

Records

AMCOP XXXVII
ANNUAL MIDWESTERN CONFERENCE
OF PARASITOLOGISTS

The Ohio State University

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COLUMBUS, OHIO

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JUNE 20-22, 1985

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SYMPOSIUM -- PHYSIOLOGICAL ECOLOGY OF PARASITES

Affiliate American Society of Parasitologists

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ACKNOWLEDGEMENTS

AMCOP expresses its gratitude to the following organizations for their contributions to this 37th meeting to make it enjoyable and meaningful:

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BRING THIS PROGRAM WITH YOU

Annual Midwestern Conference of Parasitologists (AMCOP XXXVII)
The Ohio State University, Columbus, Ohio 43210
June 20 - 22, 1985

*** PROGRAM SCHEDULE ***

June 20

- 4:00-10:00 PM Check in and registration, North Dormitory Facilities.
- 7:00-12:00 PM Social gathering (at Pappas', maps to be provided at registration).

June 21

- 8:00-11:00 AM Registration, coffee and donuts, main lobby, Postle Hall (School of Dentistry).
- 9:00-9:15 AM Welcoming remarks, Dr. William Jensen, Dean, College of Biological Sciences.
- 9:15-11:30 AM General session, contributed papers, room 1187, Postle Hall.
- 11:30-1:00 PM Lunch break.
- 1:00-3:00 PM Symposium -- Physiological Ecology of Parasites. Room 1187, Postle Hall.

Speakers: Dr. Gary Uglem, Department of Biological Sciences, University of Kentucky, "Evolution of tegumentary sugar transport in digenetic trematodes."

Dr. Carmen Fioravanti, Department of Biological Sciences, Bowling Green State University, "The energetics of intestinal helminths: adaptation to an environment of low oxygen tension."

- 3:00-4:30 PM Demonstration (poster) session, rooms 121 and 129, Botany and Zoology (B&Z) Building.
- 4:30 PM Business meeting, room 100, Botany and Zoology Building.
- 6:00 PM Social hour (cash bar; beer and wine only), Drake Union.
- 7:00 PM Banquet, Drake Union

Speaker: Dr. K.D. Murrell, Animal Parasitology Institute, U.S.D.A., "Epidemiology of swine trichinosis: could both Zenker and Leuckart be correct?"

- 9:00 PM-12:00 Social gathering (at Crites', maps provided at registration).

June 22

- 8:00-9:00 AM Coffee and donuts, main lobby, Postle Hall.
- 9:00-11:00 AM General session, contributed papers, room 1187, Postle Hall.
- 11:00 AM Business meeting, room 1187, Postle Hall

DEMONSTRATIONS

(* In Competition for Herrick Award)

1. ACANTHOCEPHALAN KIDNEYS. T. T. DUNAGAN AND DONALD M. MILLER, DEPARTMENT OF PHYSIOLOGY AND PHARMACOLOGY, SOUTHERN ILLINOIS UNIVERSITY, CARBONDALE, IL 62901
- 2.* HISTOPATHOLOGIC STUDY OF CARDIAC TISSUE IN EXPERIMENTAL CHAGAS' DISEASE. R. L. LAVY, DEPARTMENT OF BIOLOGY, UNIVERSITY OF AKRON, AKRON, OH 44325 *Herrick Award*
3. ANATOMICAL CORROSION MODELING OF THE PRAESOMAL LACUNAR SYSTEM OF AN ACANTHOCEPHALAN. DONALD M. MILLER AND TOMMY T. DUNAGAN, DEPARTMENT OF PHYSIOLOGY AND PHARMACOLOGY, SCHOOL OF MEDICINE, SOUTHERN ILLINOIS UNIVERSITY, CARBONDALE, IL 62901
4. AN SEM STUDY OF TRICHODINA PEDICULUS FROM CRASPEDACUSTA SOWERBII. D. G. MYER AND S. L. EDER, DEPARTMENT OF BIOLOGICAL SCIENCES, SOUTHERN ILLINOIS UNIVERSITY, EDWARDSVILLE, IL 62026
- 5.* SCANNING ELECTRON MICROSCOPIC STUDIES ON THE ADULTS AND EGGS OF HAMMERSCHMIDIELLA DIESINGI (NEMATODA: OXYUROIDEA). XIONG YU, DEPARTMENT OF ZOOLOGY, OHIO STATE UNIVERSITY, COLUMBUS, OHIO 43210

PAPER PRESENTATIONS

(* In competition for LaRue Award)

It is hoped that each paper can be presented in ten minutes or less.

- 1.* TAUROCHOLIC ACID AFFECTS MOTILITY AND MORPHOLOGY OF CRYPTOSPORIDIUM SPOOROZITES IN VITRO. DOUGLAS B. WOODMANSEE, DEPARTMENT OF ZOOLOGY, IOWA STATE UNIVERSITY AND THE NATIONAL ANIMAL DISEASE CENTER, AMES, IA 50010
- 2.* IDENTIFICATION BY TRANSFER BLOT OF ANTIGENS REACTIVE IN THE ENZYME-LINKED IMMUNOSORBENT ASSAY (ELISA) IN RABBITS IMMUNIZED AND CALVES INFECTED WITH CRYPTOSPORIDIUM. ARISTIDES LAZO, DEPARTMENT OF MICROBIOLOGY, THE OHIO STATE UNIVERSITY, COLUMBUS, OH 43210
- 3.* COMPARISON OF THE ANTIGENS OF TWO MORPHOLOGICALLY DISTINCT ISOLATES OF ANAPLASMA MARGINALE. JOHN H. ADAMS, COLLEGE OF VETERINARY MEDICINE, UNIVERSITY OF ILLINOIS, URBANA, IL 61801
- 4.* EKG ANALYSIS OF CHAGASIC MYOCARDIOPATHY. STEVEN T. LEBLANC, DEPARTMENT OF BIOLOGY, UNIVERSITY OF AKRON, AKRON, OH 44325

PAPER PRESENTATIONS

(* In competition for LaRue Award)

- 5.* ACTIVE TRANSPORT OF GLUCOSE ACROSS THE TEGUMENT OF REDIAE OF PROTEROMETRA EDNEYI (DIGenea: AZYGIIDAE): WHAT IS THE DRIVING FORCE? MARK C. LEWIS, PHYSIOLOGY GROUP, SCHOOL OF BIOLOGICAL SCIENCES, UNIVERSITY OF KENTUCKY, LEXINGTON, KY 40508
- 6.* SOME EFFECTS OF SCHISTOSOMA JAPONICUM INFECTION ON THE STRUCTURE AND FUNCTION OF THE HEPATOGONAD OF ITS MOLLUSCAN HOST SNAIL, ONCOMELANIA HUPENSIS QUADRASI. FLORENCIA G. CLAVERIA, DEPARTMENT OF BIOLOGICAL SCIENCES, UNIVERSITY OF CINCINNATI, CINCINNATI, OH 45221
- 7.* A HISTOCHEMICAL STUDY OF GLAND CELLS OF PHILOPHTHALMUS MEGALURUS AND P. GRALLI CERCARIAE AND THEIR ROLE IN CYST FORMATION. SAZALY ABU BAKAR, DEPARTMENT OF BIOLOGICAL SCIENCES, WESTERN ILLINOIS UNIVERSITY, MACOMB, IL 61455
- 8.* ULTRASTRUCTURAL AND ELECTROSTATIC CHANGES ON BRUGIA PAHANGI MICROFILARIAE AFTER AEDES AEGYPTI MIDGUT PENETRATION. KEITH F. FORTON, DEPARTMENT OF VETERINARY SCIENCE, UNIVERSITY OF WISCONSIN, MADISON, WI 53706 *LaRue Award*
- 9.* CHARACTERIZATION OF THREE GEOGRAPHICAL ISOLATES OF TRICHINELLA SPIRALIS. DAVID A. LEIBY, DEPARTMENT OF ZOOLOGY, THE OHIO STATE UNIVERSITY, COLUMBUS, OH 43210
- 10.* SYLVATIC TRICHINOSIS IN INDIANA. MARGARET A. MACDANOLD, DEPARTMENT OF VETERINARY MICROBIOLOGY, PATHOLOGY, AND PUBLIC HEALTH, PURDUE UNIVERSITY, WEST LAFAYETTE, IN 47907
- 11.* ENVIRONMENTAL CONTAMINATION WITH BAYLISASCARIS PROCYONIS EGGS IN AN URBAN PARK. TODD A. COONEY, DEPARTMENT OF VETERINARY MICROBIOLOGY, PATHOLOGY, AND PUBLIC HEALTH, PURDUE UNIVERSITY, WEST LAFAYETTE, IN 47907
- 12.* CROSS-REACTIONS OF BAYLISASCARIS PROCYONIS WITH TWO OTHER ASCARID SPECIES USING THE ELISA. ANNE S. LITTLE, DEPARTMENT OF VETERINARY MICROBIOLOGY, PATHOLOGY, AND PUBLIC HEALTH, PURDUE UNIVERSITY, WEST LAFAYETTE, IN 47907
13. MONOGENETIC TREMATODES FROM FISHES OF THE NEW YORK BIGHT. SHERMAN S. HENDRIX, DEPARTMENT OF BIOLOGY, GETTYSBURG COLLEGE, GETTYSBURG, PA 17325
14. LARVAL TREMATODES FROM THE AQUATIC SNAIL, HELISOMA ANTROSA, IN MASON COUNTY, WEST VIRGINIA. JAMES E. JOY AND EDWARD A. GASTINEAU, DEPARTMENT OF BIOLOGICAL SCIENCES, MARSHALL UNIVERSITY, HUNTINGTON, W. VA 25701
15. INFECTIVITY, GROWTH, AND DISTRIBUTION OF ECHINOSTOMA REVOLUTUM IN SWISS WEBSTER AND ICR MICE. DONALD W. HOSIER, DEPARTMENT OF BIOLOGY, MORAVIAN COLLEGE, BETHLEHEM, PA 18018
16. THE EFFECTS OF DIFFERING THYROID STATES OF THE CHICKEN HOST ON GROWTH AND DEVELOPMENT OF PHILOPHTHALMUS GRALLI, AN EYEFLEUKE OF BIRDS. CHRISTOPHER MAKSUDIAN AND PAUL M. NOLLEN, DEPARTMENT OF BIOLOGICAL SCIENCES, WESTERN ILLINOIS UNIVERSITY, MACOMB, IL 61455

PAPER PRESENTATIONS

17. FURTHER STUDIES ON ECHINOSTOMA REVOLUTUM CULTIVATED ON THE CHICK CHORIOALLANTOIS. NANCY WISNEWSKI AND BERNARD FRIED, DEPARTMENT OF BIOLOGY, LAFAYETTE COLLEGE, EASTON, PA 18042
18. DEVELOPMENTAL REGULATION OF PROTEIN SYNTHESIS IN HYMENOLEPIS DIMINUTA. AFZAL A. SIDDIQUI, STEVE R. KARZ AND RON B. PODESTA, DEPARTMENT OF ZOOLOGY, UNIVERSITY OF WESTERN ONTARIO, LONDON, ONTARIO, CANADA N6A 5B7
19. DIPHYLLOBOTHRIUM CORDICEPS (LEIDY, 1872) MEGGIT, 1924, VALID SPECIES OR SPECIES NOMEN NUDUM? DESMOND D. ANTHONY, NIPISSING UNIVERSITY, NORTH BAY, ONTARIO, CANADA
20. POMPHORHYNCHUS ROCCI (ACANTHOCEPHALA: ECHINORHYNCHIDEA) FROM THE FRESH-WATER DRUM, APLODINOTUS GRUNNIENS, IN WEST VIRGINIA. JAMES E. JOY, DONALD C. TARTER, AND MARK SHERIDAN, DEPARTMENT OF BIOLOGICAL SCIENCES, MARSHALL UNIVERSITY, HUNTINGTON, W. VA 25701
21. THE EFFECT OF MUNICIPAL SEWAGE TREATMENT FACILITY EFFLUENTS ON THE HELMINTH PARASITES OF GREEN SUNFISH. D. G. MYER, DEPARTMENT OF BIOLOGICAL SCIENCES, SOUTHERN ILLINOIS UNIVERSITY AT EDWARDSVILLE, EDWARDSVILLE, IL 62026
22. RECURRENT WATERFOWL MORTALITY IN EAST-CENTRAL WISCONSIN CAUSED BY CYATHOCOTYLE AND SPHAERIDIOTREMA INFECTIONS. BENJAMIN N. TUGGLE, RICHARD K. STROUD, AND TERRY E. AMUNDSON, NATIONAL WILDLIFE HEALTH LABORATORY, MADISON, WI 53711, AND WISCONSIN DEPARTMENT OF NATURAL RESOURCES, MADISON, WI 53707
23. THE RELATIONSHIP OF BAYLISASCARIS PROCYONIS (NEMATODA) TO ILLINOIS RACCOONS (PROCYON LOTOR). DANIEL E. SNYDER AND PAUL R. FITZGERALD, DEPARTMENT OF VETERINARY PATHOBIOLOGY, UNIVERSITY OF ILLINOIS, URBANA, IL 61801
24. REVIEW OF BAYLISASCARIS PROCYONIS AS A ZOOZOSIS. K. R. KAZACOS, DEPARTMENT OF VETERINARY MICROBIOLOGY, PURDUE UNIVERSITY, WEST LAFAYETTE, IN 47907
25. PARASITISM IN DAIRY CATTLE OF SOUTH DAKOTA. E. J. HUGGHINS AND J. B. SHULTZ, BIOLOGY DEPARTMENT, SOUTH DAKOTA STATE UNIVERSITY, BROOKINGS, SD 57007

ABSTRACTS OF
DEMONSTRATIONS

1. ACANTHOCEPHALAN KIDNEYS. T. T. DUNAGAN AND DONALD M. MILLER, DEPARTMENT OF PHYSIOLOGY AND PHARMACOLOGY, SOUTHERN ILLINOIS UNIVERSITY, CARBONDALE, IL 62901

The protonephridial system of Acanthocephala is restricted to the family Oligacanthorhynchidae with one possible exception. These devices consist of a large number of club-shaped flame bulbs (Nephrostomes) attached to an expandable bladder located on the dorsal surface of the uterine bell or genital sheath. Each bulb projects into the pseudocoel and contains numerous cilia. In *Macracanthorhynchus hirudinaceus* the cilia are not the standard 9+2 microtubular arrangement but rather 9+0 or 8+0 with additional combinations also possible. Moreover the centrioles from which the cilia arise are not a peripheral arrangement of 9 microtubular triplets but 9 doublets imbedded in a dense matrix. The walls of the flame bulbs are arranged into two distinct layers. A spongy layer occupies the club-like terminus and a fibrous layer extends proximally to the branch points. These major features will be demonstrated by use of a light microscope supplemented with SEM and TEM photomicrographs.

2. HISTOPATHOLOGIC STUDY OF CARDIAC TISSUE IN EXPERIMENTAL CHAGAS' DISEASE. R. L. LAVY, DEPARTMENT OF BIOLOGY, UNIVERSITY OF AKRON, AKRON, OH 44325

Histopathologic studies were done on an experimental immunized mouse model infected with *Trypanosoma cruzi*. Four study groups involving age matched female C3H/HE mice were used. Group I consisted of non-immunized animals. Group II was immunized twice at two week intervals with 1×10^7 Corpus Christi strain epimastigotes. Group III animals were immunized as group II followed two weeks later by infection with 5×10^4 Brazil strain trypomastigotes. Group IV animals were infected with 5×10^4 Brazil strain trypomastigotes. Animals were sacrificed and hearts were excised at days 21, 42, 72, and 217 of infection. Tissues were processed and histologically examined using standard hematoxylin-eosin and hematoxylin-picric acid staining.

Histopathologic studies revealed amastigote pseudocysts present during the acute phase, at days 21 and 42 of infection in groups IV and III, the later being less numerous. No amastigote pseudocysts were observed in groups II and I. Inflammatory response was greatest in group IV and decreased respectively for groups III and II at days 21 through 72. Day 217 animals of groups II and III showed a very slight inflammatory response. This experimental model maybe useful in studying postacute effects of *Trypanosoma cruzi* upon the host.

DEMONSTRATIONS

3. ANATOMICAL CORROSION MODELING OF THE PRAESOMAL LACUNAR SYSTEM OF AN ACANTHOCEPHALAN. DONALD M. MILLER AND TOMMY T. DUNAGAN, DEPARTMENT OF PHYSIOLOGY AND PHARMACOLOGY, SCHOOL OF MEDICINE, SOUTHERN ILLINOIS UNIVERSITY, CARBONDALE, IL 62901

Using a previously described method for corrosion modeling the praesomal lacunar system of *Macracanthorhynchus hirudinaceus* was investigated. Firstly, the lacunar system of the worm is injected with partially-polymerized, colored butyrate monomer. The monomer is then allowed to polymerize in situ. After this, the tissues of the worm are digested away with potassium hydroxide resulting in a soft pliable three dimensional model. The pliable butyrate model can be infiltrated with epon and polymerized. Thus a model is produced which is a direct three dimensional representation of the system *in vivo* and one which lends itself to photography. By means of these techniques a lacunar system in the presomal tegument and lemnisci has been identified and found to be independent of the body wall system. It consists of longitudinal canals in each of the lemnisci with occasional side branches. In the area of the lemniscal nuclei a circular enclosing canal is formed. In the praesoma itself there is a circular canal which connects with the longitudinal lemniscal canal and other canals which radiate forward up into the praesomal tegument.

4. AN SEM STUDY OF TRICHODINA PEDICULUS FROM CRASPEDACUSTA SOWERBII. D. G. MYER AND S. L. EDER, DEPARTMENT OF BIOLOGICAL SCIENCES, SOUTHERN ILLINOIS UNIVERSITY, EDWARDSVILLE, IL 62026

The surface morphology of *Trichodina pediculus*, a peritrich ectocommensal of the freshwater jellyfish [*Craspedacusta sowerbii*] in Illinois, was examined by SEM. The adoral food capturing spiral of cilia begins at the lateral edge of the buccal cavity, winds counter-clockwise around the perimeter of the oral disc and terminates on the medial edge of the buccal cavity thus completing slightly more than one complete turn. The aboral cilia are arranged in three groups, a single row of widely-spaced lateral cilia separated by a small ridge from a medium wreath of locomotor cilia composed of many rows, and a single basal row of cilia adjacent to the broad basal septum of the basal row of cilia adjacent to the broad basal septum of the basal disc. These and other external features are illustrated with photomicrographs and are compared with structures described in TEM studies on the same ciliate found associated with *C. sowerbii* in Germany.

DEMONSTRATIONS

5. SCANNING ELECTRON MICROSCOPIC STUDIES ON THE ADULTS AND EGGS OF HAMMERSCHMIDTIELLA DIESINGI (NEMATODA: OXYUROIDEA). XIONG YU, DEPARTMENT OF ZOOLOGY, OHIO STATE UNIVERSITY, COLUMBUS, OHIO 43210.

Both males and females of *H. diesingi* were studied with the scanning electron microscope. The en face views of the female worms show two amphids but no papillae. Eight lips and eight interlabia are arranged in a specific radially symmetrical pattern. Males have two amphids but lack other labial structures. The large caudal papillae of male worm show a pattern of ten small papules circling one medial papule on the top of each large papilla. The female worms have two phasmids but no caudal papillae. The excretory pore of female worm shows a different surface topography from that of male worm. The egg shell of *H. diesingi* possesses numerous concave pits in addition to the pores on the egg surface. The diameter of the pores vary, some are five to eight times as large as others. The operculum has surface structure similar to the rest of the shell. A groove with two narrow zones separates the operculum from the remain egg shell. No pores were found on the narrow zones.

ABSTRACTS OF

PAPER PRESENTATIONS

TAUROCHOLIC ACID AFFECTS MOTILITY AND MORPHOLOGY OF CRYPTOSPORIDIUM SPOOROZOITES IN VITRO. DOUGLAS B. WOODMANSEE, DEPT. OF ZOOLOGY, IOWA STATE UNIVERSITY AND THE NATIONAL ANIMAL DISEASE CENTER, AMES, IOWA 50010.

A method was devised for assessing *in vitro* motility and morphology of sporozoites of the coccidian parasite *Cryptosporidium*. The bile salt taurocholic acid was found to have enhancing effects on both motility and morphology in a dose-dependent manner. These effects were determined to be due to the taurocholic acid itself and not simply due to pH variations, osmotic factors, or contaminants. A second set of morphological changes, termed sporozoite withering, was also observed and was found to be dependent on pH with acidic conditions (pH < 6.2) triggering the changes.

IDENTIFICATION BY TRANSFER BLOT OF ANTIGENS REACTIVE IN THE ENZYME-LINKED IMMUNOSORBENT ASSAY (ELISA) IN RABBITS IMMUNIZED AND CALVES INFECTED WITH CRYPTOSPORIDIUM. ARISTIDES LAZO, DEPARTMENT OF MICROBIOLOGY, THE OHIO STATE UNIVERSITY, COLUMBUS, OH 43210

Soluble and particulate fractions of *Cryptosporidium* oocysts from cattle were obtained by homogenization and sonication. Electrophoresis of the soluble fraction in polyacrylamide gels with sodium dodecyl sulfate and stained with silver revealed 41 bands. ELISA with sera of rabbits immunized with either extract and of a calf 40 days after infection showed that the animals produced specific antibodies. Enzyme-linked immunoelectrotransfer blot tests revealed 5 antigens with the rabbit sera and 9 (330,000 to 60,000 molecular weight) with the calf serum. ELISA proved to be an appropriate test for the diagnosis of cryptosporidiosis. Selection of reactive antigens may improve the diagnosis and/or reveal protective materials.

In conclusion, we found that 9 antigens of *Cryptosporidium* are reactive at 40 days of infection in cattle. Since passage of oocysts ceased spontaneously in the infected calf, some of these antigens may be responsible for induction of protective immunity. Because it is known that different antigens become reactive at distinct times of infection, it is also possible that selection of appropriate antigens may permit the diagnosis of current or past cryptosporidiosis. The former would be particularly useful for studies of prevalence and risk of infection and the latter to assess the existence of protection against reinfections.

COMPARISON OF THE ANTIGENS OF TWO MORPHOLOGICALLY DISTINCT ISOLATES OF *Anaplasma marginale*. JOHN H. ADAMS, College of Veterinary Medicine, University of Illinois, Urbana, Illinois.

Anaplasmosis of cattle is a vector-borne hemolytic disease caused by the rickettsia *Anaplasma marginale*. Nine isolates of *A. marginale* have been reported in the United States. Some isolates have an intraerythrocytic inclusion appendage (tail) that is detectable with a special staining technique (New Methylene Blue). Recently, a tailed, non-tick transmissible Illinois isolate (IAM) was discovered in southern Illinois. Immunity to this isolate provided no protection from disease for a splenectomized calf challenged with the untailed Florida isolate (FAM); however, FAM did produce a protectivity immunity against challenge with IAM. To determine if antigenic differences could be detected to correlate with these findings, the antigens of the Illinois (IAM) and Florida (FAM) isolates of *Anaplasma marginale* were analyzed by the Western blot technique using antiserum from *A. marginale*-infected calves. Crude antigens were prepared from the parasitemic blood of each of the calves. Antiserum was collected after the primary and recrudescence parasitemias. The IAM antigens were 100 kD, 96 kD, 47 kD, 43-38 kD, and 27 kD. All of these antigens were detected by the anti-IAM and anti-FAM antibodies, but the anti-FAM antibodies had a strong reaction to only the 100 kD and 43-38 kD antigens of IAM. The FAM antigens were 108 kD, 91 kD, 47 kD, 43-38 kD, and 27 kD. All of these antigens were detected by the IAM antibodies except the 91 kD antigen. Since the H-91 antigen was expressed and recognized only in the FAM-infected animal, this isolate-specific antigen may be associated with the ability of FAM to produce disease in the IAM immune animal. Identification specific antigens may serve as a basis for strain differentiation of *Anaplasma* isolates.

EKG ANALYSIS OF CHAGASIC MYOCARDIOPATHY. S.T. LEBLANC, DEPARTMENT OF BIOLOGY, UNIVERSITY OF AKRON, AKRON, OHIO 44325.

Chagas' Disease manifests itself as a severe and often fatal myocardopathic progression, possibly making infection with *Trypanosoma cruzi* the most common cause of myocarditis in the world.

C3H/He mice were separated into 4 groups: Group I mice were untreated and represented the normal population; Group II mice were injected with the low-virulent Corpus Cristi strain and represented the inoculated population; Group III mice were injected with the low-virulent Corpus Cristi strain and the high-virulent Brazil strain and represented the inoculated and infected population; Group IV mice were injected with the high-virulent Brazil strain and represented the infected population.

EKG analysis indicated myocardopathies in the acute phase of Groups III and IV and in the chronic phase of Groups II and III consisting of autonomic dysfunction with bradycardia, AV blocks, and atrial arrhythmias being prevalent in conjunction with cardiac tissue damage with the incidence of ischemia and infarction being greater in mice injected with *T. cruzi* as compared to normal mice.

The results from this investigation indicate that this experimental vaccine is ineffective in preventing the onset of Chronic Myocardopathy. The experimental model used in this investigation may provide an optimal system for the study of Chagas' Disease, with the C3H/He mice accurately mimicking all phases of the human infection.

ACTIVE TRANSPORT OF GLUCOSE ACROSS THE TEGUMENT OF REDIAE OF *Proterometra edneyi* (DIGENEA: AZYGIIDAE): WHAT IS THE DRIVING FORCE? MARK C. LEWIS, PHYSIOLOGY GROUP, SCHOOL OF BIOLOGICAL SCIENCES, UNIVERSITY OF KENTUCKY, LEXINGTON, KY 40508.

Rediae of *Proterometra edneyi* can actively transport glucose against a concentration gradient. The driving force could involve the cotransport of Na^+ with glucose across the external plasma membrane. To test this hypothesis rediae of *P. edneyi* were incubated *in vitro* with ^3H -sugars and $^{22}\text{Na}^+$, with and without inhibitors. In the absence of inhibitors, K_m and V_{max} for glucose were 0.3 mM and 37.8 $\mu\text{moles/g}$ protein/h, respectively. Phlorizid and quinidine were potent inhibitors of glucose transport. ^3H -Glucose transport was completely dependent upon the presence of Na^+ in the external medium, but required less than 10mM Na^+ for maximal transport. By contrast, $^{22}\text{Na}^+$ uptake was unaffected by the presence of external glucose indicating that Na^+ and glucose are not cotransported. Thus a Na^+ gradient may not be the driving force for active transport of glucose in rediae. A more direct link between glucose transport and ATP hydrolysis in *P. edneyi* is suggested.

SOME EFFECTS OF *SCHISTOSOMA JAPONICUM* INFECTION ON THE STRUCTURE AND FUNCTION OF THE HEPATOGONAD OF ITS MOLLUSCAN HOST SNAIL, *ONCOMELANIA HUPENSIS* QUADRASI. P. G. CLAVERIA, DEPARTMENT OF BIOLOGICAL SCIENCES, UNIVERSITY OF CINCINNATI, CINCINNATI, OHIO 45221

The hepatogonads of 12 adult *O. h. quadrasi*, infected with *S. japonicum* were studied using light microscopy. A marked reduction was found in the number of hepatic lobules. Daughter sporocysts were evenly distributed in the interlobular connective tissue spaces. Thinning of the tunica propria and disruptions in membrane integrity were noted. Liver cells appeared syncytial and contained large cytoplasmic vacuoles and lumpy granulations. The nuclei, basally situated were variably pyknotic. The basement membrane of hepatic tubules in some areas apposed to sporocysts showed membrane breaks and lysis of basal portions of cells, suggestive of parasite enzyme activity. Normal hepatic cells and vesicular connective tissue cells (VCTC) are rich in PAS-positive materials while infected cells varied in amounts of PAS-positive granules, depending on their proximity to developing sporocysts. In uninfected snails, test for glycogen showed an intense reaction for VCTC and a weak reaction in hepatic cells. Concurrent with the reduction or loss of host glycogen in the VCTC, an increased accumulation of glycogen were noted in the sporocyst walls and cercarial acetabular glands. Also, hepatic cells of infected snails treated with Sudan B showed a marked increase in large fat globules. Reduction in the size of both testis and ovary and separation of ovarian and testicular acini, as a result of the invasion and proliferation of parasites in the hepatogonad were equally noticeable. Apparently, parasitic sterilization occurs in both male and female snails, but whether loss of reproductive function is permanent is not known.

A HISTOCHEMICAL STUDY OF GLAND CELLS OF *PHILOPHTHALMUS MEGALURUS* AND *P. GRALLI* CERCARIAE AND THEIR ROLE IN CYST FORMATION. SAZALY ABU BAKAR, DEPARTMENT OF BIOLOGICAL SCIENCES, WESTERN ILLINOIS UNIVERSITY, MACOMB, IL

Four histochemically different glands were identified in cercariae of *Philopthalmus megalurus* and *P. gralli*; mucopolysaccharide, acid mucopolysaccharide, mucoprotein, and protein. Acid mucopolysaccharide cells were located around the suckers and anterior portion of the ventral surface, mucopolysaccharide cells were situated along the entire dorsal surface, and protein cells formed 2 lateral rows along the cercarial body sides. Protein granules were identified within the parenchyma. The mucoprotein cells were localized in clusters near the pharynx of both *P. megalurus* and *P. gralli* cercariae. Except for the mucoprotein cells, the rest are cystogenic. They secrete their respective secretory materials into the tegument of the mature cercariae to form a jacket layer encasing the cercarial body. The mucopolysaccharide gland cells discharge their secretion first and form a thin layer on the dorsal surface of the cercaria. Secretion of the protein materials then commences and forms the inner layer. The protein gland cells discharge this component in granular form. During encystment, the jacket layer becomes separated from the cercarial body. The histochemical nature of the cyst wall is identical to the components of the jacket, with a thin mucopolysaccharide layer overlaying the inner protein layer at the dorsal surface of the cyst. The histochemical properties of the gland cells, the jacket, and the cyst wall are similar in both *P. megalurus* and *P. gralli*.

ULTRASTRUCTURAL AND ELECTROSTATIC CHANGES ON *BRUGIA PAHANGI* MICROFILARIAE AFTER *Aedes Aegypti* MIDGUT PENETRATION. K.F. FORTON, DEPARTMENT OF VETERINARY SCIENCE, UNIVERSITY OF WISCONSIN, MADISON, WISCONSIN 53706.

Ultrastructural studies were conducted to evaluate surface changes in *Brugia pahangi* microfilariae (mff) after midgut penetration of *Aedes aegypti* (black-eyed Liverpool strain) *in vitro*. Microfilariae isolated from jird blood and those recovered from midgut penetration were fixed in Karnovsky's fixative at 20°C containing Ruthenium Red (RR) at 1500 ppm, and postfixed in 1% OsO₄, again with RR (1500 ppm). Microfilariae were also fixed in Karnovsky's fixative followed by incubation with cationic or anionic colloidal iron (pH 3.5) at 20°C for 30 min, thoroughly washed and postfixed in 1% OsO₄. All fixed mff were dehydrated at room temperature, embedded in Epon, thin-sectioned and examined with a Philips EM 410 at 60 kV. Cationic labeled mff isolated from jird blood showed a high electronegative charge density on the exterior sheath surface. This sheath surface electronegativity was absent in those mff that had undergone midgut penetration. Microfilariae had little affinity for anionic colloidal iron both before and after midgut penetration. Ruthenium Red staining also revealed differences in accumulation of reaction products on the surface of mff before and after midgut penetration. The role these surface changes might play in immune recognition avoidance mechanisms in the mosquito hemocoel will be discussed. (Supported by NIH grant AI 19769).

CHARACTERIZATION OF THREE GEOGRAPHICAL ISOLATES OF *TRICHINELLA SPIRALIS*.
D.A. LEIBY, DEPARTMENT OF ZOOLOGY, THE OHIO STATE UNIVERSITY, COLUMBUS,
OHIO 43210

Isolates of *Trichinella spiralis* from a black bear (*Ursus americanus*), a grey fox (*Urocyon cinereoargenteus*) and a domestic pig (*Sus scrofa*) were characterized using the following parameters: (1) distribution of adult nematodes in the host's small intestine; (2) sizes of adult nematodes; (3) sex ratio of adult nematodes; (4) infectivity (percentage of inoculum recovered); (5) reproductive capacity index (total larvae recovered/number larvae in the inoculum); (6) number of larvae recovered per gram of tissue (LPG); and (7) release of larvae in vitro by female nematodes. Each parameter was examined during 10 successive 40-day passages of each isolate in CFW (SW) mice. The three isolates of *T. spiralis* differed as follows: (1) the sex ratio of the vulpine isolate was significantly lower than those of the porcine and ursine isolates; (2) female nematodes of the porcine isolate produced significantly more larvae when incubated in vitro than either of the other two isolates; and (3) the reproductive capacity index and LPG counts for the porcine isolate were significantly greater than for the vulpine and ursine isolates. The fecundity of each isolate was tested in jirds, hamsters, multimammate rats, Sprague-Dawley rats and *Peromyscus*. Except in jirds, the porcine isolate demonstrated higher fecundity, based on reproductive capacity indices and LPG counts, than the ursine and vulpine isolates. This higher fecundity was often manifest in the form of increased mortality of hosts infected with the porcine isolate.

SYLVATIC TRICHINOSIS IN INDIANA. M.A. MACDANOLD, DEPARTMENT OF VETERINARY MICROBIOLOGY, PATHOLOGY, AND PUBLIC HEALTH, PURDUE UNIVERSITY, WEST LAFAYETTE, IN 47907

Trichinella spiralis has been found in many wildlife species throughout the world. The purpose of this study was to examine the prevalence of *Trichinella* in various wildlife species in Indiana. From November 1984 to May 1985, tongues from 192 raccoons (*Procyon lotor*), 8 mink (*Mustela vison*), 4 opossums (*Didelphis virginiana*), 11 muskrats (*Ondatra zibethicus*), 21 red foxes (*Vulpes vulpes*), 1 grey fox (*Urocyon cinereoargenteus*), and 2 coyotes (*Canis latrans*) were obtained from fur buyers, hunters, and from accessions to the Purdue University Animal Disease Diagnostic Laboratory. Each tongue was placed in a blender with 50 ml of 1% acid pepsin solution and blended for 15 seconds. Samples were then transferred to 200 ml bottles with an additional 100 ml of acid pepsin solution. Bottles were placed on a shaker and incubated at 37°C for 2-4 hours; the contents were then examined at 10X with a dissecting microscope. Larvae were isolated from 8 (4.2%) raccoons (\bar{x} = 60.3 larvae/gm, range = 0.14 - 166.7 larvae/gm), 1 (4.8%) red fox (52.7 larvae/gm), 1 (12.5%) mink (0.17 larvae/gm), and 1 (25%) opossum (5.6 larvae/gm). Mice and/or rats were inoculated with larvae from six of the raccoons, the fox, and the opossum in order to maintain the isolates. Three of the positive raccoons were collected near hog farms; two of these were collected in a lot where swine carcasses were discarded. *Trichinella* exists in a small percentage of Indiana wildlife. The relationship between sylvatic and swine infections is uncertain, however, the possibility exists that the two are related.

ENVIRONMENTAL CONTAMINATION WITH *BAYLISASCARIS PROCYONIS* EGGS IN AN URBAN PARK. T.A. COONEY, DEPARTMENT OF VETERINARY MICROBIOLOGY, PURDUE UNIVERSITY, WEST LAFAYETTE, INDIANA 47907

The raccoon ascarid, *Baylisascaris procyonis*, is a cause of fatal cerebrospinal nematodiasis and visceral larva migrans in man and lower animals. In this study, raccoon defecation patterns and environmental contamination with *B. procyonis* eggs were investigated in a 25.6 ha urban park in West Lafayette, IN. During summer and fall of 1984, raccoon latrines and random defecation sites were identified, raccoon scats were collected and analyzed for *B. procyonis* eggs by fecal flotation, and results tabulated according to location in the park. Eggs in scats were classified as rare, few, moderate or many, and further identified as embryonated or non-embryonated. Soil samples were collected from around raccoon latrines and from other sites in the park, including from stream sediments. 30-gram soil samples were analyzed for eggs using a detergent wash/centrifugal flotation technique, in an attempt to evaluate distribution and dissemination of eggs from runoff; eggs were quantified by total egg counts from 3 coverslips per sample. Raccoon defecation sites were most numerous on the fringes of the park, inside the wood's edge, on the tops of ravines near the residential neighborhoods. They were primarily located on logs, on man-made erosion control structures, and at the bases of trees. 25 of 168 (14.9%) scats were positive for *B. procyonis* eggs. 28 of 131 (21.4%) soil samples were positive, with an average egg content of 12.5 per 30-g sample. It was concluded that latrine and soil sampling for *B. procyonis* eggs in areas of high density raccoon populations may be useful in identifying contaminated areas as well as patterns of contamination, and associating these with possible human contact risk.

CROSS-REACTIONS OF *BAYLISASCARIS PROCYONIS* WITH TWO OTHER ASCARID SPECIES USING THE ELISA. A.S. LITTLE, DEPARTMENT OF VETERINARY MICROBIOLOGY, PATHOLOGY AND PUBLIC HEALTH, WEST LAFAYETTE, INDIANA 47907

Baylisascaris procyonis is gaining increased recognition as a cause of VLM, OLM, and CNS disease in animals and human beings. The purpose of these studies was to develop an enzyme-linked immunosorbent assay (ELISA) for the immunodiagnosis of *Baylisascaris larva migrans* and to assess the extent of cross-reactivity of *Baylisascaris* with 2 other ascarids. Larval antigens were prepared as homogenates/aqueous extracts of *B. procyonis*, *Ascaris suum*, and *Toxocara canis* embryonated eggs. Several rabbits were immunized by multiple intradermal injections of these antigens in adjuvant and bled sequentially over 14 weeks. Positive reactions were seen in the *B. procyonis* immunized rabbits which were reacted against *B. procyonis* antigen; similar results were seen in the homologous *T. canis* and *A. suum* systems. The serum titer of the immunized rabbits rose over the 14 week period with the final sample having the highest titer. Absorption of sera with concentrated homologous antigen decreased the reactions to "back-ground" inherent in the assay. Cross-reactions were seen between *B. procyonis* and the other ascarids, and were stronger against *A. suum* than *T. canis*. Absorption of the sera with concentrated heterologous antigens removed or diminished this cross-reactivity. Ouchterlony diffusion also indicated stronger identity between *B. procyonis* and *A. suum* antigens, based on the number of bands of identity and the effects of heterologous absorption of the sera. This work indicated that specific immunodiagnosis of *Baylisascaris larva migrans* by ELISA appears feasible. However, further refinements are necessary such as the use of larval excretory-secretory antigens.

MONOGENETIC TREMATODES FROM FISHES OF THE NEW YORK BIGHT.
SHERMAN S. HENDRIX, DEPARTMENT OF BIOLOGY, GETTYSBURG COLLEGE,
GETTYSBURG, PA 17325.

One hundred and thirty six fishes representing 17 species in 11 families were collected in and around the ocean sewage sludge, acid waste, cellar dirt, and dredge spoil dump sites in the New York Bight off the coast of New Jersey and Long Island. Gills were removed and examined for Monogenea. Seven species of fishes harbored a total of 7 species of these helminths. *Bothitrema bothi* from *Scophthalmus aquosus* was the most abundant, with a mean of 12.3 per host. Other species of monogeneans recovered include: *Choricotyle prionoti* from *Prionotus carolinus* and *P. evolvans*; *Choricotyle* sp. and *Neoheterobothrium affine* from *Paralichthys dentatus*; *Diclidophora* sp. from *Urophycis chuss*; *Cynoscionicola heteracantha* from *Cynoscion nebulosus*; and *Microcotyle poronoti* from *Poronotus triacanthus*. Host diversity and parasite numbers were altered in the more stressed portions of the Bight when compared to the cleaner waters nearby. *B. bothi* was found to be more abundant in the dump sites (16.4 per fish) than in the cleaner waters (8.2 per fish). Extensive gill histopathology was evident in fishes taken from the vicinity of the dump sites.

LARVAL TREMATODES FROM THE AQUATIC SNAIL, *HELISOMA ANTROSA*, IN MASON COUNTY, WEST VIRGINIA. J.E. Joy and E.A. GASTINEAU, DEPARTMENT OF BIOLOGICAL SCIENCES, MARSHALL UNIVERSITY, HUNTINGTON, W. VA. 25701

A total of 384 *Helisoma antrosa* individuals (24 in June and October of 1980; and 360 from March thru October 1984) were collected from Pond #6 McClintic Wildlife Station, Mason Co., W. Va., and examined for larval trematodes. Three different cercarial types were recovered from 40 (10.4%) snails. There were no dual infections. Only two of the cercariae could be identified: an amphistome, *Cercaria inhabilis*, found in 3 snails, and an apharyngeate furcocercous, *C. wardi*, from a single snail. Another apharyngeate furcocercous, this one without furcal fin folds, was also recovered from a single snail. Two different xiphidocercariae, one without a tail fin (in 35 snails) and one with a fin (in 1 snail), could not be identified. A single type of metacercaria was found only in September and October of '84. Infections were low ranging from 1 to 4 cysts per infected snail. Ten cysts were fed to each of four, day old chicks. Two chicks were necropsied after 4 days, 2 more after 5 days. No adult trematodes were recovered.

INFECTIVITY, GROWTH, AND DISTRIBUTION OF *ECHINOSTOMA REVOLUTUM* IN SWISS WEBSTER AND ICR MICE. D.W. HOSIER, DEPARTMENT OF BIOLOGY, MORAVIAN COLLEGE BETHLEHEM, PA 18018

Swiss Webster (SW) and ICR mice were each fed 25 metacercariae of *Echinostoma revolutum* and at necropsy worms were recovered from the small intestine, but not the colon or cecum. At 2 weeks postinfection, 75% of the worms were recovered from SW mice, but only 22% from ICR mice. Flukes were not recovered from ICR mice at 3 weeks, nor from SW mice at 4 weeks postinfection. ICR and SW mice were given a secondary challenge of 25 metacercariae at 3 and 4 weeks, respectively. The ICR mice were completely resistant to the secondary infection; whereas, the SW mice harbored some worms after 1 week (0.7±0.26 vs. 5.1±1.61 for controls). Host sex had no effect on worm establishment. Beyond 1 week, worm weight and body area were variable in the two strains of mice. Most worms were ovigerous at 2 and 3 weeks, but not at 1 week. Eggs teased from the uteri of flukes and embryonated in tap water produced miracidia which hatched. Metacercariae excysted mainly in the last 10 cm of the ileum and then migrated anteriorly to localize 20 to 30 cm from the ileocecal valve.

THE EFFECTS OF DIFFERING THYROID STATES OF THE CHICKEN HOST ON GROWTH AND DEVELOPMENT OF *PHILOPHthalmus GRALLI*, AN EYEFLUKE OF BIRDS. CHRISTOPHER MAKSDUDIAN AND PAUL M. WOLLENZ, DEPARTMENT OF BIOLOGICAL SCIENCES, WESTERN ILLINOIS UNIVERSITY, MACOMB, IL

This study investigated the effects of various host thyroid states on the growth and development of the eye-fluke, *Philophthalmus gralli*. These thyroid states were induced by using two different concentrations of thiouracil, a thyroid inhibitor, and supplements of thyroxine. Chickens were infected with 10 eye-flukes per eye as juveniles and divided into 5 different groups as follows: (1) controls on regular feed; (2) 0.5% thiouracil diet; (3) 1.0% thiouracil diet; (4) 10 µg per day injections of thyroxine; (5) 1.0% thiouracil diet plus 10 µg per day injections of thyroxine. Every 5 days for 40 days 3 chickens from each group were killed and the worms removed, measured, fixed, and stained for whole mounts. The only worms showing increased growth when compared to the control worms were from chickens fed 0.5% thiouracil. These worms were not only larger for most of the infection period, but also developmentally advanced when compared to the controls. The other groups were highly variable in growth and development. The growth and development of the chicken hosts was affected adversely by the thiouracil in a dose response. The thyroxine injections did not cause increased growth or completely replace thiouracil at the 1% level.

FURTHER STUDIES ON *Echinostoma revolutum* CULTIVATED ON THE CHICK CHORIOALLANTOIS. N. WISNEWSKI AND B. FRIED, DEPARTMENT OF BIOLOGY, LAFAYETTE COLLEGE, EASTON, PA 18042.

Chemically excysted metacercariae of *Echinostoma revolutum* were cultivated on the chick chorioallantois using the *in ovo* Zwilling (1959) procedure. Of 71 embryos, each inoculated with approximately 100 metacercariae, 39 (54.9%) contained vascular membranes when examined 1 hr to 15 days post-inoculation. Of the 39 membranes, 34 (87.2%) were infected with at least one worm. A total of 193 (4.9%) organisms were recovered, and the mean number of worms recovered per embryo was 5. Worms contained blood or hematin-like material in their intestinal ceca. Histochemical tests including Oil Red O, Benzidine, and Alcian Blue (pH 2.5) showed that chorioallantoic-worms fed on blood from the vascular membrane whereas chick-worms fed on host intestinal mucosa.

DEVELOPMENTAL REGULATION OF PROTEIN SYNTHESIS IN *HYMENOLEPIS DIMINUTA*. AFZAL A. SIDDIQUI, STEVE R. KARCZ AND RON B. PODESTA, DEPARTMENT OF ZOOLOGY, UNIVERSITY OF WESTERN ONTARIO, LONDON, ONTARIO, CANADA N6A 5B7

The protandrous strobilization combined with the ease of maintenance and manipulation in the laboratory, make *Hymenolepis diminuta* a very useful model for developmental studies. Using 1- and 2-dimensional electrophoretic and fluorographic techniques, the protein synthesis during strobilization was studied. Both quantitative and qualitative differences were observed in the scolex/neck region, male segments, female segments and the onchospheres. The segment specific polypeptides have been localized in different subcellular fractions *viz.*, nuclear, brush border, mitochondrial, microsomal and cytosolic fractions. The RNA isolated from scolex/neck region, male and female segments, translated *in vitro* revealed post-transcriptional regulation of the synthesis of segment specific polypeptides. (Supported by the Natural Sciences and Engineering Research Council of Canada).

DIPHYLLOBOTHRIUM CORDICEPS (LEIDY, 1872) MEGGITT, 1924, VALID SPECIES OR SPECIES NOMEN NUDUM? D. D. ANTHONY, NIPISSING UNIVERSITY, NORTH BAY, ONTARIO, CANADA

(Abstract in Addendum)

POMPHORHYNCHUS ROCCI (ACANTHOCEPHALA: ECHINORHYNCHIDEA) FROM THE FRESHWATER DRUM, *APLODINOTUS GRUNNIENS*, IN WEST VIRGINIA. J. E. JOY, D. C. TARTER, and M. SHERIDAN, DEPARTMENT OF BIOLOGICAL SCIENCES, MARSHALL UNIVERSITY, HUNTINGTON, W. VA. 25701.

Pomphorhynchus rocci was recovered from freshwater drum, *Aplodinotus grunniens*, collected from two Ohio River locations--Gallipolis Dam (mile point 279.1 from April thru November, 1982), and Greenup Dam (mile point 341.1 July and August, 1983). Prevalence at the two collection sites was 86.6% (161 of 186 fish) and 75.4% (43 of 57 fish), respectively. Intensity of infection was 12.5 and 7.5, respectively. There was virtually no correlation between host length and number of acanthocephalans present at either site. A significant invasion of inland freshwaters is recorded for *P. rocci*, a parasite previously known from marine or coastal freshwater fishes.

THE EFFECT OF MUNICIPAL SEWAGE TREATMENT FACILITY EFFLUENTS ON THE HELMINTH PARASITES OF GREEN SUNFISH. D. G. MYER, DEPARTMENT OF BIOLOGICAL SCIENCES, SOUTHERN ILLINOIS UNIVERSITY AT EDWARDSVILLE, EDWARDSVILLE, IL 62026.

Green sunfish, *Lepomis cyanellus*, were collected in Cahokia Creek, Madison County, IL, from above and below the outfall of the Edwardsville Sewage Treatment Plant and examined for worm parasites. Eight worm species were collected from fish at both sites, two monogenea, one digenea, two cestoda, one nematoda, and two acanthocephala. In addition, two additional digenetic trematode species were found below the outfall. Three species, *Urocleidus cyanellus* (Monogenea), *Pomphorhynchus bulbicollis* (Acanthocephala), and *Contracaecum* sp. (Nematoda), occurred with enough frequency and in sufficient numbers in both populations to make meaningful comparisons. All three species occurred in significantly (at the 0.2, 5 and 1% levels, respectively, with the two tailed Mann-Whitney U-test) greater numbers above the outfall. Results will be compared with similar studies in Bulgaria and the U.S.S.R.

RECURRENT WATERFOWL MORTALITY IN EAST-CENTRAL WISCONSIN CAUSED BY *CYATHOCOTYLE* AND *SPHAERIDIOTREMA* INFECTIONS. B. N. Tuggle, R. K. Stroud, and T. E. Amundson, National Wildlife Health Laboratory, Madison, Wisconsin 53711, and Wisconsin Department of Natural Resources, Madison, Wisconsin 53707.

Waterfowl die-offs in the spring of 1980-82 occurred in several lake systems in east-central Wisconsin. This recurrent mortality involving coots, lesser scaup, pied-billed grebes, and other ducks was attributed to massive infections by two trematodes, *Cyathocotyle bushiensis* and *Sphaeridiotrema globulus*. Necropsy findings revealed severe hemorrhagic enteritis and caecitis in association with intensive trematode infections. Involvement of the small intestine and colon was more variable than caeca. Hemorrhage, necrotic ulcers, and fecal impaction were observed depending on the duration and intensity of infection. Several aquatic molluscan hosts collected from areas where mortality occurred revealed infective metacercariae occurred only in *Bythinia tentaculata* and is to date considered the primary source of infection.

THE RELATIONSHIP OF BAYLISASCARIS PROCYONIS (NEMATODA) TO ILLINOIS RACCOONS (PROCYON LOTOR) Daniel E. Snyder and Paul R. Fitzgerald, Department of Veterinary Pathobiology, University of Illinois, Urbana, IL 61801

The gastrointestinal tracts of 310 steel-trapped or hunter shot Illinois raccoons (Procyon lotor) were collected in November and December 1979 and 1980 and examined for the presence of Baylisascaris procyonis (Nematoda) in order to determine the prevalence and intensity of this ascariid and to note any differences with respect to host age and sex. The raccoons were classified as either juveniles (animals less than one-year-old) or adults. The prevalence for all the raccoons examined was 81.9% and is the highest reported in the United States when compared to other moderate to large samples. Juvenile (male and female) raccoons had a higher and significantly different ($P < 0.0005$) prevalence (93.5%) and mean intensity (61.4) than adults (male and female) (55.3%, 11.8). Male (juvenile and adult) raccoons had a significantly higher ($P < 0.025$) prevalence (87.6%) than females (juvenile and adult) (74.4%). Adult male raccoons had a significantly different ($P < 0.05$) prevalence (66.7%) than adult females (44.9%). In the other comparisons, no significant differences ($P < 0.05$) in either prevalence or intensity were found. Since juvenile raccoons are more heavily infected than adults, they most likely pose a greater threat to other animals and humans as a potential cause of visceral larva migrans. It is advisable that all young raccoons kept as pets or in captivity be systematically and routinely treated with an appropriate anthelmintic to remove adult B. procyonis from the intestine.

REVIEW OF BAYLISASCARIS PROCYONIS AS A ZOOZONOSIS. K.R. KAZACOS, DEPT. OF VETERINARY MICROBIOLOGY, PURDUE UNIVERSITY, W. LAFAYETTE, IN 47907

Research in our laboratory has established Baylisascaris procyonis as an important cause of larva migrans and neurologic disease in lower animals in North America. Experiments in subhuman primates and other species indicated the marked zoonotic potential of this parasite. Recently, 2 human fatalities were diagnosed, involving young children in Pennsylvania and Illinois with massive brain invasion by B. procyonis larvae. Both became comatose within 2-3 weeks of onset of CNS disease, and had marked eosinophilia of the blood and CSF. CT scans revealed severe periventricular encephalitis. Both had positive serologic reactions to B. procyonis, by experimental IFA and ELISA. At autopsy, numerous Baylisascaris larvae were in the brain, which was severely damaged. Larval granulomas were disseminated throughout the lungs, myocardium, mesentery and other tissues. Infection occurred from contaminated open fireplaces in the home (case 1) and from chewing on contaminated firewood brought into the home (case 2). Several other possible cases involving children are in the literature. 12-15 cases of human OLM are known in which larval sizes and ratios are compatible with B. procyonis. These cases have been included in the diffuse unilateral subacute neuroretinitis (DUSN) syndrome, a multietiologic OLM disease of man. In one case, ocular disease developed in a Kentucky girl 6 weeks after obtaining a pet raccoon, and the retinal larva was consistent with B. procyonis. Based on the accumulating evidence, B. procyonis should be regarded as a potentially serious zoonosis, especially for young children. Prevention of human infection, through appropriate precautions concerning raccoons and their feces, is of great importance.

PARASITISM IN DAIRY CATTLE OF SOUTH DAKOTA. E. J. HUGHINS AND J. E. SHULTZ, BIOLOGY DEPT., SOUTH DAKOTA STATE UNIVERSITY, BROOKINGS, SD 57007

One objective was to investigate the status of gastrointestinal parasitism in dairy cattle in South Dakota. Our first approach was to visit several dairy/livestock shows at which we collected freshly voided fecal samples from 162 show-quality cattle representing 81 herds from 28 counties. We then collected fecal samples from 485 cattle representing 43 South Dakota Dairy Herd Improvement Association (DHIA) herds. A double-centrifugation, sugar flotation technique was used to analyze the samples for helminth eggs and oocystid oocysts. Eggs of nine nematode genera were identified, of which Haemonchus was the most prevalent, occurring in more than 60% of the samples. However, the overall Haemonchus egg count was low, averaging about 30 eggs/5 g of feces. The next most prevalent nematode was Cooperia; other genera were Ostertagia, Trichostrongylus, Nematodirus, Strongyloides, Oesophagostomum, Bunostomum, and Trichuris. Sporadic infections with the cestode, Moniezia benedini, were observed. Oocysts of Eimeria occurred in more than 70% of the samples.

A second objective was to investigate any advantage from raising replacement heifers on a prophylactic regimen (Thiabendazole). Seventy Holstein heifers, paired for treatment and control, were set up for monitoring from time of leaving the hutch at 2½ months of age until completing their first 120 days of lactation at 24 months or older. Under the low levels of parasitism in this herd, preliminary results indicate no significant effect of treatment on numbers of nematode eggs nor on milk production. (Supported by South Dakota Agricultural Experiment Station Project H-091).

Report of the 36th Annual
Midwestern Conference of Parasitologists
University of Iowa, 1984

The 36th AMCOP conference was held on the campus of the University of Iowa at Iowa City, 7-9 June, 1984. Eighty-five persons were registered to attend of a 1984 membership of 138. Dr. William H. Coil of the University of Kansas was Presiding Officer of the meeting and Dr. George Cain of the University of Iowa was Program Officer and made local arrangements. Eleven demonstrations and 12 papers were presented by members. The C. A. Herrick Award (and \$200) for the best demonstration by a graduate student was awarded to KEITH F. FORTON from the Department of Veterinary Science, University of Wisconsin, Madison (Dr. BRUCE M. CHRISTIANSEN, major professor) for "Ultrastructural studies on the melanization response of mosquitoes against inoculated microfilariae." The G. R. LaRue Award (and \$200) for the outstanding paper presentation by a graduate student was awarded to DOUGLAS B. WOODMANSEE of the National Animal Disease Center and Iowa State University (Dr. EDWIN C. POWELL, major professor) for "Partial development of *Cryptosporidium* sp. in a human rectal tumor cell line".

A symposium of "Helminth Immunology" was presented with Dr. Bert Stromberg of the University of Minnesota College of Veterinary Medicine speaking on "Immune response to liver flukes" and Dr. Robert Grieve of the University of Wisconsin School of Veterinary Medicine discussing "Studies on antigens of parasitic nematodes." The theme of the symposium was continued by the banquet speaker, Dr. John Donelson from the Department of Biochemistry of the University of Iowa who spoke on "Genetic rearrangements and the basis of antigenic variation in African trypanosomes."

Officers elected for 1984-85 were: Presiding Officer, Dr. Bill T. Ridgeway, Department of Zoology, Eastern Illinois University, Charleston, IL 61920 and Program Officer, Dr. Peter W. Pappas, Department of Zoology, Ohio State University, Columbus, OH 43210. Dr. George Garoian, Department of Zoology, Southern Illinois University, Carbondale, IL continues as Secretary/Treasurer. Dr. Donald M. Miller of the Department of Physiology, Southern Illinois University will serve as Representative to the ASP 1984 Council meeting at Snowbird, Utah. AMCOP-37 will be held at Ohio State University in early June, 1985.

George Garoian
Secretary/Treasurer

Committees appointed by Dr. Coil with their recommendations are as follows:

Judging Demonstrations:

T. T. Dunagan and Harry W. Huzinga

Herrick Award to Keith F. Forton (U of Wisconsin)

Judging Papers:

Bill T. Ridgeway and Charles M. Vaughn

LaRue Award to Douglas B. Woodmansee (Iowa State Univ.)

Nominating:

A. E. Duwe, D. M. Miller, and D. D. Wittrock

Presiding Officer for 1985 - Bill T. Ridgeway
Program Officer for 1985 - Peter W. Pappas

Future Meeting Sites:

L. S. Uhazy and J. A. Starling

1985 - The Ohio State University

Future Programs:

P. M. Nollen and P. W. Pappas

1. Experimental (theoretical) ecology: computer modeling as applied to ecology, epidemiology, life-cycles or control.
2. Reproductive strategies and/or mechanisms of parasites.
3. Strategies of chemotherapy.
4. Past, present, future and reliability of "chemical taxonomy".
5. Developmental biology of cestodes: morphological and/or biochemical developmental; developmental biology in relation to adaptations for parasitism.

Audit:

A. D. Johnson

Ad hoc By-Laws Review:

J. L. Crites, G. Garoian, J. H. Greve and E. J. Huggins

Recommended up-dating the language to remove sexism and to better describe current operating procedures. Also to consider adding a third category of membership to be called Emeritus Member.

Resolutions:

J. F. Williams and E. L. Waffle

The following was moved and seconded:

- Whereas: Dr. George Cain, Program Officer, coordinated the many aspects of this meeting at the University of Iowa in an outstanding and commendable manner, and
- Whereas: Dr. D. C. Spriesterback, Vice-President for Research and Dean of the Graduate College, gave his kind words of welcome and Assoc. Dean Charles Mason who so ably bore the glad tidings of good will, and
- Whereas: The University of Iowa Graduate College and College of Liberal Arts liberally provided the university facilities and some of the funding for the meetings, and
- Whereas: Southern Illinois University showed true southern hospitality by generously underwriting some of the expenses of the Secretary to help insure a successful meeting, and
- Whereas: Eli Lilly and Company so generously and continuously has provided the Herrick Award to encourage our graduate students, the Parasitologists of the future, and
- Whereas: The Graduate College of the University of Iowa thoughtfully provided the funds for the LaRue Award for graduate student stimulation, and
- Whereas: The faculty members, the Parasitologists of the present, contributed generous counseling and provision to the student parasitologists, and
- Whereas: Drs. Bert Stromberg and Robert Grieve presented an excellent and mind-stimulating symposium on helminth immunity, and
- Whereas: Dr. John Donaldson in his able presentation related the biochemical-antigenic aspects to the social impacts of trypanosomiasis in Africa, and
- Whereas: Dr. George Garoian provided registration and program information in an efficient and frugal but friendly manner, and
- Whereas: The quality of the contributed papers and demonstrations indicated a wide range of diverse interests on the part of our participants, and
- Whereas: Pat and George Cain provided a convivial launching party to set the tone of our meetings, and
- Whereas: The severe thunderstorm and severe winds spared the party until late in the evening when it really raised cane but could not dampen the spirits, and

Whereas: Dr. James Van Allen graciously provided us with the use of his private colloquium space for the Saturday morning session, and

Whereas: Sus scrofa provided the Iowa Chop, and

Whereas: Dr. William A. Coil, presiding officer, provided a warmly efficient format for the presentation of papers.

Be it hereby resolved, that the membership of the 36th Annual Midwestern Conference of Parasitologists sincerely expresses its deep and ongoing appreciation to these individuals, institutions, and companies.

The motion was moved, seconded and passed unanimously.

Officers elected for 1985 were: Presiding Officer, Dr. Bill T. Ridgeway, Eastern Illinois University, Program Officer, Dr. Peter W. Pappas, The Ohio State University and Secretary/Treasurer, Dr. George Garoian of Southern Illinois University at Carbondale. AMCOP-37 will be held on the campus of The Ohio State University at Columbus, in mid-June, 1985.

AMCOP-36 1984
Treasurer's Report (8 June, 1984)

Balance on Hand 2 June, 1983 \$1,284.96

Income

Membership dues	
Additional 1983 dues (4 regular, 1 student)	14.00
94 Regular (\$3)	282.00
34 Student (\$2)	68.00
AMCOP-35 Surplus	50.00
Bank interest	56.31
Eli Lilly Co. (Herrick Award)	200.00
LaRue Award gifts	
To complete 1983 Award	37.00
Toward 1985 Award	135.00
	<u>TOTAL</u>
	842.31

Expenses

Envelopes	2.12
Printing (200 programs)	78.25
Postage (notices & programs)	146.70
182 Day CD (10.07%)	800.00
1984 Herrick Award	200.00
	<u>TOTAL</u>
	1227.07

Balance on Hand 8 June, 1984 \$900.20

Respectfully submitted, !

George Garoian
George Garoian, Sec./Treas.

rcs

THE ANNUAL MIDWESTERN CONFERENCE OF PARASITOLOGISTS

Objectives and Organization

A restatement to incorporate changes approved in 1974. Earlier statements had been approved in 1948, 1953, 1971, 1972, and 1973.

Name

The organization shall be known as the ANNUAL MIDWESTERN CONFERENCE OF PARASITOLOGISTS, hereinafter referred to as the Conference.

Affiliation

The Conference is an affiliate of the American Society of Parasitologists.

Objectives

The Conference is a gathering of parasitologists and students of parasitology for the purpose of informal discussion of research and teaching in parasitology and the furthering of the best interests of the discipline of parasitology.

Members

The Conference is open to all interested persons regardless of place of work, residence, or affiliation in other recognized societies.

Dues

No regular dues are collected, but a registration fee is charged members during registration at annual conferences. The amount of this fee will be decided for each Conference by a committee composed of the Presiding Officer, the Secretary-Treasurer, and the Program Officer, who is to serve as its chairman. Amended by ballot vote 1977. Student dues - \$2.00 and regular dues - \$3.00. Dues are collected by the Secretary-Treasurer.

Meetings

The Conference is held in the general midwestern area in mid-June, unless otherwise specified by a majority vote of the previous Conference or a majority vote of those listed members replying by mail ballot.

Bylaws

1. Simple majority vote of members in attendance at regularly scheduled business meetings of the Conference shall determine the policies of the Conference.

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[As of May 21, 1985]

*** REGISTRATION FORM AND ROOM REQUEST ***

Annual Midwestern Conference of Parasitologists
(AMCOP XXXVII)
The Ohio State University
Columbus, Ohio 43210
June 20 - 22, 1985

This registration form and room request must be received no later than June 13, 1985 to guarantee your reservation.

NAME: _____

ADDRESS: _____

Business Phone () _____ Home Phone () _____

Dorm Rooms for June 20 () and/or June 21 () (check one or both)

Single Room (\$17.50/night) \$ _____
Double Room (\$10.50/night/person) \$ _____
Quad Room (\$7.50/night/person) \$ _____

Sex: Male ___ Female ___

Name of roommate if you have a preference: _____

Banquet ticket(s) for June 21, 1985:
No. ___ at \$11.50 each \$ _____

Registration fees:
Student Member (\$4.00) \$ _____
Professional Member (\$10.00) \$ _____
Membership Fee (\$3.00, if you haven't paid) \$ _____

Parking fee if you require parking (\$1.75) \$ _____

TOTAL AMOUNT ENCLOSED \$ _____

COMPLETE ONE FORM FOR EACH INDIVIDUAL ATTENDING AMCOP XXXVII.

Makes checks or money orders payable to: The Ohio State University. Return the completed form and check or money order to:

Department of Conferences and Institutes
ATTN: AMCOP
Fawcett Center for Tomorrow
The Ohio State University
2400 Olentangy River Road
Columbus, OH 43210-1027

Refunds: All but \$3 of your fees will be refunded if the Department of Conferences and Institutes is notified prior to June 13, 1985.

ANNUAL MIDWESTERN CONFERENCE OF PARASITOLOGISTS
(AMCOP XXXVII)
The Ohio State University
Columbus, OH 43210
June 20 - 22, 1985

*** PHONE NUMBERS AND ADDRESSES YOU MAY NEED ***

Any and all questions regarding AMCOP may be directed to:

Peter W. Pappas
Department of Zoology
The Ohio State University
Columbus, OH 43210-1293
Phone AC 614, 422-2746 (Home phone 486-3998)

Questions regarding registration forms and payment may also be directed to:

Department of Conferences and Institutes
ATTN: Mr. Robert DiBella
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The Ohio State University
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Miscellaneous phone numbers and addresses for leaving messages or in case of emergency are:

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OSU Police, Fire and Emergency
Phone AC 614, 422-2525

ANNUAL MIDWESTERN CONFERENCE OF PARASITOLOGISTS
(AMCOP XXXVII)
The Ohio State University
June 20 - 22, 1985

*** TRAVEL DIRECTIONS TO THE OHIO STATE UNIVERSITY ***

Arrival by Air

Columbus is served by a number of major airlines. No limousine service is available from the airport to the OSU campus. Taxi service is available. Those individuals arriving for the meetings by taxi should request to be taken to the OSU campus, corner of Lane and Neil Avenues.

Arrival by Car

If arriving from the NORTH, via I-71 or Highway 23, exit onto I-270 West north of Columbus. Exit from I-270 onto Highway 315 South. Exit onto Lane Avenue and turn left. The dormitory facilities are approximately 1 mile down Lane Avenue.

If arriving from the WEST, via Highway 33, continue on Highway 161 to Highway 315. Take 315 South and exit onto Lane Avenue. Turn left onto Lane Avenue; the dormitory facilities are approximately 1 mile down Lane Avenue.

If arriving from the WEST or EAST, via I-70, continue on I-70 into the downtown area. Exit I-70 onto 315 North. Exit 315 onto Lane Avenue and turn right. The dormitory facilities are approximately 1 mile down Lane Avenue.

If arriving from the SOUTH, via Highway 33, exit onto I-270 (Columbus-Indianapolis exit) and then take I-71 North. Exit from I-71 onto 315 North and then exit onto Lane Avenue. Turn right onto Lane Avenue; the dormitory facilities are approximately 1 mile down Lane Avenue.

If arriving from the SOUTH, via I-71, take I-71 into the downtown area and 315 North to Lane Avenue. Exit onto Lane Avenue and turn right. The dormitory facilities are approximately 1 mile down Lane Avenue.

For your convenience maps of the Columbus area and the OSU campus area have been included with these instructions. Bring these maps with you to the meeting.

The Ohio State University

