

POPULATION DEMOGRAPHICS AND BREEDING ECOLOGY OF THE LONG-TAILED DUCK (*CLANGULA HYEMALIS*) IN THE CHURCHILL, MANITOBA AREA



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BACKGROUND

Little is known about the current population demographics and breeding ecology of long-tailed ducks (*Clangula hyemalis*) in the Churchill, Manitoba area, although extensive work was conducted 30 years ago by Dr. Robert Alison. Increased knowledge of these factors will result in better population management for this species and seabirds in general, which are in need of more study. Population surveys conducted on the west coast of North America suggest drastic declines for the long-tailed ducks and there also is concern of wintering populations on the Atlantic coast. In many areas of its range there also is a disparate sex ratio that favors males. This study is collecting data on the population demographics of long-tailed ducks in the Churchill area as well as accumulating data on the nesting habitat, on which this population is dependent. The Churchill, Manitoba study site is unique in that there are numerous nesting ducks, is readily accessible to researchers, and represents the most southern known breeding population of long-tailed ducks.

The habitat surrounding the areas used for nesting or loafing was evaluated to determine biotic and abiotic factors important to the ducks using the area. The diversity and abundance of macro-invertebrates available for food for ducklings and adults are important factors in understanding optimum habitat for this species. The use of islands as nest sites was evaluated as a potential factor reducing predation.



R. Alison Searching for LTDU Pairs

Data are being compared with historic data collected at this study site, and are being used as the basis of future studies, possibly with satellite radio telemetry that will have more of a continental perspective to the Churchill population. This study is also providing information on common eiders (*Somateria mollissima*) and arctic terns (*Sterna paradisaea*), which nest simultaneously and in the same habitat. Population biology is considered to be the largest gap in our knowledge in the life history of long-tailed ducks. This pilot study is trying to fill that gap by providing information on a breeding population of long-tailed ducks that will include nesting chronology, productivity, brood survival, and intra-specific interaction.

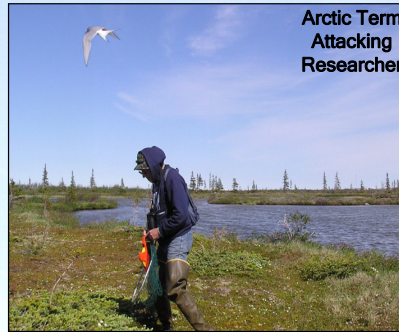


M. Perry Removing LTDU from Mist Net

OBJECTIVES

The goals of this pilot study are to determine components of breeding ecology of the local Churchill group of long-tailed ducks (LTDU) and to compare current status of long-tailed ducks and their habitat at Churchill with data collected by Dr. Alison thirty years ago. These data are providing baseline information that might have important value for long-term changes (e.g. global warming) that might be occurring in the Churchill area and throughout northern North America. Specific objectives include:

1. Determine nesting chronology and productivity of long-tailed ducks at Churchill study site.
2. Develop a population of marked ducks and methods of marking to enable more detailed study of demographics.
3. Determine intraspecific relationships and habitat conditions that affect nest location and outcome of nesting activity.



Arctic Tern Attacking Researcher



Herring Gull Attacking LTDU Brood

TECHNIQUES

Long-tailed ducks on the 4000 ha study site near Churchill, Manitoba were captured during a two-week period in mid-June with mist nets set over water, which are monitored continuously to avoid injury of ducks. In addition, females were captured while nesting with the use of dip nets. All nest examination and trapping was conducted late in incubation to minimize the possibility of nest desertion. Success or failure of all nests was determined by presence of embryo sacs detached from the eggshell. Size of broods was determined at hatching. Broods were drive-trapped into mist nets above and below water in early August to capture young of the year and molting females to determine brood survival.

All captured long-tailed ducks were banded with USGS-issued bands, and were aged, sexed, and weighed before release at capture site. Ducks were aged by use of bursa depth and plumage characteristics (especially scapulars, remiges, and retrices). The location and number of any eiders observed during this study were recorded for potential future studies with this species, which is believed to be increasing enormously since the 1960s and also is believed to winter on Hudson Bay. Intraspecific relationships in the study site was determined by recording all other avian species associated with the nesting site of the long-tailed ducks. Distance between nests, clutch size, and any intraspecific activities were recorded.

Each nesting site was recorded as being on an island, peninsula, or mainland. The habitat around each site used for nesting was described using biotic and abiotic characteristics, including elevation of nest above water, distance of nest from water, size of island, and distance from human influence (e.g., road). All measurements were made to the nearest centimeter using a one-meter stick and a 50-meter tape. Vegetation surrounding each nest was identified and percent cover for each plant species was estimated in the 2-meter area around each nest.

RESULTS

During 2005, a total of 15 nests were discovered in June and mean clutch size was 7 eggs. Number of discovered nests in 2005 was approximately half the number found during initial work in 2004. Several nest starts (1-2 eggs) were discovered, but eggs disappeared within a few days apparently from herring gull predation. Numbers of this species have increased in recent years in LTDU nesting areas. Nests were located an average 2.2 m from the water edge and 31 cm above water surface. Mean bowl depth late in incubation was 5.9 cm.

In June and August a total of 51 LTDUs were banded and sex ratio was equal among after hatching year adults and hatching year young. However, no second year males were captured in June, although second year females were common on breeding site.

Previous studies on the Churchill site by both principal investigators have revealed the close association that long-tailed ducks have with common eider and arctic terns. Arctic terns are very aggressive to predators such as gulls. Special consideration was given in this study to determine the commonality of factors in regard to nesting sites for these three species. The use of islands or narrow peninsulas as nesting sites for these species was evaluated as an important characteristic of nesting sites that might have potential benefits from reduced predation.



Female LTDU Captured with Net on Nest

CONCLUSIONS

This study is a preliminary study that is being used as the basis for future studies using the Churchill population for a continental approach with this species. Island nesting seems important to reduce mammalian predation, but does not influence herring gull predation. Arctic terns do deter gull predation. Understanding the Churchill population of long-tailed ducks could have important implications in understanding populations in more remote areas of Canada.



Embryo Sacs Indicating Successful Hatching of LTDU Nests

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