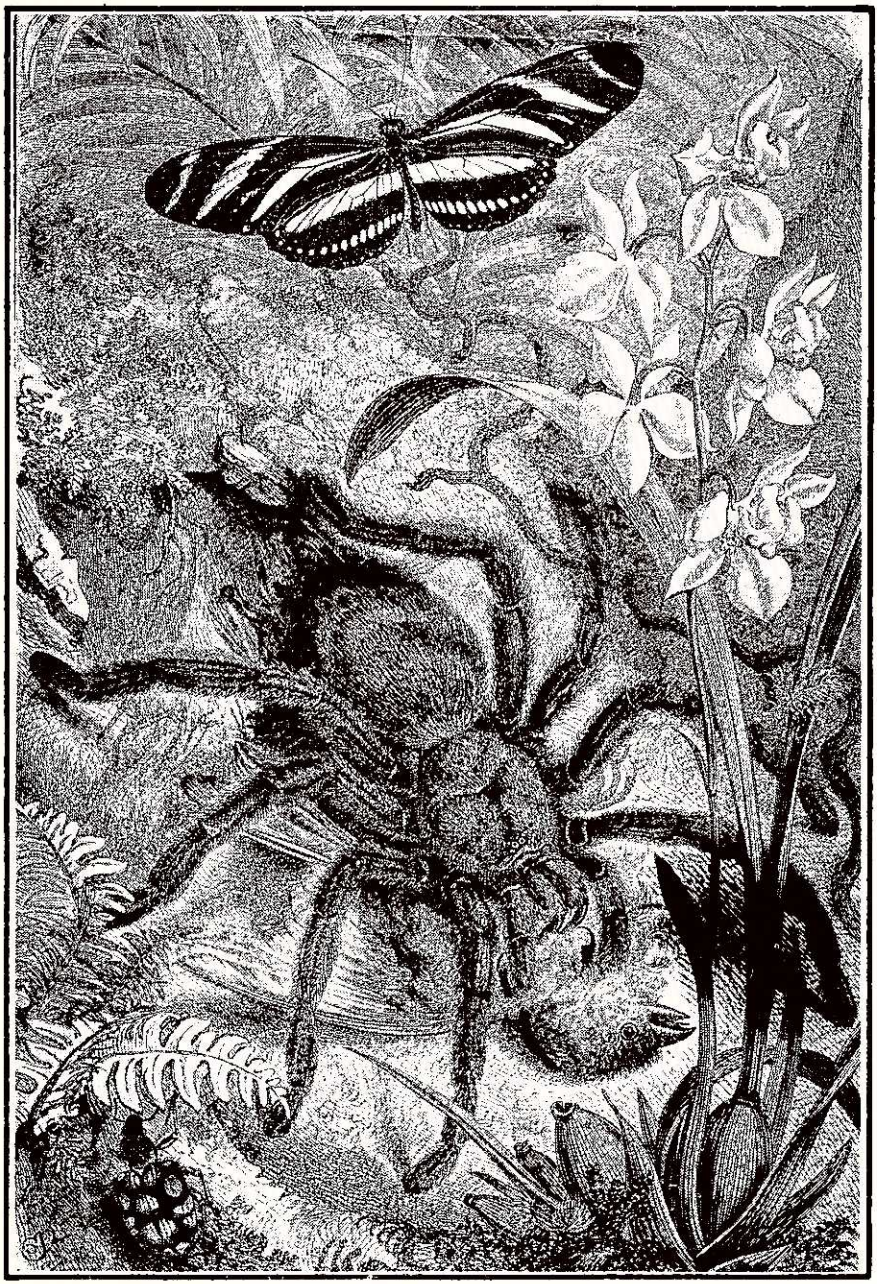
American Arachnology

The Newsletter of the American Arachnological Society



October 1981 *Number 24*

AMERICAN ARACHNOLOGY #24

In this issue of AMERICAN ARACHNOLOGY:

AMERICAN ARACHNOLOGY is the newsletter of the American Arachnological Society and is sent only to society members. For information on membership, write Dr. Norman 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 three times a year.

Correspondence, submissions and requests for back issues of AMERICAN ARACHNOLOGY should be directed to the editor, William A. Shear, Biology Department, Hampden-Sydney College, Hampden-Sydney, VA 23943, USA.

Notice of a change of address should be sent only to the Membership Secretary (see above). To do otherwise merely delays the change; all mailing for the Society is done from a list maintained by the Membership Secretary.

Society News

JIM CARICO, Chairman of the Nominations and Elections Committee reports the following election results: For President-elect: SUSAN REICHERT. For Director: MICHAEL ROBINSON. For Treasurer, NORMAN HORNER. The change in the by-laws, article 1, section 3, was agreed to.

Article VIII of the AAS Constitution states that the principal office of the Society is in Los Angeles County, California. As this is no longer true, this article will be deleted from the constitution and Article IX will be renumbered as VIII.

1982 Meetings: Places And And Times

The Western Meeting of the AMERICAN ARACHNOLOGICAL SOCIETY will be held on the campus of Doane College, Crete, Nebraska, July 28th to 30th. BILL RAPP will be the host and has planned two days of papers and a day of field trips to nearby grassland areas. Bill will be sending out a flier early next year with details.

The Eastern Meeting will take place at Hampden-Sydney College, Hampden-Sydney, Virginia, June 18-21, and will be organized by BILL SHEAR. Present plans call for a week-long course in Arachnology, emphasizing spiders, to precede the meetings. No college-level biology background will be needed to benefit from the course. Again, details will be made available early in 1982.

The next International Meeting will be held in 1984 in Panama, the first to be held outside the United States. Hosts will be MIKE and BARBARA ROBINSON and DIOMEDES QUINTERO.

Research Requests

ANDY PENNIMAN (Department of Zoology, Ohio State University, Columbus, OH 43210) is still interested in obtaining specimens of Scotinella (a.k.a. Phrurolithus and Phruronellus, Clubionidae) for a taxonomic study.

JÜRGEN PÖHLMANN (Albrechtstrasse 113, 1000 Berlin 42) wants living specimens of the following theraphosid species for a projected behavioral study: Avicularia avicularia, Grammostola mollicoma, G. iheringi, G. pulcripes, G. acteon, Lasiodora klugi, Xenesthis spp., Eurypelma spp., Aphonopelma spp., Brachypelma smithi, Dugesiella hentzi, Psalmopoeus spp., Theraphosa blondi, Pamphobeteus roseus, Megaphobema robusta, Eupalaestrus tenuitarsus and E. tarsicrassus. North American correspondents are warned that the Post Offices of the United States and Canada may consider "tarantulas" to be venomous animals and so prohibit them from the mails. Also, please see the item in this newsletter on the AMERICAN TARANTULA SOCIETY.

Books New And Old

A new printing of the Spiders of Connecticut by B. J. Kaston, with about 146 additional pages of revisionary material, will be ready for distribution about mid-October. Total number of pages 1020, with 161 plates. Copies are obtainable from Publication Sales, Department of Environmental Protection, State Office Building Room 555, Hartford, Conn. 06115. Payment of $25 must accompany the order. Make check or money order payable to the Department of Environmental Protection. Connecticut residents must add the sales tax of 7½%.

PECKHAMIA, the journal/newsletter of the PECKHAM SOCIETY, an informal organization dedicated to research in the biology of jumping spiders (Salticidae), has recently resumed publication, with Volume 2, Number 1, issued in December of 1980. G. B. EDWARDS is editor of the newsletter, which costs $1.50 per number. Submissions of articles from authors in the USA should be sent to DAVID RICHMAN, Department of Entomology and Nematology, 3103 McCarty Hall, University of Florida, Gainesville, FL 32611, while those from authors in other countries should be sent to BRUCE CUTLER, 1747 Eustis Street, St. Paul. MN 55113. Manuscripts must be in English; authors may be required to pay the costs of half-tone or color illustrations. Material submitted should be in the PECKHAMIA format and offset-ready.

The current issue contains an obituary of ELIZABETH GIFFORD PECKHAM (d. 1940) and seven articles on jumping spider biology.

In its current sale catalog (effective until December 31, 1981) Harvard University Press is offering PETER WEYGOLDT's classic book, "The Biology of Pseudoscorpions" for only $2.50. Orders must be on the special form included in the catalog, so begin by requesting the catalog from Harvard University Press, 79 Garden Street, Cambridge, MA 02138.

American Tarantula Society: Report and Opinion

At the Knoxville meeting, Society members were made aware of the existence of the AMERICAN TARANTULA SOCIETY, an organization of persons interested in "tarantulas" as pets. Pet shops, particularly those in major urban areas or near university campuses, now offer theraphosid spiders for sale at prices ranging from $35.00 to $200.00, usually depending on the attractive coloration of the species offered. Most of the animals are imported from Mexico, Central America, South America or the West Indies, while some come from the southwestern United States. There is reason for concern over this traffic. First, the taxonomy of the Theraphosidae is very poorly known; many of the species imported are undescribed ones or are not identifiable from the available literature. Despite the long paper by Chamberlin (1940, Bull. Univ. Utah, Biol. Ser. 5(8): 39 pp) which lists 25 species from the southwestern United States and parts of Mexico, the status of many names remains unclear. Secondly, as a consequence of this lack of knowledge, and in the usual absence of any detailed information on the place of origin of spiders offered for sale, it is not possible to ascertain if a given individual is a member of a potentially endangered species or not. In addition, some few Theraphosidae from the West Indies and northern South Africa are suspected of being venomous, and may represent a health hazard. At the meeting, some members expressed concern over the deaths of many theraphosids due to improper handling, and feared that indiscriminate collecting for a commerical market could lead to the extinction of species even before the most rudimentary scientific studies could be carried out in the field.

Commercial collecting is not the same as collecting done for scientific work, or by an individual for his own education or amusement. Commercial collectors focus intensely and indiscriminately on all desirable material, plant or animal, within a given region, and an unscrupulous minority has already done incalculable damage serving American fanciers of orchids, bromeliads, cacti, tropical birds, reptiles, and fish, to say nothing of unusual small mammals (ocelots, jaguarundis, etc.) generally quite unsuitable as pets.

Pet fanciers are in part responsible for the activities of commercial collectors, because they create the market these persons serve. I hope that members of the AMERICAN TARANTULA SOCIETY will take this responsibility seriously and investigate the conditions under which their pets are captured, imported, and offered for sale. By so doing they would perform a service to science and to the animals themselves. Likewise, members of AAS in the southwestern United States, Mexico, Central and South America, and the West Indies, should contact state and national authorities to familiarize themselves with whatever regulations may exist that could be employed to control the traffic in tarantulas and make sure the spiders are not indiscriminately collected and are given humane treatment.

BOB SNETSINGER (Dept. of Entomology, Pennsylvania State University, University Park, PA 16802) is in contact with the officers of ATS, and I suggest that your concern be expressed through him. By cooperating with ATS members and making our expertise available to them, we can work together to make sure irreparable damage is not done.

Report On The Knoxville Meeting

The International Meeting of the AMERICAN ARACHNOLOGICAL SOCIETY was held at the University of Tennessee, Knoxville, from August 5th to 8th. More than 120 persons attended.

The efficient conference staff of the University of Tennessee handled the registration in a friendly and speedy manner, and the accommodations at Humes Hall were clean and comfortable. The meeting got under way Wednesday morning with a paper session in the Shiloh Room of the Student Center. Papers on behavior, systematics and ecology were read, with breaks for lunch and cofee, until 5:30 P.M., when the group moved out to the home of host SUSAN RIECHERT and her husband, MAC POST, for barbecue and conversation on the lawn, followed by a session of arachnological films in an outdoor "walk-in" theater. The audience was raucous but appreciative.

Thursday was occupied by a symposium organized by BILL SHEAR on "Spider webs and spider behavior," with participation by MITCH MASTERS, TONY JANETOS, SUSAN REICHERT, FRED COYLE, JON CODDINGTON, YAEL LUBIN, MARK STOWE, JIM CARICO, BILL EBERHARD and GEORGE UETZ. A paper by BILL TIETJEN was read by AL CADY. This was followed by a paper session lasting until after 6:00 P.M., moderated by F. G. BARTH.

The Business Meeting was capably conducted by outgoing President HERB LEVI, despite the late and sometimes unruly arrivals of officers and members. Thursday evening's social featured a Bluegrass band, square dancing, and the vocalizations of GEORGE UETZ and AL CADY. These guys are definitely headed for the big time.

Friday morning's symposium was organized by MATT GREENSTONE. The subject was "Spider predation: optimal foraging and prey population suppression," and participating were TONY JANETOS, Z. B. GALECKA, A. KAJAK, J. UCHMANSKI, DOUGLASS MORSE, CADER OLIVE, SUSAN REICHERT, GEORGE UETZ, J. LUCZAK, E. DABROWSKA-PROT, FADEL MANSOUR, WILL WHITCOMB and MATT GREENSTONE. There is a strong possibility that both symposia from this meeting will be published as separate volumes. The quality of the papers was extremely high. PETER GABBUTT then moderated a paper session that filled out Friday afternoon. In addition to the many papers read, the coffee room featured poster presentations of other research.

After a splendid dinner at the Faculty Club, menaced but not dampened by a nearby thunderstorm, B. J. KASTON presented a keynote address on "The History of Arachnology," filled with amusing anecdotes about the great arachnologists of the past. Following KASTON's speech, WILLIS GERTSCH was surprised by the presentation of the proof sheets of a volume of papers in honor of his 75th birthday, to appear as a Bulletin of the American Museum of Natural History. The festschrift was organized by NORMAN PLATNICK, who managed to keep it a secret from Willis until the presentation. Prizes were given for the best student papers to JON CODDINGTON for his symposium presentation on "Web architecture in ray spiders and some related families" and to GAIL STRATTON for her paper, "Behavioral genetics of a reproductive isolating mechanism." In this connection, I want to say that the most encouraging thing about the meeting was the uniform high quality of the papers given by graduate and undergraduate students--the judges awarding the prizes had a difficult task before them! This augurs well for the future of arachnology.

Field trips were organized to the Smoky Mountain National Park and the Cumberland Plateau for Saturday and Sunday.

Again, many thanks to SUSAN REICHERT for a memorable meeting, and to her small army of UT "redshirts" who took care of every detail.

Abstracts Of Papers From From Knoxville

SYMPOSIUM: WEBS AND BEHAVIOR

William Shear, Organizer

CARICO, James E.
WEB REMOVAL PATTERNS IN ORB-WEAVING SPIDERS
Department of Biology
Lynchburg College

Web removal, a long-ignored but important part of the behavioral repertoire of orb-weaving spiders, is discussed. Two principal patterns are described. First is the "slow pattern" in which usually 3-5 sectors are removed each time the spider moves from the hub to the periphery. This activity, which resembles a pass of a "snow-plough", and is repeated several times, leaves the frame lines intact and simultaneously puts the first new radii in place. The second, or "quick pattern", resembles the raising of a "window shade" when the spider cuts the lower frame threads and collapses the entire web upwards against the bridge. The bridge, with the collapsed web, is then removed leaving, at most, a "Y-shaped" pattern of drag-lines that may be used as the basis for the next web. Other patterns that occur in unusual webs are also discussed.

The cyclic nature of web building in orb-weavers is described and emphasized with web removal as an essential component. It is therefore important that descriptions of web construction should also include a description of the removal phase to complete our knowledge of this important and interesting behavior in orb-weaving spiders.

CODDINGTON, Jonathan
WEB ARCHITECTURE IN RAY SPIDERS AND RELATED ARANEOID TAXA
Department of Zoology
Harvard University

Changes in the architecture of theridiosomatid orb-webs suggest a formal definition of an orb-web to be used in other araneoid families. Behavioral evidence for interfamilial relationships is evaluated.

COYLE, Frederick A.
THE ROLE OF SILK IN PREY CAPTURE BY NON-ARANEOMORPH SPIDERS
Western Carolina University

A literature review and some new observations on the prey capture behavior and silk constructs of non-araneomorph spiders (Liphistiidae and Mygalomorphae) reveal that nearly all their prey are captured at or close to the entrance of a tubular silk retreat and that portions or extensions of this retreat often help to detect and locate prey by extending the range of substrate vibration receptors located on the pedipalps and legs.

Trap doors, which serve primarily for protection, are plesimorphic within the Liphistiidae, Ctenizidae, Migidae, and Barychelidae . The loss of trap doors by several taxa within some of these groups, the evolution of double-door strategies in the Migidae, Actinopodidae, and Barychelidae, and the attachment of prey detection devices to the entrance rim are more easily understood in light of experimental evidence that trap doors reduce prey capture effectiveness. The presentation of substrate vibration stimuli to capture-ready antrodiaetid spiders revealed a significantly greater ($P < .05$) prey capture effectiveness (as measured by the percent of stimuli resulting in accurate strikes) for the collar door spider, Antrodiaetus unicolor, than for Aliatypus trap door spiders. The propensity to strike and the strike accuracy are significantly lower ($P < .01$) for Aliatypus than for A. unicolor at the dorsal sector of the entrance where the trap door is hinged, but not at the ventral sector. Apparently Aliatypus is genetically programmed to be very reluctant to strike at substrate vibrations near the hinge because the hinge decreases the chance that a strike will be successful.

Extensions of the spider's prey-sensing area by extending the entrance rim or by attaching pieces of litter or radiating silk lines to the rim have evolved many times independently in several non-araneomorph families. Probably the diplurid, hexathelid, and mecicobothriid funnel and sheet webs, some of which are trapping webs, have evolved from such a system of silk signal lines radiating out from the entrance of a tubular silk retreat. It is suggested that the failure of non-araneomorphs to evolve more sophisticated aerial webs may be due in part to the limitations imposed upon prey capture and water conservation by paraxial chelicerae and book lungs, respectively.

EBERHARD, William G.
WEBS AND BEHAVIOR AS TAXONOMIC CHARACTERS IN ORB-WEAVING SPIDERS
Dependencia de Biologia
Universidad de Costa Rica

Some details of orb web construction and attack behavior are evolutionarily conservative and appear to be useful in defining subfamilies and families and determining their relationships. The patterns of distribution of these characters among at least 148 species in at least 55 genera agree in general with classical taxonomic schemes based on adult morphology. The data suggest that convergent evolution of orb webs may have occurred in two lines (uloborids and araneoids). They also indicate that several previous proposals regarding the evolution of orb weavers and their webs may be incorrect. Certain behaviors appear to constitute autapomorphies for Uloboridae, Nephilinae, and Araneinae, while others may be synapomorphies for Theridiosomatidae - Anapidae. Some characters in orb webs themselves may be useful in characterizing and distinguishing different genera.

JANETOS, Anthony C.
WEB-SITE SELECTION
Department of Biology
Princeton University

I have been studying the foraging behavior of some web-building spiders in order to answer the question: what are the behavioral mechanisms used to

exploit variable prey supplies and dependable prey supplies?

Orb-weavers (Araneidae) and sheetweb weavers (Linyphiidae) require different vegetation structures for web supports, but both catch flying insects randomly, and both eat similarly sized insects. However, the prey supply at typical araneid web-sites is extremely variable, while the prey supply at typical linyphiid web-sites is more consistent.

A significant consequence is the movement pattern of spiders among web-sites. In old fields, orb-weavers have a short average residence time at a web-site, and the distribution of residence times is significantly non-random. Orb-weavers either move quickly or stay at a web-site for a long time. Field data and laboratory experiments suggest that spiders stay if they catch enough prey in their first day; otherwise they move.

The residence times of the Linyphiidae are virtually identical to those expected from random movement, although the average is longer than that of araneids. If one thinks of spiders as searching for a profitable place to hunt, then araneids are active searchers, while linyphiids are sit-and-wait predators.

The cost of moving to a new web-site fits into these general patterns. The smaller sheetweb weavers invest proportionally much more silk in their webs and do not recycle silk. Araneids use much less silk in their sticky snares, and recycle the silk by eating the web at the end of the day. Thus the linyphiids pay a very high cost for moving to a new web-site; araneids pay a low cost.

Linyphiids in a lowland woods follow the same sit-and-wait strategy as their relatives in old fields. The lower insect abundance in the woods makes web-site bonanzas rare, and woods araneids converge on a sit-and-wait strategy.

There may be a general association of a sit-and-wait strategy with dependable prey supplies and an active foraging strategy with variable prey supplies.

LUBIN, Y. D.
VARIATION IN ULOBORID WEB STRUCTURE AND SPECULATIONS ON THE ADVANTAGES OF COMPLEX VERSUS REDUCED WEBS
Smithsonian Tropical Research Institute
Balboa, Rep. Panama and Charles Darwin Research Station, Galapagos, Ecuador

Most uloborids construct orb webs superficially like those of araneids, the most obvious differences being the presence of a cribellar silk spiral instead of the araneid sticky spiral. The modifications of the basic uloborid web structure and the diversity of web types within the Uloboridae are less well known than in the Araneidae. In this paper I bring to attention some of the variation that exists in uloborid webs and raise questions concerning economies in the use of silk in uloborids. Two examples are given: (1) an orb-plus-cone web whose complex construction involves building two orb webs and takes about 3 hours to complete, and (2) a reduced web with one or few sticky (cribellar) threads. Sticky-trap experiments simulating single- and multiple-thread webs indicate that reduced visibility may be an important factor in the evolution of reduced webs. Considerations of the use of silk in web construction and prey capture behaviour leads one to speculate on the importance of anti-predator adaptations in the evolution of uloborid webs.

MASTERS, W. Mitch and Hubert Markl
TRANSMISSION OF VIBRATION SIGNALS THROUGH SPIDER ORBWEB
Fakultat fur Biologie
Universitat Konstanz
D-7750 Konstanz
Germany

Vibration transmitted through an orbweb (perhaps from prey trapped in the catching region of the web or from a courting male) can be divided into three main components: (a) transverse vibration perpendicular to a radial strand and perpendicular to the plane of the web, (b) lateral vibration perpendicular to the radius and in the plane of the web, and (c) longitudinal vibration parallel to the radius. Two measuring techniques (laser Doppler vibrometry

and a new optical position-sensing system) were used to measure transmission of these three components in loaded and unloaded orbwebs of Nuctenea sclopetaria. In the unloaded web (that is, one containing neither spider nor prey) longitudinal vibration is transmitted to the hub with less attenuation than transverse or lateral vibration -- usually only 1 to 3 dB over the frequency range measured (1-10,000 Hz), sometimes with amplication in the kilohertz range. In contrast, the other two vibration types are attenuated by at least 10 dB, and usually more as the frequency increases. Longitudinal vibration also provides more information on the direction of the source of vibration from the hub than do the other two types. Preliminary measurements of the vibration signals transmitted to the (empty) hub by prey trapped in the catching zone of the web show that the vibration amplitude is greatest in the range below a few hundred Hz. but that there is signal energy at frequencies higher than 1kHz, and for longitudinal vibration we occasionally measure energy up to about 10 kHz.

RIECHERT, Susan E.
SPIDER CONFLICT OVER WEB-SITES: HABITAT QUALITY ASSESSMENTS
Department of Zoology
University of Tennessee

Agelenopsis aperta (Gertsch) shows within and between population variation in the levels of persistence and escalation it exhibits in conflicts over webs and associated territories. These differences are correlated with variation in habitat quality. They do not appear to be correlated with the quality of the web itself (e.g., web size and state of repair). The cues Agelenopsis uses in selecting web-sites are delineated: 1) shade and temperature in locating a suitable thermal environment; 2) chemical cues in locating areas of prey activity. The territory owner is also shown to monitor prey availability during the course of its residency at a site and to utilize this information in its persistence and escalation "decisions".

TIETJEN, William James
SOCIAL SPIDER WEBS WITH SPECIAL REFERENCE TO THE NESTS
OF MALLOS GREGALIS
Department of Biology
Georgia College

Various authors have suggested that the cooperative activities of nestmates in the building of communal web complexes is an important factor in explaining the evolution of social behavior among the Araneae. Not only do these constructions allow for more efficient prey capture, but also they provide a potential for organizing the behavior of colony members. Mallos gregalis is used as the primary example to show how several cues associated with the web might aid in coordinating colony activities. Such cues include, but are not limited to chemical communication, vibrational signals and position-dependent effects which may alter individual behavior patterns. The use of the web in subduing prey and in possible prey attraction is discussed as well as problems that are associated with large web structures. Such problems include attraction of predators and sanitation-related consequences in nests that are utilized over long periods of time. Data concerning the structure of natural webs, structure and growth of laboratory webs and environmental buffering effects of the web are also presented.

UETZ, George W.
WEB-BUILDING AND PREY CAPTURE IN THE COLONIAL ORB WEAVER,
METEPEIRA SPINIPES (ARANEAE: ARANEIDAE)
University of Cincinnati

An orb web building spider found in Mexico, Metepeira spinipes, occurs solitarily, but more frequently occurs in aggregations of 5-150 or more individuals. Although colonial, each individual maintains a web and retreat within the colony, and captures its own prey. Aspects of the behavior and ecology of this species were studied during several trips to Mexico in 1978 and 1979.

Web-building in Metepeira spinipes occurs during the night and in the early morning hours. The daily rhythm of activity is the same for solitary and colonial individuals. Nightly destruction and ingestion of the catching spiral are followed by construction of a new spiral. This process has several discernable phases and takes several hours to complete. It is during the web construction phase that most agonistic interactions between colonial individuals occur. As a result, web spacing, orientation and location vary within and between colonies and over time. Spacing patterns suggest that these spiders tolerate conspecifics at closer distances than if individual web units were merely attached to each other. Analysis of spatial distribution of spiders shows much variance in within-colony dispersion, including random, aggregated and overdispersed patterns.

M. spinipes colonial webs may allow this species to occupy sites at the top of Agave plants or between branches of Opuntia; sites to which other (solitary) spiders may not have access. It is possible that web complexes are architecturally more stable than solitary webs, and better able to withstand wind and rain encountered in open microhabitats. Spiders occupying these sites may also have access to kinds of flying prey not present in other microhabitats.

The increased prey knockdown effect of grouped webs may allow colonial individuals a higher prey capture rate than solitary spiders. An explanation for this may lie in the fact that a sizeable proportion of the prey captured in M. spinipes web colonies consists of insects deflected from other spider's webs. In observing the fate of insects flying into web colonies, it was noted that those captured after striking and escaping from several webs (5-10%) were significantly larger in size. The knockdown effect of grouped webs may thus contribute prey of greater biomass than that typically available to solitary spiders.

SYMPOSIUM: SPIDER PREDATION:
OPTIMAL FORAGING AND PREY POPULATION SUPPRESSION

Matthew Greenstone, Organizer

GREENSTONE, Matthew H.
OPTIMAL FORAGING AND INSECT POPULATION
SUPPRESSION - A SYNTHESIS OF MODELS AND DATA

If optimal foraging models are valid they should enable us to predict the individual and population-level responses of spiders to change in prey population densities. Models of feeding behavior with respect to food availability, food quality, and habitat patchiness are reviewed and their predictions compared with empirical data on functional and numerical responses and the impact of spiders on prey populations.

All web and wandering spider species tested in the field or laboratory show classical type I or type II (respectively) functional responses to the availability of single prey species. However, field data from a complex system show that single-species functional responses may bear no relationship to responses to the same species in the field for these polyphagous predators.

Most spider populations have behavioral mechanisms which confer strong population homeostasis and thereby prevent significant numerical responses to fluctuations in prey populations. However, some spider populations do show numerical responses to prey populations. Whether or not they do may depend upon the predictability of prey availability, habitat patchiness, and the extent to which the spider is dependent upon featuares of the habitat.

The pitfalls of component analyses of predation, and their failure to predict reported cases of significant impact of spiders on prey populations, are discussed.

JANETOS, Anthony C.
Department of Biology
University of Utah

FORAGING TACTICS OF WEB-SPINNING SPIDER GUILDS

A simple theoretical analysis provides insight into the movement tactics of web-spinning spiders. Spiders that leave web-sites frequently will have higher food intake depending on three parameters: the difference between good and poor web-sites, the cost of moving between web-sites and the efficiency of the decision rule.

This insight has been used to analyze the foraging tactics of orbweavers (Araneidae and Tetragnathidae) and sheetweb weavers (Linyphiidae) in old fields in New Jersey. Field data uphold its qualitative predictions. However, several accounts in the literature refer to web-spinning spiders that leave web-sites and re-establish themselves elsewhere. I review these studies to determine whether the simple theory has general applications or if significant modifications are needed.

Variation in foraging tactics within guilds can be partitioned in two ways: within or between species. I examine field data for evidence of correlation between the type of partitioning and foraging tactics. Implications for coexistence and competition are discussed.

Finally, I discuss shortly the connections between life-history characteristics and foraging tactics. The selective forces acting on each are seen to be extremely complicated, and no totally satisfactory arguments can be made at this time.

Galecka, Z. B., A. KAJAK, and J. Uchmanski
Institute of Ecology
Poland

SIMULATED PREDATION ON APHIDS

It has been found in laboratory raised Myzus persicae Sulz. populations that the decrease in number of instar 4 determines the number of females and the abundance of the next generation. This has been confirmed by removal experiments. The removal of mostly this instar, had a greater effect on the abundance of the next generation than the removal of earlier instars. It is concluded that spiders, which mostly prey upon adults, can have an important effect on the abundance of the next generation.

LUCZAK, J. and E. Dabrowska-Prot.
Institute of Ecology
Poland

THE EFFECT OF DIFFERENT ECOLOGICAL CONDITIONS ON INDIVIDUAL FOOD RATIONS OF SPIDERS

Under the conditions of field experiments, investigations were carried out on the changing amount of individual food rations (mosquitos) of two ecologically different spider species. The following evaluations of the effect on the food ration size were made: of prey density and subsequent changes of prey dynamics in the environment. Differences in the predatory activity/efficiency on such types of prey of two spider species were evaluated.

MANSOUR, Fadel
Agricultural Research Organization
Israel

SPIDERS AS BIOLOGICAL CONTROL AGENTS OF INJURIOUS INSECTS IN ISRAEL.

Egg masses of the Egyptian cotton leafworm Spodoptera littoralis (Boisd) were attached to foliage of unsprayed apple trees in the experimental orchard of the Research Station at Newe Ya'ar. Daily observations indicated that exposed young larvae of S. littoralis did not cause any significant damage, whereas spiders were seen preying upon them. These observations led to the supposition that spiders are predators of some practical value.

A survey of spider populations was carried out all the year round in both unsprayed and pesticide-treated apple orchards. The spiders collected from apple trees were reared individually to maturity and identified.