21st Swan Conference

"Celebrating 40 years of Trumpeter Swan Conservation"

Presentation Abstracts

The Trumpeter Swan Society

The High Country Inn

Whitehorse, Yukon Territory
April 16-19, 2008

WEDNESDAY• APRIL 16

9:00 AM - 5:00 PM **Directors' Meeting**
Members welcome, Executive Board Room

5:00 – 8:00 PM **Registration** Conference Room B

NOTE: **Posters** will be displayed throughout the conference in Conference Room A. Please leave your poster at the front desk, or bring to the registration table as soon as possible.

THURSDAY• APRIL 17 Conference Room A

7:00 AM **Registration**

8:00 AM **Welcome** *Dale Becker, TTSS President*
Prayer *Annie Smith, Kwanlin Dun Elder*
Opening Remarks
The Honourable Dennis Fentie, Yukon Premier and Minister of Environment
Bev Buckway, Mayor City of Whitehorse
Jesse Dawson, A/Chief, Kwanlin Dun First Nation

The Rocky Mountain Population – Updates
Session Chair: Mary Maj, U. S. Forest Service

8:30 AM Current Status of Trumpeter Swan Reintroduction at the Flathead Indian Reservation.
Co-authors*: Dale M. Becker and Janine S. Lichtenburg*
Presenter: *Dale Becker, Confederated Salish and Kootenai Tribes, Polson, Montana*

8:50 AM Trumpeter Swan Reintroduction in the Blackfoot River Watershed of Montana.
Co-authors: *Greg Neudecker, Tom Hinz, Bill Long, and Vanessa Fields*
Presenter: *Greg Neudecker, U.S. Fish and Wildlife Service, Helena, Montana*

9:10 AM Assessing Temporal Distribution of Harvested Trumpeter Swans at Bear River Migratory Bird Refuge During the 1999-2006 Hunting Seasons.
Co-authors: *Adrianna C. Araya and James A. Dubovsky*
Presenter: *Adrianna Araya, U.S. Fish and Wildlife Service, Lakewood, Colorado*

9:30 AM Twenty Years of Trumpeter Swan Range Expansion Efforts in the Tri-State Area and Idaho's Changing Role.
Presenter: *Ruth Shea, The Trumpeter Swan Society, Vale, Oregon*

9:50 AM Status of the Rocky Mountain Population of Trumpeter Swans, 2007.
Presenter: *Jim Dubovsky, U.S. Fish and Wildlife Service, Lakewood, Colorado*

10:10 - 10:30 **Break**

Pacific Coast Population
Session Chair: Dave Weaver, U. S. Fish and Wildlife Service, Retired

10:30 AM Growth of Trumpeter Swan Populations in Alaska from 1968-2005 and the Effects of Climate Change on Habitat Occupancy.
Co-authors: *Joshua H. Schmidt, Mark S. Lindberg, Devin S. Johnson, Bruce Conant, and James G. King*
Presenter*: Josh Schmidt, University of Alaska, Fairbanks*

10:50 AM Trumpeter Swan Surveys on Minto Flats, Alaska, 2006.
Co-authors: *Karen S. Bollinger, Ed Mallek, Rodney J. King, and Deborah J. Groves*
Presenter: *Karen Bollinger, U.S. Fish and Wildlife Service, Fairbanks, Alaska*

11:10 AM Swan Conservation in Washington: Working Group Update.
Presenter: *Martha Jordan, The Trumpeter Swan Society, Everett, Washington*

11:30 AM Lead Shot Poisoning in Swans: Sources of Pellets within Whatcom County, Washington and Sumas Prairie, British Columbia.
Co-authors: *M. C. Smith, M. Davidson, C. M. Schexnider, L. Wilson, J. Bohannon, J. M. Grassley, M. Jordan, and C. E. Grue*
Presenter: *Mike Smith, Washington Cooperative Fish and Wildlife Research Unit, University of Washington, Seattle*

11:50 AM California Condor (*Gymnogyps californianus*), Lead, Politics, and the Future of Hunting.
Presenter: *Judd Hanna, Mill Creek, California*

12:10 - 1:30 PM **Lunch on your own**

Pacific Coast Population
Session Chair: Ruth Shea, The Trumpeter Swan Society

1:30 PM Management Planning for Lewes Marsh and Tagish River Habitat Protection Areas.
Co-authors: *Bruce McLean and John Meikle*
Presenter: *John Meikle, Environment Yukon, Whitehorse, Yukon Territory*

1:50 PM Trumpeter Swan Surveys on the Chugach National Forest 2007.
Co-authors: *Deborah J. Groves, Karen S. Bollinger, and Rob MacDonald*
Presenter: *Karen Bollinger, U.S. Fish and Wildlife Service, Fairbanks, Alaska*

2:10 PM Trumpeter Swan Status, Trends and Issues in Alaska — A Panel Discussion, *John Cornely, Moderator*
Bruce Conant, John Morton, Karen Bollinger, Jenny Bryant, and Josh Schmidt

2:40 - 3:00 **Break**

Pacific Coast Population
Session Chair: Gary Ivey, International Crane Foundation

3:00 PM Spring Migration Areas for Swans in the Yukon Southern Lakes: What Have We Learned in 30 Years?
Presenter *Jim Hawkings, Canadian Wildlife Service, Whitehorse, Yukon Territory*

3:20 PM Yukon's Celebration of Swans: A Success Story.
Co-authors: *Bruce Bennett and Sara Nielsen*
Presenter*: Sara Nielsen, Environment Yukon, Whitehorse, Yukon Territory*

3:40 PM Breeding Distribution and Abundance of Trumpeter Swans (*Cygnus buccinator)* in British Columbia, Summer 2005.
Co-authors: *Andre M. Breault, Bruce Harrison, and Steve Shisko*
Presenter: *Bruce Harrison, Ducks Unlimited, Canada, Kamloops, British Columbia*

4:00 PM Dagay of Lù'àna (Swans of the Kluane Lake Area)
Presenter: *Joe Johnson, Kluane First Nation, Burwash Landing, Yukon Territory*

4:25 PM **TTSS Business/Membership Meeting**

6:30 PM **Refreshments and free viewing of exhibits at the Beringia Interpretive Centre**

8:00 PM **An evening of imagination and inspiration**
Performances by First Peoples Performances and the Northern Lights School of Dance.
Multimedia presentations *The Swans of Spring* by Jim Hawkings and *Moving in the Magic of this Place* by Marten Berkman. Beringia Interpretive Centre

FRIDAY• APRIL 18

8:15-5:45 **Field Trip (advance registration required)**
Meet in hotel lobby. Travel by vans and private vehicles. We will visit Carcross, Tagish, Marsh Lake Community Centre, and Swan Haven Interpretive and Viewing Center. Lunch will be served at Marsh Lake Community Centre. Dress for the wind, sun and for walking (optional). Binoculars and camera a must!

Evening Open – Option for Meetings

SATURDAY• APRIL 19

8:00 AM **Opening Remarks and Announcements**

Pacific Coast/Interior Populations/Range-wide
Session Chair: Dave Sharp, U.S. Fish and Wildlife Service

8:20 AM Sympatric Nesting Range of Trumpeter and Tundra Swans on the Koyukuk/Nowitna National Wildlife Refuge in Northwest Interior Alaska.
Co-authors: *Jenny M. Bryant, Bradley D. Scotton, and Melanie R. Hans*
Presenter: *Jenny Bryant, U.S. Fish and Wildlife Service, Galena, Alaska*

8:40 AM The Quinquennial Trumpeter Swan Survey, 1968-2005.
Co-authors: *Timothy J. Moser, John E. Cornely, and David F. Caithamer*
Presenter: *Tim Moser, U.S. Fish and Wildlife Service, Fort Snelling, Minnesota*

9:00 AM Density Dependence Affecting Nest Success on the Reintroduced Trumpeter Swans at Seney National Wildlife Refuge, Michigan
Presenter: *Dave Olson, U.S. Fish and Wildlife Service, Seney, Michigan*

9:20 AM Status of the High Plains Flock of Interior Population Trumpeter Swans.
Co-authors: *Shilo Comeau, Mark Vrtiska, Tom Koerner, and James A. Dubovsky*
Presenter: *Jim Dubovsky, U.S. Fish and Wildlife Service, Lakewood, Colorado*

9:40 AM An Experiment to Enhance More Southward Migration of Interior Trumpeter Swans—The Iowa/Arkansas Connection.
Co-authors and Presenters: *Ron Andrews and Dave Hoffman, Iowa Department of Natural Resources, Clear Lake, Iowa*

10:00-10:20 AM **Break**

Range-wide/Pacific Coast Population
Session Chair: Dale Becker, Confederated Salish and Kootenai Tribes

10:20 AM Fool's Gold or Fact: Trumpeter Swan Museum Specimens May Indicate Historic Distribution.
Presenter: *Jeff Snyder, Western Oregon University, Monmouth, Oregon*

10:40 AM Trumpeter Swan Habitat Suitability Study in the Blackfoot River Watershed of Montana.
Co-authors: *Brian Ferrasci-O'Malley, Vicki Watson, and Greg Neudecker*
Presenter: *Greg Neudecker, U.S. Fish and Wildlife Service, Helena, Montana*

11:00 AM Wintering Concentrations of Trumpeter Swans in the Interior of British Columbia.
Co-authors: *Bruce Harrison, Richard Howie, and Fraser Corbould*
Presenter: *Bruce Harrison, Ducks Unlimited, Canada, Kamloops, British Columbia*

11:20 AM Response of Trumpeter Swan Populations to Management on Kenai National Wildlife Refuge, Alaska.
Co-authors: *John M. Morton, Toby A. Burke, Mark W. Laker, and Elizabeth Jozwiak*
Presenter: *John Morton, U.S. Fish and Wildlife Service, Soldotna, Alaska*

11:40-12:45 PM **Lunch on your own**

12:45-1:00 PM **Announcements**

Pacific Coast Population/Tundra Swans
Session Chair: Jim Dubovsky, U.S. Fish and Wildlife Service

1:00 PM Vectors or Victims? The Role of Swans in the Transmission of the Avian Influenza Virus.
Presenter: *Craig Ely, U.S. Geological Survey, Anchorage, Alaska*

1:20 PM Comox Valley Waterfowl Management Program Reduces Swan Impacts to Farms on Vancouver Island.
Co-authors: *Graeme Fowler and Jeanine Bond*
Presenter*: Graeme Fowler, Comox, British Columbia*

1:40 PM The 2007 Revision of the Cooperative Flyway Management Plan for the Eastern Population of Tundra Swans.
Co-authors: *David E. Sharp and Jerome R. Serie*
Presenter: *Dave Sharp, U.S. Fish and Wildlife Service, Lakewood, Colorado*

2:00 PM Maryland's Landscape Effects on Tundra Swan Distribution.
Presenter: *Arnella Trent, U.S. Department of Agriculture, Washington, D.C.*

2:20 – 2:40 PM **Break**

Rocky Mountain Population/Future of Swan Conservation
Session Chair/Moderator: John Cornely, The Trumpeter Swan Society

3:00 PM Status Report for Wyoming's Green River Basin Trumpeter Swan Range Expansion Project, 2007.
Co-authors: *Susan Patla and Bob Oakleaf*
Presenter: *Mary Maj, U.S. Forest Service, Cody, Wyoming*

3:20 PM Trumpeter Swan Conservation in the 21st Century — A Panel Discussion
Becky Abel, Jim Hawkings, W.C. Joe Johnson, Dale Becker, Dave Sharp

6:30 PM **Cash Bar and Silent Auction**.

7:00 PM **Banquet and Awards**
(Buffet dinner, reservations required)

Presentation

The Trumpeter Swan Society, 1968-2008: 40 Years of Swan Conservation, Dedication and Success.

Guest Speaker: *David K. Weaver, former TTSS Executive Secretary/Treasurer*

Concluding Remarks
New TTSS President

SPECIAL THANKS TO…

Bruce Bennett
Jim Hawkings
Nancy Hughes
Patricia Joe
Erin Spiewak
Sara Nielsen
Yukon Conservation Society
The Trumpeter Swan Society

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The Trumpeter Swan Society

Members of The Trumpeter Swan Society share a common mission – to assure the vitality and welfare of wild Trumpeter Swan populations. Since our founding in 1968, our conferences have brought together agency managers, researchers, private sector partners, and involved citizens to discuss the issues, problems, and opportunities of Trumpeter Swan restoration and management. By maintaining this network between conferences, the Society has helped to promote more effective management and restoration of Trumpeter Swans. In Whitehorse, we will celebrate our past successes from the last 40 years and look ahead to the future for swans and swan management.

The focus of the 21st Conference will be on the status and challenges of the swans of Western Canada and Alaska, but we will also learn about the other North American populations. We welcome your enthusiasm and knowledge and hope that all conference participants will renew their commitment to conserve the majestic Trumpeter Swan and its habitat.

If you are not already a member, we invite you to join The Trumpeter Swan Society.

The Trumpeter Swan Society
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Plymouth, Minnesota 55441-1248
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Celebrating 40 years of Trumpeter Swan Conservation

21st

Trumpeter Swan Society

Conference

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High Country Inn

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ABSTRACTS OF THE 21ST TRUMPETER SWAN SOCIETY CONFERENCE

Whitehorse, Yukon Territory
April 16-19, 2008

THE NORTH AMERICAN QUINQUENNIAL TRUMPETER SWAN SURVEY, 1968-2005

Timothy J. Moser, U.S. Fish and Wildlife Service, 1 Federal Drive, Fort Snelling, MN 55111

John E. Cornely, The Trumpeter Swan Society, 3 Cliffrose, Littleton, CO 80127

David F. Caithamer, University of Wisconsin - Barron County, 1800 College Drive, Rice Lake, WI 54801

ABSTRACT

The abundance and productivity of North American trumpeter swans (Cygnus buccinator) have been assessed during quinquennial surveys during the last 40 years. These coordinated surveys were conducted in 1968, 1974-1975, and at 5-year intervals thereafter (1980-2005). The 2005 survey yielded a continental abundance estimate of 34,803 trumpeter swans, the highest level obtained since surveys were initiated. Abundance estimates of North America's Pacific Coast, Rocky Mountain, and Interior trumpeter swan populations in 2005 were 24,928, 5,228, and 4,647 birds, respectively, and represented record-high levels observed for each population. These 3 populations increased an average of 5.8%, 5.4% and 11.7%, respectively, during 1968-2005. Survey results indicated growth rates during 2000-2005 were at least as rapid as those previously exhibited (1968-2000). We examined other quinquennial survey data for temporal trends in abundance and productivity of North American trumpeter swans.

PACIFIC COAST POPULATION OF TRUMPETER SWANS

TRUMPETER SWAN SURVEYS ON MINTO FLATS, ALASKA, 1968 – 2006

Karen S. Bollinger, U.S. Fish and Wildlife Service, Division of Migratory Bird Management, Waterfowl Management Branch, 1412 Airport Way, Fairbanks, AK 99701-5824

Rodney J. King, U.S. Fish and Wildlife Service-Retired, Division of Migratory Bird Management, P.O. Box 1232, Goldendale, WA 98620-1232

Edward J. Mallek, U.S. Fish and Wildlife Service, Division of Migratory Bird Management, Waterfowl Management Branch, 1412 Airport Way, Fairbanks, AK 99701-5824

Deborah J. Groves, U.S. Fish and Wildlife Service, Division of Migratory Bird Management, Waterfowl Management Branch, 3000 Vintage Blvd., Suite 240, Juneau, AK 99801-7100

ABSTRACT

Trumpeter Swan (*Cygnus buccinator*) aerial surveys have been flown during spring and fall on Minto Flats and surrounding areas in interior Alaska, since 1982 and 1968, respectively. Surveys were conducted using mostly single-engine Cessna amphibious aircraft. Data presented is based on 35 comparable surveys, 15 flown in the spring and 20 flown in the fall. Observations presented in this paper are based on only the core swan area having the highest density in the Minto Flats area. Swan numbers have increased dramatically since surveys were initiated. In spring, numbers of white phase swans increased from 403 to 1809 individuals; and in fall, from 85 to 1362. Considering just trends in recent years, swan numbers in the spring have continued to increase (annual growth rate = 1.16), while numbers in the fall have remained relatively stable (annual growth rate = 1.00). Numbers of cygnets and broods have also continued to increase over time, reaching peaks of 659 and 205, respectively, in 2006. Other productivity measures such as nest success, brood size, and number of young per occupied nest, which are usually density dependent, have shown no trend over the years of the survey. These values for 2006 were comparable to the long-term averages. Productivity in the Minto Flats is higher when compared to that of the Copper River Delta in Alaska. Due to potential threats to the area, a continued standardized trumpeter swan survey program is recommended.

GROWTH OF TRUMPETER SWAN POPULATIONS IN ALASKA FROM 1968-2005 AND THE EFFECTS OF CLIMATE CHANGE ON HABITAT OCCUPANCY

Joshua H. Schmidt and Mark S. Lindberg Institute of Arctic Biology, University of Alaska Fairbanks, Fairbanks, AK 99775

Devin S. Johnson, National Marine Mammal Laboratory, Alaska Fisheries Science Center, NOAA, Seattle, WA 98115

Bruce Conant, U.S. Fish and Wildlife Service, 3000 Vintage Blvd., Suite 240, Juneau, AK, 99801

James G. King, 1700 Branta Road, Juneau, AK, 99801

ABSTRACT

Surveys of all known Trumpeter Swan breeding habitats in Alaska were first conducted in 1968 and since 1975 have been conducted every 5 years. The number of swans counted and the amount of area surveyed increased substantially through time. The increase in coverage created problems for standard analytical techniques because it is difficult to separate increased coverage from actual increases in the population. We applied recent advances in statistical methods to create models that account for the increased area and provide accurate estimates of population growth rate. Our analysis of the 1968-2005 data showed that the number of adult swans increased at an annual rate of 5.9% and cygnet production grew at a rate of 5.3% annually. We also found some evidence that rates of cygnet production in more northern areas were higher in later years, which could indicate a response to climate warming. Increases in annual temperature may be extending the ice-free period in some areas, allowing trumpeter swans to breed in previously unsuitable locations. This led us to examine the relationship between the occupancy of survey units by swans and mean annual temperature. We found that the probability of occupancy of survey units was positively influenced by mean temperature, strongly suggesting that Trumpeter Swan populations are being affected by climate change. Currently, climate warming may be benefiting swans in some areas in Alaska, but we are also investigating the potential counter effects associated with wetland drying. Some areas of the state have experienced high levels of wetland shrinkage associated with a warming climate, and this could obviously impact habitat use by Trumpeter Swans throughout the boreal forest.

TRUMPETER SWAN SURVEYS ON MINTO FLATS, ALASKA, 2006

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ABSTRACT

Trumpeter Swan (*Cygnus buccinator*) aerial surveys were conducted during spring (June) and fall (August) 2006 on Minto Flats and surrounding areas in interior Alaska. The surveys were accomplished through cooperation between the U.S. Fish and Wildlife Service and the University of Alaska, Fairbanks. Two of the six quadrangle maps covering this area were not flown during the spring survey. Swans recorded during spring 2006 were: 220 singles (76 with nests), 450 pairs (207 with nests), and 689 flocked birds for a total of 1809 white swans and 283 nests. During the fall survey, counts totaled: 93 singles (3 with broods), 462 pairs (227 with broods), and 513 flocked birds for a total of 1530 white swans and 230 broods. Cygnets totaled 654 and comprised 33% of the fall population. Mean brood size was 3.0 young. Since the first survey in fall 1986, 25 productivity surveys have been flown and during 18 of those years, both spring and fall surveys were conducted. A continued standardized trumpeter swan survey program is recommended.

RESPONSE OF TRUMPETER SWAN POPULATIONS TO MANAGEMENT ON KENAI NATIONAL WILDLIFE REFUGE, ALASKA

John M. Morton, Toby A. Burke, Mark W. Laker, and Elizabeth Jozwiak, U.S. Fish and Wildlife Service, Kenai National Wildlife Refuge, P.O. Box 2139, Soldotna, AK, USA 99669

Aerial Surveys of breeding Trumpeter Swans have been conducted annually on the Kenai National Wildlife Refuge (KENWR) in Alaska since 1957. From 1957 through 1984, the known population on KENWR remained at ~ 30 nesting pairs despite a 2-fold increase in swan numbers throughout the rest of Alaska. To help ameliorate human disturbance, KENWR began protecting lakes used by nesting trumpeter swans from aircraft disturbance in 1985. Additionally, aircraft landings on lakes with late summer broods were prohibited and motorized boats were restricted on part of the Kenai River used by spring staging swans. A quadratic, fixed effects regression model suggests that the population of nesting pairs increased rapidly and steadily after aircraft regulations were put into place; ≤ 75 pairs are currently using KENWR. However, declining mean brood size over this same time interval also suggests that optimum breeding habitat may be saturated. Despite these successes within KENWR, human disturbance on lakes outside refuge boundaries may be hindering the establishment of new pairs elsewhere on the Kenai Peninsula. Available nesting habitat within KENWR has declined because of boundary adjustments associated with the Alaska Native Claims Settlement Act (1971) and the Kenai Natives Association Equity Act Amendments (1996). The number of nesting pairs has only increased on lakes within KENWR (despite decreased habitat availability) and not on lakes outside KENWR boundaries; most cygnets were produced on territories with little or no human disturbance. Permanent swan nesting habitat on KENWR, particularly in closed-basin lakes, is likely to continue declining in the future because of increased water body evaporation due to a warming climate. Other management concerns include renewed interest in aircraft access, increasing levels of recreational use, and declining beaver populations.

TRUMPETER SWAN SURVEYS ON THE CHUGACH NATIONAL FOREST 2007

Deborah J. Groves, U.S. Fish and Wildlife Service, Migratory Bird Management, Waterfowl Management Branch, 3000 Vintage Blvd., Suite 240, Juneau, AK 99801-7100

Karen S. Bollinger, U.S. Fish and Wildlife Service, Migratory Bird Management, Waterfowl Management Branch, 1412 Airport Way, Fairbanks, AK 99701-5824

Rob MacDonald, U.S. Fish and Wildlife Service, Migratory Bird Management, Waterfowl Management Branch, 3000 Vintage Blvd., Suite 240, Juneau, AK 99801-7100

ABSTRACT

Trumpeter Swan (*Cygnus buccinator*) aerial surveys were conducted during May and August 2007 on the Copper River Delta and surrounding areas of the Chugach National Forest in southcentral Alaska. The surveys were accomplished through cooperation between the U.S. Fish and Wildlife Service and the U.S. Forest Service. In May, 906 white (adult and subadult) swans and 137 nests were counted. In August, 776 white swans and 125 cygnets in 43 broods were recorded. Production was below average. Nest success was 0.31, mean brood size was 2.9, and young made up 14% of the early fall population. The total fall swan population decreased 22% from 2006 and was equal to the previous 31-year mean. There are now 61 comparable swan surveys in 32 different years for this area. A continued standardized trumpeter swan survey program is recommended.

BREEDING DISTRIBUTION AND ABUNDANCE OF TRUMPETER SWANS (*Cygnus buccinator*) IN BRITISH COLUMBIA, SUMMER 2005

André M. Breault, Pacific Wildlife Research Centre, Canadian Wildlife Service, Environment Canada, RR#1, 5421 Robertson Road, Delta, British Columbia V4K 3N2

Bruce Harrison, Ducks Unlimited Canada, 954[A] Laval Crescent, Kamloops, British Columbia V2C 5P5

Steve Shisko, Pacific Wildlife Research Centre, Canadian Wildlife Service, Environment Canada, RR#1, 5421 Robertson Road, Delta, British Columbia V4K 3N2

ABSTRACT

The results of the British Columbia portion of the 2005 Trumpeter Swan continental breeding survey were presented in the Technical Report Series of the Canadian Wildlife Service. Surveys were conducted using fixed-wing aircraft in mid-August to coincide with the brood-rearing of flightless young. The survey area covered most of the known breeding range of Trumpeter Swans in British Columbia (BC), and sightings are reported for two populations (Rocky Mountain and Pacific Coast) in four geographic units (Western Alberta Upland, Fort St. John – Fort Nelson, Taiga Plains, Coast Mountains). The number of breeding Trumpeter Swans in BC has continuously increased in all units over the last 20 years, from 122 birds in 1985 to 1,126 birds (808 adults and 318 cygnets) in 2005. Range extension into previously unoccupied areas accounts for much of this growth. Brood sizes averaged 2.66 young per brood, but significantly declined between 2000 and 2005 in at least one geographic unit.

COMOX VALLEY WATERFOWL MANAGEMENT PROGRAM REDUCES SWAN IMPACTS TO FARMS ON VANCOUVER ISLAND

Graeme Fowler, Ducks Unlimited Canada, Unit 511 - 13370 78th Avenue, Surrey, British Columbia V3W 0H6

Jeanine Bond, Ducks Unlimited Canada, 954A Laval Crescent, Kamloops, British Columbia V2C 5P5

ABSTRACT

The Comox Valley Waterfowl Management Program (CVWMP) was initiated in 1991 to reduce swan impacts on farms in southeastern Vancouver Island. Key components include providing partial funding to farmers to plant approximately 500 acres of cover crops each year, hazing swans from fields, and outreach activities. The Comox Valley Naturalists conduct weekly swan counts, and in 2002 an evaluation of the program was completed. Although government funding for the CVWMP has been reduced since 1991, Ducks Unlimited Canada and its partners have been able to use the income generated from several conservation properties to maintain the program. In recent years the program has been coordinated with two other pilot projects to better integrate farm and wildlife activities. In 2005, the Comox Valley Forage Mitigation and Compensation Program (CVFMCP) was initiated to compensate farmers for the loss of perennial grass due to swans. It also provides additional funding for the cover crop program. Also in 2005, the Comox Valley Farmer's Institute Demonstration and Variety Trial Project began. In addition to demonstrating potential new forages and production techniques, this program pilots the use of relay crops (annual grasses planted in a corn field) which complement traditional cover crops for swans. The two new programs have created valuable opportunities for farmers and wildlife organizations to work together.

YUKON'S CELEBRATION OF SWANS: A SUCCESS STORY

Sara Nielsen, Yukon Environment, Box 2703, Whitehorse, Yukon, Y1A 2C6

ABSTRACT

Celebration of Swans is a community-driven festival of wildlife viewing, appreciation and artistic, cultural, and family events complemented by contagious delight for the return of spring and all the natural wonders that come with it. The Wildlife Viewing Unit of Environment Yukon coordinates efforts in partnership with a myriad of non-profit organizations, local businesses and dedicated volunteers.

The annual celebration was initiated in 1994 to raise awareness for the importance of early open water for waterfowl staging in southern Yukon. Major partners include Environment Yukon, Ducks Unlimited Canada, Canadian Wildlife Service, Girl Guides of Canada and Yukon Energy. What began as a one day event and has now grown to nine days. Swan images by local artists are showcased in limited edition free collectable posters that are printed by Yukon Energy. This major partner also launched a swan cam (live video camera) in 2008.

Festival events include: swan-watching from the Swan Haven Interpretation Centre at M'Clintock Bay on Marsh Lake, interpretive programs for school groups, family weekend events, bird and bat house building, expert presentations in Whitehorse and other southern Yukon communities, birding tours in surrounding communities, First Nation storytelling, watercolour, drawing and photography workshops, film showings, a juried community exhibit, and a children's art contest followed by an exhibit of the winners in downtown Whitehorse. Local media, organisations and individuals independently promote the return of the swans and surrounding events. As part of the awareness campaign, over twenty years of waterfowl counts at M'Clintock Bay have been recorded and announced daily on the radio during the month of April. School programs have always played an integral role in the department's efforts to educate about the importance of M'Clintock Bay to wildlife. Each year nearly 1000 school children in Grades 2 to 6 visit the centre for structured interpretative programs. Private businesses also take initiative by creating displays, painted windows and specialty products and foods.

Swan Haven Interpretation Centre has become one of the most important accessible wildlife viewing sites in Yukon. Nearly 10 percent of all Yukon residents visit the centre annually. The centre and the Celebration of Swans have become powerful tools for interpreting the spectacle of spring and raising awareness for protecting the area's critical habitat — the link between waterfowl breeding and wintering grounds.

FOR MORE INFORMATION

Yukon Department of Environment. A Celebration of Swans.
http://environmentyukon.gov.yk.ca/wildlifebiodiversity/CelebrationofSwans.php

Yukon Department of Environment. 2006. Celebration of Swans 2005 Visitor Survey Analysis. Yukon Fish and Wildlife Branch Report MR-06-01, Whitehorse, Yukon, Canada

ROCKY MOUNTAIN POPULATION OF TRUMPETER SWANS

CURRENT STATUS OF TRUMPETER SWAN REINTRODUCTION AT THE FLATHEAD INDIAN RESERVATION

Dale M. Becker and Janene S. Lichtenberg, Tribal Wildlife Management Program, Confederated Salish and Kootenai Tribes, P.O. Box 278, Pablo, MT 59855.

ABSTRACT

The Confederated Salish and Kootenai Tribes and other agency and non-governmental partners commenced a project to reintroduce Trumpeter Swans (Cygnus buccinator) at the Flathead Indian Reservation in 1996. A total of 155 swans were released from 1996-2007. Released swans generally wintered nearby in the lower Flathead River drainage and its tributaries, likely due to mild winter weather conditions, abundant open water and ample food resources. Wintering swans from the project were also observed in southwestern Montana, northeastern Colorado and eastern Idaho, but few of these migrants were observed to have survived. Collisions with overhead power lines accounted for the majority of documented mortalities. Cooperative efforts with the local electrical utility are underway to mark lines in the area, and the marking seems to have reduced the incidence of collision mortalities. The first wild-nesting Trumpeter Swans from the reintroduction project were observed in 2004, with continued successful nesting occurring during each subsequent year. Future plans for the reintroduction project include additional releases of captive-reared swans, continuing monitoring of released swans and subsequent reproduction, additional wetland habitat restoration, and marking of additional power lines.

STATUS REPORT FOR WYOMING'S GREEN RIVER BASIN TRUMPETER SWAN RANGE EXPANSION PROJECT, 2007

Susan Patla and Bob Oakleaf, Wyoming Game and Fish Department, P.O. Box 67, Jackson, WY 83001

ABSTRACT

Wyoming Game and Fish Department (WGFD) initiated a Trumpeter Swan (*Cygnus buccinator*) range expansion program in the upper Green River Basin of southwest Wyoming in the early 1990s with the objective of expanding both summer and winter distribution of swans in Wyoming to support efforts to increase number and distribution of Trumpeters in the Rocky Mountain Population Tri-state Area Flocks. Initial efforts in conjunction with U.S. Fish and Wildlife Service included translocations of wild swans from Red Rock Lakes National Wildlife Refuge (NWR) to Seedskadee NWR in the summers of 1992 and 1993, and in the winters of 1992/93 and 1993/94. Although a total of 89 wild swans were translocated, few showed fidelity to the area. In 1994, WGFD switched to releasing only captive-raised swans produced either from eggs salvaged from Wyoming wild birds or those produced by captive swans of Tri-state origin. Over 70 cygnets and yearlings were released from 1994-2002 at wetland sites north of Pinedale, WY. Releases were halted in 2003 after achieving our goal of establishing 10 occupied nest areas. In the five year period from 2003-2007, this newly established nesting group has produced a total of 105 cygnets. In 2007, swan pairs in the Green River Basin occupied a total of 16 nest areas and fledged 28 cygnets which accounted for 44% of all nest sites occupied and 47% of cygnets fledged in Wyoming. During the Mid-winter Survey in February 2008, we counted a total of 123 swans on the Green River below Fontenelle Dam where no swans were found prior to expansion efforts. WGFD's swan management program is now focused on establishing new wetlands in the Green River drainage to provide additional summer habitat for nesting pairs and subadults. Funding for three wetland projects has been obtained to date through partnerships with private land owners, federal agencies and the newly created Wyoming Wildlife and Natural Resource Trust Fund.

STATUS OF ROCKY MOUNTAIN POPULATION TRUMPETER SWANS, 2007

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ABSTRACT

The status of Rocky Mountain Population (RMP) trumpeter swans (*Cygnus buccinator*) is monitored twice annually. The Fall Survey enumerates swans from the U.S. Breeding Segment, and includes primarily birds that summer in the Tri-state Area of Montana, Idaho, and Wyoming, as well as swans nesting at Malheur National Wildlife Refuge (NWR) in Oregon, Ruby Lake NWR and vicinity in Nevada, and the Summer Lake Wildlife Management Area (WMA) and vicinity in Oregon. The Winter Survey counts these birds, as well as RMP/Canadian Flocks that summer in Alberta, British Columbia, the Northwest Territories, and the Yukon Territory in Canada, but winter sympatrically with birds from the U.S. Nesting Segment. For the 1993-2006 period, the RMP/U.S. Breeding Segment grew at an average annual rate of 1.8%. Increases in total swans occurred in Montana, Idaho, and Wyoming. During the 2007 Fall Survey, 527 swans were counted, which was the highest count since 1992. The number of swans counted in the Tri-state Area was 498, the highest since 1991. Far fewer birds were counted in and around the Summer Lake WMA than in the early 1990s, whereas counts for Malheur and Ruby Lake NWRs were about average for their areas during that timeframe. Results from the Winter Survey indicate that the RMP grew at an average annual rate of 6.0% during 1972-2006, with most of the increase occurring in the Canadian Flocks. Approximately 90% of the RMP is now comprised of Canadian Flocks. The increase in birds wintering in Wyoming and Idaho was greater than that for birds wintering in Montana. Biologists conducting the 2007 Winter Survey counted 4,701 swans, a decrease of 783 birds from the previous winter, but the third highest count recorded. Although both the U.S. Breeding Segment and the entire RMP have grown in recent years, the number of swans in the U.S. Breeding Segment is below the goal specified for this group in the Pacific Flyway Management Plan for this species.

Keywords: *Cygnus buccinator*, trumpeter swan, Rocky Mountain Population, Fall Survey, Winter Survey

TRUMPETER SWAN HABITAT SUITABLITY STUDY IN THE BLACKFOOT RIVER WATERSHED OF MONTANA

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ABSTRACT

Reintroduction of trumpeter swans to the Blackfoot River valley is being planned for the summer of 2005. To identify the best sites for reintroduction, over 70 wetlands across the valley were surveyed in fall 2004 and subsequently analyzed for habitat suitable for bird survival and nesting potential. Particular emphasis was placed on the abundance of certain submergent plants which are key food species.

Field work was conducted from August to October 2004. Each wetland was surveyed by land and by canoe to develop a current baseline dataset of wetland characteristics. Transects were run across areas dominated by submergent vegetation to provide a semi-quantitative estimate of the abundance of these food species. An overland survey netted information on other wetland characteristics like percent of open water, species diversity of emergent vegetation, and presence/absence of human disturbances.

Out of 71 sites surveyed, 27 were determined to have suitable nesting sites, and 9 of these sites were selected as being most suitable for release sites. Hazards near these sites (intruding fence lines and power lines) will be mitigated in preparation for a July 2005 release date.

TRUMPETER SWAN REINTRODUCTION IN THE BLACKFOOT RIVER WATERSHED OF MONTANA

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ABSTRACT

We evaluated over 70 depressional wetlands in the Blackfoot River Watershed in 1994 for suitability for release and nesting of Trumpeter Swans. Reintroduction of trumpeter swans in the Blackfoot River valley began in 2005 and continued through 2007. 40 total trumpeter swans were released on four separate wetlands during the three year period (10 – 2005, 17 -2006, 13 – 2007). Eight swans were two year olds, 28 were yearlings and 4 cygnets when released. All birds were from Red Rock Lakes genetic stock and reared and released by the Wyoming Wetland Society. 12 trumpeter swans are known to still be alive, 12 dead and 16 missing. Of the 12 a live, all were yearlings at release and 11 were wintering in 2007 in three separate groups in Southeast Idaho along the Snake River below Blackfoot, Idaho and on the Bear River at Oneida Reservoir. One bird, a 2005 released bird has wintered for three years in Montana along the Flathead and Clark Fork River. One bird also wintered on the Blackfoot River in 2005 but has not been relocated since September of 2006. Four total birds have returned to the Blackfoot River Watershed, 2 in 2006 and 2 in 2007. One of those four birds migrated to the Mission Valley of Montana in 2006 and is paired with a Salish and Kootenai released bird. Of the 12 confirmed dead birds, four were cygnets at release, three were two year olds and 6 were yearlings. Four have died from intestinal parasites, three from legal hunting, two from power line strikes, one from predators (coyotes) and two unknown.

ASSESSING TEMPORAL DISTRIBUTION OF HARVESTED TRUMPETER SWANS AT BEAR RIVER MIGRATORY BIRD REFUGE DURING THE 1999-2006 HUNTING SEASONS

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ABSTRACT

In 1962, the U.S. Fish and Wildlife Service (Service) authorized the hunting of tundra swans (*Cygnus columbianus*) in portions of the Pacific Flyway. Tundra swans often comingle with trumpeter swans (*Cygnus buccinator)* in parts of their range and it is difficult to differentiate the two species in the field. Consequently, there was concern that trumpeter swans could be accidentally shot during tundra swan hunting seasons. In 1995, the Service completed an environmental assessment on a proposed action to resolve conflicting management strategies for the Western Population (WP) of tundra swans and the less abundant Rocky Mountain Population (RMP) of trumpeter swans. An experimental general swan season established from 1995-1999 restructured existing tundra swan regulations to allow the take of a small number of RMP trumpeter swans. As part of the experiment, a monitoring system was required to collect information on harvested swans. Hunters that were successful in harvesting a swan were required to have their swan examined at designated locations where certain swan characteristics, including bill length, were recorded to assist in identifying the species of swan harvested. In 1999, a check station was established at the Bear River Migratory Bird Refuge (Refuge) in Utah and operated daily from the time the first hunters arrived until the last hunter left the area for the day. Operating the check station at this intensity was very expensive, so to reduce staff and monetary resources at the Refuge without significantly decreasing the ability to detect harvested trumpeter swans, we assessed harvest records from the 1999-2004 hunt seasons to determine when the majority of swans were being checked. Harvest data from 1999-2004 revealed that only 70% (n =1066) of the swans at the Refuge were checked Friday-Sunday therefore, it was necessary that the check station continue to operate daily. However, analysis of data from the 2003 and 2004 seasons that included information about the time of day swans were checked, indicated that 97% (n=409) of swans were checked between 1400 and the end of the day Monday-Thursday and all day Friday-Sunday. Therefore, we recommended staffing the check station in future years during these hours when the majority of swans were being checked. Subsequent analysis of harvest data collected for the 2005 and 2006 hunting seasons indicated that after reducing the number of hours of check station operation, the frequency at which swans were checked remained high at 97% (n=253) and 94% respectively (n=242). Overall, harvest information from Utah indicate that since 1999 only 1-2 trumpeter swans have been harvested during each season. Because of the expense associated with staffing the check station, combined with results that intensified efforts did not detect more swans compared to methods used prior to the check station, in 2006 we recommended that the check station effort be discontinued but that hunters continue to have their swans checked at other designated locations as required.

Keywords: *Cygnus buccinator*, *Cygnus columbianus*, trumpeter swan, tundra swan, swan hunting, swan harvest, Rocky Mountain Population, Bear River Migratory Bird Refuge

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INTERIOR POPULATION OF TRUMPETER SWANS

STATUS OF THE HIGH PLAINS FLOCK OF INTERIOR POPULATION TRUMPETER SWANS, 2007

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ABSTRACT

The High Plains Flock of (HPF) of Interior Population (IP) trumpeter swans (*Cygnus buccinator*) is comprised of birds summering primarily in western South Dakota and Nebraska. The status of this flock is monitored twice annually. Separate aerial surveys conducted during fall and winter are used to estimate the abundance of swans in the flock, production of young, and to monitor their distribution. Results from both surveys have indicated an increase in the HPF from 1980 to 2007. The average annual growth rate estimated from the fall survey is 3.5%, while that from the winter survey is 2.9%. Generally, the counts of white birds (adults and subadults) have increased, whereas the counts of cygnets have remained relatively stable. This result could be explained by an increasing proportion of non-breeding adults and subadults in the flock, density-dependent recruitment, or perhaps other factors. The counts from the 2007 fall and winter surveys were 398 and 538 total swans, respectively, and the average difference between counts during 1980-2007 has been 24%. Reasons for the discrepancies between counts for this flock could include incomplete coverage of U.S. nesting areas during the fall survey, migration of breeding swans in Canada to HPF wintering areas, or movement of IP swans from more eastern areas such as Iowa and Minnesota into Nebraska and South Dakota. Survey results also suggest that the range of this flock is expanding, with birds now being seen in the eastern Sandhills region of Nebraska. The Flyway Management Plan for this flock was revised in 2005, and has an abundance goal of 50 successful breeding pairs and 500 total swans during fall, and is based on managers' perceptions on the potential habitat for these birds. Research investigating use of wetlands by post-nesting swans with landscape attributes within the nesting range of the HPF is being conducted to provide a stronger biological basis for developing an abundance goal for this flock and to guide land-management decisions.

Keywords: *Cygnus buccinator*, trumpeter swan, High Plains Flock, Interior Population, Fall Survey, Winter Survey

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SEARCHING FOR METHODS TO ASSESS SUMMER GRAZING FROM TRUMPETER SWANS (*CYGNUS BUCCINATOR*) ON THE AQUATIC MACROPHYTE COMMUNITIES IN SENEY NATIONAL WILDLIFE REFUGE.

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ABSTRACT

Trumpeter Swans are herbivores that can graze on aquatic plants to a depth of about 1 m. Although the eating habits of swans have the potential of altering the aquatic plant community (both qualitatively and quantitatively), few studies have been conducted to examine these effects. Each year more than 230 Trumpeter Swans congregate on several of the 21 managed pools in Seney National Wildlife Refuge. This number has increased 15% each year since 1991. In June 2006, ten fences were constructed around 5m x 5m plots (5 in a swan-dense pool and 5 in a swan-free pool) to exclude swans and other waterfowl. A plot that was exposed to waterfowl grazing was also located adjacent to each fenced plot. After 8 weeks, each plot was sampled for plant species and densities (determined by dry weight). No significant difference was detected between grazed and non-grazed plots although the average mass of plants normally grazed by swans (*Potamogeton* sp., *Sagittaria* sp., and *Vallisneria americana*) was reduced in plots exposed to grazing from both "swan-dense" and "swan-free" pools. The patchy distribution of macrophytes in this preliminary study may have decreased the power of our statistical analysis. New experimental designs will be tried this summer to reduce some of this variability in hopes of quantifying the effect of Trumpeter Swans on the aquatic vegetation.

DENSITY DEPENDENCE AFFECTING NEST SUCCESS ON THE REINTRODUCED TRUMPETER SWANS AT SENEY NWR

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The Trumpeter Swan reintroduction program at Seney NWR can be considered a success. The swans have had an annual average growth rate of 13 % since first nesting in 1992. However, no population can increase infinitely. Eventually some sort of regulation mechanism begins to limit the population size to a more or less fluctuating level. Density dependence often begins to show in a growing population by affecting that population's life history traits. I compared 1996 nesting data to data collected in 2006 and 2007. In 1996 clutch size were 5.6 eggs per nest (n = 7 nests), hatching rate of 70.8 % and a cygnet survival rate of 84 % (the highest in 15 years). However data from 2006 and 2007 shows a clutch size of 5.8 and 6.1 eggs per nest (2006 n = 24 nests and 2007 n = 15 nests), hatching rate of 57.4 % and 60.8 % and a survival rate of 36.3 % and 37.8 % respectively. In 2006 and 2007 fertility was checked on non-hatched eggs and after 2 years it appears to be decreasing. When a pool has more than one nest on it both hatching and fledging rates decrease. Density dependence might be occurring on the reintroduced trumpeter swans at Seney NWR and is probably one of multiple parameters affecting the nest success of the swans.

POSTER

THE STATUS OF TRUMPETER SWANS (*Cygnus buccinator*) AT SENEY NATIONAL WILDLIFE REFUGE (1991-2007)

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Abstract.-Because of its enabling legislation, remoteness, and habitat quality, Seney National Wildlife Refuge was identified as a sight for Trumpeter Swan (*Cygnus buccinator*) reintroduction in the late 1980's. Subsequently, 44 swans were released in the Refuge over a period of three years (1991 – 1993) in a multi-agency attempt to bring back a breeding population to the Upper Great Lakes region. Seney NWR Trumpeter Swans have had an average annual growth rate of 13 % since 1992. The past 16 years has shown a steady increase in the total number of white birds (adult/juvenile swans) on the Refuge (231 in 2007), the number of swan nests on the Refuge (33 in 2007), and the total number of cygnets hatched (82 in 2007). However, cygnet survival is still low (37.8%) compared to the long term average (52.4%) since the swans started nesting on the Refuge in 1992. Although the swan reintroduction program is an ongoing success for the Great Lakes region, information gaps still exist. These gaps include, but are not limited to, determining adult survival rates, identifying wintering and pre-breeding areas, identifying predators and predation rates on cygnets, and determining how swans are affecting the overall ecology of the pools on the Refuge.

CALIFORNIA CONDOR (*Gymnogyps californianus*), LEAD POISONING, POLITICS AND THE FUTURE OF HUNTING

R. Judd Hanna, former Commissioner, California State Fish and Game Commission

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ABSTRACT

40,000 years ago this prehistoric species ranged from what are now British Columbia to Mexico and across the continent to present-day Florida. In those days the land was awash with a plentiful food supply of Ice Age mammals like the Mastodon, Giant Sloth, Bison, Elk and Deer herds. In the last millennium, as the food supply diminished, these giant carrion eaters, nature's cleaning crew, consolidated on the west coast between Baja California, Mexico, and Washington State. With the arrival of Europeans the birds were hunted for feathers and eggs and subsequently subjected to DDT, power lines, habitat loss and lead poisoning. The condor has been on the endangered species list since 1967. In 1986 there were two breeding pairs left in the wild. In 1987 the last of the remaining wild birds was caught and brought into a captive breeding program. Today, approximately 150 condors remain in captivity and an equal number have been released into the wild in California, Arizona, Utah and Baja California, Mexico. The lead poisoning issue was brought to the forefront in 2006 with a lawsuit filed by the Natural Resources Defense Council and others against the California Fish and Game Commission. Subsequent toxicology and lead isotope studies determined that lead from ammunition was the leading cause of sickness and death in the California Condor. In order for hunting to continue and hunters to be respected, politics must be removed from the arena and hunters need to be the leaders in the fight to go "unleaded".

Sources and References:

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Gary Langham, Director of Bird Conservation, National Audubon Society, California
John Moir, Return of the Condor
Jeff Miller, Center for Biological Diversity
Elsevier, Biological Conservation
Jesse Grantham, California Condor Recovery Program, USFWS
Pamela Flick, Defenders of Wildlife
Dr. Robert Brown, Dean, College of Natural Resources, North Carolina State University
James Birkelund, NRDC
Hunting License Statistics, California Department of Fish and Game
Numerous hours of public testimony to the California Fish and Game Commission

VECTORS OR VICTIMS? THE ROLE OF SWANS IN THE TRANSMISSION OF AVIAN INFLUENZA VIRUSES

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ABSTRACT

Swans are among the most common species of wild bird found dead during outbreaks of the highly pathogenic (HP) H5N1 avian influenza (AI) in Europe and Asia. There has been protracted debate over the ability of wild birds to carry highly pathogenic H5N1, as movements, and hence dispersal of the virus, may be thwarted due to sickness or death of individual carriers. Laboratory tests have shown naïve (juvenile) swans to be much more susceptible to the HP H5N1 AI virus than wild species of ducks and geese, as the swans all died shortly after inoculation; an indication that swans may simply be victims of viruses carried to areas used by many species of aquatic birds. Recent work however has revealed that adult swans inoculated with the HP H5N1 virus do indeed become asymptomatic carriers of the virus, and hence potential vectors of the disease. I present information on the prevalence of swans in HP H5N1 outbreaks in Eurasia, consider arguments concerning the likelihood that swans carry the HP H5N1 virus, and discuss the surveillance program for HP H5N1 and other avian influenza viruses in swans in North America.

THE 2007 REVISION OF THE COOPERATIVE FLYWAY MANAGEMENT PLAN FOR THE EASTERN POPULATION OF TUNDRA SWANS

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ABSTRACT

Tundra swans (*Cygnus columbianus*) are divided into 2 populations for management purposes, the Eastern Population (EP) and the Western Population (WP). These population management units are based on substantially segregated breeding, migration, and wintering distributions determined from banding data and not on genetic differences. The EP spans all four flyways and, therefore, the Cooperative Flyway Management Plan is endorsed by the Atlantic, Mississippi, Central, and Pacific Flyway Councils. The first management plan for EP Tundra Swans was implemented in 1982, and a harvest strategy was adopted in 1988. The purposes of the Cooperative Flyway Management Plan are to identify population goals, establish guidelines and priorities for management actions, identify strategies and assign responsibilities for them, specify levels of public use, and emphasize research needs to improve the management of EP swans. The plan is scheduled for review and revision at 5-year intervals. In 2007, the EP Cooperative Flyway Management Plan (1998) was revised and endorsed by all four Flyway Councils. This updated plan incorporates new information and sets a path forward for continued accumulation of knowledge for the continental management of EP Tundra Swans. The specific population objective is to maintain at least 80,000 EP Tundra Swans based on a 3-year average population index from the Mid-winter Survey in the Atlantic and Mississippi Flyways. This population objective will provide the population level to satisfy public demand for enjoyment and use of this resource and satisfy the desire to maintain distributions of EP Tundra Swans throughout their range, as well as continue to support both subsistence and sport harvest.

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MARYLAND'S LANDSCAPE EFFECTS ON TUNDRA SWAN DISTRIBUTION

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The latest mid-winter waterfowl survey estimated that Maryland tundra swan (*Cygnus columbianus*) population has dropped by nearly 42% from 1997. It is speculated that tundra swans are spending less time in the Maryland's Chesapeake Bay and more time further south in North Carolina. Since 1974 Maryland has lost nearly 16% of their total agricultural cropland since 1974 as compared to nearly 5 percent in North Carolina. USDA Data Gateway's land cover and imaginary data was used to construct a map of land use and vegetation for North Carolina and Maryland for 2002. Both radio and satellite telemetry tracks of tundra swans were overlay with this map to gauge distribution. Tundra swans had a strong correlation for areas with greater than 25% agricultural crop land that was near a water body such as lakes and rivers. Swans were also found in urban areas with at least 15% agricultural. From the land use data map there was a strong correlation for corn and soybeans than other crops for both Maryland and North Carolina. Tundra swan distribution and abundance may be influence by not only the quality and quantity of sub- aquatic vegetation but also daytime land roost sites.

A REVIEW OF SWAN MARKING TECHNIQUES

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ABSTRACT

Marking animals is important for collection of certain biological data, but marking techniques have not always been used appropriately. The Greater Yellowstone Trumpeter Swan Working Group has had many discussions about marking techniques and their application to swan management and research. There has been a wide range of views based on personal experience, but insufficient data to answer concerns. A sub-committee was formed to compile data form past studies and we developed and distributed a simple questionnaire to collect a wider range of data related to swan marking efforts worldwide. We also reviewed the literature to obtain additional data. We know of several large databases still missing, including a long-term tundra swan dataset from the East Coast of the U.S., and data from trumpeter swan reintroduction programs in the upper Midwest (MI, MN and WI). Thus this report must be considered preliminary. We received 25 responses concerning marked tundra, trumpeter, mute and whooper swans. Markers used included leg bands, neckbands, various radio-transmitter configurations, patagial markers, and dyes. Most reports of neckband use included comments about icing. Mortalities were reported but these were always short-term (<3 days) events, usually affecting a small percentage (<3%) of marked birds, and occurred only conditions of high winds and extreme sub-zero temperatures. We recommend that additional attention be paid to agency protocols, marking ethics, and new analytical techniques. Research is lacking on the behavioral impacts of marking swans, and development and testing of new markers. We list >20 potential marking techniques that might be tested and applied to swan marking projects.
