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THERIDIID SYSTEMATICS: A PRELIMINARY MOLECULAR AND MORPHOLOGICAL PHYLOGENETIC ANALYSIS

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The family Theridiidae (cob-web spiders) is one of the largest spider families, comprising over 2000 described species in 73 genera and exhibiting extreme diversity in morphology, ecology and behavior. Theridiids are unique in including many cooperative or quasisocial species, a behavior otherwise very rare in arachnids. Theridiids include some very familiar species, such as the common house spider (*Achaearanea tepidariorum*) and the widow spiders (*Latrodectus* spp.). Despite their relatively high profile, systematic work on the family has so far been limited to the inclusion of a few of its members in family level phylogenetic analyses. We present the first cladistic analysis of a wide selection of theridiid genera based on molecular and morphological data. Apart from presenting a higher level phylogenetic hypothesis of theridiid interrelations, we address questions such as their sister relationship with nesticids, the monophyly and placement of the putative theridiid subfamily Hadrotarsinae, and the evolution of several morphological traits.

CANNIBALISM AS A FACTOR REGULATING POPULATION DENSITY IN THE WOLF SPIDER PARDOSA MILVINA (ARANEAE, LYCOSIDAE)

Robert Balfour, Sean E. Walker & Ann L. Rypstra

Cannibalism has been suggested as a factor that can regulate population density in wolf spiders. We used a series of laboratory and field experiments to determine if cannibalism occurs in *Pardosa milvina* and if it is density dependent. Field collected *Pardosa* were paired in laboratory arenas in order to measure the level of aggression. Cannibalism occurred in only 10% of the trials and we have evidence of injury due to an aggressive interaction in an additional 8%. Levels of aggression were related to size, injuries or cannibalism were more likely with larger weight differences between spiders. In the field, we used replicated enclosures in conventionally tilled soy bean fields to determine if survival is density dependent. 2.25 m² enclosures were stocked with 0.5x, 1x, or 2x the field density of *Pardosa* (~16/m²). After five days, we counted the number of *Pardosa* in each enclosure. Survival was negatively correlated with density. Also, as density increased, the size of the survivors increased indicating that the smaller individuals were missing. These data along with the lab study suggest that cannibalism could play a role in regulating the density of *Pardosa milvina*.

A COMPARISON OF SPIDER FAUNAS OF HENDERSON AND PITCAIRN ISLANDS

J.A. Beatty

The Pitcairn group, including Pitcairn, Henderson, Oeno and Ducie Islands, lies just south of the tropics and east of all the other central and west Pacific island groups. Only two small islands, Easter and Sala-y-Gomez, lie between the Pitcairns and South America. A major recent study of this group (Ed. Benton & Spencer

mimicry to catch salticids and other spiders, and detouring to catch an orb-web spider were filmed. Another theme was the evolution of secondary sexual characters in male salticids; an obvious platform for sequences on vision-based courtship behaviour and male-male competition. In a sequence on mimicry, male *Myrmarachne*, ant-mimics with chelicerae exaggerated by sexual selection, fight like diminutive samurai-like swordsmen. Simon will show the documentary and talk on the making of it.

TAKING THE STING OUT OF SCORPION SYSTEMATICS: PROGRESS IN UNDERSTANDING OPISTOPHTHALMUS

Lorenzo Prendini, Timothy M. Crowe, H. Peter Linder & Ward C. Wheeler

Burrowing scorpions of the genus *Opisthophthalmus* C.L. Koch (Scorpiones: Scorpionidae) are a conspicuous element of the southern African terrestrial arthropod fauna, where they make up more than 50% of the scorpion species. These scorpions display unusually high levels of endemism and an array of specialised ecological and behavioural strategies for life on different substrata (rock, sand, etc.). As such, the genus represents an ideal model for research into the biogeography and evolution of arid-adapted arthropods. In addition, it is in taxonomic chaos, only the Namibian species having been re-appraised since the 1900s, and thus in serious need of systematic revision. The aim of this research programme is to delimit the approximately 80 ingroup species (and a selection of appropriate outgroup taxa) and to infer a phylogeny, based on morphological and molecular data. The resultant cladogram will be used in a comparative framework for the testing of biogeographical, ecological, and behavioural hypotheses concerning the group (e.g. the evolution of psammophily and the biogeography of southern African sand systems). This research also aims to test the monophyly of the Scorpionidae, to which *Opisthophthalmus* belongs, and the relationships among its component genera. The morphological component of the project involved an examination of freshly-collected and museum material, wherein approximately 180 qualitative characters were scored for phylogenetic analysis. The molecular component involved automated DNA sequencing of four genomic regions (28S rDNA, 12S rDNA, 16S rDNA and cytochrome oxidase I), comprising approximately 2 kilobases per species, from freshly-collected material. Sensitivity analysis of the combined data, where congruence (the Mickevich-Farris ILD) is employed as an optimality criterion, is currently underway. I present here a summary of preliminary results obtained during the past three years. These comprise an overview of progress in our understanding of *Opisthophthalmus* phylogeny, the position of *Opisthophthalmus* in the family Scorpionidae, and the number of species currently recognised in the genus.

SPIDERS OF THE ARID SOUTHWEST- A LIST AND MANUAL IN REVISION

David B. Richman & Bruce Cutler

Over the last 10-15 years we have accumulated data on the spider diversity of the southwestern United States. The project was originally started by the senior author as the Spiders of New Mexico. More material was added to the list by Don Lowrie, who donated his notes on a similar project on the New Mexico fauna. The format of the current manuscript is similar to that used for a manual of New Mexico Grasshoppers. The manuscript was expanded in 1995 to include Arizona and Trans-Pecos Texas. Vince Roth and David Allen Dean both contributed their notes on the Arizona and Texas faunas. Other records have been added by David Lightfoot, Sandra Brantley, William O'Keefe, Greg Forbes, and Peter Pache. A web page was constructed in 1997, with a simple list of the spiders now known to occur in the region, along with the state or states in the area in which they are found. A list of references was recently added. At present the list contains 52 families, 258 genera and 968 species and is at <http://taipan.nmsu.edu/people/richman/southwest.html>. The most prominent families include the Salticidae, Gnaphosidae and Linyphiidae, each with over 100 species in the area, with Lycosidae, Araneidae, Dictynidae, Philodromidae and Thomisidae containing over 40 species