

WINDOM WETLAND MANAGEMENT DISTRICT

WINDOM, MINNESOTA

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ANNUAL NARRATIVE REPORT

Calendar Year 1990

U.S. Department of the Interior
Fish and Wildlife Service
NATIONAL WILDLIFE REFUGE SYSTEM

REVIEW AND APPROVALS

WINDOM WETLAND MANAGEMENT DISTRICT

WINDOM, MINNESOTA

ANNUAL NARRATIVE REPORT

Calendar Year 1990

Steven W. Kallin 8/21/91
Refuge Manager Date

Ralph Seyfried 8/27/91
Wildlife Associate Manager Date

John R. Enace
Regional Office Approval

9/11/91
Date

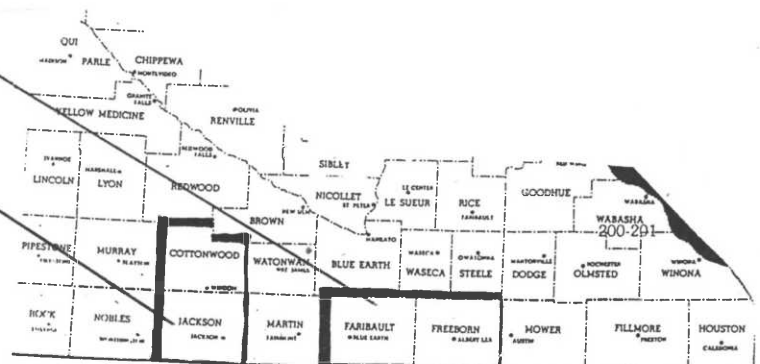
INTRODUCTION

The Windom Wetland Management District was established in 1990 and includes 29 Waterfowl Production Areas (WPA's) covering 5,569 acres of fee title lands and 110 acres of wetland easements.

The District acquisition program is currently approved for four counties with all WPA's and Wetland Easements located in the counties of Cottonwood, Jackson, Freeborn. The Wildlife Management District includes the 12 southwestern Minnesota counties, with Farm Bill responsibilities in 10 of these counties. The District headquarters is located in Jackson county approximately 2 miles southeast of the City of Windom.

WINDOM WMD

MINNESOTA



Intense row crop agriculture dominates land use in the District. The topography is nearly level to gently sloping.

The District was part of the tall grass prairie during pre-settlement times. Most early settlers were of northern European ancestry and first settled the area in the late 1850's.

Heron Lake, located in Jackson County, originally contained 8,251 surface acres and was a nationally known waterfowl lake. At the turn of the century 700,000 canvasbacks used the lake during migration, which gave Heron Lake the nickname "Chesapeake Bay of the Midwest". Severe degradation has occurred from: 1) Intensive agricultural practices resulting in the drainage of an estimated 90% of the watershed's wetlands which dramatically increased the volume, velocity of run-off and the sediment, fertilizer and chemical loads of the water reaching the lake; 2) Municipal waste water; 3) Introduction of rough fish. The Service is currently a partner involved in a Prairie Pothole Joint Venture Project to stop and reverse the degradation of this once, magnificent waterfowl migration area.

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A. HIGHLIGHTS

Steven Kallin reported on duty January 14, as the Windom District Wetland Manager. Service office space was not available at that time, so the Minnesota Department of Natural Resources graciously provided temporary office space.

• Craig Lee reported on duty March 19, 1990 as the District's Wildlife Biologist.

Renovation of the District Headquarters building began March 26, and was completed June 18.

Thad FitzHenry, summer work study intern from Vermilion Community College, began his 400 hour work study program on June 4.

Brenda Pigman reported on duty June 18 as the District's Clerk/Typist. She was converted to permanent full-time status on December 2.

Thirteen local conservation organizations raised \$24,000 enabling the purchase of a 211.98 acre tract as a Waterfowl Production Area.

B. CLIMATIC CONDITIONS

The State Climatologist, Greg Spoden, provided us with the following climatological data for the Windom area. See Table #1.

TEMPERATURE ° F

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Average Max.	34.7	33.5	43.5	58.7	66.3	80.4	81.3	80.4	76.3	58.5	45.5	23.6
Average Min.	17.3	10.9	24.8	33.3	43.8	58.2	59.6	59.7	52.1	33.4	24.3	5.0
Average	26.0	22.1	34.2	46.0	55.1	69.3	70.5	70.1	64.2	46.0	34.9	14.3
Departure from Normal	13.7	3.3	4.5	-0.1	-3.9	.3	-2.7	-.7	2.7	-4.4	1.1	*
Highest	50	57	68	85	90	95	102	93	93	81	76	55
Date	11th	13th	13th	24th	8th	28th	4th	28th	6th	6th	1st	10th
Lowest	2	-16	6	12	28	37	45	46	32	22	8	-22
Date	1st	17th	19th	7th	1st	4th	13th	6th	23rd	25th	28th	22nd
^M _A ^X # of Days above 90	0	0	0	0	1	5	5	1	2	0	0	0
^M _A ^X # of Days below 32	14	12	4	0	0	0	0	0	0	0	8	20
^M _I ^N # of Days below 32	31	28	26	18	3	0	0	0	1	16	26	31
^M _I ^N # of Days below 0	0	6	0	0	0	0	0	0	0	0	0	12

* Data needed to calculate departure from normal not available.

B. CLIMATIC CONDITIONS

The State Climatologist, Greg Spoden, provided us with the following climatological data for the Windom area. See Table #1.

PRECIPITATION

		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Total		.28	.46	2.43	2.40	4.61	3.85	5.66	1.98	1.29	2.05	.32	.79
Departure from Normal		-.27	-.26	.92	-.09	1.07	-.12	2.10	-1.60	-1.82	.22	-.89	*
Greatest Day		.15	.37	.82	.55	1.14	.84	3.10	1.12	.40	1.23	.18	.45
Date		9th	16th	14th	29th	20th	17th	29th	20th	19th	3rd	4th	15th
S N O W	Total	2.0	5.0	5.0	T	.0	.0	.0	.0	.0	1.0	4.0	10.0
	Max. Depth on Ground	2	5	5	T	.0	.0	.0	.0	.0	1	3	5
Date		2+	17+	16	---	---	---	---	---	---	18	7+	15+
No. of Days	.1 or more	1	1	7	7	8	8	6	4	4	3	1	2
	.5 or more	0	0	1	1	5	4	2	1	0	1	0	0
	1.0 or more	0	0	0	0	1	0	2	1	0	1	0	0

* Data needed to calculate departure from normal not available.

The preceding climatological data reveals the months of March through July receiving near to above average precipitation. This is a much needed break from the drought!

C. LAND ACQUISITION

1. Fee Title

Three Waterfowl Production Areas were purchased totalling 442.23 acres. The Pletz Marsh WPA is located adjacent to a Jackson County Wildlife Management Area, and will provide 12 restored wetlands which will compliment a large adjacent brood marsh. The Bonner tract is a roundout to the Lake Augusta Waterfowl Production Area in Cottonwood County, and secures a large portion of a 35 acre wetland restoration project. The Headquarters WPA provides a 0.9 acre building site for the District Office.

Initial efforts to purchase a 211.98 acre tract from Henry Mews and Vernon Mews in Cottonwood County, failed because his selling price was \$24,000 more than the appraised value of the property. Thirteen local organizations raised \$24,000 for Mr. Mews with the stipulation that he sell his land to the Service for the appraised value. This overwhelming local support prompted the Cottonwood County Commissioners to certify the purchase of this tract despite a previous resolution not to sell lands to the Service until Shared Revenue Payments reached 100%. This tract was conveyed to the Service in January of 1991.



Water control structure and dike constructed to restore a 38 acre drained wetland on the Wolf Lake WPA. The purchase of this area was made possible through contributions from 13 organizations.

SWK . 11/90

FEE LANDS MANAGED BY WINDOM WMD - 1990

County	<u>Acquisition During 1990</u>		Units	<u>Acquisition As of 12/31/90</u>	
	New Tract	Total Acres		Total Acres	Goal Acres
Cottonwood	1	312.14	8	1,995.09	2,446.38
Jackson	1	130.00	17	2,981.24	3,500.00
Freeborn	-0-	-0-	3	593.38	3,610.00
Faribault	-0-	-0-	-0-	-0-	5,920.00
TOTAL			28	5,569.71	

2. Easements

The Service can protect in perpetuity, though a Wetland Easement, quality wetlands from being burned, drained, filled or leveled. This program has been used very little in the Windom District. One Wetland Easement exists in Freeborn County. Cottonwood and Jackson Counties, although approved for wetland easements, did not receive goal acres at the inception of the program, and currently do not have Wetland Easements.

One flowage easement option was taken on the 7 acre Terry Quiring tract located adjacent to the Storden Waterfowl Production Area in Cottonwood County. This easement is required for the restoration of a 153 acre wetland.

3. Other

Loss of tax revenues was cited as a serious problem by the Cottonwood County Board of Commissioners. On March 14, 1990 they stated they would no longer certify sales of land to the U.S. Fish and Wildlife Service until Refuge Revenue Sharing payments reached 100%. On May 8 in the face of overwhelming local support, the County Commissioners reluctantly certified the acquisition of the Henry Mews tract. Future acquisitions in Cottonwood County will be seriously hampered if a large disparity continues between calculated refuge revenue sharing payments and the actual payment.

D. PLANNING

1. Master Plan

The Windom Wetland Management District is responsible for the management of 29 Waterfowl Production Areas (WPAs) scattered throughout 3 counties with new units anticipated every year. A distance of 112 miles separates the Eastern and Western most WPA's. Additional WPA's are expected to be purchased each year. The scattered nature and changing land base of the District makes it impractical for a single master plan to adequately address the needs of this diverse and dynamic system.

Unit Management Plans are completed for each individual Waterfowl Production Area as they are acquired. These plans contain aerial photographs, survey information, soil and topography maps, land use reservations, previous wildlife observations, past development, habitat descriptions and the future development needs of the unit.

3. Public Participation

The Cottonwood County Game and Fish Protection League spearheaded the effort to raise \$24,000 to enable the Service to purchase the 211.98 acre Henry Mews tract as a WPA. They also participated in the process to plan developments on the unit. As a result of their participation, a tree shelter belt will be planted to protect a 20 acre area in the southeast corner of the unit. This area will also include two tree plantings totalling 7.3 acres and a 9 acre food plot which will be planted by the League.

5. Research and Investigations

WINDOM WMD NR 91- "DISTRIBUTION OF CARP IN THE HERON LAKE BASIN (32587-1)"

A masters of science research study entitled "Distribution of Carp in the Heron Lake Basin" was initiated with the U.S. Fish and Wildlife Service Cooperative Wildlife Research Unit at South Dakota State University. This study will attempt to answer three questions necessary for the effective management of rough fish in Heron Lake:

- 1) Where do carp over-winter in Heron Lake?
- 2) How many carp enter Heron Lake from upstream sources?
- 3) Is the electric rough fish barrier effective?

Winter drawdowns of Heron Lake have only been partially successful in killing rough fish populations. In 1990 radio transmitters were implanted in six carp to determine the location of over winter sites within the lake.

An undetermined number of rough fish may enter Heron Lake from upstream sources. This study will try to determine to what extent upstream sources contribute to the Heron Lake rough fish problem.

An electric rough fish barrier will be constructed on the Outlet of Heron Lake to prevent the mass annual migration of rough fish into this watershed. Carp will be trapped, tagged and released downstream from the fish barrier, and then trap nets will be placed upstream from the barrier. The presence or absence of tagged rough fish in these upstream traps will determine the effectiveness of the electric barrier.

E. ADMINISTRATION



UNK 1/91

1. Personnel

Permanent Staff (left to right)

1. Steven W. Kallin, Wetland Manager, GS-12, PFT (EOD 1/14/90)
2. Brenda Pigman, Clerk/Typist, GS-4, PFT (EOD 6/18/90)
3. Craig W. Lee, Wildlife Biologist, GS-9, PFT (EOD 3/19/90)

3. Other Manpower Programs

Thad FitzHenry completed a 400 hour internship as a work study student through the Vermilion Community College in Ely, Minnesota. Thad assisted with the office renovation, noxious weed control and wetland restoration surveys.

4. Volunteer Program

Perry Olson, a natural resources student at Vermilion Community College, volunteered for two days to assist with wetland restoration surveys. He worked with Litchfield Biological Technician Mortie B. Berg. Together they provided important assistance to our limited staff.

5. Funding

The Windom Wetland Management District received \$122,246.00 for operations (1261), \$34,229.00 for maintenance (1262), \$30,000.00 for the Headquarters renovation (1262, maintenance management system), and \$5,000.00 for acquisition (3110).

A total of \$20,000.00 was received for wetland restoration activities (1120-3030).

North American Waterfowl Management Plan funds of \$100,000.00 was received for the Heron Lake Area Restoration Project. This Prairie Pothole Joint Venture Project was selected as the number one priority project by the Minnesota steering committee. Funds were spent for the digitized mapping of the 474 square mile watershed (\$30,000.00), a Carp Habits and Distribution Study (\$19,760.00), electric rough fish barrier (\$50,000.00) and a water control structure (\$240.00).

A total of 1.7 FTE's were used during the year.

6. Safety

No accidents occurred during the field season despite the building renovation project and wetland restoration efforts.

Personal protective fire equipment, fire extinguishers and smoke detectors were purchased during the year.

Field staff attended an aircraft safety training session given by the Regional pilot.

Lyme disease blood tests were completed for the field staff. The disease was not detected.

Technical Assistance

a. General

Recommendations following an elevation survey were provided to the Christiania Township Board, Jackson County for the replacement of a culvert and riser to restore a drained wetland.

Wetland restoration recommendations were given to the Nobles County Pheasants Forever Chapter for several tracts of land that they recently purchased.

The District provided comments to the Middle Des Moines Watershed District on drainage permit applications and a water retention project.

b. Farm Bill

Considerable time was spent working with Soil Conservation Service offices in Nobles, Redwood, Brown and Cottonwood Counties on Wetland Appeal Determinations. A total of 90 wetlands were field checked and the results of our determinations were provided to the Soil Conservation Service offices in each county.

Two minimal effects determinations were completed in Nobles County. A late filed commenced appeal was coordinated with the Cottonwood County Soil Conservation Service office and four commenced appeals were discussed with the Soil Conservation Service in Jackson County.

F. HABITAT MANAGEMENT

1. General

Historically, logistics have made habitat management on WPA's in Cottonwood, Jackson and Freeborn counties difficult due to the extreme distance to the responsible District Headquarters. In the past, these counties had been managed from offices in Benson or Litchfield, Minnesota or the Union Slough NWR in Iowa. In each case, the distance and required travel time reduced efficiency and increased response time to local problems. During some years, the only management accomplished during the year was weed control.

The Windom Wetland Management District was established in order for the Service to improve management of existing lands, be more responsive to local concerns, expand the land base through acquisition and to be an active partner in the Heron Lake Area Restoration Project. Being located near the WPA's will enable more active management, an advantage the other managing offices did not have.

2. Wetlands

The Windom Wetland Management District has restored 15 wetlands in 1990, all on private lands. No restorations were completed on Waterfowl Production Areas.

In Cottonwood County, 10 ditch plugs, one water control structure and 2 tile breaks yielded 9 wetlands totalling about 72 acres on 4 tracts.

Working with the Department of Transportation, a tile outlet was diverted along Minnesota Highway #62 to increase the watershed of a 26 acre restoration.

In Jackson County, 7 ditch plugs, one tile break and this districts first tile stoplog structure yielded 6 wetlands totalling about 56 acres on 4 tracts.

Sixty-one tracts were field checked in Jackson, Cottonwood and Nobles County. Most of these proved to have no restorable wetlands on them or the landowner wasn't interested in breaking tiling or plugging ditches. Many landowners wanted us to dig ponds, and one landowner even thought we would drain his wetland for him! About 15 of the 61 tracts will provide some restoration work for 1991.

3. Forests

The U.S. Fish and Wildlife Service added to it's management a relic population of Shagbark Hickory (*Carya Ovata*) on the Moore FmHA easement in Section 12 of Riceland Township (Township 103 North, Range 20 West). This population represents one of the furthest extensions West of this species in Minnesota. These trees were somehow spared from the historical prairie fires that burned over much of Freeborn County. Closer examination of the woods in 1989 revealed a long history of cattle grazing which eliminated most of the understory's forbs and shrubs. If grazing hadn't taken its toll, this area would have been a prime candidate for Scientific and Natural Area designation because of its rarity this far West and North.

The District also retains remnants of a plant community of special concern, the oak savannah, on three WPA's: Loon Lake, Rush Lake and Sioux Valley. All three are in need of careful prescribed burning to slow the encroachment of small trees which are turning them into the more common oak woods.

4. Croplands

The District farming program is used to assist in the preparation of the desired seedbed for the establishment of warm and cool season grasses. Each area is farmed for one to three years depending on several factors: weed problems, herbicide carryover that may effect the growth of desired grasses, the amount of funding received and the amount of equipment and manpower that is available to properly seed the desired grasses.

In 1990, 600 acres of WPA's were farmed, including 292 acres seeded to warm and cool season grasses with oats cover crop, 62 acres were planted to beans to prepare for seeding to grasses in 1991 and 246 were replanted to corn because of herbicide carryover problems.

To date, 504 acres of cropland on 5 new tracts remain to be seeded to grasses. This acreage will all be seeded by 1993.

5. Grasslands

The following 6 Waterfowl Production Areas were seeded down in 1990 by Cooperative Farming Agreements:

<u>WPA</u>	<u>ACRES</u>	<u>COOPERATOR'S NAME</u>
Bisaillon	42	Lee Bisaillon
Iowa	30	David Dean
Long Lake	84	Darrel Horkey
Sioux Forks	74	Richard Wolf
Sioux Valley	13	David Dean
<u>Storden</u>	<u>49</u>	Gary Thulien
TOTAL	292	

These 292 acres were seeded with a cool season mixture of Tall Wheatgrasses, Intermediate Wheatgrasses, Orchard Grass and oats. The Long Lake WPA also had Switchgrass in the mix. The oats cover crop was removed by the cooperator.

The District assisted the Detroit Lakes District with seed cleaning operations in September. A total of 9,964 lbs. of native warm season mixed grasses from the Ashmore WPA were cleaned, bagged and weighed. This seed was split 3 ways (3,321 lbs. each) between Detroit Lakes, Litchfield, and Windom Districts. Windom's seed was stored at the Litchfield facilities.

6. Other

Native Prairie

In 1990 a short literature search was made to determine which plant and animal species historically occurring in southwestern Minnesota are listed on Federal and State Endangered, Threatened and Special Concern list. We hope to follow up in 1991 by field checking some of our native prairie to determine the presence of the above species.

7. Grazing

The District has not used grazing as a management tool. A short-term, high intensity grazing program, coupled with interseeding, could be beneficial to some of our grasslands. Unfortunately, finding a cattle owner willing to graze for only a short period of time is not easy. Therefore, grassland management grazing will probably not occur in this District.

8. Haying

Two Hundred Ninety-Two acres of 6 Waterfowl Production Areas were hayed to remove oats cover residue from new seedings according to Cooperative Farming Agreements.

In exchange for seeding our WPA's to warm and cool season grasses, the cooperative farmers planted oats along with the grasses as a cover crop and were allowed to harvest the oats and then to bale up and remove the oat straw.

9. Fire Management

Prescribed Burning

No prescribed burns were conducted in 1990.

Three Waterfowl Production Areas experienced wildfires in February and March of 1990:

Holy Trinity	Jackson County	70 acres
Halls Lake	Freeborn County	20 acres
Harder Lake	Cottonwood County	20 acres

The Holy Trinity fire was started by fire escaping a trash barrel at an adjacent church. It was contained by the Lakefield Fire Department on the WPA without spreading to adjoining property. This fire did accomplish some fire management objectives like mulch removal and slowing the encroachment of small trees. The fire, coupled with reduced and more species selective herbicide use, increased the number of flowering native forbs significantly, making for a rather stunning late summer wildflower display.

The Hall Lake fire (20 acres) was of unknown origin but is believed to have started in the parking lot. No damage to surrounding property was reported.

Harder Lake was set on fire by the Windom Coop spray truck as it was applying herbicide, it was put out almost immediately; 2 acres burned.

Several fire breaks were mowed to facilitate prescribed burns during the spring of 1991. The Department of Natural Resources mowed a fire break on the north side of the large marsh on the La Crosse WPA. A local farmer mowed and raked a fire break on Sioux Forks.

10. Pest Control

Plants

Intense agriculture, primarily corn and soybeans, dominates land use in the District. Noxious weed control on private and public land alike, is viewed by landowners as essential to good land management. It is not unusual for private landowners that allow noxious weeds to produce seed, to be reported to the County ASCS office and receive a fine. WPA's come under this same, if not a higher level of scrutiny.

Good public relations is inseparately linked to an effective noxious weed control program. County Commissioners must approve the sale of all new WPA purchases. Every time we meet for this approval, they identify noxious weed control as a serious concern. Without an effective noxious weed control program on existing WPA's, the purchase of new WPA's would not be approved at the County level.

Canada thistle and other early successional weed species problems reached all time highs on WPA's this summer, because of the drought. Dry wetlands with moist bottoms provided ideal conditions for noxious weeds. These areas posed new problems because spraying aquatic vegetation requires special chemicals, equipment and permits. Many of these areas were cut by hand to avoid these additional requirements.

This year, the new Windom Wetland Management District, underwent a major overhaul in its annual weed control program. After looking over 25 years of herbicide based weed control, we found that after all the years of spraying chemicals, and all the manpower, machinery and money spent to accomplish this task, many WPA's still had the same weed problems in the same areas. This, coupled with the knowledge that herbicides have eliminated hundreds of species of beneficial plants, resulting in weakened the food chains, prompted us to re-evaluate our long range noxious weed control strategies.

Herbicides are necessary for establishing the perennial grasses planted on WPA's, if conventional farming techniques are used. Once established, grasses provide good soil stabilization, but over time there tends to be "gaps" between the grass plants. This is the area where natural succession occurs. Often times as many as 50 pioneer species will move into a seeding by the second or third

year. These plants come from surrounding grasslands, like a fringe around a wetland or a roadside or from seed blown in from a distance. They also can be brought there by animals, like burrowing mammals, birds flying over or stuck in the fur of some predator. Sometimes, depending on how long the area was cropped, these plants can come back from established root systems or from dormant seed in the soil. Regardless where the plants come from, natural succession will occur and some species will always be trying to stabilize that gap between the grass plants.

During the first year, most of the plants will be annual weeds like the ragweeds, foxtails, smartweeds and pigweeds. The second and third year, more annuals, some biennials and some short-lived perennials will begin showing up like Canada wild rye, ground cherries, wild bergamot and gray-headed coneflowers. After five years, some of the longer lived perennial begin to move in like rosin weed, purple coneflower, purple prairie clover and blazing star.

But if in that second or third year after seeding, one of those pioneer species happens to be on the noxious weed list and herbicide is blanket sprayed on the area, the entire successional process is set back to zero. Many species are destroyed when only one species was the problem and noxious weed species are again encouraged to invade the area. Where herbicide is blanket sprayed annually, succession is never allowed to proceed past the weedy stage and soil stabilization is never achieved. This is why weed control strategies need to be aimed more at the requirements of the problem plant.

Since plants are the problem, we thought maybe Botany would provide some answers. Basic Botany tells us that all plants have two basic requirements that need to be met before they can become established anywhere:

1. They need a viable seed source.
2. They need to have fulfilled the requirements of seed germination.

This tells us that there are two basic strategies that we need to employ to stop any plant from becoming established on our Waterfowl Production Areas.

1. We need to destroy the seed source.
2. We need to stop fulfilling the requirements of seed germination.

Our next step was to apply these principals to our problem plants. Most of our problem plants are early successional, "pioneer plants" and produce an abundant source of seeds which will lie dormant, but viable for many years. Disturbance and moisture is all that's required for seed germination. So, basically, if we were to

Table #1

WEED CONTROL ACREAGE

CHEMICAL
CONTROLMECHANICAL
CONTROL

COUNTY	WPA 's	CONTRACT	HAND	HAND	MOWING
Cottonwood	8	32		8	8
Freeborn	3		10		10
Jackson	16	106	64	50	48
ACRES		138	74	58	66
WPA 's		7	9	16	9

Table #1 - WEED CONTROL ACREAGE

CHEMICAL
CONTROLMECHANICAL
CONTROL

	Contract	Force	Hand	Mowing
COTTONWOOD COUNTY				
Des Moines River			1	
Harder Lake	7		1	
Lake Augusta			2	
Long Lake				
Mountain Lake	5			
Storden				
Watonwan River	20		4	
Westbrook				8
FREEBORN COUNTY				
Goose Lake				
Halls Lake				10
Twin Island		10		
JACKSON COUNTY				
Bisailon		2	15	
Boot Lake	41	15	3	15
Holy Trinity		20	8	
Iowa				3
La Crosse	42	10	1	
Little Sioux River		3	2	10
Loon Lake		6	3	
Minneota				3
Rost			4	
Round Lake		4	6	
Rush Lake				7
Sioux Forks	9		3	5
Sioux Valley			2	5
Spirit Lake	14			
String Lake			2	
Ulbright		4	1	
ACRES	138	74	58	66
UNITS	7	9	16	9

destroy the seed source each year and minimize disturbance on our Waterfowl Production Areas, we should, over time, eliminate the problem. (If the plant isn't allowed to produce seed and the seed isn't allowed to germinate, the plant can't survive). This may be one of the reasons why herbicide doesn't work well for long term control. If applied at the appropriate time herbicide will stop seed production but because it kills so many plants in an area, it creates a major disturbance, which encourages weed seed germination the next season. This is especially true if the herbicide is applied after flowering is well underway, because it is too late to stop seed formation and the seed drops directly into the disturbance caused by herbicide. And the cycle repeats.

One of our aims was to stop this vicious cycle so we decided to change the focus of our weed control efforts from treating a problem area to treating a problem plant. To accomplish this end, we reduced the acreage that was blanket sprayed to help to reduce the disturbance factor and increase the number of competitive plants. Only 138 acres on 7 Waterfowl Production Areas were sprayed in 1990, nearly one-half of the 1989's total.

To make up for this reduction, we hand sprayed many acres previously sprayed with a truck and boom, especially areas containing native species. This method was far more selective and much less disturbing. The chemical can be applied to just the target plants, allowing the non-target plants to live and to compete for the space previously held by a problem plant. This method also released far less chemical into the environment than boom spraying. Seventy-four acres on 9 Waterfowl Production Areas were hand sprayed with a wand on a 4-wheeler spray unit using only 2 gallons of 2-4D and 2 gallons of Banvel.

We also used mowing and hand cutting as a mechanical control alternative to boom spraying. Mechanical control provides good seed control and reduced disturbance but also provides another important function, reducing leaf surface. Basic botany also tells us that all plants need to maintain near a 1 to 1 leaf to root ratio to keep from wilting and dying. So when a percentage of the leaf surface is removed, the root surface must die back to preserve the plant especially if cutting occurs in mid-June when the plant is past its actively growing stage. In comparative effectiveness, hand cutting is better than mowing because the target species can be singled out and a larger percentage of its leaf surface can be removed, while no leaf surface is removed from non-target species, giving them the competitive edge for root space. Sixty-Six acres on 9 Waterfowl Production Areas were mowed and 58 acres on 16 Waterfowl Production Areas were hand cut.

The combination of these methods provided good noxious weed control. Table 1 shows the acreage covered by WPA and the type of treatment. Many WPA's received more than one type of treatment

(Boot Lake received all four). Only 3 Waterfowl Production Areas received no treatment at all.

The District did gain ground over weeds in 1990. The Jackson County Agriculture inspector, Lyle Gade, told us that he received fewer weed complaints this year than he has for many years. Most complaints received in 1990 were handled the next day and in a couple of cases, were solved before the weed inspector could inspect the complaint. See Tables #1 and #2.

Pest Control

Grasshoppers

Last fall we listened to warnings of a massive grasshopper infestation in 1990. But thanks to adequate spring moisture, these fears never manifested themselves and no areas needed to be treated for grasshoppers.

15. Private Lands



Tile line water control structure
installed on private land.

CWL 10/31

Fifteen wetlands were restored on private land during the field season. Additional wetland restoration opportunities existed, however, we were limited by staff and time.

Considerable time and effort was spent on two large wetland restoration/enhancement projects. The Thompson Wetland Restoration is a 153 acre drained wetland located on and adjacent to the Storden WPA in Cottonwood County. The Wolf Lake Enhancement Project will re-establish vegetation in a 124 acre shallow lake located adjacent to the Wolf Lake WPA which is one-half mile East of the City of Windom. In cooperation with the Minnesota Department of Natural Resources, elevation surveys, landowner contacts, funding proposals and a hydrologic evaluation has been completed on these projects. We optimistically anticipate these projects can be completed in 1991.

G. WILDLIFE

1. Wildlife Diversity

An effort was made change to reduce the amount of herbicide used on Waterfowl Production Areas in order to reduce the negative effects of herbicide on wildlife diversity. (See Section on Pest Control).

Plants comprise the base of the food chain. The reduction in broad spectrum herbicide use or the conversion to a more species specific system, will result in an increase in wildlife diversity. It was apparent that our 1990 reduction in herbicide use produced an increase in the diversity and number of summer and late summer wildflowers. This increase in plant diversity will add more links to the food chain and will produce an increase in animal diversity.

2. Endangered and/or Threatened Species

On March 22, 1990 a migrating Peregrin Falcon was spotted Northeast of Warren Lake near Windom, Minnesota.

On November 20, 1990 an immature Bald Eagle was sighted over the Wolf Lake Waterfowl Production Area.

The endangered Prairie Bush Clover (*Lezpedesa Leptostachya*) could possible exist on a couple of our Waterfowl Production Areas. A short search for it and other rare species is planned for 1991 as well as listing of all rare species found in our area.

3. Waterfowl

Four Square Mile breeding pair counts were conducted from May 1 through May 15 and again May 22 through May 30. The District completed pair counts on 7 plots in 4 counties. (Freeborn (2), Jackson (3), Martin (1) and Murray (1). The results of the counts are shown in the Table below.

<u>AOU NUMBER</u>	<u>SPECIES</u>	<u>FIRST COUNT</u>	<u>SECOND COUNT</u>
132	Mallard	17	20
135	Gadwall	1	1
139	Green Wing Teal	1	-0-
140	Blue Wing Teal	23	17
142	Shoveler	4	-0-
144	Wood Duck	24	27
146	Redhead	1	1
147	Canvasback	1	1
149	Lesser Scaup	1	-0-
167	Ruddy Duck	1	2
172	Canada Goose	7	6
77	Black Tern	1	2

The District's data was computed with the Litchfield District's data in figuring total pair information. This makes extrapolating for just the Windom District very difficult. Next year the data will remain separate. Also an increase in the number of four square mile plots counted in the District is expected.

Kelly McDowell, the North Heron Lake Game Manager, provided us with some very applicable data from the Heron Lake area and also the Talcot and Ocheda-Bella Lakes area:

Status of 1990 Statewide Waterfowl Populations and Habitat:

Drought conditions prevailed through much of the State until late May and early June when precipitation began to paint a brighter picture for waterfowl production in Minnesota. Pond (wetlands) numbers decreased 9% compared to 1989 and were 19% below the 10-year average (1980-89) and 23% below the long term average (1968-89). Wetland water conditions began to improve throughout the State in late May-early June after above normal rainfall, however, improvements were not reflected in the 1990 pond numbers.

The 1990 State waterfowl breeding population survey indicated increased numbers of blue-winged teal, while mallards, other ducks and scaup, all declined. Minnesota's duck population may

not have increased in 1990 but they were still 41% above the States 10-year average. Mallard populations declined 15% from 1989, when they were at record levels. They were still 17% above the 1975-88 average and the duck plan population objective of 225,000. Blue-winged teal breeding populations increased 16% and were 42% above the 10 year average. Teal numbers were also 10% above the duck plan goal of 300,000 birds. Canada goose numbers continued to increase 12% from 1989 and are 270% above the 10-year average.

Other important waterfowl producing areas in South and North Dakota experienced extreme dry springs in 1990. Many birds counted in Minnesota may likely be birds that have been displaced from other areas in the Prairie Pothole Regions. It does not appear that Minnesota breeding waterfowl populations are currently stable in contrast to these other areas.

Heron Lake Breeding Waterfowl Population Trends

Waterfowl breeding pair estimates are under represented in this report because, the 1990 Heron Lake waterfowl census was conducted before late May-early June rains improved water conditions. Total breeding ducks were down 24% from 1989 estimates. Mallard pairs were 27% lower than estimates from 1989 while blue-winged teal were 25% lower.

Canada geese breeding pairs increased 53% from 1989 estimates, however, production appeared to be down because of poor water conditions during nesting. Kelly McDowell located many remains of adult birds which had been predated. This sight was not common in 1989. During 1990 geese were forced to nest longer distances from water making them much more vulnerable to predators.

Many pond estimates were lower in 1990, suggesting the drought persisted through early spring in the Heron Lake area as it did through most of the State. Type II-IV wetlands, where are typically the most representative of changing water level conditions were 43% lower in 1990. Although late rains did improve water conditions in many ponds during June, many wetlands remained dry.

Kelly McDowell also made two fall flights to count waterfowl on October 29, 1990 and November 18, 1990. Table 2 shows the results. This data includes the waters nearby each lake shown, not just the lake.

FALL FLIGHTS 1990

AREAS	Talcot Lake		Ocheda-Bella Lakes		Heron Lake	
DATES	10/29	11/18	10/29	11/18	10/29	11/18

<u>Species</u>						
Canada Geese	16,415	15,000	5,500	3,285	2,010	1,360
Snow Geese	502	175	270	350		5
Swans					18	
Hooded Merganser						2
Common Merganser		5				3
Mallards	20,375	20,500	4,150	3,600	2,500	132,500
Blue Winged			6		40	
Green Winged Teal	205		125		525	60
Ringnecks				4	40	18
Shovelers			4			30
Widgeon			14		245	13
Gadwalls					300	
Redheads	24					6
Scaup			425	3	640	33
Bufflehead			14	5	40	
Ruddys			12		315	9
Canvasbacks			1		18	5
Coot					300	45



Flocks of Canada Geese were a common site in western Cottonwood County near the Talcot Wildlife Refuge.

SWK 12/90

4. Marsh and Water Birds

On November 20, 1990 a lone Cattle Egret was seen migrating over Wolf Lake Waterfowl Production Area. This is a very late bird! According to Green & Janssen in Minnesota Birds, the latest dates given for fall migration are September 29, October 1, 10 and 27.

American and Least Bitterns are considered species of special emphasis, are found in the District. We planned to record any sightings during the Four Square Mile Breeding Waterfowl Census. However, none were observed during the census.

Kelly McDowell, the North Heron Lake Game Manager, also provided us with some information on colonial nesting waterbirds from the Heron Lake area. The following is his text:

Grebes Nest on Heron Lake

The red-necked, horned, eared, western and pied-billed grebes were all recorded nesting on Heron Lake in the early 1900's according to Dr. Thomas Roberts author of Birds of Minnesota, 1936. There are recent record of nesting on Heron Lake for all but horned grebes. However, 2 years of drought have prevented grebes from nesting on Heron Lake. Late spring rains, a dense stand of sago pondweed and the absence of disturbance made it possible for western and eared grebes to nest on heron Lake last summer, 1990. Many western and eared grebes were observed on the lake in early spring, however, there was no indication of nesting in early colonial waterbird nest searches.

Typically these two species of grebes nest in sparse openings in emergent vegetation. Flooded openings in the cattails or bulrush was not available in 1990 because of below normal rainfall did not allow water to flood the emergent periphery of Heron Lake. A commercial bait dealer was observed trapping on North lake in a motorboat through most of June. In early July the bait dealer pulled his traps because the sago was so thick he could no longer navigate effectively. Approximately 3 days after the disturbance of the bait dealer was removed, 34 western and 38 eared grebe nests were found.

The colonies were located in Redhead Bay and were between a 100-750 yards from shore. According to Dr. Gary Nuechterlein, a professor in North Dakota who has studied grebes extensively, this is unusual, particularly for western grebe which traditionally nest in sparse emergent vegetation. This behavior has, however, been documented before. No successful nest were found from either colony in 1990. Dr. Nuechterlein noted that "it is not uncommon for grebes to nest to unsuccessfully in open water on sago mats, because they are flooded by wind and wave action." This was likely to be the cause of nest failure on Heron Lake as well. I also noted eggs being dislocated from nest by interactions ~~between~~ grebes and Forester's tern while adult and young terns were using grebe nests for loafing sites. Reestablishing bulrush and other vegetation by a successful drawdown and a return to normal water levels should greatly enhance grebe nesting habitat.

Colonial Waterbirds Observation and Nest on
Heron Lake, summer of 1990

Species	# of Nests	# of Young	# of Birds
Forester's Tern	12	31	70*
Black Tern	-0-	17	58*
Franklin's Gull	-0-	-0-	400
Ring-billed Gull	-0-	-0-	12
Herring Gull	-0-	-0-	1
Great Blue Heron	-0-	-0-	75*
Great Egret	-0-	-0-	1
Black-crowned Night Heron	-0-	-0-	25
Western Grebe	34	-0-	72
Eared Grebes	38	-0-	63
Pied-billed Grebe	-0-	-0-	2
White Pelican	-0-	-0-	3500
Double-crested Cormorant	-0-	-0-	275

* Represents an estimate, not an actual count

A great deal of historic data has been collected on historical nongame use of Heron Lake. It will continue to be a major priority to catalog and enter this information into a resource data base. It is my hope that this resource base will provide historical information, anecdotal accounts and recent data on nongame wetland birds on Heron Lake which is compatible with other State data bases and easily accessible.

Webless Migratory Waterbirds

(Shorebirds, rails and bitterns)

Several least bitterns were observed and heard on Heron Lake. Although I did not find any least bittern nests, I do suspect they were nesting in North Marsh, Winzer Bay and the South end of South Lake. An American bittern was observed several times near redhead bay during the breeding season and may also have been nesting. Rails or bitterns were not surveyed and no casual observations were made of rails during the 1990 nesting season. This is not unusual because of the secretive behavior of these birds. Several observations of avocets were made from the State dam on mud flats to the West in early May. Many other shorebirds were present, however, no official census was conducted.

5. Shorebirds, Gulls, Terns and Allies

This year the Black Tern was placed on the breeding pair counts list. Three terns were counted in the Windom Wetland Management District.

According to Kelly McDowell, 45 tern nesting platforms were donated by the Department of Natural Resources for placement on Heron Lake. At the time of placement the birds were already nesting so the 20 placed were not used in 1990 except for loafing sites. More platforms will be placed next year.

8. Game Mammals

The Wildlife Manager of the Minnesota Department of Natural Resources in Windom, Randy Markl, provided us with some excellent data on some game mammals in their Southwestern and South Central districts in Minnesota. Their farmlands district map is show below with the Windom WMD county responsibilities superimposed onto it. The solid counties indicate where our WPA's are located. The hatched areas indicate counties within the Management District.

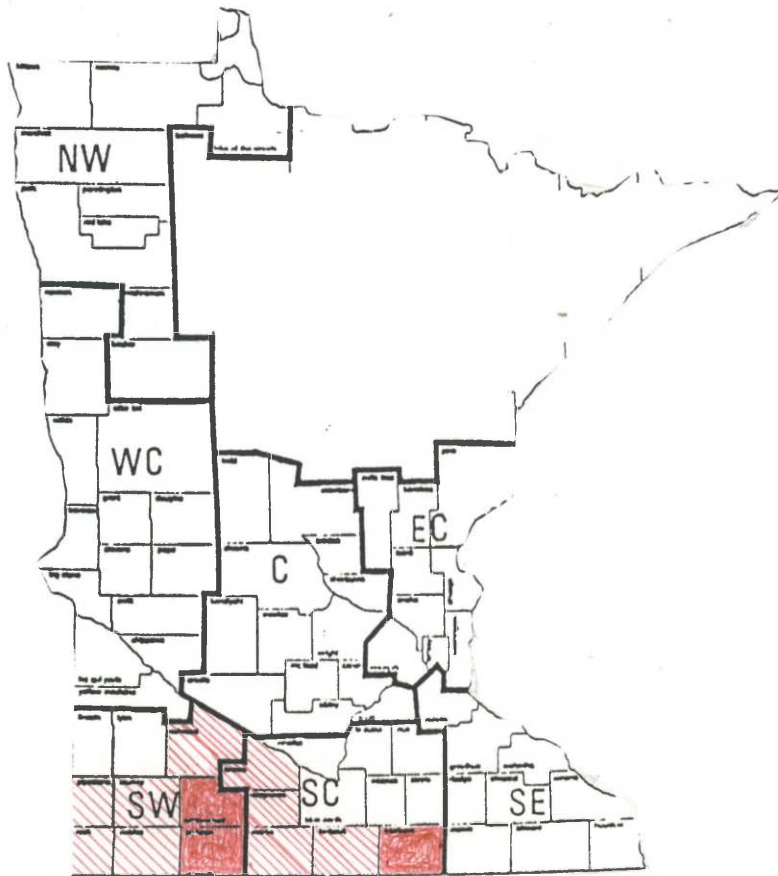


Figure . Minnesota DNR Farmland Census Districts showing Windom WMD hatched) and WPA's (solid).

KEY: NW - North West
 WC - West Central
 C - Central
 EC - East Central
 SW - South West
 SC - South Central
 SE - South East

Each year since 1955, the Minnesota DNR has conducted an August roadside count of certain selected species and published the results by agricultural region and statewide. The following table contains information on some mammals in our district.

Animals seen per 100 miles driven

SOUTH WEST

SOUTH CENTRAL

STATEWIDE

MAMMALS	1989	1990	% Change	1989	1990	% Change	1989	1990	% Change
White tail Deer	11.2	12.0	+8	1.8	3.6	+107	6.4	7.2	+ 12
Eastern Cottontail	6.7	4.0	-41	4.2	6.6	+56	5.4	6.7	+ 24
White-tailed Jackrabbit	2.1	1.3	-40	2.4	2.1	-11	1.6	1.4	- 9
Badger *							0.03	0.00	-100
Gary and Fox Squirrel *							1.20	0.85	- 33
Gray and Red Fox*							0.74	0.91	+ 25
Striped and Spotted Skunk *							0.30	0.55	+ 85

* Data not available by Region

10. Other Resident Wildlife

The Windom DNR also provided some information on resident game birds, the Ring-necked Pheasant and the Hungarian Partridge.

The pheasant is on the increase. This is probably due to 3 or 4 consecutive mild winters coupled with the increase in available habitat provided by CRP. The August roadside counts revealed increases in populations in both the DNR's SW and SC agricultural regions. The SW region counted 59.6 birds observed per 100 miles reflecting an 86% increase over the 32.0 birds observed per 100 miles in 1986 and a 100% increase over the 5 year (85-89) average of 30.3 birds per 100 miles. The SC region counted 61.8 birds per 100 miles, a 56% increase over the 39.6 birds per 100 miles counted in 1989 and an 88% increase over the 5 year average of 33.3 pheasants per 100 miles driven.

Statewide, Minnesota boasted 57.5 birds per 100 miles driven in 1990, a 46% increase over the 39.8 birds counted in 1989 and a 61% increase over the 1985-1989 average of 36.2 birds per 100 miles.

The Hungarian Partridge on the other hand is experiencing a decrease in numbers through most of the state. This decrease, however, is deceiving. Minnesota still has 10 times as many "huns" as were present 25 years ago. The SW region counted 101.5 birds per 100 miles reflecting a 9% increase over the 93.5 birds counted in 1989. The SC region counted 62.7 birds per 100 miles which is a 25% decrease over the 84.1 birds counted in 1989. Statewide, 35.2 birds per 100 miles driven were counted which shows an 11% decrease over the 39.7 birds counted in 1989. The SW and SC regions contain by far, the largest populations of Hungarian Partridge in the state. The SW and SC populations are respectively 3 and 2 times the state's average.

H. PUBLIC USE

8. Hunting

All of the District's Waterfowl Production Areas are open to hunting in accordance with State Regulations.

Waterfowl

Marshes contained fair water levels during the hunting season and local waterfowl populations provided good waterfowl hunting during the first week of the season. Vehicle traffic was permitted along

an established trail on the Sioux Forks Waterfowl Production Area in order to accommodate handicapped waterfowl hunters. This eliminated a one-quarter mile long walk which prevented disabled hunters from reaching the flooded backwaters of the Little Sioux River.

Ring-necked Pheasant

→ Pheasant numbers were up significantly from previous years. Minnesota Department of Natural Resources census routes showed an increase of up to 80% in Jackson County. These well publicized reports lured many pheasant hunters into the District. Hunting success was very good with reports of parties as large as 6 hunters shooting their limit of 2 birds per hunter on WPA's during opening day.

White-tailed Deer

Archery and gun (shotgun only) hunters made heavy use of the WPA's with good success. The area has an average deer population of about three deer per square mile, but after crops are harvested, many concentrate into WPA's.

9. Fishing

Fishing is allowed on all Waterfowl Production Areas, however, very few fishing opportunities exist on these units.

10. Trapping

Low fur prices greatly reduced trapping activity on public and private lands. Casual observations seemed to indicate a high red fox population in the District, which is especially devastating to ground nesting birds. The Minnesota Department of Natural Resources conducted a mallard nesting study which found 2 successful nests out of 25 attempts, most of the unsuccessful nests were destroyed by mammalian predation.

Other Wildlife-Oriented Recreation

Birdwatching, cross-country skiing, hiking and wildlife photography takes places on some of the Waterfowl Production Areas.

13. Camping

Overnight camping is prohibited on Waterfowl Production Areas.

17. Law Enforcement

Vandalism of WPA facilities and trespass farming appears to be minimal in the District. A snowmobile trail was discovered on the Loon Lake Waterfowl Production Area, Jackson County. The boundary fence was cut for the trail. The fence was repaired and the adjacent County Park Manager, a prime suspect, was informed of the Service's policy regarding off-road vehicle use.

A coordinated effort with Minnesota Conservation Officer, Tim Jennings was conducted for waterfowl enforcement in Cottonwood County during the opening weekend of the waterfowl season. Only one violation, an unplugged shotgun, was detected.

Manager Kallin presented an easement enforcement seminar at the annual law enforcement refresher training session in Des Moines, Iowa on March 23, 1990.

I. EQUIPMENT AND FACILITIES

2. Rehabilitation

Building Site



Front of Headquarters Building
before renovation.

CWL 3/90



Headquarters Building after renovation.

SWK 12/90

The Headquarters WPA, located two miles southeast of Windom, was purchased in March of 1990 and consisted of a 0.9 acre site with a 50 x 100' metal, insulated building which had been used as a furniture store. The inside of the building was unfinished except for two small dilapidated offices in one corner and two non-functional bathrooms in the opposite corner.

The project to rehabilitate this building for a suitable Headquarters office began on March 26 with the support from the Litchfield, Morris and Fergus Falls Wetland Management Districts. Maintenance personnel from these Districts worked from one to two weeks to remove the dilapidated offices and frame in and insulate the new offices. This assistance was extremely valuable and greatly appreciated.

The onset of the field season prevented the completion of this project through force account labor. Local contractors completed the rehabilitation.

The project was completed and the staff moved into the Headquarters building on June 18. The Headquarters consists of five offices, two bathrooms, a conference room and a vehicle storage and maintenance area. Additional work on the maintenance and storage area is still required to upgrade this area for District functions.

4. Equipment Utilization and Replacement

A 1983 Ford Station Wagon was received from the Litchfield Wetland Management District. A 1981 4 x 2 Ford Ranger and a 1981 4 x 4 Dodge Pickup was received from the Morris Wetland Management District. A 200 gallon slip-on fire pumper and two 3-wheeled ATC's were received from the Detroit Lakes Wetland Management District.

A Yamaha 350 cc 4 x 4 ATC and a 1991 Chevrolet S-10 pickup was purchased.

A Panasonic FP-1570 Photocopier was purchased. This copier has a special photograph mode which enables excellent copying of black and white aerial photographs.

An A T & T Merlin Plus telephone system was installed in the office.

A Panasonic UF-250 Fax machine was purchased and installed.

6. Computer System

A Compu-Add 320 with 100 MB hard disk, internal tape backup, color monitor and a Hewlett-Packard LaserJet III printer was purchased. It was installed by Janice Whitney of the Regional Office Support Services on September 18. The set-up and installation of this system can be time consuming and complicated, but was made painless because of the assistance from the Regional Office.

Software installed on the system are: The AutoMenu, WordPerfect 5.1, R-Base, ProComm Plus and various customized data bases prepared at the Regional Offices.

7. Energy Conservation

Energy Conservation was incorporated into the office rehabilitation project whenever possible. High efficiency windows, lights, furnace and an air conditioner were installed to minimize energy consumption. The entire office space was insulated with fiberglass insulation to prevent heat loss during the winter and to facilitate air conditioning needs in the summer.

J. OTHER ITEMS

1. Cooperative Programs.

A. HERON LAKE

The Heron Lake Area Restoration Project is a long term cooperative effort to stop and reverse the degradation of a once national known waterfowl lake and the watershed that feeds it. This is the number one priority Prairie Pothole Joint Venture Project in Minnesota. The Service has been an active supporter of the Heron Lake Area Restoration Association which consists of thirteen organizations dedicated to the restoration of Heron Lake.

The Heron lake sub-basins originally covered 8,251 surface acres but because drainage, diking and pumping, its size has been reduced to approximately 6,400 acres. Even in this reduced size, Heron Lake is the second largest Minnesota lake south of the Twin Cities. Its watershed is 474 square miles in size and extends over 30 miles east to west and is located within four counties.

Heron Lake was an important waterfowl migration lake. At the turn of the century 700,000 canvasbacks used this lake during the fall migration. A historic description of Heron Lake follows:

"Waterfowl of all native species filled the air and the water, and the clamor of bird voices was incessant day and night. Countless canvasbacks and redheads mewed and purred without ceasing as they pulled wild celery from the muddy bottom and rose for their exercise flight with a noise like thunder. The celery grew in such profusion that it was difficult to force a boat through it."
(Naturalist Thomas S. Roberts quoting stories from Mr. Peters, an early settler of the area.

The area is steeped in waterfowling tradition. In the late 1800's, 25 to 30 market hunters made their living on Heron Lake. From August 15th to freeze up, each would take an average of 2,000 ducks using shoulder fired, repeating shotguns. Once outlawed, the market hunting camps eventually gave rise to numerous private hunting clubs.



Annual spring migration of rough fish
into Heron Lake.

Kelly McDowell 4/89

Rough fish invaded the watershed in the 1920's and devastated the beneficial aquatic plant community. A key part of the project is to reduce rough fish numbers in the Heron Lake basins and prevent their annual migration into the system from the Middle Des Moines River. The Service committed \$50,000 of North American Waterfowl Management Funds towards the joint funding of a state-of-the-art electric fish barrier. This barrier is scheduled to be constructed during February and March of 1991.



Future site of electric rough fish barrier
water levels can rise 10 feet during
Spring run-off.

SWK 6/90

Heron Lake was placed in a winter drawdown from December 1989 through March of 1990. A partial rough fish kill was accomplished at that time.

The lake was again drawn down in November in hopes of winter-killing the rough fish populations which include common carp, buffalo and black bullheads.

Temporary wooden rough fish barriers were placed at the Heron Lake outlet in April of 1990 to prevent the upstream migration of rough fish into Heron Lake. The District contributed \$1,000 towards materials for this project which was successful in preventing larger fish from migrating into the system.

The importance of rough fish control to the success of the Heron Lake Restoration prompted the Service to fund a masters research study to determine the distribution and movements of common carp within the basin. Three basic questions needed to be answered in order to effectively manage or control the rough fish problem:

1. Determine rough fish over-winter sites within the basin.

Despite the 1989/1990 winter drawdown, carp survived to the following spring. This drawdown produced low dissolved oxygen levels in water which was only 6" to 1 foot deep throughout the majority of the basin. Over-winter sites needed to be identified in order to effectively eliminate carp during the winter drawdown.

2. Identify carp migration into Heron Lake from upstream sources.

Although an estimated 85% of the rough fish migrate into Heron Lake from downstream sources (Middle Des Moines River), some rough fish could enter the lake from upstream sources. Two streams contribute the majority of the water into Heron Lake. These streams are fed by run-off and overflow from five upstream lakes. In addition to these streams there are several large ditch systems which also carry water to the lake.

3. Test the effectiveness of the electric rough fish barrier.

Smith-Root, manufacturers of the rough fish barrier, guarantees 100% effectiveness in preventing fish migration past the electric fish barrier. This study will test that claim. Carp will be captured, tagged and released below the barrier. Trap nets will then be maintained above the barrier to see if it is 100% effective.

This study is being conducted through the U.S. Fish and Wildlife Service Co-op Unit at South Dakota State University. The advisor is Dr. Charles Berry.



Dr. Charles Berry, South Dakota State University, implants radio telemetry transmitter into one of six carp.

SWK 10/90

The entire Heron Lake Watershed will be mapped using a computer digitized system. This will produce a base map which can be used with a Geographic Information System (GIS). This system will assist with the monitoring and analysis of the project, and help us identify and prioritize strategies for target areas. Total cost of this process will be \$30,000 which is funded through the North American Waterfowl Management Plan Funds.

Water quality is an important concern of all partners in the Heron Lake Project. A Clean Water Partnership Grant application was submitted to the Minnesota Pollution Control Agency for the Heron Lake Watershed. This Grant would match private contributions or in-kind payments for a detailed watershed water quality study. This is Phase I of the process, which is designed to identify water pollution problems and their sources. Phase II of the process would match funds for correcting the sources of water quality problems. The Service has committed to contributing \$40,000 towards the three-year portion of the Phase I study.

The District is working with the Minnesota Department of Natural Resources and The Nature Conservancy to develop a comprehensive Heron Lake Restoration Action Plan. The purpose of this plan is to focus efforts on priority projects, identify strategies, and list responsibilities of the many agencies and organizations cooperating in this project.

B. Other

Cooperative Agreements were signed with Soil and Water Conservation Districts (SWCD) in two counties. Jackson and Nobles Counties Soil and Water Conservation Districts entered into this general agreement which provides a framework for sharing funds and personnel.

3. Items of Interest

Wetland Manager Steven W. Kallin received a Special Achievement Award for his efforts in opening a new District Headquarters office.

4. Credits

Wetland Manager Kallin wrote Sections A, C, D, E, H, I, J, K. Wildlife Biologist Lee wrote Sections B, F, G. Clerk-Typist Pigman assembly and word processing.

FEEDBACK SECTION

The shortfall in Refuge Revenue Sharing payments continues to threaten the District's acquisition program. Reduced state funding to counties, will place extraordinary pressure on local county government budgets. More than ever before, the shortfall in Service Refuge Revenue Sharing Payments will be used as the reason for counties to deny certification. On March 14, the Cottonwood County Commissioners passed a Resolution to deny the sale of lands to the U.S. Fish and Wildlife Service, until more equity exists between Revenue Sharing Payments and property taxes paid by private individuals.

Opening a new District office is a very challenging process. The most basic necessities which are taken for granted in established offices, such as a desk, telephone and typewriter, all become hurdles to overcome. A tremendous amount of assistance was received from the other Minnesota Wetland Management Districts in setting up the Windom Wetland Management District Headquarters. Clerical support, excess equipment, labor for construction, and materials were contributed by the other districts. This assistance was tremendously valuable and greatly appreciated. The team spirit and selfless attitude of the Minnesota Wetland Districts was remarkable, and could be considered a model for all Service field stations to follow.

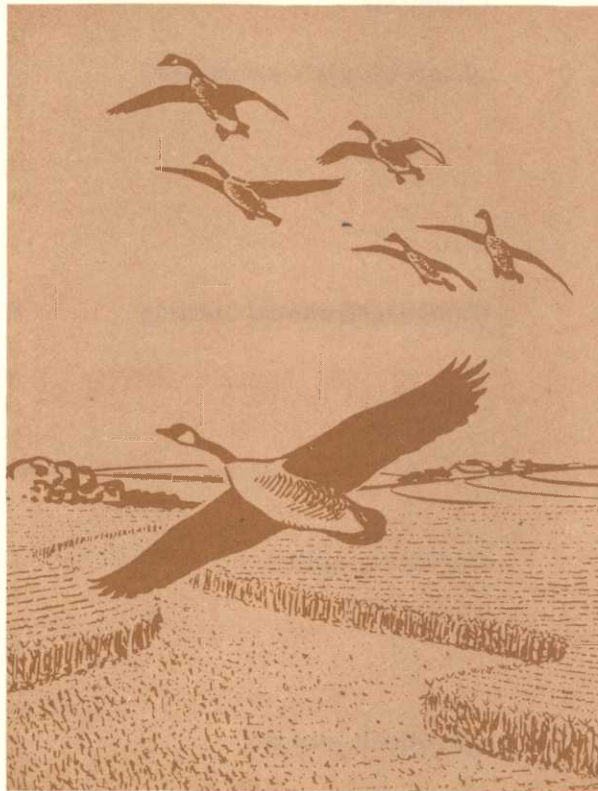
This cooperative spirit was also apparent when manpower and funds were shared between three Wetland Management Districts for a

cooperative native grass seed harvest in the Detroit Lakes Wetland Management District. This type cooperative effort was cost effective and resulted in benefits to all stations involved. This type of operational cooperation is noteworthy and should be encouraged in the future.

FS 854

Farming and Waterfowl

in the prairie pothole region



U.S. Fish and Wildlife Service
and Cooperative Extension Service
South Dakota State University
U.S. Department of Agriculture

Agricultural Practices	Benefits to Waterfowl	Effects on Agronomics	Effects on Economics
No till	Conversion of spring seeded crops to no-till winter wheat or rye creates large areas of both standing stubble and "green cover" for early nesting birds. Eliminates nest destruction since there are no spring tillage operations.	Additional fertilization substitutes for fallow and tillage. Less soil compaction. Does not work on heavy, poorly drained soils.	Higher chemical costs partially offset by lower operating costs. Net profits increase with no-till winter wheat. No-till winter wheat can be harvested earlier than spring wheat, so it is less vulnerable to depredation by migrating waterfowl.
Minimum till	Usually provides suitable nesting cover in spring.	Chemical use is the same as or greater than in conventional tillage.	Chemical costs may be offset by lower operational costs.
Ridge till	Less beneficial as nesting cover to waterfowl than no till, minimum till, or "organic" farming. Best benefit is as a food source for wintering and migrating wildlife.	Works best with row crops. Rotations recommended. Weed control costs are reduced compared to no till and minimum till.	Herbicide costs are less than for minimum till and no till. Eliminates preplant tillage costs.
Organic farming	Mortality or reproductive failure due to chemicals eliminated. Waterfowl benefit from crop diversity. More tillage may be required, which will lower nesting success.	Replaces chemical fertilizers and pesticides with biological techniques and crop rotations. Alleviates nitrate poisoning of streams, lakes, and wells.	Can be economically competitive with other farming methods. No chemical costs. But it may take several years before the crops can be certified as "organic."
Supporting conservation techniques (contouring, terracing, barrier strips, strip cropping, double cropping, intercropping, crop rotation, grassing of drainageways)	Provides nesting areas. Crop diversity is more likely to meet needs of waterfowl and other wildlife than a monoculture. Keeps sediments out of wetlands.	Year-round systems of managing plant cover to reduce erosion. Crop rotation reduces disease, insect, and weed problems. Either fertilization may be more efficient at same rate or fertilizers may be reduced. Conserves soil moisture.	Management improvements usually increase returns. Diversified farming stabilizes farm income.

Agricultural Practices

Benefits to Waterfowl

Effects on Agronomics

Effects on Economics

Subsurface undercutters

Many duck nests survive this kind of tillage. No injury to adults or pre-flight young. More nesting habitat created.

Undercutters without mulch treaders retain about 90% of the residue on soil surface after one operation. Stubble helps control soil erosion, retains soil moisture, and influences grain yields. Retards weed growth unless used under cool, wet conditions when control may be inadequate.

Fewer tillage operations. Savings on fuel, equipment, and labor costs. Reduced power requirements and operating costs.

Chisel plowing and disking

One fall tillage leaves enough stubble residue for nesting. Two or more fall tillages reduce stubble residue too much for it to be suitable cover.

Protective layer reduces wind and water erosion.

Once-over chisel plowing and disking is less expensive than moldboard plowing.

Wetland protection and restoration

Breeding, nesting, and feeding areas for ducks and geese. Shallow wetlands, which offer high potential for duck production, are often the most easily drained for crop production. Wetlands with sufficient edge cover provide nesting sites.

Recharges ground water, retains runoff waters, helps reduce soil erosion, and provides water and forage for livestock. Wetlands are unreliable areas for growing crops.

No drainage costs. Recreational hunting, fishing, and trapping. Landowner can grant hunting rights for fee or other considerations. Government programs such as incentive payments, land tax reductions, purchase agreements, and easements are available. Wetlands can provide up to four times the amount of forage or hay as adjacent uplands (see FS 826 and FS 853). Fur production.

Rest-rotation or twice-over rotation on grazing land

Rested pastures provide residual cover for nesting ducks. More early nests. More duck nests and better hatching occur in well managed grasslands (pastures) than in overgrazed areas.

Cattle productivity increases. Depletion of root reserves, invasion by undesirable plants and insects, and soil erosion reduced. Increases plant vigor and range condition. Reduces soil compaction due to trampling. Greater efficiency due to even distribution of livestock over pastures.

Management improvements usually increase returns. Initial costs for additional fences and water development may be necessary; cost sharing may be available. Lower intensity of management, fewer costs, and greater payback, when compared to high intensity-short duration systems. Increased beef production is likely.

Agricultural Practices

Benefits to Waterfowl

Effects on Agronomics

Effects on Economics

High intensity-short duration grazing

Offers waterfowl certain "rested areas" for nesting, but only before the first rotation is complete.

Productivity of cattle increases. Depletion of root reserves and invasion of undesirable plants and insects reduced. Plant vigor increased and range condition may improve. Greater efficiency due to even distribution of livestock over fields.

Intensive management required. Most costly to implement. Increased livestock production likely.

Holistic range management (HRM)

Somewhat poorer nesting results than under other systems (preliminary findings).

Same as high intensity-short duration.

Extensive management required. Range condition changes can be expected after 2 or 3 years of operation, sometimes for the better and sometimes not.

Grassy cover along fence rows, odd areas, and roadsides

Nesting habitat. In some intensive agricultural areas, these areas are all that is left to provide nesting and escape cover.

Reduces erosion. Roadside management provides cleaner lakes and streams. Grass-legume stands reduce need for weed control. Exclude grazing or restrict to light winter use. It is illegal to cultivate federal-aid roadsides.

Reduces road culvert maintenance. Resulting higher waterfowl populations can be hunted for a fee. Roadsides can be hayed during most years, preferably after July 10.

Prescribed burning of grasslands and marshes

Avoid annual burning or burning during the nesting season. Usually, nesting is temporarily reduced during the year of burn; however, in the long term, grasslands burned once in every 3 to 4 years show higher nesting success than do unburned areas. Exclusion of fire over long periods allows grasslands to deteriorate in quality. Fire opens up overgrown marshes, especially in emergent meadow zones, thus increasing waterfowl pair habitat. Causes vigorous growth of plants valuable as food, cover, and nesting sites. Avoid burning stubble.

Removes excessive old growth. Greater yields of herbage. Better quality of forage. Pastures are more evenly grazed, due to increased plant quality over the entire field. Earlier plant growth and extended growing season. Helps control insects.

Easy and inexpensive method to manage vegetation.

Agricultural Practices	Benefits to Waterfowl	Effects on Agronomics	Effects on Economics
Fenced dugouts	Provides nesting cover, brood protection, and cleaner water.	Reduces erosion and siltation, thus lowering maintenance costs. Keeps cattle from loafing in dugout. Prevents accidental loss of livestock.	Extends life of dugout. Fencing and water lift equipment investments.
Stock dams	Increased use by waterfowl.	Provides livestock water. Several in a pasture will encourage better distribution of grazing.	More forage available in drawdown zone of pond, increasing beef production.
Lure crops or food plots	Food and rest areas for migrating waterfowl. (Mallards and pintails are responsible for most duck crop damage.) Crops preferred by ducks are barley, durum, and bearded wheat.	Plant early ripening varieties in high-damage areas. Delay fall tillage of stubble fields to provide alternate feeding sites. Food plots can lure waterfowl away from vulnerable fields and reduce depredation. Use shatter-resistant varieties. Straight combining eliminates swathing which attracts waterfowl to fields. Use grain dryers. Plant winter wheat (it is harvested earlier).	Helps reduce or eliminate crop losses. Resource agencies sometimes provide some compensation for lure crops or food plots.
Artificial nesting structures (baskets and bales)	Provides hens with relatively predator-free nesting sites.	Flax, straw, hay, or marsh vegetation can serve as nesting materials for baskets or bales. Flax is preferable in baskets.	Bales are free or low-cost. Baskets and hardware are reasonably priced and durable. Wildlife agencies and sportsmen's clubs often cooperate in cost and construction.
Land set-aside or retirement programs (ASCS, SCS, and state and federal wildlife agencies)	Provides and greatly enhances both quality and quantity of waterfowl habitat. Should receive a grazing, haying, or burning treatment about once every 5 years.	Protects environment and improves agricultural production. Set-aside areas should be where cultivation would cause serious soil loss. Weed control may be necessary.	Long-range benefits from land improvement. Economic incentive (payments) provided.

Agricultural Practices

Detriments to Waterfowl

Effects on Agronomics

Effects on Economics

High-tillage farming

Little or no habitat for nesting. Forces ducks to concentrate nests in marginal areas where predation is high.

Promotes soil erosion, compounded by large fields without windbreaks. Erosion removes carbonates, nitrogen, and phosphates. Reduces water holding capacity. Much of the erosion is caused by fall applications of incorporated, pre-emergence herbicides which require tillage. Increases runoff, delays entry into field, and causes higher sedimentation and salinity.

High costs for fuel, equipment, and labor. Increasing amounts of costly fertilizers will be needed to replace nutrients lost by erosion. Loss of snow catch reduces yields. Siltation can plug up road culverts.

Summer fallowing

No nesting cover.

Summer fallow tillage causes extensive erosion and can increase salinity in low areas.

Reduces total area in crops per year. Increases chance of depredation because it concentrates blackbirds and ducks in nearby unharvested fields.

Spring plowing and disking

Destroys nests.

Adds spring work at an already busy time of year. Entry into field and planting may be delayed. Less erosion than with fall tillage.

Moldboard plowing is more expensive than disking or chisel plowing.

Wetland drainage

Destroys breeding, feeding, and nesting habitats.

Drainage ditches hinder machine operation. Increases salinity.

Expensive. Crop production is unreliable. Drainage ditches often fragment larger fields; therefore equipment operation advantages are lost. Contributes to downstream flooding, waterway erosion. Reduces water quality in lakes and streams.

Agricultural Practices

Overgrazing or season-long grazing

Chemicals

Unmanaged annual burning

Dugout trampling

Detriments to Waterfowl

Reduces nest success.

Directly or indirectly affects life processes of waterfowl. Some ag chemicals are of short duration and nontoxic. Methyl or ethyl parathion or carbofuran insecticides are highly toxic to waterfowl.

Removes cover for early nesters in year of burn. Fires set in early May to mid-July destroy more nests and can delay renesting longer than fires set at other times of the year.

Destroys nesting and brood-rearing cover. Poorer water quality and invertebrate (food) habitat.

Effects on Agronomics

Accelerates soil erosion. Decreases plant productivity and range condition. Detrimental to desirable plant species. Increases soil compaction. A single pasture cannot support food requirements throughout the season.

Avoid drift into aquatic areas. Use with minimum or no-till systems, which reduce erosion. Protection from erosion is more likely to keep the chemical on the field and not in the wetland or water table, the family well, or farm water supply.

Hay production can be reduced in a dry year following a burn. Can increase erosion and lower water infiltration rates.

Increases erosion and siltation. Possible livestock loss.

Effects on Economics

Lowers long-range net income potential. Smaller calf size, poor rates of gain, and poor conception rates can be expected.

Improper amount and/or application increases cost of operation, reduces net income, and adds to farm water quality problems.

Wildfires can be expensive, causing loss of buildings and equipment. Possibility of litigation if fire escapes to your neighbor's land.

Expense of replacing dugouts and livestock loss.

Nest-Saving Techniques

General

1. Mark the nests found prior to or during tillage and planting, to avoid destroying them during future operations.
2. If you disturb a nest site, leave it looking as much like the surrounding area as possible so that predators aren't attracted. Cover the eggs with down or a thin layer of vegetation to camouflage and protect them from excessive heat or cold or predators. Contrary to common belief, handling eggs does not discourage the hen from returning to the nest, and she will find it even when you cover the eggs.

Seedbed Preparation

1. Skip over or avoid nest sites, or raise the equipment over the nest.
2. When nests are found, use your hat or a bag to move the nest out of the path of the equipment, drive through, and then return the nest and eggs to the original site. It's too hard to move 12 or so small mallard eggs in your hands without dropping some.

No till

1. The drill and other implement wheels are the major threats to nests; watch wheel paths and steer around nests.
2. Try to leave the nest at the original site and raise the drill over the nest.

Summer fallow

1. Delay cultivation until after hatching.
2. When nests are found, move them from the equipment's path, cover the eggs with down, and slightly camouflage the site with grass or straw.
3. Spring herbicides can delay tillage until the end of June or later.
4. Chemical summer fallow is an alternative.

Hay fields

1. Delay mowing as long as possible, preferably until after June 15 in the lower parts of the Northern Plains to July 10 or later in the northern parts.

2. Mow slowly in areas where nests occur (or wait). Set cutter bar higher than 6 inches.

3. Mow from the center of the field outward to give ducks and other animals an escape route.

4. A flushing or noise device that is attached to the cutting bar may help warn hens you are coming.

5. To camouflage nests, raise the cutting bar over nest and lower it again as you go by.

6. Cover eggs with down or a thin layer of vegetation after you pass the nest site. Mark the nest so it won't be destroyed during raking and hay removal.

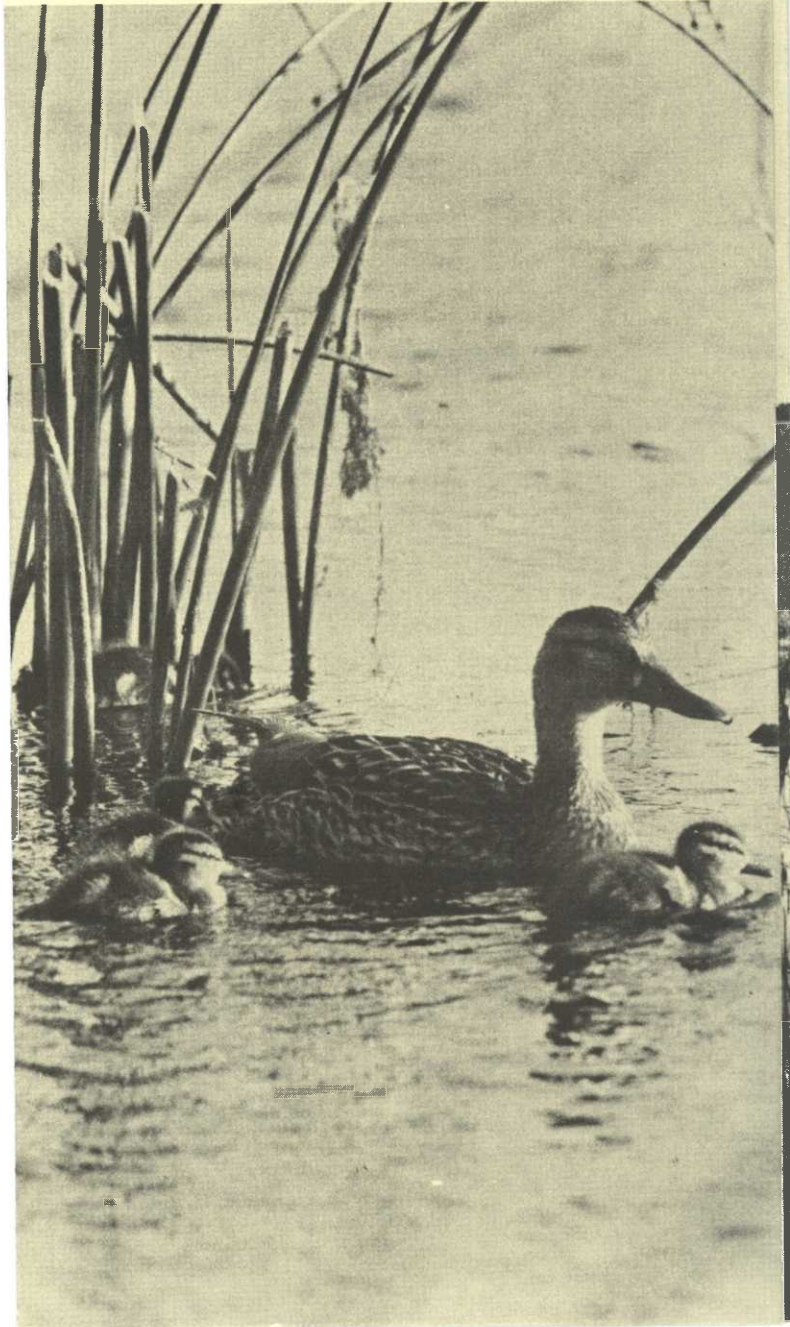
FS 854
January, 1990

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the USDA. Mylo A. Hellickson, Director of CES, SDSU, Brookings. Educational programs and materials offered without regard to age, race, color, religion, sex, handicap, or national origin. An Equal Opportunity Employer.

This publication was prepared by the Ag Communications Department, SDSU, and printed at the SDSU Printing Laboratory.

A Message to Hunters

Using Waterfowl Production Areas



YOU ARE ON A

WATERFOWL PRODUCTION AREA



Purchased With Duck Stamp Dollars

OPEN
TO PUBLIC HUNTING

U. S. DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

UNAUTHORIZED ENTRY PROHIBITED

Waterfowl Production Areas (WPAs) are public lands purchased by the Federal government. The money comes from the Duck Stamp you bought. WPAs, scattered through the western prairie areas of Minnesota, are all that remain of a vast sea of grasslands interspersed with marshes. They are dedicated to the perpetuation of this country's waterfowl heritage.

In almost every case, WPAs are open to public hunting of upland and big game as well as waterfowl. These areas serve as a reminder of the concern felt by the American sportsman for the future of this once vast resource.

Waterfowl must have their basic needs met for them to survive. Most important is habitat for courting, nesting, feeding and resting during migration. And they need older, experienced birds in the adult population to nest and reproduce successfully in the spring.

Minnesota waterfowl need your help. 1) Waterfowl habitat must be protected from drainage and damage. Today's economics makes drainage of wetlands more likely than ever. Misuse of wetlands by a few hunters and others is causing public problems for those agencies responsible for wetland acquisition and management. 2) Vegetation is damaged by vehicles on WPAs. This



damages the grassy nesting habitat that has been purchased just for waterfowl production! 3) Excessive hunting pressure on some WPAs, or in certain locales, creates an overkill of locally produced ducks, especially hens. This means nesting next spring may not be as successful in producing lots of ducklings since there are fewer hens.

What can you do? Know the rules for a start—they are listed on the other side of this leaflet. But a true sportsman does more than just obey the law. For instance, make sure you are on the right side of the boundary. Let's not cause any problems for our neighbors. That will hurt our efforts to preserve needed wetlands for waterfowl production.

Be careful not to crush or beat down the vegetation. Tire tracks destroy the nesting cover and frequently encourage weeds to grow. They may also help lead predators to nesting hens. And that means fewer ducklings for future hunting.



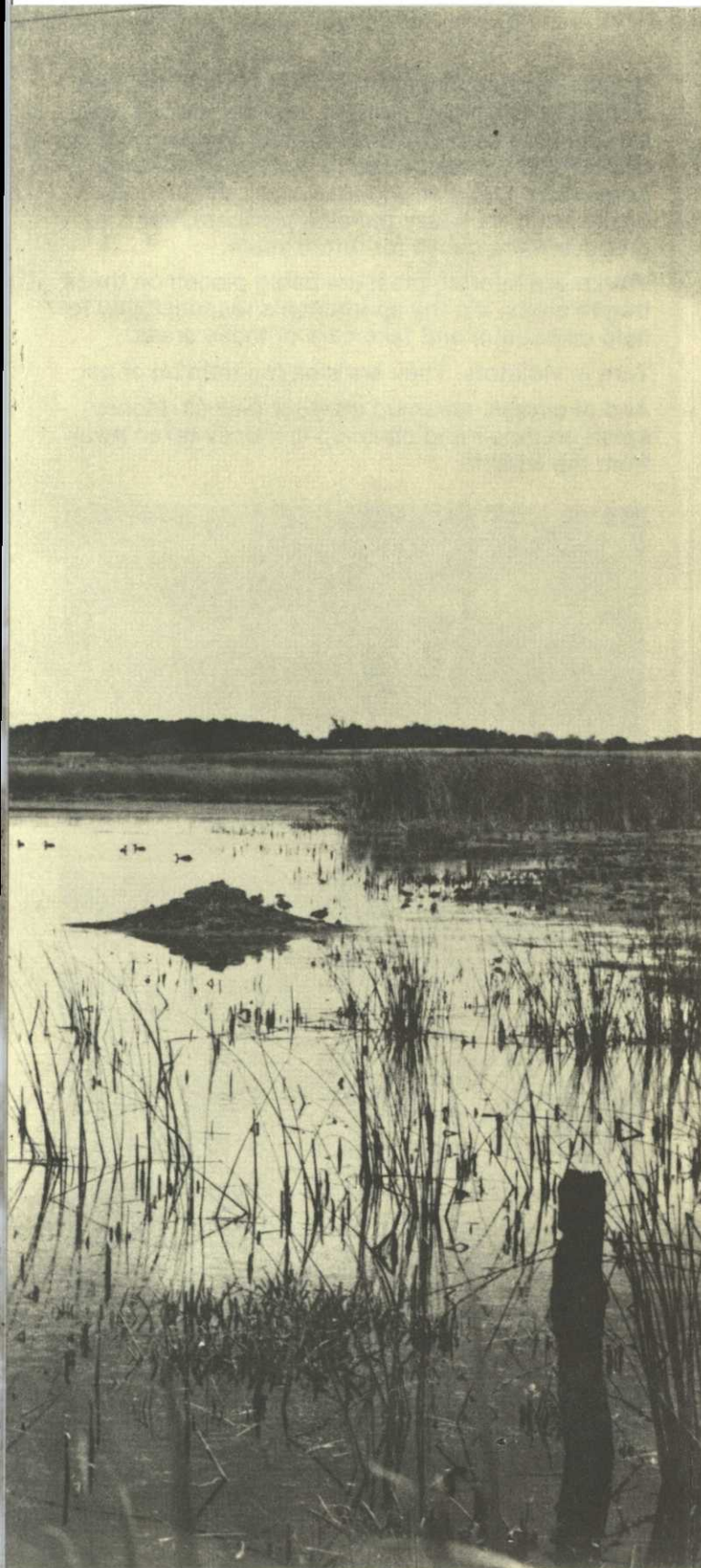
Quality hunting is more than just birds in the bag. If this WPA is full of hunters, try another one with less hunting pressure on the birds. Respect the few WPAs that are closed to waterfowl hunting. Remember that a strong local duck population, protected from heavy gunning pressure, will produce more ducks for future years.

With more hunting pressure being placed on these fragile areas, it's the sportsman's responsibility to help us acquire and take care of these areas.

Turn in violators. They are stealing from all of us.

And of course, clean up after yourselves. Money spent on repair and clean-up is money taken away from the wildlife.





REGULATIONS

- All motor vehicles, including snowmobiles and all-terrain vehicles, are prohibited except in designated parking areas.
- Hunting is subject to all applicable state and federal laws. Steel shot must be used in accordance with current regulations.
- Firearms are permitted only during open hunting seasons.
- Do not pick or destroy any living vegetation.
- Littering is prohibited.
- Camping and overnight use is prohibited.
- Fires are prohibited—use matches with care.
- Contact me for information and free county maps of WPAs. I want to hear your suggestions.

Rollin Siegfried

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Fergus Falls Wetland
Management District
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Management District
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Howard A. Lipke
Detroit Lakes Wetland
Management District
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Detroit Lakes, MN 56501
Tel. 218/847-4431

Matthias A. Kerschbaum

Matthias A. Kerschbaum
Litchfield Wetland
Management District
305 North Sibley
Litchfield, MN 55355
Tel. 612/693-2849

TIP

**TURN IN POACHERS
CALL**

800-652-9093

**OR ONE OF THE MANAGERS
LISTED ABOVE**

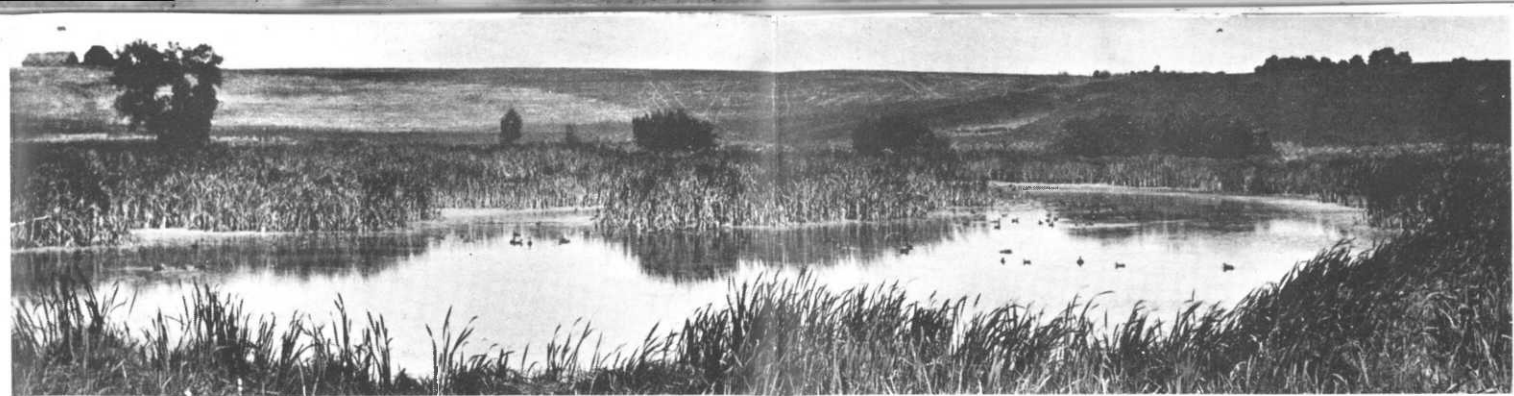
As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.



Wetlands Can Yield Dollars



The following information in the form of Questions and Answers explains The Wetlands Easement Program of the United States Fish and Wildlife Service



Marshes such as this are needed for duck production. Ducks use these marshes in spring, summer, and fall. Other wildlife use these areas year-round.

Why protect wetlands?

Wetlands are mandatory for waterfowl production. And they are rapidly disappearing, yielding to the encroachment of expanding society. Wetlands not only provide essential habitat for wildlife, they serve man too. By protecting wetlands, man protects his future and the destiny of waterfowl in North America.

Do wetlands contribute any other benefits?

Yes. They aid in flood and erosion control by holding the water on the land, reducing fast runoff and flooding conditions. Water held in wetlands also has a chance to seep underground and recharge water supplies.

What rights are included in the Easement?

You agree not to drain, burn, level, or fill the wetlands covered by the Easement. The agreement also gives Service representatives the right of entry on your land to check compliance with the terms of the easement contract. Crops and livestock will not be disturbed, however, as inspections are usually made from airplanes.

What type of document is used to transfer these rights?

The agreement used by the Service is both an option and an easement. The option provides that the Service may at any time during the option period accept the easement whereupon it will be recorded in the county records. You must adhere to the terms of the agreement from the day you sign it.

Will the Service purchase a wetlands Easement on any property?

No. The property must have wetlands of value to waterfowl and be in a county which has been approved for the easement program.

How much of my land would be covered by the Easement?

The Easement covers certain existing wetlands or those which recur through natural or man-made causes. These wetlands will be shown on a map which is part of the Easement. Enforcement of the terms of the easement contract will be limited to these wetlands.

What happens to land I have already drained?

It will not be covered by the provisions of the Easement.

Will the Easement affect my farming use of the wetlands?

The Easement does not affect normal farming practices such as cropping, haying, grazing, plowing or working wetlands when they are dry of natural causes.

Will the Easement affect hunting and trapping rights on my land?

No. You still have the right to open or close your lands to hunting and trapping as you have in the past.

Will the Easement affect my mineral rights?

No. You retain your right to develop your minerals. The rights the United States acquire are limited to burning, draining, filling and leveling of wetland areas.

How many years will the Easement be in effect?

This is a permanent (perpetual) Easement.

Why is the option period necessary?

The option period is needed so that the Government will have time to obtain and examine evidence of legal title to the land.

How soon will the Service accept the Easement?

Normally the Easement agreement will be accepted in less than four months. The option is usually taken for a longer period of time to allow for unforeseen problems.

What happens before the Easement is accepted?

We obtain title evidence from the abstractor at no cost to you. This is checked to determine that all owners of record have signed the Easement. Our attorneys then review the case and furnish an opinion of title. If the opinion points out any title defects, we will take steps to have them corrected. The Easement will then be accepted by us.

What happens after the Easement is accepted?

You will receive a letter by certified mail informing you that the Easement has been accepted and is being recorded at the county courthouse. We will also send you a copy of the fully executed Easement at that time.

What is the method of payment?

A single lump-sum payment will be made by a U.S. Treasury check for the amount specified in the Easement.

When will I be paid?

Payment is usually made within three to five months after the Easement has been signed. We must record the Easement agreement and have the abstractor bring the title evidence up to date.

What if I have a mortgage on the property?

In most cases this will not affect the Easement transaction. If it is necessary to have the mortgagee give his consent to the Easement, we will ask him to sign a statement known as a subordination agreement.

Will I have to pay for the subordination agreement?

When a charge is made by the mortgagee for the subordination agreement, you must pay this charge, but you may file a claim and be reimbursed by the United States.

I am buying my land under a contract for deed, does the seller join in signing the Easement?

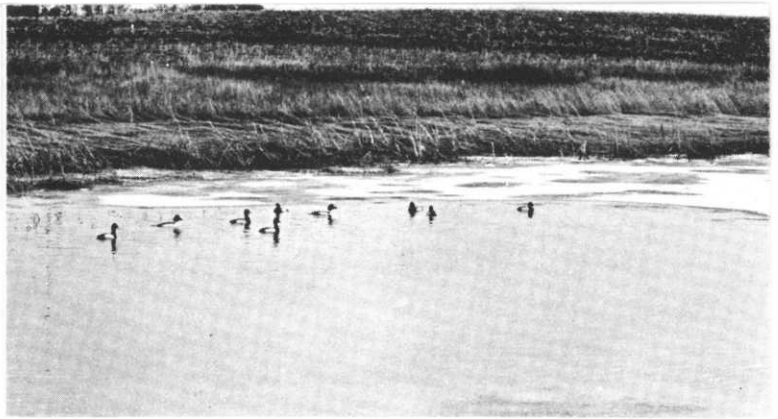
Yes. In order for an Easement to be placed on your property, both you and the contract seller, who holds the legal title, must sign the Easement agreement.

Who receives payment when there is a mortgage or contract for deed?

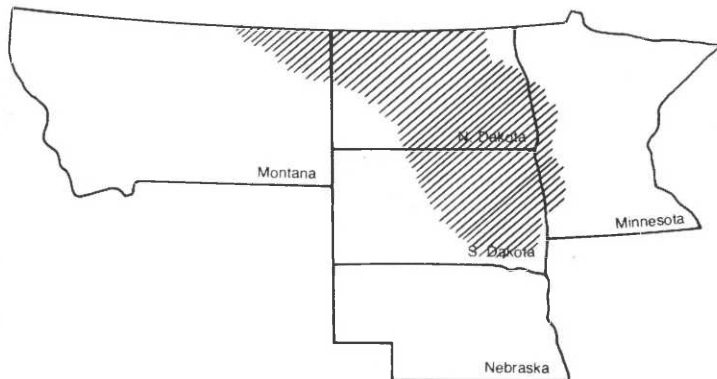
This is dependent on the mortgage holder or the contract seller and the terms of your agreement with them. They may require that all or a part of the money be applied to the mortgage or contract balance, or they may allow the entire payment to go to you.



A grouping of temporary and permanent wetlands in the same area are best for duck production.



Even small potholes qualify for the easement program. Breeding ducks often use them in the springtime.



More than half of the ducks raised each year in the contiguous United States come from the shaded area of this map. Most of the easement activity also occurs in this region.

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under United States administration.

The Easement Program Provides for

One lump-sum payment

Your agreement not to drain, burn, level, or fill wetlands

A permanent or perpetual agreement

Land remaining on tax rolls

For further information contact:

The program to save The Wetlands was authorized by Congress on August 1, 1958. It is financed by receipts from the sale of Migratory Bird Hunting and Conservation Stamps, commonly known as Duck Stamps. Sportsmen throughout the nation are sponsoring this project when they purchase these stamps.

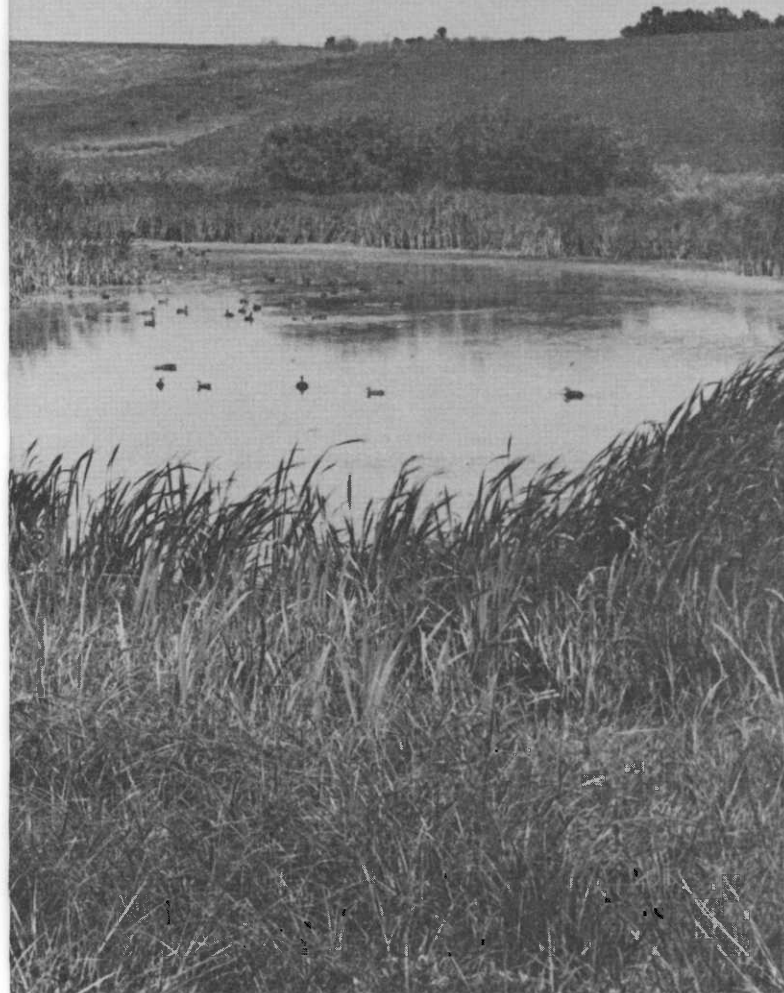


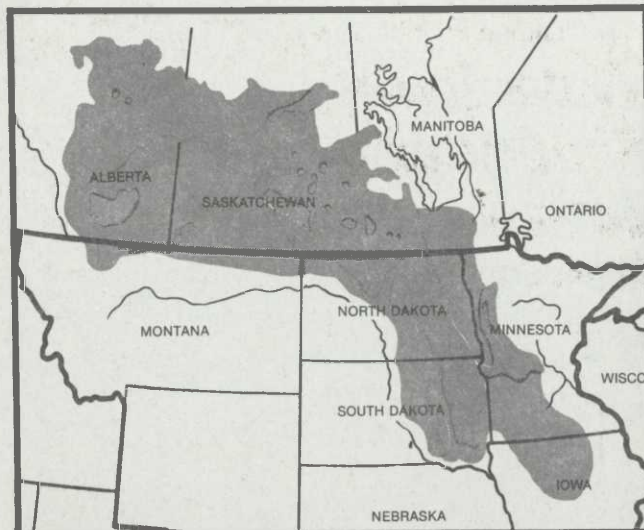
DEPARTMENT OF THE INTERIOR
U.S. Fish and Wildlife Service

U.S. Fish and Wildlife Service

Waterfowl Production Areas

Minnesota



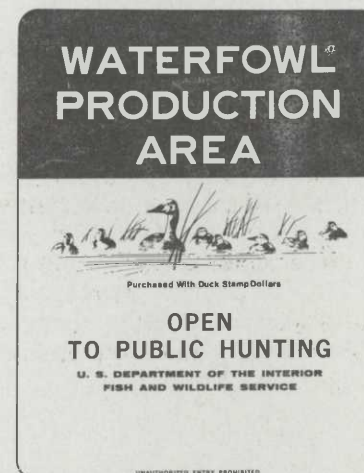


The highly fertile soils in western and southwestern Minnesota are a result of glaciers and centuries of decomposed, deep-rooted, tallgrass prairie plants. This creates prime breeding grounds for prairie ducks and productive agricultural acres.



A bird's-eye view of western Minnesota reveals a landscape pitted with thousands of small marshes. This is the famous Prairie Pothole Region. It stretches northwest into the grasslands of Canada and is the most important nesting ground for ducks in North America. This is where you will find an important Federal wetland preservation program aimed at producing more waterfowl.

WHAT ARE WPAs?



This sign marks the boundary of a Waterfowl Production Area.

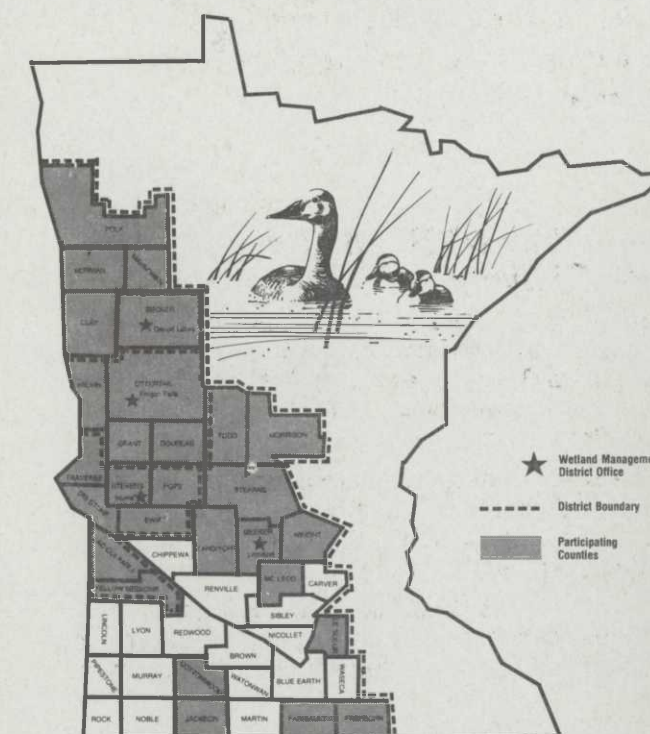
Waterfowl Production Areas (WPAs) are primarily prairie wetlands with associated uplands managed to provide nesting areas for waterfowl. Drainage and cultivation of many small wetlands prompted the U.S. Fish and Wildlife Service to begin a program to acquire small wetlands in 1962. This program preserves high quality nesting areas for declining waterfowl populations. These valuable prairie wetlands are bought from willing landowners who, in many cases, want their marshes preserved and managed for this purpose. Acquisition money comes from the sale of "Duck Stamps" to waterfowl hunters. Today, some 125,000 acres of wildlife habitat has been preserved in western Minnesota under this Federal program. There are 700 WPAs located in 22 counties.

WPA management involves a variety of activities, depending on the property's soils, topography and past history. Management is aimed at

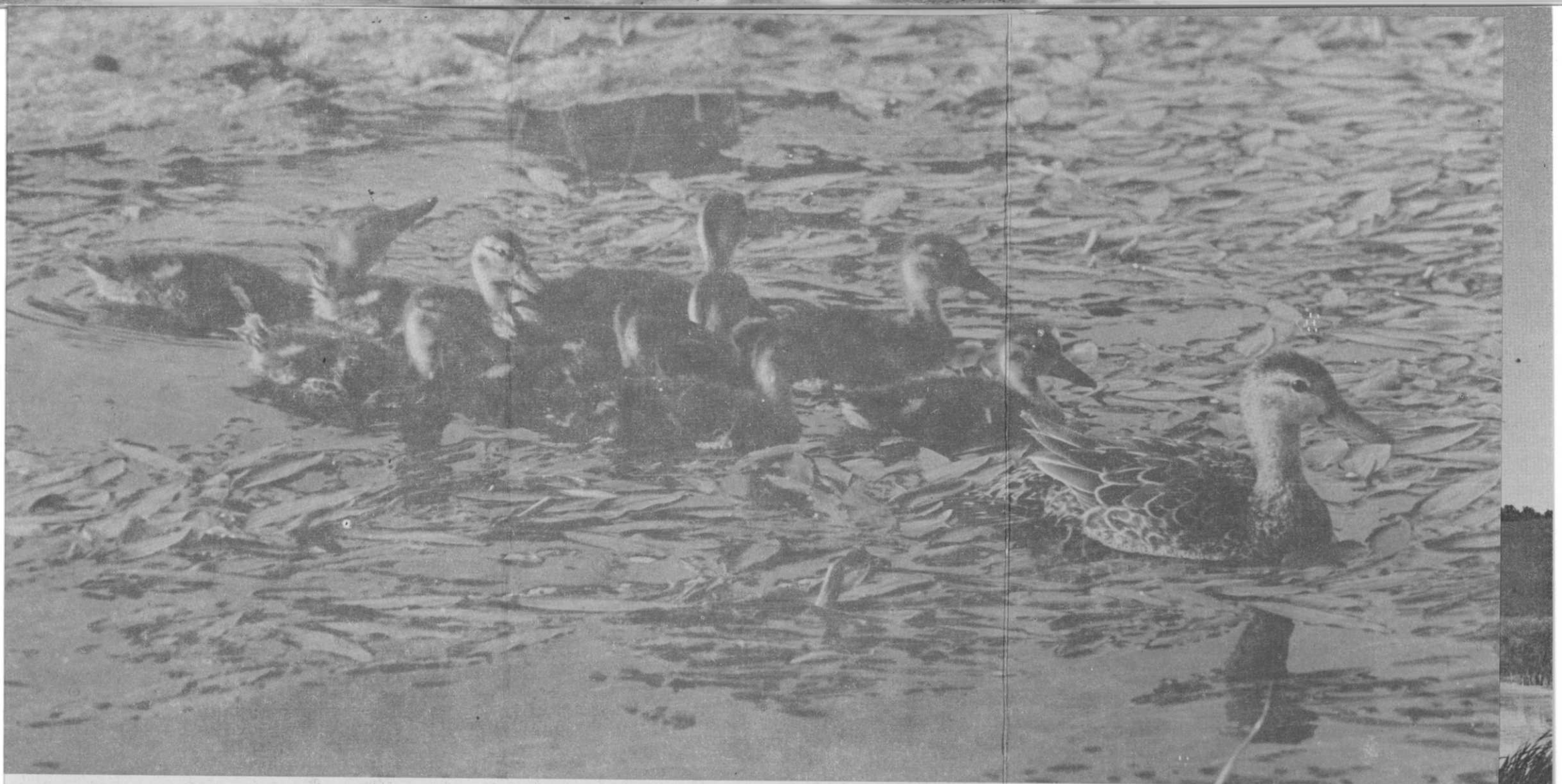
encouraging the most favorable wetland and upland food and cover for waterfowl production.

Drained wetlands are restored by plugging ditches or building small water control structures. On the uplands, native grasses, legumes and introduced grasses are seeded to provide dense nesting cover for ducks and other wildlife. Native grasses may be managed by controlling burning, haying or grazing. Sometimes uplands are leased to farmers for cultivation with the agreement that they will leave part of the crop standing for winter feed and cover for resident game.

WPAs ARE AN IMPORTANT NATIONAL RESOURCE



Countless thousands of pothole ponds and marshes were left by the glaciers over a broad band of northern grasslands. This is called the Prairie Pothole Region and it covers 300,000 square miles. 50% of the ducks in North America are raised each year in this region, even though it contains only 10% of the continent's wetlands. It is here that fertile wetland waters and soils which provide abundant, high protein food for your growing ducklings.



WPA wetlands can vary in size from less than a tenth of an acre to one hundred or more acres of water area. Ranging from temporary sheet water which lasts only a few days in early spring to permanent lakes, marshes and potholes, a variety of wetlands meets the varying breeding, nesting and migration needs of many waterfowl species. One marsh usually cannot supply all the requirements of a nesting pair of ducks for the complete production cycle — from courtship to nesting, egg incubation, and raising ducklings to flight stage. Waterfowl biologists have learned that a complex or collection of wetlands, of varying sizes and depths as found in the Prairie Pothole Region, is needed to provide the food, cover and solitude needed by breeding ducks.

WPAs DO MORE THAN RAISE DUCKS

Scientists are just starting to learn about the importance of regional wetland systems — that collection of marshes waterfowl need to breed successfully. Recent studies have examined the benefits to man from flood control, groundwater recharge, pollution and sediment filtration, shoreline erosion protection, soil evaporation rate reduction. All these can affect an area's crops, industry, drinking water, and general quality of life. Although research results are not in yet, these studies suggest there may be significant rewards in preserving wetlands — benefits that go far beyond wildlife preservation.

Wetlands are one of the most productive kinds of wildlife habitat. Besides prairie ducks, they are home to many other kinds of birds such as rails, terns, kingfishers, herons, sandpipers and egrets. The excellent cover in the surrounding upland grass is important for deer, upland game birds, hawks, and many smaller birds such as larks, wrens, and bobolinks. Furbearers including weasels, mink, fox and muskrat are common in WPA habitat. When connected to lakes or streams with fish populations, wetlands may also be important fish spawning areas, especially for northern pike.

WPAs ARE FOR PEOPLE



Whether you are a hunter, trapper, birdwatcher, photographer, or family looking for open space to hike, WPAs are great places to observe and enjoy wildlife and the outdoors.

WPAs are open in the fall to public hunting, except where occasionally posted otherwise. Waterfowl, upland game birds and big game may be hunted and furbearers trapped in accordance with Federal and State laws.

Nature study and appreciation on WPAs are popular activities for individuals, families and school groups. Bird watching, marsh investigation, identification of remnant native prairie grass, or wildlife population studies offer exciting entry to the complex world of prairie wetlands. Some WPAs have interpretive trails and leaflets to help visitors learn more about wetland wildlife and ecology.

General recreation activities such as hiking and cross-country skiing are also welcome on WPAs. Each season of the year offers a different experience of wildlife and vegetation life-cycles — in the solitude of open prairie spaces.



SOME IMPORTANT RULES TO FOLLOW

All motor vehicles including snowmobiles and all-terrain vehicles, are prohibited unless specific areas are posted as open to this use. Please use designated parking areas.

Be careful not to crush or beat down the vegetation. Tire tracks destroy duck nesting cover and may help lead predators to nesting waterfowl.

Respect the neighbors' private property. Make sure you are on the correct side of the boundary line.

Hunting and trapping are subject to all applicable Federal and State laws. Firearms are permitted only during open hunting seasons or as authorized by State regulations.

Camping and overnight use is prohibited.

Fires are prohibited.

DO YOU WANT MORE INFORMATION?

Each of the four District Offices, shown on the map, is assigned to manage WPAs in several counties. They have special leaflets which you will find useful such as bird lists, hunting regulations, and maps.

The District staff may also have specialists in the areas of wildlife, soils or botany who would be pleased to help answer questions or suggest WPAs for specific study pursuits or interests.

Interpretive displays and leaflets at some of the offices may help your understanding of prairie wetlands, waterfowl, and wildlife management.

★ **Detroit Lakes**
R.R.#3, Box 47 D
Detroit Lakes, MN 56501
(218) 847-4431

★ **Morris**
Route 1, Box 208, Mill Dam Road
Morris, MN 56267
(612) 589-1001

★ **Fergus Falls**
Route 1, Box 76
East Highway 210
Fergus Falls, MN 56537
(218) 739-2291

★ **Litchfield**
305 N. Sibley
Litchfield, MN 55355
(612) 693-2849

We would like to meet you. Unlike other public lands with easily defined boundaries and entrance roads, our WPAs are spread over many counties, and are usually in remote areas. Because of this, we often do not know who our WPA visitors are; where they have come from; what activities they do on WPAs; and if their visit was rewarding. If you do not have time to stop at one of our Wetland Offices, write a note and let us know about your visit. Tell us what you saw and suggest how we can make your next WPA visit more enjoyable.

U.S. FISH & WILDLIFE SERVICE
ROUTE 1, BOX 273A
WINDOM, MN 56101

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.



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