

# **TESHEKPUK LAKE AREA MOLTING GOOSE SURVEY – 2007**

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**Abstract:** The 26<sup>th</sup> annual molting goose survey, conducted in the area north and east of Teshekpuk Lake on the Arctic Coastal Plain of Alaska, was conducted on 15-17 July 2007. Pacific brant, Canada geese, white-fronted geese, and snow geese were recorded throughout the survey area with counts of adults and (young) at 27,109 (45), 13,428 (120), 45,747 (2,563), and 6,626 (222), respectively. Totals of 229 tundra swans with 78 cygnets were also counted throughout the survey area.

**Key Words:** aerial survey, molting geese, Teshekpuk Lake, National Petroleum Reserve

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## INTRODUCTION

This report summarizes results from the 2007 Teshekpuk Lake area molting goose survey. The survey, initiated in 1976 and repeated in 1977-78 and conducted annually since 1982, monitors the abundance and distribution of molting geese that use the area north and east of Teshekpuk Lake. The significance of this area to molting geese was first documented by Hansen in 1957 (King 1970). Past surveys of the area have documented large concentrations of molting Pacific brant (*Branta bernicla nigricans*), Canada geese (*Branta canadensis*), and white-fronted geese (*Anser albifrons frontalis*).

This survey documents abundance and distribution of molting geese during the survey period (mid July). This time frame is believed to be the peak of the molting period for most geese, and observations during the survey (flightless geese) substantiate this assumption. The distribution of geese before and after the peak molting period may be different than the distribution during the survey. Furthermore, goose distribution during the survey period (mid July, 1976-2007) has changed over time (Flint et. al, 2007). Therefore, data collected during this survey should only be used to determine general trends (with limited temporal extent) of goose distribution during the peak molt, and should not be the sole source to determine goose distribution throughout the molt cycle in the area north and east of Teshekpuk Lake.

## STUDY AREA AND METHODS

### Study Area and Survey Design

The survey area included approximately 197 lakes and several bay, shoreline, and creek segments located north and east of Teshekpuk Lake (Figure 1). Each lake was identified by a unique number and observations of geese, swans, and loons were recorded for each lake. The 2007 survey was flown in a Cessna 206 amphibious equipped aircraft at 45-60 meters (150-200 feet) above ground level and at airspeeds of 130-190 kilometers per hour (80-120 miles per hour). Aircraft navigation was maintained by an aerial photographic based paper map with lake

identifiers (numbers) printed on the map and by a remote computer screen running a moving map program developed by John Hodges (USFWS, Waterfowl Management-Juneau). The aircraft flight path was recorded by a laptop computer connected to the aircraft global positioning system (GPS).

## **Survey Procedures**

Shorelines of large lakes were flown so that any feeding or loafing geese on land would be recorded. The surface of large lakes was also flown in a systematic fashion providing 100% coverage of the lake. For smaller lakes, a flight path over the lake provided an unrestricted view of the entire lake and shoreline. Observations from both observers were recorded directly into one laptop computer by the pilot/observer via a remote microphone (as sound files) using a program developed by John Hodges. A second computer program, also developed by John Hodges, was used later to replay sound files and transcribe data to ASCII files. The transcribed ASCII files were then used for data analyses.

## **RESULTS**

The 2007 survey was conducted over three days on 15-17 July. A total of 92,910 adult geese and 2,950 goslings were recorded during the survey. Pacific brant accounted for 29% of total adult geese observed during the survey (27,109 adults and 45 goslings), while white-fronted geese accounted for 49% of total adult geese (45,747 adults and 2,563 goslings). Canada geese totals were 13,428 adults and 120 goslings. Canada geese accounted for 14% of the total adult geese observed during the survey. Snow geese (*Anser chen caerulescens*) accounted for 7% of the adult geese observed during the survey (6,626 adults and 222 goslings). A total of 229 adult tundra swans (*Cygnus columbianus*) were observed along with 78 cygnets. Pacific loon (*Gavia pacifica*), red-throated loon (*Gavia stellata*), and yellow-billed loon (*Gavia adamsii*) totals were 187, 55, and 2, respectively.

Observation totals for geese, swans, and loons are provided in Table 1 for the 2007 survey. Figures 2-4 and 6-7 illustrate the numbers of adult geese counted on this survey from 1982-2007.

## **DISCUSSION**

### Pacific Brant

The importance of this survey area to molting Pacific brant (Figure 2) is well documented in previous reports of this survey. The 2001 count for Pacific brant in this area (36,817) was the highest ever recorded and constituted approximately 30% of the total Pacific brant population for that year. The 2007 count for Pacific brant in this area (27,109) accounted for approximately 20% of the total Pacific brant population that was counted the previous winter (140,000, Mallek and Conant, 2007). While the number of Pacific brant that use this area in a given year is an indicator of the importance of this area to brant, it doesn't indicate the proportion of the Pacific brant population that use this molting area in their life cycle.

Use of this molting area by failed and non-breeding after-second-year birds is determined by current-year success of breeding colonies throughout Alaska, Russia, and to some extent Canada. Similarly, use by non-breeding second-year birds is determined by successful recruitment during the previous reproductive year. Therefore, the number, or proportion of the population, of brant that use this molting area in a given year, or averaged over multiple years, is a biased indicator (biased low) of the use of this area by the Pacific brant population.

### Canada Geese

Use of the survey area by molting Canada geese is highly variable (Figure 3) and appears to be weakly correlated to use by Pacific brant.

### White-fronted Geese

The nesting grounds of white-fronted geese that use this area is believed to be the Arctic Coastal Plain of Alaska (ACP). Although the estimated population of white-fronted geese during the nesting season on the Arctic Coastal Plain has grown slightly over the last two decades (Mallek et al. 2007), the molting population in the Teshekpuk Lake survey area has had substantially more growth (Figure 4). The 2007 count for adult white-fronted geese (45,747) was the highest ever reported since this survey was initiated. This may be due in part to poor nesting success on the ACP during 2007 as indicated by the drop in white-fronted goose goslings counted during the survey (Figure 5) as compared to recent years.

### Snow Geese

Use of the survey area by snow geese is relatively low when compared to other species of geese, although in recent years snow goose numbers have increased significantly (Figure 6). The 2007 count for snow geese (6,626) was the highest on record, which may be a result of poor reproductive success in adjacent snow goose colonies outside the survey area..

## **CONCLUSION**

The importance of the Teshekpuk Lake survey area to molting geese has been well documented and is a major reason this area gained temporary protection from oil development in 1998. Data from this survey since 1998 confirms this importance. Since molting geese are highly susceptible to disturbance (Derksen et al. 1992), and in some years molting habitat provided by this small area is extremely important to the global population of Pacific brant, further protection of this area from disturbance caused by oil development is certainly warranted.

## **ACKNOWLEDGMENTS**

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## REFERENCES

- Derksen, D.V., K.S. Bollinger, D. Esler, K.C. Jensen, E.J. Taylor, M.W. Miller, and M.W. Weller. 1992. Effects of aircraft on behavior and ecology of molting black brant near Teshekpuk Lake, Alaska. Final Report to U.S. BLM and U.S. MMS. 227pp.
- Flint, P. L., E. J. Mallek, R. J. King, J. A. Schmutz, K. S. Bollinger, and D. V. Derksen. 2007. Changes in abundance and spatial distribution of geese molting near Teshekpuk Lake, Alaska: interspecific competition or ecological change? *Polar Biology* 31: *In press*. DOI 10.1007/s00300-007-0386-8
- King J.G. 1970. The swans and geese of Alaska's arctic slope. *Wildfowl* 21:11-17.
- Mallek E.J., R. Platte, and R. Stehn. 2007. Aerial breeding pair surveys of the Arctic Coastal Plain of Alaska – 2006. Unpublished Report. U.S. Fish and Wildlife Service, Fairbanks, Alaska. 25pp.
- Mallek, E.J. and B. Conant. 2007. Winter waterfowl survey Mexico west coast and Baja California.. Unpublished Report. U.S. Fish and Wildlife Service, Fairbanks, Alaska. 19pp.

*Data and conclusions presented in this report are preliminary and are not for publication or citation in published manuscripts without permission from the author.*















