

**39th Annual Meeting
Rocky Mountain Conference of
Parasitologists**

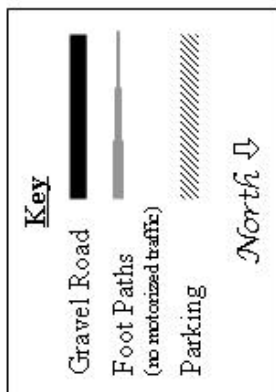


Program & Abstracts
Sept 18th-20th, 2008

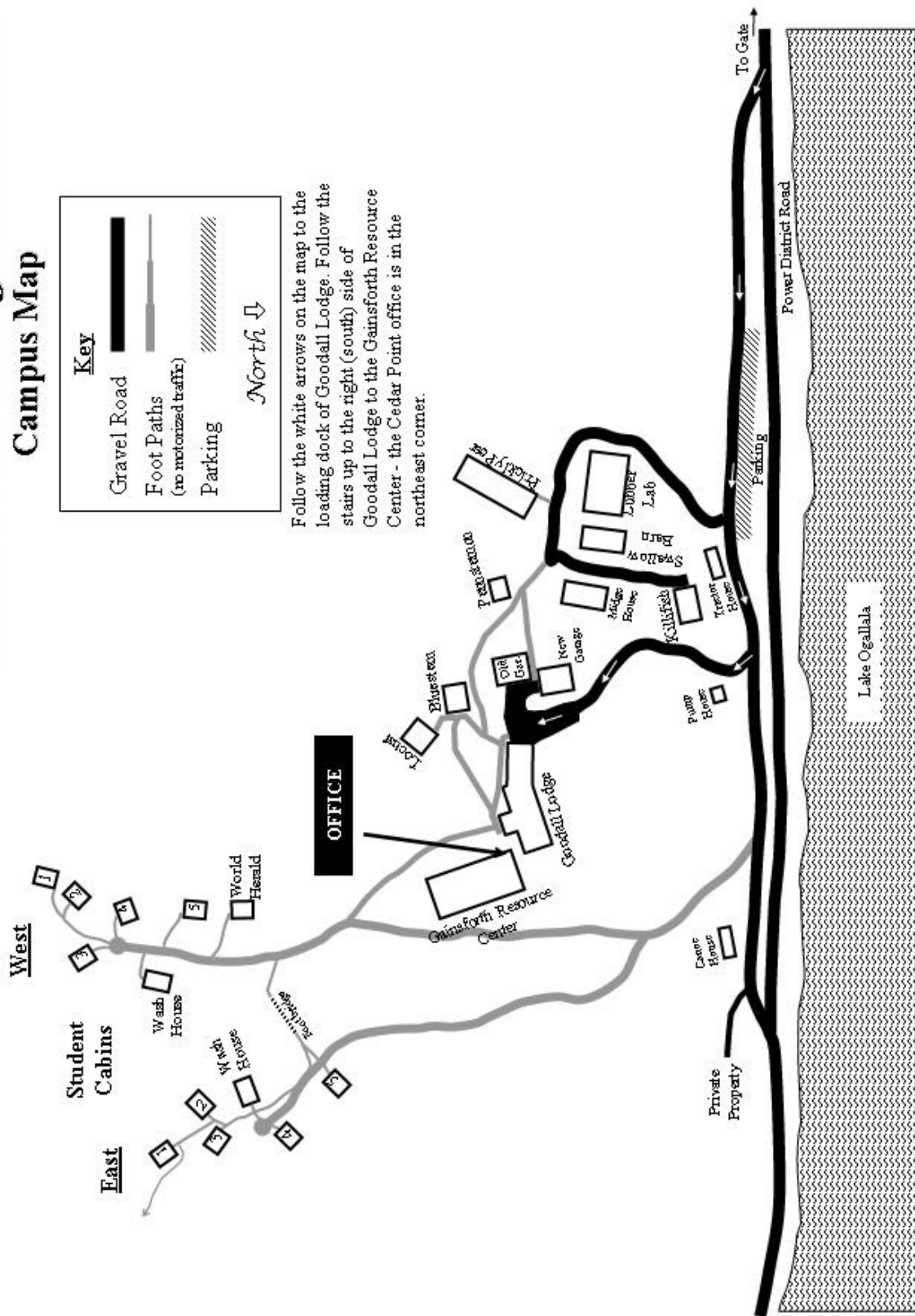
Cedar Point Biological Station, (UNL)
Ogallala, Nebraska

Cedar Point Biological Station

Campus Map



Follow the white arrows on the map to the loading dock of Goodall Lodge. Follow the stairs up to the right (south) side of Goodall Lodge to the Gainsforth Resource Center - the Cedar Point office is in the northeast corner.



Rocky Mountain Conference of Parasitologists
(1969-2008)

A Regional Affiliate of the
American Society of Parasitologists

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Department of Zoology
Oklahoma State University
Stillwater, Oklahoma 74078

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Bert B. Babero	1983		
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* Deceased

**This Meeting Was Made Possible By Support From: Cedar Point Biological Station,
University of Nebraska-Lincoln.**

**Special thanks are also extended to Katharine C. Potter, Kathryn and Roy Bailey,
Jean Knops, Alaine Knipes, John Janvoy, Jr., Heather Tracy, Melissa Bolek, Ron
Hathaway, and Scott Seville.**

Rocky Mountain Conference of Parasitologists

Summary of Events – 2008

Thursday, Sept 18th

7:00 – 9:00 PM Welcome Reception, Goodall Lodge: CPBS

Friday, Sept 19th

7:00 – 8:30 AM Breakfast, Goodall Lodge: CPBS

9:00 – 9:10 AM Welcome to the 39th Annual Conference of Parasitologists

9:10 – 10:30 AM Session 1: Alaine Knipes presiding

10:30 – 10:50 AM Break (coffee & snacks)

10:50 – 12:00 PM Session 2: Gabriel Langford

12:00 – 2:00 PM Lunch Goodall Lodge

2:00 – 3:40 PM Session 3: Terry Haverkost

3:40 – 4:00 PM Break (beverages & snacks)

4:00 PM Posters, Gainsforth Resource Center

5:30 – 7:00 PM Dinner, Goodall Lodge

7:00 PM Gerald Schmidt Memorial Lecture, Goodall Lodge

Saturday, Sept 20th

7:00 – 9:30 AM Breakfast, Goodall Lodge

9:30 – 10:40 AM Session 4: Scott Seville presiding

10:40 – 11:00 AM Break (coffee & snacks)

11:00 – 11:40 AM Session V: Cynthia Church Presiding

11:40 – 12:00 PM Annual Business Meeting, Awards, Adjournment

12:00 PM Lunch, Goodall Lodge

Rocky Mountain Conference of Parasitologists Program

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7:00 – 9:00 PM Welcome Reception, Goodall Lodge: CPBS

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9:00 – 9:10 AM Welcome to the 39th Annual Conference of Parasitologists

Paper Session I: Alaine Knipes Presiding

9:10 – 9:30 AM (Graduate Student Paper)

- 1** *EIMERIA* SPP. IN *HABROMYS LOPHURUS* (CRESTED-TAILED DEER MOUSE) FROM NORTHWESTERN GUATEMALA. Robert E. Arlen*§, J. Kvičerová§, R.S. Seville, D. Motriuk-Smith, Department of Zoology and Physiology, University of Wyoming/Casper Center, and Department of Biology, University of South Bohemia, České Budějovice.

9:30 – 9:50 AM (Undergraduate Student Paper)

- 2** *EIMERIA* SPP. IDENTIFIED FROM WYOMING GROUND SQUIRRELS (*SPERMOPHILUS ELEGANS*) COLLECTED IN CENTRAL WYOMING. Erica Costello*, D. Motriuk-Smith, R. S. Seville, Department of Zoology and Physiology, University of Wyoming/Casper Center.

9:50 – 10:10 AM (Graduate Student Paper)

- 3** TAXONOMIC STUDIES OF SOUTH AMERICAN ANOPLOCEPHALIDAE. Terry R. Haverkost* and Scott L. Gardner, H. W. Manter Laboratory of Parasitology, University of Nebraska.

10:10 – 10:30 AM (Graduate Student Paper)

- 4** AMPHIBIAN LUNGWORMS AND PESTICIDES: A BALANCED VIEW OF HOST-PARASITE RELATIONSHIPS AND ECOTOXICOLOGY. Gabriel J. Langford* and John Janovy, Jr., School of Biological Sciences, University of Nebraska-Lincoln.

10:30 – 10:50 AM

Break (coffee & snacks)

Paper Session II: Gabriel Langford Presiding

10:50 – 11:10 AM (Graduate Student Paper)

- 5** **HOST SPECIFICITY AND DIFFERENTIAL SUCCESS OF *DACTYLOGYRUS* SPP. (PLATYHELMINTHES, MONOGENOIDEA) IN NEBRASKA MINNOWS: LOCAL AND GLOBAL IMPLICATIONS.**

Alaine K. Knipes* and John Janovy, Jr., School of Biological Sciences,
University of Nebraska-Lincoln.

11:10 – 11:40 AM

- 6** **THE SECRET LIVES OF BEDBUGS.** Robert G. Hancock, Department of
Biology, Metropolitan State College of Denver.

11:40 – 12:00 PM

- 7** **THE ROLE OF DAMSELFLIES (ODONATA) IN THE TRANSMISSION OF *HALIPEGUS ECCENTRICUS* TO ANURANS.** Matthew G. Bolek* and
Heather Tracy, Department of Zoology, Oklahoma State University.

12:00 – 2:00 PM

Lunch Break (Goodall Lodge)

Paper Session III: Terry R. Haverkost Presiding

2:00 – 3:00 PM

Newton Kingston Memorial Lecture

THE PLEASURES OF GREGARINE BIOLOGY. Richard E. Clopton,
Department of Natural Science, Peru State College

3:00 – 3:20 PM

- 8** **USING DNA SEQUENCE DATA TO RESOLVE TAXONOMIC ISSUES FOR THE *EIMERIA* (APICOMPLEXA: EIMERIIDAE): THE CASE FOR CONSPECIFICITY OF *EIMERIA CALLOSPERMOPHILI* FROM DIFFERENT HOSTS AND LOCATIONS AND ITS PHYLOGENETIC RELATIONSHIP TO OTHER EIMERIANS.** D. Motriuk-Smith, R. S. Seville*, Department of Zoology and Physiology, University of Wyoming/Casper Center.

3:20 – 3:40 PM

- 9** **THE VEGETARIAN AND THE BLOOD FEEDER. ALTERNATIVE LIFE CYCLE STRATEGIES OF *MEGALODISCUS TEMPERATUS* IN TADPOLES AND METAMORPHOSED ANURANS.** Matthew Bolek*, and
J. Janovy Jr., Department of Zoology, Oklahoma State University, and School of
Biological Sciences, University of Nebraska-Lincoln.

3:40 – 4:00 PM

Break (beverages & snacks)

4:00 – 5:00 PM Poster Session Gainsforth Resource Center.

THE EFFECTS OF PRECIPITATION ZONES ON THE OCCURRENCE OF PARASITISM IN DOGS AT DIFFERENT LOCATIONS IN NEBRASKA AND NORTH AMERICA. Ashlee Hartman* and M. Bolek, Department of Biology, University of Nebraska at Kearney, and Department of Zoology, Oklahoma State University. (Undergraduate Student)

HELMINTH COMMUNITY STRUCTURE IN SEVEN SPECIES OF TADPOLES FROM NEBRASKA. Heather Tracy*, and M. Bolek, Department of Zoology, Oklahoma State University. (Graduate Student)

5:30 – 7:00 PM
Dinner Goodall Lodge

7:00 PM
Gerald D. Schmidt Memorial Lecture
THE CEDAR POINT BIOLOGICAL STATION: A GREENHOUSE FOR THE CULTIVATION OF PARASITOLOGISTS. John Janovy Jr., School of Biological Sciences, University of Nebraska-Lincoln.

Saturday, September 20th

7:00 – 9:30 AM Breakfast Goodall Lodge

Paper Session IV: R. Scott Seville Presiding

9:30 – 9:50 AM
10 PARASITES OF THE MINK FROG (*RANA SEPTENTRIONALIS*) FROM MINNESOTA, USA. Anna M. Schotthoefer*, Centers for Disease Control and Prevention, Division of Vector-Borne Infectious Diseases; Matthew G. Bolek, Department of Zoology, Oklahoma State University; Rebecca A. Cole, USGS National Wildlife Health Center; and Val R. Beasley Department of Veterinary Biosciences, University of Illinois at Urbana-Champaign.

9:50 – 10:00 AM
11 Addressing the RMCP from the American Society of Parasitologists President. David Bruce Conn, School of Mathematical and Natural Sciences, Berry College.

10:00 – 10:20 AM
12 CRONIC WASTING DISEASE (CWD) IN NEBRASKA DEER. Dave Oates, Nebraska Games and Parks Commission.

10:20 – 10:40 AM

- 13 COCCIDIA OF NON K-9 ORIGIN FOUND IN DOG FECALS.** Richard D. McKown, TLC Vet Care, Hastings Nebraska.

10:40 – 11:00 AM

Break/Meeting of awards committee

Paper Session V: Cynthia Church Presiding

11:00 – 11:20 AM

- 14 PARASITOLOGY IN THE PERUVIAN AMAZON: LESSONS LEARNED WITH AMERICAN HIGH SCHOOL STUDENTS.** Alaine K. Knipes, School of Biological Sciences, University of Nebraska-Lincoln.

11:20 – 11:40 AM

Break/Meeting of awards committee

- 15 PARASITOLOGY IN A SMALL ANIMAL PRACTICE.** Richard D. McKown, TLC Vet Care, Hastings Nebraska.

11:40 – 12:00 PM

Business meeting and announcement of the recipients of the Datus M. Hammond and the William R. Marquardt Awards for best student presentations.

12:00 PM

Lunch Goodall Lodge (Optional)

* Presenter

Abstracts

-1-

***EIMERIA* SPP. IN *HABROMYS LOPHURUS* (CRESTED-TAILED DEER MOUSE) FROM NORTHWESTERN GUATEMALA.** Robert E. Arlen*§, J. Kvičerová§, R.S. Seville, D. Motriuk-Smith, Department of Zoology and Physiology, University of Wyoming/Casper Center, and Department of Biology, University of South Bohemia, České Budějovice.

There are no known reports of coccidia infecting Crested-tailed deer mice (*Habromys lophurus*), or of any members of the genus *Habromys*. Fecal samples were collected from small mammals in northwestern Guatemala in early 2006, and were examined for the presence of *Eimeria* spp. Of 94 samples, 4 (4.3%) were positive, 2 *Habromys lophurus*, one *Peromyscus guatemalensis*, and one *Reithrodontomys sumachrasti*. The latter genera have previously been reported infected with *Eimeria* spp. The morphology of the recovered oocysts does not resemble previously described species of *Eimeria* occurring in closely related rodents thus far. Genomic DNA was isolated from *Eimeria* oocysts from *H. lophurus*. PCR amplification of 18S sequence was unsuccessful. The technique of nested PCR will be attempted next. Additional samples collected in 2006, 2007, and 2008 have been received and are being examined.

-2-

***EIMERIA* SPP. IDENTIFIED FROM WYOMING GROUND SQUIRRELS (*SPERMOPHILUS ELEGANS*) COLLECTED IN CENTRAL WYOMING.** Erica Costello*, D. Motriuk-Smith, R. S. Seville, Department of Zoology and Physiology, University of Wyoming/Casper Center.

Fecal samples were collected from Wyoming ground squirrels (*Spermophilus elegans*) during the summer 2008. The goal of the study was to identify *Eimeria* species and to classify them taxonomically. The animals were live-trapped, their fecal samples were collected and the animals were released. The samples were mixed with potassium dichromate and held at ambient temperature for 7+ days to allow sporulation of *Eimeria* oocysts. Following sporulation oocysts were isolated from feces by sugar flotation and examined at 100-1000X light microscopy for the presence/absence of *Eimeria*. Thirty samples were screened and 25 were positive for *Eimeria* (prevalence = 83%). Three samples were positive for *Eimeria lateralis* and these samples will be further processed to concentrate oocysts, extract eimerian DNA, and amplify and sequence 18S rDNA.

TAXONOMIC STUDIES OF SOUTH AMERICAN ANOPLOCEPHALIDAE.

Terry R. Haverkost* and Scott L. Gardner, H. W. Manter Laboratory of Parasitology, University of Nebraska.

Currently there are less than 20 species of anoplocephalid cestodes known from South American mammals. Most of the species in this family are representatives of the genus *Monoecocestus* and infect almost exclusively hystricognath rodents. Over the past two decades, researchers at the Harold W. Manter Laboratory (HWML) and the Museum of Southwestern Biology conducted surveys of mammals and their parasites from Bolivia. Specimens representing anoplocephalid cestodes were pulled from this collection at the HWML and identified. With traditional taxonomic methods and the help of multivariate statistical analyses, we describe several new species of *Monoecocestus* and *Andrya* from these materials. Improved collection and preservation techniques and targeted sampling of additional representatives of hystricognath rodents is likely to lead to the discovery of more *Monoecocestus* species. It is clear that the sigmodontine rodents are also an important host group for anoplocephalid cestodes in North and South America, although their role in the evolution of these cestodes is uncertain.

AMPHIBIAN LUNGWORMS AND PESTICIDES: A BALANCED VIEW OF HOST-PARASITE RELATIONSHIPS AND ECOTOXICOLOGY.

Gabriel J. Langford* and John Janovy, Jr., School of Biological Sciences, University of Nebraska-Lincoln.

Agricultural lands are the most pervasive human landscape on Earth, forming a patchy network of natural and human-managed ecosystems. Agriculture has been cited as a factor in the decline of biodiversity worldwide. In particular, pesticides have been given much attention; most studies on pesticides have concentrated on strictly free-living organisms, and rarely consider parasites. Among the few studies that have incorporated parasites, a host-centric approach was taken, and thus little data are available on the effects of pesticides on the host-parasite relationship. To determine the effect pesticides have on a host-parasite relationship, the lungworm *Rhabdias joaquinensis* and two species of amphibians, *Rana blairi* and *Acris crepitans*, were exposed to environmentally relevant amounts of pesticides. Mortality of juvenile lungworms and frog hosts was recorded throughout pesticide exposure. Following exposure, experimental infections were performed to assess the functionality of the host-parasite relationship. Results suggest that juvenile lungworms were significantly more sensitive to pesticide exposure than their amphibian hosts. In most experimental treatments lungworms were killed during pesticide exposure, but few amphibians died during exposure. Surviving lungworms varied greatly in their ability to infect pesticide exposed hosts. However, it was clear pesticide exposed host-parasite experiments resulted in lower parasite prevalence and intensity than seen in control experiments. Given the patchy network in most agricultural landscapes, it appears that environmental heterogeneity may allow parasites and hosts exposed to various pesticide levels to come into contact, which would influence host-parasite interactions.

-5-

HOST SPECIFICITY AND DIFFERENTIAL SUCCESS OF *DACTYLOGYRUS* SPP. (PLATYHELMINTHES, MONOGENOIDEA) IN NEBRASKA MINNOWS: LOCAL AND GLOBAL IMPLICATIONS. Elaine K. Knipes* and John Janovy, Jr., School of Biological Sciences, University of Nebraska-Lincoln.

Three years of field data has demonstrated that all *Dactylogyru*s spp. that occur in our study system in Southeastern Nebraska are specific to particular host species, and that each *Dactylogyru*s species exhibits varying success among the sites. Based on these two factors, high host specificity and differential parasite success, *Dactylogyru*s of North American cyprinids is a model system for studies of fish parasite co-evolution. Initial steps to combine our field data with our preliminary molecular phylogenetic hypothesis are beginning to reveal the roles of host movement and distribution in the evolution of highly host specific symbiotic organisms, and have clear implications for the evolution of these organisms at the local and global scales.

-6-

THE SECRET LIVES OF BEDBUGS. Robert G. Hancock, Department of Biology, Metropolitan State College of Denver.

Members of the Insect family Cimicidae are obligate blood-feeding insects that live aggregated in harborages in or around the nests/roosts of certain warm-blooded vertebrates. Most species are associated with birds and bats with the exception of two species of human bedbugs (*Cimex lectularius* and *Cimex hemipterus*). After their near eradication from the developed world in the 1950s due to widespread household use of DDT, these disturbing pests are now making a major resurgence over much of their cosmopolitan range. How does bedbug behavior contribute to their resurgence? As thigmotactic and negatively phototactic animals that rest quietly in harborages during the day, bedbugs emerge at night in response to thermal and chemical cues from a sleeping host. Thermal cues from recently fed females stimulate male mating behavior that culminates in a traumatic insemination that involves the penetration of the female cuticle. Furthermore, pheromones play roles in both their aggregation behavior and an alerting response to disturbances. Recent studies examining the collective roles of temperature, chemical and physical cues in the aggregation and dispersal of bedbugs will be reported on.

-7-

THE ROLE OF DAMSELFLIES (ODONATA) IN THE TRANSMISSION OF *HALIPEGUS ECCENTRICUS* TO ANURANS. Matthew G. Bolek* and Heather Tracy, Department of Zoology, Oklahoma State University.

Halipegus eccentricus Thomas 1939 is a common hemiurid trematode in the eustachian tubes of frogs in North America. However the life cycle of this species has never been completely elucidated. Previous life-cycle studies on *H. eccentricus* suggest that it has a

3-host life cycle. Cystophorous cercariae are shed by *Physa gyrina* snail, first intermediate hosts, and are ingested by *Cyclops* and *Mesocyclops* copepod, second intermediate hosts, where metacercariae develop. Tadpoles ingest these microcrustaceans accidentally through respiratory currents, and it is assumed that worms survive tadpole metamorphosis and migrate to the eustachian tubes of frogs. Here we show, through field work and experimental infections, that the life cycle of *H. eccentricus* utilizes 4 hosts. Frogs become infected with *H. eccentricus* by feeding on infected damselflies; worms mature in the eustachian tubes of frogs releasing eggs within 50–60 days post infection. Cystophorous cercariae develop within 30–35 days postexposure in *P. gyrina* snails and infect ostracod, *Cypridopsis* sp., second intermediate hosts where metacercariae develop. Exposure of damselfly larvae and bullfrog tadpoles to infected ostracods only resulted in the infection of damselfly larvae and not tadpoles. Because no morphological changes occurred, in the metacercaria stage of *H. eccentricus*, between the ostracod second intermediate host and damselfly larva host, this study suggests that odonates serve as paratenic hosts in the life cycle, which is exceptionally common among other hemiurids.

-Newton Kingston Memorial Lecture-
THE PLEASURES OF GREGARINE BIOLOGY. Richard E. Clopton, Department of Natural Science, Peru State College

The pleasures of gregarine biology are nothing more or less than a journey through hyperdiversity. Gregarine parasites of insects are understudied yet of profound scientific significance: they are the most prevalent and diverse parasites of Earth's most prevalent and diverse animals. Global gregarine surveys over the last 100 years have documented less than 1% of estimated gregarine diversity: less than 1% of potential hosts species have been surveyed. High-level systematic studies are difficult because taxic sampling is very low. Thus hyperdiversity obviates exhaustive systematic treatment but rewards the opportunist who combines serious systematic work with evolutionary biodiversity. Studies of biodiversity begin with an inventory of community diversity and expand to a meaningful analysis of the underlying causes of that diversity. My research over the last decade has focused on Nearctic gregarine survey to provide taxonomic resolution in 3 host groups: tenebrionid beetles, damselflies, and cockroaches. Once purely systematic studies, these programs now support traditional taxonomic work, ecological and evolutionary studies, and molecular phylogenetics. They allow an evaluation of our current understanding of gregarine evolution and begin to reveal factors underlying gregarine speciation, most notably the importance of host-stabilized transmission strategies, vicariant and stochastic mechanisms underlying evolutionary assemblages, and fundamental patterns of gregarine radiation, including secondary colonization of sweet water insects and gregarine radiations correlated with metamorphic radiation of the insects.

USING DNA SEQUENCE DATA TO RESOLVE TAXONOMIC ISSUES FOR THE *EIMERIA* (APICOMPLEXA: EIMERIIDAE): THE CASE FOR CONSPECIFICITY OF *EIMERIA CALLOSPERMOPHILI* FROM DIFFERENT HOSTS AND LOCATIONS AND ITS PHYLOGENETIC RELATIONSHIP TO OTHER EIMERIANS. D. Motriuk-Smith, R. S. Seville*, Department of Zoology and Physiology, University of Wyoming/Casper Center.

Historically the taxonomy of the coccidia has been morphologically based. The purpose of this study was to establish if conspecificity of isolates of *Eimeria callospermophili* from in three ground-dwelling squirrel hosts (Rodentia: Sciuridae) is supported by comparison of DNA sequence data and to examine how this species relates to other eimerian species. *Eimeria callospermophili* was isolated from three hosts: *Spermophilus elegans* and *Marmota flaviventris* (collected in Wyoming), and *Cynomys ludovicianus* (collected in Colorado). The ITS1-2 genomic rDNA and ORF 470 plastid DNA sequences were PCR generated, sequenced, and compared to other the same sequences from eimerians from other hosts and populations. The phylogeny generated using Neighbor Joining analysis with ITS1-2 sequences supports conspecificity of the three *E. callospermophili* isolates. The phylogeny generated using the ORF 470 sequence by Neighbor Joining analysis placed *E. callospermophili* with eimerian species whose oocysts possess an oocyst residuum.

THE VEGETARINA AND THE BLOOD FEEDER. ALTERNATIVE LIFE CYCLE STRATEGIES OF *MEGALODISCUS TEMPERATUS* IN TADPOLES AND METAMORPHOSED ANURANS. Matthew Bolek*, and John Janovy Jr., Department of Zoology, Oklahoma State University, and School of Biological Sciences, University of Nebraska-Lincoln.

Megalodiscus temperatus (Stafford, 1905) is a common paramphistome trematode of North American amphibians, with a 2-host life cycle, that has been reported to infect frogs, and rarely, tadpoles. In this study, we document the alternative life-cycle strategy of *M. temperatus* in tadpoles and metamorphosed anurans. We show through field work and experimental infections that *M. temperatus* can establish in both anuran life stages and worms become gravid and release eggs in both tadpoles and metamorphosed frogs. However, worms exhibit differences in route of infection, development, egg production, and diet in tadpoles and metamorphosed anurans. These alternative life history strategies of *M. temperatus* suggest different selective pressures on the development and reproductive success of these worms in tadpoles and metamorphosed anurans, and we discuss the evolutionary avenues for, and constraints on, amphibian trematode life cycles presented by these two different anuran life stages.

-10-

PARASITES OF THE MINK FROG (*RANA SEPTENTRIONALIS*) FROM MINNESOTA, USA. Anna M. Schotthoefer *, Centers for Disease Control and Prevention, Division of Vector-Borne Infectious Diseases; Matthew G. Bolek, Department of Zoology, Oklahoma State University; Rebecca A. Cole, USGS National Wildlife Health Center; and Val R. Beasley Department of Veterinary Biosciences, University of Illinois at Urbana-Champaign.

Twenty-two mink frogs, *Rana septentrionalis*, collected from two locations in Minnesota, USA, were examined for helminth and protozoan blood parasites in July 1999. A total of 15 parasite taxa were recovered, including 5 larval digenean trematodes, 6 adult digenean trematodes, 3 nematodes, and 1 *Trypanosoma* species. Infracommunities were dominated by the digeneans in terms of richness and abundance. In particular, echinostomatid metacercariae in the kidneys of frogs were the most common parasites found, infecting 100% of the frogs and consisting of about 90% of all helminth individuals recovered. *Gorgoderia amplicava*, *Haematoloechus parviplexus*, *Cosmocercoides dukae*, and *Oswarldocruzia pipiens* represent new host records. The survey presented here represents the second known helminth survey of mink frogs conducted in North America.

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CRONIC WASTING DISEASE (CWD) IN NEBRASKA DEER. Dave Oates, Nebraska Games and Parks Commission.

CWD was discovered in Colorado in the 1960's and later found in Wyoming. Since Nebraska is an adjacent state, they started searching for it in 1997. It was found in a captive herd of elk in 1997 and 1999. In 2000, it was found in a Wild Deer. What efforts have been pursued to control CWD in this state since 2000 will be discussed.

-13-

COCCIDIA OF NON K-9 ORIGIN FOUND IN DOG FECALS. Richard D. McKown, TLC Vet Care, Hastings Nebraska.

Over a two year period, approximately 900 dog and cat fecal samples were examined for parasite eggs, cysts and oocysts via fecal flotation in a small animal practice in South Central Nebraska. Of these 89, were coccidian positive. Of these 89, 16 (18%), all in dogs, were determined to be coccidian of non K-9 origin. Those further characterized were identified as *Eimeria* spp. In one case a mixed population of *Eimeria* sp and *Isospora* sp. was seen. These dogs were assumed to have acquired these coccidian via ingestion of rodent, rabbit or bovine feces. These coccidian species are not infective to dogs, therefore if close attention is not paid to proper identification, unnecessary treatment and owner expense can result.

-14-

PARASITOLOGY IN THE PERUVIAN AMAZON: LESSONS LEARNED WITH AMERICAN HIGH SCHOOL STUDENTS. Alaine K. Knipes School of Biological Sciences University of Nebraska-Lincoln.

We realized within the first few hours of meeting them in Lima, this was no ordinary group of high school students. They were well traveled, exceedingly articulate, and many of them had already spent time in tropical rainforests. Our plan was to try to introduce them to some strange and perhaps never before seen animals: we were looking for parasites of Amazonian creatures.

-15-

PARASITOLOGY IN A SMALL ANIMAL PRACTICE. Richard D. McKown, TLC Vet Care, Hastings Nebraska.

Parasitology aspects of small animal practice can run towards the mundane. Typical parasites encountered during the course of an average day could include fleas, ear mites in cats, fleas, roundworms in puppies, fleas, ticks and fleas. However, occasionally something more exciting will walk through the door. This presentation will deal with some unusual parasitology cases that have occurred over the last year in a small animal practice in South Central Nebraska.

Poster Session

THE EFFECTS OF PRECIPITATION ZONES ON THE OCCURRENCE OF PARASITISM IN DOGS AT DIFFERENT LOCATIONS IN NEBRASKA AND NORTH AMERICA. Ashlee Hartman* and M. Bolek, Department of Biology, University of Nebraska at Kearney, and Department of Zoology, Oklahoma State University. (Undergraduate Student)

Most parasites use multiple hosts throughout their life cycle and the conditions outside of their internal environment must be adequate for their survival and development. We examined dog fecal samples from four animal shelters in different areas of Nebraska that differ in their average annual precipitation to evaluate the effects of precipitation on parasite recruitment. We found six species of protozoan and helminth parasites infecting sheltered dogs from Nebraska including: *Cystoisospora canis*, *Toxocara canis*, *Toxocara leonine*, *Trichuris vulpis*, *Ancylostoma clanimum*, and *Taenia* type eggs. We did not find any statistically significant difference in individual and overall parasite prevalence or species richness among dogs sampled from different locations in the state. However we did find a statistically significant difference in overall parasite prevalence and parasite species richness when comparing our data to other locations across the United States. Both overall parasite prevalence and species richness increased from west to east with average annual precipitation across the United States. Our data suggests that either the precipitation gradient in Nebraska is not large enough to effect parasite development in

the external environment or other factors may be important in effecting parasite development in the external environment.

HELMINTH COMMUNITY STRUCTURE IN SEVEN SPECIES OF TADPOLES FROM NEBRASKA. Heather Tracy*, and M. Bolek, Department of Zoology, Oklahoma State University. (Graduate Student)

Larval anurans, specifically tadpoles, are a group of hosts that have been ignored in helminth community studies. Tadpoles differ from their adult anuran counterparts in many ways, both ecologically and physiologically and therefore, should differ in their helminth community structure from adult anurans. We examined 257 tadpoles of 7 species during May-August 2008, from Nebraska for helminth parasites. The helminth compound community of this larval amphibian assemblage consisted of 6 species and was dominated with larval trematodes. There was a high degree of helminth species overlap among sympatric tadpole species, with only a single larval trematode, *Glythelmins pennsylvaniensis*, being restricted to a single tadpole species. Overall helminth prevalence and mean species richness was highest in bullfrog tadpoles (*Rana catesbeiana*) and lowest in the plains spadefoot toads (*Spea bombifrons*) and this was related to time spent in the pond through metamorphosis being 104-156 wks for bullfrog tadpoles and 2-3 wks for spadefoot tadpoles.

Notes

Notes