A.S.A.

Asian Society of Arachnology

2014 Chiang Mai, Thailand

PREM IB WORLD SCHOOL
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Traidhos Three-Generation Community for Learning
234 Moo 3 Huay Sai Mae Rim Chiang Mai 50180 Thailand : PO Box 1 Mae Rim Chiang Mai 50180 Thailand

Timetable

Time	Event	Presenters and information
Monday 30th June		
Arrivals from 2pm??	Registration	The Village
Tuesday 1st July		
7 - 8:30	Breakfast	The Cafeteria
8:30-9:00	Registration	The Village
9:00 - 10:00	Opening address	Dr Emma M Shaw – Introduce Traidhos and house keeping Shuqiang Li – Opening the meeting
10:00 - 10:30	Morning break	
10:30 - 12:00	Campus tour –	Facilities and the Royal Sufficiency Economy farm
12:00 - 13:30	Lunch and relaxation	
13:30 - 15:00	Talks session 1	**Mathew Joseph -** A new species of *Hermippus*Simon, *Hermippus inflexus* sp. nov. (Araneae: Zodariidae) from the Western Ghats of Kerala, India **Peter Koomen** - Jumping spiders of Kinabalu mountain, Sabah-Borneo **Siddharth Kulkarni** - Spider fauna of rocky outcrop and surrounding in Northern-Western ghats, India (Arachnida: Araneae) - Part I
15:00 - 15:30	Afternoon break	
15:30 - 16:30	Poster session 1	Anyone who is attending the Genitalia workshop or not at the meeting on Friday
16:30 - 18:00	Relaxation and enjoy the facilities	
18:00 - 20:00	BBQ at the Club for residents on campus	The Club Drinks at your own expense
Wednesday 2nd July		
7:00 - 8:30	Breakfast	The cafeteria
9:00 - 9:30	Finalise housekeeping details - give out excursion	The village

	details	
9:30 - 10:30	Talk session 2	**Peter Jager** – *Pseudopoda* –the crux of biodiversity **Nuthnaree Phoolmak , Narintra Nanthasamrerng , Pimpisa Khumkongsuwan** General Behavior And Discoloration Of Two-tailed Spiders.
10:30 – 11:00	morning break	The Village
11:00 – 12:00	Talk session 3	T**atsumi SUGURO & Kensuke YAHATA** - Taxonomic revision of *Pseudicius koreanus* (Araneae: Salticidae) and its related species **Akio Tanikawa –** Color variation or independent species
12:00 – 14:00	Lunch and relaxation	The cafeteria
14:00 – 15:30	Talk session 4	**Takeshi Yamasaki** – The genus *Myrmarachne* of Thailand Elena Grall – **Venus Saksongmuang –** Diversity of Ground Spider in Monoculture Rubber Plantation and Rubber Agroforest **Peter Jager -** Myanmar - a forgotten country
15:30 - 16:00	Afternoon break	The Village
16:00 - 16:10	Group photograph	TBA
16:20 - 17:30	ASA information - new members sign up, web site decisions, next meeting	The village
17:00 - 17:30	Meeting of Thai delegates	The village room 4
18:00 - 19:00	Dinner	The cafeteria
19:00 - 21:00	The club is open for drinks	
Thursday 3rd July		
7:00 - 8:00	Breakfast	The cafeteria
8:30	Meet vans to go on excursions	Behind the cafeteria
17:00	Return to campus	

18:00	Kantoke dinner and entertainment Drawing competition judging.	SS undercroft
Friday 4th July		
7:00 - 8:30	Breakfast	The cafeteria
8:00	Bus for genitalia workshop leaving -	TBA
9:00 - 10:00	Talk session 5	**Boopha** - Distribution of web-building spiders along rubber plantation through forest and potential factor influencing the distribution pattern. **Ganesh Vankhede -** EGG SAC MORPHOLOGY FOR IDENTIFICATION OF SPIDERS
10:00 - 12:00	Thai cookery class	Cooking school
10:30 - 11:00	Morning break	The Village
12:00 - 13:30	lunch and relaxation	The cafeteria
13:30 - 14:30	Talk session 6	Peter Schwendinger – Sunil Jose - **Studies on two mygalomorphs spiders of Western Ghats, India**
14:30 - 15:00	afternoon break	The village
15:00 - 16:00	Poster session 2	The village
16:00 - 16:30	Meeting close, house keeping, van schedules for departures	
16:30 - 17:00	Take down posters etc	
18:00 - 21:00	BBQ at the club	The Club
Friday 5th July		
7:00 – 8:00	Breakfast	The cafeteria
	Departing	At the clusters – schedule TBA

ORAL PRESENTATION ABSTRACTS

Pseudopoda – The crux of biodiversity

Peter Jäger,
Senckenberg Research Institute, Frankfurt am Main, Germany

Myanmar - a forgotten country

Peter Jäger,

Senckenberg Research Institute, Frankfurt am Main, Germany

Studies on two mygalomorphs spiders of Western Ghats, India

Sunil Jose

A new species of *Hermippus* Simon, *Hermippus inflexus* sp. nov. (Araneae: Zodariidae) from the Western Ghats of Kerala, India

Mathew M. Joseph, Pradeep S. Moothedathu, Malamel J. Jobi & Pothalil A. Sebastian
Division of Arachnology, Department of Zoology, Sacred Heart College, Thevara, Cochin, Kerala 682 013, India.

Abstract

A new species of ground-dwelling zodariid spider, *Hermippus inflexus* sp. nov. from the Western Ghats of Kerala, India is being described. Males of *H. inflexus* sp. nov. can be recognized by: the presence of three modified apophyses of the palpal tibia, fusiform TA, scar-like dorsal longitudinal, reddish membranous process on palpal femur and a short, massive, ventrally flattened dorsal patellar apophysis with three short spines. Females have simple epigynal plate with broad ventral lobes and an inverted 'C' shaped, disto-laterally fused internal duct system. Description of the male (holotype) and female (paratype) are as follows: Proximal 2/3rd of prosoma uniform chestnut brown, shiny, clothed with very fine hairs; rest of prosoma black, granulated. Fovea longitudinal, red. Eyefield black; both eye rows strongly procurved. Clypeus broad, black. Chilum triangular, dark brown. Chelicerae black; promargin with two teeth, retromargin with three minute denticles. Maxillae and labium light brown. Sternum yellowish brown. Opisthosoma oval; dorsal and lateral opisthosoma black; dorsum provided with simple chalk-white pattern; lateral opisthosoma with a narrow, longitudinal, roughly zig-zag stripe; venter greyish, mottled with numerous irregular chalk-white spots. Single row of spines lies above the spinnerets. Legs long, slender, yellowish with femora, patellae and tibiae yellowish-brown; tarsi with 8 – 13 ventral spines in male, while 7 -14 in female; leg formula 4321. The specific epithet is an adjective in apposition and is referring to the modification of the tibial apophyses of the male palp: L. *inflexio* = modification; gender masculine. *Hermippus inflexus* sp. nov. was found to occur among the litter of a dry deciduous forest floor. At present it known only from the type locality in Kerala, Southern India.

Jumping spiders of Kinabalu mountain, Sabah-Borneo

Peter Koomen

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Abstract

In 2012, Naturalis Biodiversity Centre organised, in co-operation with Sabah Parks, an expedition to Mount Kinabalu in the north of Borneo. Goal was to try to establish the origin of the many endemic species on the mountain. Are they relics of cooler times, still surviving on the mountain, or are they new species, evolved after the mountain came into existence about 2 million years ago? The hope was to come closer to an answer by collecting DNA-samples of as many organisms as possible at several elevations on and around the mountain. 62 Scientists covering several groups of plants, animals and fungi visited 8 sites within 15 days. Among the samples were 324 jumping spiders. Some pictures and preliminary results will be presented.

Spider fauna of rocky outcrop and surrounding in Northern-Western ghats, India (Arachnida: Araneae) - Part I

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Abstract

Spiders collected from rocky outcrops and their surroundings in Northern-Western ghats during 2011-2013 were examined. In this part, 31 species belonging to 6 families are reported. *Hamadruas heiroglyphica* (Thorell, 1887) is recorded for the first time from India and six species recorded for the first time from Maharashtra: *Gasteracantha dalyi* Pocock, 1900, *Oxyopes ashae* Gajbe, 1999, *O. bharatae* Gajbe, 1999, *O. pankaji* Gajbe & Gajbe, 2000 and *Peucetia jabalpurensis* Gajbe & Gajbe, 1999 and *Meotipa picturata* Simon, 1895. One spider belonging to Araneidae: *Neoscona mukerjei* Tikader, 1980 and four spiders belonging to Oxyopidae: *Oxyopes ashae* Gajbe, 1999, *O. bharatae* Gajbe, 1999, *O. pankaji* Gajbe & Gajbe, 2000 and *Peucetia jabalpurensis* Gajbe & Gajbe, 1999 are described with additional morphological characters using topotype material. *Neoscona panchganiensis* (Tikader & Bal, 1981) **comb.nov.** is proposed for species incorrectly placed under *Araneus* and its morphological variation is discussed.

Keywords- taxonomy, biodiversity, spiders, Satara plateaus, Kolhapur plateaus, Ratnagiri plateaus, Sindhudurg plateaus

Distribution of web-building spiders along rubber plantation through forest and potential factor influencing the distribution pattern.

Booppa Petcharad[1,4], Sara Bumrungsri[1], Sunthorn Sotthibundhu[1], George A. Gale[2], and Tadashi Miyashita[3]. [1]Department of Biology, Faculty of Science, Prince of Songkla University, Hat Yai, Songkhla, 90112, Thailand; [2]School of Bioresources and Technology, King Mongkut's University of Technology Thonburi, Thailand; [3]Graduate School of Agricultural and Life Sciences, The University of Tokyo, Japan

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Abstract

Recently, the plantations of rubber trees around Southeast Asia have been rapidly increased with replacing forest areas leading to many areas of rubber plantation adjacent to forest. This study, we determined distribution of understory web-building spiders along rubber plantation through forest and examine environmental key factors exerting an influence on the distribution pattern. We used visual method to collect the spiders in 5 habitats, rubber plantation, forest edge, and forest interior far from edge 50m, 100m, and 150m. Overall, we found web-building abundance, species richness, and diversity was highest in rubber plantation. Particular species of spiders indicated specific habitat preference. It was noticed that edge effect penetrated into forest deeper in light rain season comparing with heavy rain season. Generalized linear model and zero-inflated model suggested that temperature generally influenced the distribution of species diversity, richness, and abundance of spiders in community perspective. It appeared that spiders were restricted to certain vegetation features. It can be postulated that prey availability indirectly determined habitat selection of web-building spiders.

Keywords - Edge effect, local distribution, Araneae, Thailand

Study of Morphology , General Behavior And Discoloration Of Two-tailed Spiders.

Nuthnaree Phoolmak , Narintra Nanthasamrerng , Pimpisa Khumkongsuwan

Diversity of Ground Spider in Monoculture Rubber Plantation and Rubber Agroforest

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Abstract

The diversity of ground and litter dwelling spiders was compared between three pairs of monoculture rubber plantation and rubber agroforest in Songkhla and Trang provinces. Spiders were collected by pitfall trap and Winkler's bag between October to December 2013. A total of 292 spiders representing 20 families were found. There were 12 families and 19 families in monoculture rubber plantation and rubber agroforest, respectively. The Shannon–Weiner diversity index was higher in rubber agroforest than monoculture rubber plantation in every pair. The higher spider diversity in rubber agroforest than monoculture rubber plantation was the consequence of more microhabitats and less of disturbance in the rubber agroforest.

Key words: Monoculture Rubber Plantation, Rubber Agroforest, Diversity index, Spider

An update on the mesothelid and mygalomorph spiders of Thailand

Peter J. Schwendinger[1] and Komson Hongphadharakiree[2]

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Abstract

At present 57 nominal species of orthognathous spiders in 14 genera and 9 families are known from Thailand, all but 6 of them only from this country. Several species of another 8 genera and of another family have also been collected, but were not yet identified to species level or formally described. A selection of these 22 genera is briefly presented together with notes on biology and biogeography.

Taxonomic revision of *Pseudicius koreanus* (Araneae: Salticidae) and its related species

Tatsumi Suguro & Kensuke Yahata

Abstract

Pseudicius koreanus Wesołowska 1981 is a salticid spider species described from north Korea. Its male was described by Bohdanowicz & Prószyński (1987) and Xiao (1993), but judged from those drawings, these two males are apparently different species. The presenter taxonomically revised *P. koreanus* and its related species by morphological investigation and molecular analysis using partial sequencing data of mt-DNA COI gene. As a result, markings, spination, phylogenetic position and geographical distribution suggested that the male described by Bohdanowicz & Prószyński (1987) is mismatched. Instead, *Tasa nipponica* Bohdanowicz & Prószyński 1987 was identified as the male of *P. koreanus*. Therefore, *T. nipponica* should be synonymized with *P. koreanus*. *P. koreanus* should be transferred to the genus *Tasa*, due to its male genital morphology. The male described by Bohdanowicz & Prószyński (1987) was identified as the male of *Pseudicius tokaraensis* (Bohdanowicz & Prószyński 1987). The other male described by Xiao (1993) has never been found from Japan, and regarded as an unknown species. Incidentally, *P. okinawaensis* Prószyński 1992 should be synonymized with *P. tokaraensis* because their differences are not significant.

Title: Color variation or independent species?

Akio Tanikawa (The University of Tokyo, Japan)

Abstract

Two species of liphistiid spider, *Ryuthela nishihirai* and *Heptathela yanbaruensis* (HY), have been identified from Okinawajima Island, Southwest Japan. These two species have slightly different body colors. Recently, I found an interesting *Heptathela* spider (HH) with a *Ryuthela*-like body color on the island. This raised the question of whether this spider is a color variation of HY or an independent species ? To solve this problem, the morphology, phylogeny, and reproductive isolation using nuclear genes were examined.

HH and HY have only slight differences in morphological features, but quite a large difference in phylogenetic position. Of 80 specimens collected from a sympatric locality, 74 were determined to be HY and 6 to be HH based on mt-COI sequencing data and body color. Based on sequencing data for nuclear 28s-rRNA and H3 genes, all 74 HY specimens were confirmed to be HY and all 6 HH specimens were confirmed to be HH. Although the HH specimens were surrounded by overwhelming numbers of HY, gene flow from HY to HH could not be detected. This led to the conclusion that HY and HH are reproductively isolated and that they should be recognized as independent species.

The genus *Myrmarachne* of Thailand

[1]**Takeshi Yamasaki**, [2]Yoshiaki Hashimoto, [3]Tomoji Endo, [4]Takao Itioka, [5]Fujio Hyodo

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[3]Kobe College

[4]Kyoto University

[5]Okayama University

Abstract

Due to Batesian mimicry, *Myrmarachne* species resemble ants both in morphology and behavior. The evolutionary advantages of ant mimicry are well studied. The genus has diversified in tropical Africa, Southeast Asia and Australia, and more than 200 species are recorded from the world. Although about 130 species have been described in Southeast Asia, local faunas are not sufficiently studied.

Since the boundary between the Indo-Chinese and Indo-Malay subregions is placed at the Inthmus of Kra, to reveal local faunas of Thailand is important in biogeography. We collected *Myrmarachne* species in Northern and Southern Thailand. On the basis of the preliminary study, we discuss the biogeographical features of *Myrmarachne* fauna in Thailand.

Keywords: Salticidae, Taxonomy, biogeography, Southeast Asia, Sundaland

Egg sac morphology for identification of spiders

Seema Keswani and **Ganesh Vankhede**
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Abstract

Spiders lay eggs within a silken egg sac. They produce single or several egg sacs, each containing up to several hundred eggs. From Central India, we have observed and collected egg sacs of various spiders and studied them with respect to their structure and number of eggs present in each egg sac. Spiders in general are found to lay either single or many egg sacs. The egg sacs in web builders are associated with webs. However in *Pholcus*, the female carries her egg sac by holding it in the chelicerae. In *Lycosa* the egg sac is attached with the spinnerets at posterior end of abdomen. In spiders from Oxyopid family egg sacs are laid on underneath of leaf surface and the female guards it. Many spiders lay egg sacs under bark or in curled leaf. *Hygropoda* spider lays eggs in a leaf which is folded longitudinally. In theridiidae the egg sacs differ in shape from ball like, discoidal to rhomboid to cylindrical. In Uloborids the egg sacs are mostly irregular shape but in the *Miagrammopes* the egg sac was observed as elongated cylindrical. Some spiders lay more than one egg sac and these egg sacs are arranged in one string and the female protects these egg sacs by seating at the end of the egg sac string. Some spiders have outer smooth or spiny surface. Single egg sac of *Nilus* contains eggs ranging from 2600 to 3000, while in *Cyclosa* the number of eggs in one egg sac ranged from 29 to 44.

The egg sacs in different spiders not only differ in number and shape but also differ in the silk color which covers the egg sac. The egg sac silk color was observed as white, golden, grey, green, dull brown and reddish in different species. The spiderlings come out from the egg sac after 14 to 30 days depending on the spider species and mostly after first molt.

It is proposed that shape, color and number of egg sac laid can be used as a key to confirm the genus and even a species of a spider after its identification using existing keys.

POSTER ABSTRACTS

Species and Population Density of Spiders on Cassava Field

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Abstract

The study was carried out during October, 2010 to August, 2011 to ascertain the species and population density of spider associated with cassava in pesticide treated and untreated fields at Rayong province. The spiders were collected on the plants in treated and untreated fields. The results revealed that there were 1,633 specimens of spiders totally collected, of which 38 species belong to 12 families and 29 genera in untreated field and 452 specimens, of which 22 species belong to 10 families and 20 genera in treated field. *Parasteatoda mundula* (L. Koch, 1872) is the most abundant found in cassava field. Their population collected throughout the year in untreated field was 188 while in the treated orchard was 66. The population of these spiders was found to be very abundant during March to June. The spider population in the untreated field was found considerably higher than in the treated field.

Database of South East Asian jumping spiders (get your free copy!)

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Abstract

Good identification tools (field guides, handbooks) for South East Asian spiders are still rare. To be able to identify jumping spiders of Borneo, a database was compiled of all the pictures (drawings, photographs) from the scattered literature that may refer to species occurring on Borneo (so: literature describing species from Borneo and neighbouring areas like Sumatra, Java, West-Malaysia, Singapore, Thailand, South East China, Vietnam, Philippines). The database 'Labah-labah Sabah' was developed in such a way (MS Access, simple structure, pictures incorporated within the database), that it should be easy to use. It now contains about 9300 pictures of 740 species, which can be arranged in an 'atlas' of pictorial datasheets per species. The database is still more detailed than internet databases, because pictures were scanned in higher resolution, and pictures from many Chinese sources were also included. Its major drawback is, of course, that it is restricted to Salticidae and to South East Asia. Still it may be a useful tool for you. Come and get your free copy of the updated database (1.84 GB) and/or a pdf of the atlas (142 MB).

Two New Species Of Scorpions From Family Euscorpiidae: Increasing Of Knowledge On Indochina Biodiversity

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Abstract

The diversity of scorpions from family Euscorpiidae in the Southeast Asia is relatively small in compare with another areas in the subtropic and tropic zone. In the Indochinese region, there are known records of scorpions from genus *Dasyscorpiops* Vachon, 1974, *Alloscorpiops* Vachon, 1980 and *Euscorpiops* Vachon, 1980. In this contribution, we provide description of new species *Euscorpiops orioni* from Doi Inthanon mountains in northern Thailand. Second described species is *Alloscorpiops wongpromi* which was found in northeastern Thailand and southern Laos in Champasak province. Presented is sexual dimorphism, as males of some species have a narrower pedipalp chela than females, while in other species the shape of the chela is the same in both sexes. Both new species are distinguished in terms of the shape of chela and number of trichobotria on patella. In addition to morphological analysis, we describe also the karyotype of male holotype and paratype of *E. orioni***.** Both analyzed specimens have achiasmatic meiosis and the same number of chromosomes (2n=103) with predominance of acrocentric chromosomes gradually decreasing in size. During the first meiotic division we observed trivalent in both males. This type of multivalent indicates centric fusion that may cause the differentiation of the karyotypes within the genus *Euscorpiops*. Both new species of scorpions enriches diversity of scorpions in the Indochinese region of Southeast Asia.

Diversity of Spiders in Takhliprachasan School , Petch – Thong Cave Forest Park , Huai Kha Khaeng Wildlife Sanctuary and Doi Inthanon National Park , Thailand

Onrumpa Nilsonti , Manatchanok Chaprasert , Passakorn Rungwattanakit, Pongwasin Rangpet

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Application of Spider's Silk for Absorb Heavy Metals

Arinchai Nilsonti , Nopphon Khaewmung

Spider diversity and comparison around anthill on waxing and waning at Tham Phet Tham Thong forest park, Takhli, Nakhonsawan

Suwannee Phomprasith *[1] Kanokpon Nilsonti[*1] Nitipong Kaewmun [1] Inthuchai Intar[1]
Kanticha Panthong[1] Chayanit Khawthongtum[1] Jutamat Pokasem[1]
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Abstract

In comparison with the diversity of spiders between waxing moon and waning moon near the area of the termites at Tham Phet Tham Thong forest park, Takhli, Nakhonsawan. From exploring on March 2014, at 09.00-11.00 pm. by naked eyes and counting in area 4 square meters. On waxing moon we found that three families are Corinnidae such as *Castianei* sp. , Oxyopidae such as *Oxyopes* sp. , Thomisidae such as *Diaea* sp. and the other organism such as black ants, orange bugs, striders, beetles, lizards, termites, etc. On waning moon we found that two families are Corinnidae such as *Castianei* sp. , Heteropodidae. And other organism such as black ants, orange bugs, lizards, termites, etc. Average temperature is 29 ^{o}C, humidity 66, pH of soil 8.0.

Keywords : diversity of spiders, waxing and waning day, Tham Phet Tham Thong forest park

Diversity of Spiders in a Paddy Field in Petchaburi Province, Thailand

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Abstract

Nowadays, increasing of human populations has destroyed many natural habitats and decreased biodiversity. Nevertheless, paddy field, which are manipulated by human, may support conservation of biodiversity. Spiders are the living organisms which are high diversity and can be found in almost every kinds of habitat including agro-ecosystem. However, a few studies of spiders have been investigated in Thailand. This research studied about the spider diversity in the paddy field (2.08 hectare) at Petchaburi province, Thailand. The spiders had been collected from 31st May 2013 to 27th January 2014 which covered 2 cycles of rice harvest. Nine hundred and twenty three spiders were collected from the paddy field by using 4 methods, quadrat technique, sweeping net, pitfall trap and visual encounter survey, respectively. Twelve families were found in this study, Tetragnathids were recorded for the most numbers from the both sweeping and quadrat techniques. Araneids were found in the highest numbers from the visual encounter survey. Lycosidae was a majority group in pitfall traps.

Diversity And Habitat Use By Spiders In Cotton Agro-Ecosystem From Vidarbha, Central India

Seema Kewswani and **Ganesh Vankhede**

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Abstract

Cotton is one of the most important commercial crops in Vidarbha, Central India. There are four cultivated species of cotton, viz. *Gossypium hirsutum*, *G. arboreum*, *G. herbaceum* and *G. barbadense*. Vidarbha in Central India is the only agro-area where all the 4 cultivated species are grown. However, the crop output is affected due to insect pests on them. Hence spider diversity and the habitat use pattern are investigated. Spiders from 21 families are reported from cotton fields. 86 species and 63 genera are predominantly found to control the pests on cotton crop. Investigations are carried out with respect to habitat use by these spiders and their preying capacity. More emphasis is given on their fecundity and a possibility of rearing these spiders is investigated.

Keywords: Spiders, diversity, cotton agro-ecosystem,fecundity, rearing

Mitochondrial genome of water spider *Argyroneta aquatica* reveals rearranged genes, extremely truncated tRNAs and yet highly tandem repeat sequences

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Key Laboratory of Freshwater Fish Reproduction and Development (Ministry of Education)
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Abstract

Mitochondrial genome sequences and gene rearrangements have proved to be a useful character for phylogenetic reconstruction in Arachnida. Here, the nearly complete mitochondrial genome of *Argyroneta aquatica* was determined in our study. The water spider, *A. aquatica*, is the only spider that spends its whole life under water. The total length of all the 13 PCGs (protein coding genes) is 10,802 bp, with an overall A+T content 69.8%, ranging from 66.3% (cox1) to 76.1% (atp8). The mitochondrial gene order of *A. aquatica* is identical to those for *Nephila clavata* (Nephilidae) and *Habronattus oregonensis* (Salticidae), but distinctly different from the hypothetical ancestral Chelicerata *Limulus polyphemus* by a series of gene translocations and/or inversions. The *A. aquatica* mitochondrial genome indicated the most extremely truncated tRNAs among spiders which mitogenome had been sequenced. The tRNAs couldn't be folded into canonical cloverleaf–shaped secondary structure. Thus, there presumably exists a RNA editing process to repair such deleterious mutation for maintaining its proper function. Additional interesting feature was found: five repeating units (135 nt in length for each unit) and another two repeating units (363 nt in length for each unit) in the putative control region. Though highly tandem repeat sequences had reported in other organisms, it's the first time detected in Araneae. The tandem repeats in *A. aquatica* mitochondrial genome control region may play a key role in mitochondrial genome replication and transcription regulating which contributed to its adaption to aquatic lifestyle distinguished from its terrestrial relatives. The phylogenetic relationships and the evolution pattern of tRNA gene rearrangements among Arachnida was also tested by using amino acid sequences of 13 PCGs extracted from all available arachnids mitogenomes.