AMCOP 69
June 8-10, 2017
Center for Sciences and Agriculture
Wilmington College
Wilmington, OH 45177

Contents

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Acknowledgements

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The 69th Annual Midwestern Conference of Parasitologists provides 4 Continuing Education Credits (4 CE). Your registration confirmation is proof of your attendance.

SCHEDULE

THURSDAY, JUNE 8, 2017

2:00-5:00 pm Room Check-in at Pyle Center for Students

7:00-10:00 pm Opening Mixer: The Escape, 36 W. Sugartree St, Wilmington, OH

FRIDAY, JUNE 9, 2017

Center for The Sciences and Agriculture (CSA)
Room 242

8:00am Continental Breakfast (CSA Hallway) and Silent Auction Setup (Tables in back of CSA 242)

8:45am Opening Remarks and Welcome

- Dr. Doug Woodmansee, Program Officer
- Dr. Erica Goodwin, Vice President for Academic Affairs and Dean of the Faculty

CONTRIBUTED PAPERS

(STUDENT PAPERS INDICATED BY *)

9:00 1* Chronic *Cytauxzoon felis* infections in wild caught bobcats (*Lynx rufus*). **ELLIOTT ZIEMAN[1,2] (GS)**, CLAYTON K. NIELSEN[2,3] (MP) and F. AGUSTÍN JIMÉNEZ[1] (MP). [1]Department of Zoology, Southern Illinois University Carbondale, IL 62901-6501, [2]Cooperative Wildlife Research Laboratory, Southern Illinois University, Carbondale, IL 62901, [3]Department of Forestry and Center for Ecology, Southern Illinois University, Carbondale, IL 62901-4619.

9:15 2* The hidden diversity of hemoflagellate and apicomplexan blood parasites of amphibian and reptile hosts from the great plains region of the united states. **RYAN P. SHANNON** (GS) and MATTHEW G. BOLEK (MP).

Department of Integrative Biology, Oklahoma State University, Stillwater, Oklahoma 74078

9:30 3* Field and experimental observations on a new *Gordius* sp. (Nematomorpha: Gordiida) with the first documented terrestrial life cycle for the phylum**. CHRISTINA ANAYA** (GS), MATTHEW G. BOLEK (MP) Oklahoma State University, Stillwater, OK 74074. BEN HANELT University of New Mexico, Albuquerque, NM.

9:45 4* Trematodes of waterfowl hosts: patterns of distribution and association. **SCOTT MALOTKA** (GS) and ROBERT SORENSEN (MP), Department of Biological Sciences, Minnesota State University Mankato, Mankato, MN 56001

10:00 5* Mysterious snail hosts! Distribution and host use of acanthocephalans in two species of freshwater snails. **RYAN W. KOCH** (GS), RYAN P. SHANNON (GS), KYLE D. GUSTAFSON (PD), and MATTHEW G. BOLEK (MP), Department of Integrative Biology, Oklahoma State University, Stillwater, OK.

10:15 6* Climate change and the effect of temperature on the release of *Proterometra macrostoma* (Trematoda: Digenea) cercariae from their snail intermediate host, *Pleuorcera semicarinata* (Gastropoda: Pleuroceridae). **ROBIN HAUSCHNER (UG)**, FAVOUR AKABOGU (UG), NINA MENESES (UG), OLIVIA SLATER (UG), AUBREY MELTON (UG), CASEY TETIDRICK (UG), SARAH BLANK (MP) and RON ROSEN (MP), Biology Program, Biology, Berea, KY 40404

10:30 BREAK & SILENT AUCTION BIDDING

10:45 7 Nematodes, mammals and GABI, the Great American Biotic Interchange. **F. AGUSTÍN JIMÉNEZ,** JULIANA NOTARNICOLA[1], and SCOTT L. GARDNER[2]. Department of Zoology, Southern Illinois University, Carbondale, IL 62901-6501. [1]Instituto de Biología Subtropical (IBS) -CONICET, Bertoni 85 (3370) Puerto Iguazú, Misiones, Argentina. [2]The Harold W. Manter Laboratory of Parasitology, University of Nebraska-Lincoln, Lincoln NE, 68588-0514

11:00 8 The distribution and hydrophobic nature of *Ophryocystis elektroscirrha* (Apicomplexa: Neogregarinorida) oocysts on the cuticle of adult monarch butterflies, *Danaus plexippus*, reveal biologically relevant mechanisms for parasite transmission. **MATTHEW G. BOLEK (MP)**, RYAN A. SHANNON (GS), and KRISTEN A. BAUM (MP). Department of Integrative Biology, Oklahoma State University, Stillwater, OK 74078.

11:15 9* The nasty relationship between *Ophryocystis elektroscirrha* and the monarch butterfly, *Danaus plexippus*! What can buying infected butterfly specimens on the internet tell us? **MATTHEW G. BOLEK (MP)**, RYAN A. SHANNON (GS), and KRISTEN A. BAUM (MP). Department of Integrative Biology, Oklahoma State University, Stillwater, OK 74078.

11:30 10*Tadpole parasite community structure: do parasite life cycles matter? **MATTHEW G. BOLEK (MP)**, CHELCIE C. PIERCE (GS), and KYLE D. GUSTAFSON (GS). Department of Integrative Biology, Oklahoma State University, Stillwater, OK 74078.

12:00 Lunch

THE AMCOP SYMPOSIUM

Center for The Sciences and Agriculture (CSA)
Room 242
Topic: Parasitoid Hymenoptera

1:00 **Dr. Norman Johnson,** Ohio State University
Data management tools facilitate biodiversity discovery and description

2:00 **Dr. Michael Sharkey** University of Kentucky
The taxonomic impediment and parasitoid Hymenoptera (and a few other tidbits)

POSTER SESSION

CSA 242 Hallway
(Poster Set up starts following Symposium?)

3:30 4:30

11. *Area of Parasite Tissue Relative to the Area of Host Tissue in Infected Snails. **ASHLEY ADAM** (UG), EMILY JONES (UG), SCOTT MALOTKA (GS), ROBERT SORENSEN, PhD (MP), Department of Biological Sciences, Minnesota State University, Mankato, MN 56001

12. *Effects of hairworm infection on diet, morphology and egg production of *Acheta domesticus*. **CHRISTINA ANAYA**[3] (GS) LARISA VREDEVOE, GITA KOLLURU[1], BEN HANELT[2], AND MATT BOLEK.[3] [1]California Polytechnic State University, San Luis Obispo, California. [2]University of New Mexico, Albuquerque, New Mexico. [3]Oklahoma State University, Stillwater, Oklahoma 74074

13. *Proposed Research: A systematic revision of *Heligmosomoides* (Nematodea: Heligmosomoidea) in North America. **HAITHAM ALNAQEB** (GS), Department of Zoology, Southern Illinois University, Carbondale, IL 62901

14. *Seasonal changes in maturation of adult *Cotylaspis insignis* (Trematoda: Aspidogastridae) recovered from the fat mucket,

Lampsilis radiata luteola (Bivalvia: Unionidae). **ROBIN HAUSCHNER (UG),** FAVOUR AKABOGU (UG), NINA MENESES (UG), OLIVIA SLATER (UG), KAITLYN REASONER (UG), HSUAN PENG (UG), LIN PENG (UG), CHI PENG (UG) and RON ROSEN (MP), Biology Program, Berea College, Berea, KY 40404

15. *Methods for ultrastructure study of larval trematodes collected from first and second intermediate snail hosts. **JAKE IVERSON** (UG), **ROSS BUTTLEMAN** (UG), SCOTT MALOTKA (GS), and ROBERT SORENSEN (MP), Department of Biological Sciences, Minnesota State University Mankato, Mankato, MN 56001

16. *Does Time or Space Affect Bot Fly Infection in Midwestern Forest Mice? **JANIE MILLER** (UG), and SHAWN MEAGHER (MP), Department of Biological Sciences, Western Illinois University

17. *Integration of Centers for Disease Control case studies into an undergraduate parasitology course. **DOUGLAS B. WOODMANSEE** (MP), Department of Biology, Wilmington College, Wilmington, OH.

BANQUET

Pyle Center Dining Rooms C & D

Alcohol-free social hour begins at 5:30
Dinner begins at 6:30

KEYNOTE SPEAKER

Dr. Sarah Orlofske, Northeastern Illinois University
"Dead ends are just the beginning: Predation on Parasites in Aquatic Ecosystems."

SATURDAY, JUNE 10, 2017.
CSA Hallway

8:00 Continental Breakfast (CSA Hallway) & Silent Auction Bidding (CSA 242)

9:00 Business Meeting and Award Presentations. Dr. Matthew Bolek, AMCOP Presiding Officer

Dorm check out following meeting.

ABSTRACTS

1. Chronic *Cytauxzoon felis* infections in wild caught bobcats (*Lynx rufus*). **ELLIOTT ZIEMAN**[1,2] (GS), CLAYTON K. NIELSEN[2,3] (MP) and F. AGUSTÍN JIMÉNEZ[1] (MP). [1]Department of Zoology, Southern Illinois University Carbondale, IL. 62901-6501, [2]Cooperative Wildlife Research Laboratory, Southern Illinois University, Carbondale, IL. 62901, [3]Department of Forestry and Center for Ecology, Southern Illinois University, Carbondale, IL. 62901-4619.

Cytauxzoon felis is an intraerythrocytic apicomplexan of felids native to the United States. Infection in domestic cats (*Felis catus*) can result in the highly fatal disease cytauxzoonosis. The lone star tick (*Amblyomma americanum*) and the American dog tick (*Dermacentor variabilis*) are competent vectors of *C. felis*. Bobcats (*Lynx rufus*) are the natural wild animal reservoir of *C. felis*. Domestic cats and bobcats that become infected with *C. felis* and survive initial infection are thought to remain subclinically infected for the remainder of their lives. There is, however, no conclusive evidence that this occurs in wild bobcats, as this would require capture of live bobcats and subsequent recapture of the same individuals. In this study we live-trapped bobcats over a period of 3 years (2015, 2016, and 2017). During this study we recaptured 4 bobcats for 2 consecutive years and 1 bobcat for 3 consecutive years. This is a unique, multi-year collection of samples from wild caught bobcats and allowed us to test the hypothesis that bobcats can remain infected with *C. felis* indefinitely. These bobcats were all infected with *C. felis* at the initial capture and at the subsequent recapture(s). Theses bobcats were both polymerase chain reaction (PCR) positive and had positive identification of piroplasms on blood films. This represents the first evidence of multi-year infection of *C. felis* in wild bobcats. These data show that bobcats can

sustain *C. felis* infection for years with important implications for the epizootiology of this emerging feline disease.

2. The hidden diversity of hemoflagellate and apicomplexan blood parasites of amphibian and reptile hosts from the great plains region of the united states. **RYAN P. SHANNON** (GS) and MATTHEW G. BOLEK (MP). Department of Integrative Biology, Oklahoma State University, Stillwater, Oklahoma 74078

   Compared to blood parasites of mammalian and avian hosts, little information is available on host specificity, prevalence and distribution of blood parasites of amphibians and non-avian reptiles. The few available surveys suggest that amphibians and reptiles are commonly infected with a diverse group of blood hemoflagellates and apicomplexans. However, currently no information is available on these parasites in amphibian and reptile hosts from the Great Plains region of the United States. To investigate this, 7 locations in north central and southeastern Oklahoma were surveyed for amphibians and non-avian reptiles for blood protozoans. A total of 295 amphibians and reptiles from 9 families and 22 species were examined and found to be infected with 15 species/morphotypes of blood parasites. Eleven species/morphotypes of *Trypanosoma* infected amphibian hosts, 1 species of *Haemogregarina* infected reptilian hosts, and 3 species/morphotypes of *Hepatozoon* infected amphibian and reptile hosts. In terms of host parasite relationships, *Hepatozoon* and *Haemogregarina* species infected aquatic hosts; whereas *Trypanosoma* species/morphotypes infected aquatic and arboreal hosts. However, because blood parasites are difficult to identify based on morphology alone, we are in the process of sequencing the 18s rRNA and gGAPDH genes of the 11 *Trypanosoma* morphotypes and the ITS and CO3 genes of the three *Hepatozoon* and *Haemogregarina* morphotypes. Thus far, we have sequenced the 18s rRNA gene of 5 *Trypanosoma* morphotypes and found them to be genetically distinct. Additionally, we have sequenced the ITS and CO3 genes of *Hepatozoon* morphotypes from 8 anuran individuals. Phylogenetic analyses of these *Hepatozoon* sequences indicate that at least two species of *Hepatozoon* infect anuran hosts in Oklahoma. Our work characterizing the diversity of blood parasites infecting amphibians and reptiles in the Great Plains will elucidate their species relationships and create the foundation allowing for future studies on their host specificity and life cycles.

3. Field and experimental observations on a new *Gordius* sp. (Nematomorpha: Gordiida) with the first documented terrestrial life

cycle for the phylum**. CHRISTINA ANAYA** (GS), MATTHEW G. BOLEK (MP) Oklahoma State University, Stillwater, OK 74074. BEN HANELT University of New Mexico, Albuquerque, NM.

All gordiids have complex life cycles and are considered aquatic in their free-living phase. However, recently we discovered a new *Gordius* sp. in Oklahoma which occurs in terrestrial habitats. To investigate the transmission of this *Gordius* sp., during 2014-2017 a total of 1,684 adult free-living worms were collected from lawns, open fields, and road gutters from 20 sites in Payne Co., OK. Surveys of earthworms and land snails from locations where adult free-living worms were observed indicated they were commonly infected with *Gordius*-type cysts suggesting gordiid larvae are present in the soil. To test our field observations, we performed comparative laboratory assays on egg laying behavior of the new *Gordius* sp. collected from terrestrial environments and the aquatic gordiid, *Paragordius varius*. As expected, both gordiid species deposited egg strings when female worms were placed in water. However, when worms of both species were placed on soil, all individuals of the aquatic *P. varius* dried and died; whereas 80% of the *Gordius* sp. individuals collected from terrestrial habitats burrowed within minutes into the soil. More importantly, some female *Gordius* sp. began depositing egg strings within days of burrowing into the soil. Examination of the eggs of this species indicates they are unlike the eggs of any other hairworm species and contain double membranes suggesting these eggs may be resistant to desiccation. Taken together, our observations and experiments strongly suggest that this species represents the first documented hairworm species with a terrestrial life cycle.

4. Trematodes of waterfowl hosts: patterns of distribution and association. **SCOTT MALOTKA** (GS) and ROBERT SORENSEN (MP), Department of Biological Sciences, Minnesota State University Mankato, Mankato, MN 56001

   Helminth communities within many different waterfowl species have been historically well studied throughout much of the United States. However, few studies have focused on trematodes and their associations within waterfowl hosts. During this study, thirty-three birds including 16 blue-winged teal (*Anas discors*), 10 lesser scaup (*Aythya affinis*), and 7 wood duck (*Aix sponsa*) were collected during the fall 2012 from Lake Winnibigoshish, Minnesota and examined for trematode parasites. In total, 41, 006 trematodes were collected which were distributed among 12 trematode species and two Family level

identifications. Despite showing some overlap of trematode infections between these three-host species, statistically significant differences in mean trematode intensity and mean trematode species richness ($P < 0.05$) were detected. Overall, two significant associations between trematode species were detected with positive associations between *Echinostoma revolutum* and *Hypodereum conoideum* and *E. revolutum* and *Neopsilotrema lisitsynae*. This study suggests that the trematode communities between these bird species share similar species to some degree, but unique associations between particular trematode species typically do not show up within these bird species. Finally, results from this study are important for the future studies between waterfowl definitive hosts and the trematodes they harbor by highlighting associations between parasites and their host.

5. Mysterious snail hosts! Distribution and host use of acanthocephalans in two species of freshwater snails. **RYAN W. KOCH** (GS), RYAN P. SHANNON (GS), KYLE D. GUSTAFSON (PD), and MATTHEW G. BOLEK (MP), Department of Integrative Biology, Oklahoma State University, Stillwater, OK.

   In many acanthocephalan life cycles, a vertebrate paratenic host is used to bridge the ecological gap between the intermediate and definitive hosts. However, there have been few reports of freshwater snails serving as paratenic hosts for acanthocephalans. To assess how commonly freshwater snails serve as hosts for acanthocephalans, two species of freshwater snails, *Helisoma trivolvis* and *Physa acuta*, were collected from various wetlands throughout Payne Co., Oklahoma. Additionally, snails were sampled on a monthly basis for a year from a single location to further investigate seasonal variation of infection. Snails were dissected for juvenile acanthocephalans by examining the entire body and then flattening snail tissue between two slides. Acanthocephalans were identified to *Neoechinorhynchus* spp., which most likely infect turtle definitive hosts and ostracod intermediate hosts in nature. Among all sites sampled, 7 of 28 (25%) contained snails infected with acanthocephalans, with *H. trivolvis* being more commonly infected than *P. acuta*. Depending on the site, prevalence and mean intensity ranged from 4–79% and 1–3.6, respectively. Throughout the year, prevalence and mean intensity peaked at 73% during the summer and decreased to 0% during the winter. Among all acanthocephalans recovered from snails, 88% were found encysted in the head foot of snails, whereas 12% were attached with their proboscis to the mantle collar underneath the shell. Lastly, acanthocephalans were twice as large in snails as reported from ostracods. These results

suggest that 1) freshwater snails may be important hosts for the transmission of acanthocephalans to turtles; 2) location and season have a strong effect on the variation of acanthocephalan infections in snails; 3) acanthocephalans are using two different microhabitats within snail hosts; and 4) acanthocephalans appear to be growing and are metabolically active within snail hosts, which is atypical behavior for parasites in paratenic hosts.

6. Climate change and the effect of temperature on the release of *Proterometra macrostoma* (Trematoda: Digenea) cercariae from their snail intermediate host, *Pleuorcera semicarinata* (Gastropoda: Pleuroceridae). **ROBIN HAUSCHNER (UG)**, FAVOUR AKABOGU (UG), NINA MENESES (UG), OLIVIA SLATER (UG), AUBREY MELTON (UG), CASEY TETIDRICK (UG), SARAH BLANK (MP) and RON ROSEN (MP), Biology Program, Biology, Berea, KY 40404

   Digenetic trematodes are potentially susceptible to changes in temperature during the free-living stages of their life cycles and as internal parasites within their ectothermic molluscan hosts. The objectives of this study were to assess the effect of temperature on the release of *Proterometra macrostoma* cercariae from their snail intermediate host, *Pleurocera semicarinata*, by determining the minimum emergence temperature threshold (METT), the minimum development temperature threshold (MDTT) and Q_{10} temperature values. Beginning at 13ºC, there was a steady increase in cercarial emergence up to 25°C, after which cercarial release leveled off at 30ºC. The snail collection site in this study (North Elkhorn Creek, Scott County, Kentucky), is at 38º latitude, and the METT (13°C) and MDTT (10-12°C) values obtained were intermediate between cercarial emergence patterns summarized for digeneans that have been designated as either low latitude (≤ 35°) or mid-latitude (36-60°) species. The average Q_{10} value calculated for the lowest temperature increment (13–23ºC) was 16.1, while the average Q_{10} values for the 15–25 and 20–30ºC increments were 4.3 and 1.8, respectively. The high Q_{10} at 13–23ºC suggests that even small increases in water temperature associated with climate change could extend *P. macrostoma* cercarial release into the late fall and early winter resulting in year round infections of its centrarchid fish definitive hosts.

7. Nematodes, mammals and GABI, the Great American Biotic Interchange. **F. AGUSTÍN JIMÉNEZ** (MP), JULIANA NOTARNICOLA[1] (MP), and SCOTT L. GARDNER[2] (MP). Department of Zoology, Southern Illinois University, Carbondale, IL 62901-6501. [1]Instituto de Biología Subtropical (IBS) -CONICET, Bertoni 85 (3370) Puerto Iguazú, Misiones, Argentina. [2]The Harold W. Manter Laboratory of Parasitology, University of Nebraska-Lincoln, Lincoln NE, 68588-0514

   The Great American Biotic Interchange (GABI) is a large-scale zoogeographic event that illustrates the exchange and diversification of mammals between North and South America. This phenomenon was accelerated by the connection of both landmasses during the Pliocene. Support for this phenomenon includes the extant distribution of xenarthrans, didelphiomorph marsupials, hystricognath and cricetine rodents, sciurids and carnivores, as well as the distribution of fossils in the stratigraphic record and the coalescence of genotypes. Contrasting with the relatively well-documented role and history of mammals in GABI, the role of their parasites has been largely neglected. As a consequence, the reconstructions of the causes of diversification, extinction and dispersion of groups of mammals during the Pliocene (and Miocene) invoke changes in climate patterns and the role of competitors or predators, yet in most cases the lines of evidence are not direct. We posit that infections with parasites offer a direct form of evidence of the role of interactions among species, by considering that the successful establishment of species of parasites in new groups of vertebrates will result in a net effect on their adaptive immune system. Thus, the current distribution of nematode parasites of the families Aspidoderidae, Nippostrongylidae, Onchocercidae, Oxyuridae, Rictaluriidae and Viannaidae offers evidence that the historical associations of these nematodes and their hosts diverge from the expected cospeciation and codivergence. Thus, clades of parasites infect disparate clades of mammals and, by deviating from the expected cospeciation, represent a paradox. This paradox deters investigators from studying historical associations among symbionts, since researchers lose the compelling simplicity of testing coevolutionary associations through the congruence of their resulting phylogenies. However, the reconstruction of historical associations must acknowledge the differential survival of parasites in novel hosts. This consideration is part of the Stockholm Paradigm, which includes the hypotheses known as Ecological Fitting, Oscillations, Taxon Pulses and Mosaics of Geographic Coevolution. We introduce nine host-

parasite systems that provide insights on the role of parasites in GABI. We posit that the conservatism of parasite resource use, heritability of the adaptive immune system, and the genetic structure of parasites make it possible to elucidate the role of these parasites in GABI.

8. The distribution and hydrophobic nature of *Ophryocystis elektroscirrha* (Apicomplexa: Neogregarinorida) oocysts on the cuticle of adult monarch butterflies, *Danaus plexippus*, reveal biologically relevant mechanisms for parasite transmission. **MATTHEW G. BOLEK** (MP), RYAN A. SHANNON (GS), and KRISTEN A. BAUM (MP). Department of Integrative Biology, Oklahoma State University, Stillwater, OK 74078.

   The pathogenic neogregarine *Ophryocystis elektroscirrha* infects the hypodermal tissues of monarch (*Danaus plexippus*) and queen (*D. gilippus*) butterflies. Currently, three routes of transmission have been proposed for *O. elektroscirrha* and include vertical, horizontal, and sexual transmission. Vertical transmission is the most common route and happens when females scatter protozoan oocysts directly on eggs during oviposition. Horizontal transmission occurs when butterflies scatter oocysts on milkweed leaves. Additionally, sexual transmission occurs when infected butterflies contaminate the scales of uninfected butterflies with oocysts during copulation, and contaminated females subsequently scatter oocysts onto eggs and/or milkweed leaves. Caterpillars become infected when they ingest oocysts from egg cases or milkweed leaves after hatching. However, the complete life cycle of this neogregarine has never been fully evaluated in adult butterflies. Previous work indicates that when infected caterpillars metamorphose to adult butterflies, oocysts form on the cuticle from the hypodermis, resulting in the presence of oocysts on the scales of adult monarchs. However, the genitalia, and other inverted cuticular organs of hypodermal origin in adult monarchs have never been examined for oocysts. As a result, most studies have assumed that parasites are transmitted to monarch larvae when infected or contaminated adults scatter oocysts onto eggs and/or milkweed leaves during oviposition. Additionally, it is not known if or how oocysts of *O. elektroscirrha* adhere to milkweed leaves after they are scattered from butterfly scales. In this study, we first evaluated the distribution of oocysts on all abdominal organs of hypodermal origin of infected male and female adult monarch butterflies using scanning electron microscopy (SEM) and histological techniques. Second, we evaluated the adherent nature of scattered oocysts on milkweed leaves using SEM before and after plants were exposed to natural conditions. Our results indicate that

oocysts were present on the external cuticle of adult monarch butterflies of both sexes. However, oocysts were also present on all inverted organs of hypodermal origin of the abdomen, including the ovipore and the associated ductus bursae and copulatory bursa of all infected female and the aedeagus (copulatory organ) of all infected male monarch butterflies. Finally, oocysts of *O. elektroscirrha* were extremely hydrophobic and difficult to concentrate in water using centrifugation. Our SEM images of oocysts on milkweed leaves indicated that their hydrophobic nature allowed them to bond with the waxy cuticle of milkweed leaves, which prevented them from being dislodged during intense rain, hail and wind events. Our study is the first to provide the mechanisms for all three routes of transmission and the implications of our findings are discussed in terms of conservation of migratory monarch butterfly populations.

9. The nasty relationship between *Ophryocystis elektroscirrha* and the monarch butterfly, *Danaus plexippus*! What can buying infected butterfly specimens on the internet tell us? **MATTHEW G. BOLEK** (MP), RYAN A. SHANNON (GS), and KRISTEN A. BAUM (MP). Department of Integrative Biology, Oklahoma State University, Stillwater, OK 74078.

   The pathogenic neogregarine *Ophryocystis elektroscirrha* infects the hypodermal tissues of monarchs (*Danaus plexippus*) and queen butterflies (*D. gilippus*). However, the transmission and distribution of these parasites in other butterfly species is not well understood. Currently, two major routes of transmission have been proposed for *O. elektroscirrha* and include horizontal transmission, when butterflies deposit protozoan oocysts (spores) on milkweed leaves and more commonly through maternal transmission, when females deposit oocysts on eggs during oviposition. Caterpillars become infected when they ingest oocysts from milkweed leaves or egg cases after hatching. However, the mechanism of oocyst transfer from infected female butterflies to their eggs is unclear. To investigate this, we examined the abdomen region of infected female monarchs using scanning electron microscopy. Our results indicate that all infected female monarchs contained *O. elektroscirrha* oocysts in their ovipore. This observation supports the maternal transmission route of *O. elektroscirrha*. More importantly, because caterpillars of many butterfly species ingest their egg cases after hatching, our observations suggest that the genus *Ophryocystis* should be maintained in butterfly lineages and potentially infect other species of butterflies. To test this hypothesis, we sampled 28 species of milkweed butterflies from eight genera including all 11

Danaus spp. for *Ophryocystis* infections by buying dry butterflies sold for the butterfly collector trade. Based on oocyst morphology and 18S, complete ITS and 28S rDNA sequences, at least five species of milkweed butterflies from two genera collected from four continents contained oocysts of *Ophryocystis* spp. However, oocyst morphology and host pathology, defined as embedded oocysts in the cuticle of butterflies, was conserved within clades but distinct among clades of milkweed butterflies. The implications of our findings are discussed in terms of conservation of migratory monarch butterfly populations and the geographic distribution and co-occurrence of *Ophryocystis* infected butterfly species.

10. Tadpole parasite community structure: do parasite life cycles matter? **MATTHEW G. BOLEK** (MP), CHELCIE C. PIERCE (GS), and KYLE D. GUSTAFSON (GS). Department of Integrative Biology, Oklahoma State University, Stillwater, OK 74078.

    Currently, little information is available on parasite community structure in larval amphibians, specifically tadpoles of anurans. We examined the parasite community structure in tadpoles of five anuran species from an ephemeral wetland in northcentral Oklahoma. Specifically, we were interested in how species-specific factors, such as size, feeding strategies, and habitat partitioning among larval anurans affect parasite community structure. Additionally, we assessed whether parasite life cycle strategies affected tadpole parasite community composition. During May–August 2015 and April–June 2016, we collected tadpoles of southern leopard frogs, *Rana sphenocephala*, Blanchard's cricket frogs, *Acris blanchardi*, Cope's gray treefrogs, *Hyla chrysoscelis*, spotted chorus frogs, *Pseudacris clarkii*, and Great Plains narrow-mouthed toads, *Gastrophryne olivacea*. The compound parasite community was dominated by larval trematode stages (mesocercariae and metacercariae), with only two gravid adult helminth species present, the trematode *Megalodiscus temperatus*, and nematode *Gyrinicola batrachiensis*. The parasite component communities were depauperate, with a maximum of six parasite species/types per component community. Although parasite host specificity cannot be ruled out, our results indicate that tadpole size was the primary factor determining parasite abundances and intensities. However, after controlling for species-specific differences in tadpole size, parasite life cycle strategy and host species were the major factors affecting tadpole parasite community structure.

11. Area of Parasite Tissue Relative to the Area of Host Tissue in Infected Snails. **ASHLEY ADAM** (UG), EMILY JONES (UG), SCOTT MALOTKA (GS), ROBERT SORENSEN, PhD (MP), Department of Biological Sciences, Minnesota State University, Mankato, MN 56001

    When trematode parasites infect snails they consume host tissue for asexual reproduction. For this reason, there is an antagonistic relationship between the trematode parasite and the snail. The goal of this study was to evaluate the effectiveness of digital technologies for evaluating the portion of host tissue space that is occupied by parasite tissue. The ability to assess the relative proportion of parasite and host tissue within a host can provide a measure of the effects parasite exert on host resources or space. For this study, prepared slides of snail tissue cross sections infected with *Schistosoma mansoni* daughter sporocysts were used to calculate the area of parasite tissue relative to the area of snail tissue. The Moticam 10 digital camera was used to capture images of the slides under light microscopy. Moticam Images Plus, Astropad software, and an Apple pencil were used to calculate the area of parasite tissue relative to the area of host tissue in infected snails. An iPad with Astropad software was connected to the Mac computer. Astropad software and an Apple pencil were used to trace daughter sporocysts and calculate the total amount of parasite tissue in a snail cross section. Host tissue was also traced using Astropad software and an Apple pencil, and the total area of host tissue was calculated using this method. In this experiment, the average percentage of parasite tissue in a cross section was 21.69%. Infection rates were fairly consistent, with the minimum being 18.74% and the maximum equaling 25.76% parasite tissue. Calculating the area of parasite tissue relative to the area of host tissue is useful in determining the likelihood of infections in a community. A greater proportion of parasite tissue would indicate that the conditions are favorable for trematode reproduction. This method of comparing the area of host tissue and parasite tissue could be used in future experiments to determine how different conditions might affect parasite loads in host tissue.

12. Effects of hairworm infection on diet, morphology and egg production of *Acheta domesticus*. **CHRISTINA ANAYA**[3] (GS) LARISA VREDEVOE, GITA KOLLURU[1], BEN HANELT[2], AND MATT BOLEK.[3] [1]California Polytechnic State University, San Luis Obispo, California. [2]University of New Mexico, Albuquerque, New Mexico. [3]Oklahoma State University, Stillwater, Oklahoma 74074

Freshwater gordiids have complex life cycles which include multiple hosts and a free-living aquatic phase. All gordiids develop in the hemocoel of their terrestrial arthropod host. Within the host, gordiids grow from a small length of 60–100 μm to a length of over 2 m for some species. Anecdotal field observations indicate that arthropod hosts appear to show a high degree of hairworm induced pathology. Some reports indicate that after worms emerge from their hosts, only the gut remains within the arthropod's body cavity, whereas other studies indicate that the production of eggs by female arthropod hosts is inhibited or absent altogether. The focus of this investigation was to evaluate if infection by hairworms alters growth rate, depletes lipids, and reduces egg production in their arthropod host. To test the effect of parasitism on the arthropod host, four-week old female house crickets (*Acheta domesticus*) were infected with the hairworm *Paragordius varius.* Once worms emerged from their cricket hosts, morphological parameters were measured and compared with control crickets. In an independent study, infected crickets that survived infection, were provided food and water and observed for post-infection egg production. Our results indicate that cricket body length and ovipositor length, as well as lipid content and egg production were significantly reduced in infected crickets compared to sham-infected control crickets. Additionally, infected crickets ate significantly less than control crickets. In post-infected crickets, females were found to have a 95.5% infection survival rate with an average lifespan of 26.6 (range 2-90) days post infection. Last, female crickets contained eggs that were not significantly different than controls in number and size. This work is the first to demonstrate post infection egg production for crickets infected with *Paragordius varius* and the first to experimentally document the negative effects of parasitism by hairworms on their arthropod hosts and post-infection biology.

13. Proposed Research: A systematic revision of *Heligmosomoides* (Nematodea: Heligmosomoidea) in North America. **HAITHAM ALNAQEB** (GS), Department of Zoology, Southern Illinois University, Carbondale, IL 62901

    Heligmosomoides (Heligmosomoidea: Nematoda) includes nematodes that infect rodents of the families Cricetidae and Muridae. They are distributed in the Holarctic region and in North America, there are 17 nominal species concentrated in the boreal region of the continent. They dispersed into North America via Beringia Bridge during the Pleistocene. The classification and systematic of *Heligmosomoides* as will as other Heligmosomoidea genera in the order is based on the

morphological characteristics, which include buccal capsules, female reproductive system, male reproductive system, and male bursa to classify these species. By the time, researchers gain more knowledge about other structures such as synlophe (number, orientation, and size of ridges on cuticle). Recently, molecular techniques have been used to review some of these classification and taxonomy. These techniques support some previous classification and origin hypotheses while they conflict with others. Thus, my primary question is to test whether *Heligmosomoides* species in Nearctic region are monophyletic. In order to answer this question, I will examine specimens from six museums. Next, I will describe the morphological characteristics to take measurements for the structures to use them later for comparative. In addition, molecular techniques will be used to produce sequences by targeting different genes such as nuclear 28S rDNA, ITS1, and ITS2 besides the mitochondrial cytochrome oxidase I (*CO1*) and cytochrome b (*cytb*). These sequences are helpful for building phylogenetic trees to study the relationship between *Heligmosomoides* species. This research will produce a database of measurements, photographs, and sequences of *Heligmosomoides* that will be useful for future taxonomic research.

14. Seasonal changes in maturation of adult *Cotylaspis insignis* (Trematoda: Aspidogastridae) recovered from the fat mucket, *Lampsilis radiata luteola* (Bivalvia: Unionidae). **ROBIN HAUSCHNER (UG),** FAVOUR AKABOGU (UG), NINA MENESES (UG), OLIVIA SLATER (UG), KAITLYN REASONER (UG), HSUAN PENG (UG), LIN PENG (UG), CHI PENG (UG) and RON ROSEN (MP), Biology Program, Berea College, Berea, KY 40404

    The objective of this study was to assess seasonal changes in the maturation of young and mature adult *Cotylaspis insignis* recovered from the gill/visceral mass junction of the fat mucket, *Lampsilas radiata luteola,* over 14 months. Mussels were collected from North Elkhorn Creek, Scott County, Kentucky, U.S.A., between May 2015—July 2016. Staging of *C. insignis* (N = 675 worms) was based on the following criteria: Stage 1 = 17—18 peripheral alveoli in ventral sucker and 8 medial alveoli; Stage 2 = 19—20 peripheral alveoli in ventral sucker and 9 medial alveoli; Stage 3 = developing vitellaria present; Stage 4 = eggs present. Seasonal changes in the proportions of these stages were apparent in this study. Recruitment of a new cohort of adult worms by mussels began by December as evidenced by an increasing proportion of Stage 2 worms; this increase coincided with a steady decrease/loss of the older cohort of Stage 4 worms between

November and March. By March and April, developing vitellaria (i.e., Stage 3 worms) became obvious in many *C. insignis*, and the majority of worms in this new cohort began to engage in egg production (Stage 4 worms) by late May/early June.

15. Methods for ultrastructure study of larval trematodes collected from first and second intermediate snail hosts. **JAKE IVERSON** (UG), **ROSS BUTTLEMAN** (UG), SCOTT MALOTKA (GS), and ROBERT SORENSEN (MP), Department of Biological Sciences, Minnesota State University Mankato, Mankato, MN 56001

    Ultrastructure of adult trematodes recovered from a variety definitive hosts have revealed structures that aided in the identification and understanding of many aspects of trematode biology. However, larval trematodes represent difficult organisms to both identify accurately and view important structures under various forms of microscopy. This study was undertaken to assist in the preservation and preparation of larval trematodes for scanning electron microscopy (SEM). Pulmonate snail hosts were collected from Lake Winnibigoshish, Minnesota by hand during snail collections during the summer of August 2016. Larval trematodes were collected from first and second intermediate snail hosts after snails were dissected to observe the presence of rediae and tetracotyle stages. Samples were then prepared for SEM by using previously utilized methods for adult trematodes. Overall, many samples prosed many difficult problems with the overall shrinking of both the rediae and tetracotyle stages. Shrinking of the rediae stages caused many tears within the rediae samples, while tetracotyle stages did not prove to be affected as much by the dehydration process, which could be attributed to differences between metacercarial and rediae stages. Difficulties with larval trematode preparation during future studies could potentially be avoided by moving directly to SEM preparation after the processing of snail samples.

16. Does Time or Space Affect Bot Fly Infection in Midwestern Forest Mice? **JANIE MILLER** (UG), and SHAWN MEAGHER (MP), Department of Biological Sciences, Western Illinois University

    Parasites can reduce individual host reproduction or survival, and as a result, have important impacts on host populations. These impacts could vary over time or among different habitats. Variation in weather, such as rainfall or temperature could affect levels of parasitism, as could differences in microhabitat, such as vegetation and soil acidity. The bot fly, *Cuterebra fontinella,* is a parasitic maggot (larva) that lives

under the skin of the white-footed mouse, *Peromyscus leucopus*, and may reduce mouse health. Bot fly eggs are laid in vegetation and pupate in the soil after leaving the host. We trapped 270 mice over 3 years at Kibbe Life Sciences Station during August 2014, 2015, and 2016. The scrotal region of the mice was examined for bot fly infection, and the fraction of mice infected (prevalence) in each plot was calculated. Trapping plots were combined into 4 "habitat" groups based on ecological similarities, such as slope and vegetation type. Chi-squared tests were used to determine whether bot infection varied across years (habitats pooled) or habitat (years pooled). There was significant variation in prevalence across years ($\chi^2 = 31.14$, df = 2, $P < 0.0001$), but there was no effect of habitat on prevalence ($\chi^2 = 5.22$, df = 3, $P = 0.16$). These results suggest that annual variation, perhaps in weather, is more important than microhabitat differences in determining bot fly infection. More data are required to determine what climate variables, or unmeasured habitat attributes, determine bot fly infection levels

17. Integration of Centers for Disease Control case studies into an undergraduate parasitology course. **DOUGLAS B. WOODMANSEE** (MP), Department of Biology, Wilmington College, Wilmington, OH.

    The Division of Parasitic Diseases and Malaria of the US Centers for Disease Control maintains the DPDx website (https://www.cdc.gov/dpdx/) in order to support the diagnosis of parasitic diseases in humans. Among the resources on this website is a feature called "Monthly Case Studies" in which brief case histories and diagnostic images of parasitic diseases of humans are presented. Two cases are distributed monthly by email and old cases are archived on the DPDx website. I have adopted these cases, along with Wilmington College's parasite slide collection, as the basis of a lab practical in my upper-division parasitology course. AMCOP 69 attendees are challenged to take the lab practical which will be set up in one of the teaching labs of Wilmington's Center for Science and Agriculture. DPDx resources are available for free to any interested person and can be a valuable resource for teaching undergraduate students.

SUMMARY OF THE 68TH ANNUAL MIDWESTERN CONFERENCE OF PARASITOLOGISTS.

The 68th Annual Midwestern Conference of Parasitologists was held on June 9-11, 2016, at Touch of Nature Environmental Center of Southern Illinois University in Carbondale, IL. Dr. Agustín Jiménez, Dr. Matt Bolek, and Dr. Kim Bates fulfilled Presiding Officer duties during the meeting, as Dr. Matt Brewer, the elected Presiding Officer, was unable to attend this meeting. Dr. Agustín Jiménez of Southern Illinois University made local arrangements and served as Program Officer. Fifty-one persons registered for the conference.

The meeting was filled with interesting and informative presentations that consisted of eighteen talks and nineteen posters. The C. A. Herrick Award for the outstanding student poster, which is sponsored by ELANCO Animal Health, and $300 was awarded to Sarah Marshall from Purdue University for her poster "Inter- and Intra-clonal Comparisons of *Schistosoma mansoni* Cercariae." The G. R. LaRue Award and $300 for outstanding student talk was awarded to Christina Anaya of Oklahoma State University for her presentation "Morphological and physiological effects of *Paragordius varius* (Nematomorpha: Gordiida) on the cricket host, *Acheta domesticus*." Zachary Heimark from University of Wisconsin, Oshkosh was awarded the R. M. Cable undergraduate award and $200 for their presentation "Implantation of *Acanthocheilonema viteae* females pre-selected for high fecundity *in vitro* improves infection outcome in Mongolian jirds (*Meriones unguiculatus*)." Honorable Mention awards (and $100) were given to J. Trevor Vannatta of University of Minnesota Duluth for his poster entitled "Giant liver fluke in North American cervids: just a fluke?" and Tyler Achatz of Minnesota State University Mankato for his presentation "The identification of the exotic waterfowl trematode *Neopsilotrema lisitsynae* (Trematoda: Psilostomidae) in the United States." All of the students who won awards are invited to claim an additional $200 to support travel to another scientific meeting before the next AMCOP. Christina Anaya was chosen as the AMCOP nominee for the American Society of Parasitologists' student travel grant award for 2015.

The AMCOP symposium was presented by Dr. Julián Hillyer of Vanderbilt University, who presented a talk entitled, "Functional integration of the immune, circulatory and respiratory systems of mosquitoes in the anti-pathogen response" and Dr. Makedonka Mitreva of Washington University in St. Louis gave a presentation called "Soil transmitted helminths and the human gut microbiome." Dr. Karl Reinhard, from the University of Nebraska, Lincoln, gave the Keynote presentation that accompanied the banquet. Dr. Reinhard's rousing presentation was titled "Archaeoparasitology 2015-2020: Transitions in Theory and Crises in Diagnosis."

AMCOP 69 will be held in 2017 at Wilmington College, Wilmington OH. Additional future meeting sites as determined by the Meeting Sites Committee:

AMCOP 70 – 2018: Eastern Illinois University, Charleston, IL
AMCOP 71—2019: MN State University Mankato, Mankato, MN
AMCOP 72—2020: St. Norbert College, DePere, WI

Dr. Robert Sorensen presented the treasurer's report for 2014 and the interim financial report for 2015. These reports were approved.

The AMCOP Student Research Grant Committee (Dan Howe (Chair), Ron Rosen, Tom Platt, Jeff Laursen, and Doug Woodmansee) reported its decisions for the AMCOP-sponsored Student Research Grants. The awardees are: Janie Miller, Western Illinois University "Does fire affect parasitism in Midwestern mice?" ($250); Jason Block, Northeastern Illinois University, "The Molecular Mystery of the Amphistomes And *Zygocotyle lunata* Species using Morphological and Molecular Characteristics" ($250); Ryan Shannon, Oklahoma State University, "Rocky Mountain Spotted Fever: Identification and Evolutionary Relationships of Amphibian *Trypanosoma*." ($500). Dan Howe and Tom Platt are rotating off this committee. Dennis Minchella and Kim Bates graciously volunteered to fill those positions. Jeff Laursen was appointed the chair for the committee for the upcoming year.

The following committee reports were received and approved: Auditing (Shawn Meagher, Sami McCarrel), Awards (Melissa

Stuart, Doug Woodmansee, Tim Yoshino), Meeting Sites (Trudy Aebig, Matt Bolek), Nominating (Dan Howe, Agustín Jiménez), Resolutions (Scot Malotka, Shelly Michalski), and Symposium Suggestions (Tyler Achatz, Trevor Vannatta).

The annual silent auction was also held and sale of the 31 donated items raised $487 to support future AMCOP activities.

The report of the Resolutions Committee was well received and included thanks to many including Elanco Animal Health, a division of Eli Lilly Company, for its continued support of the C.A. Herrick Award given to the outstanding poster presentation; the American Society of Parasitologists was thanked for their continued support of the student travel grant award; and PLoS Pathogens was acknowledged for their gift of $400 to support AMCOP 68. A decision was made during the Business Meeting to assign the PLoS Pathogens gift as partial support for the society's Student Research Grants program.

Officers elected for 2017 were: Dr. Matt Bolek, Oklahoma State University: Presiding Officer; Dr. Douglas Woodmansee, Wilmington College: Program Officer; Dr. Robert Sorensen, Minnesota State University Mankato: Secretary-Treasurer (will be fulfilling 2nd year of 2-year term).

Items brought forward as new business, during the Business Meeting, included a decision to raise the amount of the annual AMCOP dues to $20 for faculty or professional staff and $10 for students. It was also decided to form an ad hoc committee to solicit additional sponsors to support future AMCOP activities. The members who volunteered to serve on this committee are: Matt Bolek, Sami McCarrel, Sarah Orlofske, Elizabeth Warburton, and Elliott Zieman

Prepared June 24, 2016
Robert Sorensen
AMCOP Secretary-Treasurer

REPORT OF THE 68 AMCOP RESOLUTIONS COMMITTEE
Scott Malotka and Shelly Michalski

The 68th Annual Midwestern Conference of Parasitologists met at the Touch of Nature Environmental Center on June 9-11.
For the standing record, the meeting was convened and adjourned with no incident; no one was arrested.
Therefore, we acknowledge with utmost thanks the following:
Dr. Agustín Jiménez, Program Officer, for his excellent attention to detail and for being an amazing host,
Drs. Kim Bates and Matt Bolek, for filling in for the Presiding Officer duties,
Drs. Julián Hillyer and Makedonka Mitreva for their wonderful talks on anti-pathogen responses and helminth-soil interactions,
Dr. Karl Reinhard for presenting the banquet address on the wet dream of archaeoparasitology.
Elanco Animal Health, for their support of the Herrick Award,
The American Society of Parasitologists, for support of speaker's travel expenses,
The membership of AMCOP, for the support of the LaRue, Cable, and Honorable Mention Awards and other expenses.
PLoS Pathogens, for support of speaker's travel expenses,
The College of Science, Department of Zoology, and SIU Sigma Xi Chapter.
Special thanks goes to Elliot Zieman and Sara Ressing for all of their amazing work behind the scenes at this conference,
Thank you to Christaudo's for providing box lunches and a phenomenal spinach lasagna for the banquet dinner,
Thank you to Touch of Nature Environmental Center and Giant City Lodge and their employees for the accommodations and venues for this event,
Finally, the membership of AMCOP would like to recognize Dr. Lin Twining as a stalwart member of our society; her presence will be missed for years to come.

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.

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.) / 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	Presiding Officer
1949	Univ. Wisconsin, Madison, WI (AMCOP I) ..... J.C. Baer, ST=J. R. Lincicome	Harley J. VanCleave
1950	Univ. Michigan, Ann Arbor, MI (II) ..... W.W. Cort, Trends in Helminthological Research. PO/ST=R. J. Porter	R.V. Bangham
1951	Purdue University, Lafayete, IN (III) ..... J.E. Ackert, Some Observations on Hookworm Disease. ST=W. Balamuth	L.O. Nolf
1952	Univ. Illinois, Urbana, IL (IV) ..... A.C. Walton, ST=W. Balamuth	R.J. Porter
1953	Iowa State College, Ames IA (V) ..... R.M. Cable, Parasitological Experiences in Puerto Rico. ST=W.D. Lindquist	C.A. Herrick
1954	Michigan State Univ., East Lansing, MI (VI)..... G.F Otto, Mosquitos, Worms, Somoans and the Parasitologist in Somoa. ST=W.D. Lindquist	A.C. Walton

1955 Notre Dame Univ., IN (VII) ..... R.M. Cable
G.R. LaRue, Relationships in the Development of Digenetic Trematodes.
ST=W.D. Lindquist

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

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

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

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

1960 Purdue Univ., Lafayette, IN (XII) ..... F.J. Krudenier
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. Hugghins

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

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

1967 Iowa State Univ., Ames, IA (XVIV) P.J. Silverman
N.D. Levine, Parasitology, Problems and Promise.
ST=E.J. Hugghins
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. Ameel
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]

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. Hugghins
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 Parasitiology 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.
PO=L. Uhazy, ST=D.M. Miller
H=M.C. Lewis, H=I.G. Welsford, L=D.A. Leiby, ,
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

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

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. 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. Gillilland 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 McQuistion; 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 Vasyl 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 McQuistion
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) Jason Curtis
David Williams – The Genomics Revolution in Parasitology.
PO= Shelly Michalski, ST= Doug Woodmansee;
H= Christine Hsiao; L= Shriveny Dangoudoubiyam
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)... Robert Sorensen
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) Daniel Howe
Eugene Lyons - Hookworms (*Unicaria* spp.) in Pinnipeds with Notes on the Biology of Northern Fur Seals.
PO= Ramon Carreno, ST= Doug Woodmansee;
H= Sriveny Dangoudoubiyam; 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) Jeffrey Laursen
Tim Yoshino - Frankenflukes: Parasitic GMO's.
PO= Shawm Meagher, ST=Doug Woodmansee;
H=Kathryn Coyne; L=Philip Scheibel; HM= Kathy Johnson; C= Bryan Rolfsen;
S= Can Parasitic worms treat autoimmune disorders? by David Elliott and John O. Fleming.

2011 Saint Mary's College, Notre Dame IN (LXIII)..... Shelly Michalski
Bruce Christensen – Programmes for control of lymphatic filariasis: perspectives from a vector biologist.

PO= Tom Platt, ST= Doug Woodmansee;
H=Daniela Cortese; L=Ablesh Gautam HM= Jenica Abrudan, Elizabeth Warburton; C= Markah Frost, Sarah Johnson; S=Parasitonomics by Mary Ann McDowell and Mike Ferdig.

2012 Truman State University, Kirksville, MO (LXIV) . Shawn Meagher
Scott D. Snyder - Parasite Biodiversity: Reflections, Challenges and Opportunities.
PO=Lin Twining , ST= Doug Woodmansee
H= Utibe Bickham; L= Heather Stigge; C= Michael Lehrke; HM= Shelby Heistand;
S= The importance of the unimportant. & Understanding the histories of parasites of Galapagos birds.
by John Janovy and Patricia Parker.

2013 Purdue University, West Lafayette, IN (LXV)..... Kimberly Bates
Agustin Jimenez - Biodiversity in the New World: "What is it?", still a relevant question.
PO=Joe Camp , ST= Doug Woodmansee
H= Heather Stigge; L= Elizabeth Warburton HM= Ablesh Gautam and Bhagya Wijayawardena; C= David Cordie;
S=DNA Barcoding in Parasitology Research by Sean Locke and Mark Forbes

2014 The University of Kentucky ..... Agustin Jimenez
PO=Daniel Howe, ST= Robert Sorensen
H= Alyssa Gleischner; L= Miranda White; HM= Leah Peng and ElizabethWarburton; C= Allison Young;
S= Parasite adaptation and anthelmintic resistance by Martin K. Nielsen and Craig R. Reinemeyer

2015 Lawrence University ..... Trudy Aebig
PO=Judith Humphries, ST= Robert Sorensen
H= Justin Wilcox; L= Elliot Zieman HM= Heather Toman, Evan Boone;
C= Erik Rodriguez and John Lopez;
S= Wildlife Disease by Dr. Rebecca Cole and Dr. Shelly Dubay

2016 Southern Illinois University ..... Kim Bates
PO=Agustín Jimenez, ST= Robert Sorensen
H= Sarah Marshall; L= Christina Anaya HM= Tyler Achatz and Trevor Vanatta; C= Zachary Heimark;
S= Physiology of mosquitoes in the anti-pathogen response AND interactions among geohelminths and the human gut micorbiome by Dr. Julián Hillyer Vanderbilt University and Dr. Makedonka Mitreva Washington University in St. Louis

FINANCIAL REPORTS

2016 AMCOP Financial Report

Jan. 1, 2016-Dec. 31, 2016

Updated 6/05/2017

Balance Available 1/1/2016 [checking ($702.01); savings ($5646.41)]			**$6348.42**
Date	**Expenses**		
1/19/16	2015 Student Travel Awards	$200.00	
	-Zieman (2015 winner; Fish & Wildlife Conference)		
4/28/16	GoDaddy (amcop.org URL)	29.74	
6/8/16	AMCOP 68 Program Duplication (Fedex)	$132.90	
6/10/16	Certificates & Holders (Walmart)	$28.07	
6/11/16	Herrick Award (Sarah Marshall)	$300.00	
6/11/16	LaRue Award (Christina Anaya)	$300.00	
6/11/16	Cable Award (Zachary Heimark)	$200.00	
6/11/16	H.M. Awards [Achatz ($100); Vanatta ($100)]	$200.00	
6/11/16	Site Food (Christaud's)	$2,545.10	
6/11/16	Site Fees (Touch of Nature)	$676.00	
various	Speaker Expenses-Symposium	$272.68	
	-Mitreva Travel ($130.68)		
	-Lodging (1 night x 2 speakers; $142)		
6/11/16	2016 Student Travel Awards	$250.00	
	-Anaya (ASP Conference)		
various	Research Grants Program	$1,000.00	
	-Ryan Shannon ($500)		
	-Jason Block ($250)		
	-Janie Miller ($250)		
Total Expenses			**$6134.49**
Income			
	Member Payments	$3884.00	
	-2016 Dues Payments ($410)		
	-2016 Member Contributions ($840)		
	-Member Catering Charges ($1781)		
	-Member Registration Fees ($1035)		
	-Outstanding Member Payments (-182.00)		
	ELANCO Donation	$900.00	
	-3 year's payments (2014, 2015, 2016)		
	ASP Support	$250.00	
	PLoS Donation	$400.00	
	Silent Auction Revenue	$487.00	
	SIU-Touch of Nature (Overpayment)	$142.00	
	Jimenez (SIU reimbursement)	$150.00	
	Interest Income (through 6/01/17)	$6.10	
	-2016 Savings ($5.65); Checking ($0.45)		
Total Income			**$6219.10**
Operating Surplus (Loss) for 2016-2017			**$84.61**
Net Worth (12/31/16) Savings ($5652.06); Checking ($780.97)			**$6433.03**

Submitted By:

Robert E. Sorensen

Robert E. Sorensen
Secretary / Treasurer

Financial Report Approved by

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Auditing Committee Members

2017 AMCOP Interim Financial Report

Jan. 1, 2017-June 6, 2016

Updated 6/07/2017

Balance Available 1/1/2016 [checking ($780.97); savings ($5652.06)]			**$6433.03**
Date	**Expenses**		
6/8/17	AMCOP 68 Program Duplication (Fedex)	$132.90	
6/8/17	Certificates & Holders (Walmart)	$28.07	
6/10/17	Herrick Award (Budgeted)	$300.00	
6/10/17	LaRue Award (Budgeted)	$300.00	
6/10/17	Cable Award (Budgeted)	$200.00	
6/10/17	H.M. Awards (Budgeted)	$200.00	
6/10/17	2017 Student Travel Awards (Budgeted)	$250.00	
6/10/17	Research Grants Program	$1,000.00	
Total Expenses			**$2410.97**
Income			
2/17/17	2016 Outstanding Member Payments	$182.00	
6/6/17	2017 Meeting Member Payments	$1235.00	
	-2017 Dues Payments ($450)		
	-2017 Member Contributions ($785)		
	ELANCO Donation ($300) - requested		
	ASP Support ($250) - requested		
6/6/17	PLoS Donation	$500.00	
	Silent Auction Revenue		
	Interest Income (through 6/01/17)	$2.52	
	-2016 Savings ($2.33); Checking ($0.19)		
Total Income			**$1919.52**
Net Worth (6/6/17) [Savings ($5654.39); Checking ($2198.16)]			**$7852.55**

Submitted By:

Robert E. Sorensen

Robert E. Sorensen
Secretary / Treasurer

Financial Report Approved by

_____

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Auditing Committee Members

Membership Email Directory (Dues paid in either 2016 or 2017)

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NOTES

NOTES

2017 AMCOP DUES

Name _____

Address_____

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_____

Phone # _____

Email _____

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

CONTRIBUTION to student awards: $_____

TOTAL $_____

****
Please make checks payable to AMCOP.
****

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Dr. Robert Sorensen
AMCOP Secretary/Treasurer
Department of Biological Sciences
Minnesota State University Mankato
Trafton Science Center South, S-277
Mankaton MN 56001

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www.amcop.org