REPORT OF THE DEPARTMENT OF GAME AND INLAND FISHERIES, THE DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES, AND THE AIRLIE SWAN RESEARCH PROGRAM ON

The Tundra Swan Study Committee

TO THE GOVERNOR AND THE GENERAL ASSEMBLY OF VIRGINIA

HOUSE DOCUMENT NO. 11

COMMONWEALTH OF VIRGINIA
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1994

COMMONWEALTH of VIRGINIA

Department of Game and Inland Fisheries

November 2, 1993

TO: The Honorable Lawrence Douglas Wilder, Governor of Virginia and Members of the General Assembly:

House Joint Resolution 586, adopted by the 1993 General Assembly, directed the Department of Game and Inland Fisheries in cooperation with the Virginia Department of Agriculture and Consumer Services and the Airlie Swan Research Center to "reexamine its policies which have established a season on swan including a review of (i) the viability of the swan population; (ii) the effect of swan on crops; and (iii) the alternatives available to deal with the crop damage caused by swan." A committee including representatives from the above listed organizations along with citizen members reviewed pertinent data, received technical input from wildlife professionals and developed the enclosed report. We have the honor of submitting herewith the report on the tundra "swan season."

Respectfully submitted,

Larry G. Hart

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REPORT OF THE TUNDRA SWAN STUDY COMMITTEE

HJR 586

November 2, 1993

DEPARTMENT OF GAME AND INLAND FISHERIES

DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES

AIRLIE SWAN RESEARCH PROGRAM

PREFACE

This study was undertaken in response to House Joint Resolution 586 requesting the Virginia Department of Game and Inland Fisheries, in cooperation with the Virginia Department of Agriculture and Consumer Services and the Airlie Swan Research Center, to "review its policies regarding the (tundra) swan season."

We wish to recognize the individuals of the study committee who contributed their time and expertise to this effort. The members of the study committee were: Ed Clark, Julia Connally, Rupert Cutler, Phil Eggborn, William Sladen, Pete Trexler, and Bob Duncan. Technical Advisors who contributed to this study were Jane Fitch, David Johnston, Martin Lowney and Jerome Serie. Lead staff for the study from the Department of Game and Inland Fisheries were Gary Costanzo and Bob Ellis.

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EXECUTIVE SUMMARY

The Virginia Department of Game and Inland Fisheries (VDGIF) established a Swan Study Committee in April of 1993 to study issues related to the hunting of tundra swan (Cygnus columbianus) in Virginia.

House Joint Resolution 586 requested "that the Board of the Department of Game and Inland Fisheries, in cooperation with the Virginia Department of Agriculture and Consumer Services and the Airlie Swan Research Center, should review its policies regarding the swan hunting season." The resolution identified three specific areas to be addressed including: (1) the viability of the (tundra) swan population, (2) the effect of swans on crops and, (3) the alternatives available to deal with crop damage caused by swans.

The Swan Study Committee solicited input from state, federal and private conservation agencies and organizations regarding the legal status of tundra swans, the federal framework for hunting seasons for tundra swans, population status data, and impacts on agricultural in Virginia. Scientists and technical advisors presented information to the committee on the various issues associated with the management and hunting of tundra swans in Virginia.

Based on data provided by the U. S. Fish and Wildlife Service and others, the Committee determined that the Eastern Population of tundra swans is a viable population. In addition, the number of tundra swans wintering in Virginia has been approximately 6,000 birds per year and that this represents a relatively stable population of swans in Virginia. The committee further concluded that because of the careful monitoring of the hunt by federal and state agencies the current harvest rate of three (3) percent in Virginia is not likely to adversely impact the Virginia or the Atlantic Flyway population of tundra swans.

The Committee considered information provided by the Virginia Farm Bureau, the Virginia Department of Agriculture and Consumer Services, and the U. S. Department of Agriculture and found that swan damage to agricultural interests in Virginia is localized and occurs primarily in areas of swan concentrations. The Committee reviewed non-lethal alternatives for controlling crop damage caused by tundra swans. These control techniques included the use of various balloons, propane cannons, pyrotechnic devices, etc. The committee determined that these alternatives have only limited effectiveness because of the habituation of swans to all harassment techniques. Agricultural and wildlife damage control experts reported that the number of complaints regarding swans has declined since the initiation of the limited swan hunting program in Virginia. Harassment methods appear to be more effective when used in conjunction with swan hunting.

A swan hunting season in Virginia cannot be justified on the basis of agricultural damage because of the relatively limited and localized nature of the damage. The Committee finds that tundra swans are of great interest to hunters and non-hunters alike and that the central issue with regard to an open hunting season on tundra swans in Virginia is whether or not the benefits of a biologically sound recreational season on swans exceed the costs associated with the possible loss of public support for the agency's wildlife management program as a whole.

The Swan Study Committee offers the following recommendations:

Recommendation 1:

The Committee recommends that additional research be conducted to provide data that will enhance our understanding and management of tundra swans. Research should focus on improving population estimates, obtaining data on population exchange between swans wintering in Virginia and the rest of the Eastern Population of tundra swans especially those in North Carolina and Maryland, determining population survival and productivity, and assessing habitat trends and the impact of swan populations on agriculture and wildlife based tourism in Virginia. The Department of Game and Inland Fisheries, in cooperation with the U. S. Fish and Wildlife Service, should take the lead in these efforts with collaboration from interested public and private conservation organizations.

The Committee strongly supports the initiation of a swan neck-collar and leg banding study which has been proposed by the U. S. Fish and Wildlife Service and approved by the Atlantic Flyway Council. The committee urges the Department of Game and Inland Fisheries to aggressively pursue support for this proposed swan research by written communication to the Director of the USFWS and other measures as appropriate.

Recommendation 2:

The Committee recognizes that agricultural and shellfish damage caused by swans does occur in Virginia, and that the effect of harassment methods used to alleviate swan damage is limited because swans become habituated to these techniques. The Committee concluded, however, that while the hunting of swans may increase the effectiveness of harassment methods, the agricultural damage caused by swans in Virginia is localized in areas of swan concentrations, and recommends that the tundra swan hunting season not be justified on agricultural damage.

Recommendation 3:

The Committee identified the need for greater public understanding of swan management in Virginia and recommends that

the Department of Game and Inland Fisheries and cooperators take immediate action on the following:

1. Provide for non-hunting activities involving tundra swans as a part of wetland conservation programs through the establishment swan-related education programs and public viewing areas as has been done with great success in Britain and Japan.

2. Educate the public on the history, biology, and management of the various species of swans in Virginia.

3. The committee recommends that VDGIF consider recovering the administrative costs associated with swan management by charging its beneficiaries an application fee as authorized by Virginia Code 29.1-417, -418, -422, and -743.

Preliminary findings of this committee were shared with the Board of the Virginia Department of Game and Inland Fisheries at the August 28 public hearing in Virginia Beach. Since waterfowl seasons are established annually at the August Board meeting, this was the only opportunity for the work of the committee to be shared so that the department could take recommendations under advisement as they considered the Tundra Swan season. The Board of the Virginia Department of Game and Inland Fisheries took action to reduce the swan hunting season from 90 to 60 days and also reduced the number of permits to be issued from 600 to 400.

STUDY DESIGN

The following people served as members of the Tundra Swan Study Committee, established by the Department of Game and Inland Fisheries (VDGIF):

LEAD STAFF:

Dr. Gary Costanzo
Waterfowl Project Leader
Virginia Department of Game and Inland Fisheries

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U. S. Fish and Wildlife Service

Mr. Martin Lowney, State Director, Animal Damage Control
U. S. Department of Agriculture

Jane Futch, Assistant Public Affairs Officer,
Virginia Farm Bureau

INTRODUCTION

During the 1992 and 1993 session of the General Assembly, House Bill 285 was considered. This bill would have established a continually closed season on swan in Virginia. In recognition of the policy of the General Assembly to leave the determination of bag limits and seasons to the Department of Game and Inland Fisheries, House Joint Resolution 586 was passed directing a review of policies regarding the swan hunting season be undertaken by the Board of the Department of Game and Inland Fisheries (VDGIF), in cooperation with the Virginia Department of Agriculture and Consumer Services, and the Swan Research Program at Airlie .

The tundra swan (Cygnus columbianus), previously known as the whistling swan, is a wild, migratory waterfowl species which is managed cooperatively by the United States Fish and Wildlife Service (USFWS), the Canadian Wildlife Service and the four flyway councils established for the management of migratory gamebirds. For management purposes, tundra swans are divided into two populations, an eastern and western. Tundra swans overwintering in the mid-Atlantic are part of the eastern population and are managed under the plan and guidelines developed specifically for the eastern population (Ad Hoc Whistling Swan Committee 1982).

Tundra swans have increased in numbers in the Atlantic Flyway since the 1950's, with winter counts reaching as high as 100,000 in recent years. Limited tundra swan hunting seasons have been initiated in several states in the last 10-15 years. A Memorandum of Agreement between the USFWS and the VDGIF (Memorandum Of Agreement 1988) allowed Virginia to offer tundra swan hunting beginning in 1988. Virginia has had a swan season for the past five years. The annual harvest of swans is well within the biological limits established by the USFWS.

By terms of the agreement with the USFWS, Virginia is authorized to issue no more than 600 swan hunting permits annually. The maximum number of permits is 10% of the number of birds overwintering in Virginia.

In recent years, opposition to tundra swan hunting in Virginia has become more vocal with concern about the possible impact of hunting pressure upon local populations of swans. Much of the opposition to the swan hunt stems from the public's view of the aesthetic and symbolic values of the species (Sladen 1989). The Virginia Department of Game and Inland Fisheries offers a tundra swan hunting season that is biologically sound and based on the best available scientific information. However, the VDGIF recognizes the need for both an educational program to inform the public about the biological basis of the swan hunting program and a swan watchable wildlife program to provide non-hunters with viewing

areas in which to phototgraph, study, and otherwise enjoy tundra swans non-consumptively.

With continued efforts to have the swan hunt halted in Virginia and conflicting testimony received by the General Assembly, a study was requested and a committee including a legislator, three citizen members and three representatives from the agencies and organizations specifically requested in HJR 586 was established.

The Swan Study Committee conducted three meetings which are summarized as follows:

April 27, 1993 - Airlie Center, Fauquier County: The first meeting was an organizational meeting and included presentations by U. S. Fish and Wildlife Service and state wildlife biologists, committee members and technical advisors on the population status of the Eastern Tundra Swan. The Committee members also observed tundra swans which are a part of the Swan Research Program at Airlie.

May 18, 1993 - Upper Brandon Plantation, King George County: The second meeting was devoted to a review of the agricultural damage caused by tundra swans and alternative forms of swan damage control techniques.

June 8, 1993 - Virginia Department of Game and Inland Fisheries, Richmond: The third meeting was held to develop recommendations for the Board of the Department of Game and Inland Fisheries in response to HJR 586.

August 20, 1993 - Virginia Department of Game & Inland Fisheries, Richmond: A fourth meeting was held to finalize the study report.

POPULATION ASSESSMENT

The committee reviewed life history and scientific data on tundra swans, one of three species of swans in Virginia, presented by the technical advisors. The tundra swan is a migratory waterfowl species that breeds in the northern tundra region of North America and migrates south to the United States in winter. The eastern tundra swan population overwinters in the atlantic coastal states, predominantly in Maryland, Virginia, and North Carolina. Tundra swans, and all other migratory birds, are a shared resource that cross state and international borders and are therefore regulated and managed at the federal level by the USFWS in cooperation with state fish and wildlife agencies.

Dr. Jerry Serie, of the U.S. Fish & Wildlife Service (USFWS), briefed the committee on the population surveys used to assess tundra swan populations (Serie and Bartonek 1989). Aerial surveys are conducted by the USFWS in cooperation with the Atlantic Flyway states two times each winter, once in November and again in January. In addition, ground surveys are conducted from November through January to assess swan productivity, or the number of young swans produced during the past breeding season. This information is combined with that of previous years to look at trends in tundra swan populations over time. Dr. Serie presented data on the tundra swan population dating back from 1954, when surveys were first conducted, to 1993. Trends for the eastern tundra swan population unit and for each of the Atlantic Flyway States were reviewed.

Dr. Serie also reviewed the history of swan management and the development of regulated hunting seasons for swans (Serie and Bartonek 1989). Guidelines for the management of eastern population tundra swans are described in a management plan (Ad Hoc Whistling Swan Committee 1982) that was cooperatively developed by the Flyway Councils, which consist of State and Provincial wildlife agencies, the USFWS, and the Canadian Wildlife Service. The management plan prescribes swan population levels and distribution patterns to be maintained consistent with available habitats and public demands, and identifies management guidelines and responsibilities for attaining those objectives. Goals are established for maintaining populations at levels acceptable for providing maximum benefits to society, including aesthetic, educational, scientific, and hunting uses.

The hunting of eastern population tundra swans is also managed by the guidelines prescribed in the tundra swan management plan. The plan details levels of allowable harvest when swan populations are at or above population goals, and provides provisions regulating and monitoring the hunt. In addition, the USFWS conducted an Environmental Assessment in 1984 (USFWS/U.S. Department of Interior 1984) to consider if hunting was an appropriate tool for managing eastern population tundra swans in the Atlantic Flyway. The USFWS concluded that hunting of eastern population tundra swans was

biologically justified based on swan population levels. The hunting of eastern tundra swans is managed both on a population unit basis across several flyways, and also on a subpopulation basis within flyways and within individual states. The fidelity of swans to use specific staging and wintering areas from year to year is taken into account in the management and hunting of tundra swans. Limits and quotas are set on the number of swans that can be harvested from the different migration and wintering areas. Presently, a number of states in the fall migration areas of the Central and Mississippi flyways, and several states in the wintering areas of the Atlantic Flyway, are authorized to conduct tundra swan hunting seasons.

Dr. Gary Costanzo, of the VDGIF briefed the committee on how the swan population surveys in Virginia are coordinated with the USFWS and neighboring states. Dr. Costanzo presented information on swan numbers in Virginia from 1954 to 1993, and described the distribution and major wintering areas of swans in Virginia. Dr. Costanzo also described the development of the swan hunting season in Virginia. The authority to conduct a swan hunting season was granted to the VDGIF by the USFWS under a specific Memorandum Of Agreement (MOA). The MOA details how the season is to be conducted and monitored, and what the maximum allowable harvest will be. The decision of the USFWS to allow a tundra swan hunt in Virginia was based on swan population levels in the state. The USFWS has the option to modify or close the swan hunting season if the swan population changes.

Dr. Costanzo presented information on swan harvest and hunter participation in the seasons that have been conducted in Virginia (Virginia Swan Report 1993). The Virginia swan hunting season is closely regulated and monitored as per the conditions of the MOA. The USFWS has authorized Virginia to offer 600 swan hunting permits. The number of permits is based on 10% of Virginia's wintering swan population, which the USFWS considers to be 6,000 swans. The 600 permits are offered on a lottery basis and each permittee is allowed to take only one swan per season. All harvested swans must be immediately tagged with a metal locking band provided with the permit. In addition, all permittees must complete and return a questionnaire provided as part of the permit. The questionnaire provides information for VDGIF on the date, location, and total number of swans taken, along with hunter participation information such as the number of days hunted. The VDGIF is required to submit a report describing the results of the swan hunting season to the USFWS each year. The harvest of swans in Virginia during the 5 years of hunting has averaged 170 swans and represents less than 3% of the annual wintering swan population in Virginia.

Dr. David Johnston of the Virginia Society of Ornithology (VSO) presented information on swan numbers obtained from Christmas bird counts over the past 15 years. The Christmas bird count is

conducted by surveying a number (10-12) of circular plots, each 15 miles in diameter, that are located around the state. The survey is conducted on a specific day (one twenty-four hour period) each year in late December. A team of birdwatchers start each survey plot early in the morning and continues late into the evening in an attempt to see or hear as many bird species as possible in their respective plots. Christmas bird counts do count swans and other waterfowl, but are generally not used to census waterfowl populations. They survey only a limited amount of the available waterfowl habitat and count fewer birds than aerial surveys. Aerial surveys are the accepted method for counting waterfowl as they provide the best visibility and can survey all available waterfowl habitats. Dr. Johnston felt that since Christmas bird counts are conducted similarly each year they could be used to indicate trends in swan numbers. Although there are some differences, trends in swan numbers on the Christmas bird counts over the last 15 years has roughly paralleled the results from the aerial surveys.

In order to further educate the committee, Dr. Sladen of the Swan Research Program at Airlie provided a videotape that presented life history information on tundra swans. Dr. Sladen described the three species of swan that can be seen in Virginia, the tundra swan, the mute swan (Cygnus olor), and the trumpeter swan (Cygnus cygnus). The tundra swan, the subject of this report, is a winter visitor which breeds on the arctic tundra of Northwest Territories and Alaska, migrating up to 8,000 miles annually. The tundra swan can be grouped into two geographic units, the eastern and the western tundra swan populations. Tundra swans will begin breeding at age 3 or 4 and will lay an average of 4-5 eggs. Most eastern population tundra swans migrate through the central portion of the continent and may stop-over, or stage, for a period of time in the Dakotas before continuing on. Many swans then undertake a non-stop migration from the Dakotas to the wintering grounds in the Chesapeake Bay Region and the coastal sounds of North Carolina. Tundra swans begin arriving in Virginia in early November and depart on their northward migration in late February or early March. Since the late 1960's, tundra swans have adapted to feeding in grain fields while wintering in the Mid-Atlantic Region.

Dr. Sladen conducted a field tour at the Swan Research Program at Airlie to provide a view of tundra swans for the Committee, and to describe the differences between tundra swans and other swans. The tundra swan has a black bill and is different from another species of swan now present in Virginia, the non-migratory mute swan. The mute swan is not a native species, but was introduced into North America from Europe. Feral populations of mute swans have been breeding in the wild in Virginia and other northeastern states. It is often found breeding in public parks, ponds and marinas, and in private waterfowl collections. It can be distinguished from the tundra swan by its orange bill and its swimming posture, characterized by a more curved neck and wings arched up over its

back. Dr. Sladen was concerned about the increase and spread of the undesirable and aggressive mute swan and recommended the VDGIF take immediate action, in cooperation with the Swan Research Program at Airlie, to stop its spread as well as making it unlawful to sell or purchase mute swans in Virginia without a special permit.

The trumpeter swan, formally a winter visitor with the tundra swan, was completely extirpated from the east by the early settlers over 150 years ago, and is now confined to Alaska and the northwest. About 500 trumpeter swans have been restored in the midwest and Ontario from reintroduction programs. At present, it is an extremely rare winter vagrant in Virginia.

CONCLUSIONS:

The Committee reviewed the data on tundra swans available from the annual USFWS/Atlantic Flyway surveys, and Christmas bird counts conducted by the Virginia Society of Ornithology. The Committee agreed that swan numbers in the Atlantic Flyway have increased significantly from 1954 to the present. Eastern tundra swan numbers are at or above those population goals outlined in the Tundra Swan Management Plan and the North American Waterfowl Management Plan. The Committee concluded that the number of tundra swans wintering in Virginia has been approximately 6,000 birds per year and represents a relatively stable population of swans in Virginia. The Committee recognizes that swan numbers in Virginia and swan distribution within the Atlantic Flyway fluctuate based on weather patterns and annual production.

The committee learned that an Environmental Assessment was prepared by the USFWS in 1984 which concluded that the hunting of eastern population tundra swans was biologically defensible based on the numbers of swans occurring in specific habitats during migration and winter. In addition to the Environmental Assessment, a Tundra Swan Management Plan and Hunt Plan developed by the USFWS and the Flyway Councils in 1982, prescribed desired population levels, distribution patterns, and habitat requirements to be maintained to provide maximum benefits to society including aesthetics, education, scientific, and hunting purposes.

The Committee concluded that the harvest of tundra swans that occurs in the current Virginia tundra swan hunting season is unlikely to have an adverse biological impact on the Virginia or Atlantic Flyway population of tundra swans. The current 3 percent harvest rate of tundra swans in Virginia is well below the 10 percent allowed by the USFWS.

RECOMMENDATIONS:

The Committee recommends that additional research be conducted to provide data that will enhance our understanding and management of tundra swans. Research should focus on improving population estimates, obtaining data on population exchange between swans wintering in Virginia and the rest of the Eastern Population of tundra swans especially those in North Carolina and Maryland, determining population survival and productivity, and assessing habitat trends and the impact of swan populations on agriculture and wildlife based tourism in Virginia. The Department of Game and Inland Fisheries, in cooperation with the U. S. Fish and Wildlife Service, should take the lead in these efforts with collaboration from interested public and private conservation organizations.

The Committee strongly supports the initiation of a swan neck-collar and leg banding study which has been proposed by the U. S. Fish and Wildlife Service and approved by the Atlantic Flyway Council. The committee urges the Department of Game and Inland Fisheries to aggressively pursue support for this proposed swan research by written communication to the Director of the USFWS and other measures as appropriate.

AGRICULTURAL DAMAGE AND DAMAGE CONTROL ALTERNATIVES

The committee received information on swan damage from several technical advisors and viewed a videotape on swan damage and potential methods to resolve damage problems. Swans can cause damage to agricultural crops because of their feeding habits which include pulling grain crops up by the roots, compacting soil and creating mud-puddle conditions in wet areas. Swans have also been found to dig large holes or craters in agricultural fields which can cause problems for farm equipment.

Mr. Martin Lowney from the Animal Damage Control Office of the U.S. Department of Agriculture (USDA) stated that swans and agricultural damage caused by swans was not on the list of priority research issues to be addressed by the USDA. Waterfowl research undertaken by USDA will focus mainly on damage and nuisance complaints caused by Canada geese and mallard ducks. The USDA has identified swan damage in Virginia but has little information on the extent of the damage. Swan damage identified as chronic by the USDA occurred most often in Delaware, in cranberry bogs in New Jersey, and in North Carolina. Mr. Lowney presented information on non-lethal scaring devices used to chase swans and other problem waterfowl from crop fields. Such devices include noise-making equipment such as propane cannons, bird bombs, and shellcrackers, and visual devices such as pyrotechnics, scarecrows, flagging and balloons. Most of these devices are of limited effectiveness because swans readily habituate to them. Mr. Lowney stated that in his experience these harassment methods are more effective when used in conjunction with a swan hunting season.

Mr. Phil Eggborn of the Virginia Department of Agriculture and Consumer Services presented information on swan damage to agricultural crops and oyster beds in Virginia. Mr. Eggborn indicated that damage complaints from farmers and oyster growers is greater in years when greater numbers of swans are present in the state. Agricultural damage from swans does not appear to be widespread but is localized in areas of high swan concentrations. A small percentage of farmers may bear most of the damage. Mr. Eggborn stated that there have been fewer complaints in the last several years and that this may be a beneficial result of the hunting season. Some farmers are allowing swan hunters access to their land where they have had swan damage. The Virginia Department of Game & Inland Fisheries is also helping to direct hunters to areas where swan damage is occurring.

Representatives from the Virginia Farm Bureau stated that swan damage complaints generally come from those areas where swans are concentrated. The Farm Bureau also felt that scare devices and harassment techniques were more effective on swans when hunting seasons were allowed. Swans associated the scare devices with hunting activities and were therefore more easily chased from fields where they were causing damage. The Virginia Farm Bureau

supported the hunting season as a good management technique for use in relieving agricultural swan damage.

Dr. Sladen of the Airlie Swan Research Program presented a videotape that showed agricultural damage in British Columbia caused by the trumpeter swan (a species related to the tundra swan) and a method used to help resolve some of the damage. The method involved a coordinated effort by several organizations to work with the farmers in establishing fields containing lure crops which would attract swans, and draw them away from those fields where damage was occurring.

Dr. Sladen suggested that although this particular method may not work in Virginia, we should explore other options for resolving crop damage problems in the Atlantic Flyway. Tundra swans shifted from feeding on aquatic vegetation to feeding in grain fields during the late 1960s in the mid-Atlantic Region. Dr. Sladen noted that while swans may cause some agricultural damage, they can also be beneficial by adding nutrients in the form of fecal material to the soil.

RECOMMENDATIONS:

The Committee recognizes that agricultural and shellfish damage caused by swans does occur in Virginia, and that the effect of harassment methods used to alleviate swan damage is limited because swans become habituated to these techniques. The Committee concluded, however, that while the hunting of swans may increase the effectiveness of harassment methods, the agricultural damage caused by swans in Virginia is localized in areas of swan concentrations, and recommends that the tundra swan hunting season not be justified on agricultural damage.

MANAGEMENT AND POLICY ISSUES

The Committee considered other policy issues related to the management of tundra swans. There was discussion on the length and timing of the swan hunting season, and on the area open to swan hunting. Currently the swan hunting zone is limited to that area of the state east of Interstate 95 and south of Quantico Marine Base. The Swan Research Program at Airlie representative felt that some areas within this hunt zone should be closed to hunting to provide swan viewing areas. It was determined, however, that many areas within this zone are already closed to hunting. There was no concensus in the Committee on the need to change current swan hunting regulation.

The Committee suggested the VDGIF to pursue the establishment of specific areas where swans could be viewed by the public. The VDGIF should identify tundra swan viewing areas for inclusion in the Virginia Watchable Wildlife Guide to be published in 1994. The VDGIF should also explore the feasibility of economic incentives for farmers to allow swan viewing areas on their land. Income derived from swan related ecotourism may help farmers recover costs if swan damage occurs. The Committee suggested that the VDGIF investigate other habitat protection measures for tundra swans that would complement the objectives of the North American Waterfowl Management Plan for wetlands protection. The committee also encouraged the VDGIF to develop cooperative habitat protection measures with other agencies such as a policy to control the spread of the exotic and undesirable mute swan.

To complement the swan viewing and habitat protection measures, the Committee suggested that a public education program should be initiated to provide information about the swan resource in Virginia, including population status and biology, the history of swan management, and the biological basis for hunting seasons. The hunting public should also be educated in regard to responsible swan hunting ethics and methods. To help inform the sportsmen, an informational page should be included with each swan hunting permit that provides brief instructions on proper hunting techniques, along with an explanation of conservation and management strategies that benefit swans. In addition, information could be included to help direct hunters to areas where swan crop damage is occurring. The committee agreed that both hunters and non-hunters should be working together with state, federal, and private organizations to learn more about swans and the proper management of swan populations.

RECOMMENDATIONS:

The Committee identified the need for greater public understanding of swan management in Virginia and recommends that

the Department of Game and Inland Fisheries and cooperators take immediate action on the following:

1. Provide for non-hunting activities involving tundra swans as a part of wetland conservation programs through the establishment swan-related education programs and public viewing areas as has been done with great success in Britain and Japan.

2. Educate the public on the history, biology, and management of the various species of swans in Virginia.

3. The committee recommends that VDGIF consider recovering the administrative costs associated with swan management by charging its beneficiaries an application fee as authorized by Virginia Code 29.1-417, -418, -422, and -743.

BOARD ACTION

Waterfowl hunting seasons are established by the Board of Directors of the Virginia Department of Game and Inland Fisheries at their annual August meeting. The first day of the Board meeting, August 27, was devoted to committee meetings while the second day, August 28, consisted of the full Board meeting and public comment period. The Board was provided a copy of the Swan Study Committee Report prior to the meeting.

The wildlife staff of the Department of Game and Inland Fisheries presented their proposal for the 1993-94 swan hunting season at the meeting of the Board's Wildlife and Boating Committee and again at the full Board meeting. The staff proposal was unchanged from past years and consistent with the allowable Federal framework for swan hunting in Virgina as established by the U.S. Fish and Wildlife Service. The proposal called for a 90-day swan hunting season limited to 600 swan hunting permits. Dr. Rupert Cutler, a member of the Swan Committee, presented a summary of the Swan Committee Report at the Wildlife Committee meeting and at the full Board meeting.

The Wildlife and Boating Committee, after hearing staff's proposal and Mr. Cutler's summary of the Swan Report, approved staff's recommendation on the tundra swan hunting season. There was limited public comment on the swan hunting season at the Board meeting. One citizen spoke in favor of the swan hunting season. Comments in opposition to the hunt from another citizen, received via electronic facsimile (fax), were read to the Board. Several Board members identified that the swan hunting season was not a biological issue but an emotional issue and continuation of the season as proposed by staff would only tarnish the Department's

image and promote anti-hunting sentiment. After considerable discussion, the full Board took action on the swan hunting season, rejecting staff proposal and passing a compromise proposal by a 6 to 2 vote, reducing the season length from 90 to 60 days and the number of permits issued from 600 to 400. The full Board further passed (unanimously) a motion to accept the Tundra Swan Study Committee Report. The Board also commended this Committee for the report.

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