

**ANIMAL PARASITES
U.S. NATIONAL PARASITE COLLECTION**

**Parasite Classification and Distribution Unit
Animal Parasitology Institute**

By J. Ralph Lichtenfels

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Background

The U.S. National Parasite Collection, one of the world's largest collection of parasites of animals and man, is the major type repository for North American parasitologists and for others who lack adequate facilities (figs. 1 and 2).

The collection was started in 1892 by USDA scientists Charles Wardell Stiles and Albert Hassall with their personal collections as the nucleus. It was initially called the BAI Collection (Bureau of Animal Industry). In 1894 the Smithsonian Institution authorized Stiles to establish a U.S. National Museum Helminthological Collection to be maintained by the Department of Agriculture as a research tool. This arrangement still exists. In addition to the designations BAI Collection and USNM Helminthological Collection, other names previously used include Zoological Division Parasite Collection, USDA Parasite Collection, Beltsville Parasite Collection, and the Animal Parasite Collection. Since 1969 the name U.S. National Parasite Collection has been used and specimens have been accessioned either in the USNM Helminthological Collection (all types and most specimens documented in the literature) or in the USDA Parasite Collection. Because separate collections have not been established for many other groups of parasites of animals, the USNM Helminthological Collection has many kinds of parasites other than helminths. They include protozoa, arthropods, and miscellaneous phyla.

In addition to Stiles and Hassall, the collection has been curated by B. H. Ransom, M.C. Hall, A. McIntosh, W. W. Becklund, and M. B. Chitwood. Other USDA workers associated with the collection over the years include B. G. Chitwood, E. B. Cram, G. Dikmans, J. T. Lucker, E. W. Price, and E. E. Wehr.

- 1961 Identified rat lungworm (Angiostrongylus cantonensis) from brain of man, resulting in discovery that a nematode is causative agent of parasitic or eosinophilic meningoencephalitis in the South Pacific
- 1970 Published checklist of internal and external parasites of deer in North America
- 1971 Published descriptions and keys to many common nematode parasites of ruminants
- 1971 Discovered larvae of eyeworm (Thelazia gulosa) in face fly (Musca autumnalis), the first natural vector for eyeworm of cattle in eastern North America
- 1973 Published first manual for identification of parasites in tissue sections, including 249 figures of parasites in lesions
- 1975 Published illustrated keys to helminths of domestic equids
- 1977-1983 Published redescrptions and keys to intestinal nematodes of ruminants (Cooperia, Nematodirus, Nematodirella)
- 1978 Determined that anisakid nematode of commercial shellfish was fourth-stage larva of Sulcascaris sulcata of marine turtles
- 1980 Published keys to genera for 3 superfamilies of bursate nematodes of vertebrates, Strongyloidea, Ancylostomatoidea, and Diaphanocephaloidea
- 1985 Redescribed stages of the heartworm, Dirofilaria immitis from dogs
- 1985 Identified and redescribed Nematodirus battus an imported nematode parasite of sheep
- 1986-1988 Published redescrptions of stomach worms of ruminants (Haemonchus, Ostertagia)

Selected Publications

Becklund, W. W. 1964. Revised check list of internal and external parasites of domestic animals in the United States and possessions and in Canada. Amer. Jour. Vet. Res. 25:1380-1416.

Becklund, W. W. 1968. Ticks of veterinary significance found on imports in the United States. Jour. Parasitol. 54(3):622-628.

Becklund, W. W., and Walker, M. L. 1967. Nematodirus of domestic sheep, Ovis aries, in the United States with a key to the species. Jour. Parasitol. 53(4):777-781.

Becklund, W. W., and Walker, M. L. 1969. Taxonomy, hosts, and geographic distribution of the Setaria (Nematoda: Filarioidea) in the United States and Canada. Jour. Parasitol. 55(2):359-368.

Chitwood, M. B. 1970. Comparative relationships of some parasites of man and old and new world subhuman primates. Lab. Anim. Care 20(2):389-394.

Chitwood, M. B., and Lichtenfels, J. R. 1972. Identification of parasitic metazoa in tissue sections. Exp. Parasitol. 32:407-519.

Chitwood, M. B., and Stoffolano, J. G. 1971. First report of Thelazia sp. (Nematoda) in the face fly, Musca autumnalis, in North America. Jour. Parasitol. 57(6):1363-1364.

Hoberg, E. P., Zimmerman, G. L., and Lichtenfels, J. R. 1986. First report of Nematodirus battus (Nematoda: Trichostrongyloidea) in North America; Redescription and comparison to other species. Proc. Helminthol. Soc. Wash. 53:80-88.

Lichtenfels, J. R. 1975. Helminths of domestic equids. Illustrated keys to genera and species with emphasis on North American forms. Helminthol. Soc. Wash. Proc. 42:1-92 (spec. issue).

Lichtenfels, J. R. 1977. Differences in cuticular ridges among Cooperia spp. of North American ruminants with an illustrated key to species. Proc. Helminthol. Soc. Wash. 44:111-119.

Lichtenfels, J. R. 1980. Keys to genera of the superfamily Strongyloidea. CIH Keys to the Nematode Parasites of Vertebrates No. 7, 41 pp. Commonwealth Agricultural Bureaux, England.

Lichtenfels, J. R. 1980. Keys to genera of the superfamily Ancylostomatoidea. CIH Keys to the Nematode Parasites of Vertebrates No. 8, pp. 1-19, Commonwealth Agricultural Bureaux, England.

Lichtenfels, J. R. 1980. Keys to genera of the superfamily Diaphanocephaloidea. CIH Keys to the Nematode Parasites of Vertebrates No. 8, pp. 21-26. Commonwealth Agricultural Bureaux, England.

Lichtenfels, J. R., Bier, J. W. and Madden, P. A. 1978. Larval anisakid (Sulcascaris) nematodes from Atlantic molluscs with marine turtles as definitive hosts. Trans. Am. Micros. Soc. 97(2):197-207.

Lichtenfels, J. R. and Pilitt, P. A. 1983. Nematodirella (Nematoda: Trichostrongyloidea) of North American ruminants, with a key to species. Systematic Parasitol. 5:271-285.

Lichtenfels, J. R. and Pilitt, P. A. 1983. Cuticular ridge patterns of Nematodirus spp. (Nematoda: Trichostrongyloidea) of North American ruminants, with a key to species. Proc. Helminthol. Soc. Wash. 50:261-274.

Lichtenfels, J. R., Pilitt, P. A., Kotani, T., and Powers, K. G. 1985. Morphogenesis of developmental states of Dirofilaria immitis (Nematoda) in the dog. Proc. Helminthol. Soc. Wash. 52:98-113.

Lichtenfels, J. R., Pilitt, P. A., and Lancaster, M. B. 1988. Systematics of the nematodes that cause ostertagiasis in cattle, sheep and goats in North America. Vet. Parasitol. 27:3-12.

Lichtenfels, J. R., Pilitt, P. A., and Le Jambre, L. F. 1986. Cuticular ridge patterns of Haemonchus contortus and Haemonchus placei (Nematoda: Trichostrongyloidea). Proc. Helminthol. Soc. Wash. 53:94-101.

McIntosh, A. 1932. Description of a tick, Dermacentor balli from the Texas peccary, with a key to the North American species of Dermacentor. U.S. Natl. Mus. Proc. 82:1-6.

McIntosh, A., and McDuffie, W. C. 1956. Ticks that affect domestic animals and poultry. In Animal Diseases, U.S. Dept. Agr. Ybk. 1956:157-166.

Ransom, B. H. 1911. The nematodes parasitic in the alimentary tract of cattle, sheep, and other ruminants. U.S. Dept. Agr., Bur. Anim. Indus. Bul. 127, 132 pp.

Salley, E. J., Lichtenfels, J. R. and Shaw, J. H. 1978. Checklist of types in the U.S. National Parasite Collection. Index-Catalogue of Medical and Veterinary Zoology (USDA, SEA) Special Publication No. 4. 233 pp. (Catalogue)

Walker, M. L., and Becklund, W. W. 1970. Checklist of the internal and external parasites of deer, Odocoileus hemionus and O. virginianus, in the United States and Canada. U.S. Dept. Agr. Index-Cat. Med. and Vet. Zool., Spec. Pub. No. 1, 45 pp.