

***RESTORING
MINNESOTA'S
WETLAND AND
WATERFOWL HUNTING
HERITAGE***

Minnesota Department of Natural Resources
Division of Wildlife

in cooperation with:
Ducks Unlimited, Inc.
Minnesota Waterfowl Association
U.S. Fish and Wildlife Service
Other Partners

Executive Summary

Minnesota has a long-tradition as a waterfowl producing and a waterfowl hunting state. Yet in recent years, duck flights and harvest in Minnesota have been reduced. This had led to a decline in Minnesota's proportion of the Mississippi Flyway duck harvest. This long-range plan examines both long-term and short-term factors believed to influence the changing patterns of duck use and harvest in Minnesota, and sets a goal to: ***Manage Minnesota's wetland and migratory waterfowl habitat base and undertake other measures to increase the proportion of the Mississippi Flyway duck hunter harvest in Minnesota to 1970-1979 levels, and to improve waterfowl hunter satisfaction.***

We provide a resource assessment of fall migration habitat and waterfowl harvest in Minnesota, and propose to meet dual objectives:

1. Achieve the proportion of Mississippi Flyway duck harvest in Minnesota that occurred during 1970-79 (16%), and maintain distribution of harvest (%) of key species within the state's ecological zones, and:
2. Assess and improve Minnesota waterfowl hunter satisfaction as measured by hunter surveys.

We will meet the first objective by addressing problems related to improving the quality and quantity of fall migration habitat, improving production of ducks in Minnesota, and increasing fall rest or secure areas for ducks. At the same time, we will also work to improve our understanding and monitoring of factors influencing fall waterfowl use.

We will meet the second objective by providing better information to waterfowl hunters, providing better hunting opportunities, and using surveys and other methods to better understand this important clientele.

This plan provides the conceptual framework to address the goal and objectives. A companion document, "The Challenge to Restore Minnesota's Wetland and Waterfowl Hunting Heritage -A Two-year Action Plan, 2001-2003" provides the specific actions we plan to accomplish during the next biennium. The Challenge document will be updated every two years to ensure that plan activities keep pace with current budgets, partners, and priorities.

Meeting the objectives will take substantial investment by the Department of Natural Resources Division of Wildlife and its many partners, but there will be important long-term benefits to both waterfowl that migrate through Minnesota and waterfowl hunters that work to ensure the conservation of this important resource.

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RESTORING MINNESOTA'S WETLAND AND WATERFOWL HUNTING HERITAGE

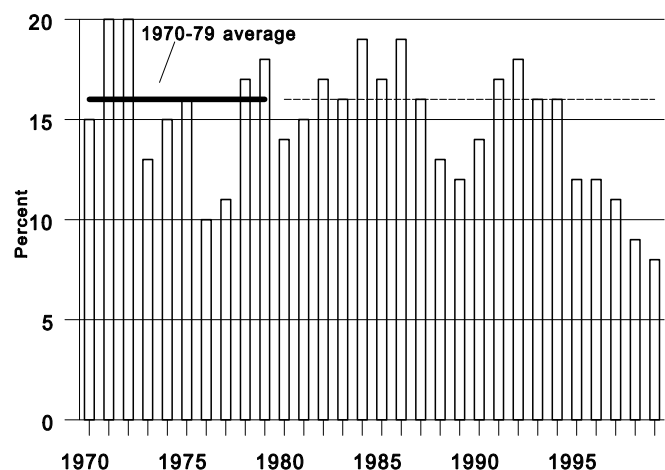
Goal: Manage Minnesota's wetland and migratory waterfowl habitat base and undertake other measures to increase the proportion of the Mississippi Flyway duck hunter harvest in Minnesota to 1970-1979 levels, and to improve waterfowl hunter satisfaction.

Introduction

Minnesota has a long history as a waterfowl hunting and conservation state. We enter the new century in a period of relative duck abundance in North America; yet duck harvests and hunter numbers in Minnesota remain average at best. Hunters and wildlife managers alike discuss the low numbers of ducks on many areas that have traditionally received significant duck use. Yet, while many mid-latitude and southern states are reaping the benefits of the high duck populations with record hunter success and record or near-record harvests, Minnesota waterfowl hunters have maintained only average success while expectations remain high. During this period, Minnesota's proportion of the Mississippi Flyway harvest has declined (Fig. 1).

We believe a combination of both long-term and short-term factors have led to this change. Long-term factors include degradation to much of Minnesota's wetland and waterfowl habitat. This includes not only wetland loss, especially of smaller basins, but also connection of remaining wetlands through ditches and waterways that has changed the ecology of these basins. Fish populations, vegetation, and other factors have changed, thus reducing the quality of many of these habitats for waterfowl. Short-term factors include recent weather patterns. The 1990s were the wettest decade of the twentieth century for much of Minnesota, and the resulting high water levels have reduced quality and increased connectivity of remaining basins. Duck migration chronology and distribution may have been influenced by mild fall weather patterns and excellent habitat conditions to the west of Minnesota, which has changed the distribution of the duck breeding populations. Many of these factors are beyond the control of wildlife managers; yet improvement of waterfowl migration habitat and security could improve duck use in Minnesota. These changes, combined with additional public information, could help improve hunter satisfaction in Minnesota.

Wildlife agencies and Conservation groups in Minnesota have a long history of habitat protection and management, with Wildlife Management Areas (state), National Wildlife Refuges and Waterfowl Production Areas (federal), and other areas that are the envy of many states in the country. Yet, while there are notable exceptions, much of the waterfowl habitat work in Minnesota in the last half century has focused on duck production habitat. Migration areas typically were managed secondarily to production areas - thus many of the key migration areas, while



protected from drainage, have experienced a degradation in quality as higher water levels, faster runoff of surface water, greater fluctuation in water levels, more stable and different fish populations, and connectivity of water bodies have increased.

This action plan was developed by the Minnesota Department of Natural Resources (DNR) Division of Wildlife in cooperation with representatives from the other major organizations actively involved with waterfowl management in Minnesota: the U.S. Fish and Wildlife Service, Minnesota Waterfowl Association, and Ducks Unlimited. The group settled on two objectives:

Objective 1. Achieve the proportion of Mississippi Flyway duck harvest in Minnesota that occurred during 1970-79 (16%), and maintain distribution of harvest of key species within the state's primary ecological zones.

Objective 2. Assess and improve Minnesota waterfowl hunter satisfaction as measured by hunter surveys.

We chose the 1970-79 period because these are the base years used to calculate the North American Waterfowl Management Plan Population Objectives

We begin the document with a review of waterfowl and wetland status and programs, providing the foundation for the action portion of the plan.

Resource Assessment - the current status of duck populations, harvest, and habitat in Minnesota

Duck Population Status: Continental breeding duck populations were near record levels in 1999 (Fig. 2) and a record fall flight was predicted. Much of this increase had occurred since water conditions improved on the prairies in 1993 and 1994. The wet cycle that began in those years has been one of the longest on record, and duck numbers have reflected that long series of wet years.

In Minnesota, approximately 40% of the best duck breeding habitat in the state has been surveyed consistently each May since 1968. In this area, mallards comprise about 39% of the breeding ducks, blue-winged teal 32%, and other ducks 29%. Mallard breeding populations have increased from <100,000 in the late 1960s to 300,000+ in the 1990s (Fig. 3). Blue-winged teal indicate a different pattern, and while continentally they are at record levels, they have declined in Minnesota since 1994. Other ducks in Minnesota also peaked in 1994 and

have declined somewhat since then. The major other duck species include wood ducks (46.2% of the 1990-99 other duck average), northern shovelers (11.7%), ring-necked duck (10.6%), redheads (7.6%), gadwall (6.6%), and ruddy ducks (5.9%). All remaining species each comprise less than 5% of the other duck total.

Duck Harvest in Minnesota and Elsewhere: Duck harvest in the United States was near a record high in 1998. Hunters in the U.S. have become more efficient at harvesting ducks – 33% fewer duck stamps were sold in 1998 than in 1970, but duck harvest was essentially the same. Louisiana and California have been the top harvest states since Federal surveys began in 1961. Additional duck harvest has shifted to the south in the late-1990s, with Louisiana, California, Arkansas, and Texas the top harvest states. Minnesota has been the number 5 state in duck harvest during this later period, compared to number 3 or 4 in most previous years. While hunters in other areas are having unprecedented success, Minnesota's duck harvest since 1994 has been below the 1970s average (Fig 4).

Duck harvest in Minnesota tracks with hunter numbers (Fig. 4). Hunter numbers have varied with habitat conditions, hunting regulations, predicted fall flights, and other factors. The number of active adult hunters in Minnesota has been about 120,000 since 1994, less than the peak of 161,000 in 1971 (Fig. 4).

Total duck harvest from 1997-99 averaged 721,000, compared to 870,000 in the 1970s and 795,000 in the early to mid 1980s. Total duck harvest during 1997-99 was 17% less than the 1970s. This varied by species, with declines in harvest of 16, 43, 20 and 57% for mallards, blue-winged teal, ring-necked ducks, and lesser scaup, and an increase in harvest of 10% for wood ducks. While the prairie, transition (excluding metro Region VI), and forested areas each had duck harvest of about 270,000 in the 1970s, in 1997-99 harvest has been 107,200 less ducks in the forest, 6,400 less in the transition, and 28,000 less in the prairie areas (Fig. 5). Reported Metro harvest has declined about 6,300.

While different duck species show different patterns of harvest between the 1970s and late 1990s, the largest decline for most species has occurred in the forested area of Minnesota. Mallard harvest in 1997-99 compared to the 1970s has changed -6, 4, and -54% in the prairie, transition (including metro), and forested area of Minnesota. Ring-necked duck harvest increased 14% in the prairie portion of Minnesota, while declining 7 and 31% in the transition and forest, respectively. Wood duck harvest increased 24% and 12 % in the prairie and transition areas, and declined 10% in the forest, while lesser scaup declined 39, 54, and 66% in the prairie, transition, and forest, respectively.

Waterfowl Hunters and Role of Regulations: Results from the North American Duck Hunter Survey in 1996 indicated that responses from Minnesota hunters were generally similar to those in other states, although they were somewhat more conservative. Respondents indicated that a maximum bag of 5 or 6 ducks is acceptable -- any greater bag has little effect on hunter participation in Minnesota. Season Length is more important than bag limit throughout the U.S. Minnesota hunters prefer a weekend opening. Special regulations (zones and splits, etc.) do not have a major influence on hunter participation. Hunters put more value on traditional, social, and appreciative factors, but increased bag and success does increase participation.

Hunters would prefer simpler regulations, but current hunters are not willing to give up opportunity to have simpler regulations.

Hunter activity is also influenced by many factors beyond managers control.

Waterfowl Banding Program: A cooperative Summer and pre-season waterfowl banding program monitors

harvest chronology, distribution, and rates on local ducks (mallard, wood duck, ring-necked duck, canvasback, and goldeneye) and migrants in north central, west central and northwestern portions of the state. The ability to capture locally produced ducks has declined considerably the last three years (1997-99), particularly in north central portions of the state. Extremely high water levels during the decade of the 1990s has likely contributed to deteriorating habitat and poor recruitment.

Harvest rates of locally-produced birds have been lower in the late-1980s and 1990s than in previous decades (for example, Fig. 6). High direct recovery rates in local areas often point to a need for additional security areas.

Over 900 direct mallard band recoveries for the years 1996-99 were examined to assess the extent of westerly “transmigration”. A total of 37 (4.1%) direct recoveries were reported in Manitoba (11), Ontario (6), North Dakota (15), and South Dakota (5). Minnesota had 36% (328) of the recoveries, states to the east 10% (91), and states to the south 49% (447). The distribution of recoveries to the north and west was within the range that occurs annually.

Data from mallards banded outside of Minnesota and shot by hunters in the state suggests that derivation of the mallard harvest in Minnesota (1990-96) has changed when compared to that reported from 1963-67. Contributions of mallards from Alberta, Saskatchewan, and South Dakota have declined, while Manitoba and North Dakota now contribute about 64% of the mallards harvested from these five areas, a 72% increase over the period of the 1960s.

Waterfowl Refuges: Refuges protect production, migration, and wintering habitats; provide security, feeding, and resting areas; maintain traditions of bird use; distribute birds, hunters, and harvest; and, support limited forms of public use compatible with the primary purpose of the refuge. There is not much written on recommended size and distribution. Early work on mallards in Illinois recommended a refuge of at least 1,000 acres in areas with potential boundary disturbance, to as small as 30 acres in remote areas. A lot of variability can be expected among different species but in good continuous habitats one refuge per 50 miles (includes the 25 mile bird radius from adjacent refuges) has been suggested for mallard. In areas with badly fragmented habitat and poor food the recommended distance increased to one refuge per 200-500 miles. In Minnesota, open water provides migrating waterfowl substantial security by creating a mosaic of no-hunting areas within migration corridors.

An inventory of all refuge types in 1985 documented 116 refuges totaling slightly over one million acres or 2% of the state. Because type and ownership take on many forms, management intensity can vary considerably. Fee title areas owned by governments and some in the private sector are often actively managed with water level manipulation and farm programs. Others such as statutory, open-water, or feeding and resting areas are often passively managed.

A small system of refuges was developed in north-central Minnesota during the mid 1970's to augment existing refuges for ring-necked ducks. Access to remote bog lakes that were providing security rapidly increased at that time with the use of ATV's, four wheel drive vehicles, and in some cases float planes. Increased hunting pressure drove many birds out of the area. Four



additional refuges were established in high harvest areas with the cooperation of local hunters and Leech Lake reservation officials. The new refuges complemented nine existing security areas and strengthened traditional migratory use by ring-necks and other waterfowl. Ring-necked ducks now remain in large numbers throughout most of October in north central Minnesota. Mid- October surveys frequently tally around 500,000 ring-necked ducks on major security areas.

Migratory Waterfowl Feeding and Resting Areas: Migratory Waterfowl Feeding and Resting Areas (MWFRA) were first authorized by the state legislature in 1969 to protect waterfowl from disturbance on selected waters of the state. Motors are prohibited on MWFRA during the waterfowl season, except electric motors of less than 30 pounds thrust are allowed on some areas. MWFRA are nominated by a petition process (at least 10 local, resident, licensed hunters must sign), and approved or denied by the department after public input is received.

There are currently 31 MWFRA designated in 23 counties (Fig. 7). Of these, the use of electric motors is allowed on 12 lakes. Until 1987, statute limited the number of MWFRA to 13. Also in that year, electric motors were first allowed unless prohibited by the DNR. Since then, the number of MWFRA has increased. In addition, the use of electric motors have proven to be controversial, and several lakes have had contentious public debates to determine whether the motors should be used.

Since establishment of MWFRA is initiated by a petition process, the selection of areas has been based on local interest rather than biological need. The Division has generally not made a pro-active effort to identify and establish specific MWFRA.

Precipitation Patterns: The decade of the 1990s was the wettest decade of the 20th century for many Minnesota communities. Following the drought of 1987-1990, water levels recovered dramatically. For the period 1991-99, many regions of the state exceeded historical averages by more than 30 inches and some areas by 40 inches (equivalent to two additional years of average annual precipitation). Many high-water outflow lakes or lakes without outlets have had water levels increase four to eight feet, resulting in flooding of extensive high quality habitat for migratory birds and stimulating immigration of rough fish such as fathead minnows. Duck recruitment has likely been negatively affected by the excessive high water in some areas of the state, especially in north central Minnesota. In addition, migrational use may be less as ducks spend less time on traditional stopover areas due to reduced food resources.

At the same time, water conditions in prairie areas to the west of Minnesota improved as a result of the wet weather during the last decade. These prairie wetlands provide abundant and very attractive food resources and relatively low disturbance for migrating waterfowl and may be attracting and holding ducks to the west that may normally migrate through Minnesota under drier conditions.

Waterfowl Habitat Programs and Status: The following is a discussion of some of the more important migration habitats and their status.

Shallow Lakes. Shallow lakes are defined as semipermanent or permanent water basins greater than 50 acres in size and dominated by water depths less than 2 meters. Traditionally, these lakes received extensive



use in fall by migrating waterfowl (and also hunters) due to an abundance of submerged vegetation and other foods of importance to waterfowl in these productive lakes. Although a number of these lakes are actively managed by the Division, observations by DNR managers and lake surveys indicate that many have deteriorated over time due to high and stable water levels, invasions of exotic species, dense fish populations, shoreline development, recreational use, and other factors.

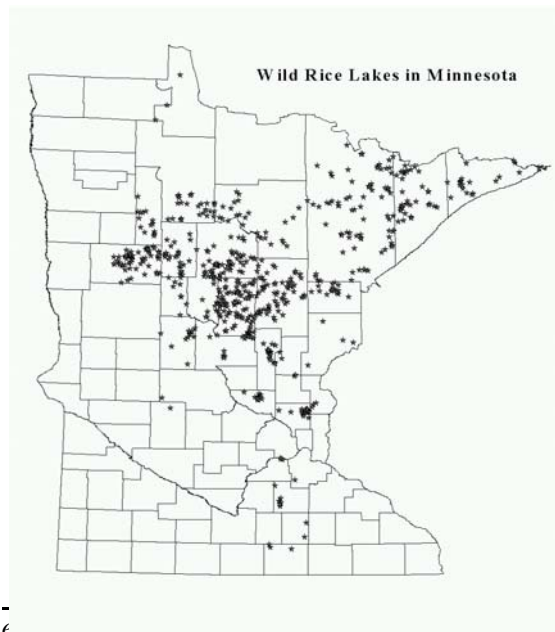
There are an estimated 5,000 shallow lakes in the state, relatively evenly divided between forest and agricultural areas with the greatest density occurring within the transition zone. Total acreage is estimated at about 4 million acres. There is generally a lack of current lake survey information for these basins, but observations and reports from wildlife managers and hunters indicate relatively poor food availability in many basins of historical importance to waterfowl.

Large, shallow lakes have traditionally been the focus of interest from both waterfowl hunters and managers. Many conservation organizations (such as MWA chapters) and past management efforts (such as establishment of major state wildlife management areas or national wildlife refuges) have developed with these lakes as a focus. An aggressive program of shallow lake surveys was initiated in the 1960s, but since then survey efforts have been sporadic and limited. Most shallow lakes do not have current surveys and many have never been surveyed.

Based on an informal survey of DNR wildlife managers, it is estimated that active management occurs on about 250 of these lakes each year. Management includes water level manipulation, fish removal, installation of water control or fish barrier structures, nesting cover establishment, and shoreline protection. The DNR has authority to designate lakes for wildlife management purposes. Designation allows manipulation of water levels without obtaining easements from all riparian landowners, and control of motorized watercraft. Thirty-six lakes totaling 51,000 acres have been designated since 1970 (Fig. 8), but none since 1992. The failure to designate additional lakes in recent years is due to Division of Wildlife staffing reductions, lack of baseline inventory information, and questions related to legal authority and public support.

Wild Rice. Wild rice stands are very attractive to migrating waterfowl, and many rice areas are traditional waterfowl staging and hunting areas. Wild rice is sensitive to varying water levels, and abundance from year-to-year is highly variable depending on water conditions. Although many of the larger wild rice beds are protected and actively managed, there is a perception that rice abundance and distribution has generally declined over time, especially many of the smaller stands along the margins of lakes and streams.

A recent DNR assessment found that there are 616 lakes in 31 counties that contain significant wild rice (Fig. 9). A total of 60,785 acres of wild rice (out of 1.5 million basin acres) was found on these lakes. More than half of the acreage was found in the 4 counties of Aitkin, Itasca, Cass, and St. Louis. There are no similar historical summaries of wild rice distribution in the state, so there is no good way to assess whether the extent of rice beds in the state has changed. A 1966 inventory estimated 15-30,000 acres of wild rice annually in 150 large stands (plus an additional several hundred smaller stands). Observations indicate that production on many traditional wild rice areas, especially those without active water level management, has been poor in recent



years. Although other factors may have an effect, the number of wild rice harvesting licenses purchased annually may provide an indication of rice abundance. The number of licenses sold has generally decreased since 1957 when the licenses were first required, from an average of 10,300/year in the 1960s, to 2,000/year in the 1990s.

Funds from sale of the \$12.50 wild rice licenses are appropriated to the DNR for wild rice management. These funds (approximately \$20,000 per year) have been used to manage water levels on wild rice lakes, to improve or maintain outlets, and for assessment. In addition, rice stands on state wildlife management areas and other lakes where the Division has management authority are intensively managed by controlling water levels. Tribal management of historically important wild rice lakes has become more significant in recent years, and has included both stand restoration and annual water level management.

Public Wildlife Lands. Minnesota has long-standing state and federal wetland acquisition programs that have protected extensive habitats, primarily in western and southern portions of the state. The state "Save the Wetlands" program was initiated in 1951, and has protected more than 1.1 million acres in 1,300 Wildlife Management Areas (WMAs). Approximately 50% of WMA lands are wetlands.

The federal small wetlands program administered by the U. S. Fish and Wildlife Service (USFWS) protects lands through acquisition and management as Waterfowl Production Areas (WPAs), and through private wetland and grassland easements. There are more than 800 WPAs in the state consisting of 172,000 acres (35% wetland). USFWS easements total 64,000 acres in the state.

The USFWS also administers 12 National Wildlife Refuges (210,000 acres) in Minnesota. These refuges represent some of the most critical and extensive waterfowl migration and production complexes in the state, and most are managed intensively for waterfowl.

Together with a large acreage of public forest lands in northern Minnesota, state and federal wildlife lands provide opportunity for extensive management of both waterfowl production and migration habitats. With the exception of some National Wildlife Refuges and larger WMAs, the focus on most of wildlife lands in the state has been protection and management of small wetlands and wetland/grassland complexes. Most are open to waterfowl hunting, although waterfowl refuges have been established on some portions of WMAs, on extensive areas of NWRs, and on selected WPAs in portions of west-central Minnesota. Fish rearing is generally prohibited, as are other uses that are incompatible with waterfowl and wildlife and related recreation. Most acreage (approximately 80%) is found in DNR regions 1 and 4. Even so, these state and federal wildlife lands account for only 2% of the total land base in these regions.

Wetland Quantity and Diversity. The overall abundance of wetlands in Minnesota has declined over time, forcing migrating waterfowl (and waterfowl hunters) to concentrate in fewer areas and increasing the susceptibility of birds to disturbance and habitat degradation on larger basins. Many smaller basins have been lost that likely provided security during times of heavy hunting pressure. Also, most losses have occurred to shallow, seasonal wetlands, creating a lack of shallow productive water. Conditions in individual basins change dramatically from year to year based on water regimes and weather patterns. A more diverse wetland resource could help to buffer the effects of these varying conditions.

Minnesota has lost more than 52% of its original wetlands. Most losses have occurred in agricultural areas of the state. Forty-five counties have lost 90% or more of their pre-settlement wetlands. Based on an evaluation of National Wetlands Inventory data, there are an estimated 3.3 million acres of type 1-5 wetlands in the state: Type 1: 9%; Type 2: 30%; Type 3: 51%; Type 4: 3%; Type 5: 7% .

While wetland losses have slowed in recent years due to public education, improved wetland regulation, and aggressive efforts to restore drained wetlands, losses continue. Quantitative information does not

exist for current rates of loss, but observations indicate that most losses are now directed towards seasonally flooded wetlands that are not protected by most regulatory programs. These seasonal wetlands are very productive, provide unique habitats and food resources not available from other wetland types, and can provide waterfowl with valuable shallow water feeding habitat. This is important in wet years when more permanent wetlands experience high water and associated problems such as increased over-winter fish survival, decreased submerged and emergent aquatic plant growth, and high rates of sedimentation, and runoff.

Wetland losses in Minnesota have exceeded those in other prairie pothole states. A 1980 analysis of prairie pothole region wetlands and losses found Minnesota had lost 5.6 million acres of wetlands, compared to 900,000 acres in South Dakota and 2.4 million acres in North Dakota. This analysis found that while Minnesota's wetland acreage exceeded that of both of these states in pre-settlement times, by 1980 Minnesota wetland acreage was less than either of them.

There are a number of federal and state programs available to restore drained or degraded wetlands. Most of these programs rely on landowner interest, and there are few efforts to manage restoration programs to provide specific types of wetlands that would be beneficial to waterfowl. In addition, it is likely that restoration efforts have not been keeping pace with wetland losses.

Conflicting Wetland Uses: A number of wetland uses may reduce the attractiveness of these areas to migrating waterfowl. Below is a brief description of some of the more widespread impacts to these areas.

Shoreline Development. As shoreline development increases adjacent to Minnesota's lakes and wetlands, potential waterfowl use of the basins may be influenced. Recreational use, impacts to water quality, and destruction of aquatic vegetation have increased markedly. Unfortunately, the most recent statewide measure of the extent of shoreline development was in 1982. From 1967 to 1982, the number of homes on lakes larger than 145 acres in size increased 74%. More recent data from Itasca County indicate that growth has continued, with a 31% increase from 1982 to 1998.

Observations indicate that much recent development has focused on shallower lakes that are less desirable from a typical fishing/development standpoint, but generally more valuable for waterfowl and other wildlife, or on shallower, more remote portions of lakes that already have significant development in other areas. Although 34.5% of shoreline in the state is publicly owned, there is concern that continued intensive development of remaining private shorelines will reduce waterfowl use of lakes throughout the state.

Fall Fishing. Elevated angler use of many lakes in October and November is evident and may increase disturbance of birds. Widespread fall fishing is a relatively recent phenomenon in the state, thus limited data exist on the extent of this activity. Creel survey information for Leech Lake in north-central Minnesota indicates that angling use during the month of September totaled 84,000 hours in 1967, compared to an average of 127,000 hours in 1991-92 and 237,000 hours in 1998-99. Similar data do not exist for the month of October, or for most other lakes in the state. Further, much of this activity is highly variable, weather dependent, and difficult to assess.

Fish and Aquaculture. Demand for minnows and game fish has increased over the past 30 years and currently more than 2,000 basins are used for fish rearing. Demands have increased recently due to legislatively-mandated walleye stocking and strong Minnesota and national markets for minnows. This demand has also increased competition between public and private fish growers for use of remaining wetland basins. In 1997, more than 1.5 million pounds of wild fathead minnows were harvested and sold by 240 licensed dealers in the state, and 16 private hatcheries raised and sold an additional 350,000

pounds of minnows. Recently, the DNR committed to increasing annual walleye fingerling stocking from 84,000 pounds to 125,000 pounds. DNR Fisheries uses between 200 and 400 basins each year for raising game fish, primarily walleyes.

Research has shown that high populations of fathead minnows suppress invertebrate levels, increase turbidity, and sometimes limit submerged aquatic plants. Disturbance to waterfowl may also result from trapping and other activities associated with minnow harvest. Ecological implications of walleye rearing in shallow lakes and wetlands are unclear, but are currently under investigation. White suckers are another popular bait fish raised in shallow lakes and wetlands, and limited observations indicate that their influences on wetland ecology may surpass those of fathead minnows.

Competition among aquaculturists is intense in many areas of the state. In some cases, waterfowl hunters are competing for the same basins. Guidelines have been established limiting the number of WMAs where minnow harvest may occur to no more than 3 per wildlife work area, and there are currently negotiations underway between DNR, wildlife conservation organizations, and the aquaculture industry to identify and resolve related issues and conflicts.

Access Development. Minnesota has an aggressive program of water access development. The number of lakes statewide with DNR accesses has increased dramatically in the last decade, and there are currently more than 3,000 public water access sites in the state, of which DNR manages slightly less than one-half. While this additional access provides additional recreational opportunities, including hunting, it also exposes waterfowl using these lakes to additional disturbance from hunters or from other recreation.

Wetland Connectivity. Wetland drainage has resulted in extensive wetland losses in Minnesota and has also increased connectivity between remaining wetland basins. Connections via agricultural and road ditches, drain tiles, culverts, and other structures allow exchange of organisms such as fish, minnows, exotic plants, invertebrates, and other species between basins. This has contributed to more widespread distribution of exotic plant species, fewer “fish-less” basins, and an overall deterioration of wetland quality in the state, especially when compounded by infrequent winter hypoxia and subsequent elimination of undesirable fish communities.

There are many challenges to Minnesota’s wetlands and waterfowl habitats. Minnesota has lost a large proportion of its wetlands, especially in the prairie and transition parts of the state; however, most of the wetland loss occurred prior to the Wetland Protection act and other rules and regulations to prohibit drainage. The more recent issue is related to wetland quality. Minnesota has lost many of the smaller wetlands, and the wetlands and lakes remaining are often degraded or disturbed by the many factors noted above. Addressing this next era of wetland change will require large-scale and dramatic solutions, and additional management will be required to mimic favorable conditions for waterfowl and many other wildlife that existed when there was more variety of wetlands remaining.

Meeting the Objectives

Goal: Manage Minnesota’s wetland and migratory waterfowl habitat base and undertake other measures to increase the proportion of the Mississippi Flyway duck hunter harvest in Minnesota to 1970-1979 levels, and to improve waterfowl hunter satisfaction.

The goal of this plan uses proportion of flyway harvest to account for variations in waterfowl populations, season lengths, bag limits, and changes in hunter numbers that occur throughout North America. The North American Waterfowl Management Plan population objectives were determined from 1970-79 averages, thus this is an appropriate period for development of a harvest distribution objective.

Implementation of strategies related to management of fall waterfowl foods, local duck recruitment, and fall waterfowl security should lead to increased numbers of ducks using Minnesota and staying longer in the state. While management can influence the ability to achieve this objective, changes in weather and climate, land use practices, and other factors will have a large effect on fall duck use in Minnesota.

Achieving this level of harvest will improve duck hunter satisfaction, but it is recognized that there are other measures that can also improve hunter satisfaction. Because some of these actions relate to information and regulation, they can be done relatively quickly.

This plan describes the problems keeping us from reaching the above goal and objectives, and offers conceptual strategies to address the problems over the next 10 years. The goal and objectives of this plan align with the DNR’s strategic plan “Directions 2000,” which is guiding DNR actions over the next 5 years. A companion document, “The Challenge to Restore Minnesota’s Wetland and Waterfowl Hunting Heritage,” describes specific actions that will occur in the next 2 years to begin addressing the problems. The Challenge Document will be updated every few years over the 10-year horizon of this plan to ensure that the most pressing action items are addressed.

Objective 1. Achieve the proportion of Mississippi Flyway duck harvest in Minnesota that occurred during 1970-79 (16%), and maintain distribution of harvest (%) of key species within the state’s ecological zones as follows:

Species	Prairie		Transition		Forest	
	Objective ^a	Current ^a	Objective	Current	Objective	Current
Mallard	32	36	38	47	30	16
Wood duck	27	31	50	51	23	19
Ring-necked duck	13	18	23	27	64	55
Blue-winged teal	41	41	41	49	18	11
Lesser scaup	22	30	28	30	50	40
Total ducks	31	33	37	43	32	24

^a- Objective = 1970-79 average, current = 1997-99 average.

Total harvest has been below the 16% objective, as Minnesota harvested 9.5% of the flyway duck harvest in 1997-99. Also, distribution objectives are not being met in Minnesota. All major species were below

the objective proportion of harvest in the forested portion of the state.

Problem 1.A Waterfowl migration habitats and food resources have deteriorated.

Strategy 1. Accelerate water level management, designation, and shoreline protection of shallow lakes and rice beds to increase waterfowl food resources and increase their attractiveness to migrating ducks.

Fluctuating water levels on shallow lakes (including designated lakes, wetlands on public lands, and other lakes with water level management authority) are necessary to maintain food and cover required by migrating waterfowl. Due to changes in watershed dynamics, many shallow lakes do not exhibit the water level variation needed to keep them productive, thus active water level management is necessary. There are a number of issues and questions that must be addressed prior to water level management, especially full or partial drawdowns. These include outlet control, riparian landowner rights and concerns, impacts to fish populations, downstream effects, access concerns, and others. It is desirable to conduct water level management in concert with survey and monitoring information regarding the condition of the basin and use by waterfowl, both pre- and post-management. Needs include outlet structure development and maintenance, staffing to undertake management and monitoring, and increased technical assistance to staff.

The wildlife lake designation process is time-consuming. A lack of current and historic lake survey information and limited staff to provide support and in-depth aquatic ecology expertise has hampered the designation process. There are also questions regarding the extent of water level management allowed by designation that need to be resolved by court actions. In some situations, options to designation that would allow water level management, such as riparian easements or agreements, may be more effective.

Use of shallow lakes by waterfowl may be impacted by increasing shoreline development, and the increased disturbance and impacts to vegetation and water quality that accompany development. Use of easement or acquisition programs to protect shorelines of priority waterfowl use areas would be a good long-term strategy to maintain waterfowl values. Waterfowl conservation organizations and groups like the Minnesota Land Trust have expressed interest in this type of work.

In some cases, waterfowl use of basins is compromised due to ditching, filling, or diversion of waters. For example, an illegal ditch might introduce fathead minnows into a formerly fish-less basin, impacting water quality and vegetation and invertebrate food production. Targeted enforcement and environmental protection on and near basins with high waterfowl values would be beneficial.

Strategy 2. Restore wetland complexes in the vicinity of fall staging areas to provide additional and more diverse migration habitat.

Restoration of smaller wetlands near shallow lakes will improve the value and use of the entire area by waterfowl by increasing local production of waterfowl, providing additional security during times of disturbance or heavy hunting pressure, and providing a broader diversity of food resources under varying water regimes. This work requires intensive outreach to private landowners. Cost share is available through various farm programs for much of this work, but additional funds will be needed for both staffing and project implementation.

Broader landscape initiatives across watersheds, Ecological Classification System Sub-Sections, or even counties are becoming more common, and provide a method for addressing basin improvements and protection. It is important to incorporate shallow lake and wetland issues and needs into these planning processes so that funding and habitat initiatives that are developed can address these resources. This landscape-level approach would include components necessary to address Problem B.1, increasing

Minnesota breeding duck populations.

Strategy 3. Eliminate undesirable fish populations in, and access to, wetlands and waterfowl staging areas to improve water quality, aquatic plant growth, and invertebrate food resources.

Waterfowl food production in many wetlands and shallow lakes is limited by populations of fish, for example, carp and fathead minnows. This problem has been especially severe in recent years as drainage ditches, tile systems, and high water levels have increased connectivity of wetland basins and lakes allowing fish movement and migration to many formerly fish-less basins, and reducing the likelihood of winter kill. Management to prevent fish from entering basins (barriers, tile breaks or ditch plugs, and other methods), and to reduce or eliminate fish from basins (chemical treatments, winter drawdowns, use of aeration systems, and other methods) is necessary on large numbers of basins. There is a need to clarify authority and responsibility for managing fish populations specifically for waterfowl habitat improvement.

Strategy 4. Work cooperatively with the U. S. Army Corps of Engineers (USACOE) and other agencies to modify reservoir and dam operating plans, and intensify and/or expand watershed and landscape initiatives to comprehensively improve wetland and shallow lake habitats.

The USACOE and other agencies control water levels and flows on many important waterfowl migration areas including the Minnesota River, upper and lower portions of the Mississippi River, and the Ottertail and Bois de Sioux river systems. Other agencies control important waters such as Lake of the Woods. By working with the USACOE and these other agencies to modify the extent and timing of water level fluctuations, and to identify opportunities to improve production of wild rice and other important fall waterfowl foods, waterfowl use may be enhanced at little or no cost to DNR.

Strategy 5. Establish and encourage moist soil management units, flooded agricultural crop fields, agricultural lure crops, and desirable residual crop management practices near staging habitats to provide intensively managed food resources for migrating waterfowl and other birds.

Many other states, including some northern states, manage areas intensively to attract and hold ducks in the fall. This includes moist soil management (manipulating water levels to provide flooded natural foods), and flooding corn and other grains in the fall. These types of practices have been tried to a limited extent on some WMAs in Minnesota, but they are expensive to construct, manage, and maintain due to the need to precisely manage water levels throughout the year and the difficulty in managing wet soils. However, moist soil and flooded crop sites can be very attractive to waterfowl, and for this reason these practices are very common in states to the south of Minnesota. Additional staff would be needed for broad implementation of this program.

Some species of waterfowl, notably mallards and geese, rely on waste grains and agricultural crop residues for food during fall migration. The availability of these foods can be variable in the state depending on cropping patterns, fall weather, extent of fall tillage, and other factors. Providing incentives for farmers to manage agricultural crops and residues near important duck staging areas would provide more stable and abundant food resources in these areas.

Problem 1.B Production of ducks from Minnesota is less than desired.

Strategy 1. Increase recruitment of locally-reared ducks to promote population stability or growth, and continue to contribute from 25% to 33% of annual Minnesota duck harvest.

Maintaining a sizable population of Minnesota-breeding ducks is the cornerstone to improving fall duck use. These birds are important measures of the health of the ecosystem, and provide a substantial portion (25-33%) of Minnesota's duck harvest. They are especially important early in the season, when most of the waterfowl hunters are in the field.

Information from the mallard model for Minnesota suggests that duck production is lower than necessary to maintain the population in many areas. Habitat management activities to increase duck production, e.g. wetland restoration, wetland management, and nesting cover establishment, have benefits for a wide-range of species and would improve water quality in downstream shallow lakes.

Problem 1.C Fall security is insufficient in some areas to attract and hold migrant ducks.

Strategy 1. Establish additional waterfowl refuges, Migratory Waterfowl Feeding and Resting Areas, and restricted boating areas to reduce disturbance and increase use by migrating waterfowl.

Refuges maintain key security areas for fall management of waterfowl. Minnesota has a large number of refuges and approximately 2% of the state remains closed to waterfowl hunting. However, in some areas hunting pressure is high and refuges are inadequate to provide necessary security for ducks. Providing adequate security to hold migrant ducks in an area should also provide adequate security for Minnesota-breeding ducks. A system of expanded refuges for ducks needs to be balanced with objectives to harvest more Minnesota-breeding Canada geese during the fall. Migratory Waterfowl Feeding and Resting Areas have been effective at providing additional security for waterfowl in some areas without eliminating waterfowl hunting. They also maintain areas of non-motorized hunting preferred by some hunters, although electric trolling motors are allowed on some larger areas. In some areas, open water provides potential refuge but high boating activity minimizes value to waterfowl. Voluntary no boating areas have been effective near LaCrosse, Wisconsin on the Mississippi River.

Strategy 2. Improve management of existing and planned fall security areas to provide additional security and food resources in close proximity to each other.

Active management of food resources (e.g. water level manipulations, upland food) may be important in and near refuges that have low duck use.

Strategy 3. Consider use of regulatory tools such as restricting hunter numbers on managed areas, split seasons, hunting hour restrictions, and regulation of hunting techniques to reduce disturbance of migrating and locally-produced waterfowl.

Increased security and quality hunting opportunities could be obtained by limiting hunter numbers on some managed areas, reducing disturbance by reducing hunter density. Hunter numbers are currently controlled on some managed areas in Minnesota, mostly in conjunction with Controlled Hunting Zones on goose management areas.

Duck numbers decline following the opening weekend, especially in southern Minnesota, as early migrants and local ducks depart and before the arrival of numbers of migrant ducks. A split season is an option to allow birds to build up prior to mid-October and provide some later hunting days. In years of

shorter duck seasons (e.g. 40 days opening on the Saturday nearest October 1), the policy is to split the duck season. Consideration of establishment of two zones would allow a split season in southern Minnesota, while maintaining a continuous season in northern Minnesota.

Under current federal guidelines that began in 1991, states may select from 3 options at 5-year intervals: 1) 3 zones with no splits, 2) split seasons (no more than 3 segments) with no zones, or, 3) two zones with the option for 2-way split seasons in one or both zones. Minnesota selected the split season (up to 3-segments) in 1991 and 1996, although it was only implemented from 1991 to 1993. Minnesota has selected the split season option for the 2001-2005 period.

Minnesota has effectively used the 4:00 P.M. closure to provide additional protection to Minnesota breeding ducks. A noon closure would be one method of providing additional security (an undisturbed feeding period) for ducks and may provide improved hunting opportunity. Afternoon closures improve the quality of the morning hunt and overall hunter success, but they are controversial among waterfowl hunters.

There are several regulations to limit techniques for hunting waterfowl (e.g. no baiting, live decoys, lead shot). State regulations on time of decoy and blind placement are related to providing equitable distribution to hunting sites rather than to provide security to birds. Preliminary studies indicate that, motoduck type decoys (with rapidly-rotating imitation wings) increase waterfowl hunter effectiveness at decoying and shooting ducks. A national prohibition on these type of decoys has not been broadly supported, but the DNR should consider the impact of these and other issues on waterfowl harvest and fair chase, and how they may influence waterfowl security.

Problem 1.D Information on quality and quantity of waterfowl migration and production habitat and food resources, and waterfowl security strategies is insufficient.

Strategy 1. Design, implement, and complete a comprehensive shallow lake inventory database, and coordinate with other lake databases.

Shallow lake surveys date back to the 1950s. These surveys contain a wealth of information that would be of value to assess management needs, determine changes in habitat quality over time, determine future survey priorities, assess changes in key fall waterfowl foods, and determine priorities for lake designation and other management activities. In addition, survey information, permit activity, water level data, dam information, and other data is available for a large number of basins. Integrating shallow lake surveys with this additional information is necessary to identify and prioritize management opportunities.

Strategy 2. Identify and assess historic and current waterfowl migration and staging habitats. Annually monitor the quantity and quality of food resources and fall waterfowl habitat use.

Documenting basins that have been historically important for fall use by migrating waterfowl is useful for identifying future management priorities. Information such as waterfowl use and hunter use and harvest is available for some basins from a variety of sources. In addition, publications and historical information from department files may provide valuable insights.

There is no systematic and comprehensive annual assessment of migration habitat. This includes wild rice abundance, food and cover conditions on major waterfowl refuges and stopovers, and field feeding conditions. Such a monitoring program could help identify trends and explain hunter success and fall bird use.

Strategy 3. Conduct additional research on fish-wetland interactions, rough fish management and

control options, and exotic species control methods.

Fish rearing or bait harvest activities by both DNR and the private aqua-culture industry potentially impact public lands and other lakes of value to migrating waterfowl by introducing fish that compete with waterfowl for food, and disturbing waterfowl due to netting and other activities. Although large numbers of basins are already being used for these purposes, priority basins (publicly owned, designated wildlife lakes, Migratory Waterfowl Feeding and Resting Areas, and basins with a history of waterfowl use in the fall) are generally protected from the impacts of fish rearing and bait harvest by law or practice. In some cases, introduction of predator fish may be beneficial to a basin by reducing levels of rough fish or minnows, but additional research is needed to determine the potential for use of fish as a management tool.

There are still a number of questions regarding the impact of fish on waterfowl foods and habitats. These include interactions between walleyes and other game fish and fathead minnows, and impacts of white suckers on wetland habitats.

Rough fish are currently degrading many historically important waterfowl use basins, and threaten most others. Many current fish removal and barrier techniques are controversial (such as Rotenone treatments) or ineffective or prohibitively expensive, and additional techniques are needed.

Exotic species such as narrowleaf cattail, purple loosestrife, and Eurasian watermilfoil eliminate food resources important for waterfowl. Control of these species is difficult and often very expensive, and new techniques are needed.

Strategy 4. Conduct additional research on refuge requirements, fall duck movements, and duck habitat use and hunter success relative to food resources and security.

There is little available information on what makes a most effective refuge, especially for smaller refuges. Additional research on refuge requirements would improve refuge development.

There is uncertainty about changes in fall migrant duck use patterns in Minnesota. Additional information on migration chronology, distribution, harvest, food resources, and other factors that influence fall use may lead to improved management actions.

Strategy 5. Document effects of surface water use activities on disturbance of waterfowl and habitat use.

There have been increases in fall use of lakes and wetlands for fishing and aqua-culture. These disturbance factors could contribute to declining fall duck use, but additional information is needed to consider possible management actions.

Objective 2. Assess and improve Minnesota waterfowl hunter satisfaction as measured by hunter surveys.

We currently are conducting a waterfowl hunter survey to measure hunter satisfaction. This will provide a baseline value of hunter satisfaction. The objective is to increase hunter satisfaction relative to this baseline value. The hunter satisfaction survey will provide insights into additional problems, but we identified some likely causes of hunter dissatisfaction.

Problem 2.A Hunters have insufficient information about duck population status and migrations, hunting opportunities, and regulations.

Strategy 1. Inform duck hunters of general duck movements, numbers, habitat conditions, and hunter success and create realistic hunter expectations through news releases, pre-season reports, and other public information tools.

Fall surveys could be used to provide better information on concentrations of birds and chronology of migration. There is a need to reexamine current distribution and importance of survey sites, provide long-term averages of waterfowl numbers for comparison, and present the data in a coherent fashion to maintain the historical record.

The Division of Wildlife currently provides general information on fall habitat conditions, duck numbers and success. More detailed information would increase satisfaction of some hunters. The Division policy has been to not provide detailed information on waterfowl numbers on areas that can be hunted, in order to not influence waterfowl hunter distribution; however, beginning in fall 2000, numbers for some areas and combined areas were provided on the DNR website.

We currently provide general information on the DNR web site and through e-mail to DNR staff and reporters. Improvement of that information and distribution should be coordinated with improved fall migration surveys.

The Division has prepared many Fact Sheets on various waterfowl issues in recent years; however, these have either mostly been distributed internally or had limited external distribution. Fact sheets can be updated and distributed on the web site and through other forums.

Strategy 2. Hold local waterfowl roundtables, workshops, forums, or discussion groups to discuss waterfowl management and regulations.

Current public input comes mostly from annual public input meetings and letters, phone calls, and e-mails from hunters and others with comments on issues. Waterfowl roundtables, workshops, forums, or discussion groups may be useful tools to reach more waterfowl hunters. The Minnesota Waterfowl Symposium, coordinated by the Minnesota Waterfowl Association, has been a successful method to exchange information with approximately 100 participants per year during the last 3 years. If we decide to proceed with workshops, roundtables, or similar forums, we will need to assign a lead individual and provide adequate time to chair the sessions. Fisheries has held several roundtables, and we can learn from their experiences.

Problem 2.B Frustration with hunting regulations may create dissatisfaction among waterfowl hunters.

Strategy 1. Evaluate current waterfowl hunting regulations, including Youth Waterfowl Hunt, September Canada goose seasons, noon opening time, position on framework opening dates, and

others, to determine whether regulations could be changed and the dual objectives of increased proportion of flyway duck harvest and increased hunter satisfaction can be maintained.

Minnesota has selected the one-day Youth Waterfowl Hunt season offered by the U.S. Fish and Wildlife Service since 1996. In 2000, states were allowed to have a 2-day Youth hunt, but Minnesota selected only one day. This hunt has proven controversial with some hunters and outdoors writers because of perceptions that it is affecting duck distribution and availability for the opening weekend of the regular duck season. The Division of Wildlife has agreed to address this issue in a statewide survey of waterfowl hunters and consider changes to this hunt based on results of that survey.

Current U.S. Fish and Wildlife Service duck season frameworks do not allow states to open their duck seasons earlier than the Saturday nearest October 1. With the current longer duck seasons, there has been interest from some other states and hunters in opening the duck season earlier. Iowa conducted an extensive experiment in the 1970s and is allowed to offer 5 days of their regular duck season in mid-September to compensate for lack of a September teal season. Iowa is considered a duck production state, the same as Minnesota, and thus not allowed an early teal season. The penalty for taking the 5-day early segment is that Iowa cannot open the remainder of their duck season until after October 10. Minnesota did not pursue this option because we believed that it would put additional pressure on Minnesota-breeding ducks, and the cost in potential harvest in delaying the remainder of the season until after October 10 was too great, especially for hunters in northern Minnesota. Earlier opening dates for duck seasons would also put additional hunting pressure on Minnesota-breeding ducks.

There has been some interest in beginning shooting hours earlier on opening day (e.g. 9 a.m.) or dropping the opening day shooting hour restrictions. Minnesota and Wisconsin are the only two states that currently maintain the noon shooting hours on the opening day of duck season. Changes in these and other regulations would need to be considered relative to information from the waterfowl hunter survey and meeting other management objectives.

Strategy 2. Simplify duck hunting regulations.

An often heard complaint is that duck hunting regulations are too complex. Much of the complexity in regulations is designed to provide additional hunting opportunity. Responses to the North American Duck Hunter Survey in 1996 indicated that Minnesota waterfowl hunters, like those in the rest of the United States, were not willing to give up hunting opportunity to have simpler hunting regulations. While simpler regulations (with less opportunity) may not increase satisfaction of the majority of duck hunters; they may help recruit new hunters by making it easier to begin waterfowl hunting.

Problem 2.C There are insufficient waterfowl hunting opportunities.

Strategy 1. Provide more public hunting areas and improved access and use facilities.

Acquire new Wildlife Management Areas and increase public access to waterfowl hunting lakes. Support U.S. Fish and Wildlife Service in acquisition of Waterfowl Production Areas. Hunter satisfaction may be greater if there were better hunter use facilities on WMA's. For example, there have been upgrades to goose blinds on Lac qui Parle WMA in recent years.

Strategy 2. Provide incentives or other programs to encourage farmers/landowners to allow waterfowl hunting on private property.

Consider a program to increase public hunting opportunity on private land in Minnesota.

Problem 2.D Information on hunter expectations and satisfaction is insufficient.

Strategy 1. Conduct hunter surveys to understand preferences and expectations, and monitor hunter satisfaction.

Minnesota has more waterfowl hunters than any other state, but we do not have any quantitative measures of attitudes, preferences, or satisfaction. With the advent of the Electronic Licensing System, we have access to hunter names and addresses needed to conduct a waterfowl hunter survey.

Minnesota DNR, through the Minnesota Fish and Wildlife Cooperative Research Unit at the University of Minnesota, will be conducting a waterfowl hunter survey in spring 2001 to measure preferences and satisfaction of the waterfowl hunting public. This survey will provide baseline information on hunter satisfaction, thus allowing comparison of changes in satisfaction over time.

Strategy 2. Use conservation groups and local clubs as sounding boards to determine expectations and sources of dissatisfaction.

The DNR is usually represented at annual meetings of the Minnesota Waterfowl Association, Ducks Unlimited, and other conservation groups. This forum allows a productive exchange of ideas between these organizations and the DNR. Better representation by DNR staff at local meetings would allow improved exchange of ideas.

Strategy 3. Increase use of field surveys and contacts of Division staff with hunters.

Historically, many Division of Wildlife staff collected information on hunter success and bag checks on opening weekend and sometimes later in the season. In recent years, this data is only collected by major wildlife units and a few wildlife managers. Most information on hunter success is obtained from hunter surveys; however, bag check information allows managers to get local data and talk to local hunters. This information could be compiled and included in fall migration internal reports and also would provide a quantitative measure of hunter success for the more general waterfowl migration reports.

Strategy 4. Provide information to hunters regarding this planning process and strategies, and determine their level of agreement.

In order to build support for the Action Plan and involve clientele, communications on the action plan and actions and results should be developed.

General Strategy: It is proposed that discrete geographic “Wetland Heritage Focus Areas” be identified and used as the basis for implementing components of this plan. Focus Areas could be watersheds or ecological landscapes where the Division and other partners (conservation organizations, local clubs, other agencies, individuals) would cooperatively work to identify priorities and work together to implement plan strategies. This would include evaluation of existing and needed security areas, identification and prioritization of habitat improvement opportunities, and development of funding proposals to accomplish necessary work.

Staffing and Funding: This is an ambitious plan. Some strategies can be addressed by existing division staff and funding, or by current programs of conservation organizations. However, full implementation of these strategies statewide will require additional resources. The focus of this plan is on DNR Division of Wildlife Staff, yet the plan goals will not be achieved without cooperation with our many partners, including the U.S. Fish and Wildlife Service, Ducks Unlimited, Minnesota Waterfowl Association, other Conservation organizations, Tribal Governments, and other entities. However, much of the work will

require the local knowledge, contacts, and experience of area wildlife staff. Thus, it is essential to provide staffing to area offices in priority Focus Areas to free-up existing area staff time to devote time to this effort. In addition, it is recommended that Focus Areas have wetland specialists assigned to them to support work by Focus Area partners.

Challenge Document: See the companion document, “The Challenge to Restore Minnesota’s Wetland and Waterfowl Hunting Heritage,” for specific actions that will occur in the next 2 years to begin addressing the problems. The Challenge Document will be updated every few years over the 10-year horizon of this plan to ensure that the most pressing action items are addressed.

September 26, 2001

Appendix 1. *The Fall Duck Use Working Group*

Dave Schad	Co-chair, DNR, Wetland Wildlife Program Leader (current: Region 3 Manager)
Jeff Lawrence	Co-chair, DNR, Waterfowl Specialist
Bruce Hawkinson	DNR, Ecological Services, Planner
Tim Bremicker	DNR, Wildlife Division Director
Ed Boggess	DNR, Resources Manager
Tom Isley	DNR, Operations Manager
Mike DonCarlos	DNR Research Manager
Ray Norrgard	DNR, Wildlife Lake Specialist (current: Wetland Wildlife Program Leader)
Todd Eberhardt	DNR, Wetland Wildlife Populations and Research Group Leader
Paul Telander	DNR, Wildlife Area Manager, Thief Lake WMA
Jim Schneeweis	DNR, Area Wildlife Manger, Grand Rapids
Mike Mauer	DNR, Area Wildlife Manager, St. Cloud
Ken Varland	DNR, Regional Wildlife Manager, Region 4
Don Schultz	DNR, Area Wildlife Manager, Fergus Falls
Jon Cole	DNR, Wildlife Area Manager, Whitewater WMA
Jeanine Vorland	DNR, Area Wildlife Manager, Owatonna
Roger Johnson	DNR, Regional Wildlife Manager, Region 6
Steve Maxson	DNR, Goose Specialist
Bill Spence	DNR, Enforcement
Jim Konrad	DNR, Enforcement
Tom Dickson	DNR, Division Information Officer
Bob Jessen	DNR, Retired, former Waterfowl Specialist
Tom Landwehr	Ducks Unlimited, Minnesota Conservation Director
Mike McGinty	Minnesota Waterfowl Association, Executive Director
Harvey Nelson	Minnesota Waterfowl Association, Special Consultant
Steve Wilds	U.S. Fish and Wildlife Service, Region 3 Migratory Bird Coordinator
Sean Kelly	U.S. Fish and Wildlife Service, Asst. Region 3 Migratory Bird Coordinator
