



White as a Ghost, Winter Ticks and Moose

Author: Addison, Edward M.

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White as a Ghost, Winter Ticks and Moose. By Bill Samuel, Published by The Federation of Alberta Naturalists, 11759 Groat Road, Edmonton, AB T5M 3K6 CANADA. 100 pp. ISBN-10: 0-9696134-6-6. CDN \$24.95 (Hardback).

Review by Edward M.

Our understanding of winter ticks (*Derma-centor albipictus*) and moose (*Alces alces*) is largely a 20th century story beginning when Seton (1909) described winter ticks as a greater “enemy” of moose than were wolves, bears, and cougars. Until 1980, field observations comprised the literature on winter ticks and moose. In the last two decades of the century, Bill Samuel, along with colleagues in Alberta and others, examined the relationship between winter ticks and moose using thorough experimental and field studies.

White as a Ghost, Winter Ticks and Moose is a summary of our knowledge of the moose-winter tick-habitat complex. It is appealing reading for the general public, as well as a wide range of people in science. It is likely of greatest interest to “people of the land” (farmers, hunters, naturalists, trappers), secondary and post-secondary biology students, and wildlife biologists. At the same time, it should have great appeal to people studying wildlife health. Rare is the book that can be of interest to such a breadth of audiences.

Techniques that lead to the broad appeal begin with the overall presentation of the book. The front cover has a stunning picture of a wild moose with extensive alopecia arising from its relationship with winter ticks. There are excellent photographs and simple illustrations or graphs on over half of the 100 pages plus preface and prologue. Of the over 60 photographs, there are only two or three that are not of the highest quality. Simple graphs, science sidebars, and earth-tone colors and fonts for chapter headings and subject areas within chapters all enhance the organization of the subject matter and help the reader to easily absorb the contents.

Samuel has used an informal writing style that begins with his name. The author is “Bill Samuel” rather than the “W. M. Samuel” that we have become accustomed to in most of his scientific writings. There is simplicity to the writing as Bill describes complex ecological relationships. Bill’s humor entertains the reader “par tick ularly” with his frequent play on the word “tick.”

There are nine chapters in the book, all in a logical sequence beginning with a short introduction to parasites, ticks, winter ticks, and the geographic distribution of winter ticks on moose range. The second chapter reviews the published field observations from throughout the 20th century about winter ticks on moose. Winter tick is the only “one host tick” in Canada. This point and other aspects of the life history of the tick comprise Chapter 3. Moving toward the moose side of the winter tick-moose-habitat complex, Chapter 4 summarizes the fascinating morphological and behavioral adaptations that facilitate the attachment of larval winter ticks to moose. Chapter 5 describes the enormous numbers of winter ticks on infested moose as compared to ticks on other North American wildlife.

The impact of winter ticks on individually infested moose is reviewed in the longest chapter, Chapter 6. Topics discussed are: evidence of anemia and other blood physiological responses, grooming behavior, activity patterns, growth, and occurrence of fat reservoirs in moose. Chapter 7 summarizes ways in which moose minimize numbers of ticks that they carry, including avoidance, tolerating corvid foraging on the ticks on moose, and grooming to remove ticks.

Chapter 8 reviews not only the relationship of the winter tick and moose, but also the relationships of meningeal worm (*Parelaphos-trongylus tenuis*) and liver flukes (*Fascioloides magna*) with moose. These relationships are explored in an evolutionary context with respect to both their duration and spatial occurrence.

The final chapter discusses the potential interactive effects of moose population numbers, winter ticks, weather, vegetation, habitat management, and hunting. Although this is a highly complex set of interactions about which only a limited amount is known, Samuel continues to provide easily understood suggestions and explanations.

Although the text has a popular writing style, there is no doubt as to the extent to which the material is based on science. Throughout the book, Samuel refers to the more than 90 papers that are summarized in the bibliography. The bibliography alone is a valuable summary of the current literature.

Those of us in science need to effectively communicate the results of our work to the public. *White as a Ghost, Winter Ticks and Moose* is an excellent template for others to examine should they choose to write about their research for the general public.

Literature Cited

SETON, E. S. 1909. Life-histories of northern mammals, an account of the mammals of Manitoba. Volume I. Grass-eaters. Charles Scribner's Sons, New York, New York, 673 pp.

Edward M. Addison, Ecolink Science, 107 Kennedy Street West, Aurora, Ontario L4G 2L8, Canada. (ecolink@aci.on.ca)