MANAGEMENT AND HUNT PLANS FOR TUNDRA SWANS

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The Migratory Bird Treaty (1916) and the subsequent Migratory Bird Treaty Act (1918) serve as the legal basis for migratory bird management in the United States. Beginning in the late 1940s, the management of waterfowl was formalized into the four flyway system that, with modifications, exists today. The flyway management approach recognizes the shared responsibilities for stewardship between the states and the federal governments in the United States, Canada, and Mexico. The international commitments of the Migratory Bird Treaty are also addressed by including Canada and Mexico in most flyway council deliberations. The direct participation by Canada and Mexico varies among flyways. This general system has proven to be an effective process to coordinate management activities and develop goals and objectives for migratory bird management.

The concept of flyway or management unit plans to guide population management, particularly of geese, swans, cranes, doves and pigeons, developed under the auspices of the flyway management approach. These species were seen as more geographically distinct than most duck populations and, thus, more amenable to specific flyway/unit management. Most management plans are cooperatively developed within the respective flyway technical committees with participation by both state and federal technical personnel. When there are biological factors that warrant broader consideration, such as overlap in distribution between or among flyways, joint flyway technical committees coordinate plan development. Flyway councils generally approve management plans on a flyway-specific basis. The federal governments of the United States, Canada, and Mexico do not generally sign plans, although, when considering specific issues, they view recommendations from councils based on these plans with substantial weight.

The objective of this paper is to review the current management and hunt plans for Tundra Swans (*Cygnus columbianus*). Management agencies recognize two populations of Tundra Swans in North America, eastern and western (Figure 1), each of which is managed under a specific plan. The distribution of the eastern population encompasses all four flyways, while the western population is restricted entirely to the Pacific Flyway (Figure 1).

MANAGEMENT AND HUNT PLANS FOR THE WESTERN POPULATION OF TUNDRA SWANS

The current management plan for western Tundra Swans was approved by the Pacific Flyway Council in March 1983. The plan contains the following goal and objectives.

Goal

To ensure the maintenance of the western population of Whistling (Tundra) Swans at a size and distribution which will provide for their continued benefits to society.

Objectives

A. Maintain a 3-year average population index of at least 38,000 swans, as estimated by the midwinter waterfowl survey.

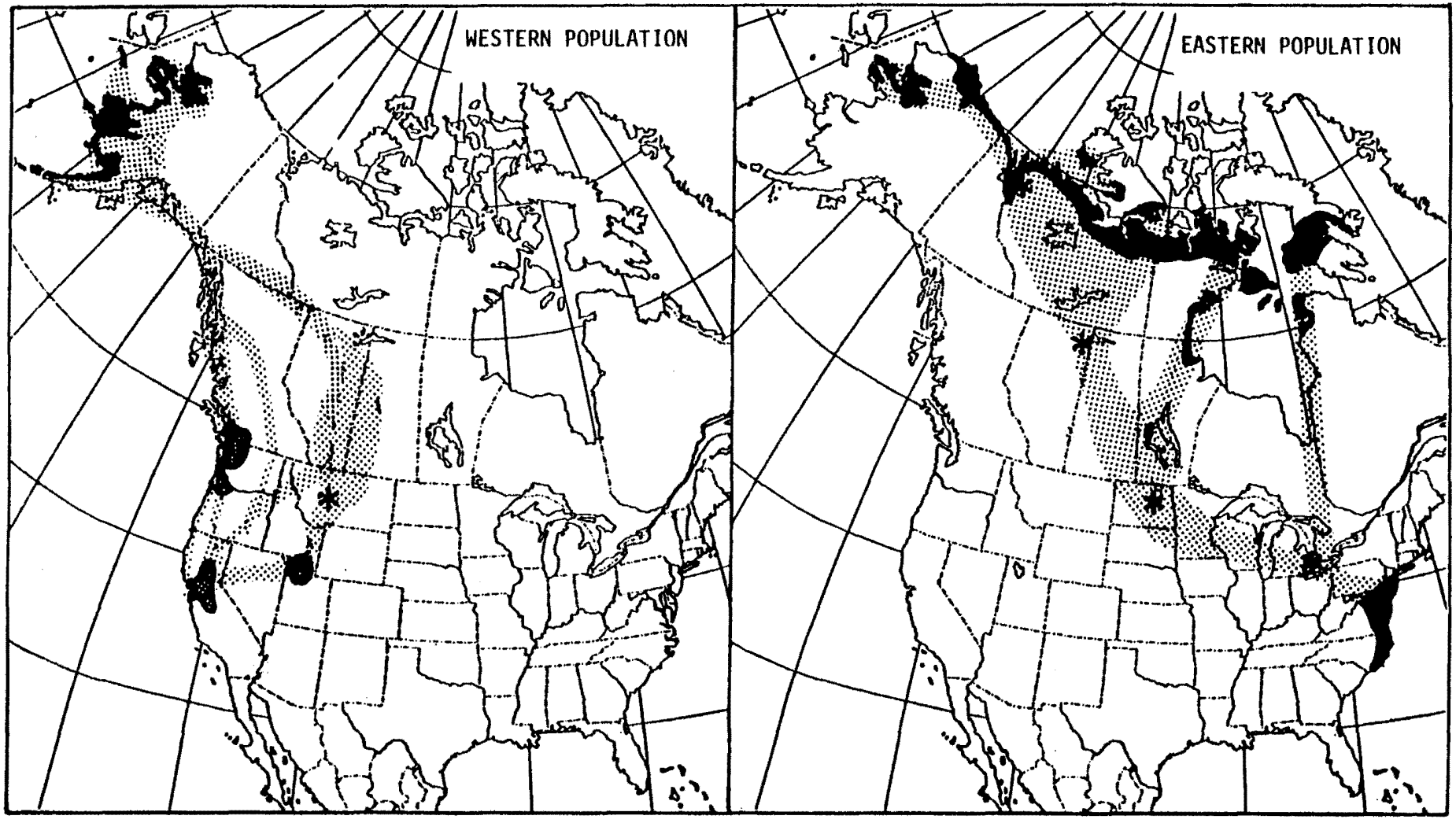

Figure 1. Approximate distribution of the western and eastern populations of tundra swans (*Cygnus columbianus*) in North America.

B. Maintain current patterns of distribution throughout the swan's range.

C. Provide breeding, migration, and wintering habitats of sufficient quantity and quality to maintain the desired numbers and distribution of swans.

D. Provide for aesthetic, educational, scientific, and hunting uses of these swans.

In addition to establishing these general goals and objectives, the plan reviews the current status and biology of the population, identifies current problems, and recommends management actions. Key problems identified in the plan include the need to incorporate subsistence harvest into harvest management programs, the threat posed by oil, gas and mineral exploration and development on the breeding grounds, wetland loss on migration and wintering areas, and the continuing threat posed by disease (avian cholera) on some key wintering areas, particularly California. Additional problems relate to depredation on agricultural crops and habitat destruction caused by concentrated feeding activity of swans in certain wetland habitats. The plan assigns lead responsibilities to the cooperating management agencies for specific management practices and identifies information needs to improve the management program.

The Pacific Flyway developed a separate hunt plan, most recently updated in 1989, to provide structure and general frameworks for conducting Tundra Swan hunting in the Pacific Flyway. This plan reviews historical harvest and survey data and establishes general procedures and guidelines for conducting Tundra Swan hunts.

General Guidelines

1. Daily and seasonal bag limit is one bird.
2. State/province must issue a nontransferable permit and non-reusable tag.
3. The season must be conducted within the regular duck and/or goose season.
4. Hunts must be consistent with management plans.
5. Hunt proposals require Pacific Flyway Council endorsement.
6. All hunts must undergo a 3-year experimental evaluation.

Participation Requirements

1. Each state/province must submit a hunt plan proposal at least 45 days prior to the appropriate flyway technical meeting.
2. Hunt proposals must include:
   a. location of the proposed hunt,
   b. number of permits requested and anticipated harvest,
   c. season dates,
   d. description of the permit process,
   e. survey methodology for determining harvest characteristics as listed under section 3 below, and
   f. size, age, composition, and timing of staging/migration use of swan flocks in the hunt area for at least 2 years prior to experimental requests.
3. After each year a hunt is conducted, the following information must be submitted to the swan committee chair for compilation into the annual flyway reports:
   a. number of applications for permits,
   b. number of permits issued,
   c. percentage of permittees hunting,
   d. estimated number of hunter days,
   e. estimated retrieved harvest,
   f. estimated crippling loss, and
   g. percentage of gray swans in bag.

There is also a formula for permit allocation that apportions 10% of the allowable harvest to production areas, 70% to migration areas, and 20% to wintering areas. Determination of the allowable harvest was based on observed rates of population growth and the current status of the population relative to the population objective in the management plan.

The 1996 Midwinter Survey provided a population index of 96,832 Tundra Swans in the western population. This population has grown continuously, although erratically, since the initiation of the survey in 1948. Some of the variation is due to the nature of the midwinter survey. Recognizing the host of factors that can influence these counts, the plans call for the use of a 3-year average for management decisions. The most recent 3-year average is 76,000, exactly twice the

Table 1: ESTIMATED HARVESTS (RETRIEVED) OF WESTERN AND EASTERN POPULATIONS OF TUNDRA SWANS, 1962-95.

	WESTERN POPULATION					EASTERN POPULATION						TOTAL
YEAR	UTAH	NEVADA	MONTANA	ALASKA	TOTAL (west)	MONTANA	N. DAKOTA	S. DAKOTA	N. CAROLINA	VIRGINIA	TOTAL(east)	East + West
1962	320				320						0	320
1963	392				392						0	392
1964	335				335						0	335
1965	336				336						0	336
1966	491				491						0	491
1967	246				246						0	246
1968	520				520						0	520
1969	1,377	87			1,464						0	1,464
1970	1,078	208	179		1,465						0	1,465
1971	1,109	102	91		1,302						0	1,302
1972	1,028	124	150		1,302						0	1,302
1973	1,191	109	101		1,401						0	1,401
1974	1,377	190	259		1,826						0	1,826
1975	1,383	188	266		1,837						0	1,837
1976	1,109	206	139		1,454						0	1,454
1977	1,575	84	214		1,873						0	1,873
1978	1,152	90	146		1,388						0	1,388
1979	1,293	214	275		1,782						0	1,782
1980	1,156	103	250		1,509						0	1,509
1981	1,619	301	177		2,097						0	2,097
1982	1,244	161	139		1,544						0	1,544
1983	1,168	169	218		1,555	34					34	1,589
1984	1,194	229	221		1,644	22			313		335	1,979
1985	673	145	185		1,003	19			2523		2542	3,545
1986	947	196	200		1,343	41			2302		2343	3,686
1987	600	94	280		974	27			2498	117	2642	3,616
1988	854	78	260		1,192	25	191		2468	117	2801	3,993
1989	694	81	302	16	1,093	41	511		2128	133	2813	3,906
1990	874	67	275	15	1,231	59	474	339	2855	128	3855	5,086
1991	774	62	79	8	923	52	704	444	2940	205	4345	5,268
1992	450	29	221	16	716	37	833	814	2609	187	4480	5,196
1993	337	55	290	18	700	18	712	545	2773	130	4178	4,878
1994	768	89	326	29	1,212	62	690	483	3750	194	5179	6,391
1995	348	69	182	47	646	51	789	198	2833	217	4088	4,734
TOTAL	30,012	3,530	5,425	149	39,116	488	4,904	2,823	29,992	1,428	39,635	78,751
AVERAGES	857	126	201	19	1,118	35	545	403	2,307	143	1,132	2,250

population objective. The retrieved harvests of Tundra Swans in both the western and eastern populations demonstrate that the total harvest of Tundra Swans remains very small relative to the current population levels (Table 1).

MANAGEMENT AND HUNT PLANS FOR THE EASTERN POPULATION OF TUNDRA SWANS

The original management plan for the eastern population of Tundra Swans was approved by all four flyway councils in 1982. The plan called for a population goal of 60,000-80,000 birds based on a 3-year average of the midwinter survey estimates for the Atlantic Flyway. A sport hunting plan adopted in 1988 provides guidelines for harvest. Prior to adoption of the hunt plan, an environmental assessment, Proposed Hunting Regulations on Whistling (Tundra) Swans - September 1984, authorized hunting. Both the management and hunt plans are scheduled for update and revision every 5 years.

An ad hoc committee, appointed by all four flyways and including members from both the U. S. and Canada, began to revise the plans in the fall of 1993. The revision process has proceeded slowly, probably due to the lack of impending crisis. However, committee deliberation has resulted in several significant management strategies. These include a cut in sport harvest permits (9800, down from 10,800), independent validation of the midwinter survey Tundra Swan estimate, post-season leg banding, and development of a computer simulation model for the population. The revision should be completed in 1997.

The draft of the revised management plan calls for a single population goal of 80,000 swans in the eastern population and continued use of the Atlantic Flyway midwinter survey average to index population size. The latest 3-year midwinter survey average is 81,626, slightly above the population goal. Recommendations called for improved precision of the midwinter survey and the fall production surveys. Strategies for maintaining traditional population distributions, reducing non-hunting mortality, and restoring habitat quality remain in the draft plan; however, the plan strives for increased simplification to facilitate implementation of management actions. Another change is to recognize subsistence harvest of eastern population swans and add strategies to obtain an estimate of mortality from this source. Research strategies are updated and re-prioritized. A post-season leg banding program in the Atlantic Flyway and the development of a model for population simulation increase to highest priority and will be implemented. Color-marking and radio-tracking studies to delineate the breeding range is urged.

The ad hoc committee reviewed the status of the effects of sport and subsistence hunting programs. The original hunt plan called for a harvest rate objective of 10 percent, which was believed to be reasonable from existing western population harvest programs. The observed average harvest during 1993-95 was 6 percent, and this has appeared to be sufficient to stabilize the population. The draft hunt plan calls for a harvest rate objective of 5 percent. Initial work with the computer simulation model suggests that this rate should allow for some growth in the eastern population.

PROTECTION OF TRUMPETER SWANS IN TUNDRA SWAN SEASONS

The U. S. Fish and Wildlife Service (USFWS) has previously developed a general policy statement regarding Trumpeter Swan (*C. buccinator*) harvest and Tundra Swan hunting (Hartwig 1989). This policy supported the restoration of migratory Trumpeter Swan populations and the maintenance of existing Tundra Swan hunting seasons. At present, the USFWS has not adopted a national approach toward the reconciliation of the occasional harvest of a Trumpeter Swan during an approved Tundra Swan season. Therefore, the harvest of a Trumpeter Swan during a Tundra Swan season is a violation in the Central and Atlantic Flyways at this time. The USFWS is convinced that the number of such occurrences remains very low, with the possible exception of some areas within the Pacific Flyway. However, the USFWS recognizes that, as range expansion efforts continue, such incidents are likely to become more frequent. The USFWS supports both the continued restoration of migratory Trumpeter Swans throughout their former range and the continuation of Tundra Swan hunting seasons in accordance with approved flyway management and hunt plans. With the 1995 environmental assessment (EA), the USFWS has recently approved a general swan season in Montana, Utah, and Nevada to facilitate both Trumpeter Swan range expansion and continued Tundra Swan hunting opportunities (Bartonek *et al.*). The USFWS believes this approach holds the greatest promise for

a long-term solution. Before advocating this approach nationally, the USFWS would like to evaluate the hunt during the experimental period described in the EA and to hear from the concerned interests. While enforcement and prosecutorial discretion have been effectively used to manage this issue in other parts of the country to date, we recognize that it is not the long-term solution as Trumpeter Swans expand into areas of Tundra Swan hunting. The USFWS will work with the respective flyway councils and other concerned interests during the next several years to evaluate possible solutions.

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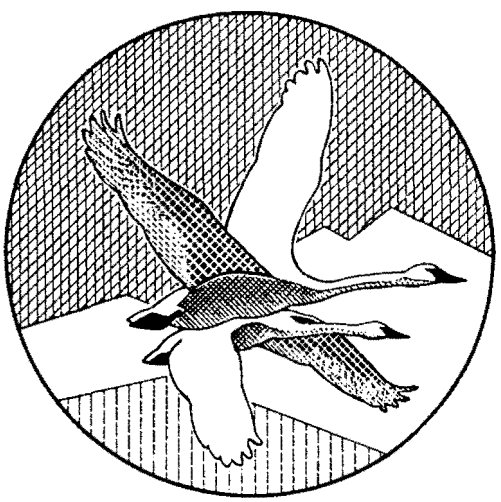
PROCEEDINGS AND PAPERS OF THE SIXTEENTH TRUMPETER SWAN SOCIETY CONFERENCE

Trumpeter Swans -- Restoration in the Heartland



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