UNITED STATES DEPARTMENT OF AGRICULTURE

INDEX-CATALOGUE

OF

MEDICAL AND VETERINARY ZOOLOGY

SPECIAL PUBLICATION NO. 1

CHECKLIST OF THE INTERNAL AND EXTERNAL PARASITES OF DEER, *ODOCOILEUS HEMIONUS* AND *O. VIRGINIANUS*, IN THE UNITED STATES AND CANADA

UNITED STATES DEPARTMENT OF AGRICULTURE

INDEX-CATALOGUE
OF
MEDICAL AND VETERINARY ZOOLOGY

SPECIAL PUBLICATION NO. 1
CHECKLIST OF THE INTERNAL AND EXTERNAL PARASITES OF DEER, *ODOCOILEUS HEMIONUS* AND *O. VIRGINIANUS*, IN THE UNITED STATES AND CANADA

By

MARTHA L. WALKER, ***Zoologist***

and

WILLARD W. BECKLUND, ***Zoologist***

National Animal Parasite Laboratory
VETERINARY SCIENCES RESEARCH DIVISION
AGRICULTURAL RESEARCH SERVICE

Issued September 1970

U. S. Government Printing Office
Washington: 1970

ABSTRACT

The protozoan, helminth, and arthropod parasites of deer, *Odocoileus hemionus* and *O. virginianus*, of the continental United States and Canada are named in a checklist with information categorized by scientific name, deer host, geographic distribution by State or Province, and authority for each record. Sources of information are the files of the Index-Catalogue of Medical and Veterinary Zoology, the National Parasite Collection, and published papers. Three hundred and fifty-two references are cited. Seventy-nine genera of parasites have been reported from North American deer, of which 73 have been assigned one or more specific names representing 137 species (10 protozoans, 6 trematodes, 11 cestodes, 51 nematodes, and 59 arthropods). Sixty-one of these species are also known to occur as parasites of domestic sheep and 54 as parasites of cattle. The 71 parasites that the authors have examined from deer are marked with an asterisk. This paper is designed as a working tool for wildlife and animal disease workers to quickly find references pertinent to a particular parasite species, its deer hosts, and its geographic distribution.

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C. 20402 - Price 50 cents

CHECKLIST OF THE INTERNAL AND EXTERNAL PARASITES OF DEER, *ODOCOILEUS HEMIONUS* AND *O. VIRGINIANUS*, IN THE UNITED STATES AND CANADA

By MARTHA L. WALKER and WILLARD W. BECKLUND, Zoologists,
Veterinary Sciences Research Division, Agricultural
Research Service

During the course of recent taxonomic investigations and responses to inquiries on the parasites of North American deer, we have encountered unusual difficulties in consulting the voluminous literature concerning, or at least mentioning, deer parasites. Not only are the publications on the subject vast in number, but they are also scattered in an assortment of periodicals, reports, books, and bulletins written by workers of exceptionally diverse backgrounds and interests for widely varying audiences and purposes.

Despite this volume of literature, the speciation, incidence, and geographic distribution of the parasites of North American deer have not yet been adequately documented. As Anderson (1962)[1] pointed out, "... it is not easy for students of these problems, especially those who are not primarily parasitologists, to compare their findings with what is already in the literature." The resultant confusion has costly implications for wildlife management and veterinary parasitology. Hoping to alleviate this situation somewhat by providing a working tool for future investigations, we decided to complete, insofar as possible, our collection of the literature on deer parasites and to make readily available some of the information contained therein.

In light of the aesthetic and economic significance of deer, it is understandable that more, perhaps, has been written about this animal than about any other wild mammal. Important to wildlife workers and sportsmen as the most hunted big game animal in the United States and as a food animal, the deer is significant to farmers as a source both of crop damage and of parasites and diseases which are transmissible to his domestic animals. Slightly more than 40 percent of the parasites reported from deer are also known to occur as parasites of domestic sheep and slightly less than 40 percent as parasites of cattle.

Because of potential disease relationships to livestock and the consequential role that deer may play in quarantine and regulatory activities, they are animals of interest to veterinarians and veterinary parasitologists. The cattle fever tick, *Boophilus annulatus* (Say, 1821), was described from specimens from a deer; and there are reports attesting that deer infested with *B. microplus* (Canestrini, 1887), another vector of cattle fever, delayed eradication of this dangerous tick from Florida (e.g., Knapp, 1940). Neither species of *Boophilus* now occurs in the United States. Before the advent of the current program to eradicate screw-worms from the United States, Lindquist (1937) suggested that wild animals, including deer, serving as hosts of screw-worms may have been a constant reservoir of infestation for domestic animals. Baker, Longhurst, and Douglas (1957) have done experimental work on the possibility of mutual exchange of gastrointestinal nematodes between domestic sheep and black-tailed deer. The proof that anaplasmosis occurs in wild deer and that it may be transmitted from deer to cattle and vice versa (Boynton and Woods, 1940; Osebold, Christensen, Longhurst, and Rosen, 1959; Howe and Hepworth, 1965; and others) complicates the current thinking on a control program for this disease. The large American liver fluke, *Fascioloides magna* (Bassi, 1875), is well tolerated by deer, whereas in sheep it is highly pathogenic and often causes death (Griffiths, 1962). These are a few examples of the role that deer may play in the transmission of diseases to livestock.

[1] Literature Cited, pages 35 to 45, is referred to in the text and in Table 1 by the name of the author (or authors) followed by the date of the publication in parentheses, or by both name and date in parentheses.

Three relatively recent works concerning the literature on North American deer parasites have been published: (1) A bibliography by Halloran (1955) includes references to diseases of all wild mammals and birds on a worldwide basis. (2) Anderson (1962) critically reviews the literature on helminth and arthropod parasites of the white-tailed deer. (3) A partly annotated bibliography edited by Karstad (1964, 1969) covers all diseases of the Cervidae of the world and is available only on microcards. Although each of these compilations is useful, they are not arranged so that references pertinent to a particular parasite species, its deer hosts, and its geographic distribution can be easily and efficiently retrieved. Our intent is to present this information in a concise and easy-to-use checklist categorized by parasite name, host, State or Canadian Province from which the parasite is reported, and authority (Table 1). The protozoan, helminth, and arthropod parasites of both North American species of deer are covered. No information was gathered on blood-sucking diptera that do not spend the larger part of their life on the host (simulids, tabanids, culicids, etc.).

Our sources for the checklist are the files of the Index-Catalogue of Medical and Veterinary Zoology, the National Parasite Collection, and available published papers. To conserve space, we used a slightly different bibliographic style than that of the Author Catalogue of the Index-Catalogue. Where two or more publications by the same author or set of authors in a single year are cited, the letters following the dates of publication correspond to those in the Author Catalogue. Over 300 publications are cited; we examined at least twice this number. References were not included if: (1) no definite geographic area was given; (2) hosts were not clearly correlated with either localities or parasite species or both (unfortunately, a major contribution with such valuable information as that of Bishopp and Trembley (1945) largely falls into this category); (3) only common names, rather than scientific names, of parasites were used; (4) dangerous assumptions on our part concerning parasite synonymy would have been necessary; (5) the work was not original but consisted of general statements or facts based on previously published records; (6) the nonparasitic stage of certain ectoparasites (*Cephenemyia* spp. and hippoboscid flies) was discussed without specific reference to the parasitic stage; (7) vague and evasive wording made it impossible to determine whether a parasite was actually being reported or not; or (8) the report concerned only experimental work and, therefore, did not reflect the natural occurrence of a parasite.

Although many of the parasites listed have been reported in the literature under more than one name, we recorded each parasite species under the scientific name currently accepted for it. To minimize confusion, synonymous names are listed for some species, but to indicate synonymy completely is an undertaking beyond the scope of a checklist. No new synonymy is proposed in this paper. However, a related problem arises in that the generic designation for the meningeal worm of *Odocoileus virginianus* has been in a state of confusion for several years because more than one name has been used by some animal disease workers. Recent findings by Brunetti (1969) on recovery of a little known, similar species will probably result in a definitive, generally acceptable conclusion. Rather than draw possibly unfounded conclusions about synonymy, we either omitted some genera and species of parasites of doubtful occurrence on deer or combinations of questionable nomenclatural validity (e.g., *Linognathus* sp., *Haematopinus crassicornis*) or we listed them exactly as they were reported (e.g., *Cervicola forficula, Damalinia americana, Damalinia* sp., *Trichodectes tibialis, Trichodectes* sp., *Dermacentor erraticus* typical, *Dermacentor erraticus* var. *albipictus*). Excluding these dubious genera and species, 79 genera of parasites have been reported from North American deer, and 73 of these have been used in combination with one or more specific names to represent 137 species (10 protozoans, 6 trematodes, 11 cestodes, 51 nematodes, and 59 arthropods).

Following the example of Miller and Kellogg (1955), we recognize two species of *Odocoileus* in the United States and Canada—*O. hemionus* (Rafinesque, 1817) and *O. virginianus* (Zimmermann, 1780). In some of the literature cited, the generic names *Cariacus, Cervus,* and *Dama* are used for these two species. Publications concerning *O. columbianus,* mule deer, black-tailed deer, coast deer, Columbian black-tailed deer, etc. were considered to be referring to *O. hemionus.* Publications involving white-tailed deer, Virginia deer, or any of the numerous subspecies of *O. virginianus* were referred to that species. Publications mentioning only deer or *Odocoileus* sp. were simply reported under deer with no assumptions about the species.

Information on geographic distribution of the parasites was derived from the published papers that are cited in parentheses following the name of the State or Canadian Province. Numbers from the National Parasite Collection (USNM Helm. Coll. and USDA Par. Coll.) are cited only when they provide records not available in the literature. Some recent Collection records were omitted in deference to depositors who presumably intend to publish their findings in the near future. Dr. K. C. Emerson kindly made available to us records, which are cited like the National Parasite Collection numbers, from his own personal collection and from the U.S. Na-

tional Museum Entomological Collection on the biting lice.

Using material in the National Parasite Collection, we attempted to examine specimens from deer of each of the parasite species reported. Those species marked with an asterisk are those that we have seen. The fact that any species is not marked with an asterisk is not necessarily to be construed as having negative implications regarding its actual occurrence but simply to indicate that we have not personally seen that species. However, we are extremely doubtful about two species of nematodes that were not marked with an asterisk. We question that the *Setaria* of *Cervus elaphus*, incorrectly named *S. cervi* (Rudolphi, 1819), has ever been recovered from North American deer. We have examined 98 specimens of *Setaria* collected from deer in the United States and Canada, including the British Columbia material which Cowan (1946, 1951) reported under this name, and have found them all to be *S. yehi* Desset, 1966. A more complete discussion of the difficulties in speciation and nomenclature of this genus may be found in Becklund and Walker (1969). We have also examined many specimens collected from deer and identified as *Nematodirus filicollis* (Rudolphi, 1802), and in every case we have re-identified them as *N. odocoilei* Becklund and Walker, 1967. It seems likely that this recently described species has been consistently called by the name of the older, supposedly very common species.

An unusual problem arises in recording some ticks of deer. *Dermacentor albipictus* (Packard, 1869) and *D. nigrolineatus* (Packard, 1869) have been reported as separate species (Bishopp and Trembley, 1945) and as one species having two forms (Cooley, 1938), largely differing in that one has an abundance of white on the scutum and the other is without white. We have seen male and female tick specimens (from deer) that could represent both species, as well as specimens with intermediate characters. McIntosh and McDuffie ([1957]) thought that the two species may be separate and may interbreed, giving rise to hybrids with intermediate characters. We have elected to record both species exactly as reported by the various authors and as indicated in the Collection records.

Table 1. Checklist of the Internal and External Parasites of Deer, Odocoileus hemionus and O. virginianus, in the United States and Canada.

PARASITES (* Species seen by authors)	HOSTS: Odocoileus hemionus	HOSTS: Odocoileus virginianus	HOSTS: Deer	GEOGRAPHIC DISTRIBUTION
PROTOZOAN AND PROTOZOAN-LIKE ORGANISMS				
Anaplasma marginale	x			California (Christensen, Osebold, and Rosen, [1959]; Osebold, 1959; Osebold, Christensen, Longhurst, and Rosen, 1959; Osebold, Douglas, and Christensen, 1962; Christensen and McNeal, 1967).
	x			Wyoming (Landram and Honess, 1955; Honess and Winter, 1956; Howe and Hepworth, 1965).
		x		Wyoming (Honess and Winter, 1956).
Anaplasma sp.	x			California (Boynton and Woods, 1933, 1940).
		x		Texas (Kuttler and Robinson, 1967).
			x	California (Hurt et al, [1945]).
Babesia cervi Emerson and Wright, 1968, not (Bettencourt, Franca, and Borges, 1907) Manson, 1907		x		Texas (Emerson and Wright, 1968; Emerson, 1969).
Babesia sp.		x		New Mexico (Spindler, Allen, Diamond, and Lotze, 1958).
		x		Texas (Kuttler and Robinson, 1967).
Eimeria madisonensis		x		Wisconsin (Anderson and Samuel, 1969).
Eimeria mccordocki	x			Wyoming (Landram and Honess, 1955; Honess and Winter, 1956).
		x		Pennsylvania (Anderson and Samuel, 1969).
		x		Texas (Anderson and Samuel, 1969).
		x		Wisconsin (Anderson and Samuel, 1969).
Eimeria odocoilei	x			Washington (Levine, Ivens, and Senger, 1967).
		x		Pennsylvania (Anderson and Samuel, 1969).
		x		Texas (Anderson and Samuel, 1969).
		x		Wisconsin (Anderson and Samuel, 1969).
Eimeria virginianus		x		Pennsylvania (Anderson and Samuel, 1969).
		x		Wisconsin (Anderson and Samuel, 1969).
Eimeria zurnii		x		Wisconsin (Dahlberg and Guettinger, 1956).
Eimeria sp.	x			California (Longhurst and Douglas, 1953).
	x			Wyoming (Landram, 1951b).
		x		Pennsylvania (Samuel and Beaudoin, 1966; Samuel, 1967).
		x		Wisconsin (Samuel and Trainer, 1969).
Eperythrozoon sp.	x			Wyoming (Howe and Hepworth, 1965).
		x		Texas (Kuttler and Robinson, 1967; Kuttler, Robinson, and Rogers, 1967a).

Table 1. Checklist of the Internal and External Parasites of Deer, Odocoileus hemionus and O. virginianus, in the United States and Canada -- Continued

PARASITES	HOSTS			GEOGRAPHIC DISTRIBUTION
	Odocoileus hemionus	Odocoileus virginianus	Deer	
Sarcocystis gracilis	x			California (Taber and Dasmann, 1958).
Sarcocystis sp.	x			California (Sayama, 1952).
	x			Wyoming (Honess and Winter, 1956).
		x		Ontario (Karstad and Trainer, 1969).
		x		Texas (Karstad and Trainer, 1969).
		x		Wisconsin (Karstad and Trainer, 1969).
			x	Wyoming (Rush, [1932]).
Theileria cervi		x		Illinois (Schaeffler, 1963).
Theileria sp.		x		Missouri (Schaeffler, 1961; Krier, Ristic, and Watrach, 1962).
		x		Texas (Cook, Trainer, Glazener, and Nassif, 1965; Glazener and Knowlton, 1967; Kuttler and Robinson, 1967; Kuttler, Robinson, and Bell, 1967; Kuttler, Robinson, and Rogers, 1967a, 1967b; Robinson, Kuttler, Thomas, and Marburger, 1967; Emerson, 1969).
Toxoplasma gondii	x			New Mexico (Trainer, 1962).
		x		Georgia (Walton and Walls, 1964).

Table 1. Checklist of the Internal and External Parasites of Deer, Odocoileus hemionus and O. virginianus, in the United States and Canada -- Continued

PARASITES	HOSTS: Odocoileus hemionus	HOSTS: Odocoileus virginianus	HOSTS: Deer	GEOGRAPHIC DISTRIBUTION
TREMATODES				
Rumen fluke				
*Paramphistomum liorchis			x	Alabama (USDA Par. Coll. 47560).
			x	Florida (Price and McIntosh, 1944).
			x	Louisiana (Price and McIntosh, 1944).
Blood fluke				
Heterobilharzia americana		x		South Carolina (Byrd, Prestwood, and Maples, 1967).
Liver flukes				
Fasciola hepatica	x			British Columbia (Hadwen, 1916).
	x			California (Longhurst and Douglas, 1953; Taber and Dasmann, 1958; Browning and Lauppe, 1964).
			x	California (Herman, 1945e).
			x	Montana (Butler, 1932).
*Fascioloides magna (Fasciola magna)	x			British Columbia (Hadwen, 1916, 1932; Cowan, 1946, 1951).
	x			Oregon (Dutson, Shaw, and Knapp, 1967).
	x			Washington (Schwartz, [1942]; Dutson, Shaw, and Knapp, 1967).
		x		Alabama (Holland, 1959).
		x		Florida (Dinaburg, 1939; Holland, 1959).
		x		Louisiana (Holland, 1959).
		x		Michigan (Whitlock, 1939).
		x		Minnesota (Fenstermacher, Olsen, and Pomeroy, 1943; Olsen and Fenstermacher, 1943; Griffiths, 1962).
		x		Mississippi (Holland, 1959).
		x		Montana (Aiton, 1938).
		x		New York (Stiles and Hassall, 1894; Cheatum 1951, 1952).
		x		Ontario (Swales, 1935; Kingscote, 1950).
		x		Oregon (Dutson, Shaw, and Knapp, 1967).
		x		South Carolina (Holland, 1959).
		x		Tennessee (Holland, 1959).
		x		Texas (Olsen, 1949; Glazener and Knowlton, 1967).
		x		Wisconsin (Dahlberg and Guettinger, 1956; Samuel and Trainer, 1969).

Table 1. Checklist of the Internal and External Parasites of Deer, Odocoileus hemionus and O. virginianus, in the United States and Canada -- Continued

PARASITES	HOSTS			GEOGRAPHIC DISTRIBUTION
	Odocoileus hemionus	Odocoileus virginianus	Deer	
^Fascioloides magna (Cont.)			x	Florida (Hall, 1912; Schwartz, 1938).
			x	Montana (Senger, 1963).
			x	New York (Levine, 1934; Bump, 1937, 1940, 1941, 1942; Cheatum, 1942).
			x	North Carolina (USDA Par. Coll. 42098).
			x	North Dakota (Dutson, Shaw, and Knapp, 1967).
			x	Wisconsin (Chaddock, 1948).
^Dicrocoelium dendriticum		x		New York (Mapes and Baker, 1950).
Intestinal fluke				
Zygocotyle lunata			x	Michigan (Swanson, 1960).

Table 1. Checklist of the Internal and External Parasites of Deer, Odocoileus hemionus and O. virginianus, in the United States and Canada -- Continued

PARASITES	HOSTS: Odocoileus hemionus	HOSTS: Odocoileus virginianus	HOSTS: Deer	GEOGRAPHIC DISTRIBUTION
CESTODES				
Mature cestodes				
Helictometra giardi	x			California (Linsdale and Tomich, 1953; Voge, 1955).
*Moniezia benedeni	x			British Columbia (Cowan, 1946, 1951).
	x			California (Longhurst and Douglas, 1953).
	x			Nebraska (Mohler, Wampole, and Fichter, 1951).
	x			Oregon (USDA Par. Coll. 43182).
	x			South Dakota (Boddicker and Hugghins, 1969).
	x			Wyoming (Landram and Honess, 1955; Honess and Winter, 1956).
		x		New York (USDA Par. Coll. 45004).
		x		South Dakota (Boddicker and Hugghins, 1969).
		x		Wisconsin (Samuel and Trainer, 1969).
			x	Montana (Senger, 1963).
Moniezia expansa	x			California (Longhurst and Douglas, 1953; Voge, 1955).
	x			Wyoming (Landram, 1951a, 1951b; Landram and Honess, 1955; Honess and Winter, 1956).
		x		Massachusetts (Rankin, 1946).
		x		Pennsylvania (Samuel and Beaudoin, 1966; Samuel, 1967).
		x		Wisconsin (Dahlberg and Guettinger, 1956).
			x	Michigan (Swanson, 1960).
			x	Montana (Senger, 1963).
Moniezia sp.	x			California (Clarke, 1913; Dixon, 1934; Browning and Lauppe, 1964).
	x			Montana (Joneschild, 1938).
	x			Oregon (USDA Par. Coll. 41960).
		x		Florida (USDA Par. Coll. 41319).
		x		North Carolina (Ruff, [1938]; Schilling, 1938).
			x	California (Herman, 1945e).
			x	Idaho (USDA Par. Coll. 33083).
			x	Wyoming (Rush, [1932]).
*Thysanosoma actinioides	x			Arizona (Allen and Erling, 1964).
	x			British Columbia (Cowan, 1946, 1951).
	x			California (Clarke, 1913; Linsdale and Tomich, 1953; Longhurst and Douglas, 1953; Voge, 1955).

Table 1. Checklist of the Internal and External Parasites of Deer, Odocoileus hemionus and O. virginianus, in the United States and Canada -- Continued

PARASITES	HOSTS: Odocoileus hemionus	HOSTS: Odocoileus virginianus	HOSTS: Deer	GEOGRAPHIC DISTRIBUTION
*Thysanosoma actinioides (Cont.)	x			Nebraska (Mohler, Wampole, and Fichter, 1951).
	x			Oregon (Shaw, Simms, and Muth, 1934).
	x			South Dakota (Boddicker and Hugghins, 1969).
	x			Utah (Grundmann, 1958).
	x			Wyoming (Landram, 1951a, 1951b; Landram and Honess, 1955; Honess and Winter, 1956).
		x		Arizona (USDA Par. Coll. 40463).
		x		South Dakota (Boddicker and Hugghins, 1969).
		x		Texas (USDA Par. Coll. 30986).
		x		Wisconsin (Dahlberg and Guettinger, 1956).
			x	California (Herman, 1945e).
			x	Montana (Senger, 1963).
			x	Oregon (Shaw, 1947).
			x	Wyoming (Rush, [1932]).
Thysanosoma sp.	x			California (Taber and Dasmann, 1958).
Immature cestodes				
*Coenurus sp.	x			Idaho (USDA Par. Coll. 49189).
^Cysticercus krabbei (C. tarandi of some authors, Taenia krabbei)	x			Alaska (Klein, 1965).
	x			British Columbia (Cowan, 1951).
	x			Colorado (Williams, 1956; DeGrazio and Pillmore, 1958; Olsen and Williams, 1959).
	x			Oregon (Shaw, Simms, and Muth, 1934).
			x	Montana (Senger, 1963).
			x	Oregon (Shaw, 1947).
Cysticercus lyncis (Taenia lyncis)	x	x		United States (Skinker, 1935).
Cysticercus omissa (Taenia omissa)	x			Alberta (Holmes and Podesta, 1968).
	x			California (Linsdale and Tomich, 1953).
			x	Montana (Senger, 1963).
Cysticercus ovis (Taenia ovis)	x			British Columbia (Cowan, 1946, 1951).
	x			California (Longhurst and Douglas, 1953).
			x	Wyoming (Rush, [1932]).
^Cysticercus tenuicollis (Taenia hydatigena, Taenia marginata)	x			Alaska (Klein, 1965).

Table 1. Checklist of the Internal and External Parasites of Deer, Odocoileus hemionus and O. virginianus, in the United States and Canada -- Continued

PARASITES	HOSTS: Odocoileus hemionus	HOSTS: Odocoileus virginianus	HOSTS: Deer	GEOGRAPHIC DISTRIBUTION
Cysticercus tenuicollis (Cont.)	x			Alberta (Cowan, 1951; Kerr and Holmes, 1966; Holmes and Podesta, 1968).
	x			Arizona (Hanson and McCulloch, 1955; Russo, 1956; Swank, 1958; Allen and Erling, 1964).
	x			British Columbia (Gregson, 1937; Cowan, 1946, 1951).
	x			California (Rosen, 1951; Linsdale and Tomich, 1953; Longhurst and Douglas, 1953; Browning and Lauppe, 1964).
	x			Montana (Joneschild, 1938, 1939).
	x			New York, Zoo (Blair, 1903).
	x			Oregon (Shaw, Simms, and Muth, 1934).
	x			Pennsylvania, Philadelphia Zoo (Weidman, 1923).
	x			South Dakota (Boddicker and Hugghins, 1969).
	x			Utah (Doman and Rasmussen, 1944; Richens, 1967).
	x			Wyoming (Landram and Honess, 1955; Honess and Winter, 1956).
		x		Alberta (Holmes and Podesta, 1968).
		x		British Columbia (Cowan, 1951).
		x		Idaho (USDA Par. Coll. 39879).
		x		Michigan (Whitlock, 1939).
		x		Minnesota (Olsen and Fenstermacher, 1943).
		x		New York (Cheatum, 1952).
		x		Ontario (Anderson, 1962).
		x		Pennsylvania (Samuel and Beaudoin, 1966; Samuel, 1967).
		x		South Dakota (Boddicker and Hugghins, 1969).
		x		Wisconsin (Samuel and Trainer, 1969).
			x	Alberta (Sweatman and Plummer, 1957).
			x	British Columbia (Sweatman and Plummer, 1957).
			x	Kansas, Zoo (Gouge, 1936).
			x	Montana (Senger, 1963).
			x	Nevada (USNM Helm. Coll. 38375).
			x	New Mexico (USDA Par. Coll. 28498).
			x	Ontario (Sweatman and Plummer, 1957).
			x	Oregon (Shaw, 1933, 1947).
			x	Quebec (Sweatman and Plummer, 1957).
			x	Wyoming (Rush, [1932]).

Table 1. Checklist of the Internal and External Parasites of Deer, Odocoileus hemionus and O. virginianus, in the United States and Canada -- Continued

PARASITES	HOSTS			GEOGRAPHIC DISTRIBUTION
	Odocoileus hemionus	Odocoileus virginianus	Deer	
*Echinococcus granulosus	x			Alaska (Rausch and Williamson, 1959).
	x			Alberta (Cowan, 1948, 1951).
	x			British Columbia (Cowan, 1946, 1948, 1951).
	x			California (Rosen, 1951).
	x			Oregon (Hall, 1925).
		x		Minnesota (Riley, 1939c, 1939d; Olsen and Fenstermacher, 1943).
		x		Ontario (Sweatman, 1952; Anderson, 1962; Sweatman and Williams, 1963).
		x		Pennsylvania, Philadelphia Zoo (Weidman, 1923).
		x		Quebec (Sweatman and Williams, 1963).
		x		Saskatchewan (Harper, Ruttan, and Benson, 1955; Sweatman and Williams, 1963).
Taenia serialis	x			California (Linsdale and Tomich, 1953).

Table 1. Checklist of the Internal and External Parasites of Deer, Odocoileus hemionus and O. virginianus, in the United States and Canada -- Continued

PARASITES	HOSTS: Odocoileus hemionus	HOSTS: Odocoileus virginianus	HOSTS: Deer	GEOGRAPHIC DISTRIBUTION
NEMATODES				
Gullet worms				
*Gongylonema pulchrum	x			District of Columbia, Nat. Zool. Pk. (USDA Par. Coll. 4296).
		x		Alabama (USDA Par. Coll. 42871, 47243).
		x		North Carolina (Dikmans and Lucker, 1935; Ruff, [1938]; Schilling, 1938).
		x		Pennsylvania (Samuel and Beaudoin, 1966; Samuel, 1967).
		x		Texas (Emerson, 1969).
		x		Virginia (USDA Par. Coll. 46524, 46880).
			x	? New York (USDA Par. Coll. 49378).
*Gongylonema verrucosum		x		Alabama (USDA Par. Coll. 43621).
		x		Florida (Dikmans and Lucker, 1935; Dinaburg, 1939).
			x	Georgia (USDA Par. Coll. 56614).
			x	Missouri (USDA Par. Coll. 43273).
Stomach worms				
*Haemonchus contortus	x			British Columbia (Cowan, 1951).
	x			California (Longhurst and Douglas, 1953; Taber and Dasmann, 1958; Browning and Lauppe, 1964).
	x			District of Columbia, Nat. Zool. Pk. (USDA Par. Coll. 4282, 4406).
	x			South Dakota (Boddicker and Hugghins, 1969).
	x			Wyoming (Landram, 1951a, 1951b; Landram and Honess, 1955; Honess and Winter, 1956).
		x		Florida (Dinaburg, 1939; Hayes, Greer, and Shotts, 1958).
		x		Michigan (Whitlock, 1939).
		x		Pennsylvania (Samuel and Beaudoin, 1966; Samuel, 1967).
		x		South Dakota (Boddicker and Hugghins, 1969).
		x		Texas (Robinson, Kuttler, Thomas, and Marburger, 1967; Emerson, 1969).
		x		Wisconsin (Dahlberg and Guettinger, 1956; Samuel and Trainer, 1969).
			x	Georgia (USNM Helm. Coll. 61127).
			x	New York (Levine, 1934).
			x	Texas (Van Volkenberg and Nicholson, 1943).

Table 1. Checklist of the Internal and External Parasites of Deer, Odocoileus hemionus and O. virginianus, in the United States and Canada -- Continued

PARASITES	HOSTS: Odocoileus hemionus	HOSTS: Odocoileus virginianus	HOSTS: Deer	GEOGRAPHIC DISTRIBUTION
*Haemonchus similis		x		Florida (Dinaburg, 1939).
Haemonchus sp.			x	Arizona (USDA Par. Coll. 32586).
			x	California (Herman, 1945e).
*Marshallagia marshalli (Ostertagia marshalli)	x			Wyoming (Dikmans, 1932i; Landram, 1951b; Landram and Honess, 1955; Honess and Winter, 1956).
*Obeliscoides cuniculi		x		Arkansas (Maples and Jordan, 1966).
		x		Georgia (Maples and Jordan, 1966).
*Ostertagia bisonis (O. bellae and O. orloffi of some authors. See: Becklund and Walker, 1967b.)	x			Montana (Worley and Sharman, 1966).
	x			South Dakota (Boddicker and Hugghins, 1969).
	x			Wyoming (Landram, 1951a; Landram and Honess, 1955; Honess and Winter, 1956).
*Ostertagia circumcincta	x			British Columbia (Cowan, 1946, 1951).
	x			California (Longhurst and Douglas, 1953; Taber and Dasmann, 1958; Browning and Lauppe, 1964).
	x			Oregon (Shaw, Simms, and Muth, 1934).
	x			Wyoming (Landram, 1951a, 1951b; Landram and Honess, 1955; Honess and Winter, 1956).
		x		New York (Dikmans, 1934).
			x	Colorado (USDA Par. Coll. 29276).
			x	Oregon (Shaw, 1947).
*Ostertagia dikmansi		x		Georgia (Becklund and Walker, 1968).
		x		Louisiana (Becklund and Walker, 1968).
		x		Ontario (Becklund and Walker, 1968).
		x		Pennsylvania (Becklund and Walker, 1968).
		x		Wisconsin (Samuel and Trainer, 1969).
*Ostertagia mossi		x		New York (Dikmans, 1934).
		x		Pennsylvania (Dikmans, 1931k; Samuel and Beaudoin, 1966; Samuel, 1967).
		x		Virginia (USDA Par. Coll. 66628).
		x		Wisconsin (Samuel and Trainer, 1969).
			x	Canada (Becklund and Walker, 1967d).
			x	Georgia (Becklund and Walker, 1967d).
			x	Louisiana (Becklund and Walker, 1967d).
			x	New York (Bump, 1937).
*Ostertagia occidentalis	x			Wyoming (Dikmans, 1932i; Landram, 1951b; Landram and Honess, 1955; Honess and Winter, 1956).

Table 1. Checklist of the Internal and External Parasites of Deer, Odocoileus hemionus and O. virginianus, in the United States and Canada -- Continued

PARASITES	HOSTS: Odocoileus hemionus	HOSTS: Odocoileus virginianus	HOSTS: Deer	GEOGRAPHIC DISTRIBUTION
*Ostertagia odocoilei		x		Alabama (USDA Par. Coll. 47241).
		x		Florida (Dinaburg, 1939).
		x		Louisiana (Dikmans, 1932j).
		x		New York (Dikmans, 1934).
		x		Ontario (USDA Par. Coll. 42884).
		x		Pennsylvania (Dikmans, 1931k; Samuel and Beaudoin, 1966; Samuel, 1967).
		x		South Dakota (Boddicker and Hugghins, 1969).
		x		Wisconsin (Samuel and Trainer, 1969).
			x	Georgia (USNM Helm. Coll. 37371, USDA Par. Coll. 56617).
			x	New York (Bump, 1937).
			x	? Texas (USDA Par. Coll. 56956).
			x	Wisconsin (Rausch, 1950).
*Ostertagia ostertagi	x			Montana (Worley and Sharman, 1966).
	x			South Dakota (Boddicker and Hugghins, 1969).
	x			Wyoming (Landram, 1951a, 1951b; Landram and Honess, 1955; Honess and Winter, 1956).
		x		Wisconsin (Dahlberg and Guettinger, 1956).
			x	New York (USDA Par. Coll. 34050).
			x	Wyoming (Rush, [1932]).
Ostertagia trifurcata	x			California (Longhurst and Douglas, 1953; Taber and Dasmann, 1958; Browning and Lauppe, 1964).
	x			Wyoming (Landram, 1951a, 1951b; Landram and Honess, 1955; Honess and Winter, 1956).
Ostertagia sp.	x			Wyoming (Landram, 1951b).
		x		Florida (Dinaburg, 1939).
		x		Montana (Worley and Sharman, 1966).
		x		New York (Cheatum, 1952).
		x		South Dakota (Boddicker and Hugghins, 1969).
		x		Texas (Glazener and Knowlton, 1967).
			x	California (Herman, 1945e).
			x	Wisconsin (Chaddock, 1948).
*Teladorsagia davtiani	x			Oregon (USDA Par. Coll. 59031, 66571).
*Trichostrongylus axei	x			California (Longhurst and Douglas, 1953; Taber and Dasmann, 1958).

Table 1. Checklist of the Internal and External Parasites of Deer, Odocoileus hemionus and O. virginianus, in the United States and Canada -- Continued

PARASITES	HOSTS: Odocoileus hemionus	HOSTS: Odocoileus virginianus	HOSTS: Deer	GEOGRAPHIC DISTRIBUTION
Trichostrongylus axei (Cont.)	x			Montana (USDA Par. Coll. 56785).
		x		Texas (Samuel and Trainer, 1968).
		x		Wisconsin (Samuel and Trainer, 1968, 1969).
Intestinal worms (small intestine)				
^Capillaria sp.	x			British Columbia (Cowan, 1946, 1951).
		x		Florida (Dinaburg, 1939).
		x		Pennsylvania (Samuel and Beaudoin, 1966; Samuel, 1967).
		x		Wisconsin (Samuel and Trainer, 1969).
			x	Georgia (USDA Par. Coll. 56616).
*Cooperia oncophora	x			Arizona (Allen and Erling, 1964).
Cooperia pectinata			x	Texas (Van Volkenberg and Nicholson, 1943).
Cooperia punctata			x	Texas (Van Volkenberg and Nicholson, 1943).
Cooperia surnabada (C. mcmasteri)	x			California (Douglas in Allen and Becklund, 1958).
Cooperia sp.		x		New York (Dikmans, 1934).
			x	Montana (Senger, 1963).
*Monodontus louisianensis		x		Louisiana (Chitwood and Jordan, 1965).
Nematodirella longissimespiculata (N. longispiculata, N. longispiculata antilocaprae)	x			British Columbia (Cowan, 1946, 1951).
*Nematodirella sp.			x	Wyoming (USDA Par. Coll. 31449).
^Nematodirus abnormalis	x			California (USDA Par. Coll. 16503).
	x			Wyoming (Landram, 1951a, 1951b; Landram and Honess, 1955; Honess and Winter, 1956).
Nematodirus filicollis (See text.)	x			British Columbia (Cowan, 1946, 1951).
	x			California (Clarke, 1913; Longhurst and Douglas, 1953; Taber and Dasmann, 1958).
		x		Michigan (Whitlock, 1939).
		x		Pennsylvania (Samuel and Beaudoin, 1966; Samuel, 1967).
		x		Wisconsin (Samuel and Trainer, 1969).
			x	Michigan (Swanson, 1960).
			x	Texas (Van Volkenberg and Nicholson, 1943).
			x	Wyoming (Rush, [1932]).

Table 1. Checklist of the Internal and External Parasites of Deer, Odocoileus hemionus and O. virginianus, in the United States and Canada -- Continued

PARASITES	HOSTS: Odocoileus hemionus	HOSTS: Odocoileus virginianus	HOSTS: Deer	GEOGRAPHIC DISTRIBUTION
*Nematodirus odocoilei	x			British Columbia (Becklund and Walker, 1967a).
	x			Montana (Becklund and Walker, 1967a).
	x			Oregon (Becklund and Walker, 1967a).
	x			Wyoming (Becklund and Walker, 1967a).
		x		North Carolina (USDA Par. Coll. 66012).
		x		Quebec (USDA Par. Coll. 66578).
		x		Virginia (USDA Par. Coll 66627).
*Nematodirus spathiger	x			California (Longhurst and Douglas, 1953; Taber and Dasmann, 1958).
	x			Wyoming (Landram, 1951a, 1951b; Landram and Honess, 1955; Honess and Winter, 1956).
			x	Montana (Senger, 1959).
			x	Texas (Van Volkenberg and Nicholson, 1943).
			x	Wyoming (Rush, [1932]).
Nematodirus sp.	x			California (Browning and Lauppe, 1964).
	x			Wyoming (Landram, 1951b).
		x		New York (USDA Par. Coll. 39946).
		x		Wisconsin (Dahlberg and Guettinger, 1956).
			x	Montana (Senger, 1963).
			x	New York (Bump, 1937).
Strongyloides papillosus	x			California (Longhurst and Douglas, 1953).
Strongyloides sp.		x		Texas (Glazener and Knowlton, 1967).
Trichostrongylus colubriformis	x			California (Longhurst and Douglas, 1953; Taber and Dasmann, 1958).
	x			Wyoming (Landram, 1951a, 1951b; Landram and Honess, 1955; Honess and Winter, 1956).
			x	Texas (Van Volkenberg and Nicholson, 1943).
Trichostrongylus vitrinus	x			California (Longhurst and Douglas, 1953).
Trichostrongylus sp.	x			British Columbia (Cowan, 1946).
	x			California (Browning and Lauppe, 1964).
		x		Texas (Glazener and Knowlton, 1967).
			x	California (Herman, 1945e).
Intestinal worms (large intestine)				
*Chabertia ovina	x			California (Clarke, 1913; Longhurst and Douglas, 1953).

Table 1. Checklist of the Internal and External Parasites of Deer, Odocoileus hemionus and O. virginianus, in the United States and Canada -- Continued

PARASITES	HOSTS: Odocoileus hemionus	HOSTS: Odocoileus virginianus	HOSTS: Deer	GEOGRAPHIC DISTRIBUTION
*Chabertia ovina (Cont.)	x			Oregon (Shaw, Simms, and Muth, 1934).
		x		New York (Dikmans, 1934).
			x	Oregon (Shaw, 1947).
*Eucyanthostomum longesubulatum		x		Florida (Dinaburg, 1939).
		x		South Carolina (USDA Par. Coll. 65968).
Oesophagostomum cervi		x		Alabama (Payne, Maples, and Smith, 1967).
		x		Louisiana (Payne, Maples, and Smith, 1967).
		x		Maryland (Payne, Maples, and Smith, 1967).
		x		Mississippi (Payne, Maples, and Smith, 1967).
		x		North Carolina (Payne, Maples, and Smith, 1967).
		x		Virginia (Payne, Maples, and Smith, 1967).
		x		West Virginia (Payne, Maples, and Smith, 1967).
Oesophagostomum columbianum		x		Texas (Emerson, 1969).
*Oesophagostomum venulosum	x			Alaska (Klein, 1965).
	x			British Columbia (Cowan, 1946, 1951).
	x			California (Linsdale and Tomich, 1953; Longhurst and Douglas, 1953).
		x		Alabama (Payne, Maples, and Smith, 1967).
		x		Georgia (USNM Helm. Coll. 60572).
		x		Louisiana (Payne, Maples, and Smith, 1967).
		x		Maryland (Payne, Maples, and Smith, 1967).
		x		Michigan (Whitlock, 1939).
		x		Mississippi (Payne, Maples, and Smith, 1967).
		x		North Carolina (Ruff, [1938]; Schilling, 1938; Payne, Maples, and Smith, 1967).
		x		Pennsylvania (Samuel and Beaudoin, 1966; Samuel, 1967).
		x		Virginia (Payne, Maples, and Smith, 1967).
		x		West Virginia (Payne, Maples, and Smith, 1967).
			x	California (Van Roekel, 1929c; Herman, 1945e).
			x	Michigan (Swanson, 1960).
			x	New York (Bump, 1937).
			x	Oregon (Shaw, 1947).
Oesophagostomum sp.		x		Minnesota (Olsen and Fenstermacher, 1943).
		x		Wisconsin (Samuel and Trainer, 1969).

Table 1. Checklist of the Internal and External Parasites of Deer, Odocoileus hemionus and O. virginianus, in the United States and Canada -- Continued

PARASITES	HOSTS: Odocoileus hemionus	Odocoileus virginianus	Deer	GEOGRAPHIC DISTRIBUTION
Oesophagostomum sp. (Cont.)			x	New York (Levine, 1934).
*Skrjabinema parva	x			California (Schad, 1959).
	x			Colorado (Olsen and Tolman, 1950; Schad, 1959).
	x			Idaho (Dikmans, 1942; Schad, 1959).
		x		Wisconsin (Samuel and Trainer, 1969).
			x	Colorado (Olsen and Tolman, 1949).
Trichuris ovis	x			British Columbia (Cowan, 1946, 1951).
	x			California (Longhurst and Douglas, 1953).
	x			Oregon (Shaw, Simms, and Muth, 1934).
		x		Pennsylvania (Samuel and Beaudoin, 1966; Samuel, 1967).
		x		Wisconsin (Samuel and Trainer, 1969).
			x	Michigan (Swanson, 1960).
*Trichuris sp.	x			British Columbia (USDA Par. Coll. 43670).
	x			California (Linsdale and Tomich, 1953).
	x			Utah (USDA Par. Coll. 43613).
		x		Florida (Dinaburg, 1939).
		x		Georgia (USDA Par. Coll. 65860).
		x		New York (Cheatum, 1952).
		x		Pennsylvania, Pittsburgh Zoo (USDA Par. Coll. 41995).
			x	California (Herman, 1945e).
Wellcomia evaginata	x			Colorado (Olsen and Tolman, 1951).
Eyeworm				
*Thelazia californiensis	x			California (Oberhansley, 1940; Stewart, 1940; Herman, 1944; Dixon and Herman, 1945; Linsdale and Tomich, 1953; Longhurst and Douglas, 1953; Taber and Dasmann, 1958; Browning and Lauppe, 1964).
	x			New Mexico (Schad and Raught, 1958).
			x	California (Herman, 1945e; Parmelee, Lee, Wagner, and Burnett, 1956).
			x	Nevada (Parmelee, Lee, Wagner, and Burnett, 1956).

Table 1. Checklist of the Internal and External Parasites of Deer, Odocoileus hemionus and O. virginianus, in the United States and Canada -- Continued

PARASITES	HOSTS: Odocoileus hemionus	HOSTS: Odocoileus virginianus	HOSTS: Deer	GEOGRAPHIC DISTRIBUTION
Meningeal worm				
*Odocoileostrongylus tenuis (Pneumostrongylus tenuis, Elaphostrongylus tenuis, Neurofilaria cornellensis, Elaphostrongylus odocoilei sensu Anderson, 1956 and DeGiusti, 1963)		x		Alabama (Prestwood and Smith, 1969).
		x		Arkansas (Prestwood and Smith, 1969).
		x		Florida (Prestwood and Smith, 1969).
		x		Georgia (Prestwood and Smith, 1969).
		x		Kentucky (Prestwood and Smith, 1969).
		x		Louisiana (Prestwood and Smith, 1969; Seger, Newsom, Roth, and Hutchinson, 1969).
		x		Maine (Behrend and Witter, 1968).
		x		Maryland (Prestwood and Smith, 1969).
		x		Minnesota (Loken, Schlotthauer, Kurtz, and Karns, 1965; Karns, 1966, 1967).
		x		Mississippi (Prestwood and Smith, 1969).
		x		New Brunswick (Smith, Archibald, and Corner, 1964; Smith and Archibald, 1967).
		x		New York (Dougherty, 1945).
		x		North Carolina (Prestwood and Smith, 1969).
		x		Nova Scotia (Smith, Archibald, and Corner, 1964; Smith and Archibald, 1967).
		x		Ontario (Anderson, 1956, 1963, 1965; Bennett and Freeman in Lankester and Anderson, 1968).
		x		Pennsylvania (Whitlock, 1959; Alibasoglu, Kradel, and Dunne, 1961; Samuel and Beaudoin, 1966; Samuel, 1967).
		x		Tennessee (Prestwood and Smith, 1969).
		x		Virginia (Dudak, 1964; Dudak, Cornwell, Holliman, and McGinnes, 1966; Prestwood and Smith, 1969).
		x		West Virginia (Prestwood and Smith, 1969).
		x		Wisconsin (Samuel and Trainer, 1969).
			x	Michigan (DeGiusti, 1963).
Muscle worm (Lungworm)				
Parelaphostrongylus odocoilei (Elaphostrongylus odocoilei)	x			California (Hobmaier and Hobmaier, 1934; Browning and Lauppe, 1964; Brunetti, 1969).

Table 1. Checklist of the Internal and External Parasites of Deer, Odocoileus hemionus and O. virginianus, in the United States and Canada -- Continued

PARASITES	HOSTS: Odocoileus hemionus	HOSTS: Odocoileus virginianus	HOSTS: Deer	GEOGRAPHIC DISTRIBUTION
Arterial worm				
*Elaeophora schneideri	x			Arizona (Hanson and McCulloch, 1955; Kemper, 1957; Swank, 1958; Hibler and Adcock, 1968).
	x			British Columbia (Cowan, 1946, 1951).
	x			California (Linsdale and Tomich, 1953; Voge, 1956; Taber and Dasmann, 1958).
	x			Colorado (Hibler and Adcock, 1968).
	x			New Mexico (Hibler and Adcock, 1968; Hibler, Adcock, Davis, and Abdelbaki, 1969).
	x			Utah (Wehr and Dikmans, 1935).
	x			Wyoming (Hibler and Adcock, 1968).
		x		Arizona (Hibler and Adcock, 1968).
		x		Florida (USNM Helm. Coll. 59909).
			x	California (Herman, 1945e; Douglas, Cordy, and Spurlock, 1954).
Abdominal worms				
Setaria cervi (See text.)	x			British Columbia (Cowan, 1946, 1951).
	x			California (Longhurst and Douglas, 1953; Taber and Dasmann, 1958; Browning and Lauppe, 1964).
	x			Nebraska (Mohler, Wampole, and Fichter, 1951).
		x		New Jersey (Mangold, 1958).
		x		South Dakota (Boddicker and Hugghins, 1969).
			x	California (Herman, 1945e).
*Setaria labiatopapillosa	x			California (Clarke, 1913).
	x			District of Columbia, Nat. Zool. Pk. (Becklund and Walker, 1969).
			x	California (Van Roekel, 1929c, 1929d).
*Setaria yehi (Artionema tundra sensu Yeh, 1959)	x			British Columbia (Becklund and Walker, 1969).
	x			California (Yeh, 1959; Becklund and Walker, 1969).
		x		Alabama (Becklund and Walker, 1969).
		x		Georgia (Yeh, 1959; Becklund and Walker, 1969).
		x		Maryland (Becklund and Walker, 1969).
		x		New Jersey (Yeh, 1959; Becklund and Walker, 1969).
		x		Texas (Becklund and Walker, 1969).

Table 1. Checklist of the Internal and External Parasites of Deer, Odocoileus hemionus and O. virginianus, in the United States and Canada -- Continued

PARASITES	HOSTS: Odocoileus hemionus	HOSTS: Odocoileus virginianus	HOSTS: Deer	GEOGRAPHIC DISTRIBUTION
*Setaria yehi (Cont.)		x		Wisconsin (Becklund and Walker, 1969).
Setaria sp.		x		Michigan (Whitlock, 1939).
		x		Minnesota (Olsen and Fenstermacher, 1943).
		x		Ontario (Shoho, 1958; Anderson, 1962).
		x		Pennsylvania (Samuel and Beaudoin, 1966; Samuel, 1967).
		x		Texas (Emerson, 1969).
			x	New York (Bump, 1940).
Lungworms				
*Dictyocaulus filaria	x			California (Clarke, 1913; Longhurst and Douglas, 1953; Browning and Lauppe, 1964).
		x		Michigan (Dikmans, 1935b; O'Roke, 1936a; Whitlock, 1939).
		x		North Carolina (Ruff, [1938]; Schilling, 1938).
			x	British Columbia (Swales, 1933).
			x	New York (Bump, 1937).
*Dictyocaulus viviparus (D. hadweni)	x			Alaska (Klein, 1965).
	x			Alberta (Cowan, 1951).
	x			British Columbia (Cowan, 1946, 1951).
	x			California (Linsdale and Tomich, 1953; Longhurst and Douglas, 1953; Taber and Dasmann, 1958).
	x			Montana (USDA Par. Coll. 47973).
	x			Oregon (Shaw, Simms, and Muth, 1934).
	x			Utah (Doman and Rasmussen, 1944).
		x		Michigan (Dikmans, 1935b; O'Roke, 1936a; Whitlock, 1939; Goble, 1941).
		x		Minnesota (Olsen and Fenstermacher, 1943).
		x		Mississippi (USDA Par. Coll. 65535).
		x		New York (Cheatum, 1951, 1952).
		x		North Carolina (USDA Par. Coll. 65881).
		x		Pennsylvania (Samuel and Beaudoin, 1966; Samuel, 1967).
		x		South Dakota (Boddicker and Hugghins, 1969).
		x		Virginia (USDA Par. Coll. 42876, 43609).
		x		Washington (USDA Par. Coll. 43649).
		x		Wisconsin (Dahlberg and Guettinger, 1956; Samuel and Trainer, 1969).

Table 1. Checklist of the Internal and External Parasites of Deer, Odocoileus hemionus and O. virginianus, in the United States and Canada -- Continued

PARASITES	HOSTS: Odocoileus hemionus	HOSTS: Odocoileus virginianus	HOSTS: Deer	GEOGRAPHIC DISTRIBUTION
*Dictyocaulus viviparus (Cont.)			x	California (Van Roekel, 1929c).
			x	Georgia (USDA Par. Coll. 56624).
			x	Montana (Senger, 1963).
			x	New York (Bump, 1937, 1942; Cheatum, 1942).
			x	Oregon (Shaw, 1947).
			x	South Carolina (USDA Par. Coll. 65639).
			x	Wisconsin (Flakas, 1950).
Dictyocaulus sp.		x		Florida (Hayes, Greer, and Shotts, 1958).
		x		New York (Cheatum, 1949).
			x	California (Herman, 1945e).
			x	New York (Bump, 1940, 1941).
*Leptostrongylus alpenae (Pneumostrongylus alpenae, Varestrongylus alpenae)		x		Michigan (Dikmans, 1935k; Whitlock, 1939).
		x		New York (Dougherty, 1945; Cheatum, 1949, 1951, 1952).
			x	Michigan (Swanson, 1960).
Pneumostrongylus sp.		x		Michigan (Dikmans, 1935b; O'Roke, 1936a).
*Protostrongylus coburni		x		Michigan (Dikmans, 1935k; O'Roke, 1936a; Whitlock, 1939; Goble, 1941).
		x		New York (Goble, 1943).
			x	New York (Cheatum, 1942).
*Protostrongylus macrotis	x			Colorado (USDA Par. Coll. 43610).
	x			Montana (Dikmans, 1932l).
	x			Utah (USDA Par. Coll. 42869, 43679).
	x			Wyoming (Dikmans, 1931j; Landram, 1951a, 1951b; Landram and Honess, 1955; Honess and Winter, 1956).
			x	Colorado (Pillmore, 1961).
			x	Wyoming (Rush, [1932]).
Protostrongylus rufescens		x		Michigan (Whitlock, 1939).
		x		Wisconsin (Dahlberg and Guettinger, 1956).
			x	Michigan (Chandler, 1931; Gardner, [1932?]).
			x	Wisconsin (Flakas, 1950).
Protostrongylus sp.		x		Florida (Hayes, Greer, and Shotts, 1958).
		x		Michigan (Dikmans, 1935b).
			x	New York (Bump, 1940, 1941, 1942).
			x	Wisconsin (Rausch, 1950).

Table 1. Checklist of the Internal and External Parasites of Deer, Odocoileus hemionus and O. virginianus, in the United States and Canada -- Continued

PARASITES	HOSTS: Odocoileus hemionus	HOSTS: Odocoileus virginianus	HOSTS: Deer	GEOGRAPHIC DISTRIBUTION
Footworm				
Onchocerca sp.	×			Wyoming (Landram and Honess, 1955; Honess and Winter, 1956).
*Wehrdikmansia cervipedis (Onchocerca cervipedis, Onchocerca flexuosa of some authors)	×			Arizona (Hibler, 1965).
	×			British Columbia (Wehr and Dikmans, 1935; Cowan, 1946, 1951).
	×			California (Annereaux, 1941; Duckworth, 1941; Herman and Bischoff, [1946a], 1946b; Herman, 1947; Linsdale and Tomich, 1953; Voge, 1956; Taber and Dasmann, 1958).
	×			Colorado (USDA Par. Coll. 45125, 47222).
	×			Idaho (USDA Par. Coll. 44211).
	×			Ontario (Anderson, 1962).
	×			Oregon (USDA Par. Coll. 41786).
	×			Utah (Yuill, Low, and Fitzgerald, 1961).
		×		Arizona (Hibler, 1965).
		×		Montana (Rush, 1935; Wehr and Dikmans, 1935).
		×		New York (Cheatum, 1952).
		×		Pennsylvania (Latham, 1955; Samuel, 1967).
			×	California (Herman, 1945e).
			×	Colorado (Dikmans, 1933, 1947).
			×	Idaho (DeNio and West, 1942).
			×	Montana (Butler, [1936]; DeNio and West, 1942; Senger, 1959, 1963).
			×	Nevada (USDA Par. Coll. 49496).
			×	Oregon (Shaw, 1947).
			×	Washington (USDA Par. Coll. 42200, 56129).
			×	Wyoming (DeNio and West, 1942).
Wehrdikmansia sp.	×			Colorado (DeGrazio and Pillmore, 1958).
			×	Maine (USNM Helm. Coll. 70955).

Table 1. Checklist of the Internal and External Parasites of Deer, Odocoileus hemionus and O. virginianus, in the United States and Canada -- Continued

PARASITES	HOSTS: Odocoileus hemionus	HOSTS: Odocoileus virginianus	HOSTS: Deer	GEOGRAPHIC DISTRIBUTION
ARTHROPODS				
Fleas				
Ctenocephalides canis	x			California (Linsdale and Tomich, 1953; Linsdale and Davis, 1956).
Juxtapulex porcinus		x		Texas (Eads, 1951; Hightower, Lehman, and Eads, 1953).
Orchopeas sexdentatus	x			California (Linsdale and Davis, 1956).
Oropsylla arctomys		x		New York (Stewart, 1933; Geary, 1959).
Pulex irritans	x			British Columbia (Cowan, 1946; Holland, 1949).
	x			California (Augustson, 1943; Holdenreid, Evans, and Longanecker, 1951; Linsdale and Tomich, 1953; Longhurst and Douglas, 1953; Linsdale and Davis, 1956; Taber and Dasmann, 1958; Browning and Lauppe, 1964).
	x			Oregon (Hubbard, 1947; Hopkins and Rothschild, 1953).
			x	California (Clarke, 1913).
			x	Oregon (Jellison and Kohls, 1936).
Pulex simulans			x	United States (Smit, 1958).
Flies				
Cephenemyia apicata	x			Montana (Bennett and Sabrosky, 1962).
		x		? Texas (Glazener and Knowlton, 1967).
			x	California (Bennett and Sabrosky, 1962).
			x	Montana (Bennett and Sabrosky, 1962).
*Cephenemyia jellisoni	x			Alaska (Klein, 1965).
	x			Alberta (Cowan, 1951).
	x			British Columbia (Cowan, 1943, 1946, 1951; Bennett and Sabrosky, 1962).
	x			California (Herman, 1945a; Longhurst and Douglas, 1953; Taber and Dasmann, 1958; Bennett and Sabrosky, 1962).
	x			Colorado (Bennett and Sabrosky, 1962).
	x			Idaho (Bennett and Sabrosky, 1962).
	x			Montana (Townsend, 1941; Capelle and Senger, 1959; Bennett and Sabrosky, 1962).
	x			Utah (Bennett and Sabrosky, 1962; Richens, 1967).
		x		British Columbia (Cowan, 1951).
		x		Minnesota (Bennett and Sabrosky, 1962).
		x		Montana (Bennett and Sabrosky, 1962).

Table 1. Checklist of the Internal and External Parasites of Deer, Odocoileus hemionus and O. virginianus, in the United States and Canada -- Continued

PARASITES	HOSTS: Odocoileus hemionus	HOSTS: Odocoileus virginianus	HOSTS: Deer	GEOGRAPHIC DISTRIBUTION
Cephenemyia jellisoni (Cont.)		x		?Texas (Glazener and Knowlton, 1967).
		x		Wyoming (Bennett and Sabrosky, 1962).
			x	California (Herman, 1946).
			x	Idaho (Bennett and Sabrosky, 1962).
			x	Montana (Bennett and Sabrosky, 1962; Senger, 1963).
			x	New Mexico (Bennett and Sabrosky, 1962).
			x	Oregon (Bennett and Sabrosky, 1962).
			x	Texas (Bennett and Sabrosky, 1962).
			x	Wyoming (Bennett and Sabrosky, 1962).
*Cephenemyia phobifera (C. phobifer)		x		Georgia (Bennett and Sabrosky, 1962).
		x		Michigan (Whitlock, 1939).
		x		Minnesota (Fenstermacher, Olsen, and Pomeroy, 1943; Olsen and Fenstermacher, 1943; Bennett and Sabrosky, 1962).
		x		New Hampshire (Blickle, 1956).
		x		New Jersey (Mangold, 1958; Bennett and Sabrosky, 1962).
		x		New York (Cheatum, 1951, 1952).
		x		North Carolina (Bennett and Sabrosky, 1962).
		x		North Dakota (Bennett and Sabrosky, 1962).
		x		Ontario (Bennett, 1962; Bennett and Sabrosky, 1962).
		x		Pennsylvania (Latham, 1955).
		x		South Carolina (Bennett and Sabrosky, 1962).
		x		Texas (Bennett and Sabrosky, 1962).
		x		Virginia (Bennett and Sabrosky, 1962).
		x		Wisconsin (Bennett and Sabrosky, 1962).
			x	Michigan (Chandler, 1931; Hutson, 1931; Gardner, [1932?]).
			x	New York (Cheatum, 1942).
			x	Pennsylvania (Stewart, [1930?], 1938).
			x	Texas (Van Volkenberg and Nicholson, 1943).
			x	West Virginia (USDA Par. Coll. 56984).
*Cephenemyia pratti	x			California (Dixon, 1934; McLean, 1940; Linsdale and Tomich, 1953).
	x			Colorado (USDA Par. Coll. 43440).
	x			Montana (Jellison, 1935; Joneschild, 1938).
	x			Nebraska (Mohler, Wampole, and Fichter, 1951).

Table 1. Checklist of the Internal and External Parasites of Deer, *Odocoileus hemionus* and *O. virginianus*, in the United States and Canada -- Continued

PARASITES	HOSTS: *Odocoileus hemionus*	HOSTS: *Odocoileus virginianus*	HOSTS: Deer	GEOGRAPHIC DISTRIBUTION
Cephenemyia pratti	x			Utah (Doman and Rasmussen, 1944).
		x		Texas (Hunter, 1915; Bennett and Sabrosky, 1962).
			x	Arizona (USDA Par. Coll. 29421, 57042).
			x	British Columbia (Bruce, 1931).
			x	California (Hunter, 1915; Herman, 1946).
			x	Colorado (Bennett and Sabrosky, 1962).
			x	Georgia (USDA Par. Coll. 17321).
			x	Idaho (USDA Par. Coll. 29422).
			x	New Mexico (USDA Par. Coll. 42921, 45849).
			x	Oregon (USDA Par. Coll. 28126).
			x	Utah (Knowlton and Smith, 1936; Bennett and Sabrosky, 1962).
			x	Wyoming (USDA Par. Coll. 29394).
Cephenemyia trompe		x		Ontario (Bennett and Sabrosky, 1962).
		x		Wisconsin (Dahlberg and Guettinger, 1956).
Cephenemyia sp.	x			Arizona (Swank, 1958).
	x			California (Browning and Lauppe, 1964).
	x			Colorado (Walker, 1929).
	x			Oregon (Shaw, Simms, and Muth, 1934).
	x			Wyoming (Honess and Winter, 1956).
		x		Minnesota (Fitch, 1928).
		x		Ontario (Scholten, Ronald, and McLean, 1962).
		x		Pennsylvania (Samuel, 1967).
		x		Wisconsin (Samuel and Trainer, 1969).
			x	British Columbia (Bruce, 1931).
			x	California (Clarke, 1913; Van Roekel, 1929c).
			x	New York (Bump, 1937, 1940, 1941, 1942).
			x	Oregon (Shaw, 1947; Greene, 1956).
			x	Pennsylvania (Stewart, 1929).
			x	Wisconsin (Chaddock, 1948).
			x	Wyoming (Rush, [1932]).

Table 1. Checklist of the Internal and External Parasites of Deer, Odocoileus hemionus and O. virginianus, in the United States and Canada -- Continued

PARASITES	HOSTS: Odocoileus hemionus	HOSTS: Odocoileus virginianus	HOSTS: Deer	GEOGRAPHIC DISTRIBUTION
Cochliomyia hominivorax (Cochliomyia americana, Callitroga americana, Callitroga hominivorax)		x		Texas (Lindquist, 1937; Glazener and Knowlton, 1967).
			x	Alabama (Allen, G. W., 1951; Allen, R. H., 1951).
			x	Arizona (Nichol, 1938).
			x	Arkansas (Allen, G. W., 1951).
			x	Florida (Allen, G. W., 1951; Strode, 1955).
			x	Georgia (Allen, G. W., 1951).
			x	Louisiana (Allen, G. W., 1951).
			x	Mississippi (Allen, G. W., 1951).
			x	North Carolina (Allen, G. W., 1951).
			x	South Carolina (Allen, G. W., 1951).
			x	Tennessee (Allen, G. W., 1951).
Cochliomyia macellaria			x	Arizona (Nichol, 1938).
			x	Florida (Insect Pest Survey Bull., [1934]).
			x	Georgia (Insect Pest Survey Bull., [1934]).
Cuterebra sp.	x			California (Longhurst and Douglas, 1953).
		x		New York (Severinghaus, 1949).
Lipoptena cervi (L. subulata Coquillett)		x		Massachusetts (Bequaert, 1935, 1937, 1942).
		x		New Hampshire (Bequaert, 1935, 1937, 1942, 1957).
		x		New York (Gerberg and Goble, 1941; Bequaert, 1942, 1957).
		x		Pennsylvania (Bequaert, 1935, 1937, 1942).
			x	New Hampshire (Coquillett, 1907; Bequaert, 1937, 1942).
			x	New York (Bump, 1941; Bequaert, 1957).
Lipoptena depressa	x			British Columbia (Bruce, 1931; Bequaert, 1935, 1937; Spencer, 1938, 1939; Bequaert, 1942; Cowan, 1943, 1946, 1951; Bequaert, 1957).
	x			California (Ferris and Cole, 1922; Dixon, 1934; Bequaert, 1935, 1937, 1942; Holdenreid, Evans, and Longanecker, 1951; Linsdale and Tomich, 1953; Longhurst and Douglas, 1953; Bequaert, 1957; Taber and Dasmann, 1958; Browning and Lauppe, 1964).
	x			Montana (Bequaert, 1935, 1937, 1942, 1957; Senger and Capelle, 1959).
	x			Oregon (Shaw, Simms, and Muth, 1934; Bequaert, 1935, 1937, 1942, 1957).
	x			South Dakota (Bequaert, 1935, 1957).
	x			Washington (Bequaert, 1935, 1937, 1942, 1957).
	x			Wyoming (Bequaert, 1957).

Table 1. Checklist of the Internal and External Parasites of Deer, Odocoileus hemionus and O. virginianus, in the United States and Canada -- Continued

PARASITES	HOSTS: Odocoileus hemionus	HOSTS: Odocoileus virginianus	HOSTS: Deer	GEOGRAPHIC DISTRIBUTION
*Lipoptena depressa (Cont.)		x		British Columbia (Cowan, 1951; Bequaert, 1957).
		x		Idaho (Bequaert, 1942, 1957).
		x		Montana (Bequaert, 1957; Senger and Capelle, 1959).
		x		South Dakota (Bequaert, 1957).
		x		Washington (Bequaert, 1957).
			x	British Columbia (Ferris and Cole, 1922).
			x	California (Clarke, 1913, Bequaert, 1937; Herman, 1945d).
			x	Michigan (O'Roke, 1936b).
			x	Montana (Senger, 1963).
			x	Oregon (Bequaert, 1937; Shaw, 1947).
*Lipoptena mazamae		x		Florida (Bequaert, 1935, 1937, 1942, 1957).
		x		Georgia (Bequaert, 1935, 1957).
		x		Louisiana (Bequaert, 1957).
		x		South Carolina (Bequaert, 1935, 1937, 1942).
		x		Texas (Bequaert, 1935, 1942; Eads, 1949; Bequaert, 1957).
			x	Texas (Van Volkenberg and Nicholson, 1943).
Lipoptena odocoilei		x		Louisiana (Byram, 1964).
Lipoptena sp.		x		Pennsylvania (Latham, 1955).
		x		Texas (Robinson, Kuttler, Thomas, and Marburger, 1967; Emerson, 1969).
		x		Washington (Hadlow, 1955).
			x	California (Clarke, 1913).
Melophagus ovinus	x			Oregon (Bequaert, 1957).
		x		Texas (Randolph and Eads, 1946).
*Neolipoptena ferrisi (Lipoptena subulata sensu Ferris and Cole, Lipoptena ferrisi)	x			British Columbia (Bequaert, 1937; Spencer, 1938, 1939; Bequaert, 1942; Cowan, 1946, 1951; Bequaert, 1957).
	x			California (Ferris and Cole, 1922; Bequaert, 1937, 1942; Linsdale and Tomich, 1953; Longhurst and Douglas, 1953; Bequaert, 1957; Taber and Dasmann, 1958).
	x			Montana (Bequaert, 1937, 1942, 1957; Senger and Capelle, 1959).
	x			Oregon (Bequaert, 1937, 1942, 1957).
	x			South Dakota (Bequaert, 1957).
	x			Washington (Bequaert, 1957).
	x			Wyoming (Bequaert, 1942; Honess and Winter, 1956).
		x		British Columbia (Cowan, 1951).

Table 1 Checklist of the Internal and External Parasites of Deer, Odocoileus hemionus and O. virginianus, in the United States and Canada -- Continued

PARASITES	HOSTS: Odocoileus hemionus	HOSTS: Odocoileus virginianus	HOSTS: Deer	GEOGRAPHIC DISTRIBUTION
*Neolipoptena ferrisi (Cont.)		x		California (Bequaert, 1937, 1942).
		x		Montana (Bequaert, 1937, 1942; Senger and Capelle, 1959).
		x		Oregon (Bequaert, 1942).
		x		South Dakota (Bequaert, 1957).
			x	California (Herman, 1945d).
			x	Idaho (USDA Par. Coll. 66091).
			x	Montana (Senger, 1963).
			x	Oregon (Bequaert, 1937).
Oestrus ovis		x		Wisconsin (Dahlberg and Guettinger, 1956).
Phormia regina	x			British Columbia (Cowan, 1946).
	x			California (Linsdale and Tomich, 1953).
			x	British Columbia (Cowan, 1951).
Sarcophaga plinthopyga	x			California (Linsdale and Tomich, 1953).
Lice				
Cervicola forficula (?, See text.)		x		Oklahoma (Emerson, 1940).
Damalinia americana (?, See text.)	x			Wyoming (Honess and Winter, 1956).
Damalinia sp. (?, See text.)			x	Colorado (Pillmore, 1961).
Polyplax spinulosa		x		Rhode Island (Mathewson and Hyland, 1962).
Solenopotes binipilosus (Linognathus binipilosus, Cervophthirius binipilosus)	x			Arizona (Swank, 1958).
		x		Arizona (Ferris and Stojanovich, 1951).
				Arizona (Nichol, 1938).
				Texas (Van Volkenberg and Nicholson, 1943; Ferris and Stojanovich, 1951).
*Solenopotes ferrisi (Linognathus ferrisi, Cervophthirius ferrisi, Cervophthirius crassicornis)	x			British Columbia (Cowan, 1946).
	x			California (Ferris, 1916b, 191[illegible] 1932; Ferris and Stojanovich, 1951; Holdenre[illegible] Evans, and Longanecker, 1951; Linsdale and Tomich, 19[illegible]; Longhurst and Douglas, 1953; Taber and Dasmann, 1958).
		x		Minnesota (Fenstermacher, Olsen, and Pomeroy, 1943; Olsen and Fenstermacher, 1943; Scanlon, 1960).
		x		North Carolina (Ruff, [1938]; Schilling, 1938).
		x		Ontario (Scholten, Ronald, and McLean, 1962).
			x	British Columbia (Spencer, 1939).

Table 1. Checklist of the Internal and External Parasites of Deer, Odocoileus hemionus and O. virginianus, in the United States and Canada -- Continued

PARASITES	HOSTS: Odocoileus hemionus	HOSTS: Odocoileus virginianus	HOSTS: Deer	GEOGRAPHIC DISTRIBUTION
*Solenopotes ferrisi (Cont.)			x	Montana (Senger, 1959, 1963).
			x	Pennsylvania (Peters, 1933).
			x	Washington (USDA Par. Coll. 42937).
Trichodectes tibialis (?, See text.)	x			British Columbia (Buckell, [1934]).
	x			California (Kellogg and Ferris, 1915; Longhurst and Douglas, 1953; Taber and Dasmann, 1958; Browning and Lauppe, 1964).
		x		Michigan (Whitlock, 1939).
Trichodectes sp. (?, See text.)	x			Nebraska (Mohler, Wampole, and Fichter, 1951).
*Tricholipeurus lipeuroides (Trichodectes lipeuroides, Tricholipeurus virginianus, Damalinia lipeuroides, Cervicola lipeuroides, Cervicola virginianus)	x			Alberta (Hopkins, 1960).
	x			Arizona (Swank, 1958).
	x			British Columbia (Spencer, 1939; Cowan, 1946; Hopkins, 1960).
	x			Idaho (USNM Ent. Coll.).
	x			Montana (USNM Ent. Coll.).
	x			Oregon (USNM Ent. Coll.) (USDA Par. Coll. 41968, 41989).
	x			Utah (Doman and Rasmussen, 1944).
	x			Wyoming (Honess and Winter, 1956).
		x		Arizona (K. C. Emerson Coll.).
		x		Florida (USNM Ent. Coll.).
		x		Idaho (USDA Par. Coll. 40288).
		x		Maine (USNM Ent. Coll.).
		x		Michigan (Lawrence, Hays, and Graham, 1965).
		x		Minnesota (Fenstermacher, Olsen, and Pomeroy, 1943; Olsen and Fenstermacher, 1943).
		x		Mississippi (USNM Ent. Coll.).
		x		Montana (USNM Ent. Coll.).
		x		New Jersey (K. C. Emerson Coll.).
		x		New Mexico (USDA Par. Coll. 58971).
		x		New York (Gerberg and Goble, 1941; Scanlon, 1960).
		x		North Carolina (Ruff, [1938]; Schilling, 1938).
		x		Oklahoma (Emerson, 1940).
		x		Ontario (Scholten, Ronald, and McLean, 1962).
		x		Pennsylvania (Peters, 1930), Philadelphia Zoo (Hope in Fox, 1936).
		x		Quebec (Webster and Stewart, 1964).

Table 1. Checklist of the Internal and External Parasites of Deer, Odocoileus hemionus and O. virginianus, in the United States and Canada -- Continued

PARASITES	HOSTS: Odocoileus hemionus	HOSTS: Odocoileus virginianus	HOSTS: Deer	GEOGRAPHIC DISTRIBUTION
*Tricholipeurus lipeuroides (Cont.)		x		South Carolina (USNM Ent. Coll.).
		x		Texas (Peters, 1930; Hightower, Lehman, and Eads, 1953).
		x		Washington (USNM Ent. Coll.).
			x	Arizona (Nichol, 1938).
			x	Colorado (USNM Ent. Coll.).
			x	Iowa (USDA Par. Coll. 43384).
			x	Maine (USDA Par. Coll. 41517, 41518).
			x	Montana (Senger, 1963).
			x	New Jersey (USNM Ent. Coll.) (USDA Par. Coll. 59029).
			x	New York (Bump, 1937).
			x	Pennsylvania (Peters, 1933).
			x	Texas (Van Volkenberg and Nicholson, 1943).
			x	Wisconsin (Rausch, 1950).
*Tricholipeurus parallelus (Trichodectes parallelus, Trichodectes odocoilei, Cervicola odocoilei, Damalinia parallelus)	x			Alberta (Cowan, 1951).
	x			British Columbia (Spencer, 1939; Cowan, 1946, 1951; Hopkins, 1960).
	x			Colorado (USNM Ent. Coll.).
	x			Montana (USNM Ent. Coll.).
	x			Oregon (Shaw, Simms, and Muth, 1934).
	x			Utah (Doman and Rasmussen, 1944).
	x			Washington (USNM Ent. Coll.).
		x		Alberta (Cowan, 1951).
		x		Arizona (Beer, Cook, and Schwab, [1960]).
		x		British Columbia (Cowan, 1951).
		x		California (USNM Ent. Coll.).
		x		Georgia (K. C. Emerson Coll.).
		x		Massachusetts (K. C. Emerson Coll.) (USNM Ent. Coll.).
		x		Montana (McGregor, 1917).
		x		New Hampshire (USNM Ent. Coll.).
		x		New York (Scanlon, 1960).
		?		New York (Osborn, 1896 and Hopkins, 1960).
		x		North Carolina (Ruff, [1938]; Schilling, 1938).
		x		Nova Scotia (K. C. Emerson Coll.).
		x		Oklahoma (Emerson, 1940).

Table 1. Checklist of the Internal and External Parasites of Deer, Odocoileus hemionus and O. virginianus, in the United States and Canada -- Continued

PARASITES	HOSTS: Odocoileus hemionus	HOSTS: Odocoileus virginianus	HOSTS: Deer	GEOGRAPHIC DISTRIBUTION
*Tricholipeurus parallelus (Cont.)		x		Pennsylvania (USNM Ent. Coll.).
		x		South Carolina (USNM Ent. Coll.).
		x		South Dakota (K. C. Emerson Coll.).
		x		Texas (USNM Ent. Coll.).
		x		Virginia (USNM Ent. Coll.).
			x	California (Clarke, 1913).
			x	Michigan (Paine, 1912; Kellogg and Ferris, 1915).
			x	Montana (Senger, 1963).
			x	Ontario (USNM Ent. Coll.).
			x	Oregon (Shaw, 1947).
			x	Pennsylvania (Peters, 1933).
			x	South Dakota (USDA Par. Coll. 59030).
Tricholipeurus sp.	x			British Columbia (Hopkins, 1960).
		x		New York (Cheatum, 1952).
			x	New York (Bump, 1940).
			x	Wyoming (Rush, [1932]).
Mites				
Euschoengastia radfordi	x			California (Brennan and Jones, 1954; Gould, 1956).
	x			Utah (Allred and Beck, 1966).
Euschoengastia sp.	x			California (Longhurst and Douglas, 1953).
Neoschoengastia fullbergae	x			California (Gould, 1956).
	x			Montana (Brennan, [1949]).
			x	Montana (Senger, 1963).
Neoschoengastia sp.	x			California (Longhurst and Douglas, 1953; Taber and Dasmann, 1958).
Otodectes cynotis		x		Alberta, Calgary Zoological Gardens (Sweatman, 1958).
Otodectes sp.		x		Wisconsin (Dahlberg and Guettinger, 1956).
Odontacarus dentatus (Trombicula dentata)		x		Texas (Ewing, 1925, 1931).
Trombicula (Eutrombicula) alfreddugesi (Eutrombicula alfreddugesi)	x			California (Dixon and Herman, 1945).
Trombicula (Eutrombicula) splendens (Acariscus masoni)		x		Florida (Ewing, 1943).

Table 1. Checklist of the Internal and External Parasites of Deer, Odocoileus hemionus and O. virginianus, in the United States and Canada -- Continued

PARASITES	HOSTS: Odocoileus hemionus	HOSTS: Odocoileus virginianus	HOSTS: Deer	GEOGRAPHIC DISTRIBUTION
Ticks				
*Amblyomma americanum		x		Georgia (Lund, Marshall, and Hayes, 1962).
		x		Illinois (Montgomery and Hawkins, 1967).
		x		Indiana (White, 1967).
		x		North Carolina (Tibbetts, 1953).
		x		Texas (Brennan, 1945a, 1945b; Randolph and Eads, 1946; Robinson, Kuttler, Thomas, and Marburger, 1967; Emerson, 1969).
		x		Virginia (Sonenshine, Lamb, and Anastos, 1965).
			x	Alabama (USDA Par. Coll. 43393).
			x	Florida (USDA Par. Coll. 34117).
			x	North Carolina (Carpenter, Chamberlain, and Peeples, 1946).
			x	South Carolina (Bishopp and Trembley, 1945).
			x	Texas (Van Volkenberg and Nicholson, 1943; Cooley and Kohls, 1944b).
Amblyomma cajennense		x		Texas (Eads, Menzies, and Hightower, 1956).
			x	Texas (Cooley and Kohls, 1944b).
Amblyomma imitator			x	?Texas (Kohls, 1958).
Amblyomma inornatum		x		Texas (Cook, Glazener, and Trainer, 1969).
*Amblyomma maculatum		x		Florida (Travis, 1941).
		x		Texas (Eads, Menzies, and Hightower, 1956).
			x	Florida (USDA Par. Coll. 34090, 34174, 34250, 42219, 44853).
			x	South Carolina (Bishopp and Trembley, 1945).
*Boophilus annulatus		x		Florida (Say, 1821).
			x	California (USDA Par. Coll. 15119, 15884).
			x	Florida (USDA Par. Coll. 31511).
			x	Texas (McIntosh, 1934).
*Boophilus microplus (B. annulatus microplus, B. annulatus australis)		x		Florida (Travis, 1941).
			x	Florida (McIntosh, 1934; Knapp, 1940).
			x	Texas (USDA Par. Coll. 40250).
*Dermacentor albipictus (D. variegatus) (See text.)	x			Alberta (Cowan, 1951).
	x			Arizona (Russo, 1956; Swank, 1958; Allen and Erling, 1964).
	x			British Columbia (Bruce, 1931; Hearle, 1938; Humphreys and Gibbons, 1942; Cowan, 1946, 1951; Gregson, 1956).

Table 1. Checklist of the Internal and External Parasites of Deer, Odocoileus hemionus and O. virginianus, in the United States and Canada -- Continued

PARASITES	HOSTS: Odocoileus hemionus	HOSTS: Odocoileus virginianus	HOSTS: Deer	GEOGRAPHIC DISTRIBUTION
*Dermacentor albipictus (Cont.)	x			California (Holdenreid, Evans, and Longanecker, 1951; Linsdale and Tomich, 1953).
	x			Montana (Birdseye in Henshaw and Birdseye, 1911; Bishopp and Wood, 1913).
	x			Nevada (Brinton and Kohls, 1963).
	x			Oregon (Chamberlin, 1937).
	x			Texas (Eads, Menzies, and Hightower, 1956).
	x			Utah (Doman and Rasmussen, 1944; Coffey, 1954; Richens, 1967).
	x			Washington (USDA Par. Coll. 44895).
	x			Wyoming (Honess and Winter, 1956).
		x		Georgia (Pratt and McCauley, 1948).
		x		Idaho (USDA Par. Coll. 40287).
		x		Michigan (Lawrence, Hays, and Graham, 1965).
		x		Minnesota (Fenstermacher and Jellison, 1933; Fenstermacher, Olsen, and Pomeroy, 1943; Olsen and Fenstermacher, 1943).
		x		New Mexico (Cooley, 1938).
		x		Oklahoma (Ellis, 1955).
		x		Ontario (Anderson, 1962).
		x		Rhode Island (Hyland and Mathewson, 1961).
		x		Texas (Eads, Menzies, and Hightower, 1956).
		x		Virginia (Sonenshine, Lamb, and Anastos, 1965).
		x		Wisconsin (Knipping, Morgan, and Dicke, 1950).
			x	Alberta (Gregson, 1956).
			x	British Columbia (MacNay, 1952; Gregson, 1956).
			x	Colorado (Pillmore, 1961).
			x	Montana (Senger, 1959, 1963).
			x	New Mexico (USDA Par. Coll. 31564, 42922).
			x	New York (USDA Par. Coll. 18563).
			x	Ontario (Gregson, 1956).
			x	Oregon (Shaw, 1947).
			x	South Carolina (Carpenter, Chamberlain, and Peeples, 1946).
			x	Texas (Van Volkenberg and Nicholson, 1943; Brennan, 1945b).
			x	Utah (Edmunds, 1951).
			x	Washington (Neumann, 1897).

Table 1. Checklist of the Internal and External Parasites of Deer, Odocoileus hemionus and O. virginianus, in the United States and Canada -- Continued

PARASITES	HOSTS: Odocoileus hemionus	HOSTS: Odocoileus virginianus	HOSTS: Deer	GEOGRAPHIC DISTRIBUTION
*Dermacentor albipictus (Cont.)			x	Wyoming (Rush, [1932]).
Dermacentor erraticus typical (?, See text.)		x		Massachusetts (Bequaert, 1946).
		x		New York (Bequaert, 1946).
		x		Pennsylvania (Bequaert, 1946).
Dermacentor erraticus var. albipictus (?, See text.)			x	Nova Scotia (Bequaert, 1946).
*Dermacentor hunteri	x			Arizona (Russo, 1956; Swank, 1958; Allen and Erling, 1964).
	x			Nevada (Brinton and Kohls, 1963).
*Dermacentor nigrolineatus (See text.)	x			Texas (USDA Par. Coll. 59298).
		x		Arizona (USDA Par. Coll. 40279).
		x		New Mexico (USDA Par. Coll. 55699).
		x		New York (Packard, 1869).
		x		Texas (Banks, 1908; Bishopp and Wood, 1913).
			x	Arizona (Nichol, 1938).
			x	Florida (USDA Par. Coll. 56080).
			x	New York (Banks, 1908; Stiles, 1910).
			x	Oklahoma (USDA Par. Coll. 28637).
			x	Pennsylvania (Peters, 1933).
			x	Rhode Island (McIntosh and McDuffie, [1957]).
			x	Texas (Stiles, 1910).
			x	Wisconsin (Banks, 1908; Stiles, 1910).
Dermacentor nitens (Anocentor nitens)		x		Texas (Eads, Menzies, and Hightower, 1956).
			x	Florida (Strickland and Gerrish, 1964).
*Dermacentor occidentalis	x			California (Boynton and Woods, 1933; Dixon, 1934; Boynton and Woods, 1940; Dixon and Herman, 1945; Holdenreid, Evans, and Longanecker, 1951; Linsdale and Tomich, 1953; Longhurst and Douglas, 1953; Taber and Dasmann, 1958; Osebold, Douglas, and Christensen, 1962; Browning and Lauppe, 1964; Brunetti, 1965).
			x	California (Marx in Curtice, 1892; Banks, 1908; Stiles, 1910; Clarke, 1913; Cox, Jahraus, and Moore, 1921).
Dermacentor parumapertus	x			California (Boynton and Woods, 1933).
*Dermacentor variabilis		x		Illinois (Montgomery and Hawkins, 1967; Montgomery, 1968).
			x	Florida (USDA Par. Coll. 44852).
			x	New York (Bump, 1937).
*Dermacentor venustus (D. andersoni)	x			Alberta (Cowan, 1951).
	x			British Columbia (Hearle, 1938; Cowan, 1951).

Table 1. Checklist of the Internal and External Parasites of Deer, Odocoileus hemionus and O. virginianus, in the United States and Canada -- Continued

PARASITES	HOSTS: Odocoileus hemionus	HOSTS: Odocoileus virginianus	HOSTS: Deer	GEOGRAPHIC DISTRIBUTION
*Dermacentor venustus (Cont.)	x			Canada (Gregson, 1956).
	x			Colorado (Cooley, 1938).
	x			Oregon (Chamberlin, 1937).
	x			Utah (Coffey, 1954).
	x			Wyoming (Honess and Winter, 1956).
		x		Alberta (Cowan, 1951).
		x		British Columbia (Cowan, 1951).
			x	Idaho (USDA Par. Coll. 32417).
			x	Montana (Senger, 1963).
Dermacentor sp.	x			Alaska (Klein, 1965).
Haemaphysalis leporispalustris		x		Ontario (Scholten, Ronald, and McLean, 1962).
			x	Texas (Brennan, 1945b).
*Ixodes affinis		x		Georgia (Lund, Marshall, and Hayes, 1962).
		x		South Carolina (Gerrish and Ossorio, 1965).
Ixodes dentatus		x		Rhode Island (Hyland and Mathewson, 1961).
Ixodes muris		x		New York (Anastos, 1947; Collins, Nardy, and Glasgow, 1949).
Ixodes ozarkus			x	Arkansas (Cooley, 1944; Cooley and Kohls, 1945).
Ixodes pacificus (I. californicus, I. californicus pacificus, I. ricinus californicus, I. ricinus sensu Hearle)	x			British Columbia (Hearle, 1938 [see Gregson, 1956]; Cowan, 1946).
	x			California (Banks, 1908; Boynton and Woods, 1933; Holdenreid, Evans, and Longanecker, 1951; Linsdale and Tomich, 1953; Longhurst and Douglas, 1953; Taber and Dasmann, 1958; Osebold, Douglas, and Christensen, 1962; Browning and Lauppe, 1964; Brunetti, 1965).
	x			Canada (Gregson, 1956).
	x			Oregon (Kohls and Cooley, 1937).
	x			Utah (Beck, 1955).
			x	British Columbia (Cowan, 1951).
			x	California (Clarke, 1913; Cox, Jahraus, and Moore, 1921).
			x	Oregon (Shaw, 1947).
*Ixodes scapularis (I. ricinus var. scapularis)		x		Florida (Travis, 1941; Moore, 1957).
		x		Georgia (Pratt and McCauley, 1948; Lund, Marshall, and Hayes, 1962).
		x		Massachusetts (Bequaert, 1946).
		x		Rhode Island (Hyland and Mathewson, 1961).
		x		Texas (Randolph and Eads, 1946).

Table 1. Checklist of the Internal and External Parasites of Deer, Odocoileus hemionus and O. virginianus, in the United States and Canada -- Continued

PARASITES	HOSTS: Odocoileus hemionus	HOSTS: Odocoileus virginianus	HOSTS: Deer	GEOGRAPHIC DISTRIBUTION
*Ixodes scapularis (Cont.)		x		Virginia (Sonenshine, Lamb, and Anastos, 1965).
			x	Alabama (USDA Par. Coll. 18310, 43392).
			x	Arkansas (Cooley and Kohls, 1945; Tugwell and Lancaster, 1962).
			x	North Carolina (USDA Par. Coll. 40885).
			x	South Carolina (Carpenter, Chamberlain, and Peeples, 1946).
			x	Texas (Brennan, 1945b; Cooley and Kohls, 1945; Eads, Menzies, and Hightower, 1956).
Ornithodoros coriaceus	x			California (Cooley and Kohls, 1944a; Holdenreid, Evans, and Longanecker, 1951; Linsdale and Tomich, 1953; Taber and Dasmann, 1958).
Ornithodoros hermsi	x			California (Longhurst and Douglas, 1953).
*Otobius megnini (Ornithodoros megnini)	x			Arizona (Cooley and Kohls, 1944a).
	x			British Columbia (Cowan, 1951; Gregson, 1956; Rich, 1957).
	x			California (Hooker, Bishopp, and Wood, 1912).
	x			Montana (Cooley and Kohls, 1944a).
	x			Texas (Eads, Menzies, and Hightower, 1956).
	x			Wyoming (Honess and Winter, 1956).
		x		British Columbia (Cowan, 1951; Rich, 1957).
		x		Montana (Cooley and Kohls, 1944a).
		x		New Mexico (USDA Par. Coll. 56200).
			x	Arizona (Cooley and Kohls, 1944a).
			x	British Columbia (MacNay, 1952; Gregson, 1953; MacNay, 1958).
			x	Idaho (Cooley and Kohls, 1944a).
			x	Montana (Cooley and Kohls, 1944a; Senger, 1959, 1963).
			x	Oregon (Shaw, 1947).
			x	Texas (Cooley and Kohls, 1944a; Brennan, 1945b).
			x	Utah (Edmunds, 1951).
*Rhipicephalus sanguineus			x	Florida (USDA Par. Coll. 42965, 44111).
			x	Texas (Cooley, 1946).

LITERATURE CITED

AITON, J. F. 1938. Enlarged spleen in whitetail deer at Glacier National Park. Tr. 3. North Am. Wildl. Conf., p. 890-892.

ALIBASOGLU, M., D. C. KRADEL, and H. W. DUNNE. 1961. Cerebral nematodiasis in Pennsylvania deer (Odocoileus virginianus). Cor. Vet. 51: 431-441.

ALLEN, G. W. 1951. Effects of screw-worm on deer in the southeast. Tr. 16. North Am. Wildl. Conf., p. 135-145.

ALLEN, R. H. (jr.). 1951. The screwworm menace. Alabama Conserv. 22: 11, 16.

ALLEN, R. W. and W. W. BECKLUND. 1958. Cooperia mcmasteri and Cooperia surnabada in the United States. J. Parasit. 44: 503-506.

_____ and H. G. ERLING. 1964. Parasites of bighorn sheep and mule deer in Arizona with new host records. J. Parasit. 50 (supp.): 38.

ALLRED, D. M. and D. E. BECK. 1966. Mites of Utah mammals. Brigham Young Univ. Science Bull., Biol. ser., 8: 1-123.

ANASTOS, G. 1947. Hosts of certain New York ticks. Psyche 54: 178-180.

ANDERSON, D. R. and W. M. SAMUEL. 1969. Eimeria (Protozoa: Eimeriidae) from white-tailed deer Odocoileus virginianus in Pennsylvania, Texas, and Wisconsin, with descriptions of two new species. Bull. Wildl. Dis. As., Proc. Ann. Conf. 5: 351-356.

ANDERSON, R. C. 1956. Elaphostrongylus odocoilei Hobmaier and Hobmaier, 1934 in the cranial case of Odocoileus virginianus borealis Miller. Can. J. Zool. 34: 167-173.

_____. 1962. The helminth and arthropod parasites of the white-tailed deer (Odocoileus virginianus): a general review. Tr. Roy. Can. Inst. 34: 57-92.

_____. 1963. The incidence, development, and experimental transmission of Pneumostrongylus tenuis Dougherty (Metastrongyloidea: Protostrongylidae) of the meninges of the white-tailed deer (Odocoileus virginianus borealis) in Ontario. Can. J. Zool. 41: 775-792 plus 9 pls.

_____. 1965. The development of Pneumostrongylus tenuis in the central nervous system of white-tailed deer. Path. Vet. 2: 360-379.

ANNEREAUX, R. F. 1941. A new record of a deer parasite for California. Am. J. Vet. Res. 2: 199-201.

AUGUSTSON, G. F. 1943. Preliminary records and discussion of some species of Siphonaptera from the Pacific Southwest. Bull. South. Calif. Acad. Sci. 42: 69-89.

BAKER, N. F., W. M. LONGHURST, and J. R. DOUGLAS. 1957. Experimental transmission of gastrointestinal nematodes between domestic sheep and Columbian black-tailed deer. Tr. 22. North Am. Wildl. Conf., p. 160-168.

BANKS, N. 1908. A revision of the Ixodoidea, or ticks, of the United States. [Bull.] Tech. Ser. (15), Bureau Ent., U.S. Dept. Agr., p. 1-61.

BECK, D. E. 1955. Some unusual distributional records of ticks in Utah. J. Parasit. 41: 198-201.

BECKLUND, W. W. and M. L. WALKER. 1967a. Nematodirus odocoilei sp. n. (Nematoda: Trichostrongylidae) from the black-tailed deer, Odocoileus hemionus, in North America. J. Parasit. 53: 392-394.

_____ and M. L. WALKER. 1967d. Redescriptions of the nematodes Ostertagia bisonis Chapin, 1925, of cattle and wild ruminants, and Ostertagia mossi Dikmans, 1931, of deer. J. Parasit. 53: 1273-1280.

_____ and M. L. WALKER. 1968. Ostertagia dikmansi sp. n. (Nematoda: Trichostrongylidae) from deer, Odocoileus virginianus, with a key to the species of medium stomach worms of Odocoileus in North America. J. Parasit. 54: 441-444.

_____ and M. L. WALKER. 1969. Taxonomy, hosts, and geographic distribution of the Setaria (Nematoda: Filarioidea) in the United States and Canada. J. Parasit. 55: 359-368.

BEER, J. R., E. F. COOK, and R. G. SCHWAB. [1960]. The ectoparasites of some mammals from the Chiricahua Mountains, Arizona. J. Parasit. 45: 605-613.

BEHREND, D. F. and J. F. WITTER. 1968. Pneumostrongylus tenuis in white-tailed deer in Maine. J. Wildl. Mgt. 32: 963-966.

BENNETT, G. F. 1962. On the biology of Cephenemyia phobifera (Diptera: Oestridae), the pharyngeal bot of the white-tailed deer, Odocoileus virginianus. Can. J. Zool. 40: 1195-1210.

_____ and C. W. SABROSKY. 1962. The nearctic species of the genus Cephenemyia (Diptera, Oestridae). Can. J. Zool. 40: 431-448.

BEQUAERT, J. C. 1935. The American species of Lipoptena (Diptera, Hippoboscidae). Bull. Brooklyn Ent. Soc. 30: 170.

_____. 1937. Notes on Hippoboscidae. 5. The American species of Lipoptena. Bull. Brooklyn Ent. Soc. 32: 91-101.

_____. 1942. A monograph of the Melophaginae, or ked-flies, of sheep, goats, deer and antelopes (Diptera, Hippoboscidae). Ent. Am. 22: 1-210.

_____. 1946. The ticks, or Ixodoidea, of the northeastern United States and eastern Canada. Ent. Am. 25: 73-232.

BEQUAERT, J. C. 1957. The Hippoboscidae or louse-flies (Diptera) of mammals and birds. Part II. Taxonomy, evolution and revision of American genera and species. Ent. Am. 36: 417-611.

BISHOPP, F. C. and H. L. TREMBLEY. 1945. Distribution and hosts of certain North American ticks. J. Parasit. 31: 1-54.

_____ and H. P. WOOD. 1913. The biology of some North American ticks of the genus Dermacentor. Parasitology 6: 153-187.

BLAIR, W. R. 1903. Cysticerci in wild ruminants. 7. Ann. Rep. N. York Zool. Soc. (1902), p. 137-144.

BLICKLE, R. L. 1956. Notes on the life history of Cephenemyia phobifer Clark (Diptera). Ent. News 67: 13-14.

BODDICKER, M. L. and E. J. HUGGHINS. 1969. Helminths of big game mammals in South Dakota. J. Parasit. 55: 1067-1074.

BOYNTON, W. H. and G. M. WOODS. 1933. Deer as carriers of anaplasmosis. Science 78: 559-560.

_____ and G. M. WOODS. 1940. Anaplasmosis among deer in the natural state. Science 91: 168.

BRENNAN, J. M. 1945a. Field investigations pertinent to Bullis fever. The lone star tick Amblyomma americanum (Linnaeus, 1758). Notes and observations from Camp Bullis, Texas. Texas Rep. Biol. and Med. 3: 204-226.

_____. 1945b. Field investigations pertinent to Bullis fever. Preliminary report on the species of ticks and vertebrates occurring at Camp Bullis, Texas. Texas Rep. Biol. and Med. 3: 112-121.

_____. [1949]. New North American chiggers (Acarina, Trombiculidae). J. Parasit. 34: 465-478.

_____ and E. K. JONES. 1954. A report on the chiggers (Acarina: Trombiculidae) of the Frances Simes Hastings Natural History Reservation, Monterey County, California. Wasmann J. Biol. 12: 155-194.

BRINTON, E. P. and G. M. KOHLS. 1963. New distributional and host data for the tick Dermacentor hunteri Bishopp. Great Basin Nat. 23: 166.

BROWNING, B. M. and E. M. LAUPPE. 1964. A deer study in a redwood-Douglas fir forest type. Calif. Fish and Game 50: 132-147.

BRUCE, E. A. 1931. Record of insects affecting wild life in B. C. Rep. Vet. Director Gen., Dept. Agr., Canada (1930-1931), p. 71-73.

BRUNETTI, O. A. 1965. Tick paralysis in California deer. Calif. Fish and Game 51: 208-210.

_____. 1969. Redescription of Parelaphostrongylus (Boev and Schuls, 1950) in California deer, with studies on its life history and pathology. Calif. Fish and Game 55: 307-316.

BUCKELL, E. R. [1934]. Notes on ticks and insect parasites of game animals in British Columbia. Proc. Ent. Soc. Brit. Columbia (31), p. 10-16.

BUMP, G. 1937. Bureau of game. 26. Ann. Rep. N. York State Conservation Dept. (1936), p. 288-335.

_____. 1940. Bureau of game. 29. Ann. Rep. N. York State Conservation Dept. (1939), p. 230-270.

_____. 1941. Bureau of game. 30. Ann. Rep. N. York State Conservation Dept. (1940), p. 213-260.

_____. 1942. Bureau of game. 31. Ann. Rep. N. York State Conservation Dept. (1941), p. 209-264.

BUTLER, W. J. 1932. Report of the Montana Livestock Sanitary Board. Rep. Montana Livestock San. Bd. and State Vet. Surg. (1930-1932) 1: 3-24.

_____. [1936]. Onchocerca flexuosa [in a deer shot in Broadwater County]. Rep. Montana Livestock San. Bd. and State Vet. Surg. (1934-36), p. 15.

BYRAM, J. E. 1964. Lipoptena (Lipoptenella) odocoilei, a new species of ked-fly (Diptera, Hippoboscidae, Melophaginae) from white-tailed deer in Louisiana. J. Parasit. 50: 155-157.

BYRD, E. E., A. K. PRESTWOOD, and W. P. MAPLES. 1967. A new host and two new locality records for the blood fluke, Heterobilharzia americana Price, 1929. J. Parasit. 53: 1115-1116.

CAPELLE, K. J. and SENGER, C. M. 1959. Occurrence of Cephenemyia jellisoni in a sample of Montana mule deer. J. Parasit. 45 (supp.): 32.

CARPENTER, S. J., R. W. CHAMBERLAIN, and L. PEEPLES. 1946. Tick collections at army installations in the Fourth Service Command. Ent. News 57: 71-76.

CHADDOCK, T. T. 1948. Some facts relative to disease as found in wildlife. North Am. Vet. 29: 560-567.

CHAMBERLIN, W. J. 1937. The ticks of Oregon. Station Bull.(349), Oregon Agr. Exp. Sta., p. 1-34.

CHANDLER, W. L. 1931. Report of research associate. 44. Ann. Rep. Michigan Agr. Exp. Sta. (1930-1931), p. 236.

CHEATUM, E. L. 1942. Comparative disease studies (suppl. E). Pittman-Robertson Quarterly, U. S. Fish and Wildl. Service 2: 215.

_____. 1949. A contribution to the life-history of the deer lungworm Leptostrongylus alpenae (Nematoda: Metastrongylidae), with observations on its incidence and biology. Microfilm Abstr. 9: 190-191.

_____. 1951. Disease in relation to winter mortality of deer in New York. J. Wildl. Mgt. 15: 216-220.

_____. 1952. Disease and parasite investigations. Final Report, Pittman-Robertson Project 1-R, Suppl. E., New York State Conservation Dept., Division of Fish and Game, Bureau of Fish and Wildlife Investigations, p. 1-75.

CHITWOOD, M. B. and H. E. JORDAN. 1965. Monodontus louisianensis sp. n. (Nematoda: Ancylostomatidae) from the white-tailed deer, Odocoileus virginianus (Zimmermann), and a key to the species of Monodontus. J. Parasit. 51: 942-944.

CHRISTENSEN, J. F. and D. W. McNEAL. 1967. Anaplasma marginale infection in deer in the Sierra Nevada foothill area of California. Am. J. Vet. Res. 28: 599-601.

_____, J. W. OSEBOLD, and M. N. ROSEN. [1959]. The incidence of latent Anaplasma marginale infection in wild deer in an area where anaplasmosis is enzootic in cattle. Proc. 62.Ann. Meet. U.S. Livestock San. As. (1958), p. 59-65.

CLARKE, F. C. 1913. Investigation of the large game situation in California with special reference to deer. Game Bull. (1) Calif. Fish and Game Comm., p. 6-20.

COFFEY, M. D. 1954. A study of some Rocky Mountain spotted fever vectors and their hosts in Utah. Great Basin Nat. 14: 31-37.

COLLINS, D. L., R. V. NARDY, and R. D. GLASGOW. 1949. Some host relationships of Long Island ticks. J. Econ. Ent. 42: 110-112.

COOK, R. S., W. C. GLAZENER, and D. O. TRAINER. 1969. White-tailed deer, a new host for Amblyomma inornatum. Bull. Wildl. Dis. As. 5: 108.

_____, D. O. TRAINER, W. C. GLAZENER, and B. D. NASSIF. 1965. A serological study of infectious diseases of wild populations in South Texas. Tr. 30. North Am. Wildl. and Natural Resources Conf., p. 142-155.

COOLEY, R. A. 1938. The genera Dermacentor and Otocentor (Ixodidae) in the United States, with studies in variation. National Inst. Health Bull. (171), U.S. Pub. Health Serv., p. 1-89.

_____. 1944. Ixodes ozarkus n. sp. and Ornithodoros aquilae n. sp., with notes on O. talaje and O. kelleyi (Ixodoidea). J. Parasit. 30: 287-294.

_____. 1946. The genera Boophilus, Rhipicephalus, and Haemaphysalis (Ixodidae) of the New World. National Inst. Health Bull. (187), U.S. Pub. Health Serv., p. 1-54.

_____ and G. M. KOHLS. 1944a. The Argasidae of North America, Central America and Cuba. Am. Midl. Nat. Monogr. Ser. (1), p. 1-152.

_____ and G. M. KOHLS. 1944b. The genus Amblyomma (Ixodidae) in the United States. J. Parasit. 30: 77-111.

_____ and G. M. KOHLS. 1945. The genus Ixodes in North America. National Inst. Health Bull. (184), U.S. Pub. Health Serv., p. 1-246.

COQUILLETT, D. W. 1907. Notes and descriptions of Hippoboscidae and Streblidae. Ent. News 18: 290-292.

COWAN, I. McT. 1943. Notes on the life history and morphology of Cephenemyia jellisoni Townsend and Lipoptena depressa Say, two dipterous parasites of the Columbian black-tailed deer (Odocoileus hemionus columbianus (Richardson)). Can. J. Res., Sec. D. 21: 171-187.

_____. 1946. Parasites, diseases, injuries, and anomalies of the Columbian black-tailed deer, Odocoileus hemionus columbianus (Richardson), in British Columbia. Can. J. Res., Sec. D. 24: 71-103.

_____. 1948. The occurrence of the granular tape-worm Echinococcus granulosus in wild game in North America. J. Wildl. Mgt. 12: 105-106.

_____. 1951. The diseases and parasites of big game mammals of western Canada. Rep. Proc. 5. Ann. Game Conv., Game Dept., Prov. British Columbia, p. 37-64.

COX, F., P. JAHRAUS, and W. MOORE. 1921. A list of California Arachnida VI. Acarina or the mites and ticks. J. Ent. and Zool. [Pomona Coll.] 13: 23-37.

CURTICE, C. 1892. Parasites. Being a list of those infesting the domesticated animals and man in the United States. J. Comp. Med. and Vet. Arch. 13: 223-236.

DAHLBERG, B. L. and R. C. GUETTINGER. 1956. The white-tailed deer in Wisconsin. Tech. Wildl. Bull (14), Game Mgt. Div., Wisconsin Conserv. Dept., p. 1-282.

DeGIUSTI, D. L. 1963. Incidence and distribution of Elaphostrongylus odocoilei in Michigan deer herd. J. Parasit. 49 (supp.): 47.

DeGRAZIO, J. and R. E. PILLMORE. 1958. Study of cysticercosis of mule deer. Quart. Rep. Colorado Dept. Game and Fish, p. 29-30.

DeNIO, R. M. and R. M. WEST. 1942. The foot-worm disease in deer of the northern Rocky Mountain region. J. Forest. 40: 540-543.

DIKMANS, G. 1931j. Two new lungworms from North American ruminants and a note on the lungworms of sheep in the United States. Proc. U.S. Natl. Mus. (2884), 79, Art. 18: 1-4.

_____. 1931k. Two new species of nematode worms of the genus Ostertagia from the Virginia deer, with a note on Ostertagia lyrata. Proc. U.S. Natl. Mus. (2872), 79, Art. 6: 1-6.

_____. 1932i. Ostertagia marshalli from the mountain sheep, Ovis canadensis; Ostertagia marshalli and O. occidentalis from a deer, probably Odocoileus hemionus hemionus, both from the Yellowstone National Park. J. Parasit. 19: 83-84.

_____. 1932j. Ostertagia odocoilei from the fourth stomach of a deer, Odocoileus virginianus, in Louisiana. J. Parasit. 19: 90.

_____. 1932l. Protostrongylus macrotis from the black-tailed deer, Odocoileus columbianus. J. Parasit. 19: 89.

_____. 1933. Onchocerca flexuosa from the subcutaneous tissues of an antelope and from subcutaneous abscesses of a deer. J. Parasit. 19: 246.

DIKMANS, G. 1934. New records of helminth parasites. Proc. Helm. Soc. Wash. 1: 63-64.

_____. 1935b. Lungworms collected from deer, Odocoileus virginianus, in Michigan. Proc. Helm. Soc. Wash. 2: 59.

_____. 1935k. Two new lungworms, Protostrongylus coburni, n. sp., and Pneumostrongylus alpenae, n. sp., from the deer, Odocoileus virginianus, in Michigan. Tr. Am. Micr. Soc. 54: 138-144.

_____. 1942. A new nematode, Skrjabinema parva, (Nematoda: Oxyuroidea), from deer. Proc. Helm. Soc. Wash. 9: 66-68.

_____. 1947. A note on the caudal papillae of the male of Wehrdikmansia cervipedis (Wehr and Dikmans, 1935) Caballero, 1945. Proc. Helm. Soc. Wash. 14: 34-35.

_____ and J. T. LUCKER. 1935. New records of nematode parasites from deer in the United States. Proc. Helm. Soc. Wash. 2: 83.

DINABURG, A. G. 1939. Helminth parasites collected from deer, Odocoileus virginianus, in Florida. Proc. Helm. Soc. Wash. 6: 102-104.

DIXON, J. S. 1934. A study of the life history and food habits of mule deer in California. Calif. Fish and Game 20: 181-282, 315-354.

_____ and C. M. HERMAN. 1945. Studies on the condition of California mule deer at Sequoia National Park. Calif. Fish and Game 31: 3-11.

DOMAN, E. R. and D. I. RASMUSSEN. 1944. Supplemental winter feeding of mule deer in northern Utah. J. Wildl. Mgt. 8: 317-338.

DOUGHERTY, E. C. 1945. The nematode lungworms (suborder Strongylina) of North American deer of the genus Odocoileus. Parasitology 36: 199-208.

DOUGLAS, J. R., D. R. CORDY, and G. M. SPURLOCK. 1954. Elaeophora schneideri Wehr and Dikmans 1935 (Nematoda, Filarioidea) in California sheep. Cor. Vet. 44: 252-258.

DUCKWORTH, C. U. 1941. Division of animal husbandry. 21. Ann. Rep. Calif. Dept. Agr. (1940), p. 352-369.

DUDAK, D. 1964. Incidence and degree of infection of Pneumostrongylus tenuis in white-tailed deer (Odocoileus virginianus) west of the Blue Ridge in Virginia. Virginia J. Sci., n.s. 15: 289.

_____, G. W. CORNWELL, R. B. HOLLIMAN, and B. S. McGINNES. 1966. The incidence and degree of infection of Pneumostrongylus tenuis in the white-tailed deer of western Virginia. Proc. 19. Ann. Conf., Southeastern As. Game and Fish Comrs. (1965), p. 128-141.

DUTSON, V. J., J. N. SHAW, and S. E. KNAPP. 1967. Epizootiologic factors of Fascioloides magna (Trematoda) in Oregon and southern Washington. Am. J. Vet. Res. 28: 853-860.

EADS, R. B. 1949. A second record of Lipoptena mazamae from cattle. J. Econ. Ent. 42: 158.

_____. 1951. A note on the javelina flea, Juxtapulex porcinus. J. Parasit. 57: 328.

_____, G. C. MENZIES, and B. G. HIGHTOWER. 1956. The ticks of Texas, with notes on their medical significance. Texas J. Sci. 8: 7-24.

EDMUNDS, L. R. 1951. A checklist of the ticks of Utah. Pan-Pacific Entom. 27: 23-26.

ELLIS, L. L. (jr.). 1955. A survey of the ectoparasites of certain mammals in Oklahoma. Ecology 36: 12-18.

EMERSON, H. R. 1969. A comparison of parasitic infestations of white-tailed deer (Odocoileus virginianus) from central and east Texas. Bull. Wildl. Dis. As. 5: 137-139.

_____ and W. T. WRIGHT. 1968. The isolation of a Babesia in a white-tailed deer. Bull. Wildl. Dis. As. 4: 142-143.

EMERSON, K. C. 1940. Records of Mallophaga from Oklahoma hosts. Can. Ent. 72: 104-108.

EWING, H. E. 1925. A contribution to our knowledge of the taxonomy of chiggers including the descriptions of a new genus, six new species and a new variety. Am. J. Trop. Med. 5: 251-265.

_____. 1931. A catalogue of the Trombiculinae, or chigger mites, of the New World with new genera and species and a key to the genera. Proc. U.S. Natl. Mus. (2908), 80, Art. 8: 1-19.

_____. 1943. The American chiggers (larvae of the Trombiculinae) of the genus Acariscus, new genus. Proc. Ent. Soc. Wash. 45: 57-66.

FENSTERMACHER, R. and W. L. JELLISON. 1933. Diseases affecting moose. Bull. (294), Minn. Agr. Exp. Sta., p. 1-20.

_____, O. W. OLSEN, and B. S. POMEROY. 1943. Some diseases of white-tailed deer in Minnesota. Cor. Vet. 33: 323-332.

FERRIS, G. F. 1916b. A catalogue and host list of the Anoplura. Proc. Calif. Acad. Sci. 6: 129-213.

_____. 1916c. Cervophthirius crassicornis (N.) (Anoplura). Ent. News 27: 197-200.

_____. 1932. Contributions toward a monograph of the sucking lice. Part V. Stanford Univ. Publ. Publ., Univ. Ser., Biol. Sci. 2: 273-413.

_____ and F. R. COLE. 1922. A contribution to the knowledge of the Hippoboscidae (Diptera Pupipara). Parasitology 14: 178-205.

_____ and C. J. STOJANOVICH. 1951. The sucking lice. Mem. Pacific Coast Ent. Soc. 1: 1-320.

FITCH, C. P. 1928. A preliminary note on the occurrence of a head and throat bot in the wild deer (Cervus virginianus) of Minnesota. Cor. Vet. 18: 353-357.

FLAKAS, K. G. 1950. Wildlife pathology study. Wisconsin Wildlife Research, Pittman-Robertson Quarterly Progress Report 9: 1-106.

GARDNER, V. R. [1932?]. Parasitological studies. Rep. Agr. Exp. Sta. Michigan State Coll. (1930-1932), p. 16-17.

GEARY, J. M. 1959. The fleas of New York. Mem. (355), Cornell Univ. Agr. Exp. Sta., p. 1-104.

GERBERG, E. J. and F. C. GOBLE. 1941. A new record for Lipoptena cervi L. in New York State. Bull. Brooklyn Ent. Soc. 36: 26.

GERRISH, R. R. and J. M. OSSORIO. 1965. New record of the tick Ixodes affinis in the United States. J. Econ. Ent. 58: 369.

GLAZENER, W. C. and F. F. KNOWLTON. 1967. Some endoparasites found in Welder Refuge deer. J. Wildl. Mgt. 31: 595-597.

GOBLE, F. C. 1941. Tissue changes in white-tailed deer (Odocoileus virginianus borealis) accompanying natural infections of lungworms (genera Protostrongylus and Dictyocaulus). J. Wildl. Mgt. 5: 141-158.

_____. 1943. Notes on the adults of Protostrongylus coburni in the lungs of white-tailed deer. J. Parasit. 29: 158.

GOUGE, R. E. 1936. Cysticercosis in deer. Vet. Med. 31: 259.

GOULD, D. J. 1956. The larval trombiculid mites of California (Acarina: Trombiculidae). Univ. Calif. Publ. Ent. 11: 1-15.

GREENE, C. T. 1956. Dipterous larvae parasitic on animals and man and some dipterous larvae causing myiasis in man. Tr. Am. Ent. Soc. 82: 17-34.

GREGSON, J. D. 1937. Cysticercosis in deer. Parasitology 29: 409.

_____. 1953. Records of the tick Otobius megnini (Duges) from British Columbia (Acarina: Argasidae). Proc. Ent. Soc. Brit. Columbia (1952) 49: 30.

_____. 1956. The Ixodoidea of Canada. Publ. (930) Canada Dept. Agr. Ent. Div., p. 1-92.

GRIFFITHS, H. J. 1962. Fascioloidiasis of cattle, sheep, and deer in northern Minnesota. J. Am. Vet. Med. As. 140: 342-347.

GRUNDMANN, A. W. 1958. Cestodes of mammals from the Great Salt Lake Desert region of Utah. J. Parasit. 44: 425-429.

HADLOW, W. J. 1955. Degenerative myopathy in a white-tailed deer, Odocoileus virginianus. Cor. Vet. 45: 538-547.

HADWEN, I. A. S. 1916. A new host for Fasciola magna, Bassi. Together with observations on the distribution of Fasciola hepatica, L. in Canada. J. Am. Vet. Med. As. 2: 511-515.

HADWEN, I. A. S. 1932. [Helminth parasites of deer]. J. Parasit. 19: 83.

HALL, M. C. 1912. Our present knowledge of the distribution and importance of some parasitic diseases of sheep and cattle in the United States. 27. Ann. Rep. Bureau Animal Indust., U.S. Dept. Agr. (1910), p. 419-463.

_____. 1925. Parasites of deer, Odocoileus sp. J. Parasit. 12: 105.

HALLORAN, P. O. 1955. A bibliography of references to diseases in wild mammals and birds. Am. J. Vet. Res. 16: 1-465.

HANSON, W. R. and C. Y. McCULLOCH. 1955. Factors influencing mule deer on Arizona brushlands. Tr. 20. North Am. Wildl. Conf., p. 568-588.

HARPER, T. A., R. A. RUTTAN, and W. A. BENSON. 1955. Hydatid disease (Echinococcus granulosus) in Saskatchewan big game. Tr. 20. North Am. Wildl. Conf., p. 198-208.

HAYES, F. A., W. E. GREER, and E. B. SHOTTS. 1958. A progress report from the Southeastern Cooperative Deer Disease Study. Tr. 23. North Am. Wildl. Conf., p. 133-136.

HEARLE, E. 1938. The ticks of British Columbia. Scient. Agr. 18: 341-354.

HENSHAW, H. W. and C. BIRDSEYE. 1911. The mammals of Bitterroot Valley, Montana, in their relation to spotted fever. Circ. 82, Bureau Biol. Survey, U.S. Dept. Agr., p. 1-24.

HERMAN, C. M. 1944. Eye worm (Thelazia californiensis) infection in deer in California. Calif. Fish and Game 30: 58-60.

_____. 1945a. Cephenemyia jellisoni Townsend (Diptera Cuterebridae) reared from nasal bot of blacktailed deer. Pan-Pacific Entom. 21: 120.

_____. 1945d. Hippoboscid flies as parasites of game animals in California. Calif. Fish and Game 31: 16-25.

_____. 1945e. Some worm parasites of deer in California. Calif. Fish and Game 31: 201-208.

_____. 1946. The nose bot fly of deer. Calif. Fish and Game 32: 17-18.

_____. 1947. Further observations on deer footworm infection. Calif. Fish and Game 33: 54.

_____ and A. I. BISCHOFF. [1946a]. Preliminary report on the distribution of Onchocerca cervipedis. J. Parasit. 31 (supp.): 16.

_____ and A. I. BISCHOFF. 1946b. The foot worm parasite of deer. Calif. Fish and Game 32: 182-190.

HIBLER, C. P. 1965. Description of the microfilaria of Wehrdikmansia cervipedis (Wehr and Dikmans, 1935) and observations on its location in Arizona deer. Bull. Wildl. Dis As. 1: 44-48.

HIBLER, C. P. and J. L. ADCOCK. 1968. Redescription of Elaeophora scheideri Wehr and Dikmans, 1935 (Nematoda: Filarioidea). J. Parasit. 54: 1095-1098.

_____, J. L. ADCOCK, R. W. DAVIS, and Y. Z. ABDELBAKI. 1969. Elaeophorosis in deer and elk in the Gila Forest, New Mexico. Bull. Wildl. Dis. As. 5: 27-30.

HIGHTOWER, B. G., V. W. LEHMAN, and R. B. EADS. 1953. Ectoparasites from mammals and birds on a quail preserve. J. Mammal. 34: 268-271.

HOBMAIER, A. and M. HOBMAIER. 1934. Elaphostrongylus odocoilei n. sp., a new lungworm in black tail deer (Odocoileus columbianus). Description and life history. Proc. Soc. Exp. Biol. Med. 31: 509-514.

HOLDENREID, R., F. C. EVANS, and D. S. LONGANECKER. 1951. Host-parasite-disease relationships in a mammalian community in the central coast range of California. Ecol. Monog. 21: 1-18.

HOLLAND, G. P. 1949. A revised check list of the fleas of British Columbia. Proc. Ent. Soc. Brit. Columbia (1948) 45: 7-14.

HOLLAND, J. B. (jr.). 1959. Liver flukes in the southeastern white-tailed deer. Proc. 12. Ann. Conf. Southeast. As. Game and Fish Comm., p. 224-227.

HOLMES, J. C. and R. PODESTA. 1968. The helminths of wolves and coyotes from the forested regions of Alberta. Can. J. Zool. 46: 1193-1204.

HONESS, R. F. and K. B. WINTER. 1956. Diseases of wildlife in Wyoming for those interested in the diseases and parasites of the wild animal. Bull. (9) Wyoming Game and Fish Comm., p. 1-279.

HOOKER, W. A., F. C. BISHOPP, and H. P. WOOD. 1912. The life history and bionomics of some North American ticks. Bull. (106) Bureau Ent. U. S. Dept. Agr., p. 1-239.

HOPE, J. G. 1936. [Ectoparasites]. (In Fox, H. Mortality and matters of pathological interest). Rep. Penrose Res. Lab., Zool. Soc. Phila., p. 18.

HOPKINS, G. H. E. 1960. Notes on some Mallophaga from mammals. Bull. Brit. Mus. (Nat. Hist.) Ent. 10: 77-95.

_____ and M. ROTHSCHILD. 1953. An illustrated catalogue of the Rothschild collection of fleas (Siphonaptera) in the British Museum (Natural History). V. I. Tungidae and Pulicidae, p. 1-361.

HOWE, D. L. and W. G. HEPWORTH. 1965. Anaplasmosis in big game animals: tests on wild populations in Wyoming. Am. J. Vet. Res. 26: 1114-1120.

HUBBARD, C. A. 1947. Fleas of western North America, their relation to the public health. Iowa State College Press. Ames, Iowa. p. 1-533.

HUMPHREYS, F. A. and R. J. GIBBONS. 1942. Some observations on corynebacterial infections with particular reference to their occurrence in mule deer, Odocoileus hemionus, in British Columbia. Can. J. Comp. Med. 6: 35-45.

HUNTER, W. D. 1915. A new species of Cephenomyia from the United States (Diptera: Oestridae). Proc. Ent. Soc. Wash. 17: 169-173.

HURT, L. M. et al. [1945]. Report of committee on miscellaneous transmissible diseases. Proc. 48. Ann. Meet. U.S. Livestock San. As. (1944), p. 101-104.

HUTSON, R. 1931. The nose-fly of deer, Cephenomyia phobifer. 44. Ann. Rep. Michigan Agr. Exp. Sta. (1930-1931), p. 269-271.

HYLAND, K. E. and J. A. MATHEWSON. 1961. The ectoparasites of Rhode Island mammals. I. The ixodid tick fauna. Wildl. Dis. No. 11.

INSECT PEST SURVEY BULL. [1934]. Screw worm. 13: 339.

JELLISON, W. L. 1935. Cephenomyia pratti (Diptera: Oestridae) reared from blacktailed deer. Proc. Helm. Soc. Wash. 2: 69.

_____ and G. M. KOHLS. 1936. Distribution and hosts of the human flea, Pulex irritans L., in Montana and other western states. Pub. Health Rep., U.S. Pub. Health Serv. 51: 842-844.

JONESCHILD, E. M. 1938. Brain abscess in a deer. J. Am. Vet. Med. As. 45: 566-568.

_____. 1939. Report of bacteriologist and pathologist, December 1, 1938 to November 30, 1939. Rep. Montana Livestock San. Bd. and State Vet. Surg. (1938-1939), p. 14-18.

KARNS, P. D. 1966. Pneumostrongylus tenuis from elk (Cervus canadensis) in Minnesota. Bull. Wildl. Dis. As. 2: 79-80.

_____. 1967. Pneumostrongylus tenuis in deer in Minnesota and implications for moose. J. Wildl. Mgt. 31: 299-303.

KARSTAD, L. (editor). 1964. Diseases of the Cervidae: a partly annotated bibliography. Wildl. Dis. No. 43.

_____. 1969. Diseases of the Cervidae: bibliography supplement 1. Wildl. Dis. No. 52.

_____ and D. O. TRAINER. 1969. Sarcocystis in white-tailed deer. Bull. Wildl. Dis. As. 5: 25-26.

KELLOGG, V. L. and G. F. FERRIS. 1915. The Anoplura and Mallophaga of North American mammals. Leland Stanford Jr. Univ. Publ., Univ. Ser., p. 1-74.

KEMPER, H. E. 1957. Filarial dermatosis of sheep. J. Am. Vet. Med. As. 130: 220-224.

KERR, G. R. and J. C. HOLMES. 1966. Parasites of mountain goats in west central Alberta. J. Wildl. Mgt. 30: 786-790.

KINGSCOTE, A. A. 1950. Liver rot (fascioloidiasis) in ruminants. Can. J. Comp. Med. 14: 203-208.

KLEIN, D. R. 1965. Ecology of deer range in Alaska. Ecol. Monog. 35: 259-284.

KNAPP, J. V. 1940. Existence of tropical variety of cattle-fever tick (=Boophilus annulatus, var. australis) complicates tick eradication in Florida. J. Am. Vet. Med. As. 96: 607-608.

KNIPPING, P. A., B. B. MORGAN, and R. J. DICKE. 1950. Notes on the distribution of Wisconsin ticks. Tr. Wisconsin Acad. Sci., Arts, and Lett. 60: 185-197.

KNOWLTON, G. F. and C. F. SMITH. 1936. Deer botfly (Cephenomyia pratti Hunter). Insect Pest Survey Bull. 16: 90.

KOHLS, G. M. 1958. Amblyomma imitator, a new species of tick from Texas and Mexico, and remarks on the synonymy of A. cajennense (Fabricius)(Acarina-Ixodidae). J. Parasit. 44: 430-433.

_____ and R. A. COOLEY. 1937. North American records of the tick Ixodes ricinus californicus (Banks). Pub. Health Rep., U.S. Pub. Health Serv. 52: 282-284.

KREIER, J. P., M. RISTIC, and A. M. WATRACH. 1962. Theileria sp. in a deer in the United States. Am. J. Vet. Res. 23: 657-662.

KUTTLER, K. L. and R. M. ROBINSON. 1967. A capillary-tube agglutination test for the detection of Theileria infections in white-tailed deer. Southwest. Vet. 21: 51-55.

_____, R. M. ROBINSON, and R. R. BELL. 1967. Tick transmission of theileriasis in a white-tailed deer. Bull. Wildl. Dis. As. 3: 182-183.

_____, R. M. ROBINSON, and W. P. ROGERS. 1967a. Exacerbation of latent erythrocytic infections in deer following splenectomy. Can. J. Comp. Med. Vet. Sci. 31: 317-319.

_____, R. M. ROBINSON, and W. P. ROGERS. 1967b. The detection of specific complement-fixing antibodies in serum of white-tailed deer (Odocoileus virginianus) with Theileria infection. Can. J. Comp. Med. Vet. Sci. 31: 354-357.

LANDRAM, J. F. 1951a. Internal parasites of the mule deer (Odocoileus hemionus subspecies) in Wyoming. Univ. Wyoming Publ. 16: 154.

_____. 1951b. Notes on the internal parasites of deer in Wyoming. J. Colorado-Wyoming Acad. Sci. 4: 81.

_____ and R. F. HONESS. 1955. Some internal parasites of the mule deer Odocoileus hemionus hemionus in Wyoming. Bull. (8), Wyoming Game and Fish Comm., p. 13-22.

LANKESTER, M. W. and R. C. ANDERSON. 1968. Gastropods as intermediate hosts of Pneumostrongylus tenuis Dougherty of white-tailed deer. Can. J. Zool. 46: 373-383.

LATHAM, R. M. 1955. Common diseases and parasites of wild animals. Penn. Game News 26: 17-25.

LAWRENCE, W. H., K. L. HAYS, and S. A. GRAHAM. 1965. Arthropodous ectoparasites from some northern Michigan mammals. Occas. Papers Mus. Zool. Univ. Michigan (639), p. 1-7.

LEVINE, N. D., V. IVENS, and C. M. SENGER. 1967. Eimeria odocoilei n. sp. from the mule deer Odocoileus h. hemionus in Washington. J. Prot. 14: 455-456.

LEVINE, P. P. 1934. Pathological examination of game. 23. Ann. Rep. N. York State Conservation Dept. (1933), p. 285-289.

LINDQUIST, A. W. 1937. Myiasis in wild animals in southwestern Texas. J. Econ. Ent. 30: 735-740.

LINSDALE, J. M. and B. S. DAVIS. 1956. Taxonomic appraisal and occurrence of fleas at the Hastings Reservation in Central California. Univ. Calif. Publ. Zool. 54: 293-369.

_____ and P. Q. TOMICH. 1953. A herd of mule deer. A record of observations made on the Hastings Natural History Reservation. University of California Press, Berkeley and Los Angeles, p. 1-567.

LOKEN, N. I., J. C. SCHLOTTHAUER, H. J. KURTZ, and P. D. KARNS. 1965. Pneumostrongylus tenuis in Minnesota moose (Alces alces). Bull. Wildl. Dis. As. 1: 7.

LONGHURST, W. M. and J. R. DOUGLAS. 1953. Parasite interrelationships of domestic sheep and Columbian black-tailed deer. Tr. 18. North Am. Wildl. Conf., p. 168-188.

LUND, H. O., C. M. MARSHALL, and F. A. HAYES. 1962. The occurrence of Ixodes affinis Neumann on Blackbeard Island, Georgia (Acarina: Ixodidae). Proc. Ent. Soc. Wash. 64: 105-106.

McGREGOR, E.A. 1917. Six new species of Mallophaga from North American mammals. Ann. Ent. Soc. Am. 10:167-178.

McINTOSH, A. 1934. Distribution of Boophilus annulatus australis (Fuller) in the United States. Proc. Helm. Soc. Wash. 1: 22.

_____ and W. C. McDUFFIE. [1957]. Ticks that affect domestic animals and poultry. Yearbook of Agr.,U.S. Dept. Agr. (1956), p. 157-166.

McLEAN, D. D. 1940. The deer of California, with particular reference to the Rocky Mountain mule deer. Calif. Fish and Game 26: 139-166.

MacNAY, C. G. 1952. Summary of the more important insect infestations and occurrences in Canada in 1951. 82. Ann. Rep. Ent. Soc. Ontario (1951), p. 91-115.

_____. 1958. Summary of important insect infestations, occurrences and damage in Canada in 1957. Ann. Rep. Ent. Soc. Ontario (1957) 88: 63-78.

MANGOLD, R. E. 1958. Wildlife diseases and parasites and what they mean to you. N. Jersey Outdoors 9: 8-14.

MAPES, C. R. and D. W. BAKER. 1950. The white-tailed deer, a new host of Dicrocoelium dendriticum (Rudolphi, 1819) Looss, 1899 (Trematoda: Dicrocoeliidae). Cor. Vet. 40: 211-212.

MAPLES, W. P. and H. E. JORDAN. 1966. A new host record for Obeliscoides cuniculi (Graybill, 1923) Graybill, 1924. J. Parasit. 52: 49.

MATHEWSON, J. A. and K. E. HYLAND. 1962. The ectoparasites of Rhode Island mammals. 11. A collection of Anoplura from non-domestic hosts. J. N. York Ent. Soc. 70: 167-174.

MILLER, G. S. (jr.) and R. KELLOGG. 1955. List of North American recent mammals. Bull. (205), U.S. Natl. Mus., p. 1-954.

MOHLER, L. L., J. H. WAMPOLE, and E. H. FICHTER. 1951. Mule deer in Nebraska National Forest. J. Wildl. Mgt. 15: 129-157.

MONTGOMERY, G. G. 1968. Rate of tick attachment to a white-tailed fawn. Am. Midl. Nat. 79: 528-530.

_____ and R. E. HAWKINS. 1967. Lone star ticks from white-tailed deer in Illinois. Tr. Illinois State Acad. Sci. 60: 203.

MOORE, J. C. 1957. The natural history of the fox squirrel, Sciurus niger shermani. Bull. Am. Mus. Nat. Hist. 113 (Art. 1): 1-71.

NEUMANN, L. G. 1897. Revision de la famille des ixodides. (2. memoire). Mem. Soc. Zool. France 10: 324-420.

NICHOL, A. A. 1938. Experimental feeding of deer. Tech. Bull. (75) Arizona Agr. Exp. Sta., p. 1-39.

OBERHANSLEY, F. R. 1940. California mule deer a host for nematode eye worms in Sequoia National Park. J. Am. Vet. Med. As. 96: 542.

OLSEN, O. W. 1949. White-tailed deer as a reservoir host of the large American liver fluke. Vet. Med. 44: 26-30.

_____ and R. FENSTERMACHER. 1943. The helminths of North American deer with special reference to those of the white-tailed deer (Odocoileus virginianus borealis) in Minnesota. Tech. Bull. (159), Minn. Agr. Exp. Sta., p. 1-20.

_____ and C. D. TOLMAN. 1949. Male of the deer pin worm, Skrjabinema parva. J. Colorado-Wyoming Acad. Sci. 4: 64.

_____ and C. D. TOLMAN. 1950. Description of the male of the pinworm, Skrjabinema parva Dikmans, 1942 (Nematoda: Oxyuroidea) from deer, with an emendation of the genus. J. Parasit. 36: 411-415.

_____ and C. D. TOLMAN. 1951. Wellcomia evaginata (Smith, 1908) (Oxyuridae: Nematode) of porcupines in mule deer, Odocoileus hemionus, in Colorado. Proc. Helm. Soc. Wash. 18: 120-122.

_____ and J. E. WILLIAMS. 1959. Cysticerci of Taenia krabbei in mule deer in Colorado. J. Wildl. Mgt. 23: 119-122.

O'ROKE, E. C. 1936a. The lungworm situation in the white-tailed deer, Odocoileus virginianus borealis, in Michigan. Proc. North Am. Wildl. Conf., p. 473-481.

_____. 1936b. Sickle cell anemia in deer. Proc. Soc. Exp. Biol. Med. 34: 738-739.

OSBORN, H. 1896. Insects affecting domestic animals: an account of the species of importance in North America, with mention of related forms occurring on other animals. Bull. (5) n.s., Div. Ent., U.S. Dept. Agr., p. 1-302.

OSEBOLD, J. W. 1959. Wild deer as carriers of anaplasmosis in California. J. Am. Vet. Med. As. 134: 329.

OSEBOLD, J. W., J. F. CHRISTENSEN, W. M. LONGHURST, and M. N. ROSEN. 1959. Latent Anaplasma marginale infection in wild deer demonstrated by calf inoculation. Cor. Vet. 49: 97-115.

_____, J. R. DOUGLAS, and J. F. CHRISTENSEN. 1962. Transmission of anaplasmosis to cattle by ticks obtained from deer. Am. J. Vet. Res. 23: 21-23.

PACKARD, A. S. 1869. Report of the Curator of Articulata. 1. Ann. Rep. Peabody Acad. Sci., p. 52-56; App., p. 56-69.

PAINE, J. H. 1912.Notes on a miscellaneous collection of Mallophaga from mammals. Ent. News 23: 437-442.

PARMELEE, W. E., R. D. LEE, E. D. WAGNER, and H. S. BURNETT. 1956. A survey of Thelazia californiensis, a mammalian eye worm, with new locality records. J. Am. Vet. Med. As. 129: 325-327.

PAYNE, R. L., W. P. MAPLES, and J. F. SMITH. 1967. The occurrence of Oesophagostomum cervi Mertts, 1948, in white-tailed deer (Odocoileus virginianus) of the southeastern United States. J. Parasit. 53: 691.

PETERS, H. S. 1930. A new biting louse (Mallophaga) from white-tailed deer. Proc. Ent. Soc. Wash. 32: 76-79.

_____. 1933. [Ectoparasites of deer in Pennsylvania]. Insect Pest Survey Bull. 13: 94-95.

PILLMORE, R. E. 1961. General investigations of diseases and parasites. Quart. Rep. Colorado Dept. Game and Fish, p. 101-102.

PRATT, H. D. and R. H. McCAULEY (jr.). 1948. Two interesting tick records from Georgia. J. Econ. Ent. 41: 832-833.

PRESTWOOD, A. K. and J. F. SMITH. 1969. Distribution of meningeal worm (Pneumostrongylus tenuis) in deer in the southeastern United States. J. Parasit. 55: 720-725.

PRICE, E. W. and A. McINTOSH. 1944. Paramphistomes of North American domestic ruminants. J. Parasit. 30 (supp.): 9.

RANDOLPH, N. M. and R. B. EADS. 1946. An ectoparasitic survey of mammals from Lavaca County, Texas. Ann. Ent. Soc. Am. 39: 597-601.

RANKIN, J. S. 1946. Helminth parasites of birds and mammals in western Massachusetts. Am. Midl. Nat. 35: 756-768.

RAUSCH, R. L. 1950. Observations on histopathological changes associated with starvation in Wisconsin deer. J. Wildl. Mgt. 14: 156-161.

_____ and F. S. L. WILLIAMSON. 1959. Studies on the helminth fauna of Alaska. XXXIV. The parasites of wolves, Canis lupus L. J. Parasit. 45: 395-403.

RICH, G. B. 1957. The ear tick, Otobius megnini (Duges) (Acarina: Argasidae), and its record in British Columbia. Can. J. Comp. Med. 21: 415-418.

RICHENS, V. B. 1967. Characteristics of mule deer herds and their range in northeastern Utah. J. Wildl. Mgt. 31: 651-666.

RILEY, W. A. 1939c. Maintenance of Echinococcus in the United States. J. Am. Vet. Med. As. 95: 170-172.

_____. 1939d. The need for data relative to the occurrence of hydatids and of Echinococcus granulosus in wildlife. J. Wildl. Mgt. 3: 255-257.

ROBINSON, R. M., K. L. KUTTLER, J. W. THOMAS, and R. G. MARBURGER. 1967. Theileriasis in Texas white-tailed deer. J. Wildl. Mgt. 31: 455-459.

ROSEN, M. N. 1951. A noticeable absence of bladder worms in Catalina deer. Calif. Fish and Game 37: 217.

RUFF, F. J. [1938]. The white-tailed deer of the Pisgah National Game Preserve, p. 1-249.

RUSH, W. M. [1932]. Northern Yellowstone Elk Study. Published by the Montana Fish and Game Comm., p. 1-131.

_____. 1935. Onchocerciasis, a new disease in the white-tailed deer of Montana. J. Mammal. 16: 70-71.

RUSSO, J. P. 1956. Desert bighorn sheep in Arizona, p. 1-153.

SAMUEL, W. M. 1967. Parasites of Pennsylvania deer. Penn. Game News 38: 25-27.

_____ and R. L. BEAUDOIN. 1966. Evaluation of two survey methods for detection of helminth infections in white-tailed deer (Odocoileus virginianus). Bull. Wildl. Dis. As. 2: 100-107.

_____ and D. O. TRAINER. 1968. Trichostrongylus axei (Cobbold, 1879) in white-tailed deer. J. Parasit. 54: 1091.

_____ and D. O. TRAINER. 1969. A technique for survey of some helminth and protozoan infections of white-tailed deer. J. Wildl. Mgt. 33: 888-894.

SAY, T. 1821. An account of the arachnides of the United States. J. Acad. Nat. Sci. Phila. 2: 59-82.

SAYAMA, K. 1952. Sarcocystis in deer and elk of California. Calif. Fish and Game 38: 99-104.

SCANLON, J. E. 1960. The Anoplura and Mallophaga of the mammals of New York. Wildl. Dis. No. 5.

SCHAD, G. A. 1959. A revision of the North American species of the genus Skrjabinema (Nematoda: Oxyuroidea). Proc. Helm. Soc. Wash. 26: 138-147.

_____ and R. W. RAUGHT. 1958. Thelazia californiensis from a mule deer, Odocoileus hemionus crooki (Mearns, 1879), in New Mexico. J. Parasit. 44: 483.

SCHAEFFLER, W. F. 1961. Theileria in white-tailed deer in the United States. J. Prot. 8 (supp.): 10.

_____. 1963. Serologic tests for Theileria cervi in white-tailed deer and for other species of Theileria in cattle and sheep. Am. J. Vet. Res. 24: 784-791.

SCHILLING, E. A. 1938. Management of whitetail deer on the Pisgah National Game Preserve. Summary of five-year study. Tr. 3. North Am. Wildl. Conf., p. 248-255.

SCHOLTEN, T. H., K. RONALD, and D. M. McLEAN. 1962. Parasite fauna of the Manitoulin Island region. 1. Arthropoda Parasitica. Can. J. Zool. 40: 605-606.

SCHWARTZ, B. 1938. Zoological division. Rep. Bureau Animal Indust., U. S. Dept. Agr. (1937-38), p. 75-85.

SCHWARTZ, J. E. [1942]. Range conditions and management of the Roosevelt elk on the Olympic Peninsula, p. 1-65. [mimeographed] [Washington, D. C.] (U.S. Dept. Agr., Forest Service).

SEGER, C. L., J. D. NEWSOM, E. E. ROTH, and W. R. HUTCHINSON (jr.). 1969. Chronic toxic hepatitis in deer from a Louisiana coastal marsh. Bull. Wildl. Dis. As., Proc. Ann. Conf. 5: 295-296.

SENGER, C. M. 1959. Notes on the ecto and endoparasites of the Rattlesnake deer herd. Proc. Montana Acad. Sci. 18: 33.

_____. 1963. Some parasites of Montana deer. Montana Wildl. Autumn: 5-13.

_____ and K. J. CAPELLE. 1959. Louse-flies from mule and white-tailed deer in Western Montana. J. Parasit. 45 (supp.): 32.

SEVERINGHAUS, C. W. 1949. Occurrence of a botfly larva in white-tailed deer. J. Mammal. 30: 75.

SHAW, J. N. 1933. Some parasites of Oregon wild life. J. Am. Vet. Med. As. 36: 599-603.

_____. 1947. Some parasites of Oregon wild life. Station Techn. Bull. (11) Oregon Agr. Exp. Sta., p. 1-16.

_____, B. T. SIMMS, and O. H. MUTH. 1934. Some diseases of Oregon fish and game and identification of parts of game animals. Station Bull. (322) Oregon Agr. Exp. Sta., p. 1-23.

SHOHO, C. 1958. Studies on the identity of Setaria species from the peritoneal cavity of American moose (Alces a. gigas) and white-tailed deer (Odocoileus virginianus). Ceylon Vet. J. 6: 43-47.

SKINKER, M. S. 1935. Two new species of tapeworms from carnivores and a redescription of Taenia laticollis Rudolphi, 1819. Proc. U.S. Natl. Mus. 83: 211-220.

SMIT, F. G. A. M. 1958. A preliminary note on the occurrence of Pulex irritans L. and Pulex simulans Baker in North America. J. Parasit. 44: 523-526.

SMITH, H. J. and R. McG. ARCHIBALD. 1967. Moose sickness, a neurological disease of moose infected with the common cervine parasite, Elaphostrongylus tenuis. Can. Vet. J. 8: 173-177.

SMITH, H. J., R. McG. ARCHIBALD, and A. H. CORNER. 1964. Elaphostrongylosis in Maritime moose and deer. Can. Vet. J. 5: 287-296.

SONENSHINE, D. E., J. T. LAMB (jr.), and G. ANASTOS. 1965. The distribution, hosts and seasonal activity of Virginia ticks. Virginia J. Sci. 16: 26-91.

SPENCER, G. J. 1938. Ectoparasites of birds and mammals of British Columbia. II. A preliminary list of the Pupipara, louse flies. Proc. Ent. Soc. Brit. Columbia (34), p. 39-45.

_____. 1939. Ectoparasites of deer in British Columbia. Proc. Ent. Soc. Brit. Columbia (35), p. 15-19.

SPINDLER, L. A., R. W. ALLEN, L. S. DIAMOND, and J. C. LOTZE. 1958. Babesia in a white-tailed deer. J. Prot. 5 (supp.): 8.

STEWART, M. A. 1933. Revision of the list of Siphonaptera from New York state. J. N. York Ent. Soc. 41: 253-262.

_____. 1940. Ovine thelaziasis. J. Am. Vet. Med. As. 96: 486-489.

STEWART, N. H. 1929. Cephenomyia, a probable cause of death among deer [Abstract]. Proc. Pennsylvania Acad. Sci. 3: 97.

_____. [1930?]. Preliminary report on the occurrence of the nose fly (Cephenomyia) in the deer of Pennsylvania. Bull. (12), Bd. Game Comrs., Pennsylvania, rev., p. 61-65.

_____. 1938. Observations on parasites in the deer of Pennsylvania. The Biologist 20: 79-84.

STILES, C. W. 1910. The taxonomic value of the microscopic structure of the stigmal plates in the tick genus Dermacentor. Bull. (62) Hyg. Lab., U.S. Pub. Health and Mar.-Hosp. Serv., p. 1-72.

_____ and A. HASSALL. 1894. A preliminary catalogue of the parasites contained in the collections of the United States Bureau of Animal Industry, United States Army Medical Museum, Biological Department of the University of Pennsylvania (Coll. Leidy) and in Coll. Stiles and Coll. Hassall. Vet. Mag. 1: 245-253, 331-354.

STRICKLAND, R. K. and R. R. GERRISH. 1964. Distribution of the tropical horse tick in the United States, with notes on associated cases of equine piroplasmosis. J. Am. Vet. Med. As. 144: 875-878.

STRODE, D. D. 1955. The screw-worm problem in the Ocala National Forest deer herd. Proc. 8. Ann. Conf. Southeastern As. Game and Fish Comrs., p. 85-89.

SWALES, W. E. 1933. A review of Canadian helminthology. I. The present status of knowledge of the helminth parasites of domesticated and semidomesticated mammals and economically important birds in Canada, as determined from work published prior to 1933. Can. J. Res. 8: 468-477.

_____. 1935. The life cycle of Fascioloides magna (Bassi, 1875), the large liver fluke of ruminants, in Canada with observations on the bionomics of the larval stages and the intermediate hosts, pathology of Fascioloides magna, and control measures. Can. J. Res. 12: 177-215.

SWANK, W. G. 1958. The mule deer in Arizona chaparral and an analysis of other important deer herds. Wildl. Bull. (3) Game and Fish Dept. Arizona, p. 1-109.

SWANSON, D. O. 1960. A study of the helminth parasites of the George Reserve deer herd. Wildl. Rev. (98), p. 74.

SWEATMAN, G. K. 1952. Distribution and incidence of Echinococcus granulosus in man and other animals with special reference to Canada. Can. J. Pub. Health 43: 480-486.

_____. 1958. Biology of Otodectes cynotis, the ear canker mite of carnivores. Can. J. Zool. 36: 849-862.

_____ and P. J. G. PLUMMER. 1957. The biology and pathology of the tapeworm Taenia hydatigena in domestic and wild hosts. Can. J. Zool. 35: 93-109.

_____ and R. J. WILLIAMS. 1963. Comparative studies on the biology and morphology of Echinococcus granulosus from domestic livestock, moose, and reindeer. Parasitology 53: 339-390.

TABER, R. D. and R. F. DASMANN. 1958. The black-tailed deer of the chaparral. Its life history and management in the north coast range of California. Game Bull. (8) Calif. Dept. Fish and Game, p. 1-163.

TIBBETTS, T. 1953. Ectoparasites from mammals at Camp Lejeune, North Carolina. J. Econ. Ent. 46: 530.

TOWNSEND, C. H. T. 1941. An undescribed American Cephenemyia. J. N. York Ent. Soc. 49: 161-163.

TRAINER, D. O. 1962. Protozoan diseases of white-tailed deer (Odocoileus virginianus). Proc. 1. Natl. White-tailed Deer Disease Symposium, p. 155-161.

TRAVIS, B. V. 1941. Examinations of wild animals for the cattle tick Boophilus annulatus microplus (Can.) in Florida. J. Parasit. 27: 465-467.

TUGWELL, P. and J. L. LANCASTER (jr.). 1962. Results of a tick-host study in northwest Arkansas. J. Kansas Ent. Soc. 35: 202-211.

VAN ROEKEL, H. 1929c. Parasitism in deer. Calif. Fish and Game 15: 309-314.

_____. 1929d. [Specimens received in the laboratory conducted by Dr. H. Van Roekel at the Hooper Foundation for Medical Research]. Calif. Fish and Game 15: 164-165.

VAN VOLKENBERG, H. L. and A. J. NICHOLSON. 1943. Parasitism and malnutrition of deer in Texas. J. Wildl. Mgt. 7: 220-223.

VOGE, M. 1955. A list of cestode parasites from California mammals. Am. Midl. Nat. 54: 413-417.

_____. 1956. A list of nematode parasites from California mammals. Am. Midl. Nat. 56: 423-429.

WALKER, C. R. 1929. Cephenomyia sp. killing deer. Science 69: 646-647.

WALTON, B. C. and K. W. WALLS. 1964. Prevalence of toxoplasmosis in wild animals from Fort Stewart, Georgia, as indicated by serological tests and mouse inoculation. Am. J. Trop. Med. Hyg. 13: 530-533.

WEBSTER, W. A. and R. C. STEWART. 1964. Tricholipeurus lipeuroides (Mégnin) (Mallophaga) from a white-tailed deer in Quebec. Can. J. Zool. 42: 323.

WEHR, E. E. and G. DIKMANS. 1935. New nematodes (Filariidae) from North American ruminants. Zool. Anz. 110: 202-208.

WEIDMAN, F. D. 1923. The animal parasites, their incidence and significance(In Fox. Disease in captive wild mammals and birds. Philadelphia, London and Chicago, p. 614-659.).

WHITE, C. M. 1967. The lone star tick on deer in Indiana. J. Parasit. 53: 104.

WHITLOCK, J. H. 1959. Elaphostrongylus, the proper designation of Neurofilaria. Cor. Vet. 49: 3-27.

WHITLOCK, S. C. 1939. The prevalence of disease and parasites in whitetail deer. Tr. 4. North Am. Wildl. Conf., p. 244-249.

WILLIAMS, J. E. 1956. A study of muscle cysticercosis in Colorado mule deer. Quart. Progr. Rep. Fed. Aid Div. Colorado Dept. Game and Fish, p. 1-10.

WORLEY, D. E. and G. A. M. SHARMAN. 1966. Gastritis associated with Ostertagia bisonis in Montana range cattle. J. Am. Vet. Med. As. 149: 1291-1294.

YEH, L.-S. 1959. A revision of the nematode genus Setaria Viborg, 1795, its host-parasite relationship, speciation and evolution. J. Helm. 33: 1-98.

YUILL, T. M., J. B. LOW, and P.R. FITZGERALD. 1961. The foot worm of northern Utah deer. Wildl. Dis. No. 10.

☆U.S. GOVERNMENT PRINTING OFFICE: 1970 O—399-989