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AN ECOLOGICAL SURVEY OF THE CHIGNECTO COASTAL WETLANDS **

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Scope of Investigation

Between New Brunswick and Nova Scotia, along the coasts of the Chignecto Bay and its extensions, Shepody Bay and Cumberland Basin, there are about 80 square miles of coastal lowlands which owe their existence to the direct or indirect influence of the high Fundy tides. The present survey will provide information on the ecology of this large and important wetland area and will serve as a basis for a consideration of wildlife values in land planning and management.

As originally proposed, the survey was to be restricted to the Jolicure Lakes area, of about five square miles near Sackville, N.B. That area, however, is too small to contain representative examples of all important wetland conditions.

Note: This information has been prepared for the annual meeting of the Canadian Wildlife Service Staff in Ottawa, February 5-7, 1968 and represents a summary of investigations between April 1, 1967 and February 1, 1968. A formal report on the Yorkadone during the fiscal year 1967-68 will be submitted in march.

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The Chignecto lowlands, furthermore, from the low tide line to the upland border form a geomorphic and ecological unit and conditions in any part can be understood only if the whole landscape is taken into consideration.

Work Done to Date

In 1967 the investigator spent a total of 124 hours in the field. Mr. William Grant, a summer student employed by the Sackville Office of the C.W.S., provided field assistance during the summer. In the fall Mr. Daniel Welsh assisted for a total of 32 hours. Herbarium work was done in July and August by Miss. J. E. Price while Mr. Donald Trenholm analyzed water samples for three weeks in July. To date the investigator has spent 55 hours with work on the report for the year 1967-68. Results of this work and plans for the coming year are summarized in the following sections.

Landscape Units

The large variety of different surface conditions found in this area have been grouped into a limited number of "landscape units". With consideration of communities described elsewhere in the literature, those landscape units have been defined on the basis of physiognomy and floristic composition of the vegetation, waterlevels, soil morphology, salt content, and base status of water and soil. Twenty-eight such units have provisionally been established. In 1968-69 these units will be re-evaluated on the basis of

additional data including bottom deposits, oxygen contents C/N/P ratios in soils and bottom deposits, and aquatic invertebrates. The landscape units will serve as mapping units and for the organization and correlation of data. They will also be units of land use value and land use potential.

Landscape Pattern

The distribution and arrangement of landscape units into a landscape pattern has been studied. On the basis of characteristic combinations and arrangements of landscape units, four landscape zones have been distinguished between low tide line and upland border: mudflat zone, salt marsh zone, reclaimed marsh zone, and lake and peatland zone. A provisional map showing the distribution of landscape elements and zones will accompany the March report. Field work for a definitive map will be done in 1968.

Landscape Dynamics

Wetland landscapes tend to be in an unstable state. Effective manipulation for the protection and improvement of wildlife values depends, therefore, on the knowledge and understanding of historical developments and successional relationships, A description of such developments and relationships based on literature information and on interpretation of present-day conditions is being prepared for the march report. More precise and detailed information

will be obtained in 1968-69 through interviews of local residents; comparison of descriptions, maps, and photographs made of the area at different times; investigations of peat and bottom deposits; and tree ring studies. Future changes may be followed by means of permanent plots, transects or remapping.

Vertebrate Animals

On the basis of data obtained by members of the Sackville Office of the C.W.S., literature, information gathered from local residents, and my own observations an assessment will be made in the March report of the vertebrate animal component of the different landscape zones and landscape units, and its relationships to the other components of the landscape ecosystem. More precise information will be obtained in 1968-69.

Wildlife Values and Management

Recommendations for the consideration of wildlife values and their maintenance or habitat manipulation can be summarized as follows:

Parts of the mudflat zone and salt marsh zone are important as habitat for Canada geese, surface-feeding ducks, and waders during spring and fall migrations. Possibilities for habitat manipulation appear to be excluded or limited because of the tides. For the salt marsh zone,

there exists the possibility for reclaimation for agriculture through dyking. In that case the loss of wildlife habitat should be weighed against agricultural gains.

The reclaimed marsh zone is largely occupied by landscape units of more or less eutrophic character. The agricultural land use counteracts the general successional tendency, typical of cool, humid regions, towards a more oligotrophic-dystrophic condition. This zone seems to have a high wildlife potential especially for surface feeding ducks. It appears that a considerable amount of habitat manipulation would be necessary to realize this potential. Any such manipulation would have to be coordinated with development for agriculture. Such coordination would, however, not appear to be difficult because agricultural potential decreases and wildlife potential increases with decreasing drainage conditions. This zone could, therefore, be subdivided on the basis of drainage into lands to be used best for agriculture and those best for wildlife. It could even be considered that future reclaimation work might be modified as to result also in habitat improvement for wildlife.

The size of wildlife populations in the lake and peatland zone appears to be limited because of its predominantly mesotrophic to oligotrophic-dystrophic character. It is, however, by far the most varied and most interesting of the four zones, containing the largest number of different landscape units, plants, and animal species, including a few

which reach in the Chignecto lowlands the limit of their distribution, or occur here as outposts, widely separated from their main range. Emphasis in the management of this zone should be on the preservation of the present conditions and any manipulations which would threaten the persistence of interesting animal and plant species, landscape units, and landscape pattern should be avoided.

Work in 1968-69, including literature studies on the management of similar wetlands elsewhere, will be centered on the last two zones, and will include a separate plan for habitat management for wildlife in the reclaimed marsh zone.

Research Contract
Number 20