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A HISTORY OF FIELD PARASITOLOGY STUDIES ORIGINATING FROM THE REELFOOT LAKE REGION OF TENNESSEE AND KENTUCKY

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ABSTRACT—Field parasitology studies began in the Reelfoot Lake region 130 years ago with the collection of an unattached turtle leech taken from a small creek near its point of entry into the Lake. Most of the early studies involved public health workers investigating malaria and the mosquitoes that vector its etiological agents. Later, traditional natural history field studies, primarily involving helminth parasites, became ascendant and were joined by recent comparative molecular studies. Ninety reports of parasitology research, authored or coauthored by 72 investigastors and published in 19 different journals, have originated from the Lake region. Included in these reports, were descriptions of 62 new helminth species recovered from hosts inhabiting the region. Six of these new species carry the specific names *reelfooti* or *reelfootensis*. Additionally, distribution records for 228 parasite species—including nine protozoans, 162 helminths, four leeches, and 53 arthropods—were reported for the region. Neglected areas of research include the parasites of aquatic macroinvertebrates and aquatic birds.

> A lake is the landscape's most beautiful expressive feature. It is earth's eye; looking into which the beholder measures the depth of his own nature.
>
> Henry David Thoreau, *Walden* (1854)

> Most of the field stations in North America are located near lakes. I am not sure why, but perhaps next to an air-conditioned molecular biology laboratory, a lake is about the coolest place to spend a summer in the northern half of the world.
>
> Gerald W. Esch, *Parasites, People, and Places: Essays on Field Parasitology* (2004)

According to Esch (2004) organized field parasitology research had its North American beginnings five years after the 1909 establishment of the University of Michigan Biological Station (UMBS) at Douglas Lake, which has approximately 15 km^2 of surface area near the northern tip of the Lower Peninsula. Research for the first (Cort, 1915) of over 350 parasitology papers to issue from that region began in the summer of 1914.

By 1917 such studies (Pratt, 1923; Van Cleave, 1923) had begun at the Roosevelt Wild Life Forest Experiment Station of the New York State College of Forestry located at Oneida Lake, which has approximately 228 km^2 of surface area in central New York. Unlike Douglas Lake, Oneida Lake's place in the history of field parasitology does not rest upon a large body of research literature but rather almost entirely on a four-part series published in the *Roosevelt Wild Life Annals*. These papers (Van Cleave and Mueller, 1932; 1934; Mueller and Van Cleave, 1932; Mueller, 1934) comprise a 334-page treatise on taxonomy, ecology, and host relationships of the parasites of 34 species of Oneida Lake fishes and are collectively perhaps the most cited works in field parasitology. The authors reported distribution records for 68 previously described parasite species, as well as descriptions of 31 new species. Within a decade several species from both lists would be reported by other investigators as Reelfoot Lake distribution records.

Two-hundred-year-old Reelfoot Lake, hereinafter also referred to as "the Lake," covers approximately 57 km^2 of surface area in extreme northwestern Tennessee. According to Milton (1969), the Reelfoot Lake Biological Station (RLBS) (Fig. 1) was officially declared open to researchers in April 1932. Beginning in 1937, competent investigators from all biological specialties, who could work independently or without direction, were invited to apply for summer research scholarships. Applications were accepted and awards were made by the Tennessee Academy of Science, which owned and operated the facility. These awards covered living expenses, laboratory materials, and use of equipment (Milton, 1969). Researchers who received the Academy's stipend, and completed the summer session, were expected to submit a report on their research for possible publication in the *Journal of the Tennessee Academy of Science*, hereinafter also referred to as "the Journal."

Directors of the RLBS, in annual reports published in the Journal from 1933 to 1969, listed names, affiliations, and research interests for each of the past summer's researchers, some of whom were repeat summer residents with renewed scholarships (Milton, 1969). One perennial investigator spent 32 consecutive summers in scholarship residence and published a report every year. Of the 71 investigators during those 37 summers, 25 conducted parasitology research. Many parasitologists, however, worked on or in the vicinity of the Lake as nonresident researchers or worked there after 1968, and their names do not appear on any Lake visitor list. Several specialists never visited the Lake but rather examined and reported on specimens furnished by other investigators who had worked there.

Prior to 1933 all organized parasitology research from the Lake region had been of an applied nature and primarily involved public health workers studying malaria and the mosquitoes that vector its etiological agents. During the Second

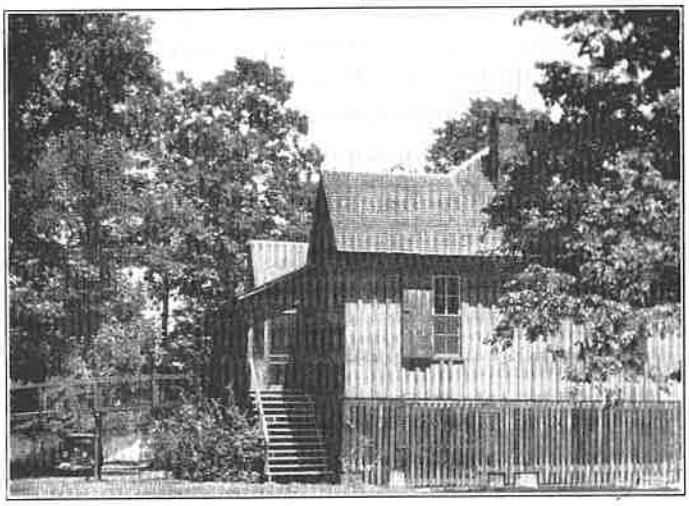

FIG. 1. The Reelfoot Lake Biological Station as it appeared soon after opening. (Courtesy of the Tennessee Academy of Science.)

World War, with many Americans serving in malarious zones, field research on the disease acquired a renewed importance and until the early 1940's mosquito studies occupied a significant number of summer researchers. However, as early as the 1934 summer session some basic field research was undertaken. Later, traditional natural history field studies, mostly involving helminth parasites, became common only to be joined by recent comparative molecular studies.

A CHRONOLOGICAL ANNOTATED BIBLIOGRAPHY

Moore, P. J. 1898. The leeches of the U. S. National Museum. *Proceedings of the United States National Museum*, 21:543–563.

The author, from the University of Pennsylvania, reported on his study of the small unidentified leech collection in the U.S. National Museum of Natural History. Among the collection was a specimen of a turtle leech identified by Moore as *Glossiphonia parasitica* (= *Placobdella parasitica*). Collection data for the specimen indicated that it was taken by Ed Palmer on May 30, 1882 from Indian Creek, which enters the Lake from the east just northeast of Samburg, Tennessee (Fig. 2). *Placobdella parasitica* thus became the first parasite reported from the Lake region (Table 1). Furthermore, based upon accession number and collection date, that specimen was the third representative of its species deposited in the Smithsonian.

LePrince, J. A., and H. A. Johnson. 1929. Development of a power dusting device for applying Paris green as an anopheline larvicide. *Public Health Reports*, 44:1001–1017.

The authors, both from the U.S. Public Health Service in Memphis, visited the Lake during the summer and fall of 1928 in order to test a mosquito control apparatus. Most of the report concerned design, technique, efficacy, and cost of distributing Paris green from a boat over portions of the Lake surface. In terms of basic field parasitology research their work was limited to the observation that larvae of *Anopheles quadrimaculatus*, which was a known vector for human infecting *Plasmodium* and a new Lake region distribution record, were abundant in the Lake.

Meleney, H. E., E. L. Bishop, and F. L. Roberts. 1929. Observations on the malaria problem in west Tennessee. *Southern Medical Journal*, 22:382–394.

The authors were physicians and included Meleney from the Vanderbilt University School of Medicine, Bishop who was the Tennessee Commissioner of Health, and Roberts who was a practitioner from Trenton, Tennessee. They reported on a survey of malaria within the six counties of the State's Mississippi Alluvial Plain, and noted that during the years 1925 through 1927 state-wide per capita deaths from the disease were greatest in Lake and Obion counties, which border the Lake. Prevalence among children at the Phillipy schools, located in Lake County just northwest of the Lake (Fig. 2), was 16.6% for 60 students, while at the Reelfoot School on Reelfoot Creek, located just east of the Lake in Obion County, prevalence was only 3.8% for 53 students. The greater malaria prevalence at Phillipy was attributed to its proximity to the Mississippi River and its greater potential for standing water overflows. Twenty percent of the malaria cases were of the malignant tertian form, verified by finding *Plasmodium falciparum* in stained blood films.

Meleney, H. E., E. L. Bishop, and W. S. Leathers. 1932. Investigations of *Endamoeba histolytica* and other intestinal protozoa in Tennessee. III. A state-wide survey of the intestinal protozoa of man. *American Journal of Hygene*, 16:523–539.

In this study Meleney and Bishop were joined by Leathers, from the Vanderbilt University School of Medicine. Their research was funded by a grant from the Rockefeller Foundation and involved a survey for six species of intestinal protozoans. Fecal specimens were collected from rural school children, processed, stained, and examined for cyst and trophozoite stages. Unlike the malaria study of the previous entry, data from schools were pooled for each county with each protozoan species assigned to one of five prevalence range levels. For Obion County ranges were as follows: *Entamoeba histolytica* (0–5%), *E. coli* (31–40%), *Endolimax nana* (11–15%), *Iodamoeba buetschlii* (0–2%), *Chilomastix mesnili* (16–30%), and *Giardia duodenalis* (6–10%).

Horsfall, M. W. 1935. Observations on the life history of *Macravestibulum obtusicaudum* Macklin, 1930 (Trematoda: Pronocephalidae). *Proceedings of the Helminthological Society of Washington*, 2:78–79.

If basic field parasitology research had its North America beginnings in 1914, another 19 years were required for it to reach the Lake with this study by Horsfall, who was an employee of the U.S. Department of Agriculture's Bureau of Animal Industry. During April of 1933 and 1934 she visited the Lake and recovered specimens of a digenetic trematode (digene) from the intestines of three species of turtles (Table 1).

LePrince, J. A. 1935. Investigations on the malarial mosquito at the Reelfoot Lake Biological Station. *Journal of the Tennessee Academy of Science*, 10:25.

During the summers of 1932 through 1935 LePrince was in residence at the RLBS. He noted that specimens of *Anopheles crucians* (a new Lake region distribution record) were captured in light traps along with *A. quadrimaculatus*. *Anopheles crucians* was later determined, by other malariologists, to be a vector for

FIG. 2. Map adapted from the 1925 U.S. Geological Survey of the Reelfoot Lake Quadrangle and modified by Albert Ganier in 1933 to show the Reelfoot Lake Biological Station at the northeast end of the Lake near Walnut Log and Bayou du Chien, "Cranetown" on the west central side of the Lake, and the Spillway at the south end of the Lake. Such maps were used by early field investigators. (Courtesy of the Tennessee Academy of Science.)

Plasmodium. This short note represented the first parasitological study from the Lake region published in the Journal.

Johnson, H. A. 1936. Notes on the occurrence of *A. walkeri*. *Southern Medical Journal*, 29:856–857.

During the summer of 1935 Johnson used light traps to attract and captured several species of anopheline mosquitoes from the Walnut Log/RLBS vicinity (Fig. 2). New among the species distribution records for the Lake region were *Anopheles walkeri* and *A. puncipennis*. Larvae of *A. walkeri* were collected at the margin of the Lake in what the author described as "a dense smartweed swamp."

Harwood, P. D. 1936. Notes on Tennessee helminths III. Two trematodes from a kingfisher. *Journal of the Tennessee Academy of Science*, 11:251–256.

Harwood, like Horsfall, was an employee of the Bureau of Animal Industry. During August 1934 his visit to the Lake and examination of a belted kingfisher resulted in distribution records for two digene species (Table 1). His report is

TABLE 1. List of parasite species reported as new distribution records for the Reelfoot Lake region.

Parasite	Host Species	Location In/On Host	Reference
Protozoa			
Chilomastix mesnili	Human	Intestine	Meleney et al., 1932
Entamoeba coli	Human	Intestine	Meleney et al., 1932
E. histolytica	Human	Intestine	Meleney et al., 1932
Endolimax nana	Human	Intestine	Meleney et al., 1932
Giardia duodenalis	Human	Intestine	Meleney et al., 1932
Haemogregarina sp..	*Chelydra serpentina* and others	Blood Stream	Strohlein & Christensen, 1984
Hartmanella sp.	Various species of freshwater snails	Viscera Mass	Detterline & Wilhelm, 1991
Iodamoeba buetschlii	Human	Intestine	Meleney et al., 1932
Plasmodium falciparum	Human/*Anopheles quadrimaculatus*	Blood Stream/Hemocoel	Meleney et al., 1929
Trematoda			
Actinocleidus fergusoni	*Lepomis macrochirus*	Gills	Mizelle & Brennan, 1942
A. flagellatus	*L. gulosus*	Gills	Mizelle & Cronin, 1943
A. fusiformis	*Micropterus salmoides*	Gills	Mizelle & Cronin, 1943
Allacanthochasmus artus	*Merone mississippiensis*	Intestine	Bangham & Venard, 1942
A. varius	*M. mississippiensis*	Intestine	Bangham & Venard, 1942
Allassostoma magnum	*Pseudemys cocinna*	Intestine	Parker, 1941
A. parvum	*Helisoma trivolvis*	Digestive Gland	Byrd, 1940
Anallocreadium armatus	*Aplodinotus grunniens*	Intestine	Bangham & Venard, 1942
A. pearsei	*Lepomis gulosus*	Intestine	Venard, 1941
Allocorrigia filiformis	*Procambarus clarkii*	Antennal Glands	Turner, 2006
Alloglossidium corti	*Ictalurus punctatus*	Intestine	Bangham & Venard, 1942
A. dolandi	*Procambarus acutus*	Antennal Glands	Turner, 2009
Athesmia heterolecithoides	*Gallinula chloropus*	Liver Bile Duct	Denton & Byrd, 1951
Baschkirovitrema incrassatum	*Lutra canadensis*	Intestine	Kollars et al., 1997
Brachycoelium storeriae	*Ambystoma opacum*	Intestine	Parker, 1941
Brachylaemus opisthotrias	*Didelphis virginana*	Intestine	Byrd et al., 1942
B. virginana	*D. virginana*	Intestine	Byrd et al., 1942
Caecincola parvulus	*Micropterus salmoides*	Intestine	Venard, 1940
Cathaemasia reticulata	*Ceryle alcyon*	Intestine	Harwood, 1936
Cercaria corti	*Helisoma trivolvis*	Digestive Gland	Byrd & Reiber, 1940
C. ramonae	*Physia gyrina*	Digestive Gland	Byrd, 1940
C. rebstocki	*Helisoma trivolvis*	Digestive Gland	Byrd & Reiber, 1940
Cercorchis robustus	*Pseudemys cocinna*	Intestine	Parker, 1941
Cleidodiscus capax	*Pomoxis annularis*, *P. nigromaculatus*	Gills	Mizelle et al., 1943
C. longus	*P. annularis*	Gills	Mizelle et al., 1943
C. mirabilis	*Ameiurus melas* and others	Gills	Mizelle & Cronin, 1943
C. pricei	*Ictalurus punctatus* and others	Gills	Mizelle & Cronin, 1943
C. robustus	*Lepomis macrochirus*	Gills	Mizelle & Brennan, 1942
C. uniformis	*Pomoxis annularis*	Gills	Mizelle et al., 1943
C. vancleavei	*P. annularis*, *P. nigromaculatus*	Gills	Mizelle et al., 1943
Clinostomum marginatum	*Micropterus salmoides*	Encysted on Gills	Venard, 1940
Cotylaspis insignis	*Anodonta grandis* and others	Gills, Heart, and Kidney	Najarian, 1955
Cotylogaster occidentalis	*Aplodinotus grunniens*	Intestine	Bangham & Venard, 1942
Crassiphiala ambloplitis	*Ceryle alcyon*	Intestine	Harwood, 1936
Crepidostum cooperi	*Lepomis gulosus*	Intestine	Venard, 1941
C. cornutum	*Micropterus salmoides* and others	Intestine	Venard, 1940
C. ictaluri	*Ictalurus punctatus*	Intestine	Bangham & Venard, 1942
C. isostomum	*Aphredoderus sayanus*	Intestine	Bangham & Venard, 1942
Dasymetra nicolli	*Nerodia rhombifer*	Mouth	Tkach et al., 2001
D. villicaeca	*N. rhombifer*	Mouth	Parker, 1941
Diclybothrium hamulatus	*Polyodon spathula*	Intestine	Bangham & Venard, 1942
Diplostomum variabile	*Didelphis virginana*	Intestine	Byrd et al., 1942
Echinochasmus sp.	*Chelydra serpentina*	Intestine	Platt, 2006

TABLE 1. Continued.

Parasite	Host Species	Location In/On Host	Reference
Echinostomum revolutum	*Physa gyrina*	Digestive Gland	Byrd, 1940
Eurytrema procyonis	*Procyon lotor*	Pancreatic Duct	Cole & Shoop, 1987
Fibricola cratera	*Didelphis virginana*	Intestine	Byrd et al., 1942
Gorgodera amplicava	*Rana catesbeiana*	Urinary Bladder	Parker, 1941
Gyrosoma singulare	*Procyon lotor*	Intestine	Cole & Shoop, 1987
Hapalorhynchus gracilis	*Chelydra sepentina*	Blood Vascular System	Byrd, 1939
Hasstilesia texensis	*Sylvilagus aquaticus, S. floridanus*	Intestine	Byrd & Reiber, 1942
Macravestibulum obtusicaudum	*Graptemys kohnii* and others	Intestine	Horsfall, 1935
Macroderoides flavus	*Amia calva*	Intestine	Bangham & Venard, 1942
M. spiniferus	*Lepisosteus platostomus*	Intestine	Bangham & Venard, 1942
M. trilobatus	*Amia calva*	Intestine	Tkach et al., 2008
M. typicus	*Lepisosteus platostomus*	Intestine	Tkach et al., 2001
Mazocraeoides olentangiensis	*Dorsoma cepedianum*	Gills	Price, 1961
Megalodiscus temperatus	*Rana catesbeiana* and others	Rectum	Parker, 1941
Microcotyle spinicirrus	*Aplodinotus grunniens*	Intestine	Bangham & Venard, 1942
Neodiplostomum lucidum	*Didelphis virginana*	Intestine	Byrd et al., 1942
Neochasmus umbellus	*Etheostoma proeliare*	Intestine	Bangham & Venard, 1942
Neorenifer georgianum	*Coluber constrictor*	Mouth, Esophagus	Parker, 1941
N. septicus	*C. constrictor, Agkistrodon piscivorus*	Mouth	Parker, 1941
N. wardi	*Nerodia erythrogaster* and others	Mouth, Esophagus	Parker, 1941
Paragonimus kellicotti	*Didelphis virginana*	Lungs	Byrd, 1941
Paramphistomum stunkardi	*Micropterus salmoides*	Intestine	Venard, 1940
Pharyngostomoides procyonis	*Procyon lotor*	Intestine	Bafundo, 1978
Plagorchis sp.	*Nycticeius humeralis*	Intestine	Byrd & Macy, 1942
P. ameiurensis	*Helosoma trivolvis*	Digestive Gland	Byrd & Reiber, 1940
Phyllodistomum hunteri	*Ameriurus nebulosus*	Urinary Bladder	Bangham & Venard, 1942
P. lacustri	*Ictalurus punctatus* and other	Urinary Bladder	Bangham & Venard, 1942
P. lohrenzi	*Micropterus salmoides*	Urinary Bladder	Venard, 1940
P. pearsei	*Aphredoderus sayanus*	Urinary Bladder	Bangham & Venard, 1942
P. staffordi	*Ameiurus melas*	Urinary Bladder	Bangham & Venard, 1942
Pneumatophilus foliaformis	*Nerodia rhombifer*	Mouth	Parker, 1941
P. leidyi	*N. cyclopion*	Trachea, Lungs	Goodman, 2006
P. variabilis	*N. erythrogaster*	Trachea	Parker, 1941
Polylekithum ictaluri	*Ameiurus nebulosus*	Intestine	Bangham & Venard, 1942
Posthodiplostomum mininum	*Micropterus salmoides* and others	Encysted in Viscera	Venard, 1940
Renifer ellipticus	*Heterodon platyrhinos*	Mouth	Parker, 1941
Rhopalias macracanthus	*Didelphis virginana*	Intestine	Byrd et al., 1942
Spirorchis artericola	*Pseudemys cocinna* and others	Blood Vascular System	Byrd, 1939
S. haematobium	*Chelydra serpentina*	Heart	Byrd, 1939
S. scripta	*Graptemys pseudogeographica*	Blood Vascular System	Byrd, 1939
Telorchis sirensis	*Amphiuma tridactylum*	Intestine	Mcdonald & Brooks, 1989
Triganodistomum mutabile	*Erimyzon sucetta*	Intestine	Bangham & Venard, 1942
Urocleidus acer	*Lepomis macrochirus*	Gills	Mizelle & Brennan, 1942
U. attenuatus	*L. miniatus*	Gills	Mizelle & Jaskoski, 1942
U. chaenobryttus	*L. miniatus*	Gills	Mizelle & Jaskoski, 1942
U. dispar	*Micropterus salmoides*	Gills	Mizelle & Cronin, 1943
U. grandis	*Lepomis gulosus*	Gills	Mizelle & Cronin, 1943
U. mucronatus	*L. macrochirus*	Gills	Mizelle & Brennan, 1942
U. principalis	*Micropterus salmoides*	Gills	Mizelle & Cronin, 1943
Unicaecum ruszkowskii	*Pseudemys cocinna* and others	Blood Vascular System	Byrd, 1939
Vasotrema attenuatus	*Apalone spinifera*	Mesenteric Vessels	Platt & Snyder, 2007
V. robustum	*A. spinifera*	Arterial System	Byrd, 1939
Cestoda			
Atriotaenia procyonis	*Procyon lotor*	Intestine	Bafundo, 1978
Biacetabulum meridianum	*Erimyzon sucetta*	Intestine	Bangham & Venard, 1942

TABLE 1. Continued.

Parasite	Host Species	Location In/On Host	Reference
Bothriocephalus claviceps	*Micopterus salmoides*	Intestine	Venard, 1940
Capingens singularis	*Carpiodes carpio*	Intestine	Bangham & Venard, 1942
Corallobothrium fimbriatum	*Ictalurus anguilla*	Intestine	Bangham & Venard, 1942
C. giganteum	*I. punctatus*	Intestine	Bangham & Venard, 1942
Haplobothrium globuliforme	*Amia calva, Ameiurus nebulosus*	Intestine	Bangham & Venard, 1942
Marsipometra hastata	*Polyodon spathula*	Intestine	Bangham & Venard, 1942
Mesocestoides variabilis	*Procyon lotor*	Intestine	Bafundo, 1978
Monobothrium ingens	*Ictiobus cyprinellus*	Intestine	Bangham & Venard, 1942
Proteocephalus ambloplitis	*Micropterus salmoides*	Encysted in Viscera	Venard, 1940
P. macrocephalus	*Pylodictis olivaris*	Intestine	Bangham & Venard, 1942
P. pearsei	*Centrarchus macropterus*	Intestine	Bangham & Venard, 1942
P. perplexus	*Amia calva*	Intestine	Bangham & Venard, 1942
P. singularis	*Lepisosteus platostomus*	Intestine	Bangham & Venard, 1942
Pseudolytocestus differtus	*Ictiobus bubalus*	Intestine	Bangham & Venard, 1942
Taenia pisiformis	*Canis latrans*	Intestine	Van Den Bussche, 1984
Nematoda			
Agamospirura odontocephala	*Amphiuma tridactylum* and others	Stomach, Intestine	Reiber, 1941
Ancylostoma caninum	*Canis latrans*	Intestine	Van Den Bussche, 1984
Arthrocephalus lotoris	*Procyon lotor*	Intestine	Cole & Shoop, 1987
Ascarops sp.	*Tamiasciurus hudsonicus* ?	Intestine	Reiber & Byrd, 1942
Baylisascaris procyonis	*Procyon lotor*	Intestine	Bafundo, 1978
Camallanus oxycephalus	*Lepomis gulosus*	Intestine	Venard, 1941
C. trispinosus	*Chelydra serpentina* and others	Stomach, Intestine	Reiber, 1941
Capillaria plica	*Procyon lotor*	Urinary Bladder	Cole and Shoop, 1987
Citellinema bifurcatum	*Sciurus carolinensis*	Intestine	Reiber & Byrd, 1942
C. sleggsi	*S. carolinensis, Marmota monax*	Intestine	Reiber & Byrd, 1942
Contracaecum spiculigerum	*Lepomis gulosus*	Viscera	Venard, 1941
Cosmoseralla haberi	*Hyla cinerea*	Colon	Reiber, 1941
Crenosoma gobeli	*Procyon lotor*	Lungs	Cole & Shoop, 1987
Cruzia tentaculata	*Didelphis virginana*	Intestine	Reiber & Byrd, 1942
Dichelyna robustus	*Ameiurus melas, Ictalurus anguilla*	Intestine	Bangham & Venard, 1942
Dirofilaria imitis	*Canis latrans*	Heart	Van Den Bussche, 1984
Dracunculus insignis	*Procyon lotor*	Skin	Cole & Shoop, 1987
Foleyella americana	*Rana utricularia, Bufo woodhousii*	Abdominal Mesenteries	Reiber, 1941
Haplonema immutatum	*Amia calva*	Intestine	Bangham & Venard, 1942
Kalicephalus tennesseensis	*Elaphe obsoleta, Coluber constrictor*	Intestine	Rieber, 1941
Molineus barbatus	*Procyon lotor*	Intestine	Cole & Shoop, 1987
Oswaldocruzia leidyi	*Bufo woodhousii*	Intestine	Reiber, 1941
O. waltoni	*Hyla cinerea, H. avivoca*	Intestine	Rieber, 1941
Oxysomatium georgianum	*Rana utricularia*	Colon	Reiber, 1941
Physaloptera ranae	*Hyla cinerea*	Stomach	Reiber, 1941
P. rara	*Procyon lotor*	Intestine	Bafundo, 1978
P. turgida	*Didelphis virginana*	Stomach	Reiber & Byrd, 1942
Protospirura muris	*Sylvilagus aquaticus*	Intestine	Reiber & Byrd, 1942
Rhabdias fascovenosa	*Nerodia erthrogaster* and others	Lungs	Reiber, 1941
R. joaquinensis	*Rana clamitans*	Lungs	Kuzmin et al., 2003
R. ranae	*R. utricularia, R. clamitans*	Lungs	Reiber, 1941
Rictularia onychomis	*Peromyscus leucopus*	Intestine	Reiber & Byrd, 1942
Spinitectus punctatus	*Ictalurus punctatus*	Intestine	Bangham & Venard, 1942
S. carolini	*Micropterus salmoides*	Intestine	Venard, 1940
Spironoura chelydrea	*Chelydra serpentina* and others	Intestine	Reiber, 1941
S. catesbeiana	*Rana catesbeiana, Hyla cinerea*	Intestine	Reiber, 1941
Spiroxys contorta	*Pseudemys cocinna, Chrysemys picta*	Stomach	Reiber, 1941
Strongyloides papillosis	*Sciurus carolinensis*	Intestine	Rieber & Byrd, 1942
Trichostrongylus calcaratus	*Sylvilagus floridanus, S. aquaticus*	Intestine	Reiber & Byrd, 1942

TABLE 1. Continued.

Parasite	Host Species	Location In/On Host	Reference
Trichuris vulpis	*Canis latrans*	Intestine	Van Den Bussche, 1984
Viannaia bursobscura	*Didelphis virginana*	Intestine	Reiber & Byrd, 1942
Acanthocephala			
Acanthocephalus dirus	*Aplodinotus grunniens*	Intestine	Bangham & Venard, 1942
Leptorhynchoides thecatus	*Micropterus salmoides*	Intestine	Venard, 1940
Macroacanthorhynchus ingens	*Procyon lotor*	Intestine	Cole & Shoop, 1987
Neoehinorhynchus chrysemydis	*Trachemys scripta*	Intestine	Barger, 2004
N. cylindratus	*Micropterus salmoides*	Intestine	Venard, 1940
N. emyditoides	*Graptemys pseudogeographica*	Intestine	Barger, 2004
N. pseudemydis	*Trachemys scripta*	Intestine	Barger, 2004
Pomphorhynchus bulbocolli	*Lepomis gulosus*	Intestine	Bangham & Venard, 1942
Tanaorhamphus longirostris	*Dorsoma cepedianum*	Intestine	Bangham & Venard, 1942
Hirudinea			
Illinobdella alba	*Lepomis microlophus*	Mouth	Bangham & Venard, 1942
I. moorei	*Micropterus salmoides*	Mouth	Bangham & Venard, 1942
I. richardsoni	*Pomoxis annularis*	Mouth	Bangham & Venard, 1942
Placobdella parasitica	*Trachemys scripta* and others	Skin	Moore, 1898
Copepoda			
Achteres micropteri	*Micropterus salmoides*	Gills	Venard, 1940
A. primelodi	*Ameriurus melas*	Gills	Bangham & Venard, 1942
Argulus americanus	*Lepomis macrochirus*	Skin	Bangham & Venard, 1942
A. lepisostei	*Lepisosteus platostomus*	Skin	Bangham & Venard, 1942
Ergasilus caeruleus	*Micropterus salmoides*	Gills	Venard, 1940
E. centrarchidarum	*Lepomis macrochirus*	Gills	Bangham & Venard, 1942
E. elegans	*Ameiurus natalis*	Skin	Bangham & Venard, 1942
E. versicolor	*A. melas*	Skin	Bangham & Venard, 1942
Hydracarina			
Unionicola fossulata	*Quadrula pustulosa* and others	Mantle Cavity	Hoff, 1944
U. intermedia	*Anodonta grandis* and others	Mantle Cavity	Najarian, 1955
U. ypsilophora	*Ligumia subrostrata* and others	Mantle Cavity	Najarian, 1955
Diptra			
Aedes aegypti	Mammals	Skin	Quimby, 1941
A. dupree	Mammals	Skin	Snow & Picard, 1954
A. infirmatus	Mammals	Skin	Quimby, 1941
A. sticticus	Mammals	Skin	Quimby, 1941
A. tormentor	Mammals	Skin	Quimby, 1941
A. triseriatus	Mammals	Skin	Brown & Pearson, 1938
A. thibaulti	Mammals	Skin	Snow & Picard, 1954
A. vexans	Mammals	Skin	Brown & Pearson, 1938
Anopheles barberi	Mammals	Skin	Brown & Pearson, 1938
A. crucians	Mammals	Skin	LePrince, 1935
A. puncipennis	Mammals	Skin	Johnson, 1936
A. quadrimaculatus	Mammals	Skin	LePrince & Johnson, 1929
A. walkeri	Human, Horse, Cow, Pig	Skin	Johnson, 1936
Chrysops brunnea	Mammals	Skin	Snow & Picard, 1954
C. flavida	Mammals	Skin	Snow & Picard, 1954
Culex apicalis	Frogs, Turtles, Snakes	Skin	Brown & Pearson, 1938
C. erraticus	Birds, Mammals	Skin	Brown & Pearson, 1938
C. pipiens	Birds, Mammals	Skin	Quimby, 1941
C. quinquefasciatus	Birds, Mammals	Skin	Brown & Pearson, 1938
C. restuans	Birds, Mammals	Skin	Quimby, 1941
C. salinarius	Birds, Mammals	Skin	Brown & Pearson, 1938
Culicoides crepuscularis	Birds, Mammals	Skin	Snow & Picard, 1954
C. debilipalpis	Mammals	Skin	Snow & Picard, 1954

TABLE 1. Continued.

Parasite	Host Species	Location In/On Host	Reference
C. guttipennis	Mammals	Skin	Snow & Picard, 1954
C. haematopotus	Mammals	Skin	Snow & Picard, 1954
C. multipunctatus	Mammals	Skin	Snow & Picard, 1954
C. spinosus	Mammals	Skin	Snow & Picard, 1954
C. travisi	Mammals	Skin	Snow & Picard, 1954
C. venustus	Mammals	Skin	Snow & Picard, 1954
Mansonia perturbans	Bird, Mammals	Skin	Brown & Pearson, 1938
Orthopodomyia signifera	Birds	Skin	Brown & Pearson, 1938
Phlebotomus shannoni	Mammals	Skin	Snow & Picard, 1954
Psorophora ciliata	Birds, Mammals	Skin	Brown & Pearson, 1938
P. columbiae	Birds, Mammals	Skin	Quimby, 1941
P. confinnis	Birds, Mammals	Skin	Snow & Picard, 1954
P. cyanescens	Birds, Mammals	Skin	Brown & Pearson, 1938
P. ferox	Birds, Mammals	Skin	Brown & Pearson, 1938
P. horrida	Birds, Mammals	Skin	Quimby, 1941
P. howardi	Birds, Mammals	Skin	Brown & Pearson, 1938
P. varipes	Birds, Mammals	Skin	Brown & Pearson, 1938
Theobaldia inornata	Mammals	Skin	Quimby, 1941
Uranotaenia sapphirina	Amphibians	Skin	Snow & Picard, 1954

significant in that it was the first of what are only a few records of parasites of avian hosts from the Lake region.

Johnson, H. A. 1937. Attractivity of light for *Anopheles* mosquitoes. *Journal of the Tennessee Academy of Science*, 12:104–106.

Johnson reported much of the same data collected in the summer of 1935 and published previously in the *Southern Medical Journal*. This article, however, included a report on the relative attraction of different intensities and colors emitted by light traps to night flying *A. quadrimaculatus*. The most interesting inclusion in this paper was a photograph of the RLBS with light traps in both right and left foreground (Fig. 3).

Brown. F. R., and J. W. Pearson. 1938. Some Culicidae of the Reelfoot Lake region. *Journal of the Tennessee Academy of Science*, 13:50–56.

FIG. 3. The Reelfoot Lake Biological Station in 1935 with mosquito light traps in right and left foreground. (Courtesy of the Tennessee Academy of Science.)

During the summers of 1936 and 1937 the authors, who were medical students employed for summer work with the U.S. Public Health Service in Memphis, collected, identified, and noted habitats and breeding places for 18 mosquito species, 14 of which represented new Lake region distribution records (Table 1).

Byrd, E. E. 1938. Studies on blood flukes of the family Spirorchidae. I. Preliminary report. *Journal of the Tennessee Academy of Science*, 13:57–60.

In 1937 Byrd, from the University of Georgia, began four summers in residence as a scholarship researcher. He necropsied 98 turtles representing seven of the 11 aquatic turtle species reported from the Lake. From these hosts Byrd recovered pathogenic blood flukes or spirorchiids, which are found only in turtles and primarily in their blood vascular systems. Prevalence of spirorchiid infections among the host species ranged from 79.2% to 100%. Although he provided no specific identifications or descriptions of these worms, Byrd noted the presence of a diverse assemblage consisting of what he believed to be 16 species. As suggested by the title, this report represented work-in-progress and was written to fulfill the author's obligation to submit, for possible publication in the Journal, a report of each summer's supported research.

Byrd, E. E. 1939. Studies on the blood flukes of the family Spirorchidae. Part II. Revision of the family and description of new species. *Journal of the Tennessee Academy of Science*, 14:116–161.

This long article followed the preliminary report of the previous year and is among the most important papers ever published by the Academy. For 50 years it remained the most complete taxonomic revision of the trematode family Spirorchiidae and has been cited countless times. In this revision, Byrd reduced the number of spirorchiid genera from 17 to eight and the number of previously described species from 35 to 27. He recorded 15 species of spirorchiids from the Lake, six

of which represented new distribution records (Table 1). Nine spirorchiids were described as new species (Table 2). Among the new species was *Hapalorhynchus reelfooti* (Fig. 4A), which became the first parasite to carry the Lake's name. Byrd's work established Reelfoot Lake as a major center of diversity for blood flukes of freshwater turtles.

Bang, F. B., G. E. Quinby, and T. W. Simpson. 1940. *Anopheles walkeri* (Theobald): A wild-caught specimen harboring malarial plasmodia. *Public Health Reports*, 55:119–120.

The authors were medical students employed for the summer by the U.S. Public Health Service in Memphis. During mid to late July 1939 they dissected over 200 of the subject mosquitoes collected near Bondurant, Kentucky just north of the Lake. A single specimen harbored, in its salivary glands, sporozoites identified as those of *Plasmodium*. Significance of this report resided in the fact that while *A. walkeri* had been demonstrated, by other workers, as capable of hosting experimental infections with *Plasmodium*, no record existed of it hosting natural infections.

Venard, C. E. 1940. Studies on parasites of Reelfoot Lake fish. I. Parasites of the large-mouthed bass, *Hiro salmoides* (Lacepede). *Journal of the Tennessee Academy of Science*, 15:43–63.

In 1939 Venard, from The Ohio State University, began two summers of supported research by examined 29 large-mouth bass for both external and internal parasites. He recorded 13 parasite species, all of which represented new Lake distribution records (Table 1). Additionally, he collected, from the host's gills, several unidentified monogenetic trematodes (monogenes). These specimens were sent to J. D. Mizelle, at the University of Notre Dame, who would report their identities, as discussed later in this paper.

Byrd, E. E., C. E. Venard, and R. J. Reiber. 1940. The excretory system in Trematoda. I. Studies on the excretory system in the trematode subfamily Gorgoderinae Looss, 1899. *Journal of Parasitology*, 26:407–420.

The authors, including Reiber, who was one of Byrd's graduate students from the University of Georgia, collaborated on detailed descriptions of the excretory systems of three digene species collected from the Lake during the summer of 1937. Specimens of *Phyllodistomum lohrenzi* and *Catoptroides lacustri* were obtained from the urinary bladders of a largemouth bass and a channel catfish, respectively, while *Gorgodera amplicava* was obtained from the urinary bladder of a bullfrog. Based upon comparative anatomy of the worms' excretory systems, the authors concluded that the genus *Catoptroides*, which was considered closely related to the genus *Phyllodistomum*, shared a greater affinity with the genus *Gorgodera*. However, Dawes (1946) later determined that *Catoptroides* was a junior synonym for *Phyllodistomum*, effectively transferring all species of the genus *Catoptroides* to the genus *Phyllodistomum*. A two-page abstract reporting this Academy supported research was later published (Byrd et al., 1941) in the Journal.

Byrd, E. E. 1940. Larval flukes from Tennessee. I. A new mother sporocyst of a *Leucochloridium*. *Journal of the Tennessee Academy of Science*, 15:117–123.

Byrd described a new species (Table 2) of digene from larval metacercariae developing in a mother sporocyst found in a tentacle of the terrestrial snail *Succinea retusa*. The snail was taken during the summer of 1938 from the trunk of a cypress tree in a heronry located on the west central side of the Lake and known to local residents as "Cranetown" (Fig. 2).

Byrd. E. E. 1940. Larval flukes from Tennessee. II. Studies on cercariae from *Physa gyrina* Say, with descriptions of two new species. *Journal of the Tennessee Academy of Science*, 15:124–131.

During the summer of 1938, Byrd examined over 100 specimens of the aquatic snail *Physa gyrina,* and noted that 28 individuals were releasing one or more of five different species of trematode cercariae. Three were larvae of known adult species or larvae that had previously been described (Table 1), while the remaining two represented new larval species (Table 2).

Byrd, E. E., and R. J. Reiber. 1940. Larval flukes from Tennessee. III. Studies on cercariae from *Helisoma trivolvis* Say, with descriptions of new species. *Journal of the Tennessee Academy of Science*, 15:132–156.

During the summers of 1938 and 1939 over 12% of approximately 300 specimens of the aquatic snail *Helisoma trivolvis* examined by the authors were found to be infected with one of 14 species of larval digenes. Five were larvae of known adult species or larvae that had previously been described (Table 1), however, nine were considered new to science (Table 2). One of these new species, *Cercaria reelfooti* (Fig. 4B), became the second parasite to carry the Lake's name.

Venard, C. E. 1941. Studies on parasites of Reelfoot Lake fish. II. Parasites of the warmouth bass, *Chaenobryttus gulosus* (Cuvier and Valenciennes). *Journal of the Tennessee Academy of Science*, 16:14–16.

This short paper reported the results of an examination of 39 warmouth made in the summer of 1940. Both external and internal parasites were reported in a list of 16 species, four of which represented new Lake distribution records (Table 1). Additionally, most fish specimens had gills infested with unidentified monogenes, which were later identified and reported on by J. D. Mizelle, as noted elsewhere in this paper.

Quinby, G. E. 1941. Additions to the mosquitoes (Culicidae) of the Reelfoot Lake region. *Journal of the Tennessee Academy of Science*, 16:17–21.

Based upon collections Quinby and others made during the late 1930's, while working for the National Youth Administration in Fulton County, Kentucky, nine new mosquito species distribution records (Table 1) were added to those for the Lake region. Also reported were data on those mosquitoes' habitats and breeding places.

Parker, M. V. 1941. The trematode parasites from a collection of amphibians and reptiles. *Journal of the Tennessee Academy of Science*, 16:27–45.

In 1938 Parker, another of Byrd's graduate students at the University of Georgia, began his third of seven summers of scholarship supported research. In this entry he reported on a survey of digenes parasitizing some amphibians and reptiles from Florida, Georgia, and Tennessee. Among the Tennessee records were 12 new Lake region distribution records (Table 1) involving 11 host species. Additionally, he described two new species of digenes (Table 2). One of these, *Cercorchis reelfooti* (Fig. 4C), became the third parasite to carry the Lake's name. The current taxonomic status of *C. reelfooti* will be noted later.

TABLE 2. List of parasites described as new species from the Reelfoot Lake region.

Parasite	Host Species	Location In/On Host	Current Taxonomic Status
Trematoda			
Actinocleidus bakeri Mizelle & Cronin, 1943	*Lepomis microlophus*	Gills	Valid
A. bifidus Mizelle & Cronin, 1943	*L. microlophus*	Gills	Valid
A. brevicirrus Mizelle & Jaskoski, 1942	*L. miniatus*	Gills	Valid
A. crescentis Mizelle & Cronin, 1943	*L. microlophus*	Gills	Valid
A. harquebus Mizelle & Cronin, 1943	*L. microlophus*	Gills	Valid
A. subtriangularis Mizelle & Jaskoski, 1942	*L. miniatus*	Gills	Valid
A. unguis Mizelle & Cronin, 1943	*Micropterus salmoides*	Gills	Valid
Amblosoma reelfooti Goodman, 1990	*Viviparus intertextus*	Mantle Cavity	Valid
Athesmia reelfooti Denton, 1941	*Gallinula chloropus*	Liver Bile Duct	Sy. *A. heterolecithoides*
Brachylecithum americanum Denton, 1945	*Cyanocitta cristata*	Liver Bile Duct	Valid
Cercaria brachystyla Byrd & Reiber, 1940	*Helisoma trivolvis*	Digestive Gland	Valid
C. brevicauda Byrd & Reiber, 1940	*H. trivolvis*	Digestive Gland	Valid
C. byrdi Goodman, 1951	*Physa gyrina*	Digestive Gland	Valid
C. compactisoma Byrd & Reiber, 1940	*Helisoma trivolvis*	Digestive Gland	Valid
C. dorsata Byrd & Reiber, 1940	*H. trivolvis*	Digestive Gland	Valid
C. fimbriata Goodman, 1951	*Physa gyrina*	Digestive Gland	Valid
C. instigata Byrd & Reiber, 1940	*Helisoma trivolvis*	Digestive Gland	Valid
C. isomi Goodman, 1951	*Physia gyrina*	Digestive Gland	Valid
C. leiosoma Byrd, 1940	*P. gyrina*	Digestive Gland	Valid
C. macrostyla Byrd, 1940	*P. gyrina*	Digestive Gland	Valid
C. macrotrema Byrd & Reiber, 1940	*Helisoma trivolvis*	Digestive Gland	Valid
C. obioni Goodman, 1951	*Physia gyrina*	Digestive Gland	Valid
C. oedematocauda Byrd & Reiber, 1940	*Helisoma trivolvis*	Digestive Gland	Valid
C. palegae Goodman, 1951	*Viviparus intertextus*	Digestive Gland	Valid
C. paralinearis Goodman, 1951	*Physa gyrina*	Digestive Gland	Valid
C. paramulticellulata Goodman, 1951	*P. gyrina*	Digestive Gland	Valid
C. pteractinota Byrd & Reiber, 1940	*Helisoma trivolvis*	Digestive Gland	Valid
C. reelfooti Byrd & Reiber, 1940	*H. trivolvis*	Digestive Gland	Valid
C. samburgi Goodman, 1951	*Physa gyrina*	Digestive Gland	Valid
C. simulate Byrd & Reiber, 1940	*Helisoma trivolvis*	Digestive Gland	Valid
C. yankapinensis Goodman, 1951	*Viviparous intertextus*	Digestive Gland	Valid
Cercorchis reelfooti Parker, 1941	*Amphiuma tridactylum*	Intestine	Sy. *Telorchis sirensis*
Cleidodiscus chelatus Mizelle & Jaskoski, 1942	*Lepomis miniatus*	Gills	Valid
C. venardi Mizelle & Jaskoski, 1942	*L. miniatus*	Gills	Valid
Cotylaspis reelfootensis Najarian, 1961	*Anodonta grandis*	Gill, Heart, Kidney	Sy. *C. insignis*
Conspicuum icteridorum Denton & Byrd, 1951	*Quiscalus quiscula*	Liver Gall Bladder	Valid
Hapalorhynchus evaginatus Byrd, 1939	*Apalone spinifera*	Mesenteric Vessels	Sy. *Vasotrema attenuatus*
H. reelfooti Byrd, 1939	*Sternotherus odoratus*	Pulmonary Vessels	Valid
H. stunkardi Byrd, 1939	*Kinosternon subrubrum*	Pulmonary Vessels	Valid
Leucochlorodium migranum Byrd, 1940	*Succinea retusa*	Tentacle	Valid
Mazocraeoides tennesseensis Price, 1961	*Dorsoma cepedianum*	Gills	Valid
Paramacroideroides echinus Venard, 1941	*Lepisteus platostomus*	Intestine	Valid
Prosthodendrium transversum Byrd & Macy, 1942	*Lasiurus borealis*	Intestine	Valid
Pseudanthocotyloides banghami Price, 1961	*Dorsoma cepedianum*	Gills	Valid
Pseudomazocraeoides megalocotyle Price, 1961	*D. cepedianum*	Gills	Valid
Spirorchis blandingoides Byrd, 1939	*Pseudemys cocinna*	Mesenteric Vessels	Sy. *S. scripta*
S. magnitestis Byrd, 1939	*Chelydra serpentina*	Wall of Heart	*species inquirenda*
S. minutus Byrd, 1939	*C. serpentina*	Mesenteric Vessels	Valid
S. pseudemyae Byrd, 1939	*Pseudemys cocinna*	Mesenteric Vessels	Sy. *S. artericola*
Stomatrema faranciae Parker, 1941	*Farancia abacura*	Esophagus	Valid
Unicaecum dissimilis Byrd, 1938	*Pseudemys cocinna*	Cardiac Vessels	Valid
Urocleidus miniatus Mizelle & Jaskoski, 1942	*Lepomis miniatus*	Gills	Valid
U. parvicirrus Mizelle & Jaskoski, 1942	*Lepomis miniatus*	Gills	Valid
U. torquatus Mizelle & Cronin, 1943	*L. microlophus*	Gills	Valid

TABLE 2. Continued.

Parasite	Host Species	Location In/On Host	Current Taxonomic Status
U. variabilis Mizelle & Cronin, 1943	*L. microlophus*	Gills	Valid
Vasotrema longitestis Byrd, 1939	*Apalone spinifera*	Arterial Vessels	Valid
Zonorchis chandleri Denton, 1972	*Icteria virens*	Liver Bile Duct	Valid
Cestoda			
Biacetabulum carpiodi Mackiewicz, 1969	*Carpiodes carpio*	Intestine	Valid
Calentinella etnieri Mackiewicz, 1974	*Erimyzon oblongus*	Intestine	Valid
Penarchigetes macrorchis Christensen & Calentine, 1983	*E. sucetta*	Intestine	Valid
Proteocephalus alternans Riser, 1942	*Amphiuma tridactylum*	Intestine	Valid
Acanthocephala			
Neoechinorhynchus strigosus Van Cleave, 1949	*Ictiobus bubalus*	Intestine	Valid

Reiber, R. J. 1941. Nematodes of Amphibia and Reptilia. I. Reelfoot Lake, Tennessee. *Journal of the Tennessee Academy of Science*, 16:92–99.

In 1939 Reiber began two summers as a scholarship researcher. His report included 14 new distribution records (Table 1) for nematode species parasitizing 11 host species examined during the summers of 1939 and 1940. Additionally, he reported what he believed to be the first record of an acanthocephalan (*Leptorhynchoides thecatus*) from the three-toed amphiuma.

Venard, C. E. 1941. Studies on parasites of Reelfoot Lake fish. III. A new genus and new species of trematode (Plagiorchioidea: Macroderoididae) from *Lepisosteus platostomus*. *Journal of the Tennessee Academy of Science*, 16:379–383.

Venard described the digene *Paramacroderoides echinus* from eight of ten shortnose gar examined during the summers of 1939 and 1940.

Byrd, E. E. 1941. The opossum, *Didelphis virginana* Kerr, a new host for *Paragonimus* in Tennessee. *Science*, 93:542.

Byrd reported, in a short research note, presence of a lung fluke recovered from one of six opossums trapped in the vicinity of the Lake during the summer of 1940. He tentatively identified the worm as *Paragonimus westermani* (a new Lake region distribution record) and stated that to his knowledge no previous record existed of an opossum hosting a species of *Paragonimus*. The fact that Byrd chose to publish this note outside the Journal, may have reflected his desire to preserve priority in this discovery, i.e., avoid being "scooped," since the journal *Science* had a shorter submission to publication time as well as a wider distribution than the Journal.

Denton, J. F. 1941. Studies on the morphology, taxonomy, and life histories of trematodes of the subfamily Dicrocoeliinae Looss, 1899. PhD dissert., Rice Univ., Houston, Texas.

During the summer of 1938 Denton, a recent M.S. graduate from the University of Georgia and one of Byrd's former students, visited the Lake as a scholarship researcher. In preparation for his upcoming doctoral program at Rice University, he examined several species of non-game birds from the Lake vicinity. From the livers or gall bladders of four avian species, he recovered four different digenes that he believed were new to science. Their descriptions later formed portions of his doctoral thesis. One of these new species, *Athesmia reelfooti* (Fig. 4D), from the liver of a common moorhen, was the fourth parasite to carry the Lake's name. According to the International Code of Zoological Nomenclature, in order for a new species name to be valid its first use in a publication must meet certain criteria. Appearance in an unpublished graduate thesis did not meet that standard.

Petri, L. H. 1942. Two new dicrocoeliid trematodes from birds. *Transactions of the American Microscopical Society*, 61:57–61.

Although Petri had no direct connection to the Lake, this paper provided a "footnote" in the history of parasitological research from the Lake region. The author, from the University of Nebraska, described as a new species, *Athesmia butensis*, from a hawk in the Galapagos Islands. Petri apparently believed Denton's description of *A. reelfooti* was "in press," and used the name in his paper without providing a description. This first publication of a scientific name without a valid description constituted a *nomen nudum* (naked name) and rendered the name invalid. *Athesmia reelfooti* remained a *nomen nudum* and was later determined to be a synonym of a previously described species, as discussed later in this paper.

Bangham, R. V., and C. E. Venard. 1942. Studies on parasites of Reelfoot Lake fish. IV. Distribution studies and checklist of parasites. *Journal of the Tennessee Academy of Science*, 17:22–38.

Bangham, from Wooster College in Ohio, joined Venard as a summer scholarship researcher for this final part of a four part series that became the Lake's equivalent of Van Cleave and Mueller's classic work on parasites of Oneida Lake fishes. Citations for this paper, while not as many as for the Oneida Lake study, are numerous and place it among the more important works published in the Journal. The authors examined 558 fish specimens representing 44 of the 56 species reported from the Lake. They reported 67 parasite species, 45 of which represented new Lake distributon records (Table 1).

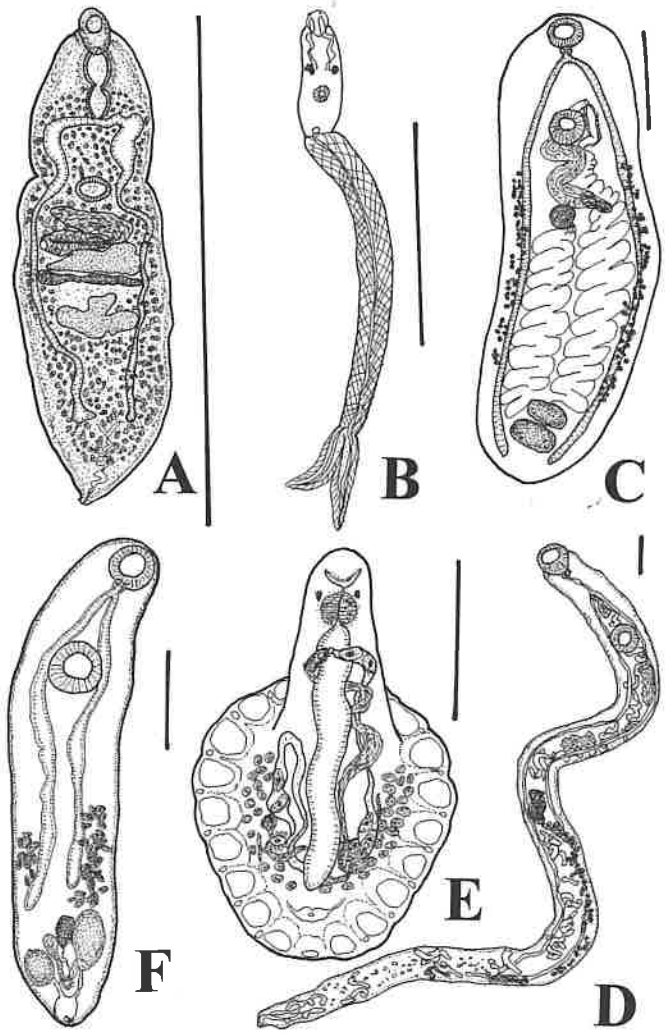

FIG. 4. Illustrations of adult or larval parasite species that carry the Lake's name. A) *Hapalorhynchus reelfooti*, B) *Cercaria reelfooti*, C) *Cercorchis reelfooti*, D) *Athesmia reelfooti*, E) *Cotylaspis reelfootensis*, and F) *Amblosoma reelfooti*. All illustrations were redrawn as adaptations and/or composites of the original published illustrations. Scale bars = 0.5 mm.

No attempt was made to identify the monogenes, which were sent to J.D. Mizelle and formed the basis of two reports by that author.

Reiber, R. J., and E. E. Byrd. 1942. Some nematodes from mammals of Reelfoot Lake in Tennessee. *Journal of the Tennessee Academy of Science*, 17:78–89.

During the summer of 1940 the authors necropsied 36 specimens representing six mammalian species. One of the specimens was reported to be a red squirrel (*Tamiasciurus hudsonicus*), since this species has not been reported from the Lake vicinity perhaps the authors misidentified an eastern fox squirrel (*Sciurus niger*). Ten parasite species recovered from the six host species represented new Lake region distribution records (Table 1).

Byrd, E. E., R. J. Reiber, and M. V. Parker. 1942. The anatomy of a lung fluke from the opossum (*Didelphis virginiana* Kerr). *Journal of the Tennessee Academy of Science*, 17:116–129.

The authors reported the recovery of 26 specimens of *Paragonimus westermani* from the lungs of a single opossum trapped in the vicinity of the Lake. They stated that "no specimen of any species of *Paragonimus* has been reported heretofore from the opossum." They did not cite Byrd's research note, published the previous year, reporting *P. westermani* from an opossum. This lapse, however, was negated by a detailed anatomical study of the lung fluke. Later Sogandares-Bernal and Seed (1973), determined that *P. westermani* was restricted to Asia, Africa, the Pacific Islands, and parts of South America, while *P. kellicotti* was indigenous to parts of North America.

Byrd, E. E., R. J. Reiber, and M. V. Parker. 1942. Mammalian trematodes. I. Trematodes from the opossum, *Didelphis virginiana* Kerr. *Journal of the Tennessee Academy of Science*, 17:130–142.

The authors reported the recovery of seven digene species from an unstated number of hosts. Six species represented new Lake region distribution records (Table 1).

Byrd. E. E., and R. J. Reiber. 1942. Mammalian trematodes. II. Three flukes from small mammals. *Journal of the Tennessee Academy of Science*, 17:143–148.

Two of the three digenes reported were from the New Orleans, Louisiana area. Only one species, *Hasstilesia texensis*, represented a new Lake region distribution record, having been recovered from both swamp and eastern cottontail rabbits.

Byrd, E. E., and R. W. Macy. 1942. Mammalian trematodes. III. Certain species from bats. *Journal of the Tennessee Academy of Science*, 17:149–156.

Byrd was jointed by Macy, from the College of St. Thomas in Minnesota, for a report on some digenes parasitizing bats from the states of Tennessee, Mississippi, and Louisiana. The Tennessee records were for the Lake region and included an unidentified species of *Plagiorchis* from the intestine of an evening bat and a new species, *Prosthodendrium transversum*, from the intestine of a red bat.

Bang, F., and T. Simpson. 1942. Feeding habits of *Anopheles walkeri* Theobald at Reelfoot Lake, Tennessee. *American Journal of Tropical Medicine*, 22:513–516.

The authors performed precipitin tests on blood from the guts of wild-caught subject mosquitoes, and demonstrated that they fed extensively on cows, horses, and other domestic mammals. Human blood was found in 9% of tested samples.

Riser, N. W. 1942. A new proteocephalid from *Amphiuma tridactylum* Cuvier. *Transactions of the American Microscopical* Society, 61:391–397.

During June of 1941 Riser, from the Illinois Institute of Technology and working independent of RLBS scholarship support, recovered and later described *Ophiotaenia alternans* a new species of proteocephalid tapeworm from the small intestine of a three-toed amphiuma. In a review of proteocephalid tapeworms from North American reptiles and amphibians, Brooks (1978) accepted the validity of *O. alternans* but transferred the species to the genus *Proteocephalus*.

Mizelle, J. D., and W. J. Brennan. 1942. Studies on monogenetic trematodes VII. Species infesting the bluegill sunfish. *The American Midland Naturalist*, 27:135–144.

Based upon material collected by Venard during his residency at the Lake, the authors, from the University of Notre Dame, reported new Lake distribution records (Table 1) for four species of monogenes infesting bluegill sunfish.

Mizelle, J. D., and B. J. Jaskoski. 1942. Studies on monogenetic trematodes VIII. Tetraonchinae infesting *Lepomis miniatus* Jordan. *The American Midland Naturalist*, 27:145–153.

Based upon material furnished by Venard, the authors reported two new distribution records (Table 1), and described six new species of monogenes (Table 2) from the Lake. This paper was later abstracted (Mizelle and Jaskoski, 1945) for publication in the Journal.

Mizelle, J. D., D. R. LaGrave, and R. P. O'Shaughnessy. 1943. Studies on monogenetic trematodes IX. Host specificity of *Pomoxis* Tetraonchinae. *The American Midland Naturalist*, 29:730–731.

The authors used material furnished by Venard and Bangham to report new Lake distribution records for four species of monogenes of the genus *Cleidodiscus* infesting the gills of crappie (Table 1). They also reported an apparent case of host specificity exhibited by *C. longus* and *C. uniformis*, both of which were recovered from white crappie but not from black crappie caught at the same time and from the same site at the Lake.

Mizelle, J. D., and J. P. Cronin. 1943. Studies on monogenetic trematodes X. Gill parasites from Reelfoot Lake fishes. *The American Midland Naturalist*, 30:196–222.

Most of this paper's one-page introduction recounted the legend of the Chickasaw Indian chief Kalopin and his role in a mythical story of the Lake's formation. Also included was a summary of a dramatic first-person account, by Eliza Bryan, of the December 16, 1811, earthquake that formed the Lake. Mizelle and Cronin were obviously granted license for a brief digression from parasitology. They did, however, report on additional monogenes collected by Venard and Bangham from seven species of fishes, and included seven new distribution records for the Lake (Table 1), as well as seven new species descriptions (Table 2). Among the new species was *Actinocleidus bakeri* described from the gills of a redeared sunfish and named in honor of C.L. Baker, who for 33 summers served as the RLBS Director. This paper, like the earlier one by Mizelle and Jaskoski, was published as an abstract in the Journal (Mizelle and Cronin, 1945).

Eyles, D. E., and L. K. Bishop. 1943. The microclimate and diurnal resting places of *Anopheles quadrimaculatus* Say in the vicinity of Reelfoot Lake. *Public Health Reports*, 58:217–230.

During the summer of 1941 the authors, both from the U.S. Public Health Service in Memphis, measured light intensity, temperature, and humidity existing in barns and other outbuildings at the Walnut Log area of the Lake. Such structures had been identified as daytime resting places for the subject mosquitoes with one building sheltering an estimated 10,000 individuals. According to Eyles and Bishop, decreasing evening light intensity triggered a departure of mosquitoes from shelters during the 20 minutes after sunset. Experiments involving placement of artificial light in shelters resulted in a large number of mosquitoes remaining sheltered through the evening. The authors suggested that lower daytime temperatures and higher humidities in shelters, compared to ambient conditions, drove mosquitoes to seek such resting places.

Eyles, D. E. 1943. A method for catching, marking, and reexamining large numbers of *Anopheles quadrimaculatus* Say. *Journal of the National Malaria Society*, 2:85–91.

Eyles reported on a new apparatus and technique for processing large numbers of the subject mosquitoes captured from a barn serving as their resting place. The device consisted of a modified vacuum cleaner attached to a capture chamber. Mosquitoes' wings were marked with a fine aluminum bronzing dust, applied by an atomizer, while they were still in the capture chamber. Marked specimens were released and recaptured up to 26 days later. Recaptures were identified by examination under an ordinary lighted dissecting microscope. The author noted no site location for this study, however, he stated that it occurred over the 1942 mosquito season. According to Baker (1943), Eyles was in residence at the RLBS during the summer of 1942. A photograph included in the paper shows an exterior view of the barn used in the study. This structure is identifiable as one located at Walnut Log. Another photograph shows the author examining mosquitoes for marked specimens and is identifiable as an interior view of the RLBS.

Eyles, D. E., and W. E. Cox. 1943. The measurement of a population of *Anopheles quadrimaculatus* Say. *Journal of the National Malaria Society*, 2:71–83.

The authors applied the quantitative ecology technique known as the "Lincoln Index" to estimate population densities of the subject mosquitoes at Walnut Log. In a large scale process, detailed in the previous entry, specimens were captured during the day from barns and other outbuildings, then marked, released, and recaptured from the same buildings. Eyles and Cox explained the mathematics involved in their estimate that population densities of female *A. quadrimaculatus* were up to 11,000 per acre during the summer of 1942.

Eyles, D. E., and L. K. Bishop. 1943. An experiment on the range of dispersion of *Anopheles quadrimaculatus*. *American Journal of Hygene*, 37:239–245.

During the summer of 1942 over 16 thousand specimens of the subject mosquito were captured from their daytime resting places at Walnut Log. Specimens were marked and transported various distances from their original points of capture and then released. Of the 31 females recaptured, most were recovered a week later at their original daytime resting places. Range of dispersal was determined to be from 3.2 to 4.0 km.

Eyles, D. E. 1943. Accidental transportation of mosquitoes by automobile. *Journal of Economic Entomology*, 36:345.

The author reported the survival of several specimens of an unidentified mosquito species accidentally transported in the trunk of his automobile from the Lake to Memphis during August 1942. He suggested that this mode of transport might account for isolated malaria cases in otherwise nonmalarious regions. This short note, written during the early months of the Second World War, demonstrated the readiness of some journals of the day to publish most anything that might support the war effort by combating malaria.

Bang, F. B., G. E. Quinby, and T. W. Simpson. 1943. Studies on *Anopheles walkeri* Theobald conducted at Reelfoot Lake, Tennessee 1935–1941. *American Journal of Tropical Medicine*, 23:247–273.

The authors reported that the subject mosquito population composed about 38.5% of the Lake region's entire anopheline community. Flight distances of individuals from their nearest breeding sites to points of capture were reported to be 2.4 to 3.2 km. Their daytime resting places were discovered to be the high humidity, shaded bases of mature cut-grass. Prevalence of *Plasmodium* infection among 2,003 specimens of *A. walkeri* was determined to be a low 0.0005%, whereas dissections of 1,170 specimens of *A. quadrimaculatus* indicated a higher prevalence of 0.0026%. The laying of overwintering eggs by *A. walkeri* was reported to have extended over a period of up to two weeks in September of 1937 and 1939. Capture data indicated that few *A. walkeri* were active and in flight at temperatures below 23.9°C. This lengthy article reflected the need of major medical journals of the day to disseminate information on potential vectors for human infecting *Plasmodium*.

Ellis, J. M. 1944. Notes on the collection and oviposition of *Anopheles walkeri*. *Journal of the Tennessee Academy of Science*, 19:29–30.

Ellis, from the Malaria Research Laboratory of the National Institute of Health in Columbia, South Carolina, was in residence at the RLBS for six weeks during the summer of 1942. This note consisted mostly of the materials and methods the author used to capture female mosquitoes, feed them a blood meal, induce them to lay eggs on small squares of wet filter paper, and package those pieces of paper for shipment to his home laboratory in South Carolina. Except for noting the percent of blood-fed specimens that oviposited (58%) and the range in number of eggs they laid (100 to 200), this "contribution to the war effort" would rank among the least important papers ever published in the Journal.

Hoff, C. C. 1944. A preliminary study of the Hydracarina of Reelfoot Lake, Tennessee. *Journal of the Tennessee Academy of Science*, 19:45–69.

Hoff, from Quincy College in Illinois, spent the summer of 1942 in scholarship residence. He reported on his collection of water mites from 141 locations around the Lake. While all hydracarina are parasitic as larvae, as are those of the freshwater mussel family Unionidae, some member of the water mite genus *Unionicola* are coincidentally parasitic as adults in the mantle cavities of adult unionid mussels. One such parasitic mite was reported from two species of mussels taken from the Lake (Table 1).

Denton, J. F. 1945. Studies on the life history of *Brachylecithum americanum* n. sp., a liver fluke of passerine birds. *Journal of Parasitology*, 31:131–141.

Denton, a member of the faculty at the Medical College of Georgia, described a new digene species from specimens initially recovered from the liver of a blue jay examined from the Lake vicinity during the summer of 1938 (Table 2).

Meyer, M. C. 1946. Further notes on the leeches (Piscicolidae) living on fresh-water fishes of North America. *Transactions of the American Microscopical Society*, 65: 237–249.

Meyer, from Rutgers University, reported on an examination of several freshwater fish leech collections including Venard's, which contained specimens from Lake fishes. According to Meyer the *Piscicola punctata* reported by Venard, from both largemouth bass and warmouth, had been misidentified and were in fact *Illinobdella moorei*. In a review of reports on densities and pathogenicities of leech infestations of freshwater fish, Meyer stated that, "In Reelfoot Lake *Illinobdella richardsoni* infesting mucosal lining of the mouth of the black crappie (*Pomoxis nigromaculatus*) has recently been observed to do serious damage. Apparently in an attempt to escape from leeches the infested fish will repeatedly leap out of the water." Since Meyer cited no authority for this observation, presumably it was a personal observation or perhaps it was personally communicated by Venard or Bangham.

Eyles, D. E. 1948. *Anopheles* mosquito production of the plant communities of Reelfoot Lake. *Journal of the Tennessee Academy of Science*, 23:139–147.

Eyles study, which was conducted in the summer of 1941, was unusual in that it considered some of the ecological factors involved in the association of the free-living stage of a parasite with its community. Four distinct aquatic plant communities were studied along with the four species of larval anophelines developing in the Lake. The *Salix* community, dominated by arboreal willow trees located at the shoreline, included relatively small populations of *Anopheles crucians* and *A. puncipennis*, but supported larger populations of *A. walkeri* and *A. quadrimaculatus*. The *Zizaniopsis* community, dominated by emergent cut-grass, included only large populations of *A. walkeri* and *A. quadrimaculatus* and was considered to have optimal biotic and abiotic factors for production of those two mosquito species. No mosquito larvae composed the deeper water *Nuphar-Nelumbo* (cow-lily/American lotus) community, nor the deepest water *Ceratophyllum* (coontail moss) community.

Goodman, J. D. 1949. Observation on the anatomy, classification, and life history of the trematode genus *Stomatrema* Guberlet (1928). *Journal of the Tennessee Academy of Science*, 24:52–59.

The author, from Mercer University in Georgia, spend the summers of 1947 and 1948 in scholarship residence. He investigated the unsettled familial assignment of the digene genus *Stomatrema*, all described species of which reportedly parasitized the esophagus of mud snakes. Goodman conducted anatomical and life cycle studies on *S. faranciae* from the Lake vicinity. Based upon these studies he concluded that the genus *Stomatrema* was assignable to the subfamily Reniferinae of the family Plagiorchiidae. Goodman's research would later form a portion of his doctoral thesis at the University of Michigan.

Van Cleave, H. J. 1949. The acanthocephalan genus *Neoechinorhynchus* in the catostomid fishes of North America, with descriptions of two new species. *Journal of Parasitology*, 35:500–512.

Van Cleave, from the University of Illinois, was an aforementioned coauthor of the study on parasites of Oneida Lake fishes. Although no record exists of him visiting Reelfoot Lake, Van Cleave described a new species of acanthocephalan (Table 2) from the intestine of a Lake dwelling smallmouth buffalo. Worms were recovered and given to Van Cleave by William Robertson, who was a University of Illinois graduate student conducting ornithology studies at the Lake. Van Cleave, incidentally, was the only parasitologist to have published research originating from Douglas Lake (Van Cleave, 1919), Oneida Lake (Van Cleave, 1923), and Reelfoot Lake.

Denton, J. F., and E. E. Byrd. 1951. The helminth parasites of birds, III: Dicrocoeliid trematodes from North American birds. *Proceedings of the United States National Museum*, 101:157–202.

The authors collaborated on a report that included accounts of two more of the four species of digenes Denton recovered from birds during the summer of 1938. Although still a *nomen nudum*, *Athesmia reelfooti* was determined by the authors to be a junior synonym for *A. heterolecithoides*, a species that had been described in 1899 from a purple moorhen (*Porphyrio porphyrio*) in Europe. This new Lake region distribution record for *A. heterolecithoides* also represented the first Western Hemisphere record for a widely distributed parasite from a near cosmopolitan group of avian hosts. Additionally, the authors described as a new species *Conspicuum icteridorum* initially recovered from the gall bladder of a common grackle from the Lake vicinity.

Goodman, J. D. 1951. Studies on trematode cercariae at Reelfoot Lake, Tennessee, I. *Journal of the Tennessee Academy of Science*, 26:22–25.

The author, relocated to the University of Michigan where he was a graduate student, returned to the Lake for the summer of 1949, and examined almost 1,500 snails representing eight species. Snails were taken from two areas of the Lake, including "Cranetown," and from Lake Isom just south of Reelfoot Lake. Goodman reported the presence of 24 different cercarial species from four species of snails. He neither identified nor described any of the larval trematodes beyond general morphological type.

Goodman, J. D. 1951. Studies on trematode cercariae at Reelfoot Lake, Tennessee, II. *Journal of the Tennessee Academy of Science*, 26:55–72.

This long paper was a follow-up to the previous entry but appeared in the same issue of the Journal. Goodman described nine new species of larval trematodes from two species of aquatic snails (Table 2). While the specific name *reelfooti* was unavailable for any of the new species, Goodman formed the specific names of *samburgi*, *obioni*, *isomi*, and *yankapinensis* from Lake region locality names. A footnote to the title acknowledged the paper to be a joint contribution from the RLBS and the University of Michigan.

Goodman, J. D. 1952. Taxonomic studies of the family Ochetosomatidae Leao, 1944, and the life history of *Stomatrema guberleti* Byrd, 1937, Trematoda. PhD dissert., Univ. of Michigan, Ann Arbor, Michigan.

Based upon collections made and life cycles studies conducted at the RLBS during the summers of 1947 and 1948 and later at the UMBS, Goodman elucidated the life cycle of the digene *Stomatrema guberleti*. He also reported on the taxonomy of the digene genus *Pneumatophilus*, which like *Stomatrema* parasitizes water snakes. The historical significance of Goodman's dissertation resides in the fact that the research originated from both the Reelfoot and Douglas Lake regions.

Venard, C. E., and J. H. Warfel. 1953. Some effects of two species of Acanthocephala on the alimentary canal of the largemouth bass. *Journal of Parasitology*, 39:187–190.

Venard was joined by Warfel, from the University of Buffalo School of Medicine, for a report describing the pathogenesis of two acanthocephalan species parasitizing largemouth bass. Both worms had previously been reported by Venard who had preserved, as biopsy specimens, segments of fish intestine containing worms *in situ*. After histological preparation, stained sections of the host organ containing worms were studied and photographed to illustrate the greater tissue damage caused by one species compared to that of the other.

Snow, W. E., and E. Pickard. 1954. Observations on the seasonal activity of some night-biting Diptera. *Journal of the Tennessee Academy of Science*, 29:17–22.

The authors were medical entomologists with the Malaria Control Branch of the Tennessee Valley Authority. During the spring, summer, and fall of 1952 they made regular collections of nocturnal blood feeding Diptera at two capture stations near the RLBS. One station was on the edge of a cypress forest and the other was 45.7 m inside the forest. Biting flies, including many non-mosquito species, were captured by light traps or by suction aspirator as they attempted to feed on the exposed skin of the collector. While most of this paper dealt with seasonal feeding activity, the authors listed 14 new Lake region distribution records for blood feeding Diptera (Table 1). These records included three additional mosquito species, two deerfly species, eight species of small biting gnats commonly called punkies or "no-see-ums," and one sand fly species.

Snow, W. E. 1955. Feeding activities of some blood-sucking Diptera with reference to vertical distribution in bottomland forest. *Annals of the Entomological Society of America*, 48:512–521.

Snow used the same data reported in the previous entry but organized differently. Biting fly catches were compared between the forest edge and forest proper and between ground level and heights of 9.1 m or 22.9 m in the forest canopy. Among the more interesting observations was the apparent high canopy preference exhibited by the sand fly *Phlebotomus shannoni* (= *Lutzomya shannoni*), a species indigenous to Central and South America that had extended its range northward.

Najarian, H. H. 1955. Notes on aspidogastrid trematodes and hydracarina from some Tennessee mussels. *Journal of the Tennessee Academy of Science*, 30:11–14.

Najarian, from Northeastern University in Boston, was awarded a research scholarship for six weeks during the summer of 1954. He examined 28 specimens representing three species of unionid mussels from Bayou du Chien (Fig. 2). All mussels examined harbored infections with an aspidogastrid trematode tentatively identified by the author as *Cotylaspis insignis* (a new Lake distribution record). In addition, two species of water mites, representing new Lake distribution records (Table 1), reportedly parasitized 75% of the mussel specimens.

Price, E. W. 1959. Some new monogenetic trematodes from the gizzard shad, *Dorosoma cepedianum* (La Sueur). *Journal of the Alabama Academy of Science*, 30:9–10.

Price, from Jacksonville State University in Alabama, used this short note to report three new species of monogenes, collected by Bangham and Venard, from the gills of gizzard shad inhabiting the Lake. Price erected a new genus to receive one of the new species. The other two species were assignable to an existing genus. The author, however, failed to provide descriptions for any of these new taxa, thus creating multiple *nomina nuda*.

FIG. 5. John Mackiewicz in 1968 engaged in field necropsy of a creek chubsucker taken from a pool in Indian Creek, seen in background, while David Etnier assists. (Courtesy of David Etnier.)

Price, E. W. 1961. North American monogenetic trematodes IX. The families Mazocraeidae and Plectanocotylidae. *Proceedings of the Biological Society of Washington*, 74:127–155.

Price used the taxonomic revision of two monogene families to correct the *nomina nuda* of the previous entry. He furnished a diagnosis of the new genus and provided full descriptions of the three new species (Table 2). Additionally, he also reported a new Lake distribution record (Table 1) for a previously described monogene.

Najarian, H. H. 1961. New aspidogastrid trematode, *Cotylaspis reelfootensis,* from some Tennessee mussels. *Journal of Parasitology*, 47:515–520.

The author, relocated to the University of Texas Medical Branch in Galveston, reconsidered his 1955 identification of the aspidogastrid trematode parasitizing mussels from Bayou du Chien. He decided these specimens were significantly different from *Cotylaspis insignis* and represented a new species. Accordingly, he described *C. reelfootensis* (Fig. 4E), which then became the fifth parasite to carry the Lake's name. Unfortunately for the Lake, *Cotylaspis reelfootensis* would soon be declared an invalid name.

Hendrix, S. S., and R. B. Short. 1965. Aspidogastrids from northeastern Gulf of Mexico river drainages. *Journal of Parasitology*, 51:561–569.

The authors, from Florida State University, briefly visited the Lake during the summer of 1964 and collected specimens of *Cotylaspis reelfootensis* from mussels in Bayou du Chien. Examination of these worms led to a revised diagnosis of the genus *Cotylaspis*, a redescription of *C. insignis*, and a reduction of *C. reelfootensis* to the status of junior synonym for *C. insignis*.

Mackiewicz, J. S. 1969. *Penarchigetes oklensis* gen. et sp. n. and *Biacetabulum carpiodi* sp. n. (Cestoidea: Caryphyllaeidae) from catostomid fish in North America. *Proceedings of the Helminthological Society of Washington*, 36:119–126.

During the summer of 1966 the author, from the State University of New York at Albany, had the distinction of being the last parasitologist to be a resident researcher at the RLBS. While there, Mackiewicz necropsied a river carpsucker taken from Running Reelfoot Bayou, near the Spillway (Fig. 2). From the intestine of the fish he recovered specimens of a caryophyllidean tapeworm representing a new species (Table 2).

Denton, J. F. 1972. *Zonorchis chandleri* sp. n. (Digenea: Dicrocoeliidae) from the yellow-breasted chat, *Icteria virens*. *Proceedings of the Helminthological Society of Washington*, 39:14–15.

This publication completed Denton's reports of digenes parasitizing the livers or gall bladders of birds examined 34 years earlier from the Lake vicinity. *Zonorchis chandleri* was described from specimens recovered from the avian host's liver and was named in honor of Asa Chandler, who was Denton's thesis advisor at Rice University.

Mackiewicz, J. S. 1974. *Calentinella etnieri* gen. et sp. n. (Cestoidea: Caryophyllaeidae) from *Erimyzon oblongus* (Mitchill) (Cypriniformes: Catostomidae) in North America. *Proceedings of the Helminthological Society of Washington*, 41:42–45.

From August 1967 to August 1968 the author, while on academic leave from his post in New York, worked in the parasitology laboratory of Arthur Jones at the University of Tennessee at Knoxville. In March and July of 1968 Mackiewicz examined some creek chubsuckers, taken from Indian

Creek near its entrance into the Lake, and recovered specimens of a new genus and new species of caryophyllidean tapeworm. He erected the genus *Calentinella* to receive the new species, *C. etnieri*, named in honor of David Etnier of the University of Tennessee at Knoxville, who had assisted in collecting the host fish. Incidentally, Mackiewicz (pers. comm.) did not use RLBS facililties, but like a true field parasitologist necropsied the chubsuckers in the field while using a tripod metal folding chair as a table (Fig. 5).

Bafundo, K. W. 1978. Geographic variation in helminth parasites from the digestive tract of Tennessee raccoons, *Procyon lotor*. MS thesis, Univ. of Memphis, Memphis, Tennessee.

The author reported on an examination of 253 raccoons in a state-wide survey for gastrointestinal helminth parasites. Various numbers of hosts were taken from each of Tennessee's physiographic regions. A total of six raccoons were examined from the Mississippi Alluvial Plain region, which includes the Lake vicinity. The author did not state the number of raccoons comprising the sample from Lake County, but listed five helminth species including one digene, two tapeworms, and two nematodes, all of which represented new Lake region distribution records (Table 1). This thesis was later published (Bafundo et al., 1980); however, because of the need to condense information for journal publication, data from the Lake region lost its identity when pooled with that from other sites in the alluvial plain.

Christensen, B. M., and R. L. Calentine. 1983. *Penarchigetes macrorchis* sp. n. (Cestodea: Caryophyllaeidae) from the lake chubsucker, *Erimyzon sucetta* (Lacepede), in western Kentucky. *Proceedings of the Helminthological Society of Washington*, 50:112–116.

The authors, from Murray State University in Kentucky and the University of Wisconsin at River Falls, described a new species of caryophyllidean tapeworm from the intestines of two fish taken during July 1981 from Murphy's Pond in Hickman County, Kentucky. While this locality may seem outside the Lake region, this pond is a shallow, relict cypress swamp formed during the seismic events that created Reelfoot Lake and was part of a drainage basin that included the Lake.

Strohlein, D. A., and B. M. Christensen. 1984. *Haemogregarina* sp. (Apicomplexa: Sporozoea) in aquatic turtles from Murphy's Pond, Kentucky. *Transactions of the American Microscopical Society*, 103:98–101.

During June through August 1981 the authors, from Murray State University, took blood samples from 85 turtles representing four aquatic species inhabiting Murphy's Pond. Intraerythrocytic gametocytes of an undetermined species of the protozoan genus *Haemogregarina* were found in the blood of all four turtle species (Table 1). Prevalence of infection among the turtle species ranged from 36% to 96%. According to the authors, the turtle leech *Placobdella parasitica* (the first parasite to be reported from the Lake region) had been demonstrated, by other investigators, to be a vector in the life cycles of some *Haemogregarina* species.

Van Den Bussche, R. A. 1984. Temporal and spatial variation of helminth parasites in coyotes, *Canis latrans,* from Tennessee. MS thesis, Univ. of Memphis, Memphis, Tennessee.

The author reported on a four-year project involving examination of 267 coyotes from 30 localities, mostly in western Tennessee. Trappers furnished the author with six coyote carcasses from the Obion County side of the Lake. From those six hosts Van Den Bussche recovered four parasite species (Table 1), all of which represented new Lake region distribution records. This thesis was later published (Van Den Bussche et al., 1987) and, as was the case with Bafundo et al. (1980), the need to condense information for journal publication resulted in pooling of data and loss of its identity as originating from the Lake region.

Cole, R. A., and W. L. Shoop. 1987. Helminths of the raccoon (*Procyon lotor*) in western Kentucky. *Journal of Parasitology*, 73:762–768.

The authors, from Murray State University, reported on a five-month survey in which they examined 70 raccoons for helminth parasites. Unlike the study of Bafundo et al. (1980), which involved only gastrointestinal helminths, Cole and Shoop examined many additional organs including the diaphragm, lungs, pancreas, skin, and urinary bladder. The authors reported the presence of 23 helminth species hosted by raccoons in western Kentucky. Six raccoons taken from the Lake vicinity in Fulton County, Kentucky collectively harbored 14 species of helminths. Eight of these species represented new Lake region distribution records (Table 1).

Platt, T. R. 1988. Phylogenetic analysis of the North American species of the genus *Hapalorhynchus* Stunkard, 1922 (Trematoda: Spirorchiidae), blood-flukes of freshwater turtles. *Journal of Parasitology*, 74:870–874.

The author, from Saint Mary's College in Indiana, examined specimens of *Hapalorhynchus reelfooti*, *H. stunkardi*, and *H. evaginatus*, which Byrd had deposited in the U.S. National Museum 50 years earlier as holotypes for three species of blood flukes he described from Lake turtles. While Platt expressed no opinion on the status of *H. evaginatus*, since the slide mounted specimen lacked a definitive quality, he accepted the validity of *H. reelfooti* and *H. stunkardi* and noted their phylogeny in two cladograms. This paper represented the first taxonomic review of any of the spirorchiid species described by Byrd in 1939.

Macdonald, C. A., and Brooks, D. R. 1989. Revision and phylogenetic analysis of the North American species of *Telorchis* Luhe, 1899 (Cercomeria: Trematoda: Digenea: Telorchiidae). *Canadian Journal of Zoology*, 67:2301–2320.

The authors, from the University of British Columbia and the University of Toronto, respectively, examined holotype and paratype specimens of *Cercorchis reelfooti* deposited in the U.S. National Museum by Parker in 1941. Based upon this examination they reduced *C. reelfooti* to the status of junior synonym for *Telorchis sirensis*, which had been described by Zeliff (1937) from the greater siren. Zeliff, however, reported no type locality other than the southeastern United States. Therefore, Parker's work was significant in that it established the Lake as the first definite distribution record for *T. sirensis* and the three-toed amphiuma as a new host record for the digene.

Goodman, J. D. 1990. *Amblosoma reelfooti* n. sp. (Trematoda: Brachylaimata Thapariellidae) from *Viviparus intertextus* in Tennessee and *Thapariella prudhoei* n. sp. from *Lanistes*

sp. in Zaire. *Transactions of the American Microscopical Society*, 100:319–324.

Goodman, from the San Bernadino County Museum in California, described a new digene species from unencysted metacercariae found in the mantle cavities of freshwater snails taken from Bayou du Chien during his summers as a scholarship researcher in the late 1940's and again as recently as 1981. *Amblosoma reelfooti* (Fig. 4F) thus became the sixth and most recent parasite to carry the Lake's name. Goodman noted that the definitive host for *A. reelfooti* was presumably a species of waterfowl.

Platt, T. R., and A. K. Prestwood. 1990. Deposition of type and voucher material from the helminthological collection of Elon E. Byrd. *Systematic Parasitology*, 16:27–34.

Platt was joined by Prestwood, from the College of Veterinary Medicine at the University of Georgia, for a report that would eventually serve to renew interest in field parasitology studies at the Lake. The authors catalogued the late Elon Byrd's personal collection of helminths. Among the collection were designated paratype and/or voucher specimens of seven of the nine spirorchiid species that Byrd described from Lake turtles 52 years earlier. Fifteen slide mounted specimens were deposited in either the U.S. National Museum Helminthological Collection or the collection of the Harold W. Manter Laboratory at the University of Nebraska. Accession numbers were provided thus making those specimens available for study.

Detterline, J. L., and W. E. Wilhelm. 1991. Survey of pathogenic *Naegleria fowleri* and thermotolerant amebas in federal recreational waters. *Transactions of the American Microscopical Society*, 110:244–261.

The authors, from the University of Memphis, examined water samples from 59 aquatic sites in national parks, national battlefield parks, and national wildlife refuges located across the United States. The main focus of the survey was the facultative human parasite *Naegleria fowleri*, which is the etiological agent of primary amebic meningoencephalitis. The Upper Blue Basin (Fig. 2) of the Lake was one of 53 sampled sites from which the authors reported no *N. fowleri* populations. However, they reported the presence of an unidentified species of *Hartmanella*, a genus which had been demonstrated to cause facultative infections in freshwater snails. In contrast, Owl Creek in the Shiloh National Battlefield Park, also in western Tennessee, was one of only six localities reportedly supporting populations of *N. fowleri.*

Platt, T. R. 1993. Taxonomic revision of *Spirorchis* MacCallum, 1919 (Digenea: Spirorchidae). *Journal of Parasitology*, 79:337–346.

Platt used specimens from the Byrd collection to prepare the first taxonomic revision of the genus *Spirorchis* since Byrd's major work of 1939. He accepted, as a valid species *S. minutus*, which Byrd had described from a common snapping turtle. *Spirorchis blandingoides*, described by Byrd from both the red-eared slider and the river cooter, was declared an invalid name and was reduced to a junior synonym of *S. scripta.* Pratt reduced *S. pseudomyae*, which had been described by Byrd from a red-eared slider, to the status of junior synonym for *S. artericola. Spirorchis magnitestis*, described by Byrd from a common snapping turtle, was considered a *species inquirenda*, i.e., a species of doubtful identity needing further investigation.

Kollars, T. M., R. E. Lizotte, and W. E. Wilhelm. 1997. Gastrointestinal helminths of the river otter (*Lutra canadensis*) in Tennessee. *Journal of Parasitology*, 83:158–160.

The authors, from the University of Memphis, reported on a nine-year survey involving examination of 91 river otters taken by fur trappers and Tennessee Wildlife Resources Agency personnel from 12 counties in western Tennessee. Only three helminth species were recovered from otters in the sample. A digene (*Baschkirovitrema incrassatum*) parasitized 33% of the hosts, an unidentified species of the acanthocephalan genus *Acanthocephalus* had a prevalence of 5.5%, and a nematode (*Strongyloides lutrae*) had a prevalence of 1.1%. Localities for the acanthocephalan and the nematode were not given, however, of the ten otters examined from the Lake vicinity, seven harbored infections with *B. incrassatum*, which represented a new Lake region distribution record.

Tkach, V. V., S. D. Snyder, and Z. Swinderski. 2001. On the phylogenetic relationships of some members of Macroderoididae and Ochetosomatidae (Digenea, Plagiorchioidea). *Acta Parasitologica*, 46:267–275.

The authors were from the Institute of Zoology in Kiev, Ukraine, the University of Nebraska at Omaha, and the Medical University of Warsaw in Poland, respectively. During May 2001 Snyder visited the Lake and collected a specimen of the macroderoidid digene, *Macroderiodes typicus* (a Lake distribution record) from the intestine of a shortnose gar. He also collected several specimens of the ochetosomatid digene, *Dasymetra nicolli* (a Lake region distribution record) from the mouth of a diamondback water snake. Preserved specimens of both worm species were forwarded to Tkach for extraction of genomic DNA, which was used to generate base sequences for comparisons of partial 28S rDNA among representative species of the two digene families. Based upon these studies the authors concluded that the families Macroderoididae and Ochetosomatidae formed cladistic branches independent of the family Plagiorchiidae.

Kuzmin, Y., V. V. Tkach, and S. D. Snyder. 2003. The nematode genus *Rhabdias* (Nematoda: Rhabdiasidae) from amphibians and reptiles of the Neartic. *Comparative Parasitology*, 70:101–114.

Two of the authors of the previous entry were joined by Kuzmin from the Institute of Zoology in Kiev, for this report on lung parasitizing nematodes of the genus *Rhabdias* endemic to North America. During his 2001 visit to the Lake, Snyder collected specimens of *R. fascovenosa* from the lungs of a yellow-bellied water snake and specimens of *R. joaquinensis* (a Lake region distribution record) from the lungs of a green frog. The authors subjected these specimens to detailed anatomical studies resulting in species redescriptions, which were used for comparisons with a new species described from a salamander taken from a Wisconsin lake.

Snyder, S. D. 2004. Phylogeny and paraphyly among tetrapod blood flukes (Digenea: Schistosomatidae and Spirorchiidae). *International Journal for Parasitology*, 34:1385–1392.

During the spring of 2002 the author, with support from the National Institutes of Health, visited the Lake for the second time and collected specimens of three species of turtle blood flukes. Genomic DNA was later extracted from *Hapalorhynchus gracilis*, *Spirorchis scripta*, and *Unicaecum* sp. Small and large subunit ribosomal DNA mucleotide sequences were generated

for these three spirorchiids as well as for two other species of freshwater turtle blood flukes from other localities. This data was compared with base sequences from three species of spirorchiids from Pacific Ocean marine turtles as well as a variety of schistosomatid blood flukes from birds and mammals. Results of the phylogenetic study indicated that spirorchiids from freshwater turtles were ancestral to those from marine turtles and that the family Spirorchiidae was paraphyletic and basal to the family Schistomatidae.

Barger, M. A. 2004. The *Neoechinorhynchus* of turtles: Specimen base, distribution and host use. *Comparative Parasitology*, 71:118–129.

The author, from Peru State College in Nebraska, visited the Lake during the summers of 2002 and 2003 and collected three species of acanthocephalans parasitizing the intestines of Lake turtles. *Neoechinorhynchus chrysemydis* was recovered from a red-eared slider, *N. emyditoides* was recovered from a red-eared slider and a false map turtle, and *N. pseudemydis* was recovered from a red-eared slider. All three acanthocephalan species represented new Lake region distribution records.

Snyder, S. D., and R. E. Clopton. 2005. New methods for collection and preservation of spirorchiid trematodes and polystomatid monogeneans from turtles. *Comparative Parastitology*, 72:102–107.

Snyder was joined by Clopton, from Peru State College, for a description of some of the methods and techniques developed and applied by Snyder while visiting the Lake during the spring of 2002.

Goodman, J. D., and S. Monks. 2006. Taxonomic revision of *Pneumatophilus* Odhner, 1910, and description of *Pneumatophilus tracheophilus* n. sp. (Ochetosomatoidea: Ochetosomatidae) from the mud snake *Farancia abacura abacura* (Serpentes: Colubridae: Xenodontinae). *Comparative Parasitology*, 73:14–19.

Goodman was joined by Monks, from the Autonomous University of the State of Hidalgo in Mexico, for a report on the revision of the digene genus *Pneumatophilus*. The authors noted Goodman's recovery of specimens of *P. leidyi* (a Lake region distribution record) from the tracheae and lungs of green water snakes necropsied during his residency in the late 1940's. In the acknowledgments section of the paper Goodman noted that he hoped that it was not premature to thank the Academy for a grant and the RLBS for facilities made available to him 57 years earlier.

Platt, T. R. 2006. First report of *Echinochasmus* sp. from the snapping turtle (*Chelydra serpentina* L.) from Reelfoot Lake, Tennessee, U.S.A. *Comparative Parasitology*, 73:161–164.

Among specimens from the Byrd collection catalogued by Platt and Prestwood, but not deposited in any museum collection, were 12 slide mounted specimens of a member of the digene genus *Echinochasmus*. Labels written by Byrd indicated the specimens were from the intestine of a common snapping turtle taken from the Lake in the summer of 1937. Although Platt was unable to identify the species, he described the worm and illustrated a representative specimen. Significance of the report resided not only in the fact that this represented a new Lake region locality record but was also the first report of *Echinochasmus* from a turtle host.

Turner, H. M. 2006. Distribution and prevalence of *Allocorrigia filiformis* (Trematoda: Dicrocoeliidae), a parasite of the crayfish *Procambarus clarkii*, within the state of Louisiana and the Lower Mississippi River Valley, U.S.A. *Comparative Parasitology*, 73:274–278.

The author, from the University of Tennessee at Martin, reported on the distribution and prevalence of an adult digene from the antennal glands (excretory organs) of the red swamp crayfish. Nine of 15 crayfish taken during May 2005 from the wetland on the west side of the Lake, harbored infections with *Allocorrigia filiformis*. Additionally, eight of 13 crayfish taken from Running Slough, a feeder stream entering the northeast side of the Lake from Kentucky, harbored infections with this digene. Both collections represented a new Lake region distribution record.

Curran, S. S., V. V. Thach, and R. M. Overstreet. 2006. A review of *Polylekithum* Arnold, 1934 and its familial affinities using morphological and molecular data, with description of *Polylekithum catahoulensis* sp. nov. *Acta Parasitologica*, 51:238–248.

Tkach, relocated to the University of North Dakota, was joined on this paper by Curran and Overstreet, both from the University of Southern Mississippi. During his 2002 visit to the Lake Snyder recovered and later provided the authors with specimens of *Polylekithum ictaluri* from a brown bullhead. Some specimens were used for extraction of genomic DNA while others were stained for whole mount microscopic study. Comparative anatomical and molecular studies confirmed the new species status of *P. catahoulensis*, from a blue catfish taken from Catahoula Lake in Louisiana. The authors concluded that the genus *Polylekithum* should be transferred from the family Allocreadiidae to the family Encyclometridae.

Platt, T. R., and S. D. Snyder. 2007. Redescription of *Hapalorhynchus reelfooti* Byrd, 1939 (Digenea: Spirorchiidae) from *Sternotherus odoratus* (Latreille, 1801). *Comparative Parasitology*, 74:31–34.

The authors collaborated on a paper that would establish the species validity of one of the nine spirorchiids Byrd describe from Lake turtles, but would declare another to be invalid. Based upon specimens collected from stink pot turtles in Virginia and Indiana, the authors redescribed *Hapalorhynchus reelfooti.* However, after examination of specimens of *H. evaginatus* from Byrd's collection, the authors concluded that it was a junior synonym of *Vasotrema attenuatum* (a Lake region distribution record). With this publication, five of the nine spirorchiid species described by Byrd were recognized as valid, thus reconfirming the Lake as a major center of spirorchiid diversity.

Tkach, V. V., E. J. Strand, and L. Froese. 2008. *Macroderoides texanus* n. sp. (Digenea: Macroderoididae) from alligator gar, *Atractosteus spathula* in Texas. *Parasitology Research*, 104:27–33.

The authors, all from the University of North Dakota, obtained genomic DNA extracted from two specimens of *Macroderoides trilobatus* (a Lake distribution record) recovered from a bowfin taken from the Lake by Snyder in 2001. The DNA was used to generate a base sequence for comparison with that from a worm they believed to be a new species from an alligator gar taken from the Nueces River in Texas. Differences in sequence confirmed their designation of *M. texanus* as a new species.

Turner, H. M. 2009. Additional distribution and prevalence records for *Alloglossidium dolandi* (Digenea: Macroderoididae) and a comparison with the distribution of *Alloglossidium caridicolum*, parasites of procambarid crayfish, within the Coastal Plains of the Southeastern United States. *Comparative Parasitology*, 76:283–286.

The author reported on the distribution and prevalence of a species of adult digene from the antennal glands of white river crayfish. Two of 13 crayfish taken during May 2007 from the wetlands west of the Lake harbored infections with *Alloglossidium dolandi*. Additionally, four of 14 crayfish taken from Running Slough also harbored infections with this digene. Both collections represented a new Lake region distribution record.

Freyre, D. 2009. Population genetics and host specificity of *Spirorchis scripta* in emydid turtles. MS thesis, Univ. of Nebraska at Omaha, Omaha, Nebraska.

Freyre, who was a graduate student of Scott Snyder, visited the Lake during part of the summer of 2008. She necropsied several species of emydid turtles and recovered specimens of the blood fluke *Spirorchis scripta*, which were prepared for later molecular studies.

DISCUSSION

An objective review of the preceding annotated bibliography indicates that no individual influenced the Lake region's history of field parasitology more that Elon E. Byrd of the University of Georgia. Byrd's introduction of three of his graduate students to a field station research experience created a synergy, not uncommon in such relationships, that resulted in the four investigators collectively authoring or coauthoring 18 of the 90 papers.

Most biological field stations maintain an online bibliography of works originating from that station or its vicinity. A numerical comparison of parasitological reports from ten of North American's best known and well established freshwater field stations, indicated that only the University of Michigan Biological Station (UMBS) and the Algonquin Park Wildlife Research Station (WRS) in Ontario, Canada exceeded the number of such reports originating from the Lake region. Unfortunately, the RLBS's place in the history of field parasitology ended in January 1977 when, in an apparent act of arson, it was destroyed by fire and never rebuilt.

Of the non-human hosts for parasites from the Lake region, turtles are among the most visible of year-round residents. In terms of species diversity and population numbers turtles are an important group and have been well studied at the Lake for their own biology and natural history. It was probably not coincidental that the first parasite to be reported from the Lake was a turtle leech, the first digene distribution record involved turtle hosts, and the first new species description was for a turtle blood fluke. Furthermore, species richness among the Lake turtle community was reflected in the most frequently cited study originating from the Lake, namely Byrd's report on species diversity of spirorchiid blood flukes.

Other cold-blooded vertebrates from the Lake region have been well investigated for their parasitofaunas as have some of the mammals. Two groups that have not been well studied for their roles as hosts are the aquatic macroinvertebrates, especially the freshwater limpets or ancylid snails, and the highly visible aquatic birds, many of which are not year-round residents. These two groups are perhaps the most important for any consideration of the overall parasitofauna of the region.

According to Esch (2004), principles of ecological parasitology hold that in large deep lakes with limited littoral zones the parasitofauna of fish predominate. Parasite life cycles are completed within the confines of the lake and such parasites are termed autogenic species. On the other hand, in large shallow lakes with extensive littoral zones, like Reelfoot Lake, the parasitofauna of aquatic birds predominate. Life cycles of parasites of migratory waterfowl are completed outside the lake and these parasites are termed allogenic species (Esch, 2004).

Shallow lakes support species-rich communities of aquatic macroinvertebrates that frequent the littoral zones where aquatic birds feed and defecate, thus passing their parasites' eggs into shallow water. Through infections acquired from these eggs, aquatic macroinvertebrates become intermediate hosts for larvae of avian helminths, which eventually cycle back to the birds via food webs. In the case of Reelfoot Lake, which lies along the Mississippi Flyway, allogenic parasite species should be all the more predominant.

Parasitologists will continue to visit the Lake and collect specimens needed to complement or complete distribution, classical taxonomic, or comparative molecular studies, however, the real work involves parasite life cycles and ecology. Unfortunately, such studies require time and facilities, which are commodities that are often in short supply.

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