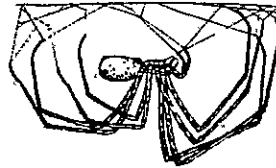


AMERICAN ARACHNOLOGY

THE NEWSLETTER OF THE AMERICAN ARACHNOLOGICAL SOCIETY

No. 31

MAY 1985



L.A. MEETINGS

The 1985 National Convention will be held at the Los Angeles County Museum of Natural History and the University of Southern California. The hosts will be the L.A. County Museum of Natural History and the Arachnologists of the Southwest. This meeting will run June 24 through 26 with field trips on June 27 and 28. The highlight of this convention will be a symposium on Scorpion Biology, organized by Dr. Gary Polis, on June 25.

Transportation: The most convenient airport for arrival is Los Angeles International with reasonably priced shuttle service to the USC Hilton. Alternate connections can be made through the Burbank or Long Beach airports. Those of you who arrive will find easy freeway access to all parts of the Southland from USC and the L.A. County Museum of Natural History. Nearby parking for campers is available, but the dorms must be used during your stay. (Nearest campgrounds are outside the L.A. City limits.)

Accommodations: Housing will be available in the USC dormitory facilities or the USC Hilton. Other hotels and motels are nearby. Dormitory rates will be approximately \$13 per day per person (based on double occupancy). Singles are available for an additional fee.

Restaurants and cafeterias are available on campus, and there are many other dining facilities nearby.

Registration: Early registration will be held on Sunday, June 23. Regular registration is Monday, June 24, from 8 a.m. Registration fees will be about \$30 for regular and \$20 for student members.

Field Trips: Two field trips are being planned to the mountains, deserts and beaches on Thursday and Friday, June 27 and 28. If there is sufficient interest, an overnight stay on Santa Catalina Island can be organized for the more adventurous.

Arrangements can also be made for tours and shuttles to Marineland, Universal Studios, Disneyland, Knotts Berry Farm, or Magic Mountain, with advance notice.

For further information contact:

Lowell Herbrandon, L.A. County Museum of Natural History Library, 900 Exposition Blvd., L.A., CA 90007 - (213) 744-3388

or

Blaine Hebert, Department of Biology, California State University, Northridge, CA 91330 - (818) 760-1462.

ARACHNOLOGICAL SYSTEMATICS

Editor's Note. The following report was prepared for the society by a committee consisting of George W. Uetz (chairperson) and Barbara Abraham. It is being presented here to make members aware of the needs this committee found and to encourage you to support their suggestions. If you would like a separate copy of this report, please send your request to: B. Opell, Department of Biology, Virginia Tech, Blacksburg, VA 24061.

At a meeting in Toronto on December 3, 1982, the membership of the Entomological Society of America passed a resolution (No. 7), expressing deep concern about the state of systematic entomology in the United States today and urging the Government of the United States and its granting agencies to increase the level of funding for arthropod systematics research and taxonomic services. The American Arachnological Society, composed of arachnologists in a wide range of disciplines (i.e., ecology, physiology, etc.), wishes to express its support for this effort, as we realize how critical these are to our research and that of our colleagues. We especially wish to call the attention of the entomological community to the desperate situation in basic systematics research and identification services in the Arachnida.

With the possible exception of economically and medically important mites, the availability of identification services for arachnids is practically non-existent. There

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AMERICAN ARACHNOLOGY is the newsletter of the American Arachnological Society and is sent only to society members. For information on membership, write: Dr. Norman I. Platnick, Membership Secretary, American Arachnological Society, Department of Entomology, The American Museum of Natural History, New York, NY 10024, USA. Members of the Society

also receive the JOURNAL OF ARACHNOLOGY.

Submission of items for AMERICAN ARACHNOLOGY or other correspondence concerning the newsletter should be directed to the editor, Dr. Brent D. Opell, Department of Biology, Virginia Tech., Blacksburg, Virginia 24061, USA.

are at present only about two dozen people in North America competent to identify any non-acarine arachnid taxa. Of these, some of the most broadly trained are retired or nearing retirement, and only a few of the remainder are permanently employed and/or paid to devote even a fraction of their time to arachnid identification. Therefore, the burden falls by default on college faculty with heavy teaching loads, scientists paid to do other kinds of research, students, and even amateurs. Many of these resource people are virtually unknown, except to a few arachnologists. Even those known to be willing to assist with identification must limit their services to a few taxa or geographic regions.

The situation in arachnid systematics research is as critical as that in identification. There are only 3 full-time curators with responsibility for major systematics collections, and new systematics positions are now almost non-existent. This forces graduates to seek jobs in other countries or other fields and potential students to seek training in less risky professions. Much basic systematics research is performed by people hired to do other kinds of work, and therefore tends to be done on the individuals' personal time and funds. Of course, this situation exacerbates the identification problem, since most of the North American fauna is in need of revision, and synoptic collections are lacking for large regions of the continent. Hence, reliable keys for many taxa are unavailable.

Paradoxically, this problem has developed at a time when both basic and applied arachnological research are expanding. During the past decade, arachnids, especially spiders, have been recognized as excellent model systems for basic research in biogeography, behavioral ecology, sociobiology, genetics, physiology, population ecology, and community organization. Generalizations from these studies have evolutionary implications which cannot be correctly interpreted without a firm systematics base.

Recent studies have suggested that spiders and other arachnids may have tremendous ecological importance, playing major roles in ecosystem energy flow and predator-prey dynamics. Spiders are exclusively predaceous and therefore are potentially important agents for biological control of pests. ~~Despite this, studies in this country are clearly lacking.~~ In other countries, spiders are confirmed biological control agents in orchards, where they outnumber other arthropod predators, and in rice paddies, where they comprise only a few very abundant species. In most other crops they are very abundant, but so diverse that few workers can fully characterize the fauna. This has led to scores of papers in which all predatory insects are identified to species, but spiders are listed simply as "spiders" and their numbers plotted on seasonal density graphs as though all individuals and species had the same ecological impact, or behaved in the same manner.

A few non-acarine arachnids are medically important. Black Widow Spiders (*Latrodectus* spp.) have long been known as having highly toxic venom, and have been thought to be members of a single species with predictable habitat occurrence. Only recently has it been shown that the "Black Widow" is indeed a species complex, with many species members, whose habitat preferences are diverse and whose venoms are biochemically distinct. Despite the potential public health significance of these spiders, there is little research (other than venom biochemistry) being done on them. Hundreds of people in parts of Mexico and the desert southwestern United States have been killed or injured by scorpions of the genus *Centruroides*, yet very little work has been done on the systematics and/or taxonomy of this difficult genus.

The situation in arachnid systematics and identification must be remedied. We call upon departments of Entomology to consider taking responsibility for training and staffing arachnid systematics as well as insect systematics. We also urge responsible state and Federal agencies to include arachnid systematics and identification services high on their lists of hiring priorities. The Smithsonian Institution's recent hiring of an arachnologist as soil arthropod curator begins to address the problem. However, since the position is for a basic research systematist, his responsibility for identification will be secondary, and his available time minimal. This will then have limited impact on the tremendous need for non-acarine arachnid identification in support of entomological and ecological research.

For reasons outlined above, we feel it is clearly the province of the Agricultural Research Service of the U.S. Department of Agriculture to provide identification services for non-acarine arachnids as well as insects and mites. We therefore urge responsible officials of that agency to give high priority to recruiting a young arachnologist with significant responsibilities for non-acarine arachnid identification as well as basic systematics research. This would be consistent not only with the Agricultural Research Service's traditional mission in providing taxonomic assistance in support of agricultural research, but also with its newly stated commitment to the support of fundamental, long-range research.

SOCIETY ELECTION

Each year a portion of the Executive Committee is replaced as members' two year terms are completed. The incumbent President (Susan E. Riechert) shall continue on the Executive Committee as one of the three Directors. The incumbent President-elect (Jerome S. Rovner) will assume the Presidency and one of the Directors (G. B. Edwards) and (Brent D. Opell) will remain in office with another year to serve. The Membership Secretary (Norman I. Platnick) and Journal of Arachnology Editor (Oscar F. Francke) are appointed and shall serve until replaced by the Executive Committee. Two Directors (William B. Muchmore and Jonathan Reiskind) and the Treasurer (Norman V. Horner) have served their two-year terms and new members shall be elected. We acknowledge the services of these members and thank them for their efforts.

Nominating Committee:

James C. Cokendolpher, Chairman

Matthew H. Greenstone

~~Gail E. Stratton~~

In order to acquaint the membership of the society with the candidates, the following summaries are provided. A pre-addressed ballot appears in the center of this newsletter.

CANDIDATES FOR PRESIDENT-ELECT:

William A. Shear.

William A. Shear was educated at the College of Wooster (A.B. 1963), the University of New Mexico (M.S. 1965) and Harvard University (Ph.D. 1971), where he as a student of Herb Levi. His dissertation was revisionary study of the milliped family Cleidogonidae, which led to a reclassification of the Chordeumatida, now widely accepted.

Shear has taught at Concord College (where Norm Platnick was one of his students as an undergraduate), the University of Florida, and, since 1974, at Hampden-Sydney College. He is now Professor of Biology, and a Research Associate in the Entomology Department at the American Museum of Natural History. With wide responsibilities (typical of a small college environment), he has taught Genetics, Microbiology, Invertebrate Zoology, Arachnology, Neurobiology, Animal Behavior, Ecology, Population Biology, and seminars in Biogeography, Symbiosis, and other topics. Shear has also been a popular speaker at a number of other campuses, presenting seminars on the evolution of spider webs, the origins of land animals, the uniqueness of biological explanations, and the future of biology in the late twentieth century. He has been active in the Creationism/Evolution controversy, and defeated a creationist from Jerry Falwell's Liberty Baptist College in a debate that was widely televised in Virginia in 1981. He has published more than 40 papers on the taxonomy and behavior of spiders, opilionids, amblypygids, millipedes, and fossil arthropods. He is the editor and coauthor with 13 other arachnologists of the forthcoming *Spiders: Webs, Behavior and Evolution* from Stanford University Press. Currently he is working on the fossils of the oldest terrestrial animals from North America

-- including trigonotarboid arachnids. This research is supported by N.S.F. and the Jeffress Trust.

Shear was a founding member of the A.A.S., and served for several years as secretary and as editor of American Arachnology. He is presently on the editorial board of the Journal of Arachnology. He is also a member of C.I.D.A., B.A.S., A.A.A.S., and Sigma Xi.

Shear has traveled extensively in the United States and Mexico, and spent part of a sabbatical year (1980) in Hawaii and Papua New Guinea.

Born in Pennsylvania in 1942, Shear is married to coreographer/dancer Noelle Prince. Gardening is a consuming interest, especially the Japanese art of Bonsai, and collecting and hybridizing species of irises. He enjoys hiking and camping in the mountains of southwestern Virginia.

George W. Uetz

George Uetz was born in Philadelphia in 1946. His undergraduate study was done at Albion College (B.A., 1968) and his graduate study at the University of Delaware (M.S., Entomology and Applied Ecology, 1970) and the University of Illinois (Ph.D., Biology with Ecology Specialization, 1976). As an undergraduate, he served as a student assistant in Invertebrate Zoology. While in graduate school, he was employed as both a graduate research assistant and a teaching assistant. At the University of Illinois, Uetz was for two years principal investigator of a project entitled: Invertebrate Study Component, Springer-Sangamon Environmental Research Project. Before beginning graduate work at Illinois, he taught biology for two years at Sanford Preparatory School. After completing graduate study, Uetz accepted his present position at the University of Cincinnati, where he was promoted to Associate Professor of Biological Sciences in 1981.

Uetz has served the American Arachnological Society in many capacities. He is a member of the Editorial Board and a regular reviewer for Journal of Arachnology. He has served on the Election Committee, Treasury Audit Committee, and the Committee to Review the State of Arachnological Systematics. At a number of AAS meetings he has been chairperson for paper sessions. Uetz was host of the 1980 AAS meetings and at the 1978 and 1981 meetings he was a symposium participant. At the 1984 meetings he organized and participated in a symposium on "Social Behavior in Spiders."

Uetz's research in spider behavior and ecology has been supported by the National Geographic Society, the American Philosophical Society, and Sigma Xi and has resulted in 33 publications appearing in journals such as Science, Ecology, Oecologia, Animal Behavior, J. Animal Ecology, J. Arachnology, and Bull. British Arachnological Society. His research program has produced 10 graduate students in the last eight years. His research and that of his students currently focus on projects to: 1) study the ecology and behavior of Metepseira spinipes, a colonial orb-web-building spider in Mexico -- examining the roles of heredity and environment in the evolution of social phenomena in otherwise solitary predators, 2) study the prey capture and reproduction in Mallos gregalis, a communal spider from Mexico -- testing models of benefit/cost in the evolution of cooperative behavior, 3) study the role of courtship behavior in the reproductive isolation of sibling species in wolf spiders of the genus Schizocosa, and 4) study the web placement, web structure and prey utilization in coexisting orb-weaving spiders -- examining foraging behavior and patterns of resource partitioning.

CANDIDATES FOR DIRECTOR:

Frederick A. Coyle

Frederick A. Coyle was born 31 May 1942 in Port Jefferson, New York. He was educated at The College of Wooster (B.A. 1964) and Harvard University (Ph.D. 1969). His honors and fellowships include: Phi Beta Kappa (1963), N.S.F. Graduate Fellowship (1964-1968), and Richmond Fellowship (1968-1969).

Coyle is a Professor in the Department of Biology at Western Carolina University, Cullowhee. He has taught General Zoology, Classical Experiments in Biology, Biology of the Arthropods, and Animal Behavior. He has directed the M.S. thesis research of six students; three of them (Leslie Bishop, Jackie Palmer, and Robb Bennett) are currently enrolled in Ph.D. programs and are conducting research on spiders.

Coyle has published or currently has in press 17 papers. Most of his research effort has been devoted to the systematics of mygalomorph spiders, but he has also published on the behavior, autecology, community ecology, life history, and functional morphology of spiders. Currently, he is completing a taxonomic revision of the funnel-web spider genus Eugrus and he is beginning a revision of another diplurid taxon, the Ischnothelinae. Coyle is a Research Associate in the Department of Entomology of the American Museum of Natural History and an Associate in the Department of Invertebrates of the Museum of Comparative Zoology. He has received research grants from the National Science Foundation (1972-74, 1981-84) and the Highlands Biological Station (1975-1980).

Coyle co-hosted the 1977 eastern regional meeting of the A.A.S. in Cullowhee, and has attended seven A.A.S. meetings. He has also reviewed many manuscripts for the Journal of Arachnology.

William J. Tietjen

William J. Tietjen was born 24 Dec. 1950. He attended Pennsylvania State University (1968-1973) and received a B.S. with a Major in Secondary Education and a Minor in Biology and General Science. Tietjen received his Ph.D. from Ohio University (Jan. 1980) where his major emphasis was Animal Behavior.

From 1981 to present, Tietjen has been an Assistant Professor of Biology at the Biology Department of Lindenwood College, Saint Charles, Mo., where he has taught courses in ~~Human Anatomy and Physiology, Advanced Physiology, Animal Physiology, Animal Behavior, General Zoology, General Biology, Laboratory in Microbiology, Biology of Man, Microcomputer Programing and Interfacing, Research Techniques, and Evolution.~~

The majority of his work and publications at Lindenwood have concentrated on the organization of social behavior in the dictynid Mallos gregalis. Methodology includes computer-aided data collection, microbiological techniques, and direct observation of behavior. At this time, he is shifting his emphasis to chemical communication in lycosids and is working with Dr. L. Rao Ayyagari. The Mallos work was supported by an N.S.F. grant. The pheromone work was supported by an internal grant and is now under consideration by N.S.F. Work continues on factors affecting the distribution of Frontinella pyramitella under field and laboratory conditions. Lindenwood College will serve as the host for the 1986 American Arachnological Society meeting.

During 1980-1981, Tietjen was a Temporary Assistant Professor at the Department of Biology of Georgia College, Milledgeville, Ga. While at Georgia College, he continued work on the behavior of M. gregalis which was begun during postdoctoral research. He also started work on microbial ecology of Mallos webs and effects of group size in organizing colony behavior.

During 1978-1980, Tietjen was a Postdoctoral Researcher with the North Carolina Foundation for Mental Health Research at Dorthea Dix Hospital. He planned and implemented research concerned with the communal behavior of the social spiders M. gregalis, Stegodyphus africanus, Stegodyphus sarasinorum, and Anelosimus lucundus. Working under Dr. Peter N. Witt provided the opportunity to learn electronics and programming used in later research.

While Tietjen was at the Doctoral Research Department of Zoology at Ohio University he researched and published on chemical communication in four species of lycosids with emphasis on ecological and evolutionary aspects. Techniques included direct observation of behavior, high-speed film analysis, light and SEM microscopy, and sequence analyses. His mentor was Dr. Jerome S. Rovner.

Professional societies to which Tietjen belongs include:

American Arachnological Society, Animal Behavior Society, Cambridge Entomological Society, American Association for the Advancement of Science, British Arachnological Society, and the East Asia Arachnological Society. He currently serves as Reviewer for the Journal of Arachnology, Animal Behaviour, and National Science Foundation (Psychobiology and Ecology Sections).

WILLARD WHITCOMB'S CONTRIBUTIONS

Editor's Note. The following letter was read by Susan Riechert the society's 1984 international meeting in New Orleans.

President, Officers and Directors
The American Arachnological Society
c/o Dr. Oscar Franke, Editor
Journal of Arachnology
Texas Tech University

Dear Sirs:

It has been my honor and privilege these past five years to be associated as student and scientist with Willard H. Whitcomb, who will retire this August after thirty-five years of service to the arachnological community. This letter represents my way of honoring him, and I would appreciate it, since I am unable to attend, if someone should read it to the meeting.

The advent of the universal use of pesticides to control anthropod pest problems resulted in the loss of an entire generation of scientists and farmers familiar with natural, biological and traditional cultural methods of pest control. At the end of this period there was but one senior scientist in the U.S. still investigating biological control in field crops; Willard Whitcomb in Arkansas was investigating biological control of field crop pests, by spiders, in Arkansas.

At the annual meeting of the Entomological Society of America, Whitcomb presented a paper on his work. Since he alone was investigating biological control, the Society set aside a huge meeting hall for his presentation, and such was the demand for information on biological control and spiders as agents that the auditorium was filled with the dozen or so people who came to listen. Half of them left midway to hear another paper elsewhere.

The following year, in a different city, Whitcomb was to present another progress report on biocontrol and predators in Arkansas cotton, and he was scheduled in a small room. So many people showed up that the meeting was moved to an auditorium large enough for hundreds of people. What was the difference? Rachel Carson's book, *Silent Spring*, had been published.

Hundreds of scientists who had secretly doubted the efficacy and suspected the risks of pesticide use in the past several years had said nothing of their doubts. They continued their research in the use of pesticides anyway, because there was plenty of grant money available for it, and none for biological control, predatory ecology, or spider research. Only one senior scientist practiced his beliefs, and continued his researches during the pesticide boom years, and that was Willard H. Whitcomb.

Since then, his reputation for research in pest management and biological control, predatory ecology, and crop ecology has grown considerable in the international community. Recently he was called upon by the Food and Agricultural Organization of the United Nations to come to Paraguay to investigate the threat imposed by the migration of the boll weevil in Brazil towards the thousands of small cotton farms in Paraguay. He was called upon to investigate the potential risk and to provide recommendations to the governments and agencies involved to prevent serious economic losses to that country. Among his recommendations were consideration of predatory anthropods, including spiders, and their role in the pest management effort.

Other scientists in this assembly have great reputation for their efforts in systematics, ecology, behavior, etc. But no one in this group is more responsible for

demonstrating to arachnologists, entomologists, government representatives and other persons in the granting infrastructure in agriculture, the real and true economic value of spiders to agriculture and to our national economy, than Will Whitcomb. Present funding guidelines in both basic and applied research are at current levels largely due to Whitcomb's contributions to the knowledge of the role of spiders in agroecosystems, and will no doubt increase in the future as a result. All members of the American Arachnological Society, and all other arachnologists in the world, owe a great debt to Will Whitcomb. It is fitting that he should be honored by this assembly.

Very respectfully,

T. Dave Gowan
Entomology Department
University of Florida

BULLETIN BOARD

JOB!

Susan Riechert wishes to announce that the University of Tennessee will have available a tenure-track position in the area of integrated pest management. This position will be in the Department of Entomology with the possibility of a joint appointment in Ecology. Persons with a Ph. D. in basic and applied ecology are encouraged to apply and should send a curriculum vitae, names of references, and reprints of publications to: Dr. Susan E. Riechert, Department of Zoology, University of Tennessee, Knoxville, Tennessee 37916.

BACK ISSUES OF JOURNAL

In keeping with the increase of regular membership from \$20.00 to \$25.00 per year (student membership remains at \$15.00), the cost of back issues of *Journal of Arachnology* has risen to \$25.00 per volume or \$8.34 per number. These are available from: Dr. Susan E. Riechert, Department of Zoology, University of Tennessee, Knoxville, TN 37916.

REQUEST FOR SPECIMENS AND INFORMATION

For the preparations of a book about SCORPIONS and various biological and comprehensive studies, I am in urgent need of:

- living scorpions for reproductive study purposes.
- preserved specimens for taxonomic and photographic purposes.
- literature and other documentary material on scorpions of desirably all families and genera from all over the world.

Same material is appreciated on SOLIFUGAE, as I have been assigned to prepare a comprising paper on the biology of these arachnids.

All contributions are warmly welcomed and acknowledged in all papers and the book.

Addresses of all kinds of institutions, research stations, and individuals which might be of help are also appreciated, specifically those in Australia, Africa, and Asia.

Matt E. Braunwalder, Frauentalweg 97, CH-8045 Zurich/Switzerland.

Continued on back cover (page 16)

Terry E. Christenson
Department of Psychology
Tulane University
New Orleans, Louisiana 70118

RESEARCH REPORTS

The orb weaving *Nephila clavipes* is the focus of my research program here in Louisiana. Several projects are underway with the major work focusing on how males reduce intermale sperm competition. To do this I am asking several specific questions: Does male pre-mate-guarding reduce sperm competition? Does sperm priority occur in this species, as suggested by Fritz Vollrath? Does prolonged mating (up to 20 min. per hour for two days) reduce sperm competition? Do males place plugs in the epigynum after mating? Do they remove the sperm of other males? Do males guard the female after mating? This is a three year project with one season completed; two graduate students, Jeff Cohn and Leann Myers, are working on this project.

Other aspects of reproduction are being investigated. We have been assessing the likelihood of female sexual behavior under different female conditions, for example, while feeding or just after the final molt. We do find variation in female responsiveness. Similarly, we note that male courtship varies with female condition, since males often attempt to feed as well as mate when the female has prey item. His vibratory patterns are subject to a rather wide latitude of variation.

Aside from influencing the nature of "courtship", the question of adult male feeding is of interest to us since this aspect of male natural history has received little attention, as recently pointed out by Bill Eberhard. Because males abandon their webs at maturation, they are generally thought of less as predators and more as searchers for females. We find that males feed on female prey and on silk from the female web and have recently assessed the effects of such feeding on male longevity.

We are concerned, as are many of our colleagues doing non-spider work, with the possibility that females sexually select among males. Although our data are limited, we find no evidence that females sexually select, but we shall continue to look. Female cannibalism of males is a related question, as a more severe form of selection is difficult to imagine. We find that a large percentage of instances of females feeding on males occurs about two or three days after the female's final molt and she has been sexually active. Male persistence in attempting to mate seems important in determining likelihood of predation. Thus, much of *Nephila* female cannibalism of males is not representing sexual selection.

Stimulation of male sexual behavior is another topic of interest to us. One might expect that the male would monitor any female sign that he might copulate, however, we find this not to be the case. Males placed on the web of females who have recently molted often do not mate. Changes in web structure due to female's lack of repair, female vibratory patterns, and close-acting pheromones are all being considered as elements potentially important in the stimulation of male sexual behavior.

We have noticed that *Nephila* mating strategies vary with ecological condition. Under wooded and adjacent cleared (forest edge) conditions our spiders do indeed show different patterns of web defense, tolerance of conspecifics, and number of individuals with whom they mate. Sperm competition work is helping clarify the implications of such differences for the reproductive success of individuals.

The mechanisms that regulate transitions in social organization common to most spiders are also being investigated. First, changes in behavior associated early in the lifespan -- transitions from overwintering egg sac to communal web to construction of own web. Second, from web construction and maintenance to web abandonment and mate searching in the adult male.

Due to the birth of our daughter, Jennie Nicole, I am for the moment reducing my Central American work on the social *Anelosimus*, done in part with Yael Labin and Wolfgang Nentwig. I am fascinated by the differences in microhabitat and social organization in *A. eximius* and *A. lucundus* and hope to return to this work at a later date.

I am most interested in discussing the possibility of graduate study here at Tulane. There is room in my lab for those in biology as well as psychology who are interested in reproductive strategies and field work in Louisiana or Central America.

Charles C. Dondale
Biosystematics Research Institute
Research Branch, Agriculture Canada
Ottawa, Ontario
K1A 0C6

The Canadian Department of Agriculture employs about 50 taxonomists to study plants, insects, arachnids, and nematodes in its Biosystematics Research Institute, Ottawa. About one-fifth of our time is taken up by identification of submitted specimens; a fifth by field work and curation, another fifth by such things as committee and editorial duties, and the remainder is available for taxonomic research. Our emphasis is on the North Temperate and Arctic regions of North America.

My assistant of more than 20 years, Mr. Jim Redner and I are responsible for the National Collection of non-acarine arachnids, which currently stands at an estimated 122,720 spider specimens (80 per cent identified to species level) and represents perhaps 1,630 species. The harvestmen account for about 1,800 specimens (50 per cent identified to species) and perhaps 30 species. The main sources of specimens are faunal surveys, exchanges, and gifts. Loans, both in and out, are made.

Our main research interest is the revision of spider genera on a North American basis and the production of manuals for Canadian species. Enough ecological and behavioral interest is maintained to counterbalance a purely museum approach. Several phidromid and thomisid genera were worked up earlier, and manuals for Phidromidae, Thomisidae, Clubionidae, and Anyphaenidae have appeared. More recent revisions are of the lycosid genera *Schizocosa*, *Alopecosa*, *Arctosa*, and *Alloccosa*. *Pardosa* is in progress, as is a manual of Lycosidae, Pisauridae, and Oxyopidae. Plans for the next few years include manuals for the Gnaphosidae (with Norman Platnick) and Araneidae and Theridiidae (with Herb Levi). When these are finished, perhaps additional families will be ripe for manual treatment.

Although teaching is not part of our mandate, visitors come for exchange of ideas, joint work, or training. Currently, Mr. Ye Yuanbei of the Sericultural Research Institute in Zhenjiang, People's Republic of China, is visiting for a year to learn spider identification. In Zhenjiang he is responsible for the production of high-quality mulberry foliage for the silkworm cultures, and must avoid chemical pesticides as much as possible. Mr. Ye has turned to pest management by natural enemies, of which spiders appear to be high on the list.

Dr. Martin Nyffeler, having completed doctorate research in spider ecology in Zurich, Switzerland, recently spent 18 months in Ottawa investigating relations between two species of *Steatoda*. *Steatoda bipunctata* apparently immigrated to eastern North America from Europe a century or more ago and is slowly displacing the native *S. borealis*, which occupies identical habitats (i.e., buildings and bark or stone crevices). Displacement is not total, however. The immigrant currently ranges in the Atlantic Provinces, much of the Great Lakes region, and northernmost New England; a rather small area in view of the length of time since introduction began and the kind of habitat occupied. Moreover, the immigrant appears to have greatest success in concentrated urban area. For example, the core area of Ottawa, including both indoor and outdoor habitats, is thoroughly occupied by *bipunctata*, whereas manmade limestone cliffs at the city periphery still support either pure *borealis* populations or a mixture of the two. We assume that mixed populations are those in which displacement of *borealis* is in progress. Also, nearly one-half the 25 barns sampled in a farm district southwest of the city contain mixed populations; one-third contain only *bipunctata*, and the remainder have intact *borealis* populations. The mechanism by which *bipunctata* displaces *borealis* is unknown, but laboratory tests indicate that it does not involve life history events, reproductive rate, niche or prey selection, nor aggressive interaction between adults of the two species. under Fred Coyle at Western Carolina University, is enrolled in a Ph.D. program at the University of Guelph. He revised *Wadotes*, and is now looking at the Cybaeinae genera. I am Robb's external supervisor.

Gail E. Stratton
Department of Biology
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My current research on spiders continues to focus on the behavior and evolution of *Schizocosa* Wolf Spiders. There are several "ethospecies" within the *S. ocreata* complex, and much of my current work is describing and recording courtship behavior, determining geographic range and habitat preferences of the several closely related species. My collections last summer were along the Illinois and Mississippi Rivers. These collections yielded possibly two new ethospecies. In addition, there is some evidence that *S. ocreata* (in the strict sense) consists of several "subspecies". In some areas (the S.E. and at least one place in Missouri) this species was in the floodplain or bottomlands. In other areas (particularly Ohio and Illinois where I have collected pretty intensively) *S. ocreata* is in the uplands, while *S. royneri* is in the bottomlands.

I am continuing to attempt interbreeding between these closely related species. So far, I have been most successful crossing *S. ocreata* and *S. royneri*. This last year I attempted crossing *occreata* from South Carolina with *occreata* from Illinois. (Individuals from a bottomlands forest and individuals from an uplands forest). Although the sample size is small at this point, there was great reduction in propensity to mate when allopatric populations were compared with sympatric populations.

A separate project which I am just beginning is an investigation of the chromosomes of these species. Hopefully, information from the cytology of these animals will shed more light on the evolutionary relationships within the genus.

I continue to be interested in acoustic communication and am currently trying to use video and special microphones to get simultaneous recordings of the movements and the sounds of the spiders.

Finally, I have a student working with me who is interested in the effects of temperature on courtship behavior in *S. royneri*.

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Research with *Metopieira spinipes* is the primary focus of activity in my lab right now. I remain fascinated by this species, because it possesses a social spacing strategy that combines the extremes of usual arrangements seen in animals; i.e., it is a "communal-territorial" species. Within communal groups, individuals are territorial, defending their webs against intrusion by other spiders with agonistic behavior. It is this combination of behavioral strategies that suggests that these spiders must reconcile the conflicting demands of selection pressures for solitary and social existence, making them a very interesting topic of study. I am currently analyzing field data on web orientation and nearest neighbor location, to see how spiders are "packed" together in colonies.

Previous work has shown that group size and spacing of this species varies with environment. Large, closely spaced groups are found in moist tropical sites (where conditions are moderate and prey are abundant), while small, widely spaced groups and even solitary individuals are found in more arid regions (where conditions are far less favorable). I have hopes of obtaining an NSF grant to fund a laboratory study to confirm what field and preliminary lab studies have shown -- that there are two behaviorally distinct populations of this communal/territorial spider, with genetically based differences in their social spacing behavior. The differences in spacing most likely result from alternative strategies in the behavior of individuals during aggressive interactions, which may be the result of experience or genetic "programming". Karen Cangialosi is finishing up a

Master's study of the influence of isolation during juvenile development on adult spacing and interactive behavior. I don't want to tell the whole story (we'll save that for Los Angeles), but the two populations differ considerably in their response to isolation.

My lab here at Cincinnati now has a large climate-controlled room for spiders. We have a number of active *Metopieira spinipes* colonies in cages in the lab, happily producing F₂ and F₃ generations. A newly arrived student, Maggie Hodge (late of the University of Georgia), hopes to pursue doctoral research with them, as well as field populations. One nice thing that happens from time to time is that globe-trotting colleagues from the Cincinnati Zoo Insectarium or Cincinnati Nature Center bring social spider colonies back from exotic places. We have just established a colony of what appears to be *Anelosimus eximius*? from Ecuador, and a colony of an unknown species of communal *Metopieira* from Bonaire, N.A., with which we also hope to do research in the future.

A second area of interest, also with social spiders, has been the "cooperative" behavior of *Mallos gregalis*, a dictynid spider from Mexico. These spiders live in large communal groups, and exhibit cooperative prey capture and communal feeding. Debbie Fritz, another graduate student, has been working with *Mallos*, investigating the growth and survival of juveniles with and without the presence of adults, and the role of nestmate recognition in cooperative web-building and prey capture. We have been gathering feeding data to test a model I have derived to explain the evolution of cooperative prey capture in these spiders -- what is the fitness gain to the individual in allowing another spider to share prey? At the moment, our *Mallos* colony has died out, and it will be some time before we can get another from Mexico. In the meantime, Ms. Fritz and I have turned out attention to horseshoe crab mating behavior (well, at least they're related to arachnids!).

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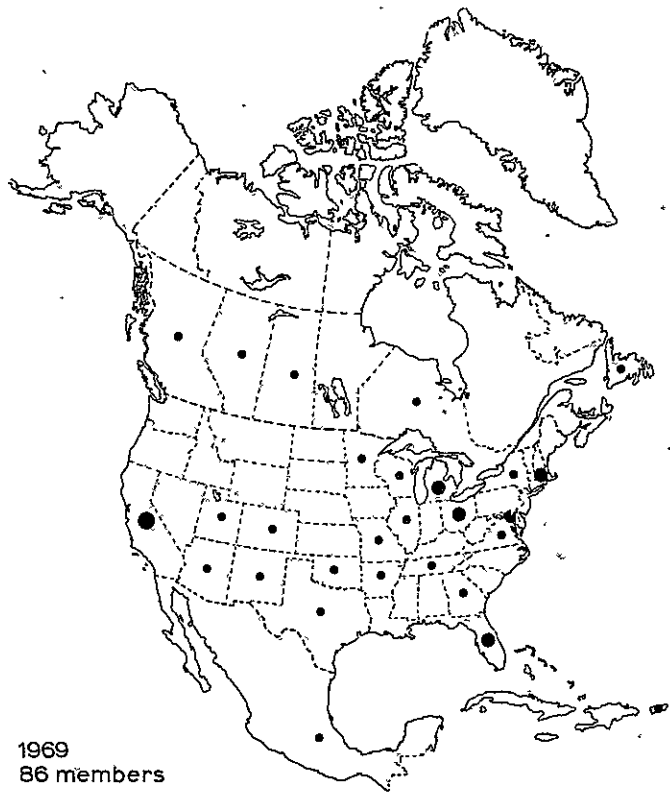
Greetings from Georgia where I've just finished teaching arachnology to 16 gung-ho students. Talking about the research of others has gotten me fired up and anxious to get back to my California population of the fossorial mygalomorph *Atypoides riverse* (Antrodiaetidae).

This summer I plan to determine to what extent the pine needles attached to the burrow entrance of *A. riverse* facilitate the capture of prey. It is obvious from field observations that the needles transmit vibrations to the spiders. I want to know to what degree these spiders can discriminate different frequencies of vibrations. Some of the burrows have many needles attached; others few. How much difference does this make? Do these spokes influence spacing and thus competition? One of my study sites had 500 to 600 burrows in a 2 x 3 m area!

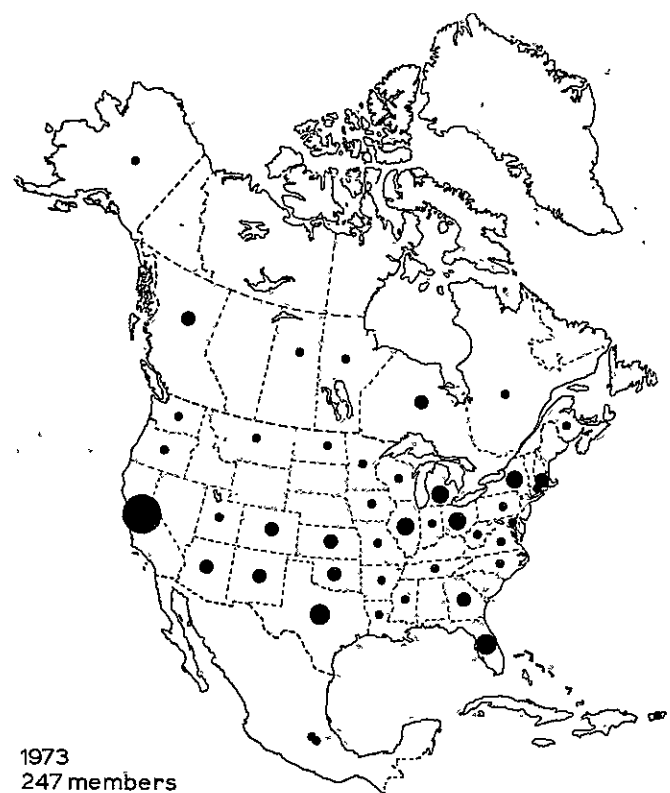
I also plan to quantify my preliminary observations on foraging times. It appears that spiders in the larger size classes (I have determined 12) are mostly active at night and for short periods during the day. The spiders in the smaller size classes are continuously active; however, they seem to be more sensitive to disturbances (and thus retreat down their burrows) during the day. Perhaps these activity patterns coincide with prey availability?

Here in the Deep South, I've just started a small field project examining those spiders associated with the pitcher plants *Sarracenia flava* and *S. minor*. So far the spiders most commonly associated with *S. flava* are *Phidippus clarus* and *P. pulcherrimus*. Both build their egg sacs in the "stalks" (leaves). Soon, I should also be finding large populations of *Peucectia viridans*. Conveniently, some agelenids incorporated their tunnels into the openings of the pitcher plants. If the plants attract suitable prey, this would be an added advantage.

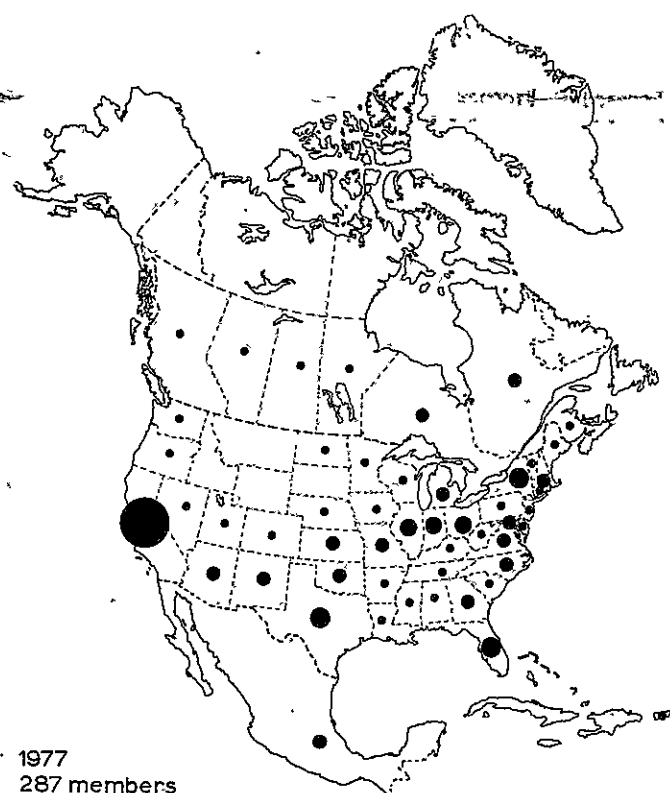
Lastly, I've been up to some library research to help my wife with her popular articles on spiders (two will appear in the May issue of *Ranger Rich*) and her children's book based on spider myths.



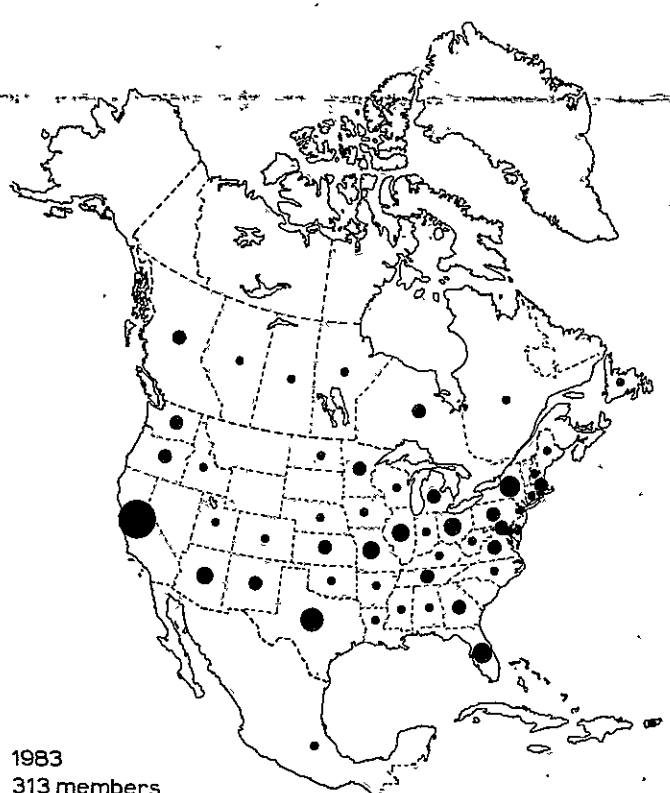
1969
86 members



1973
247 members



1977
287 members



1983
313 members

"NORTH AMERICAN" AMERICAN ARACHNOLOGISTS



Prepared by James Cokendolpher

THE AMERICAN ARACHNOLOGICAL SOCIETY
 Department of Biology Norman V. Horner, Treasurer
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FINANCIAL STATEMENT 1984

Balance Brought Forward from December 1983 \$ 5,432.37

DEPOSITS

Sale of Handbook	\$ 845.29	
Back Issues of Journal	971.00	
Dues (collections for AAS, BAS, ASEA, & CIDA)	16,487.01	
Manuscript Reprints	945.59	
Interest on C.D.'s	1,216.07	
Cash of C.D.	5,000.00	
Bank Loan	1,500.00	
Bank Chg Refund	1.84	
	<u>\$26,966.80</u>	
Subtotal		32,399.17

DISBURSEMENTS:

Postage & Shipping	\$ 2,672.82	
Supplies	392.28	
Returned checks	20.00	
Dues to Foreign Societies (BAS, ASEA & CIDA)	3,795.00	
Membership in Assoc. of Systematic Collections	50.00	
Publication Cost for Journal & Newsletter	18,098.55	
Filing Fee (Non-profit organization)	12.50	
Bank Exchange Fees for Foreign Checks	52.90	
Accountant Expense for IRS 990	30.00	
Refunds	40.00	
1984 Meeting Expenses:		
a. Travel expense for invited speakers and assoc. editor of JQA.	1,300.00	
b. Dept. of Psychology, Tulane Univ (reimbursement of funds to cover negative cash balance)	157.47	
Loan Payment (1,500) plus interest (56.47)	1,556.47	
Honorarium for JQA Editor	1,000.00	
	<u>\$29,177.99</u>	
Bank Balance		\$ 3,221.18
Certificate of Deposit		<u>10,000.00</u>
Total Assets		\$13,221.18


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