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Project Title: Ecological Evaluation

of the Peace-Athabasca Delta

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SUB-PROJECT 02

Evaluation of Waterfowl Use

Report on Field Season 1970

Submitted to H. J. Dirschl

by

Dan J. Nieman
September, 1970

Copy made and retained by Stephen

I. INTRODUCTION

The Peace-Athabasca Delta is dependent on the spring and summer flood levels of the Peace, Athabasca, and Birch rivers which maintain the delta by silt deposition and water retention. Since the filling of the resevoir behind the Bennett Dam on the Peace River near Hudson Hope, British Columbia was begun in spring, 1968, flows in the Peace River have remained quite low. The resultant change in the water level regime of the delta is expected to substantially affect the ecology of the area.

In 1968 the Canadian Wildlife Service initiated an ecological evaluation of the Peace-Athabasca Delta under the supervision of research scientist H. J. Dirschl. The objectives of the project are: (1) ecological classification and mapping, (2) evaluation of waterfowl use, and (3) topographical mapping, hydrological and meteorological records.

2. STUDY AREA

The Peace-Athabasca Delta covers an area of about 2,300 square miles in north-eastern Alberta, and lies between 58°15' and 58°50' N and between 110°40' and 112°30' W. Research was carried out mainly in the Mamawi lake area with the base camp located at Fort Chipewyan, Alberta.

3. FIELD SEASON 1970

The Canadian Wildlife Service commenced intensive data collection in May 1969. I assumed the duties of graduate assistant responsible for all technical aspects of Sub-project 02 - evaluation of waterfowl use in the Peace-Athabasca Delta. Under the supervision of Mr. Dirschl I completed the first field season of research 12 September, 1969. I resumed field work on Sub-project 02 on 4 May 1970 and terminated investigations 25 September 1970.

3.1 Sub-project 02: Evaluation of Waterfowl Use.

3.1.1 Specific objectives

(1) To determine distribution and size of waterfowl spring and fall populations;

(2) To determine habitat preferences of breeding populations of abundant species with respect to distribution of breeding pairs and broods;

(3) To evaluate use of the area for moulting; and

(4) To evaluate the effects of the water regime changes on the features of the waterfowl habitat.

3.1.2 Selection of study areas

Three representative study blocks were selected for detailed field work in the Claire, Mamawi, and Richardson lakes areas. The selected study blocks contain examples of lakes, rivers, streams, and potholes.

3.1.3 Methods

3.1.3.1 Waterfowl spring census

Two aerial counts were conducted on 7-9 May and 13-15 May to determine the spring distribution and population size of the abundant species. The census was carried out by means of a Piper Supercub aircraft flown parallel to the shoreline of selected lakes and streams. Numbers and species composition of waterfowl flocks was determined and recorded on magnetic tape.

3.1.3.2 Breeding pair census

The distribution of breeding pairs in relation to habitat types was determined by five closely spaced aerial counts on 19 May, 21 May, 24 May, 27 May, and 29 May. The census was carried out with the aircraft in a manner similar to the waterfowl spring census on representative habitat units, one

mile in length, previously marked with coloured plastic tape by means of an airboat.

3.1.3.3 Brood distribution and habitat preferences

Brood distribution in relation to habitat types was evaluated by ten replicate census' conducted from an airboat during the period 25 June to 28 August. Habitat units censused were the same as those utilized for the breeding pair census'. The airboat was driven approximately 100 yards from, and parallel to, the shoreline and broods seen recorded on magnetic recording tape. Ducklings were identified as to species, and the size and age class of the broods was recorded.

3.1.3.4 Moulting areas

The location of major moulting areas and the size and species composition of moulting flocks was determined through aerial reconnaissance from 21 to 23 July. Moulting waterfowl were counted on stream habitat, lakes, bays, and potholes. The census was carried out with the Piper Supercub in a manner similar to the waterfowl spring and breeding pair census'.

3.1.3.5 Waterfowl fall census

Aerial census of fall populations was carried out 8-11 and 21-24 September to determine population levels, species composition, and relative use of major habitat types. The aircraft was flown as in the previous aerial census' and data recorded on magnetic tape.

3.1.3.6 Vegetation sampling

The shoreline vegetation in the various habitat units censused was borken down into visible vegetation bands up to 400 yards from the water.

Each vegetation zone was referred to as a "stand" and sampled with

40 - 1/2 square meter quadrats employing the Braun-Blanquet method of vegetation sampling. Species present, cover values for each species individually, and for the stand as a whole, were derived. A total of 22 stands were sampled during the period 7 July to 6 August, 1970.

3.1.4 Utilization of data

Data from the waterfowl evaluation study will be collated with available information from the other sub-projects of the ecological evaluation of the Peace-Athabsca Delta and a completion report prepared. The objective will be to predict the long-term effects of the Bennett Dam on the waterfowl capability of the delta, and to recommend remedial actions to maintain desirable waterfowl populations.

From the waterfowl investigations carried out during the 1969 and 1970 field seasons, I will extract data on the breeding biology and habitat relationships of the mallard adn canvasback in the Peace-Athabasca Delta. This information will be compiled and analyzed for a M.Sc. thesis to be completed during the 1970-71 winter term at the University of Saskatchewan, Saskatoon.

3.2 Personal evaluation of field season 1970.

Research during the 1970 field season was completed with a minimum of difficulties. Excellent maintenance of equipment and cooperation by working companions enabled data collection to progress with maximum efficiency.

I wish to thank Mr. H. J. Dirschl for his supervision of my research, and the other members of the research and technical staff who all proved to be amiable working companions and friends throughout the summer.

D. J. Nieman
September, 1970