

58th AMCOP, June 8-11, 2006
Winona State University, Winona Minnesota

Contents

AMCOP-58	
Officers & Acknowledgements	1
Schedule Overview	2
Detailed Schedule	3 - 6
Abstracts	7 - 11
AMCOP-57	
Meeting Summary	18
Resolutions	19
Financial Report	21
ORGANISATION INFORMATION	22
SUMMARY OF PREVIOUS MEETINGS	26
CURRENT MEMBERSHIP LIST	31
EMAIL AND PHONE DIRECTORY	32
AMCOP 58 MEETING ANNOUNCEMENT.....	34
DUES FORM.....	38
AMCOP 58 REGISTRATION FORM.....	39

Officers for 2006

Presiding Officer	Dr. Thomas McQuiston Milikin University
Program Officer	Dr. Kimberly Bates Winona State University
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Acknowledgements

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Schedule Overview

THURSDAY, JUNE 8, 2006

- 3:00 pm Begin Arrival and Check in at East Lake Apartments.
6:00 -10:00 Opening Mixer at ZaZa's (at the corner of Huff and Mark Streets)

FRIDAY, JUNE 9, 2006, Stark Auditorium (Stark 103)

Continental Breakfast

- 8:45 am Opening Remarks
9:00 Platform Presentations
11:30 pm Lunch
1:15 The AMCOP Symposium
Speakers: Rebecca Cole and Daniel Sutherland
3:00 Poster and Demonstration Session
Silent Auction
6:00 Social Hour, Purple Rooms of Kryszko Commons
7:00 Banquet, Purple Rooms of Kryszko Commons
Speaker: Matthew Bolek

SATURDAY, JUNE 10, 2006, Stark Auditorium (Stark 103)

Continental Breakfast

- 9:00 am Platform Presentations
10:15 Business Meeting
Dr. Thomas McQuiston Presiding

Detailed Presentation Schedule

FRIDAY MORNING PLATFORM PRESENTATIONS

- 9:00 am **1** Seasonality of Parasites in Illinois House Sparrows (*Passer domesticus*): Influence of Stress on Infection Parameters. **TIFFANY C.M. GIBSON (GS)** and **JEFFREY R. LAURSEN (MP)**, Department of Biological Sciences, Eastern Illinois University, Charleston, IL 61920.
- 9:15 **2** The effect of crowding on the intraspecific variation of *Echinostoma caproni* (Platyhelminthes: Digenea) in ICR mice. **LINDSEY STILLSON (UG)** and **THOMAS R. PLATT (MP)**, Department of Biology, Saint Mary's College, Notre Dame, IN 46556
- 9:30 **3** Temporal dynamics of transmission of *Cyathocotyle bushiensis* (Trematoda: Cyathocotylidae) and *Sphaeridiotrema globulus* (Trematoda: Psilostomatidae) in Pool 7 the Upper Mississippi River National Wildlife and Fish Refuge. **KRISTIN HERRMANN (GS)** and **ROBERT SORENSEN (MP)**, Department of Biological Sciences, Minnesota State University, Mankato, MN, 56001.
- 9:45 **4** Geographical distribution of *Cyathocotyle bushiensis* (Trematoda: Cyathocotylidae) and *Sphaeridiotrema globulus* (Trematoda: Psilostomatidae) in Pool 7 of the Upper Mississippi River National Wildlife and Fish Refuge. **KRISTIN HERRMANN (GS)** and **ROBERT SORENSEN (MP)**, Department of Biological Sciences, Minnesota State University, Mankato, MN, 56001.
- 10:00 Break
- 10:30 **5** Importance of Lake Trophic Status and Host Trophic Status as Parasite Community Determinants in Juvenile Bluegill, *Lepomis macrochirus*, and Largemouth Bass, *Micropterus salmoides* from Two Michigan Lakes. **BRENDA M. PRACHEIL (GS)** and **PATRICK M. MUZZALL**. Michigan State University, Department of Zoology, East Lansing, Michigan 48824.

10:45 **6** Systematic review of *Rhopalias* spp. (Trematoda: Rhopaliasidae) **TERRY HAVERKOST (GS)** and **SCOTT L. GARDNER (MP)**. H.W. Manter Laboratory of Parasitology, University of Nebraska-Lincoln, Lincoln, NE 68588

11:00 **7** *Neospora caninum* exposure in Wisconsin wildlife. **T. ANDERSON (GS)**, **J. SEIDLING (UG)**, and **M.L. MICHALSKI (MP)**, Department of Biology and Microbiology, University of Wisconsin-Oshkosh, Oshkosh, WI 54902.

11:15 **8** Life Cycle and Host Specificity of *Rhabdias joaquinensis* (Nematoda: Rhabdiasidae). **G.J. LANGFORD (GS)** AND **J. JANOBY, JR. (MP)**, School of Biological Sciences, University of Nebraska-Lincoln, Lincoln, NE, 68588.

11:30 LUNCH

FRIDAY AFTERNOON AMCOP SYMPOSIUM

1:15 **9** WESTWARD MOVEMENT OF THE INVASIVE SNAIL *BITHYNIA TENTACULATA* (GASTROPODA: PROSOBRANCHIA) AND ITS PARASITES INTO THE MISSISSIPPI RIVER. **R.A. COLE¹**, **M. C STERNER III¹** **J.S. SAUER²** and **J.M. NISSEN³** ¹U.S. Geological Survey, National Wildlife Health Center, Madison, Wisconsin, United States 53711 ²U.S. Geological Survey, Upper Midwest Environmental Sciences Center, La Crosse, Wisconsin, United States 54603. ³U.S. Fish & Wildlife Service, Upper Mississippi River National Wildlife and Fish Refuge, LaCrosse, Wisconsin, United States 54650.

2:00 **10** Evidence for a Trematode Parasite Causing Severe Limb Malformations in Amphibians. **DANIEL SUTHERLAND**, University of Wisconsin- La Crosse, La Crosse, WI.

3:00 POSTER SESSION

11 The effect of freezing on blood parasites of the wood frog, *Rana sylvatica*: Analysis of post-emergence infection parameters. **KRISTIN GIGLIETTI (GS)** and **JEFFREY LAURSEN (MP)**, Department of Biological Sciences, Eastern Illinois University, Charleston, IL 61920.

12 Impact of coal mine effluent on fish parasite assemblages in southern Illinois streams. **ANDREW CLAXTON (GS)** and **JEFF LAURSEN (MP)**. Department of Biological Sciences, Eastern Illinois University, Charleston, IL 61920

7:00 pm BANQUET & BANQUET ADDRESS

13 Amphibian parasites: The cool, the bad and the ugly. **MATTHEW G. BOLEK**, School of Biological Sciences, University of Nebraska-Lincoln, Lincoln, Nebraska 68588.

SATURDAY MORNING PLATFORM PRESENTATIONS

9:00 **14** Identification of peptide sequences related to apicomplexan proteins from *Sarcocystis neurona*. **JOSEPH CAMP¹**, **MARY BOWER²**, and **SRIVENY DANGOUDOUBIYAM¹**, ¹Department of Veterinary Pathobiology and ²Bindley Bioscience Center, Purdue University, West Lafayette, IN 47907.

9:15 **15** Helminth parasites of the painted wood turtle, *Rhinoclemmys pulcherrima* (Testudines: Bataguridae), from the Area de Conservación de Guanacaste, Costa Rica. **THOMAS R. PLATT**, Department of Biology, Saint Mary's College, Notre Dame, IN 46556 and **LYNDA M. GIBBONS**, Department of Pathology and Infectious Diseases, University of London, Hatfield, Herts, AL9 7TA, UK.

9:30 **16** The Presence of the Myxozoan genus *Myxidium* spp. Within the gall bladder of United States amphibians. A new area of concern. **MAURITZ C. STERNER III**, USGS National Wildlife Health Center, 6006 Schroeder Road, Madison Wisconsin, 53711, **RICHARD SPALL**, Department of Biological Sciences, Box 8007, Idaho State University, Pocatello, Idaho, 83209 and **DAVID E. GREEN** USGS National Wildlife Health Center, 6006 Schroeder Road, Madison Wisconsin, 53711

9:45 **17** Schistosome population genetics: How microsatellite markers have increased our understanding of epidemiology. **JASON CURTIS**. Biology/Chemistry Department, Purdue University North Central, Westville, IN, 46391.

10:00 Break

10:15 AMCOP – 58 BUSINESS MEETING

- Committee Reports
- Secretary/Treasurer Report
- Old Business
- New Business
- Awards Presentation
- Adjournment

Please pay Doug Woodmansee for items purchased at the Silent Auction right after the business meeting. Please make all checks payable to "AMCOP".

Friday Morning Abstracts

- 1 Seasonality of Parasites in Illinois House Sparrows (*Passer domesticus*): Influence of Stress on Infection Parameters. TIFFANY C.M. GIBSON (GS) and JEFFREY R. LAURSEN (MP), Department of Biological Sciences, Eastern Illinois University, Charleston, IL 61920.

Parasitism often shows seasonal variation and may be associated with host densities, host stress levels or transmission strategies. This study was conducted to evaluate the possible interactions of ecological and physiological stresses and parasitism, using *Isospora* spp. levels in house sparrows (*Passer domesticus*) as a model. Since sparrows are year-round residents in Illinois, winter is an ecological stressor and summer (breeding) is a potential physiological stressor. We anticipated that if stress was a factor, then increased oocyst production per cycle during these seasons would produce higher intensity scores. If stress was not a major factor, then densities of infective oocysts in the environment, which should continue to increase through the fall, should drive parasite burdens. Results of 201 house sparrows sampled between December 2003 and February 2006 indicate that Illinois house sparrows are commonly infected with *Isospora* spp. They had an overall prevalence of 78%, a mean intensity and mean abundance scores of 1.97 and 1.54 respectively, on a 4-point scale. Sex, host age, and sampling year had no significant affect on prevalence, abundance or intensity. There was a significant difference in prevalence ($p=0.001$), mean abundance ($p<0.001$), and mean intensity ($p=0.002$) between seasons. Prevalence, mean intensity and mean abundance scores were highest in the summer (88%, 2.52, 2.23 respectively). Prevalence and mean abundance score were lowest in the winter (62% and 1.13 respectively), but spring had the lowest mean intensity score (1.63). The increase in prevalence from winter to spring indicates that new infections are arising in the spring. The decrease in mean intensity during the same time period agrees with the hypothesis that winter stress should produce higher oocyst production. The decrease did not reflect a loss of hosts with high infections, but it may be that birds were picking up low numbers of viable oocysts that began to accumulate in the spring. The significant increase in mean intensity from spring to summer, followed by a significant decrease in the fall, indicates that oocysts production per cycle is at its peak during the summer. If it was just a matter of infective oocyst accumulation fueling higher infective doses, then we would expect mean intensity to continue to increase through the fall. The fact that it doesn't, lends support for physiological stress during the summer producing some affect on parasitism.

- 2 The effect of crowding on the intraspecific variation of *Echinostoma caproni* (Platyhelminthes: Digenea) in ICR mice. **LINDSEY STILLSON (UG)** and **THOMAS R. PLATT (MP)**, Department of Biology, Saint Mary's College, Notre Dame, IN 46556.

The crowding effect is well documented in tapeworms, but is little studied in digenetic trematodes and has never been applied to taxonomic questions. A comparative morphometric analysis was conducted using *Echinostoma caproni* in order to determine the effect of crowding on the variability of metrical characteristics of the adult worms. Two groups of six ICR mice were infected with 25 or 100 metacercariae, respectively, and an additional mouse was infected with 300 metacercariae. All mice were infected at necropsy 22 days PI. Twenty adult worms from the each of the two smaller infection sizes and ten adult worms from the 300 metacercariae infection were compared using univariate and multivariate statistics. ANOVA revealed significant differences in 27 of 31 characters. Discriminant function analysis yielded a 100% accurate classification of the worms based on inoculum size. Therefore, statistical analyses of morphometric characters clearly demonstrated the presence of the crowding effect in *E. caproni*. *Echinostoma caproni* is a single, valid species, and morphological differences found in the current study were attributable directly, or indirectly, to infection size. This suggests that morphometric characters of adult worms are not sufficient for species identification in the genus *Echinostoma*.

- 3 Temporal dynamics of transmission of *Cyathocotyle bushiensis* (Trematoda: Cyathocotylidae) and *Sphaeridiotrema globulus* (Trematoda: Psilostomatidae) in Pool 7 the Upper Mississippi River National Wildlife and Fish Refuge. **KRISTIN HERRMANN (GS)** and **ROBERT SORENSEN (MP)**, Department of Biological Sciences, Minnesota State University, Mankato, MN, 56001.

Recurrent mortality of migrating waterbirds has been occurring in Pool 7 of the Upper Mississippi River National Wildlife and Fish Refuge since 2002. The bird species that have been primarily affected are Lesser Scaup (*Aythya affinis*) and American Coot (*Fulica americana*). Preliminary necropsies associate the mortality with two trematodes, *Cyathocotyle bushiensis* and *Sphaeridiotrema globulus*. The birds become infected by ingesting *Bithynia tentaculata* snails infected with metacercariae. *B. tentaculata* is an invasive species and serves as the 1st and 2nd intermediate host for both trematode species. Temporal patterns of levels of infection are affected by life history traits of both the parasite and the host. The objective of this study is to examine temporal variation of transmission of *C. bushiensis* and *S. globulus* around two man-made islands, Arrowhead and Broken Gun, in Pool 7. Five snail collections were conducted in 2005: May, June, August, September and October. Prevalence and abundance varied among collections. Prevalence and abundance of *S. globulus* metacercariae increased during mid-summer

when cercarial transmission occurs. For *S. globulus*, prevalence of 2nd intermediate hosts varied between 85% and 100%, and peak abundance was 70.7 metacercariae per snail in September at Arrowhead Island. Prevalence and abundance of *C. bushiensis* metacercariae decreased early in the summer as young snails are entering the population and increase late in the summer corresponding with cercarial transmission of this species. For *C. bushiensis*, prevalence of 2nd intermediate hosts varied between 36% and 87%, and peak abundance was 29.9 metacercariae per snail in October at Arrowhead Island.

- 4 Geographical distribution of *Cyathocotyle bushiensis* (Trematoda: Cyathocotylidae) and *Sphaeridiotrema globulus* (Trematoda: Psilostomatidae) in Pool 7 of the Upper Mississippi River National Wildlife and Fish Refuge. **KRISTIN HERRMANN (GS)** and **ROBERT SORENSEN (MP)**, Department of Biological Sciences, Minnesota State University, Mankato, MN, 56001.

Prevalence and abundance of metacercariae often exhibit temporal and spatial variation. This study is a continuation of a larger study on distribution patterns of two trematodes, *Cyathocotyle bushiensis* and *Sphaeridiotrema globulus*. Specifically, geographic distribution of both trematode species in the intermediate snail host was examined around two islands, Arrowhead and Broken Gun, in Pool 7. Snails were collected in summer and fall of 2005 at 21 sites around the two islands. A total of 2,524 snails have been examined for cercariae and metacercariae. Overall levels of infection of *S. globulus* were significantly greater than *C. bushiensis*. Prevalence of 1st intermediate hosts for *C. bushiensis* was 0.7%, and for *S. globulus* prevalence of 1st intermediate hosts was 3.9%. Prevalence of 2nd intermediate hosts for *C. bushiensis* was 60.7% at Arrowhead Island and 59.5% at Broken Gun Island. Prevalence of 2nd intermediate hosts for *S. globulus* was 97.5% at Arrowhead Island and 90.0% at Broken Gun Island. The metacercarial abundance of both trematodes was significantly greater at Arrowhead Island than at Broken Gun Island. Abundance of *C. bushiensis* metacercariae was 10.2 per snail at Arrowhead Island and 6.0 per snail at Broken Gun Island. Abundance of *S. globulus* metacercariae was 28.7 per snail at Arrowhead Island and 11.3 per snail at Broken Gun Island. Greater infection levels at Arrowhead Island may be due to abiotic differences such as water current, water depth or water temperature. Additionally, a greater number of bird carcasses are found at Arrowhead Island. Spatial heterogeneity in dispersion was observed and may be attributed to the low prevalence of snails shedding cercariae.

Importance of Lake Trophic Status and Host Trophic Status as Parasite Community Determinants in Juvenile Bluegill, *Lepomis macrochirus*, and Largemouth Bass, *Micropterus salmoides* from Two Michigan Lakes. **BRENDA M. PRACHEIL (GS)** and **PATRICK M. MUZZALL**. Michigan State University, Department of Zoology, East Lansing, Michigan 48824.

Lake trophic status has been hypothesized by Esch (1971) and Esch and Fernandez (1993) to influence proportions of autogenic (species whose life cycles are completed in the water) and allogenic (species whose life cycles are not completed in the water) parasite species. Additionally, Wisniewski (1958) hypothesized that host trophic status is the most important parasite community determinant. In order to assess the roles of lake trophic status and host trophic status on parasite community composition, 393 juvenile bluegill and 26 young-of-the-year (YOY) largemouth bass from eutrophic Three Lakes II, Michigan and 117 juvenile bluegill and 86 YOY largemouth bass from mesotrophic Gull Lake, Michigan were examined for parasites. Gull Lake bluegill and bass had higher numbers of autogenic parasite species than Three Lakes II fishes. Parasite component communities were the most similar (Jaccard's coefficient of community similarity) within one host species between lakes than between host species within one lake. The results from the present study suggest that parasite communities of juvenile bluegill and largemouth bass are more strongly influenced by host trophic status than by lake trophic status.

Systematic review of *Rhopalias* spp. (Trematoda: Rhopaliasidae)
6 TERRY HAVERKOST (GS) and **SCOTT L. GARDNER (MP)**.
H.W. Manter Laboratory of Parasitology, University of Nebraska-Lincoln, Lincoln, NE 68588

During an attempt to identify various specimens of *Rhopalias* collected from Bolivian marsupials, it became evident that species within the genus were capable of extensive morphological plasticity. This plasticity coupled with an uninformative species description has led to difficulty in differentiating common species within this genus. This investigation is an attempt to clearly define all 6 species within this genus using evolutionarily relevant characters. A morphologically-based phylogeny was produced for all species, but ambiguities on parts of the tree show that some species cannot be recognized as distinct. This suggests that certain species may be synonymous, that characters used to diagnose these parasites are not relevant, and that molecular characters may be needed to create informative splits between species.

Neospora caninum exposure in Wisconsin wildlife.

7 T. ANDERSON (GS), J. SEIDLING (UG), and M.L. MICHALSKI (MP), Department of Biology and Microbiology, University of Wisconsin-Oshkosh, Oshkosh, WI 54902.

The parasitic protozoan *Neospora caninum* is a major cause of abortion in cattle worldwide. In infected dairy farms, prevalence of anti-*Neospora* antibodies can be observed in as many as 78% of the cattle (McAllister et al. 1996). Transmission occurs by fecal-oral contamination from infected dog feces or congenitally in infected cattle. Wolves, cattle, deer, and coyotes have been implicated in transmission, but the host range of the parasite is still poorly defined. Exposure to *N. caninum* can be detected in a host population by the prevalence of circulating antibodies in the blood. Many studies have demonstrated seroprevalence within a single mammalian species in an area, but few have examined the interaction of different potential host species in the same geographical area. To further define the host range of the parasite and to characterize the sylvatic wildlife transmission cycle, the seroprevalence of *N. caninum* was determined in several central Wisconsin wildlife species. Western blot analysis of blood collected from various wildlife species was used to determine the seroprevalence of antibodies against *N. caninum*. The seroprevalence in wildlife species varied from 19.0% in white-tailed deer, 0% in raccoons and opossums, 14.7% in coyotes, and 11.1% of foxes. 13 coyote fecal samples were examined using acid-fast staining to observe oocysts. Two coyote samples contained bodies consistent with the morphology of *N. caninum* oocysts, but further research will be done. These studies will establish a baseline rate of exposure in wild ruminants and characterize natural exposure within a community.

Life Cycle and Host Specificity of *Rhabdias joaquinensis* (Nematoda: Rhabdiasidae). **G.J. LANGFORD (GS)** and **J. JANOBY, JR. (MP)**, School of Biological Sciences, University of Nebraska-Lincoln, Lincoln, NE, 68588.

8 Members of the nematode genus *Rhabdias* are among the most commonly encountered helminths of amphibians and reptiles around the world. Yet little is known about these parasites' natural history, including their life cycle variation, host specificity, and geographic distribution. To determine host specificity *R. joaquinensis* infective larvae were exposed to several anuran and non-anuran hosts in the laboratory. Interestingly, these experiments demonstrated both physiological and ecological host specificity. The study showed that *R. joaquinensis* is host specific to anurans, and unable to infect lizards, snakes, and humans. The life cycle of *R. joaquinensis* was completed in the laboratory by exposing *R. joaquinensis* collected from Nebraska and Alabama to clean *Bufo woodhousii* collected in western Nebraska. The data show that the life cycle of *R. joaquinensis* was completed very quickly in Nebraska compared to Alabama, suggesting that life cycle plasticity is present in *R. joaquinensis* and may be

based upon host species diversity and soil moisture. The free-living infective larvae of *R. joaquinensis* are restricted to moist soils, where larvae encounter and penetrate amphibian hosts. Consistently moist soils are rare in Nebraska and normally only occur at the edge of waterbodies. The frog that habitually resides in these moist habitats in Nebraska is *Acris crepitans*, which has an average lifespan of only 3 months. Considering the most common frog for infective larvae to encounter only lives for a short time span the parasite must quickly penetrate the host and reach adulthood to ensure it will reproduce. Thus, a close relationship appears to have evolved between *R. joaquinensis* and *A. crepitans*, which may be the driving factor for the fast life cycle of *R. joaquinensis* in Nebraska. In Alabama, *R. joaquinensis* may cycle slower for two reasons, (1) moist soil is abundant throughout the landscape and (2) host species richness is greater. These two factors allow *R. joaquinensis* from Alabama to encounter more hospitable free-living environments and infect a broader range of frogs and toads.

Symposium Presentation Summaries

WESTWARD MOVEMENT OF THE INVASIVE SNAIL *BITHYNIA TENTACULATA* (GASTROPODA: PROSOBRANCHIA) AND ITS PARASITES INTO THE MISSISSIPPI RIVER. R.A. COLE¹, M. C STERNER III¹, J.S. SAUER² and J.M. NISSEN³ ¹U.S. Geological Survey, National Wildlife Health Center, Madison, Wisconsin, United States 53711 ²U.S. Geological Survey, Upper Midwest Environmental Sciences Center, La Crosse, Wisconsin, United States 54603. ³U.S. Fish & Wildlife Service, Upper Mississippi River National Wildlife and Fish Refuge, LaCrosse, Wisconsin, United States 54650.

Bithynia tentaculata was introduced into the United States from Europe in the late 1800s and since then has become established in the Great Lakes Basin and some mid-Atlantic states. In 1997, *B. tentaculata* was reported to host *Leyogonimus polyoon* (Trematoda) heretofore not reported in North America. This trematode along with *Sphaeridiotrema globulus* and *Cyathocotyle bushiensis* were the etiological agents responsible for a mortality event of more than 10,000 American coot (*Fulica americana*) at Shawano Lake, Wisconsin. Wisconsin surveys (1998) indicated this snail was limited to the Wolf River system and east to Lake Michigan. In 2002, *S. globulus* and *C. bushiensis* induced mortalities in lesser scaup and American coot on Lake Onalaska on the Mississippi River revealed that the snail had moved west into the Mississippi River. Since 2002, more than 14,000 birds (primarily lesser scaup and American coot) on Lake Onalaska have died from infections with *C. bushiensis* and/or *S. globulus*. Results from Lake Onalaska surveys in 2005 indicated *B. tentaculata* is the dominate mollusk with an overall prevalence of *C. bushiensis* and/or *S. globulus* from 18 study sites of 70.75%. Snails under laboratory conditions can survive 8⁺ days at 22-23°C in a desiccated state, suggesting that snails could remain viable during transport without water or moist vegetation.

Viable metacercariae of *S. globulus* and *C. bushiensis* are often found in empty snail shells.

- 10 Evidence for a Trematode Parasite Causing Severe Limb Malformations in Amphibians. DANIEL R. SUTHERLAND, University of Wisconsin – La Crosse, La Crosse, WI.

Metacercariae of *Ribeiroia ondatrae* have been shown in laboratory and field studies to elicit significant limb malformations in metamorphs of numerous amphibian species. During a nine-year study of trematode metacercariae from Minnesota and Wisconsin anurans, *Ribeiroia* was found to be widely distributed throughout eastern Minnesota and western Wisconsin (30+ sites to date). *Ribeiroia* was most abundant (100% prevalence, mean intensity > 110 worms per host) at many rapid malformation hotspots during the same years that extremely high (67-96%) malformation frequencies occurred at these sites. Subsequent declines in malformation rates at these sites are correlated with reduced *Ribeiroia* abundance in metamorphs. A malformation hotspot near the Twin Cities produced severely malformed northern leopard frogs and American toads that harbored heavy *Ribeiroia* burdens (mean intensities > 250 for leopard frogs and > 25 for toads). Skeletal malformations in local anurans include ectromelia, ectrodactyly, taumely, polydactyly, polymelia, brachymelia, brachydactyly, anteversions and underdeveloped mandibles and snouts. Soft tissue malformations primarily include cutaneous fusions. Individual *Ribeiroia* metacercariae were often intimately associated with soft tissue growths that projected both externally and internally from points of origin in the subdermal fascia. *Ribeiroia* metacercariae are usually concentrated in tissues surrounding the anus and tail resorption area; lesser numbers occur along the margin of the mandible. *Ribeiroia* has not been found at several malformation hotspots in western Minnesota, suggesting that causes other than *Ribeiroia* are responsible (perhaps UV-radiation, chemicals and failed predation attempts). Environmental conditions such as eutrophication that support increased intermediate snail host populations may, in turn, provide more *Ribeiroia* cercariae to penetrate tadpole limb buds at critical times during limb formation. High *Ribeiroia* infection rates may elicit more frequent and severe amphibian malformations. (Supported by funds from USGS and USWFS.)

Poster Session Abstracts

- 11 The effect of freezing on blood parasites of the wood frog, *Rana sylvatica*: Analysis of post-emergence infection parameters. KRISTIN GIGLIETTI (GS) and JEFFREY LAURSEN (MP), Department of Biological Sciences, Eastern Illinois University, Charleston, IL 61920. Wood frogs, *Rana sylvatica*, are freeze tolerant organisms, meaning they have the ability to survive extensive freezing of their body fluids during winter

hibernation. They produce cryoprotectants and redistribute body fluids to the coelom and lymphatic spaces to reduce the amount of ice crystal formation within tissues, thus saving the tissues from freezing damage. This project is designed to examine the effect of freezing on two blood-borne parasites, hemogregarines and trypanosomes, both of which have been reported from natural infections. Hemogregarines are intracellular parasites so it is predicted that they will be cryoprotected by the same mechanisms as the host's cells. Trypanosomes are intercellular parasites and may therefore be subject to ice crystal damage. This system will allow me to assess different potential freeze tolerance strategies in the same host. Blood samples were taken from 93 adult collected from breeding ponds in spring after their post winter emergence. Blood smears were examined to determine the prevalence of natural post-wintering infections. Neither hemogregarines nor trypanosomes have been detected in preliminary analysis of 20 frogs. Frogs will be experimentally infected with trypanosomes and/or hemogregarines prior to cold acclimatization and infected frogs will be frozen for various time lengths to determine the parasites susceptibility to freezing.

- 12 Impact of coal mine effluent on fish parasite assemblages in southern Illinois streams. **ANDREW CLAXTON (GS)** and **JEFFERY LAURSEN (MP)**. Department of Biological Sciences, Eastern Illinois University, Charleston, IL 61920

The impact of pollutants in coal mine effluent on fish and invertebrates is well documented, but much less is known about potential interactions with parasites in these fish. This study was designed to determine the impact of coal mine effluent on helminth community structure in fish from the Saline River Basin, Illinois. This system is heavily impacted by surrounding mining activity, and the Illinois EPA has documented a "dead zone" extending for several miles downstream of a mine runoff point source. Fish will be collected from three sites upstream of this coal mine discharge and three sites at various distances downstream where fish and invertebrates have become reestablished. We have found 7 helminth species infecting *Lepomis* spp. from preliminary surveys of upstream sites. Eleven of fifteen *Lepomis* sp were infected with either *Neoechinorhynchus* sp. or *Acanthocephalus* sp. (*Acanthocephala*). *Spinitectus* sp. (Nematoda) was found in 3 fish. Adult *Bothriocephalus* sp. (Cestoda) and *Pisciamphostoma* sp (trematoda) were each recovered from single individuals. Two forms of metacercariae were found in five of fifteen *Lepomis* spp. examined. It is possible that fish in impacted downstream sites will harbor higher infection rates if stress increases their susceptibility to infections or inhibits their ability to fight off infections. This study will also evaluate the potential of these parasite communities as bioindicators of water quality. Parasite species with complex life histories, using different invertebrate intermediate hosts with variable pollution sensitivity, may be impacted by coal mine effluent in different ways. If toxicant levels are at sufficient levels to

eliminate intermediate hosts, then the resultant disruption of the parasite life cycle should lead to reduced prevalence or intensity downstream of coal mine discharge.

Banquet Presentation Summary

- 13 Amphibian parasites: The cool, the bad and the ugly. **MATTHEW G. BOLEK**, School of Biological Sciences, University of Nebraska-Lincoln, Lincoln, Nebraska 68588.

Amphibian parasites are good model systems to address questions of parasite life cycle diversity and evolution. Many amphibian parasite genera are common and globally distributed in their hosts. This cosmopolitan distribution coupled with parasitism of amphibians, a group with a Pangaeian distribution during the early Jurassic, suggests that extant amphibian parasites may represent parasite lineages present in the amphibians of Pangaea. The possibility of a very ancient origin of amphibian parasites suggests that aspects of parasite biology, including diverse patterns of host specificity, may have arisen in the distant evolutionary past and was conserved in modern lineages of amphibian parasites. However studies on the life cycles and phylogenetic hypotheses of amphibian parasites are scarce. I will address some of our recent studies on amphibian parasite life cycles and phylogenetic relationships and argue that an effort in understanding amphibian parasite life cycles may reveal much about the biogeographical patterns of both parasite and host and provide further insight into the origins of parasitism in amphibians.

Saturday Morning Platform Abstracts

- 14 Identification of peptide sequences related to apicomplexan proteins from *Sarcocystis neurona*. **JOSEPH CAMP¹**, **MARY BOWER²**, and **SRIVENY DANGODOUBIYAM¹**, ¹Department of Veterinary Pathobiology and ²Bindley Bioscience Center, Purdue University, West Lafayette, IN 47907.

Equine protozoal myeloencephalitis (EPM) is an equine neurologic disease caused by *Sarcocystis neurona*. Horses are aberrant hosts in which the parasite can migrate to and infect the CNS after ingesting the infective sporocyst stage. In some horses the immune system fails to clear the infection and nervous system problems can develop that may lead to recumbency and death. Numerous non-specific neurologic clinical signs are associated with EPM making it difficult to diagnosis. The current methods of diagnosis (e.g. Western Blot identification of parasite-specific antibodies) can be inaccurate due to contamination with blood and/or false positive reactions. Hence, new diagnost

techniques based on other horse and/or parasite proteins may help to circumvent the problems associated with the current techniques. As a first step, identification and characterization of *S. neurona* proteins may provide information that can lead to the development of new diagnostic techniques that utilize the parasite proteins as diagnostic biomarkers for EPM-positive horse cerebrospinal fluid (CSF). We used two-dimensional electrophoresis and matrix-assisted laser desorption ionization-time of flight (MALDI-ToF) ToF mass spectrometry to identify several proteins from *S. neurona* based on comparative peptide homology with other apicomplexan proteins. One of the *S. neurona* proteins identified was actin based on its peptide homology with actin from *Toxoplasma gondii*. Other proteins identified were a hypothetical *Plasmodium* sp. protein, apical membrane antigen 1 (*Plasmodium yoelii yoelii*), and immunoglobulin heavy chain binding protein (*Eimeria tenella*). Characterization of these proteins indicates a biochemical similarity of *S. neurona* proteins with other apicomplexan parasites including the tissue-cyst forming *T. gondii*, which also causes encephalitis. Future studies will be undertaken to characterize additional *S. neurona* proteins.

- 15 Helminth parasites of the painted wood turtle, *Rhinoclemmys pulcherrima* (Testudines: Bataguridae), from the Area de Conservación de Guanacaste, Costa Rica. **THOMAS R. PLATT**, Department of Biology, Saint Mary's College, Notre Dame, IN 46556 and **LYNDA M. GIBBONS**, Department of Pathology and Infectious Diseases, University of London, Hatfield, Herts, AL9 7TA, UK.

Seven individuals of the painted wood turtle, *Rhinoclemmys pulcherrima*, were collected in the ACG and examined for helminth parasites during June, 1998. Monogenetic trematodes (Polystomatidae) were found in the conjunctival sac of 2 individuals and described as a new species, *Neopolystoma fentoni* Platt, 2000. A single specimen of *Heronimus mollis* (Leidy, 1856) (Digenea: Heronimidae) was found in the lung of one animal. The large intestine of all seven turtles contained massive numbers (1000's) of nematodes belonging to the family Atractidae. Two new species were identified belonging to the genera *Atractis* and *Orientattractis*, respectively. A third species, which could not be assigned to an existing genus, was recognized and a new genus was erected to contain it. Atractids are known to be larviparous and may autoinfect their hosts resulting in heavy infections; however, the mechanism of host-to-host transmission is unknown. The fact that all animals were infected with extremely high numbers of these worms suggests the possibility that the association may be mutualistic, perhaps related to the digestion of plant material in these principally herbivorous turtles.

- 16 The Presence of the Myxozoan genus *Myxidium* spp. Within the gall bladder of United States amphibians. A new area of concern. **MAURITZ C. STERNER III**, USGS National Wildlife Health Center, 6006 Schroeder Road, Madison Wisconsin, 53711, **RICHARD SPALL**, Department of Biological Sciences, Box 8007, Idaho State University, Pocatello, Idaho, 83209 and **DAVID E. GREEN**, USGS National Wildlife Health Center, 6006 Schroeder Road, Madison Wisconsin, 53711

Myxozoans are common parasites of fish and amphibians. Over the years much work has been done on those found in fish and the diseases they cause. However, very little information is known concerning the myxozoans found in American amphibians and the related problems they may cause. In 2005 gall bladders of 295 larval and post-metamorphic amphibians of 26 species from 16 states were specifically examined for myxozoan parasites. A total of 148 (51%) amphibians from 13 states and 24 species were infected with *Myxidium* spp. Samples of the *Myxidium* spp were placed in 100% ethyl alcohol for molecular analysis and taxonomic characterization. At present, no specific disease or mortality events have been associated with this genus in amphibians. However, the possible impact of introduction of these parasites by invasive amphibian species to naïve native populations remains to be evaluated.

- 17 Schistosome population genetics: How microsatellite markers have increased our understanding of epidemiology. **JASON CURTIS**, Biology/Chemistry Department, Purdue University North Central, Westville, IN, 46391.

The first attempts to study schistosome population genetics with microsatellite markers began almost ten years ago. At that time, myself and others predicted that the use of allelic markers would change our understanding of schistosome populations and epidemiology. In the intervening years, a number of studies have used these genetic markers to study schistosome (predominantly, *S. mansoni*) populations on a variety of geographic scales. In this talk, I review the goals of such studies, critically assess how much progress has been made in the previous decade, and discuss whether microsatellite markers will continue to be a viable option in the face of new methods and technologies.

AMCOP – 57
Meeting Summary

The 57th Annual Midwestern Conference of Parasitologists was held on June 9-11, 2005, at Wabash College in Crawfordsville, Indiana. A total of 61 persons registered for the conference. Dr. Douglas Woodmansee of Wilmington College was presiding officer, and Dr. Eric Wetzel of Wabash College made local arrangements and served as program officer. Dr. Mauri Ditzler, Dean of Wabash College, provided welcoming remarks. Seventeen papers and 9 posters were presented by members. The C.A. Herrick Award and \$300 for outstanding poster was awarded to Amy McHenry of the University of Notre Dame for her poster on "Mapping binding residues in the *Plasmodium vivax* Duffy binding protein." The G.R. LaRue Award and \$300 for outstanding oral presentation was awarded to Laura Duclos of the University of Nebraska-Lincoln for her talk on "Development and infectivity of carotenoid-deprived larval *Corynosoma constrictum*." Kristin Giglietti of Eastern Illinois University received the R.M. Cable undergraduate award and \$100 for her oral presentation on "Effects of copper sulfate on snail and trematode communities" Honorable mention awards and \$100 were given to Jillian Detwiler of Purdue University for her paper on "The role of host specificity and infection dynamics in gregarine-tenebrionid coevolution," and Julie Clennon of the University of Illinois for her poster on "Dispersal cost analysis of snail intermediate hosts of *Schistosoma haematobium* in coastal Kenya." Amy McHenry was chosen as the AMCOP nominee for the American Society of Parasitologists student travel grant award for 2006.

The symposium on Friday afternoon was presented by Dr. Virginia Ferris of Purdue University who talked on "Molecular Phylogenies in Nematoda – Do we care?" and Dr. Keith Clay of Indiana University whose presentation was "Microbial Community Ecology of Tick-borne Human Pathogens." The banquet speaker was Dr. John Adams of the University of Notre Dame whose interesting address was "In a changing world of malaria research, can an old dog learn new tricks?"

AMCOP 58 will be held in June of 2006 at Winona State University in Winona, Minnesota. Additional future meeting sites as determined by the meeting sites committee are:

- AMCOP 59 – 2007: University of Wisconsin-Oshkosh, Oshkosh, WI
- AMCOP 60 – 2008: University of Illinois at Urbana-Champaign, College of Veterinary Medicine
- AMCOP 61 – 2009: Ohio Wesleyan University, Delaware, OH
- AMCOP 62 – 2010: Purdue University, West Lafayette, IN

At the business meeting, Secretary-Treasurer Wittrock presented the minutes of AMCOP 56, held last year at Minnesota State University, and treasurer's report for 2004 that were approved. Committee reports were received and approved as follows: Auditing (Omer Larson and Tom Dunagan), Symposium (Tom Platt and Wendell Patton), Meeting Sites (Jeff Laursen and Tim Yoshino), Nominating (Matt Bolek and Dennis Minchella), and Resolutions (Bob Sorensen and John Adams). At the silent auction of parasitology journals and texts, a total of \$136.50 was raised. Officers elected for 2006 were: Dr. Tom McQuiston of Millikin University as presiding officer, Dr. Kim Bates of Winona State University as program officer, and Dr. Douglas Woodmansee of Wilmington College as secretary-treasurer.

Submitted June 14, 2005 by:
Darwin Wittrock
AMCOP Secretary-Treasurer

AMCOP- 57
REPORT OF THE RESOLUTIONS COMMITTEE
Robert Sorensen and John Adams

Whereas, the 57th Annual Midwest Conference of Parasitologists met at Wabash College in Crawfordsville, Indiana, and

Whereas, the meeting was of the highest quality, promoting the field of parasitology as well as fellowship among those in attendance, and

Whereas, the membership of AMCOP wishes to acknowledge the contributions of individuals to the success of the 56th annual meeting, therefore be it resolved that we acknowledge with thanks the following:

- 1) Dr. Eric Wetzel, Program Officer, for his assiduous planning that made for a successful meeting,
- 2) Dr. Douglas Woodmansee, Presiding Officer, for his efficiency in conducting the meeting,
- 3) Dean Mauri Ditzler, Wabash College, for his welcoming remarks,
- 4) Dr. Virginia R. Ferris, Department of Entomology, Purdue University, for her thought-provoking symposium presentation "Molecular phylogenies in Nematoda – Do we care?" and Dr. Keith Clay, Department of Biology, Indiana University, for his stimulating symposium presentation on "Microbial community ecology of tick-borne human pathogens,"

- 5) Dr. John Adams, University of Notre Dame for his interesting after-dinner presentation, "In a changing world of malaria research, can an old dog learn new tricks?"
- 6) All AMCOP members, especially students, who presented papers and posters making the meeting an educational experience for all,
- 7) Wabash College and all the Wallies for providing excellent facilities in a friendly setting for our meeting,
- 8) The superb technical support during the presentations,
- 9) ELANCO Animal Health, a Division of Eli Lilly and Company, for its continued support of the C. A. Herrick Award for outstanding poster presentation,
- 10) The membership of AMCOP for their support of the G. R. Larue Award for outstanding oral presentation, Honorable Mention awards, and Cable undergraduate award,
- 11) The members of AMCOP who contributed books, journals, and esoterica for the silent auction,
- 12) The officers of AMCOP and their support for providing the programs and services to the membership, especially the exceptionally fine job done by Dr. Darwin Wittrock, our Secretary-Treasurer, during the past 8 years.

2005 AMCOP FINANCIAL REPORT

Balance on hand on 12/31/04 **\$9,650.95**

Expenses

AMCOP 57 program duplication	155.30
Stamps - program	41.50
Certificate holders - Office Max	33.73
Herrick award	300.00
LaRue award	300.00
Honorable mention awards	200.00
Cable undergrad award	100.00
Symposium speakers expenses	145.00

Total Expenses **1275.53**

\$8,375.42

Income

2005 Membership Dues	495.00
Member Contributions	312.00
2005 Eli Lilly Donation	300.00
ASP funds to regional society	250.00
Silent auction from AMCOP 57	136.50
Bank interest	158.83

Total Income **1652.33**

Balance on hand 12/31/05

\$10,027.75

Transfer fee to send treasury to Dr. Woodmansee

\$10.09

Total sent to Dr. Woodmansee on 1/13/06

\$10,017.66

Respectively
submitted,

**Financial statement approved by
2006 Audit Committee:**

Darwin Wittrock

Darwin Wittrock
Secretary/Treasurer

**THE ANNUAL MIDWESTERN CONFERENCE OF
PARASITOLOGISTS
(AMCOP)**

OBJECTIVES AND ORGANIZATION

A restatement to incorporate changes approved in 1989. Earlier statements have been approved in 1948, 1953, 1971, 1972, 1973, 1974, 1986, 2003 and 2004.

NAME

The organization shall be known as the ANNUAL MIDWESTERN CONFERENCE OF PARASITOLOGISTS (AMCOP), 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. There are three categories of membership: Emeritus, Regular, and Student. When a member retires from industry, university or other professional occupation, that person shall be eligible for emeritus membership.

DUES

Annual dues are required for emeritus, regular and student membership. A registration fee is charged 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 chair. Dues are established by the Policy Committee and collected by the Secretary/Treasurer.

MEETINGS

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

BYLAWS

1. Simple majority vote of members in attendance at regularly scheduled meetings of the Conference shall determine the policies of the Conference.
2. The officers are a Presiding Officer, whose term of office is one year or until a successor is elected (normally the term expires with adjournment of the annual Conference over which the person presides); a Secretary/Treasurer, whose term of office is two years or until a successor is elected; a Program Officer whose term of office is one year; and a Policy Committee composed of the last five available retired Presiding Officers plus, *ex officio* and without vote, the current Presiding Officer and Secretary/Treasurer. All terms of office of each full member of the Policy Committee is five years, or so long as the person is one of the five most recent, available Presiding Officers. The most recent past Presiding Officer available chairs the Policy Committee and is the Vice-President of the current Conference.
3. The Presiding Officer, the Secretary/Treasurer, and the Program Officer are elected by a majority vote of those members attending a regularly scheduled business meeting of the Conference or by a majority vote of those replying to a mail ballot of the membership.
4. The Presiding Officer shall preside at all meetings of the Conference and shall arrange for a banquet speaker. On the first day of a Conference the Presiding Officer shall appoint the following committees, which shall serve until they have reported on the last day of the annual Conference:
 - (a) Nominating Committee,
 - (b) Committee to Recommend Future Meeting Places,
 - (c) Committee to Suggest Program Possibilities for Future Meetings,
 - (d) Resolutions Committee,
 - (e) Judging Committee,

(f) Audit Committee,

(g) such other *ad hoc* committees as may be required.

The Presiding Officer shall appoint the Conference Representative to the Council of the American Society of Parasitologists for the year, who must be a member of that society. The current Presiding Officer serves as a member without vote of the Policy Committee.

5. The Secretary/Treasurer shall issue annual dues notices and about four months prior to each Conference a call for participants in the program for each Conference; inform the new Presiding and Program Officers concerning their duties and the members of the Policy Committee of their tenure and the Secretary of the American Society of Parasitology within three weeks after the annual election; serve as member without vote and the Secretary of the Policy Committee: and supervise all funds of the Conference.

6. The Program Officer shall be responsible for the general format of the Conference and for arranging suitable facilities and funding. It shall also be this person's responsibility to chair the special committee to determine and collect the registration fee for the Conference. The format of the Conference may vary, but should include both a demonstration session and a session of contributed papers, both open to all members. A symposium may also be included or may replace a session of contributed papers.

7. The Policy Committee shall determine by majority vote all matters of procedure and policy pertaining to the Conference upon which decision must be reached between consecutive Conferences, as well as all matters referred specifically to it by the membership. Such a vote may be requested by any member of the Conference but must be directed through the Secretary/Treasurer. The Chairperson of the Policy Committee shall request approval by the membership for all decisions of the Committee at the earliest subsequent business meeting of the Conference.

8.The Conference confers three major awards during its annual meeting to student participants. These are the Chester A. Herrick Award, sponsored by the Eli Lilly Co., for the best poster/demonstration of parasitological research, the George A. LaRue Award for the best oral presentation of parasitological research, and the Raymond M. Cable Award for best presentation given by an undergraduate student. Honorable mention awards will be given to the second place poster/demonstration and second place oral presentation at the discretion of the awards committee. All awards except for the Herrick Award are supported by donations from the AMCOP membership.

9. (a) The winner of each award will be selected by a 3-person committee appointed at each annual meeting by the Presiding Officer. The criteria for judgment will be established each year by the committee.

(b) The size of the Herrick and LaRue awards shall traditionally be \$300.00. The Cable undergraduate award and honorable mention awards shall traditionally be \$100. Awards may vary according to funds available from contributors.

(c) No person may win the same award more than one time while in student status. Likewise, no student may win both awards at the same meeting. However, one person may win both awards while a student in different years.

SUMMARY OF AMCOP MEETINGS 1949-PRESENT

Year	Meeting Site (Conference No.)	Presiding Officer
Banquet Speaker & Title, PO=Program Officer, ST=Secy/Treas, H=Herrick Award, L=LaRue Award, HM=Honorable Mention, C=Cable Undergraduate Award; S=Symposium Title and Speakers		
1949	Univ. Wisconsin, Madison, WI (AMCOP I) J.C. Baer, ST=J. R. Lincicome	<u>Harley J. VanCleave</u>
1950	Univ. Michigan, Ann Arbor, MI (II) W.W. Cort, Trends in Helminthological Research. PO/ST=R. J. Porter	<u>R.V. Bangham</u>
1951	Purdue University, Lafayette, IN (III) J.E. Ackert, Some Observations on Hookworm Disease. ST=W. Balamuth	<u>L.O. Nolf</u>
1952	Univ. Illinois, Urbana, IL (IV) A.C. Walton, ST=W. Balamuth	<u>R.J. Porter</u>
1953	Iowa State College, Ames IA (V) R.M. Cable, Parasitological Experiences in Puerto Rico. ST=W.D. Lindquist	<u>C.A. Herrick</u>
1954	Michigan State Univ., East Lansing, MI (VI) G.F. Otto, Mosquitos, Worms, Somoans and the Parasitologist in Somoa. ST=W.D. Lindquist	<u>A.C. Walton</u>
1955	Notre Dame Univ., IN (VII) G.R. LaRue, Relationships in the Development of Digenetic Trematodes. ST=W.D. Lindquist	<u>R.M. Cable</u>
1956	Iowa State University, Ames, IA (VIII) W.H. Headlee, ST=F.J. Krudener	<u>W.D. Lindquist</u>
1957	Univ. of Michigan, Ann Arbor, MI (IX) A.C. Chandler, ST=F.J. Krudener	<u>J.E. Ackert</u>
1958	Kansas St. Univ., Manhattan, KS (X) H.W. Manter, Trematodes of Many Waters. ST=F.J. Krudener	<u>G.R. LaRue</u>
1959	Northwestern Univ., Evanston, IL (XI) H. Van der Schalie, Contrasting Problems in Conrol of Schistosomiasis in Egypt and the Sudan. ST=D.T. Clark	<u>G.F. Otto</u>
1960	Purdue Univ., Lafayette, IN (XII) P.P. Weinstein, Aspects of Growth and Differentiation of Parasitic Helminths <i>in vitro</i> and <i>in vivo</i> . ST=D.T. Clark	<u>F.J. Krudener</u>
1961	Ohio State Univ., Columbus, OH (XIII) B. Schwartz, Parasitology Old and New. ST=D.T. Clark	<u>N.D. Levine</u>
1962	Univ. of Nebraska, Lincoln, NE (XIV) O.W. Olsen, The Life History of the Hookworm of Fur Seals. ST=D.T. Clark	<u>G.W. Kelley, Jr</u>
1963	Univ. of Minnesota, St. Paul, MN (XV) F.G. Wallace, Observations on the Louisiana State University Inter-American Program in Tropical Medicine. ST=D.T. Clark	<u>M.F. Hansen</u>
1964	Univ. of Chicago, Chicago, IL (XVI) R.E. Kuntz, Paragonimiasis in Formosa. ST=E. J. Huggins	<u>D.T. Clark</u>
1965	Kellogg Biological Station, Gull Lake, MI (XVII) L. Jacobs, Toxoplasmosis. ST=E.J. Huggins	<u>P.E. Thompson</u>
1966	Univ. of Illinois, Urbana, IL (XVIII) D.L. De Guisti, The Acanthocephala. ST=E.J. Huggins	<u>M.J. Ulmer</u>
1967	Iowa State Univ., Ames, IA (XIV) N.D. Levine, Parasitology, Problems and Promise. ST=E.J. Huggins H=P.M. Nollen [FIRST HERRICK AWARD]	<u>P.J. Silverman</u>

1968	Univ. of Wisconsin, Madison, WI (XX) D.R. Lincicome, The Goodness of Parasitism. (with APS & AIBS) ST=J.H. Greve, H=W.G. Barnes	<u>F.G. Wallace</u>
1969	Univ. of Cincinnati, Cincinnati, OH (XXI) H.W. Stunkard, Life Histories and Systematics of Parasitic Flatworms. ST=J.H. Greve, H=B. Caverny, H=T.P. Bonner	<u>H.W. Manter</u>
1970	Loyola Univ., Chicago, IL (XXII) M.J. Ulmer, Helminths from Midwest to Mediterranean. ST=J.H. Greve, H=H. Blankespoor	<u>J.L. Crites</u>
1971	Univ. of Louisville, Louisville, KY (XXIII) H. Van der Schalie, Dam Large Rivers-Then What? ST=J.H. Greve, H=R. Campbell	<u>F. Etges</u>
1972	Southern Illinois Univ., Carbondale, IL (XXIV) R.M. Cable, The Lighter Side of Parasitology. PO=T.T. Dunagan, ST=J.H. Greve, H=E.M. Cornford	<u>B.J. Jaskowski</u>
1973	Notre Dame Univ., Notre Dame, IN (XXV) R.F. Rick, Babesiosis and the Development of <i>Babesia</i> in Ticks. PO=R. Thorson, ST=J.H. Greve, H=D. Danley	<u>R. Shumard</u>
1974	Univ. of Michigan, Ann Arbor, MI (XXVI) M.J. Ulmer, Snails, Swamps and Swimmer's Itch. ST=J.H. Greve, H=P.T. LaVerde and D. Prechel	<u>D. Ameel</u>
1975	Iowa State Univ., Ames, IA (XXVII) P.M. Nollen, Studies on the Reproductive Systems of Parasitic Flatworms or All You Wanted to Know About Sex in Worms and Were Afraid to Ask. ST=J.H. Greve, H=D. Wittrock, L=V.M. Nelson [FIRST LARUE AWARD]	<u>W. Berrick</u>
1976	Univ. of Nebraska, Lincoln, NE (XXVIII) A.C. Todd, A Redefinition of Subclinical Parasitism and its Impact on World Politics. ST=W.H. Coil, PO=M.H. Pritchard, H=W.L. Current, L=C.A. Klu	<u>J. Greve</u>
1977	Kansas State Univ., Manhattan, KA (XXIX) A.J. MacInnis, Snails, Dollars, DNA and Worms. PO=W.D. Lindquist, ST=W.H. Coil, H=M. Fletcher, L=L. Smurro, L=J. Ketchum	<u>T.T. Dunagan</u>
1978	Indiana Central Univ., Indianapolis, IN (XXX) J.P. Dubey, Recent Advances in Feline and Canine Coccidia and Related Organisms. PO=M. Brandt, ST=W.H. Coil, H=D. McNair, L=G.L. Hendrickson	<u>E.J. Huggins</u>
1979	Loyola Univ., Chicago, IL (XXXI) E. Foor, Basic Studies in Reproduction (in Nematodes). PO=B.J. Jaskowski, ST=W.H. Coil, H=G. Plorin, H=D. Minchella, L=M. Fletcher	<u>D.E. Gilbertson</u>
1980	Eastern Michigan Univ., Ypsilanti, MI (XXXII) J.R. Williams, Tropical Parasitology at the Junction of the White and Blue Nile Rivers. PO=E. Waffle, ST=G. Garoian, H=C.L. Williams, L=M. Goldman, L=R. Gamble, S=Functional Morphology of Acanthocephala	<u>A.D. Johnson</u>
1981	Eastern Illinois Univ., Charleston, IL (XXXIII) G.D. Cain, Antigenic Variation: New Techniques Applied to Old Problems. PO=B.T. Ridgeway, ST=G. Garoian, H=J.M. Holy, L=B.N. Tuggle, S=Immunity to Protozoan Parasites	<u>D.M. Miller</u>
1982	Western Illinois Univ., Macomb, IL (XXXIV) J.D. Briggs, Biological Control of Invertebrates in International Programs. PO=P.M. Nollen, ST=G. Garoian, H=D.E. Snyder, L=C.L. Williams, S=Biological Control of Organisms	<u>D.G. Myer</u>

- 1983 Univ. of Illinois, Urbana, IL (XXXV) C.M. Vaughn
H.M. Moon, Speculations on the Pathogenesis of Cryptosporidiosis with Comparisons to Other Enteric Infections. PO=K.S. Todd, Jr, ST=G. Garoian, H=K.J. Hamann, L=K.W. Bafundo, S=Intestinal Protozoa
- 1984 Univ. of Iowa, Iowa City, IA (XXXVI) W.H. Coil
J. Donelson, Genetic Rearrangement and the Basis of Antigenic Variation in African Trypanosomes. PO=G.D. Cain, ST=G. Garoian, H=K.F. Forton, L=D. Woodmansee, S=Helminth Immunology
- 1985 Ohio State Univ., Columbus, OH (XXXVII) B.T. Ridgeway
K.D. Murrell, Epidemiology of Swine Trichinosis: Could Both Zenker and Leuckart be Right?, PO=P.W. Pappas, ST=G. Garoian, H=R.L. Lavy, L=H.K. Forton, S=Physiological Ecology of Parasites
- 1986 Univ. of Missouri, Columbia, MO (XXXVIII) G.D. Cain
R.C. Tinsley, Correlation of Host Biology in Polystomatid Monogenea. H=M.C. Lewis, H=I.G. Welsford, L=D.A. Leiby, PO=L. Uhazy, ST=D.M. Miller, S=Gene Expression in Helminth Development
- 1987 Southern Illinois Univ., Edwardsville, IL (XXXIX) P.M. Nollen
K. Kazacos, *Baylisascaris* Nematodes-Their Biology and Role in Larva Migrans Disease. PO=D. Myer, ST=D.M. Miller, H=D.A. Leiby, L=V.A. Conners, S=Modern Systematics in Parasitology
- 1988 Purdue University, West Lafayette, IN (XL) G. Garoian
W.H. Coil, Forty Years of AMCOP, Laying a Foundation. PO=K. Kazacos & D. Minchella, ST=D.M. Miller, H=R.A. Bautz, L=R.R. Mitchler, S=Host Parasite Genetics
- 1989 Miami Univ., Oxford, OH (XLI) A.E. Duwe
G. Castro, A Physiological View of Host-parasite Interactions. PO=R.A. Grassmick, ST=D.M. Miller, H=S.R. Morris, S=Parasites in the Immune Suppressed, Special Visit by President Kemp of ASP.
- 1990 Univ. Illinois, Urbana, IL (XLII) J.H. Hubschman
G. Cross, Phosphatidylinositol Membrane Anchor and/or Transfection of Protozoa. PO=G. McLaughlin, ST=D.M. Miller, H=L.D. Morton, L=S.R. Morris, S=Defining the Limits of Integrated Pest and Disease Management.
- 1991 University of South Dakota, Vermillion, SD, (XLIII) K.R. Kazacos
M. Dryden, What You Always Wanted to Know About Fleas on Fluffy and Fido but were Afraid to Ask. PO=A. D. Johnson, ST=D.M. Miller, H=D. Royal, L=R. Clopton, S= Host Specificity
- 1992 Univ. Wisconsin-Eau Claire, WI, (XLIV) Omer Larson
PO=D. Wittrock, ST=D.M. Miller, H=S. Storandt, L=D. K. Howe, S=Teaching of Parasitology-New Methods; Visit by ASP President J. Seed
- 1993 St. Mary's, Notre Dame, IN, (XLV) R. A. Grassmick
J. Crites, AMCOP Peragrarer Anni, Homines, Exitus PO=T.R. Platt, ST=D.M. Miller, H=M. S. Schoen, L=B. J. Davids, S="Ain't Misbehavin'": Ethology, Phylogeny and Parasitology
- 1994 Murray State Univ. Murray, KY (XLVI) Gary Uglem
E. Christiansen, Come out, come out, we know you are in there PO=L. Duobinis-Gray, ST=D. J. Minchella, H=J. Rosinski, L=R. Garrison, S=Parasite Ecology: Population and Community Dynamics
- 1995 Univ. of Wisconsin-Milwaukee (XLVII) Darwin Wittrock
E.S. Loker, Schistosomiasis in Kenya: a Copernican point of view PO= J. Coggins, ST=D.J. Minchella; H=J. Curtis; L=M. Dwinnell S=Water-borne Diseases
- 1996 Northeast MO State Univ., Kirksville, MO (XLVIII) Daniel Snyder
PO=L. C. Twining, ST=D.J. Minchella, H= V. G. Mehta, L=H. Yoder, S=Immune Aspects of Protozoan Infections: Malaria and Amoebiasis
- 1997 Butler University, Indianapolis, IN, (XLIX) Joe Camp
R. Hengst, Paleoparasitology, PO=D. Daniell; ST=D.J. Minchella; H=A. Bierberich, L=S. Kappe, S=Molecular Biology in Solving Problems in Parasitology
- 1998 Indiana State University, Terre Haute, IN (L) Jim Coggins
W. Coil, J. Crites, & T. Dunagan, AMCOP 50 - Fifty Years Revisited; PO=F. Monroy & D. Dusanic; ST=D. Wittrock; H=M. Bolek; L=K. Page S= Cytokines and Parasitic Diseases; Visit by ASP President John Oaks
- 1999 Wilmington College, Wilmington OH (LI) Dennis Minchella
P. LoVerde, Molecular Biology of Schistosomes, PO= D. Woodmansee, ST=D. Wittrock; H= J.B.Green; L=J. Curtis; S=Parasite Biochemistry by J.D. Bangs and C.F. Fioravanti.
- 2000 University of Notre Dame, Notre Dame, IN (LII) Peter Pappas
J.A. Oaks - Zen and the Art of Tapeworms PO= J. H. Adams; ST= D. Wittrock; H= A. Eppert; L= M. Bolek; HM= C. Dresden-Osborne & K. VanBuskirk S=Life Style Choices of Parasitic Protozoans by T. Sinai and J. Lebowitz
- 2001 Eastern Illinois University, Charleston, IL (LIII) Lin Twining
R.D. Smith - Environmental contamination with *Cryptosporidium parvum* from a dairy herd. PO= J. Laursen; ST= D. Wittrock; H= B. Foulk; L= M. Michalski ; HM= M. Gilliland III; B. Balu and P. Blair S= Use of Molecular Data in Parasite Systematics by M. Mort and M. Siddall
- 2002 Millikin University, Decatur, IL (LIV) David Williams
P. Brindley - Mobile genetic elements in the schistosome genome PO=Tom McQuiston; ST= D. Wittrock; H= Stacy Pfluger; L= Greg Sandland; HM= Kelly VanBuskirk and Michelle Steinauer S= Parasite Transmission and Control in Domesticated Animals by M. McAllister and L. McDougald
- 2003 Michigan State University, East Lansing (LV) Tom Platt
Robert Pennock - Darwin and the Parasitic Wasp: Teaching Evolutionary Design; PO= Pat Muzzall; ST= Darwin Wittrock; H= Luis Gondim; L= Michelle Steinauer; HM= Shawna Cook and Ahmed Sayed; C= Katie Reif, S= Vector Borne Diseases of Michigan and Adjacent States by Ned Walker and Hans Klompen
- 2004 Minnesota State University, Mankato, MN (LVI) Patrick Muzzall
Richard Clopton - Publishing with pain: The editor doesn't really hate you. PO= Robert Sorensen, ST= Darwin Wittrock; H=Rebecca LaBorde; L= Maria Castillo; HM= Angie Kuntz and Laura Duclos; C=Jenna Rodgers S= Molecular phylogenetics of parasites by Vasyil Tkach and Ramon Carreno
- 2005 Wabash College, Crawfordsville, IN (LVII) Douglas Woodmansee
John Adams - In a changing world of malaria research, can an old dog learn new tricks? PO= Eric Wetzel, ST= Darwin Wittrock; H= Amy McHenry; L= Laura Duclos; HM= Jillian Detwiler and Julie Clennon; C= Kristin Giglietti; S= Molecular Phylogenies in Nematoda by Virginia Ferris and Microbial Community Ecology of Tick-borne Human Pathogens by Keith Clay

- 2006 Winona State University, Winona, MN (LVIII) Thomas McQuiston
 Matthew Bolek - Amphibian parasites: The cool, the bad and the ugly.
 PO= Kim Bates; ST= Doug Woodmansee, S= Parasites of Wildlife of the
 Midwest by Rebecca Cole and Daniel Sutherland ; H=?; L=?; C=? HM=?
- 2007 University of Wisconsin-Oshkosh, Oshkosh, WI (LVIV)
 PO= Shelly Michalski, ST= Doug Woodmansee; H=?; L=? HM=?;
 C=?; S=?
- 2008 University of Illinois at Urbana-Champaign
 PO= Milton McAllister, ST=?; H=?; L=? HM=?;
 C=?; S=?
- 2009 Ohio Wesleyan University, Delaware, OH
 PO= Ramon Carreno, ST=?; H=?; L=? HM=?;
 C=?; S=?

List of Paid Members (As of May 16, 2006)

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Announcement of AMCOP 58

ANNUAL MIDWESTERN CONFERENCE OF PARASITOLOGISTS

JUNE 8-10, 2006

WINONA STATE UNIVERSITY IN WINONA, MINNESOTA

The 58th Annual Midwestern Conference of Parasitologists will meet June 8-10, 2006 at Winona State University in Winona, MN. The meeting will start on Thursday evening, June 8th with an opening reception. Student papers, the symposium, and all posters will be presented on Friday, June 9th followed by the banquet that evening. Faculty papers will be given on Saturday morning followed by the annual business meeting and presentation of awards. The meetings should conclude around noon on Saturday, June 10th.

The program office for the meeting is Dr. Kim Bates of Winona State University and the presiding officer is Dr. Thomas McQuiston of Millikin University. The banquet speaker will be Dr. Matthew Bolek of the University of Nebraska. His talk is entitled "Amphibian Parasites: The Cool, the Bad and the Ugly." The symposium will be presented by Dr. Rebecca Cole from USGS, BRD National Wildlife Health Center who will present "Recurring Waterbird Mortalities in Wisconsin Due to Trematodiasis" and Dr. Daniel Sutherland from the University of Wisconsin- La Crosse whose talk will be "Evidence for a Trematode Parasite Causing Severe Limb Malformations in Amphibians."

REGISTRATION

Please pre-register for AMCOP-58 by completing the enclosed form and returning it with appropriate payment to Dr. Bates at Winona State University. **Deadline for pre-registration is Friday, May 26, 2006.** Registration materials and dormitory check-in will begin at 3:00 p.m. at the East Lake Apartments of the Winona State University campus

ABSTRACTS

Students and faculty are urged to participate by presenting a 10-minute oral paper or a demonstration/poster on some aspect of parasitology. The attached abstract form for presentation at the meetings must be completed and **returned via email to Dr. Douglas Woodmansee (doug_woodmansee@wilmington.edu) by May 12, 2006.** (Faculty: Please feel free to make copies of the dues statement and abstract form to distribute to your students.)

Remember that students are eligible to receive the Herrick Award for best poster presentation and LaRue Award for best paper. Undergraduates are eligible for the Cable undergraduate award. The best overall presentation will receive a travel grant to present their research at the 2007 American Society of Parasitologists meeting.

ACCOMMODATIONS

On-campus accommodations will be available in the East Lake Apartments at a cost of \$25.00/night, including tax, for a quad suite and \$35.00/night for a double suite. Linens, blanket and pillow are provided.

Off-campus accommodations within short driving distance is available. A block of 20 rooms have been reserved at the Best Western Riverport Inn & Suites 507-452-0606 or 800-595-0606 www.bestwestern.com until May 15th 2006.

Other off-campus accommodations in the area include:

Americ Inn
507-457-0249 or 800-634-3444
www.americinn.com

Holiday Inn Hotel & Suites
507-453-0303 or 888-292-0303
www.holiday-inn.com

Quality Inn
507-454-4390 or 800-562-4544
www.qualityinn.com

Nichols Inn
507-452-6066 or 866-642-4667
www.nicholsinn.com

Carriage House Bed & Breakfast
507-452-8256
www.chbb.com

TRAVEL AND LOCATION

Winona State University is located in Winona, Minnesota, 30 miles from LaCrosse, Wisconsin and 120 miles from the Twin Cities. It is located in the high bluff country of the beautiful upper Mississippi Valley.

If you are driving to campus, Winona State University is easily accessible from Highway 61. Information from Winona Visitor's Bureau is available at <http://www.visitwinona.com/>

Winona is one of the most beautiful places on earth, nestled between the covered limestone river bluffs that rise 500 feet and the stunning mighty Mississippi River. The historical architecture and cultural opportunities give Winona a soul that is living, breathing and growing. Still, Winona and its wealth of lodging, shopping and culture is relatively undiscovered, with a resident population of only 26,000.

Winona was founded in 1851 by a steamboat captain. Positioned on a large island in the Mississippi, the lumber industry helped it grow quickly and by 1900 Winona had more millionaires per capita than any place in the United States. Winona's history lives on in architecturally significant historic buildings and vintage homes that thrill history buffs.

Please see the enclosed map of Winona and the campus for a more precise location of these buildings or go to <http://www.winona.edu/admissions/location.htm>.

PARKING

Free parking is available through out most of campus. All areas of campus are a short walk to the meeting site and dorms.

THURSDAY EVENING SOCIAL

The opening reception will be held at ZaZa's Pub and Pizzeria in Winona beginning at 6 pm. ZaZa's is located at the corner of Huff and Mark Street - 529 Huff St (in the southwest corner of campus). See the enclosed map.

FRIDAY AND SATURDAY SESSIONS

The Friday morning session will begin with student oral presentations in completion for the LaRue Award at 9:00 am in Stark Auditorium (Stark 103), located first on the first floor of Stark Hall. After lunch there will be a symposium presented by Rebecca Cole on trematode infected waterbirds and Daniel Sutherland on frog deformities due to trematode infections. The afternoon will conclude with poster/demonstrations, including student posters in competition for the Herrick Award, and a silent auction of parasitological materials. The Saturday morning session will feature contributed papers and the annual business meeting. We anticipate closing the meeting around noon.

BANQUET

The banquet will be held on Friday evening in the Purple Rooms of Kryszko Commons, located in the southwest area of campus. The social hour will begin at 6:00pm with dinner following at 7:00pm. Banquet tickets must be purchased at the time of registration. Persons wishing vegetarian meals or persons with special dietary needs should include a note with their registration. Every effort will be made to accommodate these requests.

FOOD

Continental breakfast will be served outside the meeting rooms in Stark Hall on Friday and Saturday mornings, food service will be available on campus and several restaurants are within walking distances for lunches. Locations of dining facilities will be provided at check-in.

SILENT AUCTION

Once again, AMCOP-58 will feature a silent auction of various professional materials to raise money for student awards. Individuals wishing to donate items may send them to Kim Bates or Douglas Woodmansee or, more simply, bring them to the meeting.

DUES

The financial status of AMCOP is relatively strong due to receipt of membership dues, silent auction sales, generous donations, and budget-minded program officers. However, the membership has voted to maintain yearly membership dues of \$10.00 for faculty and emeritis membership and \$5.00 for students. Membership in AMCOP is still a great bargain!

Sending your dues will ensure your receipt of the Program for AMCOP 58!

2006 AMCOP DUES FORM

Name _____

Address _____

Phone # _____

e-mail _____

DUES – Faculty & Emeriti (\$10)/Student (\$5): _____

CONTRIBUTION to student awards*: _____

TOTAL _____

*Note: Eli Lilly continues to support the Herrick Award, but the remainder of the awards - LaRue Award (\$300), honorable mention awards (\$200), and the Cable undergraduate award (\$100) - are supported by the AMCOP membership. To ensure continued distribution of these student awards, financial support from the membership is necessary.

Please make checks payable to AMCOP.

Send this form and your check to:

Dr. Douglas Woodmansee
AMCOP Secretary/Treasurer
Pyle Center Box 1263
Wilmington College
251 Ludovic Street
Wilmington, OH 45177

**58TH ANNUAL MIDWESTERN CONFERENCE OF
PARASITOLOGISTS
JUNE 8-10, 2006
WINONA STATE UNIVERSITY IN WINONA, MN**

REGISTRATION AND BANQUET REGISTRATION FORM

Please use this form for conference registration and on-campus housing reservation. Deadline for registration is May 26th, 2006.

NAME: _____

INSTITUTION: _____

DEPARTMENT: _____

MAILING ADDRESS: _____

PHONE: _____

E-MAIL: _____

REGISTRATION FEE:

Student Member - \$5.00 \$ _____

Professional Member - \$15.00 \$ _____

BANQUET:

_____ meal tickets @ \$16.00 each \$ _____

HOUSING: (Please indicate: Male _____ or female _____)

_____ nights @ \$25.00 night (Quad suite) \$ _____

_____ nights @ \$35.00 night (Double suite) \$ _____

Arrival date/time: _____

Departure date/time: _____

Roommate Preference _____

TOTAL: \$ _____

Please make checks payable to **Winona State University** with the notation "AMCOP-58" on the front. Return completed form and payment to:

AMCOP-58, c/o Kim Bates
Department of Biology
Winona State University
P.O. Box 5838
Winona, MN 55987

For questions, call Kim Bates at 507-457-5458 or email at:
kbates@winona.edu



