# AMERICAN ARACHNOLOGY

*The Newsletter of the American Arachnological Society*

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## 1992 A A S MEETING

The 1992 Annual AAS meeting will be held from 22-27 June at St. Anselm College, Manchester, N.H. and will be hosted by Dr. Craig S. Hieber. Registration information for the meeting has been mailed separately to all members of the AAS. The deadline for registration is 1 May, after which there is a late registration fee. Abstracts must be received by 15 May. If you wish to attend the meeting but have not received information, please contact Dr. Hieber, Department of Biology, St. Anselm College, Manchester, New Hampshire 03102; office telephone (603) 641-7149; USENET chieber@anselm!dartvax; home telephone (603) 497-8837.

St. Anselm College is located on 350 acres of property which includes tracts of white pine, hardwood, and mixed forest; old fields, fencerows, a cattail swamp, beaver ponds, wet meadows, and small creeks. Several state parks and the ocean coast are within one hour's drive and the White Mountain National Forest is one-and-one-half hours away.

The meeting's tentative calender follows:

22 June: Registration and evening social.

23 June: Registration, afternoon paper session, evening films and videos.

24 June: Morning and afternoon paper sessions, evening social.

25 June: Morning paper session, afternoon free, evening banquet.

26 June: Morning and afternoon paper sessions, afternoon business meeting.

27 June: Field trip to an outstanding New Hampshire site.

Manchester is served by US Air, United Airlines, and Delta Air Lines, as well as a number of affiliated connectors to Boston's Logan Airport. St. Anselm College is a short cab ride from the airport. Student dorm housing will be available in St. Anselm College facilities. Dining facilities are available on campus and there are several cafes and fast food restaurants within walking distance of the campus.

### IN THIS ISSUE



AMERICAN ARACHNOLOGY is the official newsletter of the American Arachnological Society and is distributed twice a year to members of the society. Items for the newsletter should be sent to the editor, Brent D. Opell, Department of Biology, Virginia Tech, Blacksburg, Virginia 24061, U.S.A. (Bitnet address: Uloborid@VTVM1. Deadline for receipt of material for the fall issue is 10 September and for the spring issue 10 March. All correspondence concerning changes of address and information on membership in the American Arachnological Society should be addressed to the Society's membership secretary, Norman I. Platnick, American Museum of Natural History, Central Park West at 79th Street, New York, NY 10024, U.S.A. Members of the Society also receive the JOURNAL OF ARACHNOLOGY, which is published three times each year.

## SOCIETY ELECTIONS

Two positions must be filled this year: one director and the treasurer. A nominating committee chaired by Jon Reiskind and including John Anderson, Jim Berry, and Paula Cushing has selected as candidates for director Pat Miller and Jackie Palmer and as candidate for treasurer Gail Stratton. A tear-out ballot appears on page 3 of the newsletter and should be mailed to Jon Reiskind by 25 May.

## NOTICES AND REQUESTS

### SUMMER COURSE ON BIOLOGY OF SPIDERS

The Highlands Biological Station, Highlands, North Carolina, has announced that the course "Biology of Spiders" will again be offered in the summer of 1992, from July 27th to August 7th. The course is taught by Fred Coyle (Western Carolina University) and Bill Shear (Hampden-Sydney College). "Biology of Spiders" can be taken on a credit or non-credit basis; credit is granted through Western Carolina University or UNC-Chapel Hill. Typical classes in the past have included amateur arachnologists, graduate and undergraduate students, and college and secondary school faculty. Though daily lectures and several evening seminars and film sessions are presented, the emphasis is on field work and gaining a knowledge of the extraordinarily diverse local fauna. Daily field trips include high-altitude Canadian Zone peaks, virgin cove forests, successional habitats (old fields, pine woods) and the lower Austral of the South Carolina Piedmont. Unusual families encountered include Lyssomanidae, Antrodiaetidae, Ctenidae, Leptonetidae, Nesticidae, and many others. Students amass a take-home personal collection of spiders, identified using an extensive, computer-indexed library of books and articles and a synoptic collection of local species. Locality data is recorded on a computer as well, and preprinted labels generated. All supplies and equipment, including high quality microscopes, are provided. The Highlands Biological Station is located in Highlands, North Carolina, near the borders of Georgia and South Carolina, at an elevation of 1,170 m (3,510 ft). Nearby peaks reach 1,525 m (4,575 ft) and access to peaks over 2,166 m (6500 ft) is easy. Highlands is near the escarpment of the southern Blue Ridge, surrounded by National Forest Lands and several Wild and Scenic Rivers, which have cut spectacular, waterfall-punctuated gorges in the escarpment. The immediate area has been documented as the most biologically diverse in eastern North America. The station offers comfortable accommodations at very low prices, and also maintains an extensive botanical garden, nature center, and the Appalachian Environmental Arts Center. Some financial aid may be available for qualified students. If you are interested in taking "Biology of Spiders in 1992, please contact Dr. Richard Bruce, Highlands Biological Station, PO Drawer 580, Highlands NC 28741 USA.

### SPIDER CAMP

By: Marianne B. Willey
Department of Entomology
Clemson University
Clemson, SC 29634

My father is an English professor, and he has had to endure the trauma of having a daughter who decided to "play with spiders" for a living. Poor Dad has had to learn to sound proud when, as his colleagues all brag about their kids being doctors, lawyers, and the like, he announces that his daughter watches spiders mate. I believe Dad thought the worst was behind him until the summer of 1990. This was the summer that all his friends boasted about their kids internships, promotions, etc., and Dad had to announce that his daughter was attending "Spider Camp." To me, Spider Camp made perfect sense. I could not imagine anything more wonderful than spending two weeks at the Highlands Biological Station, in Highlands, North Carolina, studying spiders under the guidance of Drs. Fred Coyle and Bill Shear. The course, Biology of Spiders, consisted of lectures, laboratories, and field trips. The lectures, delivered by a very enthusiastic Dr. Shear, covered an amazing array of material. Some of the many topics discussed included physiology, neurobiology, ecology, behavior, and taxonomy. In addition, Dr. Coyle gave a great talk on African mygalomorphs, and Dr. Joe Beatty delivered a guest lecture on Pacific island spiders. After lectures, we went on field trips and collected

spiders in such beautiful places as Joyce Kilmer Memorial Forest, the Chattooga River Gorge, and the Blue Ridge Parkway. The only thing more spectacular than the scenery was the spiders. We collected spiders from every conceivable habitat - under stones, on rocky outcrops, in bogs, in cracks and crevices of buildings, and even underground. By the end of the course, I had collected 69 different species representing 22 families. Evening laboratories were devoted to identifying the spiders we collected, and many of these sessions extended long into the night. Tourists at Dry Falls stared curiously as Dr. Coyle frantically dug into the ground in pursuit of *Antrodiaetus unicolor*, and Dr. Shear pointed out *Hupochilus pocoki* and Theridiosoma gemmosum on the rocky ledges surrounding the falls. Picking favorites from all the spiders I observed throughout the two weeks is difficult. However, I was particularly fond of *Hahnia cinerae* (Hahniidae) with its transverse row of spinnerets; the tiny, delicate *Ceratinopsis interpres* (Linyphiidae); *Nesticus sheari* (Nesticidae) with its elaborate palps; the ant mimicking *Sarinda hentzi* (Salticidae); and *Hyptiotes cavatus* (Uloboridae) with its triangular web. My appreciation of the beauty and wonder of spiders was enhanced through my interactions with the enthusiastic instructors and other students. In addition to learning an incredible amount of spiders, I made some very close friends. I will always cherish the two weeks I spent studying the Appalachian spider fauna, and I strongly urge anyone interested in these amazing animals to attend Spider Camp 1992!

## AMERICAN TARANTULA SOCIETY FORMED

The American Tarantula Society has recently been formed. Annual membership is $15.00 and should be sent to: Dr. Robert G. Breene, III, P.O. Box 3594, South Padre Island, Texas 78597. Information on the society and instructions for contributing authors for both the Forum and the Journal is available from: Barbara H. Moore, 11217 Fogelson Court, Indianapolis, Indiana 46229.

## SPIDER GENERA OF NORTH AMERICA

Copies of Vincent Roth's Spider Genera of North America are now on sale for $8.00 per copy. Checks should be made payable to the American Arachnological Society and sent to: Dr. Jon Reiskind, Department of Zoology, University of Florida, Gainesville, Florida 32611.

## 1992 A A A ELECTIONS

Vote for one candidate for each office by either placing an X on the line before a name or by writing the name of another person in the blank provided.

BOARD OF DIRECTORS: _____ Pat Miller

_____ Jackie Palmer

_____

TREASURER: _____ Gail Stratton

_____

Mail this ballot by 25 May to:

Dr. Jon Reiskind
Department of Zoology
University of Florida
Gainesville, Florida 32611

## BACK ISSUES OF AMERICAN ARACHNOLOGY ON SALE

Back issues of American Arachnology normally sell for $2.00 per copy. Only No's 19 and onward are currently available. Sixteen complete sets of issues 19 (May 1979) through 39 (April 1989) are now available at a cost of $1.00 per issue when purchased in the following 10 or 11 issue sets: SET 1: No's 19 (May 1979) - 29 (May 1984) (smaller format issues) and SET 2: No's 30 (Nov 1984) - 39 (Apr. 1989) (larger format issues). These sets are available on a first come, first served basis and the $10 cost of each includes postage. Your order must be accompanied by a check made payable to the American Arachnological Society and sent to: Brent Opell, Department of Biology, Virginia Tech, Blacksburg, Virginia 24061.

## BOOK REVIEW

By: Vincent D. Roth
Box 136
Portal, Arizona 85632

Southern African Spiders, An Identification Guide by Martin R. Filmer. Struik Publishers, Cornelis Struik House, 80 McKenzie St., Cape Town 8001, Republic of South Africa. 1991, 128 pp., 69 color plates including a few other local arachnids and about 170 line drawings. Cost of book 39.00 Rand (about $16.00 U.S.).

This is an excellent guide which covers all the families and a few of the genera of spiders in South Africa and adjacent countries. It has a unique method of using symbols to indicate lifestyles, habitats, collecting methods, medical status and silhouettes of tiny, very small, small, etc., showing different size groups of spiders. A good introduction is presented covering morphology, reproduction, growth, lifestyles and habitats, spider silk, venoms, and collecting spiders. A few paragraphs are given for each family or subfamily, and occasionally for a distinctive genus with sufficient information for someone with a magnifying glass to identify it in the field. This guide was designed for the serious amateur and the author was successful.

I would recommend it to any arachnological visitor to Southern Africa. It replaces Lawrence's our-of-date (1964) Conspectus of South African Spiders and updates the systematics of this group of animals. It would have been an excellent introduction to South African spiders for our recent visit. As it was, I worked hard to get the information now readily available in the guide.

There are very few errors and only a few changes I would make. Perhaps the resurrection of Prodidomidae occurred too late for inclusion, but Metidae and Nephilidae should have been

placed in Tetragnathidae and Armored Spiders have been known as the Tetrablemmidae and Pacullidae, not Zodariidae.

Martin Filmer is an accomplished hobbyist whether he delves into auto racing, trains as a magician, plays at ornithology, switches into homeopathy or studies arachnology. He accomplished his goal and with acknowledged help put out a beautiful book. I only regret that his son Rob, Naturalist at the Blyde River Nature Reserve to whom this book is dedicated cannot see it -- he is blind.

## NEWS FROM THE CHRISTCHURCH (NEW ZEALAND) SPIDER LAB

By: **Robert R Jackson**
Department of Zoology
University of Canterbury
Christchurch 1 NEW ZEALAND

Lots of exciting spider news from down here. I have been thinking for years that I should write up a summary for the Newsletter, but somehow good intentions never seem to be enough. It took a request from Al Cady to stir me into finally doing this. When not busy teaching and doing all the other things an academic position entails, it is the spider lab that keeps me busy. The "lab": an ever changing assortment of students, postdocs, visitors, collaborators and fellow travellers. I'll try to give a quick overview of what some of us are doing.

Our research projects are diverse, but there are several themes that stand out: intraspecific communication (courtship, display behaviour, pheromones, etc), conditional strategies (courtship versatility and predatory versatility), aggressive mimicry (in particular, spiders that deceive and eat other spiders), and antipredator behaviour (especially mechanisms by which spiders defend themselves from predation by other spiders). The following is a brief summary of some of themes and subthemes in this research program.

AGGRESSIVE MIMICRY. The impetus for work on aggressive mimicry was the serendipitous discovery that a tropical Australian salticid, *Portia fimbriata*, is behaviorally specialized at catching and eating other spiders: it invades other spiders' webs where it makes vibratory signals that deceive its victims. *P. fimbriata's* game of deceit, in which it broadcasts misinformation interspecifically to potential prey ("aggressive mimicry") has formal similarities to intraspecific communication: a sender (mimic) produces a signal which indirectly manipulates a receiver (prey).

Initial work on *Portia fimbriata* expanded into a research program on aggressive mimic spiders, and has led to the study of many additional aggressive mimics, including four other species of *Portia*, some other salticids from genera closely related to *Portia*, and some additional spiders from other families (Gnaphosidae, Pholcidae, Mimetidae, Theridiidae). Study of aggressive mimic spiders interfaces with our interests in communication and conditional strategies because aggressive mimic spiders tend to use large repertoires of aggressive mimicry displays and adopt complex conditional strategies. The genus Portia is the most distinctive. In addition to being a web-invading aggressive mimic, Portia uses some very different feeding tactics, including building its own prey-catching web and stalking insects while completely outside webs. Also, Portia is exceptional because it is able to prey efficiently on a remarkably wide range of victims. The key to Portia's success is being able to derive different signals appropriate for deceiving each victim.

COLLABORATIVE WORK WITH STIMSON WILCOX ON THE PREDATORY STRATEGY OF PORTIA. The question of how *Portia* is able to exploit such a wide range of prey, and generate so large a repertoire of effective tactics, became the impetus for a collaborative research program with Dr Stimson Wilcox (SUNY at Binghamton, N.Y., USA). We have been using a computer-based signal recording, analysis and playback system: a vibratory signal can be recorded, stored digitally, analyzed by computer, retrieved and configured digitally for playback, then played back through a power amplifier - all within a few minutes in the field or the laboratory. We have worked in the field in Sri Lanka and Australia (Queensland and the Northern Territory), and Stimson has come over to New Zealand to work in the lab a couple of times. His next visit will be March to July next year.

This collaborative work has been some sort

of wild and wonderful adventure for both of us. Portia keeps startling us by the complexity of its behavior, and Stim has an uncanny way of always asking questions that blossom into new research programs. Marianne Willey Marianne Willey took a leave of absence from her PhD studies in the Entomology Department at Clemson University (South Carolina) and joined the spider lab here for about 6 months last year. And what an exciting 6 months of research it was! I will not try to summarize all the things she worked on while here, except to note that she now has a huge colony of New Zealand spiders in Clemson and will be including work on New Zealand spiders in her thesis.

CURRENT GRADUATE STUDENTS IN THE SPIDER LAB. Mary Whitehouse is finishing her PhD work on *Argyrodes antipodiana.* These wee kleptoparasites are remarkably plastic in their behavior, and how something so minute as an Argyrodes brain can account for this animal's behavioral repertoire keeps me awake at night. And Mary's skill at working out the details of this minute, specialized spider's behavior in the laboratory continually humbles me.

Phil Taylor: PhD student and the newest member of the lab. Phil's study animal, *Trite planiceps*, is a handsome salticid that appears to be specialized for life on New Zealand flax and cabbage trees. Phil is busy developing an unique study of the interrelationship of this species' intraspecific communication and antipredator adaptations.

Michael Tarsitano, having come over here from Terry Christenson's Tulane spider lab, has just completed writing his Masters thesis. With his own unique style of straddling biology and psychology, Michael examined how *Portia* and other salticids solve detouring and confinement problems. This had led Michael to some interesting insights into why *Portia's* predatory repertoire is so complex.

Catherine Depree, a Masters student, is learning lots of interesting things about how salticids learn to avoid noxious prey (e.g., ants) and the cues by which salticids discriminate between prey and non-prey. That's right: learning. Salticids are not just automatons. Learning is an important part of a salticid's life.

Robert Clark, another hard-working Masters student, is investigating how Portia uses pheromones and other chemical cues during interactions with other Portia. Although Robert has only just begun, there are some exciting developments already from his research.

Andrew McLachlan has the distinction of being the current student with the most glamorous study site. He is working on gradungulids for his MSc, gradungulids being four-lunged araneomorphs. He is especially interested in *Spelungula*, a large cave-dwelling gradungulid. Andrew's study sites are in the rain forests of the fabulous West Coast of the South Island. Spelungula is pretty special too. This handsome animal has the distinction of being New Zealand's only protected spider.

FORMER MEMBERS OF THE SPIDER LAB. There is no way I can mention them all, because there have been so many. However, I should mention three who are now in North America. Simon Pollard completed his PhD last year. He worked out the details of how a thomisid spider's feeding mechanism influences its postcapture feeding strategy. Simon has the distinction of being my first student to publish all of his work before his thesis went to the Library. He is now taking up, successively, three postdoctorals: Virginia (U.S.A), Alberta (Canada), and Cambridge (U.K). Simon was an undergraduate when I came to New Zealand from America many years ago. Christchurch without Simon sure is a strange sensation. But hopefully lots of arachnologists in the Northern Hemisphere will now have the pleasure of getting to know Simon.

Beth Jakob and Adam Porter were here on Fulbright Postdoctoral Fellowships about a year ago. They came here from California and worked on problems related to speciation in salticids. Also, Beth got me interested in Holocnemus pluchei, and from there...more irresistible research projects. Everybody here wishes Beth and Adam could have stayed longer, but they are starting their new jobs at Bowling Green University (Ohio). Lucky Bowling Green!

Fellow travellers I should mention two. Allen Rodrigo did his PhD at Canterbury, but he worked in parasitology instead of in the spider lab. His interests, however, broadly span topics in phylogeny and biogeography, and he seems to have a persistent attraction to spiders. Allen is now at the University of Auckland, and we keep working together on spider-related research. Mark Moffett spent a lot of time with us in the

field and the lab a few years ago. Mark, who did his PhD at Harvard on ants (working with E.O. Wilson), is now a writer-photographer for National Geographic Magazine. He really likes spiders and we think of him as an honorary member of the spider lab. Check out the September 1991 issue of National Geographic for a sample of his spider photography.

## DNA IN ARACHNOLOGY: UPDATE FOR YEAR 1992

By: Victor Fet
Department of Biological Sciences
Loyola University
New Orleans, LA 70118

Not simply a fashion drives a systematist to sequence and compare genes. Availability of molecular techniques was made possible by biomedical sciences, and receives such an enormous development now that organismal zoologists are naturally considering data coming from DNA. Though costly, in a few years these techniques will become routine. Manuals exist mostly for developed biomedical labs; to find good protocols and to use them requires a lot of lab experience. Nevertheless, molecular taxonomy and systematics gained their own momentum since late 1980s, mostly with what is now known as an "advent of PCR".

For systematic arachnologists, the perspective is now visible, and the question is which genes to select for comparative studies and which techniques to use. In this essay I will briefly review the state-of-the-art in DNA applications to evolutionary biology, concentrating on mitochondrial DNA (mtDNA), and referring to the most recent technical literature. I also will provide information about people who are now working in the area of arachnid DNA, and are interested in the extensive contacts with colleagues. I am grateful to Pierre Bougis, Philip Brownell, Rosemary Gillespie, Marshall Hedin, Randolph Lewis and Deborah Smith who kindly responded to the "arachnid DNA poll". I wish to use this opportunity to thank those people who introduced me to the modern DNA techniques: Brigid L. M. Hogan, Shintaro Nomura, Karen Lyons, Mike Jones, Ron Pelton and Nathan Shiff. This review mentions experiments which were supported by Theodore Roosevelt Memorial Foundation, Loyola University and American Heart Association of Louisiana.

Intro to Mitrochondrial DNA Analysis.

Animal mtDNA was found to be an excellent genetic marker for phylogeography, i.e., study of DNA "genealogies" among geographically structured populations (Avise et al. 1987; Moritz et al. 1987; Simon et al. 1991). The mtDNA molecule is relatively small, does not have introns, and is not subject to genetic recombination. It is maternally inherited in animals. Extensive nucleotide-sequence heterogeneity often occurs within the same species, and is studied by analysis of restriction fragment length polymorphism (RFLP). Analysis of mtDNA is believed to be a more reliable indicator of a species history than analysis of variation in other characters; mtDNA clones (=haplotypes or nucleomorphs) often produce a "high historical biogeographic signal". For example, 42 composite mtDNA haplotypes, within three species of Onychomys grasshopper mice, occur in at least five discrete geographical subsets that correspond to five areas of endemism (Riddle & Honeycutt 1990). The degree that mtDNA phylogeographic differentiation occurs is a function of gene flow. MtDNA analysis is an alternative to the traditional study of allozymes. Segregation and recombination during sexual reproduction makes allozyme analysis of genealogies almost impossible. In some animals, the pattern of distribution of mtDNA clones is highly concordant with izosyme differences, e.g., in rodents. Other cases (e.g., the American oyster) show striking differences between distinctly grouping mtDNA clones and nearly uniform nuclear (allozyme) allele frequencies. MtDNA analysis is also an effective tool to investigate hybrid zones.

The common way to study differences between populations in mtDNA clones is to perform an RFLP analysis. MtDNA is isolated from an individual's mitochondria-rich tissues (e.g., muscles or liver). Small aliquotes of purified mtDNA are digested by different restriction enzymes (endonucleases that cut DNA in a very specific "site", i.e. combination of nucleotides). DNA fragments are revealed by Southern hybridization or visualized on a gel. Comparison of restriction data is usually performed either through pairwise genetic distance approach (followed by UPGMA cluster analysis) or cladistically, because presence/absence of

restriction sites can be treated as independent cladistic characters. Dollo parsimony algorithm available in PAUP program (Swofford 1990) was especially recommended for restriction site data which may be considered irreversible (to lose a site is much easier than to gain one). If direct sequence is performed, the resulting sequences are aligned and compared. Scores of problems and a lot of argument exists around phylogenetic analysis of molecular sequences. Few recent reviews may be recommended in this area (Felsenstein 1988; Swofford and Olsen 1990; Nei 1991).

Technical Advances and PCR

Screening of mtDNA RFLP from many populations is technically tedious and requires a (very expensive). ultracentrifuge. Also, extraction of the entire mtDNA molecule relies only on living animals (DNA should not be degraded). A new, highly efficient technique is available: polymerase chain reaction (PCR) (Arnheim et al. 1990, Innis et al. 1990). PCR is based on the selective enzymatic amplification of a certain DNA region flanked with two known conserved primers, and yields microgram amounts of sequence-specific DNA fragments in few hours. PCR may be employed not only with DNA from living animals, but on degraded DNA from alcohol-preserved specimens, dry skins, mummies etc. (making this technique priceless for studies of museum specimens). It is likely that PCR amplification and analysis of its products will rapidly replace traditional ways of analysis. Specific oligonucleotide primers that correspond to the conserved sequences in mtDNA exist (Kocher and White 1989; Simon 1991) and can be custom synthesized. Several labs have already used such primers to obtain data on spider and scorpion mtDNA (see below). I am now performing PCR/RFLP with primers based on 12S rRNA and control region sequences of Drosophila mtDNA which yield good PCR results for scorpions Centruroides exilicauda (=sculpturatus) and Hadrurus arizonensis. Procedures used in our lab include: (1) extraction of total DNA from individual scorpions (living or alcohol-preserved); (2) PCR of several regions of the mtDNA with specific primers; (3) RFLP analysis of different populations through the species range. This technique is an alternative to the traditional purification of the entire mtDNA molecule (Smith and Brown 1991; Solignac 1991; Croom et al., in press).

There are two recently published books on general techniques in molecular systematics (Hillis and Moritz 1990; Hewitt et al. 1991). In these books, protocols can be found which are rarely published in details in research papers. Moreover, protocol applications are discussed with regard to troubleshooting, the most precious methodical part of a beginner in a molecular lab. I have no doubt that we will see in next few years many works in our area based on described approaches. Dowling et al. (1990) give detailed descriptions and protocols of restriction enzyme analysis, and Hillis et al. (1990), of DNA sequencing. Solignac (1991) gives numerous protocols for mitochondrial DNA isolation from invertebrates. This technique, now routinely used for insects, recently was applied to scorpions by Deborah Smith (1991). Everybody who plans to work with PCR on mtDNA and thinks about suitable genes to use should read two very important papers by Simon (1991) and Simon et al. (1991) which discuss application of PCR to different mtDNA genes. Swofford and Hillis (1990) provide the best recently published review of phylogeny reconstruction techniques from molecular data. I would be glad to share info (bibliography, protocols, troubleshooting, etc.) with those in arachnological community who are interested to start DNA lab.

Who is Who (Poll Results)

The following information about current activities in arachnid DNA studies comes mostly from the results of a poll I sent around last fall. The response was pretty good, and I apologize if some labs were not involved because I was not aware of their work. I am sure that the small address list below will grow in the next couple of years. Only one lab from those who responded was overseas (France); the geography of the US labs includes Hawaii, Kansas, Louisiana, Missouri, Oregon, Tennessee, and Wyoming. Several labs work now in the field of population studies and low-level (species/genus) phylogenies obtained through mtDNA variation; they use (or plan to use) PCR, RFLP and direct sequencing of PCR products. Nuclear genes are also under consideration. The objects studied or under current study are spiders (*Tetragnatha:* H. Croom and R. Gillespie; *Anelosimus, Steatoda, Latrodectus*: D. Smith; *Nesticus, Eidmanella: M. hedin; Nephila, Microthene*: V. Fet) and scorpions (*Centruroides*: M. Hedin, V. Fet; *Hadrurus*: D. Smith, V. Fet). Deborah Smith

plans also to study mtDNA in vinegaroons and horseshoe crabs. References to mtDNA analysis in arachnids are not plenty and so far include: Vawter et al. 1988; Smith and Brown 1991; Croom and Gillespie 1991; Croom et al., in press; Poindexter and Fet, in press.

The other field of study involves nuclear genes and 'classical' molecular techniques with library screening, cloning (or PCR), sequencing and studies in gene expression. These are: spider silk genes *(Nephila, Araneus*: R. Lewis), scorpion toxin genes (*Androctonus*, Tityus: P. Bougis; see Bougis et al. 1989), and wonderful genes producing pheromone-binding protein in scorpions (*Paruroctonus*: P. Brownell and his grad student, Dylan Bulseco).

I do not have complete information about some other labs working currently with nuclear genes of arachnids. 18S rRNA of tarantulas (identified as spp. of *Eurypelma* and *Rhechostica/Aphonopelma*) and of a scorpion (Urodacus) were sequenced and published in general studies on arthropod phylogeny (Hendriks et al. 1988; Turbeville et al. 1991) (the last paper also has 18S sequences for a horseshoe crab and a tick). High-level systematics (family/order) of spiders based on 18S rRNA (nuclear) genes is under work at American Museum of Natural History by Cheryl Hayashi and Ward Wheeler (Wheeler, pers. comm.). Spider silk genes were also amplified by PCR and sequenced for *Nephila and Araneus* (Lombardi and Kaplan 1989; Beckwitt 1991). I would appreciate any further information on arachnid DNA studies.

Address List (with area of interest)

Henrietta B. Croom, Department of Biology, The University of the South, Sewanee, TN 37375: spider mtDNA genes for evolutionary studies.

Pierre E. Bougis, CNRS URA 1455, Biochimie, Faculte de Medecine Secteur Nord, Bd. Pierre Dramard, 13326 Marseille Cedex 15, FRANCE, tel. (33) 9169-8914, fax (33) 9165-7595: scorpion toxin genes.

Philip Brownell, Department of Zoology, Oregon State University, Corvallis, Oregon 97331-2914, ph. (503) 737-5343, bitnet BROWNELL @ CGRB.ORST.EDU: scorpion/arachnid genes for odorant/pheromone-binding proteins.

Randolph Lewis, Department of Molecular Biology, University of Wyoming, Laramie, Wyoming 82071-3944, ph. (307) 766-2147, fax (307) 766-5198: spider silk genes.

Victor Fet, Department of Biological Sciences, Loyola University, 6363 St. Charles Ave., New Orleans. Louisiana 70118, ph. (504) 865-2288, fax (504) 865-2149: scorpion/spider mtDNA for evolutionary studies; scorpion/spider toxin genes.

Marshall C. Hedin, Department of Biology, Washington University, Box 1137, One Brookings Drive, St. Louis, Missouri 63130, ph. (314) 935-6867, bitnet HEDIN @ WUSTLB (A. Templeton's lab): spider/scorpion mtDNA and nuclear genes for evolutionary studies.

Rosemary G. Gillespie, Department of Zoology, University of Hawaii at Manoa, Honolulu, Hawaii 96822, ph. (808) 956-8617: spider mtDNA genes for evolutionary studies.

Deborah R. Smith, Department of Entomology, University of Kansas, Lawrence, Kansas 66045, ph (913) 864-4340, bitnet MTDNA @ UKANVAX or DSMITH @ UKANVAX: scorpion/spider mtDNA and nuclear genes for evolutionary studies; also interested in Thelyphonida and Xiphosurida.

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Victor Fet, Department of Biological Sciences, Loyola University, 6363 St. Charles Ave., New Orelans, Louisiana 70118. ph. (504) 865-2288

## PETRUSEWICZ'S ESCAPE -- THE TALL AND THE SHORT OF IT

By: **Christopher K. Starr**
Department of Zoology
Univ. of the West Indies
St. Augustine
TRINIDAD & TOBAGO
and
**William B. Peck**
337 Xanthisma
McAllen, Texas 78507

Kazimierz Petrusewicz (1906-1982) was a Polish araneologist who branched out after World War II to become one of the main architects and managers of the Polish school of community ecology. It is well known that he was a member of a group of Communist partisans during the war. However, one of us (CKS) was surprised to hear a remarkable story about the partisan Petrusewicz from Frank B. Golley of the University of Georgia, one which seemed to call for some investigation.

Dr. Golley heard the story from Petrusewicz's widow, who had presumably gotten it from the main character himself. In summary (and third-hand), it goes like this. Petrusewicz and others in his group were captured by the occupying German forces. As they were being herded through a forest to their execution ground, Petrusewicz noticed a peculiar spider by the side of the path. "How odd that that species should be in this part of Poland", he thought, and he stepped off the path to take a look at it. The prisoners were so lightly guarded that Petrusewicz's action was not immediately noticed, and when he saw that the guards had passed him by he made good his escape and lived to become the major figure he later was.

Our first reaction on hearing this story was of unbounded admiration. Here was someone who was so keen on spiders that even as he was being sent to his death he had the presence of mind to take note of an unusual species. Definitely our kind of arachnologist, and we determined to tell everyone. But then we began to wonder. The story seemed too good to be true, and we thought to look into it. To judge by communications from Aleksandra Putrament and Jerzy Proszynski, our doubts were well founded.

In Dr. Putrament's recent (Quart. Rev. Biol. 65:435-45, 1990) moving and illuminating paper on "How I Became a Lysenkoist", Petrusewicz is repeatedly mentioned, thinly disguised as "Prof. P." Although her treatment of Prof. P seems highly unfavorable, in a recent letter Dr. Putrament says "I did not dislike Petrusewicz. Whatever [Michurinist/Lysenkoist] rubbish he preached he honestly believed."

"Petrusewicz was nice, kind, scrupulously honest and ready to save the world. He did all sorts of innocent, funny things and became the hero of numerous funny stories. Yet I have never heard about the spider and the partisans. I phoned several persons who knew him, but none of them knew the story. Moreover, it sounds very unlikely in view of [the competence of] German soldiers. ... I am afraid either Petrusewicz fabricated the story or there was a misunderstanding due to language. What I can easily believe is that he was capable of paying attention to spiders even when his life was in danger, so in principle the story fits his personality."

In another recent letter, Dr. Proszynski characterizes the escape story as related to Dr. Golley as "apocryphal and very much colored", and he likewise indicated that such carelessness by German soldiers would have been entirely out of character. However, as explained by Dr. Proszynski, Petrusewicz seems to have loosely based his account on a real incident.

"I checked with Prof. P. Trojan [now of the Institute of Zoology, Polish Academy of Sciences], who has heard the story over and over again from Petrusewicz during their 20+ years of close association. The truth was that Petrusewicz and hundreds of other Poles in Vilnius were arrested by the Germans on the

basis of proscription lists and shepherded temporarily into the railway station, which was surrounded by a concrete fence. Standing just at the fence and unsure what would happen next, the athletic Petrusewicz jumped over the fence and ran away through the surrounding bushes and forest. As he knew the area well from his spider-collecting excursions--and it is only in this respect that spiders relate to the event--he managed to escape and joined a partisan group. The other detained people were later executed."

Further, Dr. Proszynski's personal assessment of our hero seems not very different from that given by Dr. Putrament. "Petrusewicz was a colorful person, not the wisest, perhaps, but full of good intentions, who tried his best to help people and achieved quite a lot. As a politician [after the War] promoting Lysenko's "new biology", and dealing with matters of which he understood little or nothing, he did things which now seem stupid. But he also did much to protect people from persecution."

So there it is ... if we have got it right. But perhaps we have not got it right at all. Dr. Golley has raised several questions and given reasons for crediting the heroic version as he heard it. And the testimony we have on hand contains plenty of contradictions. Let us just say that we have reached a plausible working hypothesis of the reality of Petrusewicz's escape. It is about a tall tale, to be sure, but with an interesting short tale behind it.



AMERICAN
ARACHNOLOGY
Department of Biology
Virginia Tech
Blacksburg, Virginia 24061
U. S. A.

NON-PROFIT ORG.
U. S. POSTAGE
BLACKSBURG, VA
PERMIT NO. 28

Cushing, P., Zoology
223 Bartram Hall
Univ. of Florida
Gainesville FL 32611