A PARTIAL SURVEY OF THE TREMATODES OF MANITOBA WATER AND SHORE BIRDS

A THESIS

Presented to

the Faculty of Graduate Studies and Research

University of Manitoba

In Partial Fulfillment

of the Requirements for the Degree

Master of Science

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by

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May 1956

ACKNOWLEDGMENTS

The writer wishes to express his sincere appreciation to his adviser, Professor R. A. Wardle, for his help and guidance and for the use of his private library.

Thanks are also due to Dr. J. A. McLeod for his advice and loan of personal material, and to Dr. A. Savage for the use of photographic equipment.

ABSTRACT

Thirty seven trematode species are described from twenty six separate bird hosts. Six new species as well as six undetermined species are included. A new genus, Xenisma, is proposed for a new species belonging to the isolated genera of the family Echinostomatidae. The six new species are: Parastrigea neorobusta, Cotylurus mcleodi, Stephanoprora lari, Xenisma wardlei, Echinostoma platyrhynchi, and Echinostoma manitobensis. The undetermined species are: Mesostephanus sp., Plagiorchis sp. 1, Plagiorchis sp. 2, Astiotrema sp., Hindia sp., and Haematotrephus sp.

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CHAPTER I

INTRODUCTION

This project was undertaken with a view to increasing our knowledge of the trematodes in the Province of Manitoba. Of necessity it was restricted to surveying a small segment of the animal life in the Province. Investigation of the water and shore birds was decided upon, as much material had already been collected from this group during a survey carried out to determine the varieties of cestodes in the Province by Neufeld (616).

The material examined was mainly that which was kindly given to the author by Mr. N. Neufeld, which had been collected by him along the Nelson and Hays Rivers in northern Manitoba, and at Whitewater Lake in southern Manitoba. Additional material was obtained by the author from the Netley marshes, south of Lake Winnipeg, and from Professor R. A. Wardle and Dr. J. A. McLeod from whom I was kindly loaned material which was already mounted. Birds brought in by hunters were examined for trematodes, and the trematode collection in the Zoology Department at the University of Manitoba was also employed in this survey.

Intensive work on schistosome dermatitis had been carried out in the Province by Wardle (475, 476), McLeod (306, 307,

309), McLeod and Little (310), and Swales (426), and much information, including life cycles on the schistosomes, was recorded. This information has been integrated into this work.

A resume on the helminthological work done in Manitoba has been included, as well as a summary of the research done across Canada on trematodes. It is hoped that this project will in some small way help to consolidate the work that has been done in Canada on the study of trematodes.

Twenty six bird hosts have been included in this survey, however due to the small number of birds examined, no definite conclusions can be made as to the host specificity of the parasites described.

CHAPTER II

HISTORICAL

The investigation of trematodes in Canada has been channeled towards the domesticated birds and animals, mainly from an economic point of view. However it has been realized for some time now, that to maintain our herds and flocks free of parasites, or to minimize them, we must know the life cycles of these parasites. Once this knowledge is gained, the weak link in the cycle can be determined, and we are then enabled to apply measures which can eliminate or reduce these parasites. Since these cycles include diverse types of life, we cannot limit our investigation to the domesticated animals, but must include the wild life as well.

In Canada, Allen (8, 9), Kennedy (251), Kingscote (254, 255), Knight (260), Law (282), Law and Kennedy (283) and Duff (153) have investigated the fur-bearing animals, however most of the investigation has centred on the parasitism of fishes. Lyster (292, 293, 294, 295), Bangham (25, 26, 539), Bangham and Venard (27, 540), Cameron (98, 99, 100, 101, 102, 103), Choquette (117, 118, 553), MacLulich (602), and Miller (609, 612) have covered the eastern portions of Canada quite intensively. In the west, Bangham and Adams (541) have checked the fresh water fish in British Columbia. Cooper (126) Heller (577), and McFarlane (298, 299) have checked the trem-

atode parasites of Canadian marine fishes, while Lyster (296), has done some investigating of Canadian sea mammals. One of the earliest workers in the field of Canadian parasitology was Stafford (649) who had investigated amphibians (412), fishes (413), marine vertebrates (415), and vertebrates in general (414). Cameron (550), Kingscote (256), Miller (611), and Parnel (369) also checked Canadian animals, the latter concentrating his study in the north eastern part of Canada. Miller (613) made a critical study of Stafford's early report on the parasites of Canadian animals. Ruminants have been investigated by Griffiths (573), Hadwen (184), Kingscote (256, 258) and Swales (424, 425), who reviewed the literature of Canadian helminthology up to 1933, restricting his study to the helminth parasites of domesticated and semi-domesticated mammals and economically important birds, (422, 423). Cannon (104, 105), investigated ducks, geese and starlings, Miller (610), pigeons, and Rayner (634) wild birds, in eastern Canada. In general, very little work has been done on the birds of Canada. In the Arctic areas, Brown et al (76) did some work at Igloolik in the North West Territories, while Cooper(127) investigated the trematodes and cestodes of the Canadian north as early as 1913. Cameron (97) looked into parasitism and public health in Canada. Hogarth (200) and Ross (391) reported bilharziasis in Canada, while Conklin and Baker (125) discovered the presence of the lancet fluke in 1930.

A break down of the helminthological investigations in Manitoba is as follows: (a)-Trematoda; Allen and Wardle (10) on a serious outbreak of infection of the dogs of northern Manitoba, McLeod (306, 307, 308, 309), McLeod and Little (310), Swales (426), and Wardle (475, 476), all of whom did quite extensive work on the schistosomes, with particular detail on schistosome dermatitis in the Province. Prosthogonimus was reported by Savage (395) in chickens. (b)-Cestoda; McLeod (305) investigated the genus Citellus, Kuitunen-Ekbaum (701), Nicholson (339, 340, 341, 342), Little (595), Newton (618), and Wardle (474) the fish, Boughton (545), the snowshoe rabbit, Riddle (637), the cats of Winnipeg, and Neufeld (616) the birds of Manitoba. (c)-Nematoda; Marchant (605) on the nemas of Manitoba soils, Smedley (699) marine and fresh water fish, and Rempel (635) who investigated the importance, overwinter survival, and geographic distribution of the internal parasites in sheep. (d)-Physiological and Technique; Green (572), Stewart-Hay (650), Harvey (576), and Wardle (671, 672, 673), all of whom confined their investigations to the cestoda. Hurst (584) investigated histological and toto-mount technique, using Dibothriocephalus latus and Triaenophorus nodulosus in his work as the availability of this material was extremely good.

Other trends in helminthological studies are as follows: