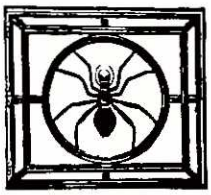
AMERICAN ARACHNOLOGY

THE NEWSLETTER OF THE AMERICAN ARACHNOLOGICAL SOCIETY

No. 38 November 1988



1989 Annual Meeting

Butler University
Indianapolis, Indiana
June 20-24, 1989

Host: Jim Berry, Department of Biological Sciences; Butler University, Indianapolis, Indiana 46208 Telephone (317)-283-9344.

Calendar:

Tues, 20 June - Registration, afternoon & evening
Mixer in evening

Wed., 21 June - Morning & afternoon paper sessions
Social with films and video

Thu., 22 June - Morning paper session
Afternoon local field trip
Casual outdoor "banquet" in evening

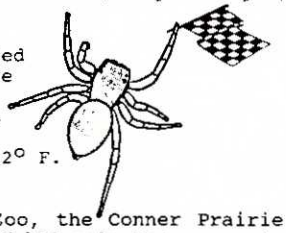
Fri., 23 June - Morning & afternoon paper sessions
Business meeting in afternoon

Sat., 24 June - Field trip

Field Trips: On the free afternoon there will be a short field trip to a close-by 10,000 acre forested park owned by the city. The Saturday field trip will include several habitats controlled by The Nature Conservancy and the State Park system, featuring stands of hardwood (beech-maple and oak-hickory) and relict evergreen forest (hemlock, white pine and Canada yew) with clear streams, sandstone bluffs, and deep gorges.

Transportation: Indianapolis is served by all of the major airlines, and we plan to provide free pick-up at the airport on the afternoon and evening of June 20. The city is within one day by car of most of the eastern United States. Parking on campus is no problem.

Accommodations: Moderate cost campus housing will be available, some air-conditioned and some au naturel. If you must have air-conditioned housing, be sure to register early. Two miles away from campus is a Sheraton Hotel with special Butler rates of $39 per night, including free shuttle service.



Local: Butler University is located in a residential neighborhood five miles northwest of downtown Indianapolis. Normal temperatures in Indianapolis for late June are highs of 83° F. and lows of 62° F. There are lots of activities for families, including the new facilities of the Indianapolis Zoo, the Conner Prairie Historical Farm, an outstanding Children's Museum, and, if you are interested, you can take a lap around the Indianapolis 500 Motor Speedway (on a bus!).

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Proposed Changes in the By-Laws

The following changes in the by-laws have been recommended by the Executive Committee and will be voted on in the next general balloting (Spring, 1989). Proposed changes are underlined.

Section 5: Associate Membership for low income workers or for countries where it is not possible to send money will be gratis aand must be bestowed by <u>two-thirds</u> vote of the Executive Committee.

<u>Section 6: Life memberships shall be 25 times the regular membership fee, paid in one sum or in two annual installments.</u>

<u>Section 7:</u> Records pertaining to Society funds shall be open to any member at any time.

Financial Status of the Society

Gail Stratton, Treasurer

1988 has the dubious distinction of being the first year in which the American Arachnological Society is in a less than ideal financial situation. The major expenditure of the Society is to publish the <u>Journal of Arachnology</u>. The cost of publication of the Journal has tripled in the last 6 years. Our main sources of income are from dues and, since 1986, from page charges. While our income has grown slowly, it has not kept pace with the rise in costs.

In June of this year, the situation was very serious; it looked like we would not be able to pay for part of Volume 16 of the Journal. At the June meeting, the executive board took several steps to start alleviating the situation: dues were raised for the first time in 5 years, page charges were increased, it was decided that the request for dues payment would be sent early, and a new position of business manager was instituted to collect page charges. Many thanks to Bob Suter for agreeing to be our first business manager! Our current assets (on the quarterly report) reflect early dues collection -- it must be remembered that the next two numbers of the Journal (due to be published yet this fall) will probably cost $6000 each. Also, since we allow members to pay for other memberships through our membership secretary, much of what we collected must be paid to B.A.S., C.I.D.A., and Revue Arachnologique. And we still have publication of the Journal in 1989 to pay for!

On a brighter note, members have responded with support. At this time, we have received almost $600.00 in donations, and two individuals have taken life memberships. The executive board is looking into finding more cost efficient means of publication, as well as looking into other means of raising money for the Society. It will be some time before we are out of the woods. If you have ideas about raising money for the Society please contact one of the executive board. And remember, all donations are tax deductible!

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11th International Congress of Arachnology

The 11th International Congress of Arachnology will be held at Turku, Finland on 7-12 August 1989. Those interested in more information should contact: The Secretary, 11th International Congress of Arachnology, Zoological Museum, University of Turku, SF- 20500 Turku, Finland.

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NEWS FLASH !!!

Norm Platnick's new supplement to Brignoli's catalog can now be ordered through the Society. The special order form is enclosed in this newsletter. Orders placed through the Society before the publication date will receive a significant discount. Details are in the enclosed order form.

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THE AMERICAN ARACHNOLOGICAL SOCIETY
Gail E. Stratton, Treasurer
Department of Biology, Albion College, Albion, MI 49224

THIRD QUARTER FINANCIAL STATEMENT
Oct 10, 1988

Balance from June 12, 1988			$8950.31
DEPOSITS			
7/18/88	Membership dues	568.00	
7/18/88	Sale of Social Spider Volume	20.00	
9/30/88	Sale of Social Spider Volume	10.00	
9/30/88	Membership dues	5629.00	
10/12/88	Membership dues	5515.00	
	Interest through Sept. 25	129.77	
		11871.77	
	Subtotal		$20,822.08
EXPENSES			
6/13/88	James Berry, Newsletter	100.00	
7/18/88	Jerry Rovner, Associate Ed.	91.71	
8/05/88	Bruce Cutler, Salticid symposium	23.82	
9/05/88	Texas Tech JA Vol 16 (1)	5587.45	
10/12/88	New York Ent. Soc. Envelopes	91.30	
10/12/88	Am.Mus.Nat.Hist. membership mailing	168.15	
10/12/88	Gail Stratton, expenses as treasurer	21.79	
		6084.22	
	Total Assets		$14737.86

Gail Stratton, Treasurer
Oct. 17, 1988

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Changes in Dues and Page Charges

At the annual meeting of the Society in Las Cruces, it was decided that the greatly increased costs for printing the journal made it necessary to increase both the annual membership dues and the page charges for manuscripts for the journal accepted after July 1, 1988. The charges proposed by the Executive Committee, and accepted at the general business meeting are as follows:

Dues

Students	$20 per year
Members	$30 per year
Institutions	$50 per year

Page Charges

Student	$10 per page
Member, without support	$15 per page
Member, with support	$25 per page
Non-members	$30 per page

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Results of Spring Balloting

At the annual meeting the Elections Committee reported the results of the spring balloting. Those elected were:

Director - - - - Jonathon Coddington
Secretary - - - James W. Berry

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Awards for Student Papers

Maggie Hodge (Univ. of Cincinnati) was presented an award for the outstanding student paper presented at Las Cruces. She received a check for $75 and a complete set of the Journal of Arachnology. The runner-up for outstanding paper was Bret Beall (Field Museum of Natural History). He received a check for $25 and a student membership to the Society.

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Opinion
Bulletin of Zoological Nomenclature

Opinion 1488 - Herilaeus Simon, 1875 (Arachnida, Araneae): Thomisus hirtus Latreille 1819 confirmed as type species.

What are folks up to?

G.B. Edwards (Florida State Collection of Arthropods) reports that the Alabama Museum of Natural History has transferred its holdings of alcohol-preserved cave arthropods and spiders from the Allan Archer collection to the Florida State Collection of Arthropods. The spiders consist almost exclusively of web-building families.

Andy Penniman (Defiance College) is still interested in the Phrurolithinae, which he thinks belongs in Corinnidae.

Cathy Tugmon (Univ. of New Hampshire) has left Texas and is now working with Ed Tillinghast in Durham, New Hampshire. Her research is definitely with spiders and probably in the area of genetics.

Don Lowrie (Santa Fe, NM) has been in Bismarck, ND studying the plants, as well as the ecology, mentioned in Lewis & Clark's journals. He is also working on a study of carapace widths in Pardosa, as well as number of eggs per egg sac.

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ARACHNOLOGICAL RESEARCH IN COSTA RICA

Jerome S. Rovner

Central America offers a rich arachnid fauna, including many taxa that are unfamiliar to workers from the temperate zone. Of the available Central American countries for research, Costa Rica is one of the two safest in which to work, as regards possible political or criminal harassment. (Belize is the other). Although a small country (about the size of West Virginia), Costa Rica offers diverse life zones and, among the Central American countries, has the highest proportion of land devoted to protected national parks. Of particular interest to researchers from the temperate zone are the various rain forest sites, the best known being the preserve at Finca La Selva, near Puerto Viejo de Sarapiqui, in Heredia Province. It is located northeast of San Jose, the city of arrival via international flights, and can be reached by car in about 3 hours.

The research station at La Selva is operated by the Organization for Tropical Studies and overseen by husband and wife co-directors David and Deborah Clark. Facilities for research include a system of well-marked trails, air-conditioned laboratories, confortable lodging, and excellent meals. For a reasonable weekly fee that covers room, board, and laboratory space one can devote most time to data collection on an arachnological topic, as well as take time out to photograph the wealth of non-arachnid fauna and the diverse flora. For current information about La Selva (facilities, costs, obtaining collecting permits, etc.), as well as for approval of planned research, write to Donald E. Stone, Executive Director, Organization for Tropical Studies, P.O. Box DM, Duke Station, Durham NC 27706.

If possible, try to time your visit during a part of the year when the station is least crowded, as will be indicated in the literature from OTS. I was fortunate in being there during November and December, when there were relatively few other researchers.

To minimize costs, take the least expensive flight to Miami and then Lacsa (Costa Rican airline) from Miami to San Jose. For a small fee, you can then be taken to La Selva from the OTS office in one of the OTS vehicles that makes the run several days a week.

Prior to your trip, appropriate reading should include the following books: Janzen, D.H. (ed.). 1983. Costa Rican Natural History. University of Chicago. Press. Forsyth, A. and K. Miyata. 1984. Tropical Nature. Charles Scribner's Sons. New York. Perry, D. 1986. Life Above the Jungle Floor. Simon and Schuster. New York. Leigh, E.G., A.S. Rand, and D.M. Windsor (eds.) 1982. The Ecology of a Tropical Forest. Smithsonian Institution Press, Washington, D.C.

I shall close by mentioning that it was Jonathon Coddington who suggested La Selva to me as one of the best places for research on spiders inhabiting a tropical rain forest. Prior to my trip, Brent Opell and Ernst-August Seyfarth provided useful information as well. These three researchers are among the relatively few arachnologists who have been fortunate enough to visit the OTS station at La Selva, Costa Rica.

COLLECTING IN MEXICO

Marsha Conley
New Mexico State University

Permit requirements for scientific collecting in Mexico have undergone major revision in recent years. New requirements include major restrictions on importation of specimens, and a detailed permitting process which is handled by the Direccion General de Conservacion, Ecologica de Los Recursos Naturales. The permitting process requires letters of agreement to pay expenses for a Mexican technician while working in Mexico, and a letter of endorsement from a Mexican institution or investigator, as well as detailed project descriptions amd arrangements for deposition of 40% of all specimens in Mexican collections. Fees are assessed for the permits at variable rates, depending on the level of specimen exportation that is planned. A more detailed description of permit requirements with additional updated information is available from Thomas H. Fritts, who serves on the Conservation Committee of the Southwestern Association of Naturalists. (Thomas H. Fritts, U.S. Fish and Wildlife Service, National Museum of Natural History, Washington, D.C. 20560. Telephone (202)-357-1930.

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Australian Arachnology
reviewed by Petra Sierwald

Austin, A.D. & N.W. Heather (eds.) 1988. The Australian Entomological Society. Miscellaneous Publications No. 5. Brisbane. 137 pp. (Australian $30.00).

The fascinating phenomenon of the still poorly known Australian spider fauna, as discussed by R.J. Raven in Australian Arachnology, is the high number of spider families endemic there and in New Zealand.

Australian Arachnology contains 11 feature articles and one abstract, based on presentations made at the first Australian symposium on arachnology, held at the 17th Conference of the Australian Entomological Society in May 1986. Four papers are reviews dealing with ecology and systematics of spiders in Australia, with behavioral ecology in scorpions in general and with the the systematics and biology of pseudoscorpions. The remaining eight contributions report on specific research projects in spiders and scorpions.

The paper that caught my attention first was the one by Raven, a census-style article, that reveals how much needs to be done on alpha-taxonomic level in Australian spiders. This fact is shown by the low number of described Australian spider species: Raven gives the figure of 1874 species in 430 genera, which comes to a mean of 4.3 species per genus thus implying a presumably rather high number of monotypic genera [compared to North America with 3412 species in 500 genera, which comes to a mean of 6.8 species per genus (Roth, 1985, Spider Genera of North America)]. Likewise, M.S. Harvey, in his inspiring and concise review on systematics and biology of pseudoscorpions, predicts that "...many Australian [pseudoscorpion] species await description and [that] much work needs to be undertaken before a realistic picture of the Australian fauna can be obtained". Raven, Harvey, and W.F. Humphreys in his review on ecological research, point out that the lack of knowledge in basic taxonomy and life history of Australian arachnids hampers further research. Raven also discusses "logistic" difficulties in obtaining the necessary 19th century literature and last but not least, that most type specimens "... are held in either the U. K. or European collections."

The volume of Australian Arachnology is presented with a handsome cover with color photographs. Some final critical remarks focus more on print and editorial quality rather than contents: The print quality of the text could have been better. There are numerous "fuzzy" characters, and the text is somewhat combersome to read as the right margin justification was achieved by whole character justification. The citation of taxa hardly ever includes the year and the inconsistent use of abbreviated generic names makes it sometimes necessary to re-read earlier paragraphs. The papers presented in Australian Arachnology, though different in style and scope, are of good quality. Arachnologists everywhere will appreciate the publication of this volume, especially because it allows us to become acquainted with arachnological research currently carried out in Australia. Travel distance and costs will inhibit many of us from attending meetings in Australia on a regular basis. Expressed concerns like those by Raven on special "logistic" problems of Australian systematics will make colleagues more aware and supportive.

THE LAS CRUCES FIELD TRIP REPORT
David Richman

It is difficult to evaluate field trips that one helped to plan and carry out. However, I can say that the success of these field trips to a large degree was due to the efforts of my cohost, Dr. Marsha Conley, and her assistants James Brunt and Mike Draney. We were gratified by the number of people who attended the meeting and took part in the two days of field trips. We were also happy that nobody got lost, was bitten by a rattlesnake, fell off a cliff, sank to their armpits in mud or was drowned (all of which were possible). As of this writing I know of no one who contracted bubonic plague- another victory! Actually the only time things got a bit on the dangerous side was when I discovered on the second field trip that the van I was driving had little in the way of brakes- but then we made it back!

Our desert and oak zone trip began on July 1. We stopped first at New Mexico State University College Ranch in the mesquite dunes. Jonathan Coddington showed his beating technique to a Las Cruces Sun-News reporter who had come with us. Maria Rambla, Jon Reiskind and other intrepid arachnologists searched the bushes and sand for quarry. Bruce Cutler, Dan Jennings and I collected Synageles noxiosus on snakeweed with the ant Conomyrma bicolor. Other common spiders found included Pseudicius piraticus, Habronattus sp. Metaphidippus sp., and Metepeira sp.

We then pushed on to our second stop, a bajada also on the College Ranch (a bajada is a slope). There G. B. Edwards collected Phidippus on blooming sotol and Allen Brady caught several Oxyopes tridens. Jonathan Coddington was photographed while collecting a Diguetia (the photo later showed up in the Sunday edition of the Las Cruces Sun-News). Several specimens of gravid females of Peucetia longipalpis were caught on flowering plants. Jonathan Reiskind, Maria-Luisa Jimenez and Susana Guzman climbed up on the boulders of this isolated piece of the Dona Ana Mountains, turning over rocks and examining plants. We were cautioned not to collect on the Long Term Ecological Research (LTER) site, which is represented by a permanent transect from this bajada down to a playa lake. We visited the latter next.

It was cooler at Aguirre Springs. We ate lunch under the Arizona oak and alligator juniper. Scott Larcher collected a number of Diguetia under a rock outcrop. Near springs along the Pine Tree Trail there were Tetragnatha and Pardosa. After a too short period we had to start the return, picking up G. B. Edwards, who was trying to find more Phidippus on the sotol. He had collected a nice specimen of P. basalis. Anyone who has collected on sotol understands the difficulties involved!

The second trip began on the next day at 7 A. M. when we drove a smaller group (unfortunately minus Marsha Conley) to White Sands National Monument. We did not have permission to collect, but it seemed a pity not to stop there for a little while, just to see the habitat. Bruce Cutler was happy that we stopped on the way in to get a look at a western hognosed snake (he watches reptiles). The whole group gathered on the top of a sand dune (all this beach and no ocean!). We were able to see some interesting flowering plants on a stop closer to the edge of the dune field. As for spiders, we did see a western black widow, Latrodectus hesperus, with a captured solpugid over the back door to the visitor's center.

By this time everybody was getting hungry and ready to do some collecting in the high mountains. James Cokendolpher and Robert Holmberg left us at this point to drop James back in Lubbock and to get Robert back to Canada. We drove on to Karr Canyon Springs at nearly 8000' in the Sacramento Mountains. We had our lunch and hunted spiders. Barbara Robinson did some photography, while Jerry Rovner turned rocks. Lynda Goin (my wife) and James Brunt botanized all the while (we are supposed to be looking for spiders dear, unhand that columbine!). Pardosa was common in the rocks around the creek bed. Tetragnatha built webs across the stream bed, which was mostly dry.

Thanks to Bruce Cutler and G. B. Edwards, among others, for supplying information on what they caught. These were especially heavy in salticids (I wonder why), and I apologize for my relative lack of coverage on other groups.

Abstracts of the papers presented at the annual meeting of the Society in Las Cruces, June 27-July 2, 1988

On Mysmenopsis (Mysmenidae), a kleptoparasite of Pholcidae

Renner L. C. Baptista
Museu de Zoologia - USP, Av. Nazare, 481 Ipiranga
Sao Paulo-SP Brasil 04263.

M. archeri is a tiny kleptoparasite of webs of Blechroscelis cyaneotaeniata and Coryssocnemis togata. The guest's web is composed of irregularly disposed, nearly horizontal threads connected to the host's vertical sustaining threads. Some threads are directly attached to the host's sheet. Males and females occur in the same web.

In laboratory, M. archeri apparently didn't capture prey by itself. There was a characteristic response to prey-movements of its host. M. archeri mounted on the prey during prey-wrapping by the host, feeding on the prey together with, and near the fangs of, the host. A new species (sister-group of M. archeri) was found in the same habitat. The phylogenetic implications of this behavior are discussed.

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Phylogenetic systematics of the Arachnida

Bret S. Beall
Department of Geology, Field Museum of Natural History
Chicago, IL 60605-2496.

Previous analyses of relationships within the Arachnida have produced disparate results, perhaps because each considered fewer than 40 characters. Additionally, extinct taxa usually were not included in these analyses. A cladogram based on the phylogenetic analysis of 146 multi-state characters among 21 groups of arachnids (including extinct taxa) and one outgroup (Eurypterida) is presented. The taxa include traditionally recognized orders, families and genera. Developmental and comparative morphological evidence permits arguing for homology. Character state polarity is evaluated using morphological transformation series rooted by outgroup analysis, resulting in several non-traditional interpretations that are also supported by functional arguments. The PAUP algorithm is used to select the most parsimonious distribution of character states. The resulting phylogeny can be used to test process-level hypotheses as explanations of the macroevolutionary pattern within the Arachnida.

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Implications of the discovery of "Repugnatorial Glands" in Cybaeota (Araneae: Agelenidae)

R. G. Bennett
Environmental Biology, University of Guelph
Guelph, Ontario, N1G 2W1, Canada.

A recently described type of spider integumentary gland with distinctive cuticular morphology, the repugnatorial glands, has been used to support a hypothesis of sister group relationship between the Telemidae and the Leptonetidae. This paper reports the presence of strikingly similar glands in the distantly related spider genus Cybaeota (Agelenidae). The placement of these glands in Cybaeota may support the repugnatorial secretion function hypothesis proposed for them in the Telemidae. The phylogenetic implications of the scattered distribution of this character and another, the distinctive series of paired elongate tibial macrosetae, are discussed.

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Notes on the intertidal spider genus Paratheuma (Desidae)

James W. Berry
Department of Biological Sciences, Butler University
Indianapolis, IN 46208.

The recent discovery of five new species of intertidal spiders (descriptions in press) on the Pacific Ocean islands indicates that the genus Paratheuma may be far more abundant in both species and numbers than the literature would indicate. Although distribution is very spotty, in some locations individuals are very abundant. So far only one species has been found on any one island group. Most of the species are found in either storm-produced coral rubble on the shore or in black volcanic rock just below the high tide line. Mating behavior is remarkably similar from species to species, and all species tested so far will attempt to mate with the other species, but only the species from Rangiroa in the Tuamotu Islands crossed with the species from Fiji (and Australia) has produced viable offspring. Electrophoresis has shown that these two species are different. Adult spiders of all species are present throughout the year. It takes about one month for the young to emerge from the cocoon and about three months for the hatchlings to mature. Keeping P. insulana individuals from Florida at low temperatures indicates that the probable reason that this species cannot live outside the tropics is that, although other physiological functions appear to be near normal, the eggs will not hatch at temperatures of 15°C. or below.

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A comparison of neoteny and troglobism in laniatorid harvestmen

Thomas S. Briggs
Department of Entomology
California Academy of Sciences, Golden Gate Park
San Francisco, CA 94118.

Laniatorid harvestmen are well known in cave populations where they can exhibit classical troglobitic modifications. They also can display neotenic modifications, particularly in California, which have interesting parallels to troglobism. These modifications suggest both adaptive (progressive) and regressive evolution. Regressive evolution in laniatorids can be limited to anopthalmy and, possibly, loss of secondary sexual characters since depigmented juvenile stages are characteristic of the suborder. Neoteny can usually be regarded as an adaptation to food scarcity, but in the California examples it may be an adaptation to harsh climatic conditions on the surface and limited interstitial access within the subsurface habitat. These selective factors are similar to those for cavernicoles and seem to lead to a similar loss of eyes. Laniatorid harvestmen have secondary sexual structures that can be lost in neotenic species. These structures are also reduced or absent on some highly troglobitic harvestmen. As with anopthalmy, an explanation for this regression is not as facile as it is for progressive evolution.

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Ant mimicry in jumping spiders (Salticidae)

Bruce Cutler
1966 Eustis Street
Lauderdale, MN 55113.

Ant mimicry in Salticidae is a well known, but ill-defined phenomenon. Approximately 10% of all jumping spider species are antlike. In current practice ant mimicry is established by a morphological resemblance to ants as discerned by a human observer, with a few also recognized as behavioral mimics. Secondary confirming evidence consists of close color and general "gestalt", temporal and ecological correspondence to a particular ant species by a particular spider, and absence of antlike Salticidae in prey caches of salticid hunting spider wasps. An experiment was devised which demonstrated protection from predation by other spiders in an antlike jumping spider. Further work is needed to elucidate the reasons for specific ant mimesis in tropical areas, while in temperate climes ant mimesis does not ordinarily concern specific models. Also not clearly understood is the reason for ant preying Salticidae to be less perfect morphological models, than those antlike species which do not prey upon ants. We also need better studies confirming model - mimic-signal receiver (i.e. predator) relationships.

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Quantitative analyses of Phidippus courtships

G. B. Edwards
Florida State Collection of Arthropods
P.O. Box 1269
Gainsville, FL 32602.

The courtships of males of 13 species of Phidippus were analyzed using a combination of filming and visual observation. The following characters were analyzed: 1) epigamic ornamentation, 2) movements of palpi, 3) movements of legs I, 4) angles held by legs I, 5) timing of movements of legs I. Three main types of visual (Type I) courtships are diagnosed and used to support the placement of species into species groups based on morphology.

Spider survey in the Woods Hole, Massachusetts area

Robert L. Edwards
Box 505
Woods Hole, MA 02543.

The region immediately around Woods Hole has been collected by many authorities over the years, including Emerton. The present survey covers an area of about twenty square miles, centered on the town of Falmouth of which Woods Hole is a part. At the time of this writing, 171 genera (including about 400 species) have turned up.

There is only limited habitat diversity, largely scrub pine and oak, and seashore environments. The entire region is being rapidly and completely developed.

Some of the genera are surprisingly well represented, as for example Grammonota and Philodromus - ten species each. There is at least one thriving colony of Sphodros niger. One of the commonest species turned out to be Trochosa ruricola, almost certainly introduced from Europe. Several other lycosid species previously recorded only from southern areas have turned up as well.

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A comparison of endosternite morphology in a "primitive" true spider, Filistata hibernalis, and an atypid mygalomorph spider, Sphodros sp., with general comments on inferred endosternite functions in spiders

Bruce L. Firstman
Biological Sciences
California State Polytechnic University
Pomona, CA 91768
and
Cole L.B. Benton, Jr.
Dept. of Biology, Jacksonville State University
Jacksonville, AL 36265.

The presence of four pairs of noncontractile, tendinous, ventral suspensors of the endosternite is a synapomorphic character state for all species of mygalomorph spiders that we have examined. These suspensors in spiders apparently are homologous to contractile, dorsoventral suspensor muscles that occur in certain nonspider arachnids. The only family of araneomorph spiders in which similar, noncontractile, ventral suspensors of the endosternite are known to occur is the Filistatidae. It is here hypothesized that this is a plesiomorphic character state in filistatids, homologous to that of mygalomorphs, and that its function is an adaptive accommodation to the requirements of a burrowing behavior.

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The mygalomorph fauna of a relict refugium on the Gulf Coastal Plain

Debbie Rymal Folkerts and George W. Folkerts
Department of Zoology and Wildlife Science
Auburn University, AL 39849-5414.

The western Red Hills of Alabama is the most deeply dissected area on the Coastal Plain of the United States. The area harbors a number of unusual endemics and many disjunct populations of southern Appalachian species. The Mygalomorph fauna of the Red Hills includes Sphodros rufipes (Atypidae), Antrodiaetus unicolor (Antrodiaetidae), Myrmekiaphila fluviatilis (Cyrtaucheniidae), Cyclocosmia truncata and Ummidia audouini (Ctenizidae). These burrowing spiders, most previously unknown from the region, utilize different microhabitats based on soil type, slope and vegetation cover. Sphodros rufipes seems to exhibit a greater degree of morphological variation than previously reported. The Cyclocosmia population is morphologically intermediate between C. truncata and C. torreya.

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What is the function of the prosomal portions of the spider midgut?

Matthew H. Greenstone
USDA-ARS
Biological Control of Insects Research Laboratory
Columbia, MO 65205.

Arthropod predators are usually prepared for serological stomach analysis by homogenizing whole animals. If spiders are prepared this way venom will be included in the homogenate and venom enzymes might attack prey antigens, thereby compromising the assay. This hypothesis was tested with Phidippus audax fed fifth instar larvae of Heliothis zea and subsequently assayed by ELISA with a monoclonal antibody to the arylphorin, (hemolymph storage protein) of H. zea. Abdomen and cephalothorax homogenates were assayed separately and also combined for 0-4 h before assay. Combined cephalothorax and abdomen homogenates have the same activity regardless of time of incubation. More surprisingly, there is no activity in the cephalothorax. This leads me to ask what the function of the prosomal midgut diverticulae is, and more generally, how digestion is organized within the gut. Immunohistochemical studies of arylphorin digestion could shed light on the organization and time-course of digestion.

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The biology and life history of the spider genus Hololena (Agelenidae) in southern California

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An examination into the biology and life history of southern California Hololena was carried out prior to a revision of the genus. Only a single variable species, H. curta is believed to exist in the areas south of the San Gabriel and San Bernadino mountains with several recognizable subspecies. A second species, H. sula occurs from the Santa Barbara area northwards. Where the two species occur in the same area they are never found together. Several isolated desert populations are closely related to H. sulu suggesting a pleistocene distribution throughout the Mojave area. Hololena occurs in dense riparian habitats, on shaded hillsides and in urban environments. Web site distribution appears to be related to the predation effects of birds and lizards. A single maturation event peaks at or very near October 1 for all species examined, with mating taking place before January. Males die out during the winter months; females persist into the following September, overwintering under bark and in deep retreats. One to eight egg sacs are laid with approximately 50 young per sac. Second instar young are found from March to September. Web site and age determine adult size with large adults being immatures from the previous season. Successful matings were made with a series of males from a single site in Los Angeles county and females from throughout southern California. Males were able to mate with females of H. sulu. Female genitalia were variable and epigynal width was found to be inversely proportionate to carapace size. Male genitalia were less variable but also tended to be somewhat inversely proportionate to carapace size.

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Impact of egg sac parasitoids on foraging costs of colonial spiders

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While foraging in groups is advantageous for some web-building spiders because of increased prey capture efficiency, living in aggregations may increase vulnerability to predators. We compared the impact of predation by egg sac parasitoids on two species of colonial orb-weaving spiders from Mexico which exhibit contrasting levels of social organization. In Metepeira atascadero, which occurs solitarily or in small groups in desert grassland habitat, rates of predation fluctuate widely from year to year. Predation was highest during seasons when spider prey were most abundant, and spiders laid more egg sacs than in average years. There was no difference in the rate of egg sac loss to parasitoids between solitary and grouped spiders in any year, and grouped spiders laid more egg sacs than solitaries only in the high prey season. In M. incrassata, which occurs in groups of thousands in tropical rainforest and agricultural sites, rates of predation vary little between years, but were higher than M. atascadero most years. The proportion of egg sacs parasitized was positively correlated with colony size, although differences in success rates of the most common parasitoids reflect varying degrees of vulnerability associated with colony size. Vulnerability of egg sacs to parasitoids may depend on colony size, timing of egg production, parasitoid attack strategies, and egg sac guarding behavior.