MANAGEMENT PLAN FOR MIDCONTINENT
GREATER WHITE-FRONTED GEESE

Prepared for the:

Central Flyway Council
Mississippi Flyway Council
Pacific Flyway Council
Canadian Wildlife Service
United States Fish and Wildlife Service

July 2005
Revised 2010
FOREWORD

This plan was prepared by members of the White-fronted Goose Subcommittee of the Central Flyway Waterfowl Technical Committee, the Arctic Goose Committee of the Mississippi Flyway Technical Section, and the Alaska Department of Fish and Game, with assistance from representatives of the Canadian Wildlife Service and U.S. Fish and Wildlife Service (see Participants section).

Mid-continent greater white-fronted geese migrate through many jurisdictions in three nations, and are of great interest to many individuals and organizations. The Central, Mississippi, and Pacific Flyway Councils solicit the cooperation of all who are responsible for and interested in the management of the international resource these geese comprise. Inquiries or comments may be addressed to:

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INTRODUCTION

The purpose of this plan is to provide guidelines for management decisions affecting the Mid-continent Population of Greater White-fronted Geese (*Anser albifrons frontalis*) (MCWFG). These geese nest in arctic areas from Hudson Bay west to the interior (non-coastal) and North Slope regions of Alaska. Migration stopovers include areas in prairie Canada, the eastern Central Flyway, and the western Mississippi Flyway. The primary wintering areas are in the gulf coast marshes and prairies, the Mississippi River alluvial valley, and in Mexico (Fig. 1). Major recreational harvest areas include Louisiana and Texas, where over 50 percent of the harvest occurs, and Saskatchewan, Alberta and Arkansas. Additionally, subsistence harvest occurs in Alaska and the Northwest Territories.

This plan is a revision of the update of a plan that was completed in 2005. The original plan of 1998 plan replaced two plans written for western and eastern segments of MCWFG, adopted by the Central and Mississippi Flyway Councils in March 1982. In those plans, the basis for population delineation was legband recovery data for birds marked during the early and mid-1960s and population status was assessed from winter and spring surveys. A more extensive banding and marking program was conducted on breeding areas from 1987 through 1995. Information from this program indicated that mixing of birds from eastern and western breeding areas during the non-breeding period was common and that eastern and western segments were not sufficiently distinct to warrant separate management. Also, previous surveys (especially the spring survey) failed to produce reliable information for population assessment and a new fall survey was implemented in 1992. Although this plan treats MCWFG as a single population, special management options for identifiable and manageable segments or subunits within the population could be considered should they be recognized with new information.

GOAL

To maintain the MCWFG population at a level that will optimize harvest opportunities and other public benefits consistent with the welfare of the population, international treaties and habitat constraints.

OBJECTIVES

The number and distribution (spatial and temporal) of birds affects harvest opportunities and other public uses associated with the MCWFG population. Accordingly, objectives are presented under separate guidelines for population, distribution, and use.

CHANGES FROM THE 2005 PLAN

Only a few minor changes were incorporated into the 2011 update from 2005. The first being the addition of two days to the allowable frameworks to simplify seasons in states that wish to split their white-fronted goose season and run concurrent with other established waterfowl seasons. The second addition was an increased emphasis to move towards a breeding ground survey. The
third change was the addition of using band recovery rates as a tool to monitor management impacts to the population.
APPROXIMATE RANGES OF MID-CONTINENT WHITE-FRONTED GEESE IN NORTH AMERICA
POPULATION GUIDELINES

Objective A: The population objective is 650,000 MCWFG. Assessment of population status in relation to the objective will be based on a 3-year running average of indices from the fall survey conducted annually in Prairie Canada.

Rationale: The 18-year average of 749,678, as measured during the fall survey, exceeds the population objective of 650,000, and annual counts have exceeded that level during 12 of 18 years that the survey has been conducted. However, surveys since the last update indicate a population increase through most of the period with a decline in the fall of 2009. The most recent survey of 583,200 (fall 2009) is 22% below the 1992-2009 average. Currently, the 3-year average as of fall 2009 of 681,500 is near the population objective.

Use of 3-year running averages rather than single-year indices to measure status in relation to the objective is considered appropriate to reduce the effects of annual variation in indices and survey conditions.

Strategy A-1: Monitor the population via the fall survey (late September) in Saskatchewan and Alberta.

Rationale: Surveys of MCWFG are difficult or impossible except when the birds are relatively concentrated during fall migration in southwestern Saskatchewan and southeastern Alberta. Later during fall, winter, and spring, the population is more dispersed and intermingled with other goose species.

Responsibilities: The fall survey will be coordinated by the Canadian Wildlife Service, with assistance from provincial wildlife agencies, the U.S. Fish and Wildlife Service and the Central and Mississippi Flyway Councils. The U.S. Fish and Wildlife Service will provide 2 aircraft and pilots, and the Central and Mississippi Flyway Councils will provide 1 observer each, including travel expenses. Observer commitments should be considered long-term (5 or more years). If a change in observers is necessary, each Council will be responsible for expenses incurred in training a new observer for their respective flyway. Training would involve sending an “observer trainee”, in addition to the regular observer for a period of one to three years. Ideally, any change in observers would be known for 3 years ahead of time for training a replacement. Consideration should be given to having two trained observers, in addition to those flying, in the event of unforeseen circumstances.
Strategy A-2: Monitor the status and trends of breeding birds by conducting surveys in select areas of the breeding range.

   a.  Continue documentation of breeding white-fronted geese on the interior and northern portions of the Alaska-Yukon Breeding Waterfowl Survey.
   b.  Continue documentation of breeding white-fronted geese on Alaska’s North Slope during the Aerial Breeding Pair Survey of the Arctic Coastal Plain.
   c.  Increase sampling intensities for breeding pair surveys in interior and northwest Alaska.
   d.  Conduct and evaluate pilot breeding population surveys in the central Arctic with the intent of replacing the fall survey as the measure of MCWF populations.

Rationale: Aerial breeding population surveys have been conducted over most of Alaska since 1957; surveys were initiated on the North Slope in 1986. Recently, surveys were initiated in the central Arctic to monitor the status of Arctic-nesting geese including MCWFG. Results of these ongoing and new surveys should be evaluated to determine if they accurately reflect the status of MCWFG in the primary portions of the breeding range. If so, these surveys could be used as an additional tool to detect regional differences, interpret results of the fall survey, and examine the feasibility of rangewide stratified population survey.


Strategy A-3: Continue operational banding of MCWFG and explore options for expanded banding across the breeding range in Canada and Alaska.

Rationale: Band recovery data provide consistent information to assess survival and harvest rates, temporal and geographic distribution of the harvest, and population size. Harvest management based only on population indices may become unreliable due to changing bird distribution. Banding data provide a means to assess the overall success of population management. Banded samples should be adequate to provide statistically valid results and have sufficient distribution across breeding areas if analyses (e.g. harvest, survival) are intended to represent the whole MCWF population.

Annual updates of survival and recovery rates should be reported to the respective flyway technical sections at their winter meetings.

Responsibilities: CWS and USFWS with funding support from the Central and Mississippi Flyways and the Arctic Goose Joint Venture.

Strategy A-4: Monitor annual productivity of MCWFG by:

   a.  Monitoring age ratios in the harvest through parts-collection surveys as a component of annual harvest surveys in the U.S. and Canada.
Rationale: Productivity data provide valuable insights into population dynamics (see Information Needs sections) and aid in interpreting results from population and harvest surveys. Direct assessments provide the best index to annual productivity, and unlike parts collection surveys, are free from biases caused by differential vulnerability of adult and immature birds to hunting. Field productivity appraisals (percent immatures and number of young per family) for MCWFG have been conducted since 1956, most recently in Texas and Louisiana during late October. However, productivity assessments should be conducted in Prairie Canada during September to reduce the bias that hunting mortality causes on the age structure of the population. Annual parts collection surveys provide useful information on the age composition of harvested birds, and provide an alternative index to annual production.


Strategy A-5: Encourage and participate in various waterfowl and habitat conservation programs and other programs that affect wildlife habitat (e.g., North American Waterfowl Management Plan, federal farm programs, etc.) to ensure habitats in adequate quantity and quality to achieve population objectives.

Rationale: MCWFG depend upon a wide array of key habitat types in three nations during their annual cycle. These habitats should be monitored, protected, restored, or enhanced as needed because human-induced and natural changes to these habitats will continue.

Responsibilities: All cooperating agencies and organizations.

Strategy A-6: Reduce non-hunting mortality and indirect hunting mortality by supporting:

a. Nontoxic shot education and enforcement programs.

b. Education efforts to reduce wounding mortality.

c. Maintenance and implementation of disease contingency plans to minimize mortality during disease outbreaks.

d. Research on disease.

e. Monitoring and controlling of other man-caused non-hunting mortality sources.

Rationale: Mandatory use of nontoxic shot was required nationwide for waterfowl hunting in the U.S. in 1991 and Canada in 1999, but continued hunter education and enforcement is needed to ensure compliance. Currently, nontoxic shot is required in Mexico where a substantial portion of the harvest is attributed to non-residents, but enforcement efforts and availability of nontoxic
shot are insufficient. Hunter education and skills development can substantially reduce wounding losses of waterfowl and can improve the efficiency of resource use. Diseases (especially avian cholera) are a significant source of mortality in some years. Disease losses should be reported and controlled as outlined in various disease contingency plans. Other forms of non-hunting mortality also occur (e.g., power line collisions, wind farms, etc.) and should be documented and controlled as appropriate.

Responsibilities: All cooperating agencies and organizations.

**DISTRIBUTION GUIDELINES**

**Objective B:** Monitor the geographic and temporal distribution of MCWFG.

**Rationale:** It is recognized that future changes in distribution patterns are likely as a result of habitat changes or other factors that are outside the control of waterfowl managers.

**Strategy B-1:** Monitor the geographic and temporal distribution of MCWFG by:

a. Monitoring MCWFG during coordinated surveys, including the annual fall survey in Canada (see strategy A-1), the mid-winter waterfowl survey in the U.S., periodic surveys in Mexico, and as needed during periodic regional and local surveys on breeding, migration, and wintering areas.

b. Monitoring results of national, provincial, territorial, state, and other harvest surveys.

c. Analyzing legband recoveries and neck collar re-sightings from marking programs.

d. Conducting additional banding and marking should a specific need be identified.

**Rationale:** These programs generally are sufficient to detect major changes in distribution patterns of MCWFG in the U.S. and Canada. Increased band reporting rates and improved surveys in Mexico (see Information Needs sections) would increase the capability of detecting changes in distribution throughout the wintering range of MCWFG.

**Responsibilities:** All cooperating agencies. Technical Committees of the Central, Mississippi, and Pacific Flyway Councils and federal wildlife agencies will evaluate distributions and recommend appropriate corrective measures if undesirable changes occur. State agencies will conduct winter surveys in the U.S., in cooperation with the U.S. Fish and Wildlife Service. The U.S. Fish and Wildlife Service will conduct winter surveys in Mexico at three-year intervals.

**Strategy B-2:** Adjust management programs when and where appropriate to maintain a desirable distribution of MCWFG.
Rationale: The distribution of MCWFG is dynamic but has been satisfactory over time. The ability to affect the overall distribution of MCWFG through management programs is limited, but there may be situations where management could effect a desirable distribution of MCWFG. For example, intense hunting on key staging or migration areas could negatively impact use of these areas by MCWFG. It is not the intent of this strategy to react to changes in distribution of MCWFG due to landscape level changes in habitat or other factors not related to specific management programs.

Responsibilities: All cooperating agencies and organizations.

**USE GUIDELINES**

Objective C: Provide optimal harvest opportunities and other public uses consistent with population size, distribution objectives, habitat constraints, and international treaties.

Rationale: MCWFG are a valuable renewable natural resource and are highly prized as game birds and for viewing. Harvest opportunity and recreational use and enjoyment are important values and strong motivation for managing MCWFG at optimum levels. Maintaining the population at or above the objective level will permit these traditional uses as well as provide other non-consumptive recreational uses.

Strategy C-1: Annually develop and implement hunting regulations according to the following guidelines:

a. Use base regulations (or a set of regulations that would produce a similar harvest) when the 3-year running average of the population index is between 500,000 and 800,000. Base regulations are defined as season lengths and bag limits similar to those that occurred during 1990-1996 period. Under these regulations, recreational harvests in the U.S. and Canada averaged approximately 182,000 ± 49,000 (avg. ± 1 Std. Dev.). Restrictive regulations will be implemented if the most recent fall survey result is below 500,000. Restrictive regulations will remain in effect until the 3-year running average exceeds 600,000.

For purposes of these guidelines, base regulations are as follows:

East Tier Central Flyway* and Mississippi Flyway - 74 days and 2 white-fronts or 88 days and 1 white-front. (Two additional days have been added to the allowable frameworks from the last update to simplify seasons in states that wish to split their white-front season and run concurrent with other established waterfowl seasons).

West Tier Central Flyway (except Texas west zone)*- 107 days and 5 white-fronts (in aggregate with dark geese).

Alaska - 107 days and 4 white-fronts
Texas West Goose Zone – 95 days and 1 white-front

Canada – 107 days and 5 white-fronts or equivalent (see paragraph e. below)

*The East Tier of the Central Flyway includes the states of North Dakota, South Dakota, Nebraska, Kansas, Oklahoma and the eastern goose-hunting zone in Texas. The West Tier of the Central Flyway includes Montana, Wyoming, Colorado, New Mexico and the western goose-hunting zone in Texas.

b. Implement restrictive regulations when a single year estimate falls below 500,000. Restrictive regulations will remain in effect until the three-year running average exceeds 600,000.

For purposes of these guidelines, restrictive regulations are as follows and are intended to result in an approximate 25% reduction in harvest from base regulations:

East Tier Central Flyway and Mississippi Flyway – 60 days and 2 white-fronts or 74 days and 1 white-front

West Tier Central Flyway (except Texas west zone) – 107 days and 3 white-fronts

Texas west zone – 95 days and 1 white front

Alaska – 107 days and 3 white-fronts.

Canada – 107 days and 2 white-fronts or equivalent (see paragraph e. below).

c. Permit the use of liberal regulations when the 3-year running average is above 800,000. Under these regulations, recreational harvests in the U.S. and Canada averaged approximately 292,000 (Appendix D)

For purposes of these guidelines, liberal regulations are as follows:

East Tier Central Flyway and Mississippi Flyway – 88 days and 2 white-fronts or 107 days and 1 white-front

West Tier Central Flyway (except Texas west zone) – 107 days and 5 white-fronts

Texas west zone – 107 days and 1 white-front
Alaska – 107 days and 4 white-fronts.

Canada – 107 days and 5 white-fronts

d. Temporal and/or geographic variation in regulations may be used to optimize harvest opportunity while addressing conservation needs of biologically identifiable and manageable population components.
The historical relationship in MCWFG harvest between Canada and the U.S. is recognized and will be considered if regulatory changes are required under these guidelines. Hunting regulations will be selected from a suite of options that will produce results in harvest that are equivalent to the above guidelines. These options will include but are not limited to bag and/or season limits, season opening dates and non-resident alien hunting restrictions. This flexibility will provide Canada with the ability to manage non-resident alien harvest while meeting specific harvest objectives.

**Rationale:** Because MCWFG are managed as 1 population and their range crosses many jurisdictional boundaries, it is essential that harvest management be agreed upon and coordinated among stakeholders before, rather than during, the annual regulations process. The intent of the above harvest strategy is to increase the proportion of seasons under “base” regulations and to minimize the number of seasons under the restrictive option. The result is expected to reverse a decline in the number of white-fronted geese that occurred following implementation of liberal harvest regulations since 1999. The above guidelines are responsive to population status, allowing for liberalization of regulations to provide additional hunting opportunity while recognizing that restrictions may be required at low population levels.

The base regulations are a set of regional-specific hunting regulations which, for the most part, were in place during 1990-1996 (Appendix E). The primary differences between the base regulations and those actually in place in 1990-1996 are:

1. A 70-day white-fronted goose season was in place in the Mississippi Flyway since at least 1971 until 1999 when current frameworks of 107/1 or 86/2 were implemented.
2. A 72-day/2 white-fronted goose/day bag limit was not available to the east tier of states in the Central Flyway until 1999.
3. An 86-day/1 white-fronted goose/day bag limit was not available to the Mississippi Flyway until 1999.
4. A white-fronted goose bag limit of less than 4 was in place in Canada and western Texas prior to 1999.
5. An 86-day/2 white-fronted goose/day bag limit was in place in North Dakota prior to 1999.

The average harvest during 1990-1996 (using MQS harvest data) was considered in selecting base regulations for these guidelines. Equitable hunting opportunity between the Mississippi Flyway and the east tier of the Central Flyway is considered appropriate because MCWFG are managed as 1 population under this plan.

Historically, hunting regulations have been more liberal in the west tier of the Central Flyway, Alaska and Canada, in recognition of short effective seasons in northern areas and limited hunting opportunity on the margins of the range. These traditional differences will continue under this plan.
Within the range of the MCWFG, there may be segments of the population that require special conservation initiatives. Where feasible, temporal and spatial tailoring of regulations will be used to address concerns about biologically identifiable population segments that can be effectively managed as separate units.

Previous management plans for MCWFG recognized the nearly equal historical harvest between the U.S. and Canada. Additionally, one of these, "Management Guidelines for Western Mid-Continent White-fronted Geese" (1982), recommended that regulatory adjustments be considered if "consistent and important deviations from these proportions" occur. In this plan, the historical international distribution of harvest will continue to be considered when proposals for regulatory adjustments are made.

**Responsibilities:** All cooperating agencies.

**Strategy C-2:** Develop (U.S.) and improve (Canada) programs for managing subsistence hunting.

**Rationale:** Subsistence hunting by rural residents in Alaska and Canada is a traditional use of MCWFG. Amendments to migratory bird conventions between the U.S., Canada, and Mexico, implemented in 1997, provide for this harvest under law and establish principles for managing subsistence bird hunting in the North. Management processes have been established in Canada, and are entering the regulation setting phase. In the U.S., the Alaska Migratory Bird Comanagement Council (AMBCC) was established to involve subsistence hunters in management processes, serve as a liaison with the flyway councils, and to develop proposed regulations for spring and summer hunting.

Improved communication and cooperation among levels of government and user groups are needed to establish an effective cooperative system for integrating subsistence management with flyway councils, and to integrate expanded co-management systems between the U.S. and Canada. It is particularly important to more broadly involve indigenous peoples and co-management bodies that are developing conservation programs on the breeding grounds in establishing management goals and harvest strategies. Local governments in the North manage large expanses of breeding habitat, control public access to these areas, and are vital to successful implementation of harvest regulation and monitoring efforts. Subsistence hunting program development should include administrative procedures, cooperative identification of conservation objectives, information exchange and education, coordination with flyway councils, harvest assessments, and monitoring of compliance with conservation agreements and rules.

**Responsibilities:** All cooperating agencies and organizations.

**Strategy C-3:** Monitor harvest of MCWFG:

a. Continue and improve existing harvest surveys in Canada and the United States.
b. Continue the development of harvest surveys in Mexico.

c. Monitor harvest and survival rates from banding programs (see Strategy A-2).

**Rationale:** Reliable estimates of harvests are essential to reasonable evaluations of population-level effects and management programs, including harvest regulations. In general, surveys of harvests are considered adequate in Canada, however, better information is needed on the species composition of harvest by nonresident aliens. In the U.S., the transition to the HIP, though likely to improve the accuracy of the estimates, has resulted in estimates that are not comparable to historic data. Because up to 30% of the MCWFG population winters in Mexico, the potential for harvest is great and an operational survey is needed. Recent information suggests a subsistence harvest of MCWFG in the range of 8,500 - 12,500 in the Northwest Territories and up to 10,000 white-fronts in Alaska. Subsistence harvest surveys in some regions have not been conducted on a regular basis, and have differed considerably in scope, methods, and level of detail. A statewide migratory bird subsistence harvest survey was initiated in Alaska in 2003 under the guidance of the AMBCC.

**Responsibilities:** All cooperating agencies and organizations.

**Strategy C-4:** Provide for non-consumptive uses consistent with local management programs.

**Rationale:** Aesthetic values of MCWFG are well recognized and supported. Promotion of these is a valid activity and may result in increased support for management programs.

**Responsibilities:** All cooperating agencies and organizations.

**ANNUAL DATA COLLECTION PROGRAMS**

1. Fall population survey in Prairie Canada.
2. Alaska-Yukon Breeding Waterfowl Survey, and Arctic Coastal Plain survey
3. Fall productivity appraisals.
4. Coordinated Midwinter surveys.
5. Non-hunting mortality surveillance and reporting.
7. Breeding ground bandings.
8. Continue pilot breeding ground surveys in the Central Arctic during experimental period.
INFORMATION NEEDS (NOT IN PRIORITY ORDER)

a. Improved population surveys are needed in Mexico. MCWFG population estimates from periodic aerial surveys conducted by the U.S. Fish and Wildlife Service have ranged from about 14,000 to 60,000, but ground count estimates made by Canadian Wildlife Service biologists during January 1994 and 1995 were at least 175,000.

b. Improved harvest surveys and ease of band reporting are needed in Mexico.

c. Improve and expand efforts to monitor the abundance and distribution on major breeding areas, including development of methods for periodic inventories in the central Arctic.

d. Develop a recovery rate to measure changes in harvest from year to year rather than rely solely on point estimates to determine success or failure of management actions (see Appendix. H)

Research Needs:

a. Leg band recovery and neck collar re-sighting data should be finalized and published. These data from marking programs have provided new perspectives on MCWFG. This information will lead to better understanding of harvest rates, harvest distribution, survival rates, movements, and population size.

b. Population models for MCWFG should be developed to learn how changes in key parameters may affect population dynamics. A better understanding of population dynamics will improve management programs.

c. Continue efforts to assess the status and trend of MCWFG breeding in interior and northwest (boreal-taiga) areas of Alaska and identify factors affecting population dynamics these geese. Concern has been expressed about historical decline, low productivity, and low survival in this boreal-breeding group.

d. Conduct additional research on the ecology of the avian cholera bacterium to determine how disease outbreaks and transmission can be prevented or reduced.

e. Determine the distribution and abundance of MCWFG in the Rainwater Basin region of Nebraska and compare to historical information. Due to the large number of snow geese using this area during February and March, it is possible that MCWFG have been displaced from the most desirable habitats.

f. Assess the effects of habitat degradation and competition by snow geese and other geese on MCWFG throughout their range.

g. Continue pilot surveys to determine if MCWFG can be adequately monitored with other species during central Arctic breeding ground spring surveys with the intent of replacing the fall survey as the measure of MCWF populations.
MAINTENANCE OF PLAN

This plan will be reviewed at 5-year intervals (2005, 2010, etc.) by the Central, Mississippi, and Pacific Flyway Councils, their technical committees, and representatives from the Canadian Wildlife Service and U.S. Fish and Wildlife Service. Participation by Mexico in future plan revisions will also be encouraged. All available information will be considered and necessary modifications to this plan will be developed and presented to all 3 Flyway Councils for consideration and appropriate action. Appendices containing information on annual data collection programs will be updated annually and distributed through appropriate contacts before the July Flyway Council meetings. These updates will be provided by the Chair of the Central Flyway White-fronted Goose Subcommittee.