

**AMCOP 62, June 3-5, 2010
Western Illinois University
Macomb, Illinois**

Contents

AMCOP-62
Officers 1
Acknowledgements 2
Schedule.....3
Abstracts7
AMCOP-61
Meeting Summary 21
Resolutions 23
ORGANIZATION INFORMATION 24
SUMMARY OF PREVIOUS MEETINGS27
2009 FINANCIAL REPORT32
MEMBERSHIP DIRECTORY 33
MAPS 37
DUES NOTICE 39

Officers for 2010

Presiding OfficerDr. Jeffrey Laursen
Eastern Illinois University
Program OfficerDr. Shawn Meagher
Western Illinois University
Secretary/ TreasurerDr. Douglas Woodmansee
Wilmington College

**Our Website:
www.amcop.org**

2010 AMCOP DUES

Name _____

Address _____

Phone # _____

Email _____

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

CONTRIBUTION to student awards: \$ _____

TOTAL \$ _____

Please make checks payable to AMCOP.

Send this form and your check via US Mail to:

Dr. Douglas Woodmansee
AMCOP Secretary/Treasurer
Pyle Center Box 1263
Wilmington College
1870 Quaker Way
Wilmington, OH 45177

This form also available at
www.amcop.org

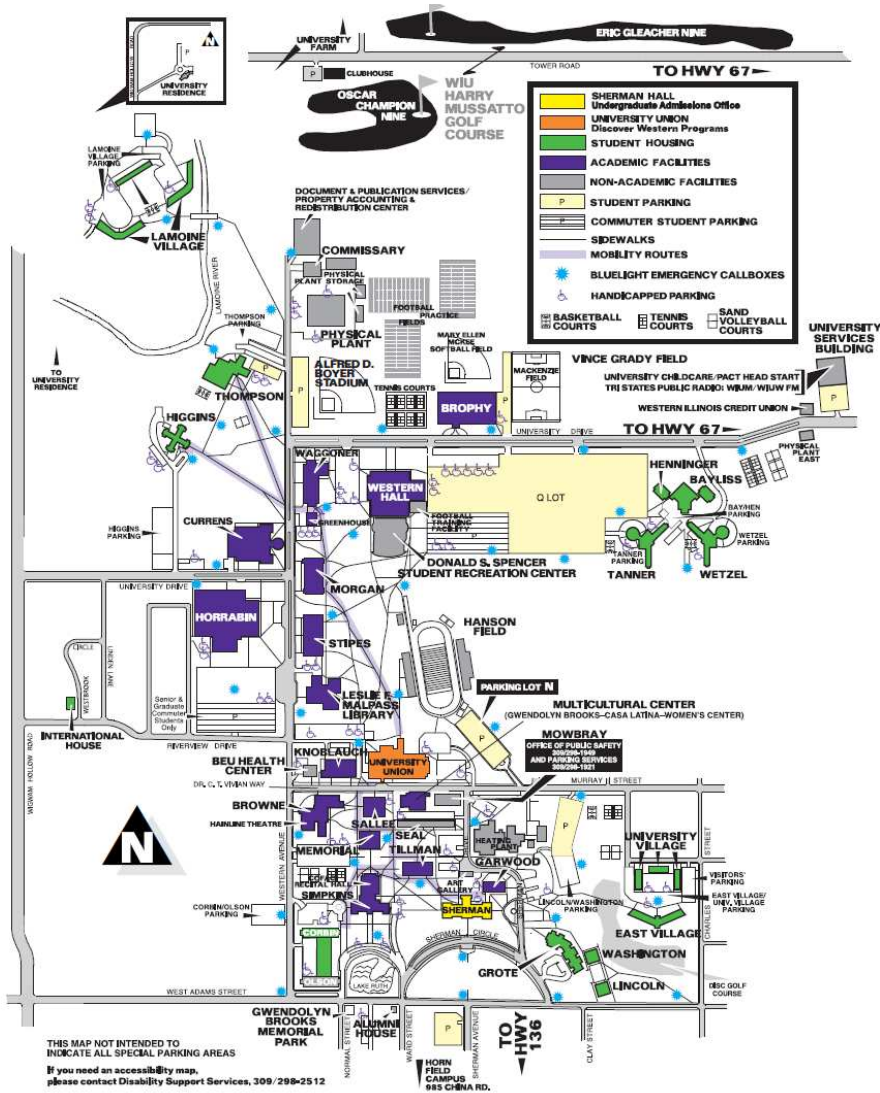
Acknowledgements

ELANCO ANIMAL HEALTH
A Division of Eli Lilly and Company
For support of the Herrick Award.

THE AMERICAN SOCIETY OF
PARASITOLOGISTS
For support of speakers' travel expenses.

THE MEMBERSHIP OF AMCOP
For support of the LaRue, Cable, and Honorable Mention
Awards and other expenses.

MAPS



Schedule

THURSDAY, JUNE 3, 2010

- After 2:00 pm Arrival and Check-in at Thompson Residence Hall.
- 6:00 -9:00 pm Opening Mixer, Prairie Lounge of the University Union.

FRIDAY, JUNE 4, 2010
Capitol Room, University Union

- 8:00am Continental Breakfast & Silent Auction Setup
- 8:40 Opening Remarks and Welcome
- Dr. Shawn Meagher, Program Officer
 - Dr. Richard Anderson, Associate Dean of the College of Arts and Sciences
 - Dr. Paul Nolen, Professor Emeritus, Biological Sciences

CONTRIBUTED PAPERS

- 9:00 1. A Parasitological Survey of Pen-raised Bobwhite Quail (*Colinus virginianus*) in Illinois. **BRYAN ROLFSEN (UG)** and **JEFFREY LAURSEN (MP)**, Department of Biology, Eastern Illinois University, Charleston, IL 61920.
- 9:20 2. Ecology of Pinworms (Thelastomatidae) in the Australian Cockroach. **KRISTA WINTERS (GS)**, **KENNETH W. MCCRAVY (MP)**, and **SHAWN MEAGHER (MP)**, Biological Sciences, Western Illinois University, Macomb, Illinois 61455.
- 9:40 3. Evaluation of synlophes and bursa as taxonomic characters for Viannaiinae (Nematoda: Trichostrongyloidea). **R. PHILIP SCHEIBEL (GS)** and **F. AGUSTÍN JIMÉNEZ (MP)**, Department of Zoology, Southern Illinois University, Carbondale IL 62901-6501.
- 10:00 Break & Silent Auction Bidding

10:20 **4.** Investigation of the seasonal prevalence of gastrointestinal nematodes and protozoal parasites of naturally infected alpacas, Lama pacos, in the Midwest. **KATHY JOHNSON (GS)** and **JOSEPH CAMP, Jr. (MP)**, Comparative Pathobiology, Purdue University, West Lafayette, IN 47907.

MAPS

10:40 **5.** The role of damselflies (Odonata: Zygoptera) as paratenic hosts in the transmission of *Halipegus eccentricus* (Digenea: Hemiuridae) to anurans. **MATTHEW G. BOLEK (MP)**, **HEATHER R. TRACY (GS)**, and **JOHN JANOVY JR (MP)**. ¹Department of Zoology, Oklahoma State University, Stillwater, Oklahoma, OK 74078, and ²School of Biological Sciences, University of Nebraska-Lincoln, Lincoln, NE 68588.

11:00 **6.** Redescription of the African *Chordodes albibarbus* Montgomery 1898, and description of a new species of *Chordodes* (Gordiida, Nematomorpha) and its non-adult stages from Cameroon, Africa. **MATTHEW G. BOLEK (MP)**, **BEN HANELT (MP)**, **ANDREAS SCHMIDT-RHAESA (MP)**, and **DENNIS J. RICHARDSON (MP)**. ¹Department of Zoology, Oklahoma State University, Stillwater, OK 74078, ²Department of Biology, University of New Mexico, Albuquerque, NM 87131, ³Zoological Museum and Institute, Biocenter Grindel, Martin-Luther-King-Platz 3, 20146 Hamburg, Germany, and ⁴School of Health Sciences, Quinnipiac University, Hamden, CT 06518.

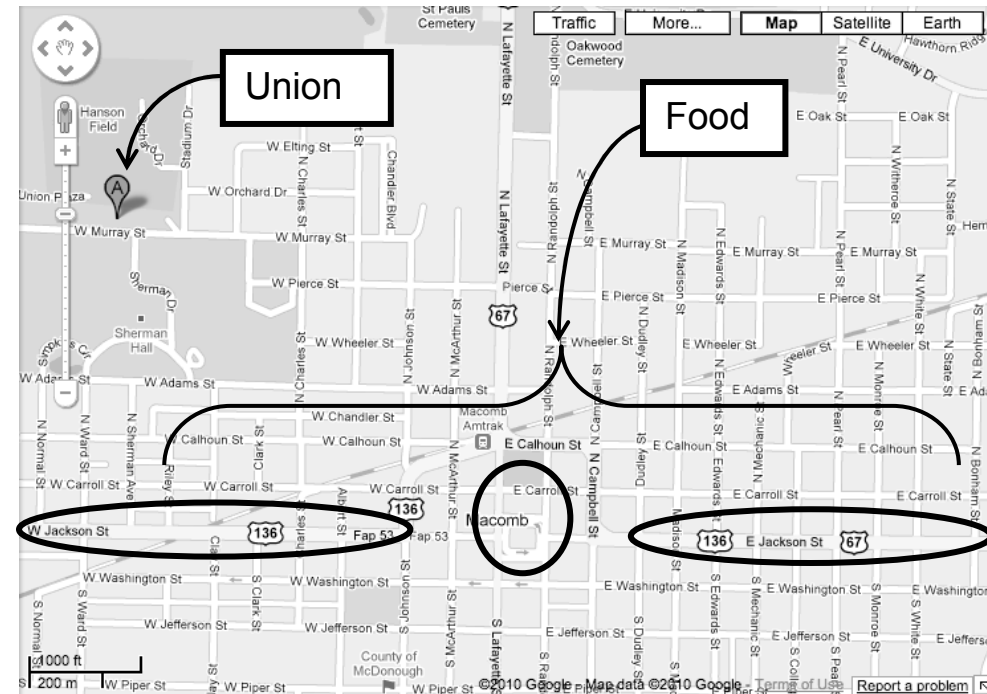
11:20 **DR. GEORGE CAIN**, President, The American Society of Parasitologists

11:30 Lunch

THE AMCOP SYMPOSIUM
Capitol Room, University Union

Can parasitic worms treat autoimmune disorders?

1:30pm **7.** Helminths: Do they belong in our Immune Ecosystem?
DAVID ELLIOTT, Department of Internal Medicine,
University of Iowa, Iowa City, IA 52242



Shweta Srivastava Georgetown University 5210 3rd St. NE, Apt. 104 Washington, DC 20011 202-320-0994 shweta200in@yahoo.co.in	Elizabeth Thiele Purdue University 915 W. State St. West Lafayette, IN 47907 765-494-9130 eathiele@purdue.edu
Lin Twining Truman State University Department of Biology 100 E. Normal St. Kirksville, MO 63501 660-785-4634 ltwining@truman.edu	Michael Vodkin University of Illinois Division of Research Safety 101 S. Gregory St. Urbana, IL 61801 217-244-7362 m-vodkin@illinois.edu
Elizabeth Warburton Western Michigan University Department of Biological Sciences 1903 W. Michigan Ave. Kalamazoo, MI 49008 269-387-5646 elizabeth.m.warburton@wmich.edu	Justin Wilcox Eastern Illinois University 1431 9th St. Charleston, IL 61920 847-848-2007 jjwilcox@eiu.edu
Jared Wilkinson Purdue University 10232 Wellborne Dr. Indianapolis, IN 46236 317-370-8014 wilkins3@purdue.edu	Darwin Wittrock Univ. of Wisconsin - Eau Claire Department of Biology Phillips Science Hall Rm. 330 Eau Claire, WI 54701 715-836-4166 wittrod@uwec.edu
Douglas Woodmansee Wilmington College Pyle Center Box 1263 1870 Quaker Way Wilmington, OH 45177 937-382-6661text 431 doug_woodmansee@wilmington.edu	Michelle Yeargan University of Kentucky 108 Gluck Equine Research Center Lexington, KY 40546 859-257-4757 myeargan@uky.edu
Tim Yoshino Dept. of Pathobiological Sciences University of Wisconsin 2115 Observatory Dr. Madison, WI 53706 608-263-6002 yoshinot@svm.vetmed.wisc.edu	

2:30 **8. Parasites as Old Friends: Multiple Sclerosis. JOHN O. FLEMING**, Department of Neurology, University of Wisconsin, Madison, WI 53792

POSTER SESSION
Prairie Lounge, University Union

3:45 **9. Survey of Alpacas within the Chippewa Valley (Wisconsin) for the parasites *Cryptosporidium* spp. and *Eimeria macusaniensis*. KAYLA WILLIAMS (UG) and DARWIN WITTRUCK (MP)**, Department of Biology, University of Wisconsin-Eau Claire, Eau Claire, WI 54701.

10. Methodology for determining alarm substance cell (ASC) density in relation to black spot parasite load in the creek chub. KATE PISCHKE (UG), MEGAN MELLER (UG), DAVID LONZARICH (MP), and DARWIN WITTRUCK (MP), Department of Biology, University of Wisconsin-Eau Claire, Eau Claire, WI 54701.

11. Survey of rural farm cats for the presence of the parasite *Tritrichomonas foetus*. EMILY PIERCE (UG), CHELSEA SAGER (UG), and DARWIN WITTRUCK (MP), Department of Biology, University of Wisconsin-Eau Claire, Eau Claire, WI 54701.

12. Host Switching and Parasite Diversity in Invasive Carp of Illinois. JUSTIN WILCOX (GS) and JEFFREY LAURSEN (MP), Department of Biology, Eastern Illinois University, Charleston IL, 61920.

13. Egg production by pinworms living in Australian cockroaches. SHAWN MEAGHER (MP), KRISTA WINTERS (GS), JAMAAL ADAMS (UG), KEVIN BRADT (UG), SHELBY LEUDERS (UG), TERESA MCDONNELL (UG), STEPHANIE STENGER (UG), TABITHA WILLIAMS (UG), and MEGAN WOODRUM (UG), Biological Sciences, Western Illinois University, Macomb, IL 61455

14. Size and fecundity of two pinworm species living in Australian cockroaches. DANYA BOKHARIY (GS), KENNETH W. MCCRAVY (MP), KRISTA L. WINTERS

(GS), and SHAWN MEAGHER (MP), Biological Sciences, Western Illinois University, Macomb, IL 61455

15. Investigation of *Biomphalaria glabrata* plasma factor(s) possessing *in vitro* toxicity to *Fascioloides magna* miracidia. **KATHRYN COYNE**¹(GS), **JEFF LAURSEN**²(P), **TIMOTHY YOSHINO**¹(MP) ¹Department of Pathobiological Sciences, University of Wisconsin, Madison, WI 53706 ²Department of Biological Sciences, Eastern Illinois University, Charleston, IL 61920.

BANQUET
Lamoine Room
University Union

Mixer 6:00 – 6:30 pm
Dinner 6:30 – 7:30 pm
After Dinner Presentation 7:30 pm

Invited speaker: **Dr. Tim Yoshino**, The University of Wisconsin.

Frankenflukes: Parasitic GMO's.

SATURDAY, JUNE 5, 2010.
Capitol Room, University Union

8:00am Continental Breakfast
Silent Auction

9:00 Silent Auction Bidding Closes

CONTRIBUTED PAPERS

9:00 **17.** Differential lethality of the *Culex pipiens* midgut for filarial worms. **SHELLY MICHALSKI**¹, **SARA ERICKSON** (GS)², **LYRIC BARTHOLOMAY**³ AND **BRUCE CHRISTENSEN** (MP)²...¹Department of Biology and Microbiology, University of Wisconsin Oshkosh, Oshkosh,

Eugene Lyons University of Kentucky Department of Veterinary Science Gluck Equine Research Center Lexington, KY 40546 859-257-3873 elyons1@uky.edu	Tom McQuiston Millikin University Department of Biology 1184 W. Main St. Decatur, IL 62522 217-424-6236 tmcquiston@millikin.edu
Shawn Meagher Western Illinois University Department of Biological Sciences Macomb, IL 61455 309-298-2409 sa-meagher1@wiu.edu	Shelly Michalski Univ. of Wisconsin - Oshkosh Dept of Biology and Microbiol. 800 Algoma Blvd. Oshkosh, WI 54901 920-424-7082 michalsk@uwosh.edu
Dennis Minchella Purdue University Department of Biological Sciences 915 W. State St. West Lafayette, IN 47907 765-494-8188 dennisM@purdue.edu	Wendell Patton Ohio Wesleyan University Department of Zoology Delaware, OH 43015 740-368-3818 wkpatton@owu.edu
Thomas Platt Saint Mary's College Department of Biology Notre Dame, IN 46556 574-284-4669 tplatt@saintmarys.edu	Leonard Scheibel Univ of Illinois Coll. of Med.at Peoria Box 1649 1 Illini Dr. Peoria, IL 61656 309-671-3412 scheibel@uic.edu
Raymond Scheibel 217 Pine Shores Dr. #41 Carbondale, IL 62092 309-678-2031 philscheibel@gmail.com	John Shea Gonzaga University Biology Department Spokane, WA 99258 509-313-5594 SHEA@gonzaga.edu
Cailee Smith Ohio Wesleyan University Department of Zoology 40 Rowland Ave. HWCC #937 Delaware, OH 43015 401-359-6314 casmith@owu.edu	Daniel Snyder Elanco Animal Health P.O. Box 708 2500 Innovation Way Greenfield, IN 46140 317-277-4439 snyder_daniel_e@lilly.com

Tom Dunagan 29 Hidden Trace Carbondale, IL 62901 618-549-1638 tdunagan@siu.edu	Merritt Gilliland III Univ. of Michigan Med. School 6240 MSRB III, SPC5642 1150 W. Medical Center Dr. Ann Arbor, MI 48109 734-222-9923 mgillill@umich.edu
Sherman Hendrix Gettysburg College Department of Biology Gettysburg, PA 17325 717-337-6152 shendrix@gettysburg.edu	Tarig Higazi Ohio University Zanesville 1425 Newark Rd. Zanesville, OH 43147 740-588-1533 higazi@ohio.edu
Daniel Howe University of Kentucky Department of Veterinary Science 108 Gluck Equine Research Center Lexington, KY 40546 859-257-4757 ex.81113 dkhowe2@uky.edu	Judith Humphries Lawrence University Room 334 Science Hall 711 Boldt Way Appleton, WI 54911 920-832-7268 judith.humphries@lawrence.edu
Agustin Jimenez Southern Illinois University 355F Life Sciences 2 1125 Lincoln Dr. Carbondale, IL 62901 618-453-5540 afustinjz@zoology.siu.edu	Kathy Johnson Purdue University Dept of Comp. Pathobiology 725 Harrison St. West Lafayette, IN 47907 765-494-7558 kajohnso@purdue.edu
Lisa Keefe Purdue University Dept. of Comparative Pathobiology 725 Harrison St. West Lafayette, IN 47907 765-494-7558 lkeefe@purdue.edu	Richard Klann Upper Iowa University Department of Biology 605 Washington Fayette, IA 52142 563-425-5245 klannr@uiu.edu
Omer Larson University of North Dakota Department of Biology Box 9019 Grand Forks, ND 58202 701-775-8618 omer.larson@und.nodak.edu	Jeff Laursen Eastern Illinois University Dept of Biological Sciences 600 Lincoln Ave. Charleston, IL 61920 217-581-3914 jrlaursen@eiu.edu

WI 54901 ²Department of Pathobiological Sciences,
University of Wisconsin Madison, Madison, WI 53706
³Department of Entomology, Iowa State University, Ames, IA
5001.

- 9:20 **18.** Endemism of parasites shapes the parasite communities of didelphid marsupials. **F. AGUSTIN JIMENEZ**
Department of Zoology, Southern Illinois University,
Carbondale Illinois 62501
- 9:40 **19.** Re-examination of *Neopolystoma liewi* (Monogenea: Polystomatidae) from the conjunctival sac of *Cuora amboinensis* (Testudines: Geomydidae) from Malaysia, and the importance of specimen preparation in taxonomic studies. **THOMAS R. PLATT** and **ANDREA FIRTH** (UG),
Department of Biology, Saint Mary's College, Notre Dame,
IN 46556
- 10:00 **20.** Parasitic organisms and parasitic ideas: More than meets the eye? **KEVIN S. BALDWIN (MP)**, Department of
Biology, Monmouth College, Monmouth, IL 61462
- 10:20 Break
- 10:40 Business Meeting and Award Presentations.
Dr. Jeffrey Laursen, Presiding.

Abstracts

- 1** A Parasitological Survey of Pen-raised Bobwhite Quail (*Colinus virginianus*) in Illinois. **BRYAN ROLFSEN (UG)** and **JEFFREY LAURSEN (MP)**, Department of Biology,
Eastern Illinois University, Charleston, IL 61920.

This survey of intestinal parasites of bobwhite quail (*Colinus virginianus*) was conducted in Casey, IL between the months of May and November 2009. Parasites were sampled from a total of 43 pen-raised quail; using necropsies, fecal examinations, and blood smear analyses. Litter egg burdens were also estimated. Three endoparasites, including two nematodes (*Heterakis* sp., *Capillaria* sp.) and one protozoan (*Eimeria* sp.) were found throughout the sample period. *Eimeria* sp. occurred in young birds, but those that

survived developed immunity. *Capillaria* sp. was present in older birds, and high intensity infections caused fatalities. *Heterakis* sp. occurred periodically at low levels throughout the study. Potential management techniques meant to lower parasite levels are discussed – vigilant sanitation ranks as the number one priority in prevention.

- 2 Ecology of Pinworms (Thelastomatidae) in the Australian Cockroach. **KRISTA WINTERS (GS)**, KENNETH W. MCCRAVY (MP), and SHAWN MEAGHER (MP), Biological Sciences, Western Illinois University, Macomb, Illinois 61455.

Parasites are associated with almost every species on earth. Pinworms are small parasitic roundworms that live in the digestive tract of most animals, including cockroaches. This research project dealt with a common greenhouse pest, *Periplaneta australasiae*, the Australian cockroach and the pinworms associated with them. Three major aspects of the cockroach/pinworm association were investigated: 1) what species of pinworms are found in the cockroach, 2) does cockroach age or sex affect levels of infection, and 3) if multiple pinworm species reside in the cockroach, does competition occur? A total of 356 cockroaches were trapped and dissected and 2146 pinworms were recovered. Of the 356 dissected cockroaches, 208 had identifiable pinworm communities, which were composed of both *Leidyneria appendiculata* and *Thelastoma* spp. We found that age is a factor in determining infection levels of all pinworms combined, as well as *L. appendiculata* and *Thelastoma* spp. alone. Older (larger) cockroaches had more pinworms. Age also affected the prevalence of infection. Prevalence tended to increase with increasing age, then decrease from late-stage juveniles to adults. This change was statistically significant in *Thelastoma* spp. I found that sex did not affect pinworm intensity but did seem to affect the prevalence of *L. appendiculata* and *Thelastoma* spp. in an age-dependent manner. In both cases, prevalence decreased from late-stage juveniles to adult in males, but not females. Finally, I found evidence for competition between *L. appendiculata* and *Thelastoma* spp. Both species occurred together less often than expected by chance.

- 3 Evaluation of synlophe and bursa as taxonomic characters for Viannaiinae (Nematoda: Trichostrongyloidea). **R. PHILIP SCHEIBEL (GS)** and F. AGUSTÍN JIMÉNEZ (MP), Department of Zoology, Southern Illinois University, Carbondale IL 62901-6501.

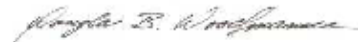
Membership Directory (Dues Paid in Either 2009 or 2010)

Trudy Aebig University of Cincinnati 1683 Beechshire Dr. Cincinnati, OH 45255 513-295-9039 aebigtj@gmail.com	Matthew Bolek Ollahoma State University Department of Zoology 501 Life Sciences West Stillwater, OK 74078 405-477-9075 bolek@okstate.edu
Matt Brewer Iowa State University College of Veterinary Medicine S. 16th St. Ames, IA 50010 715-460-0258 brewermt@iastate.edu	Nathaniel Butler Iowa State University 105 Blackberry Ct. Ames, IA 50010 320-219-2456 butlernm@uwec.edu
Joseph Camp Jr. Purdue University Dept. of Comparative Pathobiology 725 Harrison St. West Lafayette, IN 47907 765-496-2463 jcamp@purdue.edu	Ramon Carreno Ohio Wesleyan University Department of Zoology 90 S. Henry St. Delaware, OH 43015 740-368-3893 racarren@owu.edu
Paul Catalano Lakeland Community College 4868 Stow Rd. Stow, OH 44224 330-686-9815 p.catalanosr@att.net	James Coggins Dept of Biological Sciences Univ. of Wisconsin - Milwaukee Milwaukee, WI 53021 414-229-4350 coggins@uwm.edu
Sriveny Dangoudoubiyam Purdue University 725 W. Harrison St. West Lafayette, IN 47907 765-494-7546 dsriveny@purdue.edu	David Daniell Dept. of Biological Sciences Butler University Indianapolis, IN 46208 317-940-9348 ddaniell@butler.edu

**2009 AMCOP Financial Report
Final Report**

Cash on Hand 1/1/2009	\$4,262.36	
Expenses		
AMCOP 61 Program Duplication	\$108.82	
Postage	\$13.42	
Certificates & Holders	\$58.77	
Herrick Award	\$300.00	
LaRue Award	\$300.00	
Cable Award	\$100.00	
Honorable Mention Awards	\$100.00	
Bank Fees	\$0.00	
Office Supplies	\$0.00	
Speaker Travel	\$0.00	
2008 Student Travel Awards	\$0.00	
2009 Student Travel Awards	\$200.00	
Web Site Expense	\$0.00	
Event Insurance	\$278.00	
Total Expenses	\$1,457.01	
Income		
2009 Dues Payments	\$320.00	
2009 Member Contributions	\$525.00	
Lilly Donation	\$300.00	
ASP Support	\$250.00	
Silent Auction Revenue	\$73.50	
Interest Income	\$132.37	
Total Income	\$1,600.87	
Cash on Hand 12/31/2010	\$4,406.22	
Operating Surplus (Loss) for 2009	\$ 143.86	
Principal Value of CD	\$7,000.00	
Current Net Worth	\$11,406.22	

Submitted By:



Douglas B. Woodmansee
Secretary/Treasurer

Financial Report Approved by
2010 Auditing Committee:

The superfamily Trichostrongyloidea (Travassos, 1937) Durette-Desset, 1985 includes numerous diverse groups of parasites divided into 14 families and 24 subfamilies. Each family contains genera of varied morphology, yet much emphasis has been placed on characters of the caudal bursa and the synlophe as keys to classifying the nematodes and understanding their morphological evolution. Bursal arrangement types based on disposition of rays came about in order to group the parasites according to family and subfamily. However, variation in bursal arrangement can exist even within a genus, as in the case of *Viannaia* Travassos, 1914. In this study, I compare and contrast the similarities and differences in bursal arrangement and synlophe in Viannainae Neveau-Lamaire, 1934. The examination of representative species of *Travassostrongylus* Orloff, 1933, *Viannaia*, and *Hoineffia* Diaw, 1976, allows the understanding of the intra and interspecific variability of this structure. I hypothesize that significant bursa type variation exists between the genera in this subfamily. Inconsistencies in bursa types across Viannainae would suggest that bursal arrangements are not reliable diagnostic characteristics. Additionally, the positions of cuticular ridges on the synlophe are structures that provide another level of analysis. In examining these parasites I attempt to answer the following question: is bursal variability also observed in sister genera? In general, this study would reexamine the key characters of Trichostrongyloid classification and work towards a taxonomic revision of the family Viannidae Durette-Desset, 1982.

4 Investigation of the seasonal prevalence of gastrointestinal nematodes and protozoal parasites of naturally infected alpacas, *Lama pacos*, in the Midwest. **KATHY JOHNSON (GS)** and Joseph Camp, Jr. (MP), Comparative Pathobiology, Purdue University, West Lafayette, IN 47907.

Alpacas, *Lama pacos*, have increased in popularity in the United States. Their gentle dispositions, low feeding costs and high selling prices for quality breeding –age males and females have led to an increased demand for alpacas. Due to these qualities, owners from various backgrounds are now raising alpacas, including those with limited farm experience. Small ruminants often have problems attributed to gastrointestinal parasitism. Frequently, a decrease in productivity of the animal occurs and with severe infections death can result. The types of parasites, infection levels, and effects that seasonal changes have on the prevalence of gastrointestinal (GI) parasites in alpacas located in Indiana were unknown. Previously,

most of the information regarding GI parasitism in alpacas has been extrapolated from research done in South America. The objectives of this study were to determine the types of gastrointestinal nematode and protozoal parasites and their infection levels in naturally infected healthy alpacas living in the Midwest, and the effects that seasonality may have on the prevalence of GI parasites. One-hundred forty-three alpacas selected from 11 farms located in Indiana and Illinois were sampled in the year-long study. Questionnaires were submitted to the farm owners regarding husbandry practices currently in use. Dewormer resistance is a major problem in small ruminants and is expected to occur among the camelids as well. Under-dosing and frequent use of anthelmintics are contributing factors to the emergence of dewormer resistance. Currently, there are no approved dewormers for use in camelids, and questions exist as to correct dosages. By determining the effect seasonal variations have on the prevalence of GI parasites, the frequency with which dewormers are used may be reduced, thereby slowing the emergence of dewormer resistance.

5 The role of damselflies (Odonata: Zygoptera) as paratenic hosts in the transmission of *Halipegus eccentricus* (Digenea: Hemiuridae) to anurans. ¹MATTHEW G. BOLEK (MP), ¹HEATHER R. TRACY (GS), and ²JOHN JANOVY JR (MP). ¹Department of Zoology, Oklahoma State University, Stillwater, Oklahoma, Stillwater, OK 74078, and ²School of Biological Sciences, University of Nebraska-Lincoln, Lincoln, NE 68588.

Halipegus eccentricus is a common hemiurid trematode in the eustachian tubes of North America frogs. However the life cycle of this species has never been completely elucidated. Studies on *H. eccentricus* suggest that it has a 3-host life cycle. Here, we show through fieldwork and host specificity experimental infections that the life cycle of *Halipegus eccentricus* utilizes 4 hosts. Metamorphosed anurans become infected with *H. eccentricus* by feeding on infected damselflies; worms resided in the stomach of anurans, migrate to the eustachian tubes within 32-39 days post-exposure (DPE), and release eggs 50-60 DPE. Cystophorous cercariae develop in *Physa gyrina* snails within 32-35 DPE, infect ostracod (*Cypridopsis* sp.) second intermediate hosts, and develop to metacercariae. Fifteen- to 19-dayold metacercariae from ostracods are infective to both damselfly larvae and metamorphosed anurans. Field surveys of damselflies and tadpoles along with laboratory exposure of damselfly larvae, metamorphosed anurans, and tadpoles

	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) <u>Patrick Muzzall</u> 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 Vasy Tkach and Ramon Carreno
2005	Wabash College, Crawfordsville, IN (LVII) <u>Douglas Woodmansee</u> 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) <u>Thomas McQuiston</u> Matthew Bolek - Amphibian parasites: The cool, the bad and the ugly. PO= Kim Bates; ST= Doug Woodmansee; H= Andrew Claxton; L= Kristin Herrmann; C= Lindsey Stillson; HM= Brenda Pracheil, Kristin Giglietti; S= Parasites of Wildlife of the Midwest by Rebecca Cole and Darwin Wittrock
2007	University of Wisconsin-Oshkosh, Oshkosh, WI (LIX) <u>Jason Curtis</u> David Williams – The Genomics Revolution in Parasitology. PO= Shelly Michalski, ST= Doug Woodmansee; H= Christine Hsiao; L= Shriveny Dangoudoubyam HM= Peter Ziniel, Nathan Peterson; C= Emily Doucette, S= Tropical Disease by Gary Weil and Peter Fischer
2008	University of Illinois at Urbana-Champaign (LX) <u>Robert Sorensen</u> Dennis Minchella – P.C. (Post Cable) Parasitology at Purdue. PO= Milton McAllister, ST= Doug Woodmansee; H= Nathan Peterson; L= Erica Mize HM= Apichat Vitta, Jillian Detweiler; C= Kyle Luth, S= Parasitic Protists by Laura Knoll and Alexa Rosypal.
2009	Ohio Wesleyan University, Delaware, OH (LXI) <u>Daniel Howe</u> Eugene Lyons - Hookworms (<i>Uncaria</i> spp.) in Pinnipeds with Notes on the Biology of Northern Fur Seals. PO= Ramon Carreno, ST= Doug Woodmansee; H= Sriveny Dangoudoubyam; L= Elizabeth Thiele, HM= Matthew Brewer; C= Cailee Smith; S= Ectoparasites by Susan C. Jones and Glen R. Needam
2010	Western Illinois University, Macomb, IL (LXII) <u>Jeffrey Laursen</u> Tim Yoshino - Frankenflukes: Parasitic GMO's. PO= Shawm Meagher, ST=Doug Woodmansee; H=?; L=? HM=?; C=?; S= Can Parasitic worms treat autoimmune disorders? by David Elliott and John O. Fleming.
2011	Saint Mary's College, Notre Dame IN (LXIII) PO= Tom Platt, ST=?; H=?; L=? HM=?; C=?; S=?

- 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 Peragrare 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. Dwinell
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

with infected ostracods indicated that only metamorphosed anurans and damselflies become infected with *H. eccentricus*, whereas field collected tadpoles and laboratory exposed tadpoles were never infected with *H. eccentricus*. Because little morphological change occurred in the metacercaria stage of *H. eccentricus* between the ostracod second intermediate host and damselfly host, and metamorphosed anurans became infected with *H. eccentricus* metacercariae recovered from both host groups, we suggest that odonates serve as paratenic hosts in this life cycle. Additionally, our field work and experimental infections provide data on the use of odonates as the route of infection by another North American *Halipegus* sp. that matures in the stomach of frogs. Our data indicates that when the life cycles are known the use of odonates as the route of infection to anurans is common in life cycles of *Halipegus* spp.; and all species exhibit remarkable site fidelity in their amphibian hosts. (Supported by NIH grant number 1 P20 RR16469 from the INBRE Program of the National Center for Research Resources)

- 6 Redescription of the African *Chordodes albibarbatatus* Montgomery 1898, and description of a new species of *Chordodes* (Gordiida, Nematomorpha) and its non-adult stages from Cameroon, Africa. ¹MATTHEW G. BOLEK (MP), ²BEN HANELT (MP), ³ANDREAS SCHMIDT-RHAESA (MP), and ⁴DENNIS J. RICHARDSON (MP).
¹Department of Zoology, Oklahoma State University, Stillwater, OK 74078, ²Department of Biology, University of New Mexico, Albuquerque, NM 87131, ³Zoological Museum and Institute, Biocenter Grindel, Martin-Luther-King-Platz 3, 20146 Hamburg, Germany, and ⁴School of Health Sciences, Quinnipiac University, Hamden, CT 06518

We redescribe *Chordodes albibarbatatus* Montgomery 1898 from the original holotype male and the originally described female specimen using Nomarski interference contrast microscopy. Our reinvestigation indicates that *C. albibarbatatus* is sexually dimorphic and contains five types of areoles in the male and six types of areoles in the female. Our reinvestigation of *C. albibarbatatus* indicates that it is a distinct species, and is most similar to the African *Chordodes gariazzi* Camerano 1902 and *Chordodes heinzei* Sciacchitano 1937, all of which share simple “blackberry”, bulging, tubercles, and thorn areoles. In addition, we describe a male and female of a new species of *Chordodes* collected from West Province, Cameroon, Africa using both morphological (light and scanning electron microscopy) and

molecular data, and designate types for this species. The new species of *Chordodes* belongs to a large group of *Chordodes* in which simple areoles are smooth or superficially structured less so than “blackberry” areoles. Present among the simple areoles are clusters of crowned and circumcluster areoles along with thorn and tubercle areoles, whereas bulging areoles are absent. We also describe the egg strings, eggs, larvae, cysts, and oviposition behavior of this new species of *Chordodes* and compare these non-adult life stages to other nematomorph genera and species for which such life cycle stages are known. Finally, we discuss the use of non-adult stages and the use of molecular tools in future studies of nematomorph systematics and biodiversity. (Supported by NSF grant number 0949951).

7 Helminths: Do they belong in our Immune Ecosystem?
DAVID ELLIOTT, Department of Internal Medicine,
 University of Iowa, Iowa City, IA 52242.

There is an epidemic of immune-mediated inflammatory disease in highly developed industrialized countries. Diseases like inflammatory bowel disease, type 1 diabetes and asthma increase in prevalence as populations adopt modern hygienic practices. These practices prevent exposure to parasitic worms (helminths). Epidemiologic studies suggest that people who carry helminths have less immune-mediated disease. We study the effect of helminth exposure on intestinal inflammation. In mice, helminth exposure alters the immune response of the gut, promoting Th2 and Treg activity, while inhibiting Th1 and Th17 function. This alteration protects against colitis. In people, helminth exposure appears to activate similar circuits and reduces disease activity. It is possible that much of the recent increase in immune-mediated disease results from loss of natural exposure to helminths.

Parasites as Old Friends: Multiple Sclerosis. **JOHN O.**
 8 **FLEMING**, Department of Neurology, University of
 Wisconsin, Madison, WI 53792.

Clearly, pathogenic parasites are ancient foes, and their control is a prime mission of world wide public health. On the other hand, immunologists have postulated that the highly sanitary conditions in developed countries are evolutionarily abnormal and may increase the risk of allergy and autoimmunity in susceptible individuals, since exposure to infections early in life may be necessary for proper immunoregulation to develop (the hygiene or "old friends"

1976 Univ. of Nebraska, Lincoln, NE (XXVIII) J. Greve
 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

1977 Kansas State Univ., Manhattan, KA (XXIX) T.T. Dunagan
 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

1978 Indiana Central Univ., Indianapolis, IN (XXX) E.J. Huggins
 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

1979 Loyola Univ., Chicago, IL (XXXI) D.E. Gilbertson
 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

1980 Eastern Michigan Univ., Ypsilanti, MI (XXXII) A.D. Johnson
 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

1981 Eastern Illinois Univ., Charleston, IL (XXXIII) D.M. Miller
 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

1982 Western Illinois Univ., Macomb, IL (XXXIV) D.G. Myer
 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

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=L.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

1956 Trematodes. ST=W.D. Lindquist
Iowa State University, Ames, IA (VIII) W.D. Lindquist
W.H. Headlee, ST=F.J. Krudener

1957 Univ. of Michigan, Ann Arbor, MI (IX) J.E. Ackert
A.C. Chandler, ST=F.J. Krudener

1958 Kansas St. Univ., Manhattan, KS (X) G.R. LaRue
H.W. Manter, Trematodes of Many Waters. ST=F.J. Krudener

1959 Northwestern Univ., Evanston, IL (XI) G.F. Otto
H. Van der Schalie, Contrasting Problems in Control of Schistosomiasis in
Egypt and the Sudan. ST=D.T. Clark

1960 Purdue Univ., Lafayette, IN (XII) F.J. Krudener
P.P. Weinstein, Aspects of Growth and Differentiation of Parasitic
Helminths *in vitro* and *in vivo*. ST=D.T. Clark

1961 Ohio State Univ., Columbus, OH (XIII) N.D. Levine
B. Schwartz, Parasitology Old and New. ST=D.T. Clark

1962 Univ. of Nebraska, Lincoln, NE (XIV) G.W. Kelley, Jr
O.W. Olsen, The Life History of the Hookworm of Fur Seals.
ST=D.T. Clark

1963 Univ. of Minnesota, St. Paul, MN (XV) M.F. Hansen
F.G. Wallace, Observations on the Louisiana State University Inter-
American Program in Tropical Medicine. ST=D.T. Clark

1964 Univ. of Chicago, Chicago, IL (XVI) D.T. Clark
R.E. Kuntz, Paragonimiasis in Formosa. ST=E. J. Huggins

1965 Kellogg Biological Station, Gull Lake, MI (XVII) P.E. Thompson
L. Jacobs, Toxoplasmosis. ST=E.J. Huggins

1966 Univ. of Illinois, Urbana, IL (XVIII) M.J. Ulmer
D.L. De Guisti, The Acanthocephala. ST=E.J. Huggins

1967 Iowa State Univ., Ames, IA (XIV) P.J. Silverman
N.D. Levine, Parasitology, Problems and Promise. ST=E.J. Huggins
H=P.M. Nollen [FIRST HERRICK AWARD]

1968 Univ. of Wisconsin, Madison, WI (XX) F.G. Wallace
D.R. Lincicome, The Goodness of Parasitism. (with APS & AIBS) ST=J.H.
Greve, H=W.G. Barnes

1969 Univ. of Cincinnati, Cincinnati, OH (XXI) H.W. Manter
H.W. Stunkard, Life Histories and Systematics of Parasitic Flatworms.
ST=J.H. Greve, H=B. Caverny, H=T.P. Bonner

1970 Loyola Univ., Chicago, IL (XXII) J.L. Crites
M.J. Ulmer, Helminths from Midwest to Mediterranean. ST=J.H. Greve,
H=H. Blankespoor

1971 Univ. of Louisville, Louisville, KY (XXIII) F. Etges
H. Van der Schalie, Dam Large Rivers-Then What? ST=J.H. Greve,
H=R. Campbell

1972 Southern Illinois Univ., Carbondale, IL (XXIV) B.J. Jaskowski
R.M. Cable, The Lighter Side of Parasitology. PO=T.T. Dunagan,
ST=J.H. Greve, H=E.M. Cornford

1973 Notre Dame Univ., Notre Dame, IN (XXV) R. Shumard
R.F. Rick, Babesiosis and the Development of *Babesia* in Ticks.
PO=R. Thorson, ST=J.H. Greve, H=D. Danley

1974 Univ. of Michigan, Ann Arbor, MI (XXVI) D. Ameen
M.J. Ulmer, Snails, Swamps and Swimmer's Itch. ST=J.H. Greve,
H=P.T. LaVerde and D. Prechel

1975 Iowa State Univ., Ames, IA (XXVII) W. Bemrick
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]

hypothesis; Rook GAW. Clin Exp Immunol 2010;160:70-79.) In this regard, a decade ago, Elliott and colleagues were the first to propose that experimental colonization of patients with non-pathogenic helminths, such as the porcine whipworm, *Trichuris suis*, might be of benefit in human autoimmune conditions, such as inflammatory bowel disease, and this supposition was confirmed in subsequent clinical trials (reviewed in Elliott DE et al. Int J Parasitol 2007;37:464-457).

- 9 Survey of Alpacas within the Chippewa Valley (Wisconsin) for the parasites *Cryptosporidium* spp. and *Eimeria macusaniensis*. **KAYLA WILLIAMS** (UG) and **DARWIN WITTRICK** (MP), Department of Biology, University of Wisconsin-Eau Claire, Eau Claire, WI 54701.

Alpacas (*Lama pacos*) are South American camelids that are becoming increasingly popular as companion animals and sources of wool in the United States. Alpacas less than one year old, known as crias, are susceptible to many gastrointestinal pathogens including the protozoans *Cryptosporidium* spp. and *Eimeria macusaniensis*. *Cryptosporidium*, a well recognized parasite of cattle, has recently been identified as a cause of diarrhea in alpacas (Cebra et al., 2003; Waitt et al., 2008). However, it is not known if this parasite is carried by asymptomatic hosts. *Eimeria macusaniensis* was identified in camelids in 1971 as a cause of gastroenteritis, and asymptomatic hosts were also reported. A single report by Jarvinen (1999) identified *E. macusaniensis* in alpacas in Wisconsin. To access these parasites in alpacas in the Chippewa Valley area of western Wisconsin, fecal samples were obtained from two separate herds representing a total of 50 crias. Two samples were positive for *Cryptosporidium* oocysts; no *E. macusaniensis* was identified. None of the hosts showed any signs of illness when fecal samples were obtained. This is the first report of shedding of *Cryptosporidium* oocysts by asymptomatic alpacas. The cleanliness of housing facilities and routine antiparasitic treatment of alpacas by their owners may well be the reason for the low parasite prevalence in these hosts.

- 10 Methodology for determining alarm substance cell (ASC) density in relation to black spot parasite load in the creek chub. **KATE PISCHKE** (UG), **MEGAN MELLER** (UG), **DAVID LONZARICH** (MP), and **DARWIN WITTRICK** (MP), Department of Biology, University of Wisconsin-Eau Claire, Eau Claire, WI 54701.

It is thought that alarm substance cells (ASC) in the fish epidermis evolved as a means to warn other fish of nearby predation via release of the chemical substance that these cells hold. It has recently been hypothesized, however, that the evolution and presence of ASC in fish may have more of a relationship with parasitism than predation (Chivers et al., 2007). We undertook a study determine if an increased infestation of the black spot parasite caused by metacercariae of *Neascus pyriiformis* in the creek chub *Semolilus atromaculatus* correlates to an increase in the density of ASC. A total of 31 fish from 4 streams in western Wisconsin were collected with varying degrees of black spot ranging from minimal to heavy loads. Epidermal tissues containing ASC were sectioned and stained to identify the density of ASC in the fish. Preliminary results have shown no relationship between numbers of black spots and ASC count. However, statistical analyses have shown that ASC densities are greatest in smaller fish and decrease with increasing fish length. This suggests that we need to correct for the effects of fish size when exploring relationships between black spot numbers and ASC density.

Survey of rural farm cats for the presence of the parasite *Tritrichomonas foetus*. **EMILY PIERCE** (UG), **CHELSEA SAGER** (UG), and **DARWIN WITTROCK** (MP), Department of Biology, University of Wisconsin-Eau Claire, Eau Claire, WI 54701.

Tritrichomonas foetus is a sexually transmitted protozoan parasite that has long been known to cause endometritis, pyometra, and abortion in cattle. *T. foetus* has recently been identified as the cause of large bowel diarrhea in cats (Dahlgren et al., 2007), and a feline isolate of *T. foetus* was able to experimentally infect cattle (Stockdale et al., 2007). While feline trichomoniasis is considered an emerging problem, the prevalence of this parasite in rural cats has not been reported. To determine if *T. foetus* was present in rural cats in the Eau Claire area, a survey of 40 cats from 12 farms was undertaken. A fecal sample was taken from each cat using a fecal loop and inoculated into an InPouch diagnostic testing kit. Smears from the culture medium of each kit were examined with the light microscope every other day for 12 days to determine the presence of trophozoites of *T. foetus*. Unfortunately, our preliminary data have produced negative results from these 40 cats. The negative results are likely due to a small sample size and large age variation in the cats examined. Gookin et al. (2004) indicated that heaviest infections

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	<u>R.M. Cable</u>

- (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.

occurred in cats 12 months old or younger. Further studies to look at more cats of younger age are necessary to get a better understanding of *T. foetus* presence in western Wisconsin.

Host Switching and Parasite Diversity in Invasive Carp of Illinois. **JUSTIN WILCOX (GS)** and Jeffrey Laursen (MP). Department of Biology, Eastern Illinois University, Charleston IL, 61920.

Invasive non-native species are a persistent form of biological pollution that have the potential to cause severe ecological and economic damage, and are estimated to cost the United States almost \$120 billion dollars annually. The presence or absence of parasites are hypothesized to play a role in determining the extent of non-native invasions, and as such the damage they inflict, through a range of ecological mechanisms. For example, the loss of parasites maybe responsible for the incredible invasion success of some alien invaders as it frees them from natural enemies that regulate their populations. Conversely, the introduction of non-native parasites with non-native species can have devastating ecological effects if that parasite spreads to native species. As host switching plays a crucial role in both the release of parasites from their natural enemies and the threat of non-native parasite invasions, this study aims to survey the parasite communities of Illinois' four species of invasive carp (the common carp *Cyprinus carpio*, the grass carp *Ctenophryngodon idella*, the silver carp *Hypophthalmichthys molitrix*, and the bighead carp *Hypophthalmichthys nobilis*) as well as four species of closely related and ecologically similar natives (smallmouth buffalo *Ictiobus bubalus*, fathead minnow *Pimephales promelas*, gizzard shad *Dorosoma cepedianum*, and bigmouth buffalo *Ictiobus cyprinellus*). The condition of infected fish will be assessed, as will parasite loads and reproductive status. Such a survey will allow for a better understanding of the potential for native parasites to colonize invasive host and therefore limit invasion success, as well as document the potential for invasive carp to introduce new parasites. It will also serve as a test of the enemy release hypothesis in general. It is possible that invasive carp could be altering the native parasite communities and this study aims to determine the extent to which this maybe the case. The silver and bighead carp are currently threatening to invade the Great Lakes and endanger its seven billion dollar fishery, the subject of a recent lawsuit requesting that shipping locks around Chicago be closed. Preliminary research, consisting of the dissection of 29 silver carp from the Illinois river, found no gut helminths in any fish suggesting that enemy release maybe playing a

role in their invasion success. This survey will allow further clarification of this, with potential management implications.

- Egg production by pinworms living in Australian cockroaches.
- 13** **SHAWN MEAGHER (MP)**, KRISTA WINTERS (GS), JAMAAL ADAMS (UG), KEVIN BRADT (UG), SHELBY LEUDERS (UG), TERESA MCDONNELL (UG), STEPHANIE STENGER (UG), TABITHA WILLIAMS (UG), and MEGAN WOODRUM (UG), Biological Sciences, Western Illinois University, Macomb, IL 61455.

Parasites may be used as biological control agents to reduce pest populations, without toxic chemicals. Parasite dissemination depends critically on patterns of infective stage release from host individuals. To begin to determine the utility of pinworm parasites as cockroach biological control agents, we measured egg production by pinworms (*Leidynema appendiculata*) inhabiting Australian cockroaches (*Periplaneta australasiae*). 17 female cockroaches were captured from the WIU Biological Sciences green house, and their feces were collected and weighed for 30 days (>500 samples). Roaches were killed, their size (mass) measured, and the number of worms in their gut counted. There was significant variation in egg production among cockroaches, and among days from the same cockroach. There were significant positive correlations between fecal mass and daily egg output ($n = 509$, $r = 0.407$, $p < 0.0001$), and between cockroach mass and mean daily total egg output ($n = 17$, $r = 0.551$, $p < 0.011$). Pinworm number was not correlated with mean daily total egg output ($n = 17$, $r = -0.19$, $p = 0.47$), but nearly significantly negatively correlated with mean daily egg output per worm ($n = 17$, $r = -0.396$, $p = 0.058$). In summary, large roaches released more eggs, and large fecal masses contained more eggs. Higher pinworm numbers did not increase pinworm egg production, possibly due to competition among pinworms. The absence of negative density-dependent reproduction in these worms suggests that they might be useful as biological control agents, so we are currently analyzing a larger data set to corroborate these patterns.

- Size and fecundity of two pinworm species living in Australian cockroaches. **14** **DANYA BOKHARIY (GS)**, **KENNETH W. MCCRAVY (MP)**, KRISTA L. WINTERS (GS), and SHAWN MEAGHER (MP), Biological Sciences, Western Illinois University, Macomb, IL 61455.

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:

7. All AMCOP members, especially students, who presented papers and posters making the meeting an educational experience for all,
8. The staff of Vaquero's Mexican Restaurant for providing both space and food for our opening mixer,
9. Ohio Wesleyan University and the staff of the Conrades-Wetherell Science Center for providing excellent facilities for paper presentations, poster displays, silent auction, and continental breakfasts and refreshment breaks,
10. The membership of AMCOP for support of the G.R. LaRue Award for outstanding platform presentation, the Honorable Mention awards, the Raymond Cable Award for outstanding undergraduate presentation, and travel awards for student winners,
11. Members of AMCOP who contributed books, journals, and esoterica for the silent auction, and finally,
12. Dr. Doug Woodmansee for continuing his fine job as our 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

Body size is positively correlated with fecundity in many species, including parasites. We examined whether body size affects the fecundity of two species of thelastomatid pinworms (*Leidynema appendiculata* and *Thelastoma* spp.) inhabiting Australian cockroaches (*Periplaneta australasiae*). We collected 25 cockroaches from the WIU Biological Sciences greenhouse, dissected them, and removed pinworms from their guts. Pinworms were identified to species, sexed, and their length was measured as an estimate of body size. Female pinworms were dissected and their uterine eggs were counted three times and averaged for an estimate of fecundity. To test for effects of body size on fecundity, and to test whether there is a species-specific effect of size, we performed an ANCOVA with "egg count" as the dependent variable, "species" as a categorical factor, and "worm length" as the covariate. 85 female *L. appendiculata* and 33 female *Thelastoma* spp. contained eggs. There was a significant effect of worm length on egg count ($F = 4.56$, $df = 1, 114$, $p = 0.035$). There was no effect of species on egg count ($F = 0.06$, $df = 1, 114$, $p = 0.811$), and there was no significant worm length \times species interaction ($F = 0.02$, $df = 1, 114$, $p = 0.893$), thus worm length had the same effect on fecundity in both species. In conclusion, these preliminary data suggest that body size does have a positive effect on both *L. appendiculata* and *Thelastoma* spp. fecundity, and that the quantitative relationship is the same in both species.

Investigation of *Biomphalaria glabrata* plasma factor(s) possessing *in vitro* toxicity to *Fascioloides magna* miracidia.

- 15** KATHRYN COYNE¹(GS), JEFF LAURSEN²(P),
TIMOTHY YOSHINO¹(MP) ¹Department of Pathobiological Sciences, University of Wisconsin, Madison, WI 53706
²Department of Biological Sciences, Eastern Illinois University, Charleston, IL 61920.

Fascioloides magna, the deer liver fluke, contributes to North American and European fasciolosis, a ruminant parasitic infection of serious financial consequence in domestic species, and of ecological importance, especially to threatened/endangered caprids. The aim of this study was to shed some light, using *F. magna* as a study organism, on the interactions between larval trematodes and their snail intermediate hosts, which in turn will help to explain the high degree of species specificity that mediates these interactions. Eggs from live adult flukes harvested from hunter-killed white-tailed deer livers in November 2009 in St. Croix State Park, MN, were embryonated at room temperature for 4 wks, stored at 4C, and

warmed to 33C in pond water to stimulate hatching. Miracidia were then exposed to test media consisting of plasma (cell-free hemolymph) from 2 snail species, the incompatible snail *Biomphalaria glabrata* and the compatible species *Lymnaea palustris*. Plasma treatments included various dilutions in Chernin's Balanced Salt Solution, heating (65C, 30 min), proteinase K digestion (proteinase K-agarose, 34C, 4 hr), or addition of catalase (6000 U per 80 µl plasma). Miracidia were scored at 1, 4 and 20 hrs as swimming, settled (no longer swimming, without morphological changes), transforming (rounded and/or shedding ciliated epidermal plates), completely transformed (sporocyst), damaged (rough tegument with degraded epidermal plates), or lysed. Preliminary data indicates that an average of 47% of miracidia sustained damage ("lysed" or "damaged") as a result of 4 hrs exposure to a 1:1000 dilution of plasma from the incompatible snail species, *B. glabrata*, with higher damage rates being observed at higher plasma concentrations. By contrast, plasma from the compatible snail species, *L. palustris*, damaged no more than an average of 3.3% of miracidia during a 4 hr exposure. Treatment of *B. glabrata* plasma with heat or proteinase K completely ablated the toxicity of the plasma, while catalase treatment did not decrease the plasma toxicity. These results strongly suggest that *B. glabrata* plasma contains a potent larvicidal toxin that may be proteinaceous in nature, and also that reactive oxygen species (H₂O₂) are not primarily responsible for the observed toxicity. Work to further characterize the toxic factor(s) is currently ongoing. It is hoped that isolation and identification of this toxic factor(s) will shed some light on the enigma of host-parasite specificity in snail-trematode systems, and will even potentially be of use in control efforts aimed at these and related parasites of agricultural importance.

16 Frankenflukes: Parasitic GMO's. **TIM YOSHINO**, The University of Wisconsin.

Differential lethality of the *Culex pipiens* midgut for filarial worms. **SHELLY MICHALSKI**¹, SARA ERICKSON (GS)², LYRIC BARTHOLOMAY³ AND BRUCE CHRISTENSEN (MP)^{2,3,1} Department of Biology and Microbiology, University of Wisconsin Oshkosh, Oshkosh, WI 54901 ²Department of Pathobiological Sciences, University of Wisconsin Madison, Madison, WI 53706 ³Department of Entomology, Iowa State University, Ames, IA 50011.

Submitted June 10, 2009.

Douglas B. Woodmansee
AMCOP Secretary-Treasurer

**AMCOP 61
REPORT OF THE RESOLUTIONS COMMITTEE
Jim Coggins and Darwin Wittrock**

Whereas, the 61th Annual Midwestern Conference of Parasitologists met at the Ohio Wesleyan University at Delaware, Ohio on June 4-6, 2009, 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 the following individuals to the success of the 60th annual conference, therefore be it resolved that we acknowledge with UTMOST THANKS the following:

1. Dr. Ramon Carreno, Program Officer, for his meticulous planning that made for a VERY successful conference,
2. Dr. Daniel Howe, Presiding Officer, for his efficiency in conducting the meeting,
3. Our symposium speakers, Dr. Susan Jones of The Ohio State University, for her talk on "The resurgence of bed bugs (*Cimex lectularius*)—ectoparasites of humans" and Dr. Glen Needham also of The Ohio State University for his presentation on "Amazing ticks: Life in the weeds and attached to you,"
4. The American Society of Parasitologists for providing travel funds for our speakers,
5. ELANCO Animal Health, a division of Eli Lilly Company, for its continued support of the C.A. Herrick Award for outstanding poster presentation,
6. Dr. Eugene Lyons of the University of Kentucky for his banquet address reviewing his more than 50 years of research on fur seals in his talk "Hookworms (*Uncaria* spp.) in pinnipeds with notes on the biology of northern fur seals,"

American Society of Parasitologists' student travel grant award for 2010.

The symposium on Friday afternoon was presented by Drs. Susan C. Jones and Glen R. Needham both of Ohio State University who spoke on "The resurgence of bed bugs (*Cimex lectularius*) – ectoparasites of humans." and "Amazing ticks: life in the weeds and attached to you." respectively. The banquet speaker was Dr. Eugene Lyons of the University of Kentucky who spoke on "Hookworms (*Uncaria* spp.) in pinnipeds with notes on the biology of fur seals."

A silent auction of a large selection of books, microscope slides, journals and other items of interest was held.

AMCOP 62 will be held in 2010 at Western Illinois University in Macomb, Illinois. Additional future meeting sites as determined by the meeting sites committee are:

AMCOP 63 – 2011: Saint Mary's College, Notre Dame, IN
AMCOP 64 – 2012: Truman State University, Kirksville, MO
AMCOP 65 – 2013: Purdue University, West Lafayette, IN
AMCOP 66 – 2014: The University of Kentucky

At the business meeting, Secretary-Treasurer Woodmansee presented the treasurer's report for 2008 and the interim financial report for 2009. These were approved upon the recommendation of the Auditing Committee.

The travel grant program (initiated at AMCOP 59) was reviewed and it was decided that the program should continue with the value of the grants at \$150 each. The membership charged the Secretary/Treasurer with investigating the costs of renting server space for the AMCOP web site.

Committee reports were received and approved as follows: Auditing (Darwin Wittrock and James Coggins), Symposium Suggestions (Matt Brewer and Nathan Butler), Meeting Sites (Dennis Minchella and Joe Camp), Nominating (Ramon Carreno and Dan Howe), and Resolutions (Darwin Wittrock and James Coggins).

Officers elected for 2010 were: Dr. Jeff Laurson, Eastern Illinois University: Presiding Officer; Dr. Shawn Meagher, Western Illinois University: Program Officer; and Dr. Douglas Woodmansee, Wilmington College: Secretary/Treasurer (2 year term).

Culex pipiens complex mosquitoes thrive in temperate and tropical regions worldwide, and act as efficient vectors of Bancroftian lymphatic filariasis (LF) in Asia, Africa, the West Indies, South America, and Micronesia. Neither *Cx. pipiens pipiens* (Cpp) nor *Cx. p. quinquefasciatus*, however, vector South Asian Brugian LF (caused by *Brugia malayi*), despite their presence in endemic areas. The IA strain of Cpp is differentially susceptible to filarial worms, in that it efficient vectors *W. bancrofti* but is refractory to *Brugia* parasites. We report that the barrier to *Brugia* infectivity in Cpp Iowa strain is the mosquito midgut, and that the damage inflicted to incoming *Brugia* mf is somatic and lethal in nature. Less than half of experimentally infected Cpp were infected with *B. pahangi*, and infection intensities were significantly lower than for the susceptible *Aedes aegypti* black-eyed Liverpool (LVP) strain ($p < 3 \times 10^{-4}$). The Cpp strain was highly refractory to *B. malayi*, with prevalence of 0-5%, compared to 100% prevalence in LVP controls. *Brugia* mf introduced intrathoracically into Cpp developed equally well as in LVP controls, indicating that Cpp is physiologically compatible for infection. Mf isolated from Cpp midguts exhibited kinky motility, and unlike blood-derived mf and LVP midgut-derived controls, failed to develop when inoculated intrathoracically into the susceptible LVP strain. Together these data strongly support the role of the midgut as the primary infection barrier of Cpp for *Brugia* spp. Cpp midgut-derived mf absorbed vital stain, and application of papain to midgut-derived worms removed the sheaths from blood and LVP-derived mf, but damaged body walls of Cpp-derived mf, supporting the hypothesis that Cpp midgut-inflicted damage is somatic in nature. Incubation of *Brugia* mf with extracts of Cpp midguts produce similar phenotypes; clearly indicating that the Cpp midgut factors that damage mf *in vivo* are soluble and stable in physiological buffer (saline), and they are capable of attacking mf *in vitro* as effective as that *in vivo*.

Endemism of parasites shapes the parasite communities of
18 didelphid marsupials. **F. AGUSTIN JIMENEZ**: Department of Zoology, Southern Illinois University, Carbondale Illinois 62501.

Didelphidae (Marsupialia) includes 91 species distributed across the New World showing several lifestyles and morphological adaptations. However, the metazoan parasite assemblages are known for only a handful of large sized species that include the Virginia opossum and its relatives. I herein compare the structure of 13 parasite assemblages of large sized opossums present in nine

different localities across the New World. These assemblages occur in four species that form a monophyletic group within Didelphinae. The effect of host phylogeny and habitat on the taxonomic structure and species richness of the assemblages was tested. First, qualitative similarity was calculated using the Jaccard similarity index comparing all possible pairs of assemblages. Second, the effect of host phylogeny on the structure of the assemblages was tested by linear regression under an independent contrast frame and finally, the effect of each of the nine localities on species richness was tested by Welch's ANOVA. Our results suggest that 1) species of parasites infecting marsupials show high levels of endemism and vary among localities; 2) sympatric species of marsupials share a high proportion of parasites (>60%), whereas assemblages occurring in conspecific marsupials from different localities share relatively few species, and 3) species richness of parasite assemblages occurring in didelphid opossums is not an attribute of the species of marsupials. As a consequence, the structure and species richness of parasite communities in didelphid marsupials cannot be predicted based on the identity of the marsupials (i.e. species of opossum). Analysis of parasite faunas from other species of marsupials with different habits and adaptations will help in determining the role of the locality and phylogeny on the historic associations between these metazoans in the New World.

- 19 Re-examination of *Neopolystoma liewi* (Monogenea: Polystomatidae) from the conjunctival sac of *Cuora amboinensis* (Testudines: Geomydidae) from Malaysia, and the importance of specimen preparation in taxonomic studies. **THOMAS R. PLATT** and ANDREA FIRTH (UG), Department of Biology, Saint Mary's College, Notre Dame, IN 46556.

Neopolystoma liewi du Preez and Lim, 2000 is re-examined from specimens collected from the conjunctival sac of the type host, *Cuora amboinensis*. Measurements from the current study were compared to those from the original description. Specimens from the current study were killed and fixed in hot formalin while specimens from the original were fixed using cover-glass pressure. Measurements of *N. liewi* from the original description are considerably larger (30-70%) than measurements of specimens from the current study. Specimens killed and fixed in hot formalin showed limited variation in most characters as determined by calculating the coefficient of variation. Cover-glass pressure cannot be controlled or standardized and should not be used in the preparation of

platyhelminths for taxonomic study. Heat fixation produces excellent specimens with limited variation in key characters and should be employed in taxonomic studies of monogenetic and digenetic trematodes.

- 20 Parasitic organisms and parasitic ideas: More than meets the eye? **KEVIN S. BALDWIN (MP)**, Department of Biology, Monmouth College, Monmouth, IL 61462.

Just as some parasites can manipulate the behavior of their hosts to insure transmission, parasitic ideas called memes may manipulate human minds to insure theirs. Recently it has been argued that some aspects of religion and popular culture can be understood as memetic phenomena. Some concepts from the discipline of parasitology can be applied to more fully understand and possibly manipulate these memes.

Summary of the 61st Annual Midwestern Conference of Parasitologists.

The 61st Annual Midwestern Conference of Parasitologists was held on June 4-6, 2009, at Ohio Wesleyan University in Delaware Ohio. Thirty six persons registered for the conference. Dr. Daniel Howe of the University of Kentucky served as Presiding Officer, and Dr. Ramon Carreno of Ohio Wesleyan made local arrangements and served as Program Officer. Seven platform presentations and 5 posters were presented by members. The C. A. Herrick Award and \$300 for outstanding poster was awarded to Sriveny Dangoudoubiyam of Purdue University for her poster "Immunoscreening of *Baylisascaris procyonis* L3 cDNA expression library for identification of potential diagnostic antigens." The G. R. LaRue Award and \$300 for outstanding platform presentation was awarded to Elizabeth Thiele of Purdue University for her presentation "Moving at a snail's pace: elucidating the temporal and spatial dynamics of *Biomphalaria galbrata* genetic diversity in Brazil." Cailee Smith of Ohio Wesleyan University received the R. M. Cable undergraduate award and \$100 for her oral presentation on "Molecular characterization of *Clinostomum* sp. cysts from a spotted salamander (*Ambystoma maculatum*)." An Honorable Mention award and \$100 was given to Matt Brewer of Iowa State University for his presentation entitled "*Eimeria* mediates conjugation and antibiotic resistance gene transfer in *Salmonella*." Elizabeth Thiele was chosen as the AMCOP nominee for the