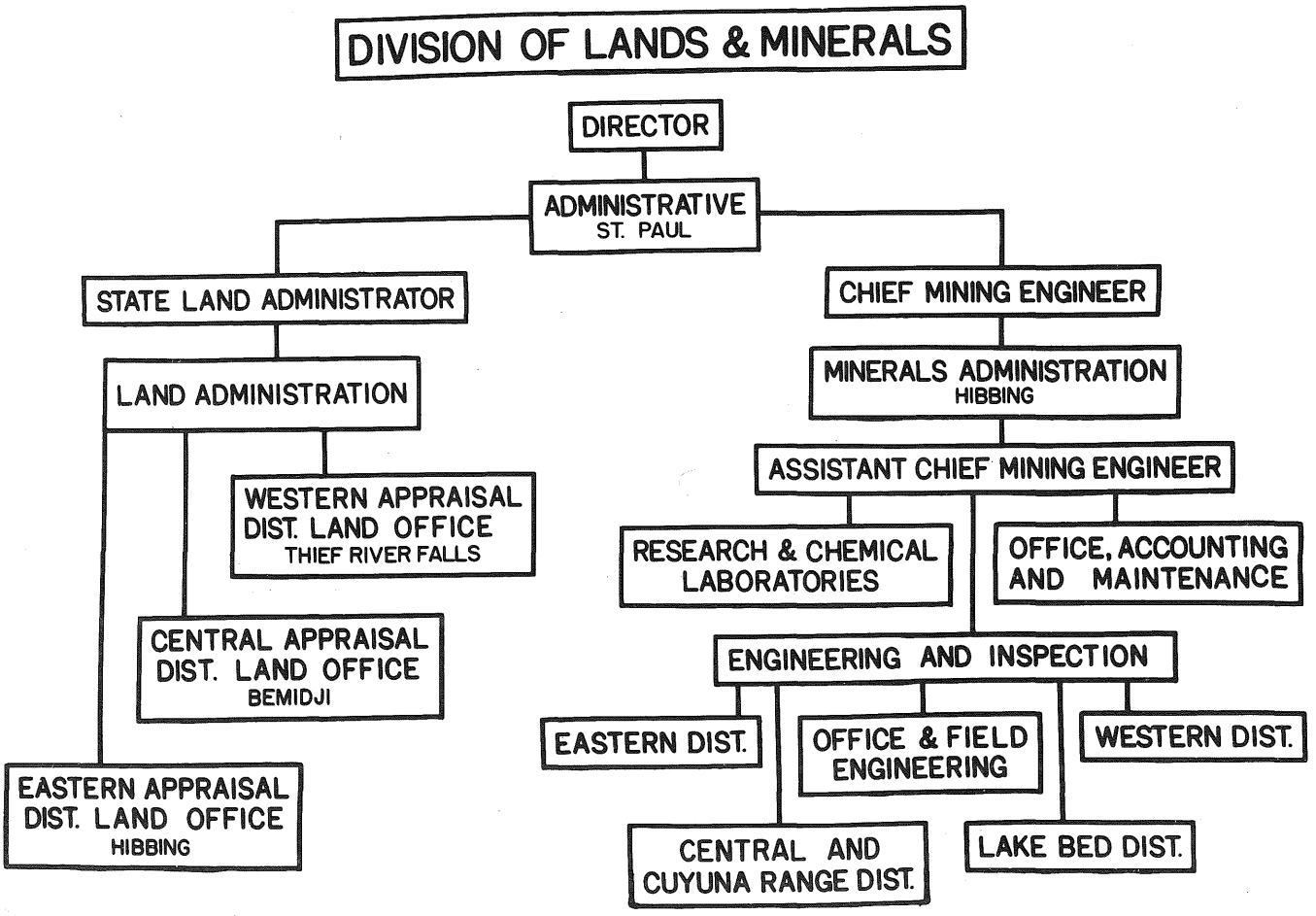
Jet Piercer Drilling in a Taconite Quarry

LANDS and MINERALS

Ray D. Nolan, Director

Under the 1857 act authorizing a state government, Congress granted to the State of Minnesota millions of acres of land, to be used for the support of public schools, a state university, for erecting public buildings, constructing public roads and other internal improvements. Congress in 1860 further granted to the state all swamp and overflowed lands which had not already been conveyed to the state; in 1862 a grant for an Agricultural College; and in 1870, 72 additional sections for the University.

Part of the swamp land grants were conveyed to railroad companies; but the trust fund lands that were covered by the original State Constitution and the Swamp Land Amendment of 1881, established Permanent Trust Fund Lands that exceeded 5-1/2 million acres.



The Division of Lands and Minerals is charged with the administration of approximately 1,700,000 acres of trust fund surface lands owned by the state under the jurisdiction of the Commissioner of Conservation, that are located outside of State Forests, and over 5,000,000 acres of trust fund minerals. It also acts as agent for the counties and local taxing districts in exploiting and leasing iron ore and other minerals located in tax-forfeited lands; conducts research on low grade minerals; and promotes the exploration and development of state-owned minerals in areas where iron ore and other minerals are not known to exist.

The division work is divided into two sections -- one covering lands, the other minerals, with headquarters for both in Saint Paul. The Mineral Section under the supervision of a Chief Mining Engineer, has an engineering, research and chemical building at Hibbing, and an engineering office on the Cuyuna Range at Ironton. The Land Section, under the supervision of a Land Administrator, has land appraisal offices located at Bemidji, Hibbing, and Thief River Falls.

REVENUE AND ACTIVITIES

Lands and Minerals revenue for the biennium ending June 30, 1966, totaled $5,231,879. A total of $4,713,157 of this was derived from iron ore and other minerals; and the balance, $518,722, was received from sale of state lands and timber and the rental of state lands, an increase of 36% over the previous biennium. Approximately 87 per cent of the total receipts was paid into the state's Permanent Trust Funds.

Mineral Section:

Minerals acquired by the state through tax-forfeiture are administered by this division. Tax-forfeited mineral royalties for this period totaled $527,680, most of which was derived from royalty paid under taconite leases. Of this total, 80 per cent was returned to the taxing districts in which the taconite was located and the remaining 20 per cent was retained by the state and deposited in the General Revenue Fund.

From the time of the first shipment of state-owned ore in 1893 until June 30, 1966, a total of 436,871,404 tons of royalty ore has been produced from state-owned properties. Of this amount, 91,877,682 tons consisted of crude taconite.

During the biennium, 18 state-owned mining units were active in producing 21,527,996 tons of royalty ore. Fourteen units were regular natural ore mines, one was a stockpile unit, one was a lakebed mine, and two were taconite quarries operated by the Erie Mining Company. These two taconite quarries produced 16,861,326 tons of state-owned crude taconite during the biennium. The remainder of the royalty ore, 4,666,670 tons, consisted of iron ore and concentrates produced by natural iron ore mining units.

For the first time since 1957, a public sale of iron ore prospecting permits was held in August of 1965 on a selected group of natural iron ore properties. As the result of this sale seven prospecting permits were issued to the high bidders. Two of these permits were converted to iron ore mining leases that same month and mining operations were started in one of these leased properties during September 1965. Exploration work was conducted under the other permits.

During the early part of 1966 an iron ore mining lease was negotiated with the Jones & Laughlin Steel Corporation for the tax-forfeited 2/3 mineral interest in the Marr-Adair property located northeast of Grand Rapids. Development of this property is expected to begin early in 1967. Negotiations were also carried on with the Reserve Mining Company for a taconite mining lease on a state-owned taconite reserve located immediately to the east of their present quarry. Development of this property is also expected to begin in 1967.

A geophysical program, involving ground magnetic surveys, was continued on state-owned lands in the Cuyuna Range and adjoining areas. One hundred and seventy-six tracts of land have been surveyed and results of this work will assist the division in evaluating the mineral potential of state lands in these areas, and in determining what additional exploration work is needed.

A program is also being started to set up state exploration drilling and testing information on an IBM system through Data Processing to make the information more usable and to facilitate the estimating and evaluation of state-owned mineral properties. This program will take a number of years to complete, but trial runs on selected properties are planned during the present fiscal year.

The Lake Bed Section is continuing the field examinations and investigations which are necessary in preparing the engineering data to be used by the Attorney General's Office in litigating the ownership of underwater minerals. In addition to the detailed engineering work conducted on specific lakes and watercourses which presently are, or may be involved in litigation, this section has continued to expand its preliminary survey work in known and possible mineral areas in order to program its future efforts.

The transition that is taking place in the iron ore industry makes it necessary for the division to expand the flexibility of its research facilities and to include advanced methods of grinding, sizing, reduction roasting, flotation, agglomeration and other types of mineral beneficiation. Although additional funds are needed to continue and complete the work, rapid progress is being made and an active research program is being developed.

In addition to the aforementioned activities, the research section processed and classified over 81,056 feet of drill hole exploration samples, an increase of 45 per cent over the previous biennium. Approximately 380 laboratory tests were made on samples of low grade ore, iron ore tailings, taconite, and non-ferrous minerals. The Chemical Laboratory completed about 13,500 analytical determinations on samples from iron ore shipments, lean ore dumps, and samples from tests that were conducted in the Research Laboratory.

Land Section:

The Land Section continued to carry out a comprehensive program of land leasing and land sale during the biennium. Land appraisers survey and locate state-owned land to determine its value for sale and lease purposes and to recommend the proper use of land which is unsuitable for agricultural purposes or is isolated from schools, roads or settlements. They also appraise and classify tax-forfeited lands in Conservation Areas and the Red Lake Game Preserve.

In the two-year period ending June 30, 1966, a total of 11,835 acres of trust fund land located in 17 counties were sold by the Land Section for $114,878. Receipts from 2,531 surface, lake shore, and miscellaneous leases totaled $87,474. During this same period 16,585 acres of tax-forfeited land located in Conservation Areas and in the Red Lake Game Preserve were sold for $94,475 by county officials after they had been investigated by division appraisers and approved for sale by the Commissioner.

In February of 1966 the other Divisions of the Department of Conservation transferred some 300 pole and power line leases to the Division of Lands and Minerals and in the later part of 1966 some 900 lakeshore cabin site leases will be transferred to this Division.

The Division keeps a record of all state-owned land under the control of the Commissioner of Conservation. At the present time these land and mineral ownership records are being set up on an IBM system to make this information more available and useful to the public and other governmental agencies and to help the division program its future activities.

Due to the increased activity in the Land Section, it is proposed that a position of Assistant State Land Administrator be established to coordinate the field activities of the land appraiser districts, and to act as liaison between the St. Paul office and those field personnel on special projects. Establishment of this position will provide for more efficient administration of all the lands that are managed by this Division, under the direction of the Commissioner.

The Division has also proposed that the present three land appraiser districts, each with two land appraisers, be combined into two land management regions with headquarters at Hibbing and Bemidji. Under the plan which has been submitted and is presently under review, each region would have one regional land manager and two area land managers. This consolidation of field activity and responsibility should further strengthen the land management activities of this division as authority and delegation of responsibility would be concentrated and this in turn would make personnel more available for special assignments and planning activities.

TRANSITION FROM NATURAL ORES

The direct shipments of iron ores in their natural state, which typified Minnesota's iron ranges for over 60 years, now have largely been replaced by concentrated ore. In 1943, the percentage of concentrates shipped from all Minnesota mines was 22.1 per cent (15.4 million tons). This increased to 33.1 per cent (27 million tons) by 1953, and by 1965 the proportion of concentrates equaled 78.3 per cent or 40 million tons of a total of 51 million tons. The large percentage of increase over 1953 was mainly due to the 18.8 million tons of taconite concentrates shipped in 1965, which represented more than 47.1 per cent of the total concentrates. The percentage of iron ore concentrates shipped from state-owned mines has followed this same pattern, but to an even greater extent. In 1965, 98.1 per cent of the ore shipped from state-owned mines consisted of concentrates.

It should be noted that the grade and structure requirements for these concentrates have also risen. The analysis of the total shipments of iron ore from the Mesabi Range in 1955 averaged 50.43 per cent natural iron and 10.21 per cent silica. In 1965 the total shipment for the Mesabi Range averaged 56.66 per cent in natural iron, 8.32 per cent silica. Indications now point to even higher grade requirements in the future for Minnesota's iron ore shipments and the necessity of meeting these requirements is emphasized by the fact that in 1965 the analysis of Canadian iron ore shipments averaged 60.24 per cent in natural iron and 5.92 per cent silica.

Even the taconite industry in Minnesota has been affected by the changing grade requirements and much experimental work is being done by the taconite operators to make their production more competitive with pellets and concentrates from other areas.

The requirement by blast furnace operators for ores of better structure has placed added emphasis on pelletizing and other forms of agglomeration. Much experimental work is being carried on in attempts to improve the structure of both the natural ores and concentrates prior to their shipment from Minnesota.

TACONITE DEVELOPMENT

The known open pit area of the Mesabi Iron Formation extends from the Grand Rapids area on the west to Babbitt and the Dunka River area on the east, a distance of over 110 miles. It contains about 105,000 acres of mineral lands. The trust fund lands owned by the state in this area amounts to about 15 per cent of the total and, when combined with the lands that have forfeited for taxes, the total state-ownership of the Mesabi Formation amounts to over 18 per cent.

Taconite is the name that has been given to the hard iron-bearing rock comprising the bulk of the Mesabi Iron Range. A large tonnage of the taconite is not amenable to commercial concentration at the present time, but it has been estimated by engineers of this division and the University that the open pit formation contains about 45 billion tons of crude taconite rock that can probably be concentrated on a commercial basis.

Minnesota, through its trust fund lands and lands that have forfeited for taxes, owns approximately nine billion tons of commercially concentratable taconite which some day can be converted into about three billion tons of high grade taconite concentrates or pellets. This reserve tonnage of state-owned material is particularly impressive when compared with the 2.7 billion tons of natural iron ore and concentrates that have been produced from both state and privately owned mineral lands during the 82 year history of iron mining in Minnesota.

At the present time there are three large commercial taconite plants and one large experimental taconite plant treating magnetic taconite in Minnesota: The Reserve Mining Company has recently completed a second expansion raising the capacity of its plant at Silver Bay to 10.7 million tons of taconite pellets per year; The Erie Mining Company is presently undergoing a 2,800,000 ton expansion program which will raise the capacity of its plant at Hoyt Lakes to 10.3 million tons per year; The Eveleth Taconite Company's plant at Forbes, with a capacity of 1.6 million tons of taconite pellets per year, was completed and put into operation at the end of 1965; The United

States Steel Corporation's taconite pilot plant at Mountain Iron has a capacity of approximately 900,000 tons of taconite concentrates per year. The combined capacity of these four units totals 23,500,000 tons of taconite pellets per year.

Construction of three new taconite plants having a combined capacity of 8.9 million tons of taconite pellets per year is presently underway: The United States Steel Corporation is building a commercial taconite plant in the Mountain Iron area, with an initial capacity of 4.5 million tons of taconite pellets per year; a commercial taconite plant with an initial capacity of 2 million tons of taconite pellets per year is being constructed in the Nashwauk area under a joint project of The Hanna Mining Company, Inland Steel and Wheeling Steel Corporation; a commercial taconite plant with an initial capacity of 2.4 million tons of taconite pellets per year is being constructed in the Keewatin area under a joint project of The Hanna Mining Company and the National Steel Company. These three new plants are expected to be in operation in 1967. In addition other companies are conducting exploration work and are working on programs of acquiring taconite reserves capable of supporting a commercial plant.

Due to the location throughout the Mesabi Iron Range of state-owned trust fund lands or lands that have forfeited for taxes, most of the taconite operations that are presently in production, or are under development, will involve large tonnages of state-owned crude taconite.

Mining from the Erie Mining Company's newly developed Dunka River taconite reserve area began during the early part of 1965, and production from State leases in this area is expected to increase during the forthcoming biennium. A number of mining companies carried on extensive taconite drilling programs during the past biennium. One hundred and seventy-two drill holes were put down on state-owned lands alone, by five different companies, for a total depth of over 26,094 feet. Much of this exploration work is expected to continue into the next biennium.

Although the treatment of magnetic taconites has been carried on commercially for many years, research work is still being conducted to improve the methods of concentration and the efficiency of the various processes used. Autogenous grinding, fine sizing, roasting, flotation and other processes are being tested by many of the private companies, and federal and state agencies in an attempt to improve the grade and structure of the taconite concentrate and economics of the magnetic taconite industry. Some of these new techniques will be used in the new plants now under construction.

SEMI-TACONITE; REDUCTION ROASTING AND DIRECT REDUCTION

Large reserves of semi-taconite are located in the western end of the Mesabi Range. This is non-magnetic iron-bearing material, softer than unaltered taconite or compact rock, which probably will require roasting, flotation, or some other complex method of treatment in order to produce high grade concentrates. Pilot plant tests on semi-taconite were conducted during biennium. While a feasible concentration process appears to have been developed, no plans have been announced for processing semi-taconite on a commercial basis in the immediate future.

Continued attention, however, is being given by operators and by various state and federal agencies, to possible methods of treating low grade natural ores and semi-taconite. A large amount of laboratory test work and some pilot plant work is being conducted on the techniques of autogenous grinding, reduction roasting, electro-dynamic separation, flotation, agglomeration, and pre-reduction of pellets, in an attempt to improve the grade and structure of these low grade materials so as to make them competitive in the rapidly changing iron ore market. Ores from a number of state-owned properties have been involved in these tests.

COPPER-NICKEL AND ASSOCIATED MINERALS

It has been known since 1948 that there was a possibility of commercial copper, nickel, and associated minerals being discovered in northeastern Minnesota, and at least two of the largest producing companies of copper and nickel were active in the 1950's in exploring for these metals in this Minnesota area. Exploration at that time indicated deposits of low grade copper and nickel, but work in the Minnesota copper-nickel area was discontinued because of discoveries of high grade nickel in Canada and of copper in other areas.

Interest in the Minnesota deposits was revived in 1965. In order to make the state-owned mineral lands available to producing companies, tentative rules and regulations covering permits to prospect for and leases to mine copper, nickel and associated minerals were prepared and reviewed with companies and individuals that had shown an interest in the development of these minerals. Subsequently, a public hearing was held, in July of 1966, to review a revised set of rules and regulations that had been prepared during the early part of 1966.

Following this hearing, proposed rules and regulations were drafted and their adoption by the State Executive Council and approval by the Attorney General will enable the Division to hold a public sale of copper-nickel leases covering state-owned lands and beds of public waters by the end of 1966. There are approximately 140,000 acres of state-owned trust fund, acquired, and tax-forfeited land and beds of public waters lying within the area of present interest which the Division is setting up into mining units to be offered at this sale.

MINERAL OUTLOOK

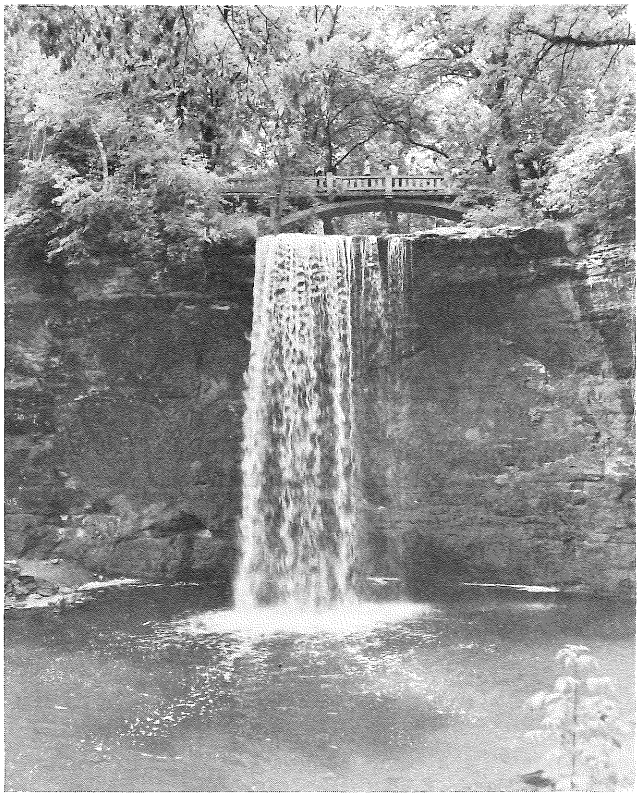
In addition to this Department, many agencies such as the University of Minnesota, the Minnesota Geological Survey, the U. S. Bureau of Mines and the Mining Industry are experimenting with, and exploring for the various kinds of minerals that are located in Minnesota -- not only for iron bearing material, but also with the possibility of developing, in the future, the state's reserve of manganese, copper, nickel, titanium and other metals and minerals that exist in the state, but which are not being produced on a commercial basis at the present time.

This biennial period has been highlighted by a number of significant developments in Minnesota's mineral industry. Expansion of two existing taconite plants and construction of three new ones are of particular importance and have increased the investment in Minnesota taconite to over one billion dollars.

The interest that is presently being shown by the major copper and nickel producing companies in the potential of copper, nickel, and associated minerals in the Duluth gabbro, located in northeastern Minnesota, holds promise of the development of a new mineral industry in that area that may approach the scale of Minnesota's taconite operations.

DIVISION REPORT IV

Itasca State Park



Minneopa State Park

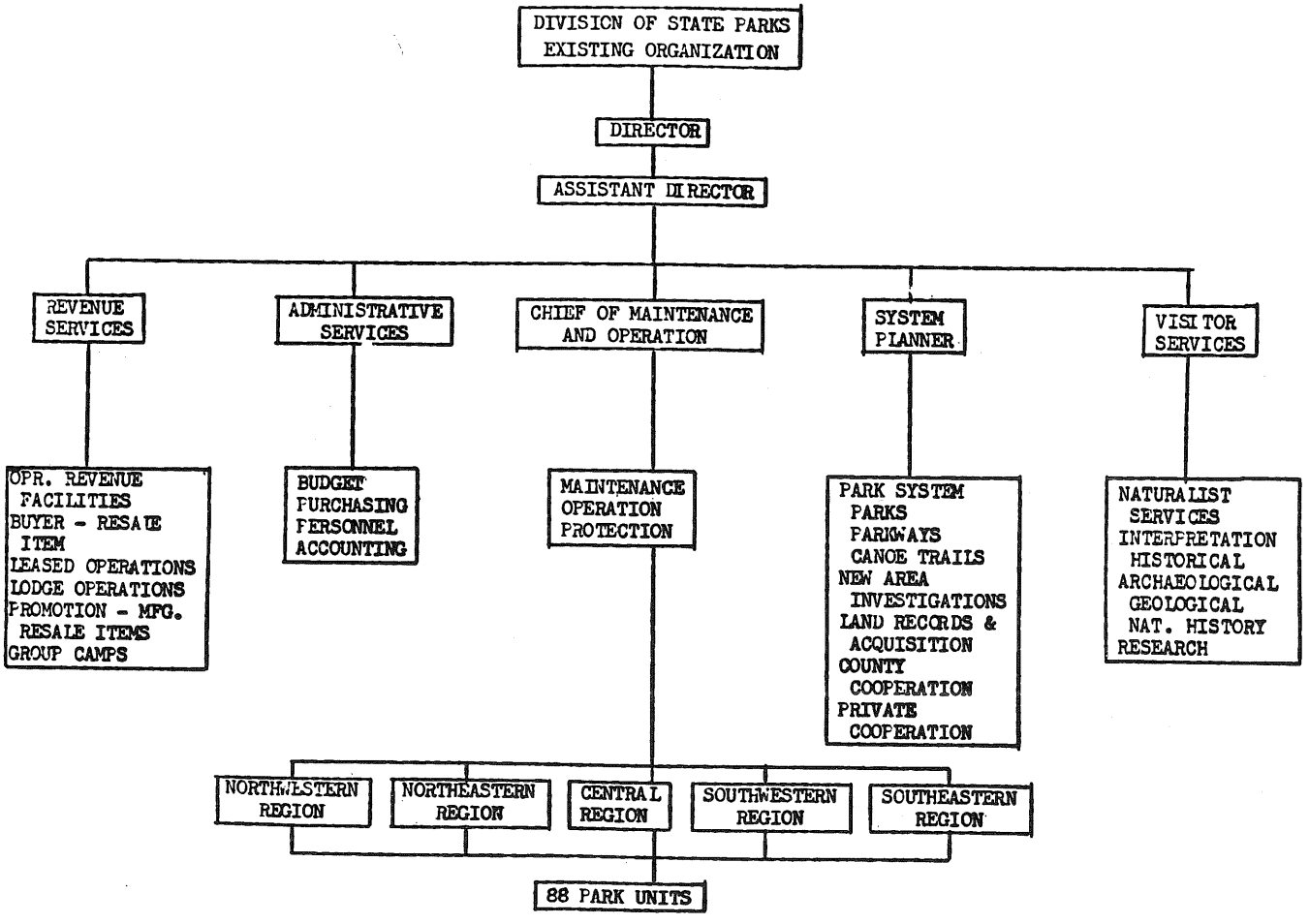
Visitor Services - a vital part of the parks program.

STATE PARKS

U. W. Hella , Director

The mission of Minnesota's Division of State Parks 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.

The Division develops public use facilities for the enjoyment of the people, but these facilities must be consistent with the protection of the character and natural attributes of the parks. The Division also selects and recommends new areas for establishment in the State Park System.



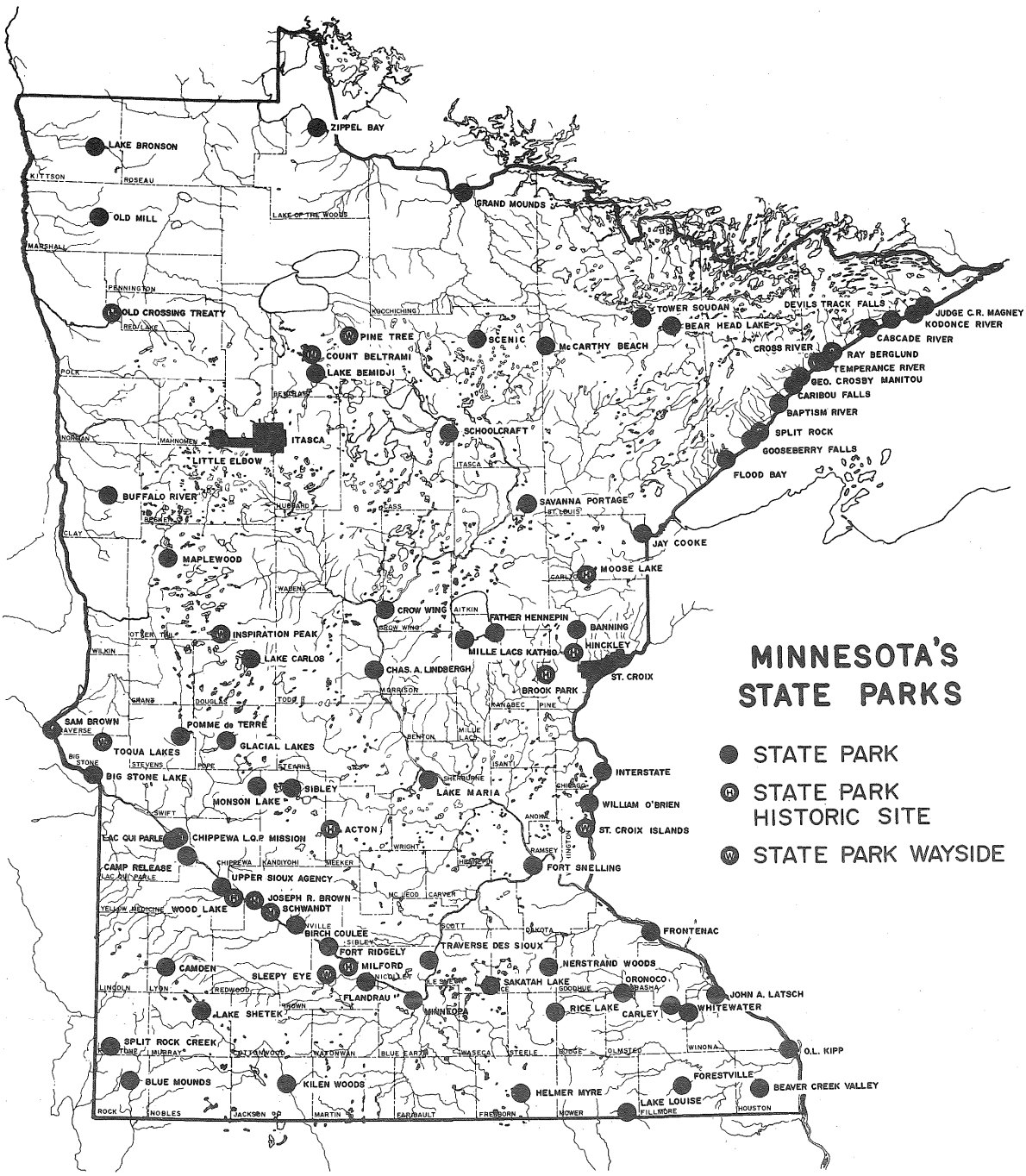
Minnesota's State Parks

The State Park System dates back 46 years to 1889 when the first park, Camp Release in Yellow Medicine County, was established. Prior to 1925, Minnesota's state parks, with the exception of Itasca and Sibley, were under the direction of the State Auditor. (Itasca at that time was supervised by the Department of Forestry and Sibley by the Department of Game and Fish.) In 1925, the parks were placed under the administration of the Conservation Commission and in 1931, with the Division of Forestry in the newly created Department of Conservation. Following the creation of the Division of State Parks in 1935, the Park System was integrated into the present departmental setup.

As of June 30, 1966, this system consisted of 88 units located strategically throughout the state. The Division of State Parks maintains, operates and regulates the use of the state parks, monuments and waysides that comprise the State Park System.

The major units in the System are the 66 areas classed as state parks and recreation reserves. These areas vary in size from 100 to 30,000 acres and are a combination of superlative scenic characteristics with varied extensive recreational opportunities. They often contain a combination of significant historical, archaeological, ecological, geological and other scientific values. Preserving the native landscape and withholding all the natural resources from commercial use are essential to any state park.

Twelve of the 88 units in the State Park System are classed as scenic or historic monuments and sites and vary in size from 50 acres to less than a fraction of an acre. A state historic site or monument possesses significant state-wide value to the historic heritage of Minnesota. There are ten state park waysides located along or close to major highways and have scenic, historic or scientific significance. The Department of Conservation's waysides provide travelers with a place to stop, rest, picnic, or enjoy the landscape.


MINNESOTA'S
STATE PARKS
STATE PARK
STATE PARK
HISTORIC SITE
STATE PARK WAYSIDE
ZIPPEL BAY
LAKE BRONSON
OLD MILL
GRAND MOUNDS
OLD CROSSING TREATY
PINE TREE
SCENIC
McCARTHY BEACH
TOWER SOUDAN
BEAR HEAD LAKE
DEVILS TRACK FALLS
JUDGE C.R. MAGNEY
KODONCE RIVER
CASCADE RIVER
CROSS RIVER
RAY BERGLUND
TEMPERANCE RIVER
GEO. CROSBY MANITOU
CARIBOU FALLS
BAPTISM RIVER
SPLIT ROCK
GOOSEBERRY FALLS
FLOOD BAY
COUNT BELTRAMI
LAKE BEMIDJI
ITASCA
SCHOOLCRAFT
LITTLE ELBOW
BUFFALO RIVER
SAVANNA PORTAGE
JAY COOKE
MAPLEWOOD
MOOSE LAKE
CROW WING
FATHER HENNEPIN
BANNING
INSPIRATION PEAK
MILLE LACS KATHIO
HINCKLEY
LAKE CARLOS
CHAS. A. LINDBERGH
ST. CROIX
BROOK PARK
SAM BROWN
POMME de TERRE
GLACIAL LAKES
TOQUA LAKES
BIG STONE LAKE
SIBLEY
MONSON LAKE
LAKE MARIA
INTERSTATE
WILLIAM O'BRIEN
ST. CROIX ISLANDS
LAC QUI PARLE
CHIPPEWA L.O.F. MISSION
ACTON
CAMP RELEASE
UPPER SIOUX AGENCY
FORT SNELLING
JOSEPH R. BROWN
WOOD LAKE
SCHWANDT
BIRCH COULEE
FRONTENAC
FORT RIDGELY
TRAVERSE DES SIOUX
CAMDEN
MILFORD
NERSTRAND WOODS
SLEEPY EYE
SAKATAH LAKE
ORONOCO
JOHN A. LATSCH
FLANDRAU
LAKE SHETEK
RICE LAKE
CARLEY
WHITEWATER
SPLIT ROCK CREEK
O.L. KIPP
BLUE MOUNDS
KILEN WOODS
HELMER MYRE
FORESTVILLE
BEAVER CREEK VALLEY
LAKE LOUISE
KITTSON
ROSEAU
LAKE-OF-THE WOODS
MARSHALL
PENNINGTON
RED LAKE
POLK
NORMAN
MAHNOMEN
BECKER
HUBBARD
CASS
CLAY
WILKIN
OTTER TAIL
GRANT
DOUGLAS
TODD
WADENA
CROW WING
AITKIN
MORRISON
CARLTON
KANABEC
PINE
BENTON
MILLE LACS
STEARNS
STEVENS
POPE
BIG STONE
SWIFT
CHIPPEWA
KANDIYOHI
MEEKER
WRIGHT
HENNEPIN
RAMSEY
WASHINGTON
ANOKA
CHISAGO
ISANTI
SHERBURNE
SIBLEY
MC LEOD
CARVER
SCOTT
DAKOTA
GOODHUE
WABASHA
WINONA
OLMSTED
DODGE
STEELE
WASECA
BLUE EARTH
WATONWAN
MARTIN
FARIBAULT
FREEBORN
MOWER
FILLMORE
HOUSTON
ROCK
NOBLES
JACKSON
MURRAY
COTTONWOOD
LINCOLN
LYON
REDWOOD
BROWN
LAC QUI PARLE
YELLOW MEDICINE

Acquisition

New Parks - Thirteen new major state park areas and one historic wayside were established by the 1963 Legislature and appropriations were made available to acquire land and to develop the areas for public use. No parks were added to the System by the 1965 Legislature. However, appropriations were made available for detailed contractual studies of four sites for consideration in the System.

Additions to State Park Lands - The 1963 Legislature provided for additions to 21 existing state parks. Additional funds were provided through the 1965 Minnesota Outdoor Recreation Resources Act for the acquisition of lands in 18 established parks and eight of the newly authorized parks.

Negotiations and purchase of lands for state park purposes are carried out by the Commissioner of Administration for the Commissioner of Conservation. The Division of State Parks, acting through the Commissioner of Conservation, sets up the priority and need for lands to be acquired.

Land transactions completed during the 1964-66 biennium amounted to 9,564 acres at a cost of $1,578,129. The transactions involved 23 state parks. Eminent domain proceedings were used in two instances, but in all others lands were acquired by direct negotiations. The largest block of land acquired in any one park was at newly established Banning State Park, where 2,548 acres were purchased at a cost of $97,625. The largest expenditure for land was at Fort Snelling State Park where two condemnation proceedings were instituted and 358 acres were purchased at a cost of $409,330. (Thirty per cent of the cost was provided by federal aid funds under the Housing and Urban Development Open Space Program.)

Development

Development of state parks includes only those facilities that provide recreation activities compatible with the preservation of the outstanding features and the historic, archaeological and other natural values that the park contains.

Development was intensified during the biennium and 95 contracts were let. Work was completed in 50 state parks at the total cost of $953,894. Numerous projects were carried out on a time, equipment and material availability basis supervised by state park personnel and manned by sources such as the Neighborhood Youth Corps. The largest contract project involved the installation of a central sewage treatment system for Itasca State Park amounting to $146,000 (30 per cent of the cost was paid by the U.S. Department of Health, Education and Welfare).

Development in the newly established parks consisted primarily of road construction, well installations and sanitary and picnic facilities to make the parks available for public use at the earliest possible date. It was possible to open seven of the 13 newly established parks for limited public use in the spring of 1966. One of the highlights of the last two years was the dedication and opening of Tower Soudan State Park in a formal ceremony held July 1, 1966.

Reorganization

Accelerated park acquisition led to additional development and operations necessary for the management of the 88 units. Consistent with the expansion of the Park System, the 1965 Legislature increased the full-time personnel complement of the Division from 54 to 83 positions. This made the reorganization of the operation and management set up possible and led to the establishment of five regional field stations each administered by a supervisor. The supervisor, through regular inspections, coordinates the work of the rangers and managers. A higher degree of maintenance and public service standards throughout the Park System is now possible.

The Legislature authorized the positions of Chief of Maintenance and Operations and the position of Park Planner. Two new urgently needed staff positions were added - Project Supervisor responsible for all development work in state parks and that of Chief of Visitor Services responsible for the naturalist and other interpretative programs. (Funding for the Visitor Services position was made possible by contributions from a private foundation.) All other personnel added were assigned to field stations.

In-service Training

A six-week training school for state park manager candidates was held in January and February of 1965 at Fort Snelling State Park under the Federal Manpower Training Program. This provided a list of qualified candidates to fill the newly authorized field positions, Corresponding with the reorganization of the Division of State Parks carried out in the summer of 1965, personnel stationed in 12 established parks were reassigned.

Visitor Services

Twenty-eight state parks offer "Natural Resources Interpretative Services" to increase the public's enjoyment and understanding of the natural resources protected. These activities are of great benefit not only to the park visitors, but also to park property in the noticeable reduction of vandalism. Means to expand this program is urgently needed. These services are presented free to the public in cooperation with the University of Minnesota's Museum of Natural History.

Self-guiding nature trails and guide leaflets are now provided in all the 28 parks with interpretative services. This is possible by research by staff members of the Museum of Natural History. Five seasonal naturalists were employed and conducted recreational interpretative programs which include guided nature walks, motor caravans, illustrated evening campfire programs and maintaining nature displays in six parks. Eight parks have museums.

State Park Open House

In the spring of 1966, a new state park concept was introduced. One day was set aside as "state park open house". No sticker was required for entrance. This gave the public an excellent chance to learn what our parks have to offer and the recreational opportunities that exist. The open house was well-received throughout the state.

Rivers Study

Many of Minnesota's rivers have tremendous potential for recreational travel and other uses. The Division of State Parks has assumed the responsibility for studying the potential of many of our rivers that can be equipped with facilities for recreational travel by small boats and canoes. Recommendations formulated from this study will be prepared for the 1967 Legislature.

State Park Attendance

The 1966 season opened with every indication of a banner year for attendance and use of our state parks. In the final reports for 1966, the Division anticipates that the attendance and use of parks will exceed that of any other year.

Attendance and use in 1964 totaled 3,616,955 visitor days, 450,000 of this total represented registered tourist camper days. In 1965, state park use was 3,296,122 visitor days, according to reports received and tabulated by the park managers. Of this number, 515,862 were registered tourist camper days.

The drop in attendance and use in 1965 is attributed to three factors:

1. Spring floods of 1965 discouraged the use of Flandrau State Park and delayed the use of Fort Snelling and Camden state parks. These parks are in the Minnesota River Watershed where the greatest flood damage occurred.

2. Cool, rainy weekends in the peak visitation periods discouraged the normal number of picnickers.

3. Reorganization and reassignment of park personnel resulted in confusion in submitting attendance reports.

Revenue Operations

The Division receives revenue from a number of sources. The state park vehicle permit is required for each vehicle entering any state park which has an area in excess of 50 acres. This represents a major source of revenue. Fees are charged for overnight camping, group camping, and for cabin, room and boat rentals. Thirty-six parks have campgrounds in which a fee of $1.50 is charged for each family camping unit.

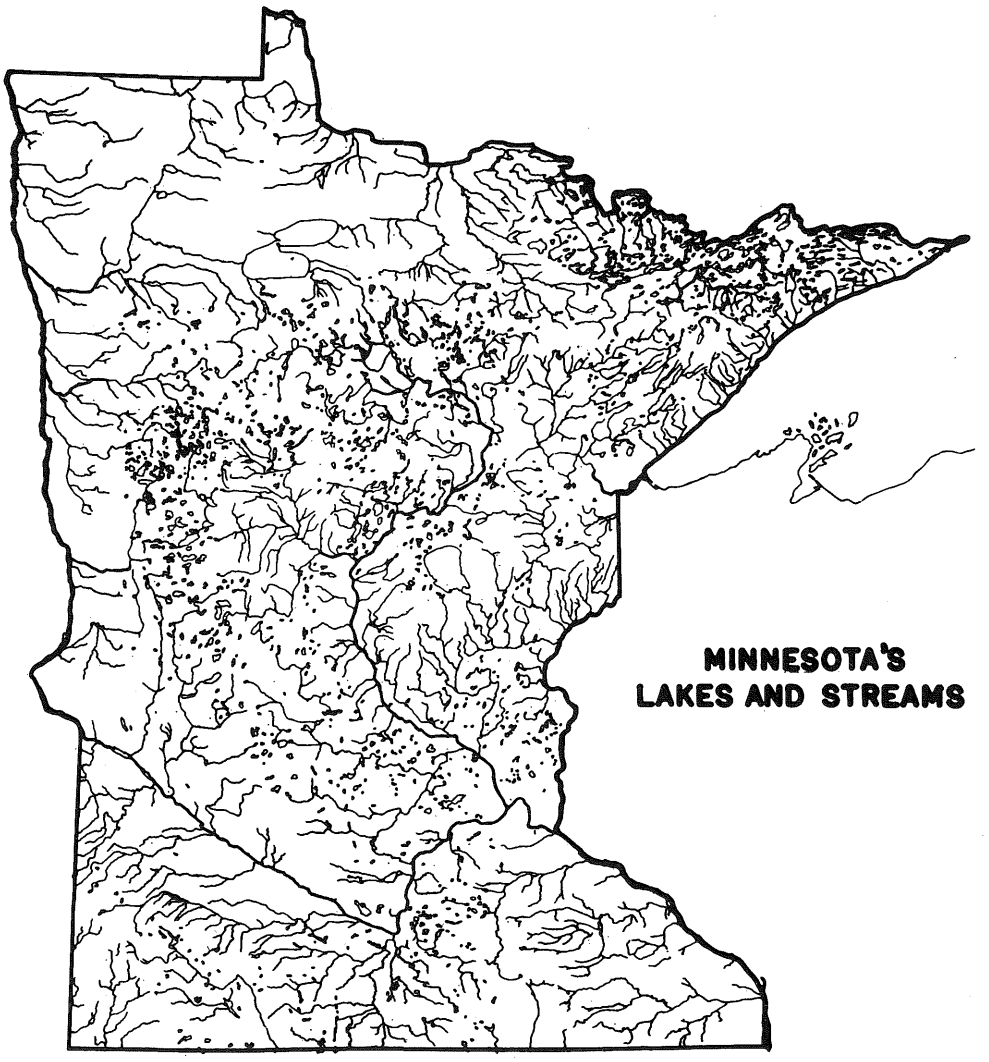
	Fee Services and Refectory Operation Receipts	Motor Vehicle and Permit Fees
July 1, 1964 to June 30, 1965	$570,716	$182,112
July 1, 1965 to June 30, 1966	$566,600	$177,415

An analysis of these figures compared to attendance figures reveals that while the over-all attendance dropped, the over-all camper day use of the park facilities increased by 14 per cent. This was possible through the development program which increased the number of campsites available throughout the Park System from 1,750 to 2,250 during the two-year period. This resulted in the fee service income dropping less than one per cent in 1965 when compared to 1964. Income from motor vehicle permit sales dropped about four per cent. This indicates that the greatest fluctuations occurred by those who use the park for day use programs only and was influenced by the flood conditions and the unsatisfactory weekend conditions that occurred during the 1965 period.

The Appropriation Act of 1965 amended the State Park Working Capital Fund to eliminate the use of receipts for operational expenses and to provide only for stores for resale. All receipts are now credited to the General Revenue and a fixed appropriation made for all maintenance and operation expenses. This finance system leaves no opportunity to meet additional expenses in utility and other services that can develop in the event that increasing demands due to larger attendance develop during a particular season. Other problems to be overcome are those caused by the flood disasters in 1965 on the Minnesota River and in 1966 on the Red River where considerable damage was done to park facilities along these rivers.

WATERS

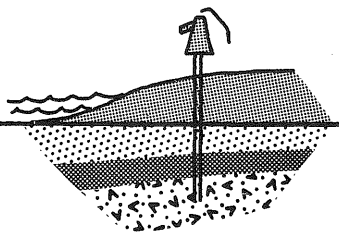
Sidney A. Frellsen , Director



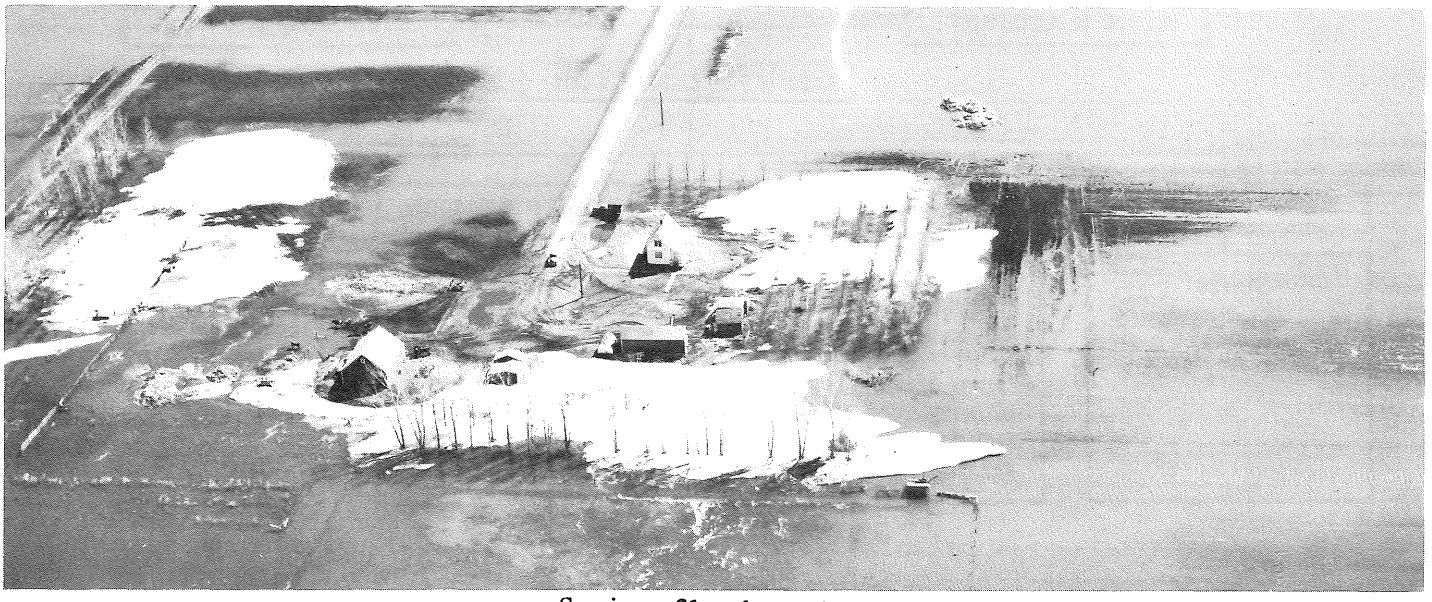
Minnesota has no shortage of water, but proper management and use of this vital resource must be our legacy to future generations. Water is a valuable resource to be protected, developed, and used wisely.

Minnesota, the "Land of Sky Blue Waters", is rightfully proud of its many lakes and streams. The lakes which dot the landscape are of many kinds, shapes and sizes. Minnesota is publicized as having 10,000 lakes, but how many there are depends on the size at which the count begins. There are 15,291 lake basins larger than ten acres. But if we include all the small waters, ponds and wetlands, perhaps 100,000 would be too small a number. The total is estimated to be about 2.6 million acres or about five per cent of the state's area. To this we could add the 1.4 million acres which is Minnesota's portion of Lake Superior. The Mississippi, Minnesota, St. Croix, Red, and St. Louis rivers, together with hundreds of tributary systems make up more than 15,000 miles of flowing waters.

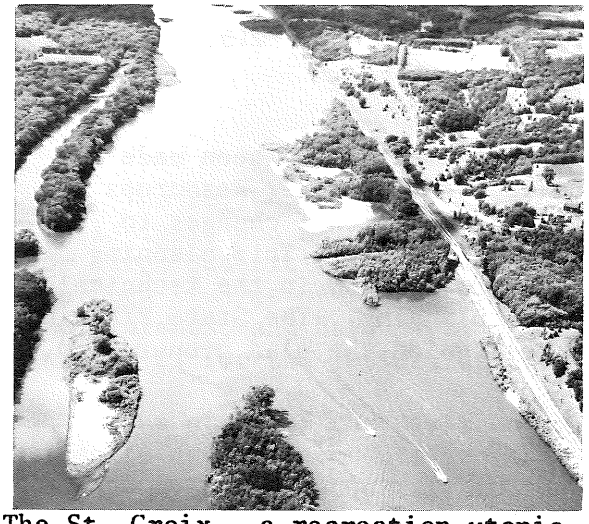
DIVISION REPORT V



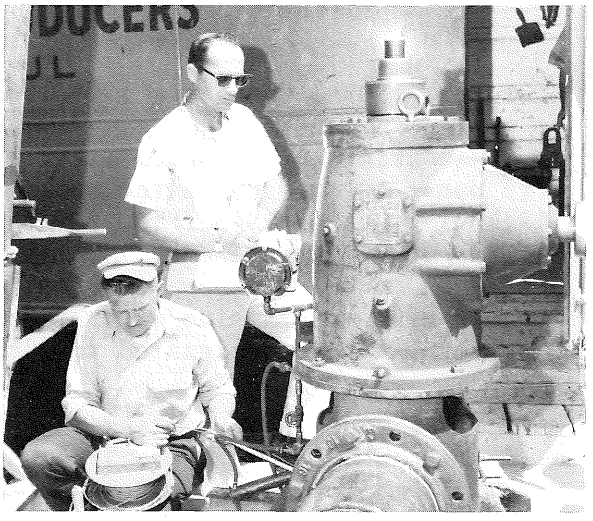
Minnesota's waters - a vital resource to be protected, developed and used wisely.



Spring flood, 1965



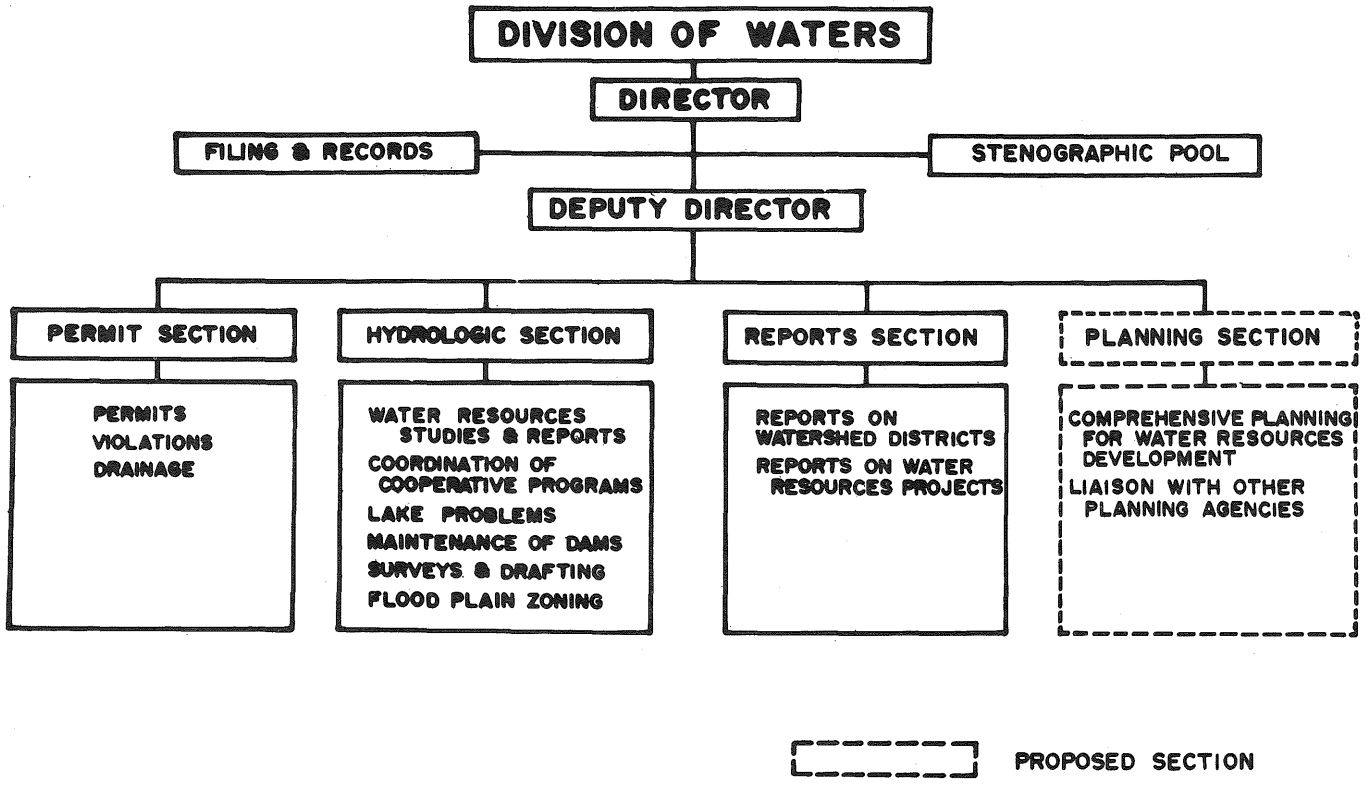
The St. Croix - a recreation utopia



Water Management

In earlier years, water was considered a nuisance to be drained away. Later when floods came it was referred to as a menace. In fact, the first state agency created to deal with water was primarily concerned with the drainage phase of water management. The first agency was a commission of three members established in 1893 to supervise northern Minnesota drainage problems. In 1897, a Drainage Commission was created for the care, custody, control and supervision of all drainage ditches in the state. It was replaced in 1905 by the State Drainage Commission which became the Department of Drainage and Waters in 1919. This was incorporated into the Department of Conservation in 1931 as the Division of Waters.

Over the years a general awareness of the growing need for water for various purposes has resulted in a shift of emphasis to investigations, studies and reports dealing with the state's water supply. Today, the Division of Waters is concerned with the preservation, protection and improvement of this great heritage and with the administration of state laws applying to all public waters.



Organizational Changes - 1964-1966

During the biennium minor adjustments of staff assignments have been made in response to changes in the work load. The advent of the federal Water Resources Planning Act of 1965 (P.L. 89-80) will involve future organizational changes to bring about improvements in planning for water needs of the state. This planning will be handled by new personnel in the Division of Waters trained in the technical field of comprehensive water and related land resources planning. The State Planning Agency has been designated to administer the program and guide the plan preparation.

Permits

After enactment of the water code in 1937, the processing of permits for work in the beds of public waters and for appropriating ground water or surface water has been a major activity of the Division of Waters. Through the permit system, the Division may forestall many actions which are considered detrimental to the public interest in lakes and streams, and may prevent the unlimited withdrawal and wasteful use of water. Approximately 10,000 such permits have been issued to date.

PERMITS

PERIOD	PENDING AT BEGINNING OF BIENNIUM	APPLICATIONS RECEIVED DURING BIENNIUM	PERMITS ISSUED	WITHDRAWN, DENIED, OR NOT REQUIRED	PENDING AT END OF BIENNIUM
July 1, 1964 to December 31, 1964	152	535	516	78	93
January 1, 1965 to December 31, 1965	93	1,399	1,297	67	128
January 1, 1966 to June 30, 1966	128	693	588	24	209
TOTAL		2,627	2,401	169	

Public Drainage Systems - Agricultural Improvement

1. Preliminary engineering plans and reports received and studied ---------- 113
   a. Director's preliminary reports prepared and submitted ---------- 2

2. Final engineering plans and reports received and studied ---------- 94
   a. Director's final reports prepared and submitted ---------- 92

3. Drainage systems found to adversely affect the public interest in lakes or publicly owned wildlife habitat areas and hunting grounds ---------- 20

Taconite Investigations

The region where taconite is found lies in the headwater areas of the St. Louis, Mississippi, and Rainy rivers, which makes it difficult to find dependable sources for large quantities of water required for processing. The taconite companies make thorough studies of the water resources of the regions before selecting sites for their plants, and have developed storage facilities and provided settling basins and facilities for the recirculation of water.

The staff of the Division of Waters makes certain that the final plans for taconite developments utilize the water resources in an economical way and do not in any way operate contrary to the best interests of the State.

Hydrologics

Collection of Basic Hydrologic Data

A substantial portion of the funds appropriated to the Division of Waters is allocated to a cooperative agreement with the U. S. Geological Survey for the collection of basic data on surface water, ground water and quality of water.

Briefly, the surface water program furnishes information on the stage and discharge of the principal rivers of the State. Through the ground water program, data is gathered on fluctuations in the water table in the glacial drift and the variation in artesian pressures in the deeper formations. The water quality program analyzes the chemical quality of water in selected streams, wells and lakes.

Under the cooperative agreement between the Division of Waters and the U. S. Geological Survey, the following facilities were in operation at the end of the biennium:

54 Stream gauging stations
1 Crest stage station
7 Partial record stream gauging stations
38 Lake and stream stage stations
78 Observation wells measured continuously or periodically
32 Lake or stream stations at which samples of water are taken for chemical analysis
106 Wells from which samples were taken for chemical analysis

In December, 1965, construction was begun of an electric analog model to be used in studying the ground water conditions in the Twin City Metropolitan Area. The model is being constructed in the Phoenix, Arizona laboratory of the U. S. Geological Survey under a cooperative cost-sharing agreement with the State of Minnesota. This model will simulate electrically the hydrologic conditions found in the artesian basin underlying the Twin Cities. It will provide a means for studying and analyzing the future effects of alternative methods of water development.

Approximately 3,000 well logs were received during the biennium from well drillers, well owners and others. These were plotted on maps for further analysis of ground water conditions. A study of formulation samples obtained from wells drilled under permit was made as part of a continuing program in cooperation with the Minnesota Geological Survey. Periodic records of lake stages were obtained for 46 lakes and staff gaugesinstalled and readings taken by voluntary observers. Requests for information on the appropriation of water were sent to 6,155 appropriators. Of this total, 2,571 returned statements reporting on their water appropriations. (All users of water are required to measure the amount of water pumped, and to report this to the Division annually.)

Lake and Stream Surveys

Surveys of lakes and streams is an important function of the Division. These surveys provide a permanent record of the conditions of lake outlets at the time of the survey. They reveal lakeshore conditions which determine ordinary high water mark or normal water levels and other conditions affecting the lake. The results of these investigations along with analyses and recommendations may be made available to county boards, municipalities, lake owners associations and others interested in protecting or improving lakes.

State Dams

During the 1930's, the design of dams, diversion projects and flood control projects constructed by state and federal work relief agencies accounted for most of the Division's activities. Responsibility for maintenance and operation of more than 300 of these structures still rests with the Division.

Over the two-year biennium, major modifications were made on 10 dams. This consisted primarily of replacing stop-log sections with reinforced concrete spillways. Major maintenance of 11 other dams consisted mainly of substantial filling and reshaping earth dikes. In addition, 270 inspections of state dams were conducted. Recent sessions of the Legislature passed acts authorizing the construction of specific lake projects. These projects are discussed briefly below.

Snake River, Pine County - The reconstruction of a dam at Pine City to improve the water levels of Cross and Pokegama lakes and parts of the Snake River.

Pomme de Terre Lake, Grant County - Acquisition of flowage easements on lands adjoining Pomme de Terre Lake. The Division plans to raise the elevation of the crest of the spillway at the outlet dam.

Kansas Lake, Watonwan County - Installation of a floating fish barrier at the dam on this lake. (The dam was completed during the last biennium.)

Double Lake, Cottonwood County - A contract was awarded in March, 1966 for reconstruction of the dam and diversion channel.

Channel Improvements

To improve opportunities for recreational navigation, snags were removed from the channel of the Minnesota River. The channel was cleared for several miles near New Ulm in July 1964 and in September and October 1965.

Snag removal to reduce flood hazards was completed in the Thief River channel from the Mud Lake dam downstream to the south line of Marshall County in January 1965, and arrangements have been made to complete the work to the mouth of the stream. Similar work was done in the channel of the Yellow Medicine River near Hanley Falls, and in the Lac qui Parle River near Dawson in the early part of 1966. The work on the Thief, Yellow Medicine and Lac qui Parle rivers was done under cooperative agreements with county boards.

Special Studies and Technical Services

Technical assistance was provided to the Bureau of Engineering in preparing specifications for 58 proposed wells for the divisions of Forestry, Game and Fish, and Parks. The Division of Waters made field investigations of ground water conditions at 10 state-owned sites and conducted pumping tests of wells drilled at 5 sites.

Meetings were held with State Highway Department personnel to discuss ground water conditions and problems associated with highway construction projects in the State. In the fall of 1965, hydrologic conditions in the Twin Lakes Wildlife Management Area were investigated.

A study of stream flow and river water temperature was made in preparation for a hearing held on the application of Northern States Power Company for a permit to appropriate water from Lake St. Croix in Washington County. A study of ground water

conditions and pumping in downtown St. Paul was made in preparation for a hearing held on the application of the St. Paul Hilton Hotel Corporation for a permit to withdraw ground water for use in an air-conditioning system.

In the spring of 1966, a field investigation was conducted on hydrologic conditions near Verndale Village, Todd County, in connection with local flooding. Several surveys were made on conditions affecting Zumbro Lake in Carver County in response to flood complaints.

Hydrologic conditions were investigated at Crystal Lake, Lake Crystal Village, Blue Earth County, and a report prepared on the feasibility of deepening the lake by dredging. Field investigations were also made for five small areas which were having water problems.

Surveys were made to determine the feasibility of supplementing the water supply of the Chisago chain of lakes in Chisago County by diverting water from a ditch. Surveys were made to determine methods of improving recreational navigation through a chain of lakes near Alexandria. An investigation was made of Pomerleau Lake in Hennepin County to suggest measures of improving the range of lake levels.

Division of Waters Publications

In 1959, the Division published the "Hydrologic Atlas of Minnesota" and has since been engaged in the preparation of other comprehensive water resource reports on each of the 39 watershed units which were first defined in the Atlas. These reports are being prepared in part by the Division's staff and in part by the U. S. Geologic Survey under a cooperative agreement. The Division of Waters prepared and published Bulletin 22, "St. Louis River Watershed Unit" and Bulletin 24, "The Lake Superior Watershed Unit". In addition, the Division is preparing an inventory of Minnesota's lakes.

Reports

U. S. Corps of Engineers Projects

The Division was represented at the following public hearings regarding projects proposed by the Corps of Engineers:

Area	Purpose
Burnsville	Minnesota River development
LaCrosse, Wisconsin	Flood protection
Wabasha	Flood protection

The Division also prepared and presented written statements to the Corps of Engineers setting forth the position of the State of Minnesota on the following proposed projects:

Area	Purpose
Austin	Local flood protection
Burnsville	Minnesota River development
St. Paul	Enlargement of Harriet Island Harbor
Minnesota River Valley, (Yellow Medicine and Lac qui Parle Rivers)	Flood problems
Roseau River	Flood protection
East Grand Forks	Local flood protection
Wabasha	Local flood protection
Stillwater	St. Croix River development
Cook	Local flood protection
Elk River	Mississippi River flood protection
Grand Portage	Harbor investigations

Water Resources Board

The organization of new watershed districts was delayed by litigation in which the constitutionality of the Minnesota Watershed Act was contested. This litigation was the result of an order of the Lower Minnesota River Watershed District Board of Managers which levied assessments on lands benefited by a proposed project for improvement of the channel of the Minnesota River. The District Court in Dakota County in June, 1964, found the Watershed Act to be unconstitutional in an action brought by some of the landowners who were assessed. The Lower Minnesota Watershed District appealed to the Minnesota Supreme Court and in May, 1965, the Supreme Court found the Act to be constitutional. The landowners appealed to the U. S. Supreme Court, but the Court declined to hear the appeal.

The Division of Waters took action during the biennium on nominating petitions for the establishment of three watershed districts, on change of boundary petitions for two districts, on proposed overall plans for five districts, and on engineer's project plans submitted by two districts.

On each of the above proposals, the Director of the Division of Waters made a report to the Water Resources Board or to the Board of Managers of the district as required by law. A staff member of the division also appeared and offered testimony at most of the hearings held by the Board to consider these matters.

Spring Floods, 1965 and 1966

When nature is undisturbed by man, natural barriers conserve our water and take care of runoff, but the exploitation of the resource aggravates the loss of water through runoff and floods often occur. We will always have floods, but we can protect against them and moderate the severity through good watershed practices.

As a result of exceptional floods in the spring of 1965 and again in the spring of 1966, severe damage was experienced by many Minnesota communities. Minnesota was declared a "major disaster area" and became eligible for federal assistance, under Public Law 875, for rehabilitation of public facilities damaged by the floods. The Act was administered for the State by the Department of Civil Defense for the 1966 floods. The Division of Waters was assigned the responsibility of making preliminary and final engineering inspections where claims were made by local governmental authorities for federal reimbursement. As a result of the 1965 floods, 93 inspections were made. Approximately 80 claims were invesitgated as a result of the 1966 floods.

For future reference and for use in operations connected with floods, the Division purchased a set of aerial photographs taken at the peak stages of the 1966 spring floods. The Division also participated in the costs and production of a documentary film, prepared by the University of Minnesota, and the Saint Anthony Falls Hydraulics Laboratory, of the 1965 flood on the Minnesota River. The film, in sound and color, shows flooded areas, damage, and protective measures along the river, and is available through the Bureau of Information.

Topographic Mapping

Topographic mapping of Minnesota proceeded at an accelerated rate during the biennium. An appropriation of $940,000 was made by the Legislature for this purpose beginning July 1, 1965. This is in accordance with a tentative schedule of appropriations recommended in MORRC Report No. 9, which contemplates completion of the mapping of the entire state by 1975. Mapping is done by the U. S. Geological Survey, Topographic Branch. The area mapped is approximately 6.4 per cent of the State. This brings the total area of Minnesota mapped to date to 50.4 per cent. At the end of the biennium, mapping was in progress on about 37 per cent of the State.

State appropriations available:

1964 - 65 biennium	$ 376,000
1966 - 67 biennium	940,000

Actual expenditures:	F.Y. 1965	F.Y. 1966	Total
State funds	$187,870	$374,278	$562,148
Federal matching funds	195,538	386,110	581,648
Sub-total	$383,408	$760,388	$1,143,796
Federal funds SIR	489,061	161,606	650,667
Total	$872,469	$921,994	$1,794,463

—*Summary of*

Major Accomplishments——

ACQUISITION

+ 1,171 acres were acquired as northern pike spawning grounds. This acreage has added 35 new northern pike spawning areas.

+ 821 acres have been optioned for purchase for northern pike spawning. This acreage involves the addition of 38 areas.

+ 20,976 acres of new wetlands were acquired. This involves the acquisition of 287 areas in 152 projects. The projects are located in 49 counties. 93 new wildlife management areas were established and brought under management.

+ 2,924 acres were added to eight major wildlife management areas.

+ 100 wildlife management areas were approved for future acquisition.

+ 103 new public accesses were acquired.

+ 9,564 acres were added to 23 State Parks.

+ 8,828 acres of state forest land were exchanged for 11,309 acres of private and/or federal land. This involved the completion of 24 land exchanges and 20 partially completed exchanges.

+ 7,040 acres were added to the Memorial Hardwood Forest. (The total acreage in this forest is now 12,499.)

MANAGEMENT AND DEVELOPMENT

+ 31 miles of new forest roads and trails were constructed. 26 miles of forest roads and trails were reconstructed.

+ 9 new state forest campgrounds were added. 4 state forest campgrounds were reactivated.

+ 18,300 acres of state forest land were planted with 15,600,000 trees. 7,930 forest acres were thinned and released. 925 acres of forest land were prunned.

+ A total of 3,973,000 acres of forest land have now been inventoried to aid in management planning. 49 forestry districts now have forest management plans as a result of these surveys.

+ 367,289 cords of timber were harvested from state forest land.

+ 6,900 landowners were provided with forest management services. These landowners hold81,000 acres of forest land.

+ 53,500,000 nursery-raised trees were shipped to public and private landowners from state nurseries.

+ 375,000 acres of tax-forfeited land were appraised for timber values. This acreage was on land proposed to be sold by the counties.

+ National Fire Danger Rating Systems were installed at 74 forest stations to aid in determining fire danger conditions.

+ One of the most rewarding accomplishments was the reduction in forest fires. 1,195 fires burned 29,587 acres. The 10-year average is 1,800 fires and 86,146 acres burned.

+ Eight new school forests were established - the highest number since the program began.

+ Intensified development of state parks has resulted from the accelerated park acquisition program. Development work was completed in 50 state parks. Seven of the 13 parks added to the System by the 1963 Legislature were opened. A highlight was the opening and dedication of Tower-Soudan State Park on July 1, 1966.

+ Many fish habitat improvement projects were completed during the biennium including a rough fish control dam, seven carp control screens, 11 channel improvement projects, nine northern spawning areas, two water control dams, the improvement of 16 trout streams, maintenance of 18 trout streams and 19 additional projects including installation of dams, dikes and water supply lines.

+ 132 state-owned and cooperative northern pike spawning areas were managed for maximum northern pike production.

+ 385,789,534 fish were stocked. The total poundage was 1,191,417.

+ 18,140,674 rough fish were removed to make Minnesota waters more productive of game fish.

+ 2,403,738 fish were rescued from lakes threatened with "winterkill". Total poundage was 691,216.

+ 31 lakes were reclaimed by the use of fish toxicants. 18 were cold-water lakes and 13 were warm-water lakes.

+ 850,000 acres of state wildlife lands are now under management. Highlights of the development and management of these lands included the construction and maintenance of 76 miles of fence, the planting of 300,900 trees and the completion of 13 new waterfowl impoundments. Nine were small impoundments adding 384 acres of wildlife habitat. The four major impoundments were:

Carlos Avery, Sunrise Addition - 1,500 acres
Ann Lake - 900 acres
Twin Lakes - 1,200 acres
Kabekona - 500 acres

+ Captive goose flocks are established at Thief Lake, Roseau and Lac qui Parle wildlife management areas. Production of wild goslings from free-flying flocks has shown a significant increase as a result of this program.

+ 127 public accesses were developed.

+ Snags were cleared from the Thief, Lac qui Parle, Yellow Medicine and Minnesota rivers to reduce flood damage.

+ Permits for work in beds of public water and ground and surface water appropriations are major activities of the Division of Waters; 2,627 applications were received and 2,401 permits issued.

RESEARCH AND SPECIAL STUDIES

+ 94 final engineering plans regarding public drainage were studied. Preliminary reports were prepared on 92 plans.

+ Preliminary and final engineering inspections were made of 123 flood damage claims as a result of the spring floods of 1965 and 1966.

+ Detailed contractual studies were completed on four areas proposed for consideration in the State Park System.

+ A Rivers Study was completed to determine the feasibility of recreational travel by small boats and canoes and what facilities would be necessary.

+ Highlights of Game and Fish research: A study was conducted on the control of diseases in trout and the development of disease-resistant strains of trout. Three new strains of trout were introduced to Minnesota waters. Improved methods of stocking trout and in the management of reclaimed trout lakes were found.

  The competition for food between lake trout and suckers in trout lakes was investigated and a study made of the possibilities of introducing smelt to inland waters. Other investigations included - studies of fertilization and development of walleye eggs to produce a higher yield of walleye fry from eggs incubated in hatcheries, walleye food habits in relation to competition with other fishes in large walleye lakes and a study of fish population and catch in two large walleye lakes.

  This biennium was a banner period for Minnesota's deer and deer hunters. The population was in good condition and the take of deer reached an all-time high with 250,000 taken by hunters who enjoyed a 44 per cent success.

The moose census revealed at least 7,000 animals and that portions of the range are over-browsed. A parasitic roundworm was found to be the cause of "moose sickness" which has plagued Minnesota's moose herd for years.

Much effort was spent on working with federal agricultural agencies so more lands retired from agriculture are managed to provide better wildlife habitat particularly for pheasants.

Experimental development was done on methods of improving nesting habitat for ducks in wooded areas of northern Minnesota.

20,000 waterfowl were banded to determine hunting kill, migrational patterns and homing.

A study was made of the needs of breeding ducks and ducklings.

172 fish lakes were surveyed.
26 watersheds were surveyed and mapped.
285 fish lakes were mapped.
345 waterfowl lakes were surveyed.
66 streams were surveyed.
7 game management areas were surveyed.
1,057 aquatic nuisance control permits were issued.
12 pollution investigations were made.
5,900 samples of water, soil and biological material were analyzed mostly in relation to other jobs.

OTHER

+ Reconstruction and development of the Conservation Building and grounds at the State Fair.

+ Increase in Conservation Volunteer subscription and issues published from 35,000 to 50,000.

+ Enrolling, training and certification of 1,505 new Hunter Safety instructors. Instructors trained 39,068 youngsters with the assistance of game wardens.

+ In-service training school for park managers in cooperation with the federal Manpower Training Program.

+ There were 7,573 persons arrested for violations of game and fish laws. Violators paid fines amounting to $193,043.