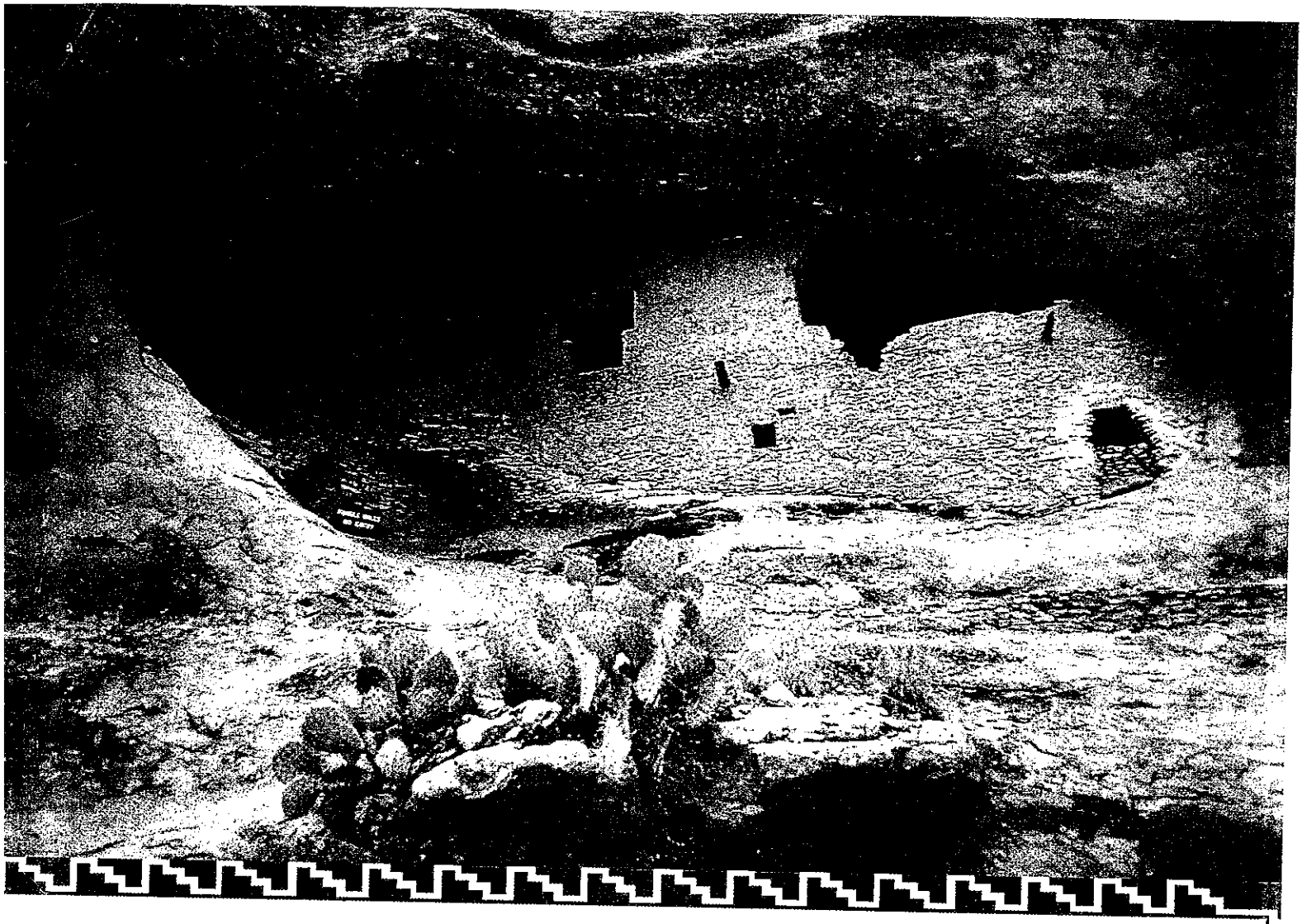

American Society of Parasitologists

76TH Annual Meeting

29 June–3 July 2001
Sheraton Old Town Hotel

Albuquerque
New Mexico, USA

SUNDAY MORNING (continued)

M. Gardner and G. Castro, University of Texas Health Science Center, School of Public Health and Fort Bend Independent School District, Houston TX.

11:50 Concluding Remarks. B. Kimbell.

9:45–Noon K. ECOLOGY II, Salon B.

Presiding: L.E. Mayberry, University of Texas, El Paso TX; J.K. Moore, Colorado State University, Ft. Collins CO

Time	Paper No.	
9:45	71 †	ENVIRONMENTAL PARAMETERS AFFECTING MYXOZOAN PARASITES AND THEIR HOSTS IN THREE LAKES IN ALGONQUIN PARK, ONTARIO. J. Koprivnikar*, A. Koehler and S.S. Desser, Department of Zoology, University of Toronto, Toronto, Ontario, Canada.
10:00	72 †	CERCARIAL EMERGENCE PATTERNS OF TWO SYMPATRIC TREMATODES OF THE POND SNAIL, *PHYSA GYRINA*. J. Schleppe* and C.P. Goater, Department of Biology, University of Lethbridge, Lethbridge, Alberta, Canada.
10:15	73 †	OCCURRENCE OF MUSCLEWORM (*PARELAPHOSTRONGYLUS ANDERSONI*) IN WHITE-TAILED DEER (*ODOCOILEUS VIRGINIANUS*) OF THE UPPER PENINSULA OF MICHIGAN. J.J. Maskey, Northern Michigan University, Marquette MI.
10:30	74 †	METAZOAN PARASITE COMMUNITIES OF THE FLORIDA POMPANO (*RACHINOTUS CAROLINUS* L.) FROM THE PENINSULA OF YUCATÁN, MÉXICO. C. Sánchez-Ramírez* and V.M. Vidal-Martínez, Department of Sea Resources, CINVESTAV–IPN Unidad, Mérida, Yucatán, México.
10:45	75 †	COMMUNITY STRUCTURE AND SEASONAL DYNAMICS OF HELMINTH PARASITES IN *LEPOMIS CYANELLUS* AND *L. MACROCHIRUS* FROM CHARLIE'S POND, NC. K.J. Fellis* and G.W. Esch, Department of Biology, Wake Forest University, Winston–Salem NC.
11:00	76	*BOTHRIOCEPHALUS ACHEILOGNATHI* INFECTION OF FISH IN SOUTHERN CALIFORNIA. B.I. Kuperman*, V.E. Matey, Center for Inland Waters, Department of Biology, San Diego State University, San Diego CA , R.N. Fisher and M.L. Warburton, USGS, Department of Biology, San Diego State University, San Diego CA.
11:15	77	SURVEY FOR *CYCLOSPORA* IN KENYAN PRIMATES WITH SOME NOTES ON ITS BIOLOGY. M.L. Eberhard, CDC, Atlanta GA, M.N. Njenga, Institute for Primate Research, Nairobi, Kenya, A.J. Da Silva, CDC, Atlanta GA, D. Owino, Institute for Primate Research, Nairobi, Kenya, E.K. Nace*, K.Y. Won, CDC, Atlanta GA, and J.M. Mwenda, Institute for Primate Research, Nairobi, Kenya.
11:30	78	SPATIAL ANALYSIS ON THE OCCURRENCE OF *PNEUMOCYSTIS CARINII* IN THE SHREW *NOTIOSOREX CRAWFORDI* IN FRAGMENTED HABITATS IN SOUTHERN CALIFORNIA. J.T. Laakkonen*, Division of Biology, University of

both species of *Lepomis* spp. were infected with all parasites that were recovered more than once. However, despite being infected by the same suite of parasites, it was concluded from the results of a multi-response permutation procedure that the overall composition of component communities was statistically different between green and bluegill sunfishes. Furthermore, a species indicator analysis showed that bluegill sunfishes harbored significantly larger infections of six species of parasites, whereas only one species of parasite was in significantly greater abundance in green sunfish, thus suggesting that host identity is a reliable predictor of parasite abundance.

76

Bothriocephalus acheilognathi Infection of Fish in Southern California. B.I. KUPERMAN*, V.E. MATEY, R.N. FISHER and M.L. WARBURTON

In 1984, the Asian fish tapeworm, *Bothriocephalus acheilognathi*, was introduced in California with grass carp, *Ctenopharyngodon idella*. In 1999–2000, we conducted parasitological survey of 610 fish in three river systems of Southern California: the Santa Margarita River (SMR), Santa Ana River (SAR) and Santa Clara River (SCR), and two creeks flowing into the Salton Sea (CSS). Four of nine species of fish examined were infected by *B. acheilognathi*. In SMR, *B. acheilognathi* was found in 37% of arroyo chub, *Gila orcutti*, (mean intensity 2.3, range 1–9) and 30% of mosquito fish, *Gambusia affinis* (mean intensity 18, range 1–75). Common carp, *Cyprinus carpio*, green sunfish, *Lepomis cyanellus*, and yellow bullhead, *Ameiurus natalis*, were uninfected. In SAR, *B. acheilognathi* infected 33% of common carp (mean intensity 2.2, range 1–15), 14% of fathead minnow, *Pimephales promelas* (mean intensity 1), 12% of arroyo chub (mean intensity 1, range 1–2), and 10% of mosquito fish (mean intensity 2.9, range 1–6). *B. acheilognathi* was not found in goldfish *Carassius auratus*, green sunfish, redeye bass *Micropterus coosae*, yellow bullhead, and tilapia *Oreochromis mossambicus*. This is the first time that arroyo chub, the only native species examined, has been recorded as a final host of *B. acheilognathi*. In SCR, only mosquito fish was infected by *B. acheilognathi* (prevalence 86%, mean intensity 10, range 1–35). In CSS, this cestode infected 60% of mosquito fish with mean intensity 2.7 (range 1–6). SEM and TEM data exhibit differentiation of the tegument and glandular appatus of *B. acheilognathi* during its life cycle. Experimental infestation of local cyclopoid copepods by coracidia of *B. acheilognathi* demonstrated that at least five species of copepods could be a potential first intermediate host for this tapeworm.

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Survey for *Cyclospora* in Kenyan Primates with Some Notes on its Biology. M.L. EBERHARD, M.N. NJENGA, A.J. DA SILVA, D. OWINO, E.K. NACE*, K.Y. WON and J.M. MWENDA

From March 1999 through August 2000, 511 stool samples collected from 11 different primate species in 10 geographically different locations in Kenya were screened for the presence of *Cyclospora* oocysts. Positive samples, 43/102 (42%) were identified from vervet monkeys (*Cercopithecus aethiops*) in four locations; 19/206 (9%), were detected in yellow and olive baboons (*Papio cynocephalus, P. anubis,* respectively) in five locations; and 19/76 (25%), were identified from black and white colobus monkeys (*Colobus angolensis, C. guereza*) from two locations. DNA sequences obtained from 18 *S* rRNA coding region from respective subsets of these positive samples were typed as *Cyclospora cercopitheci* (samples from *Cercopithecus aethiops*), *Cyclospora papionis* (samples from *Papio cynocephalus* and *P. anubis*), and *Cyclospora colobi* (samples from *Colobus angolensis* and *C. guereza*). *Cyclospora* oocysts were not detected in samples collected from patas, highland sykes, lowland sykes, blue sykes, DeBrazza, or red-tailed monkeys. Baboons were only infected with *C. papionis*, vervets with *C. cercopitheci*, and colobus with *C. colobi*, despite geographical overlaps of both the monkey and parasite species and wide geographical distribution of each parasite and monkey host. Stool samples from one troop of vervet monkeys were collected over a 12-month period. Positive samples ranged between 21% and 63%. These results suggest that there is no strongly marked seasonality evident in *Cyclospora* infection in monkeys, as has been noted in human infection. This is further confirmed by the recovery of positive samples collected from vervets, baboons, and colobus at all times of the year during this survey. The absence of seasonality in monkey–*Cyclospora* infections is especially notable because of the extreme weather patterns typical of Kenya where marked rainy and dry seasons occur, and contrasts strikingly with the marked seasonality of human *Cyclospora cayetanensis* infection.

TUESDAY MORNING (continued)

ECOLOGY

145 ALTERNATIVE EIMERIAN (APICOMPLEXA: EIMERIIDAE) LIFE HISTORY STRATEGIES IN SQUIRRELS (RODENTIA: SCIURIDAE). **R.S. Seville***, Department of Zoology and Physiology, University of Wyoming, Casper WY.

146 THE OCCURRENCE OF *ICHTHYOPHTHIRIUS MULTIFILIIS* IN WILD FISH FROM SOUTHERN CALIFORNIA. **B.I. Kuperman, V.E. Matey***, Center for Inland Waters, Department of Biology, San Diego State University, San Diego CA, **R.N. Fisher, E.L. Ervin, M.L. Warburton**, USGS, Department of Biology, San Diego State University, San Diego CA, and **T.E. Hovey**, California Department of Fish and Game, San Diego CA.

147 THE NORTHEAST PACIFIC PROGRAM OF US GLOBEC: INTEGRATING PARASITOLOGY WITH OCEANOGRAPHY IN STUDIES OF THE CALIFORNIA CURRENT. **R.E. Baldwin***, Cooperative Institute for Marine Studies, Oregon State University, Hatfield Marine Science Center, Newport OR, and **K.C. Jacobson**, National Marine Fisheries Service, Northwest Fisheries Science Center, Hatfield Marine Science Center, Newport OR.

GENETICS

148 ISOLATION AND CHARACTERIZATION OF POLYMORPHIC MICROSATELLITE LOCI FROM *SCHISTOSOMA MANSONI*. **J. Curtis***, Biology/Chemistry Section, Purdue University North Central, Westville IN, **R.E. Sorensen**, Department of Biological Sciences, Purdue University, West Lafayette, IN, **L.K. Page**, Biology Department, Wheaton College, Wheaton IL and **D.J. Minchella**, Department of Biological Sciences, Purdue University, West Layfayette IN.

HOST–PARASITE INTERACTIONS

149 GLIAL-DERIVED NEUROTROPHIC FACTOR (GDNF) IN THE SMALL INTESTINE OF RATS INFECTED WITH *HYMENOLEPIS DIMINUTA*. **W.A. Starke-Buzetti***, Departamento de Zootecnia, FEIS/UNESP–Campus de Ilha Solteira, SP, Brazil, and **J.A. Oaks**, Comparative Biosciences Department, University of Wisconsin, Madison WI.

150 ANALYSIS OF *BIOMPHALARIA GLABRATA* EMBRYONIC (BGE) CELL CDNA REVEALS A COMPLEX OF PROTEINS POTENTIALLY INVOLVED IN CELL ADHESION/MOTILITY. **X. Wu***, **N. Dinguirard** and **T.P. Yoshino**, Department of Pathobiological Sciences, School of Veterinary Medicine, University of Wisconsin, Madison WI.

151 DIVERSITY OF PARASITE-REACTIVE PLASMA POLYPEPTIDES (FREPS) IN TWO PLANORBID SPECIES. **J.L. Reif*** and **C.M. Adema**, Department of Biology, The University of New Mexico, Albuquerque NM.

152 PRELIMINARY INVESTIGATION OF THE POTENTIAL FOR VENEREAL TRANSMISSION OF *NEOSPORA CANINUM* IN CATTLE. **R.D. Pinckney***, Department of Pathobiological Sciences, **H.W. Momont**, Department of Medical Sciences, University of Wisconsin, Madison WI, and **S.P. Schmidt**, Wisconsin Veterinary Diagnostic Laboratory, Madison WI.

153 EFFECT OF INTESTINAL DEFENSINS ON INDEPENDENT STRAINS OF *GIARDIA LAMBLIA*. **M.L. Cutter***, **G. Zamora** and **S.B. Aley**, Department of Biological Sciences, University of Texas, El Paso TX.

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Enhanced DAPI Staining for *Cryptosporidium* in Water Samples. M. WARE*, F.W. SCHAEFER, III and H.A. LINDQUIST

The U.S. Environmental Protection Agency's Method 1623 is used to detect and quantify the presence of *Cryptosporidium* spp. oocysts in water. The protocol consists of concentrating a sample, staining this concentrate with a fluorescent antibody, and examining the sample microscopically. Since algae can be misinterpreted as positives using this procedure, oocysts must be confirmed by the detection of either 1–4 sporozoites or nuclei. This confirmation may be done either by differential interference contrast microscopy or by observation of the staining pattern when stained with 4,6-diamidino 2-phenyl-indole dihydrochloride (DAPI). Our research has shown that differential interference contrast is only able to confirm about 2% of oocysts with sporozoites in a fresh preparation. The rate of confirmation is improved to around 30% with DAPI staining when following the Method 1623 protocol. By a slight modification of the DAPI protocol, the confirmation rate improves to nearly 100%. A number of formats for optimizing slide preparation have been tested. Confirmation by both fluorescent antibody and DAPI staining alos is possible using flow cytometry.

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Alternative Eimerian (Apicomplexa: Eimeriidae) Life History Strategies in Squirrels (Rodentia: Sciuridae). R.S. SEVILLE

Several researchers have suggested that there may be a relationship between the prevalences at which different eimerian species occur in wild rodent hosts and oocyst morphology. High-prevalence species have oocyst features such as small size, thin unpigmented walls, and limited energy reserves that make them less viable in the external environment. Low-prevalence species have large oocysts with thick, pigmented walls and larger energy reserves that result in greater survival in the external environment. It has been hypothesized that this relationship represents the development of at least two life history strategies in this parasite group where species persist over evolutionary time by enhancing exogenous (low prevalence species) or endogenous (high prevalence species) life history components. While reviewing the literature on coccidia in squirrels (Rodentia: Sciuridae) as part of the Coccidia of the World project, I examined the data to determine if this relationship was widespread for eimerian species across this host taxon. Preliminary results support the hypothesis that eimerian species in this host taxon have indeed evolved at least two alternative life history strategies.

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The Occurrence of *Ichthyophthirius multifiliis* in Wild Fish from Southern California. B.I. KUPERMAN, V.E. MATEY*, R.N. FISHER, E.L. ERVIN, M.L. WARBURTON and T.E. HOVEY

The ciliated protozoan *Ichthyophthirius multifiliis* is one of the most harmful eukaryotic parasites of freshwater fish in tropical, subtropical and temperate regions. Ichthyophthiriasis, or "white spot disease," causes great economic loss in aquaculture facilities worldwide. In the wild, *I. multifiliis* has been noted mainly in ponds and lakes. In December 2000, 117 fish (72 arroyo chub, *Gila orcutti*; 12 goldfish, *Carassius auratus*; 29 mosquito fish, *Gambusia affinis*; and four green sunfish, *Lepomis cyanellus*) from three locations in San Francisquito Canyon, Los Angeles County, were studied for parasites. Of all fish examined, only arroyo chubs from two locations were infected by *I. multifiliis*. At one, prevalence was 67%, with a mean intensity of infection 2.8 (range 1–8). Mature trophonts were embedded in the epidermis of the body surface and fins, and in gill epithelium. All chubs at this location were infected by *Gyrodactylus* and 78% by *Lernea*. At second location, 51% of arroyo chubs were infected by *I. multifiliis* and 70% by *Gyrodactylus*. *I. multifiliis* was represented both by endoparasitic trophonts (mean intensity 2, range 1–5) and by numerous theronts crawling along or attached to the fish body. Our attempts at experimental re-infection of goldfish by *I. multifiliis* from chub were unsuccessful. As *I. multifiliis* has been recorded previously by Chen in the threespine stickleback, *Gasterosteus aculeatus*, from San Francisquiuto Canyon (Fish Pathologist Report, California Fish and Game Department, 1995), it can be supposed that this creek has long served as a source of ichthyophthiriasis.

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The Northeast Pacific Program of US GLOBEC: Integrating Parasitology with Oceanography in Studies of the California Current. R.E. BALDWIN* and K.C. JACOBSON

The US GLOBEC (Global Ocean Ecosystem Dynamics) Northeast Pacific Program examines