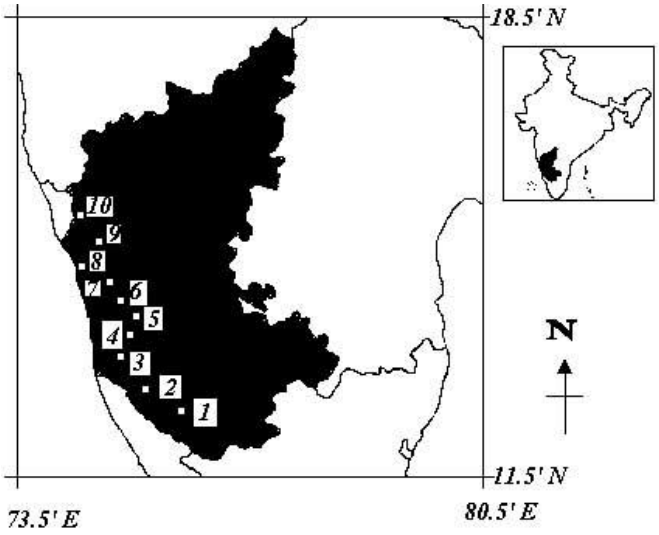

Figure 1. Map of Karnataka with the study areas. 1. Madikeri; 2. Belthangdi; 3. Bisle Ghat; 4. Kudremukh; 5. Agumbe; 6. Sagar; 7. Gersoppa; 8. Karwar; 9. Dandeli; 10. Castle Rock

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SCELIONID FAUNA OF ANNAMALAI UNIVERSITY, ANNAMALAINAGAR, TAMIL NADU

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ABSTRACT
Scelionid diversity of Annamalainagar, Tamil Nadu was surveyed and 23 genera under 13 tribes and three subfamilies were collected and identified. Subfamily Scelioninae is represented by 10 tribes and 17 genera, subfamily Teleasinae by two tribes and two genera and subfamily Telenominae by one tribe and four genera.

KEYWORDS
Annamalai University, Scelionidae, Scelioninae, Tamil Nadu, Teleasinae, Telenominae

Scelionidae (Platygastroidea: Hymenoptera) is a very important family of parasitoids from economic point of view. Many species play significant role in the control of excessive increase in population of several insect pests. They are widely distributed all over the world (Narendran, 2001).

This family is divided into three subfamilies *viz*., Scelioninae, Telenominae and Teleasinae. It contains about 150 known genera and about 3,000 known species in the world (Masner, 1993). Totally 54 genera are known from Oriental Region and 29 genera from India (Masner, 1976). Mani and Mukerjee (1976) described 13 species of different genera of scelionids from India. Gordh and Coker (1973), and, Cave and Gayler (1988) reported the attack of *Geocoris* (Heteroptera: Lygaeidae) eggs by many species of *Telenomus* (Scelionidae: Platygastroidea). Narendran and Ramesh Babu (1996-1997) have provided a key to Indian species of *Calliscelio* Ashmead (Hymenoptera: Scelionidae) and described six new species. Narendran (1998) described a new species of *Calotelia* (Hymenoptera: Scelionidae) and gave a key to five species from India. Narendran and Ramesh Babu (1996) have studied the systematics of *Heptascelio* Kieffer (Hymenoptera: Scelionidae). Rajmohana and Narendran (1997) erected a new subgenus *Neotrimorus* of genus *Trimorus* and also provided a modified key to the genera of Teleasinae.

Scelionids are solitary endoparasitoids of eggs of Lepidoptera, Orthoptera, Diptera, Hemiptera and Arachnida. Occasionally some species are found parasitising eggs of Coleoptera and Neuroptera also (Masner, 1976). Earlier surveys showed that no study has been carried out so far from this region of Tamil Nadu, hence an attempt was made to study the Scelionid fauna of Annamalai University Farm Premises.

STUDY AREA

Annamalai University is located in Chidambaram, Cuddalore district ($11^0$24'N & $79^0$44'E). It lies at an altitude of about 5m. The area receives water from Kollidam river. Temperature varies from 26^0C to 36^0C. The average annual rainfall is 1,200mm mostly from the northeast monsoon (October to December).

MATERIALS AND METHODS

The scelionids were collected from Annamalai University farm

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Table 1. List of scelionid fauna found in Annamalai University

Order: Hymenoptera
Suborder: Apocrita
Superfamily: Platygastroidea
Family: Scelionidae

Subfamily: Scelioninae
Tribe: Scelionini Foerster
Scelio Latreille
Number of specimens collected: Twenty three (6M,17F)
Distribution: A worldwide genus, speciating vigorously in tropics (Masner, 1976) but represented also in much cooler parts of temperate zones. Genus already reported from India.
Remarks: Very common in the grassy lands and paddy fields. The short horned grasshoppers of the family Acrididae are the hosts of this genus.

Tribe: Calliscelionini Masner
Macroteleia Westwood
Number of specimens collected: Eighty one (76M,5F)
Distribution: A worldwide genus but centred in the tropics and subtropics. Genus already recorded in India.
Remarks: Common in paddy fields. This genus parasitizes eggs of Tettigoniidae.

Anteromorpha Dodd
Number of specimens collected: Three (3M)
Distribution: Cosmopolitan and already known from India.
Remarks: Collected from grassy lands and paddy fields.

Tribe: Baryconini Kozlov
Baryconus Foerster
Number of specimens collected: Six (6M)
Distribution: A cosmopolitan genus, but centred in the tropics and already known from India.
Remarks: This genus parasitizes eggs of Tettigoniidae, Subfamily Phaneropterinae, laid on or inside leaves.

Tribe: Psilanteridini Kozlov
Caloteleia Westwood
Number of specimens collected: One (1M)
Distribution: Cosmopoliton and already recorded in India. So far five species of this genus are known from India.
Remarks: Collected from paddy nursery.

Fusicornia Risbec
Number of specimens collected: Three(2M,1F)
Distribution: Afrotropical, Oriental and Australian Regions. Already recorded in India.
Remarks: Collected from grassy lands.

Leptoteleia Kieffer
Number of specimens collected: One (1M)
Distribution: Nearctic, Neotropical and Oriental Regions. Already known from India.
Remarks: Collected from paddy nursery.

Opisthacantha Ashmead
Number of specimens collected: Two (1M, 1F)
Distribution: Neotropical, Afrotropical, Oriental and Australian Regions. Already recorded in India.
Remarks: Collected from paddy fields.

Merriwa Dodd
Number of specimens collected: Three (3F)
Distribution: This genus already known from Oriental Region but not from India.
Remarks: Collected from grassy lands and paddy fields.

Nyleta Dodd
Number of specimens collected: Four (2M,2F)
Distribution: Afrotropical, Oriental (but not from India) and Australian Regions.
Remarks: Collected from grassy lands.

Psilanderis Kieffer
Number of specimens collected: Two (1M,1F)
Distribution: World-wide but speciating mainly in tropics. This genus already recorded from India.
Remarks: Collected from grassy lands.

Tribe: Mantibariini Kozlov
Mantibaria Kirby
Number of specimens collected: Two (2M,1F)
Distribution: Palearctic, Afrotropical, Oriental and Australian Regions. This genus already known from India.
Remarks: These parasitoids are associated with Mantidae.

Tribe: Platyscelionini Kozlov
Platyscelio Kieffer
Number of specimens Collected: Four (4M)
Distribution: Afrotropical, Oriental and Australian Regions. This genus already recorded from India.
Remarks: Collected from paddy nursery. Hosts are probably the Pheneropterinae (Tettigoniidae)

Tribe: Gryonini Szabo
Gryon Haliday
Number of specimens Collected: Thirty seven (33M,4F)
Distribution: It is cosmopolitan in distribution with a great number of species in each of the main biogeographic regions. Already recorded in India.
Remarks: Collected from grassy lands and paddy fields. This genus parasitizes eggs of Heteroptera.

Tribe: Thoronini Kozlov
Tiphodytes Bradley
Number of specimens collected: Eight (5M,3F)
Distribution: Palearctic, Nearctic, Neotropical, Oriental and Australian Regions. Already recorded in India.
Remarks: Common near water sources. This genus parasitizes eggs of semi aquatic Heteroptera.

Tribe: Idrini Kozlov
Ceratobaeus Ashmead
Number of specimens collected: Three (3M)
Distribution: Nearctic, Neotropical, Afrotropical, Oriental and Australian Regions. Already recorded in India.
Remarks: Recovered from eggs of Spiders.

Tribe: Baeini Ashmead
Baeus Haliday
Number of specimens collected: Two (2M)
Distribution: Afrotropical and Oriental Regions. Already recorded in India.
Remarks: Recovered from eggs of spiders.
Subfamily: Teleasinae

Tribe: Teleasini Ashmead
Trimorus Foerster
Number of specimens collected: Three (3M)
Distribution: Nearly world-wide in distribution. There are 27 species known from Oriental Region, out of which 20 are so far reported from India.
Remarks: This genus parasitizes eggs of Carabidae (Coleoptera).

Tribe: Xenomerini Kozlov
Xenomerus Walker
Number of specimens collected: Ten (7M,3F)
Distribution: Palearctic, Neotropical, Afrotropical, Oriental (but not from India) and Australian Regions.
Remarks: Collected from grassy lands.

Subfamily: Telenominae
Tribe: Telenomini Thomson
Trissolcus Ashmead
Number of specimens collected: Seven (6M,1F)
Distribution: Virtually world-wide, speciating in both temperate and tropical zones. Already recorded in India.
Remarks: Collected from paddy fields, egg parasitoids of Heteroptera.

Aporophlebus Kozlov
Number of specimens collected: Three (3M)
Distribution: Palearctic, Afrotropical, Oriental and Australian Regions. Already recorded in India.
Remarks: Collected from paddy fields.

Psix Kozlov
Number of specimens collected: Fifty (39M,11F)
Distribution: World-wide in distribution. Already recorded in India.
Remarks: Collected from paddy fields, egg parasitoids of Pentatomidae.

Telenomus Haliday
Number of specimens Collected: Three thousand two hundred and seventy (@&:B& ratio is 3:1).
Distribution: World-wide in distribution and already known from India.
Remarks: These parasitoids were collected from paddy fields. Out of 3,270 parasitoids 3,169 were collected through rearing of rice stem borer egg masses. 220 Stem borer egg masses from paddy field were collected and observed for emergence of parasitoids. Surprisingly more than 80% of the egg masses were parasitized. Totally 3,528 parasitoids were recovered. Out of this 3,270 were Scelionids and the remaining were Eulophids and Trichogrammatids (Prabu & Manickavasagam, 2003).

Table 2. Details of Scelionid parasitoids collected during 2001-2003

Subfamily	Tribe		Genera collected		No. of specimens	
Scelioninae	Scelionini Foerster		*Scelio* Latreille		23	
	Calliscelionini Masner		*Macroteleia* Westwood*Anteromorpha* Dodd		813	
	Baryconini Kozlov		*Baryconus* Foerster		6	
	Psilanteridini Kozlov		*Caloteleia* Westwood		1	
			Fusicornia Risbec		3	
			Leptotelia Kieffer		1	
			Opisthacantha Ashmead		2	
			Merriwa Dodd		3	
			Nyleta Dodd		4	
			Psilanteris Kieffer		2	
	Mantibariini Kozlov		*Mantibaria* Kirby		2	
	Platyscelionini Kozlov		*Platyscelio* Kieffer		4	
	Gryonini Szabo		*Gryon* Haliday		37	
	Thoronini Kozlov		*Tiphodytes* Bradley		8	
	Idrini Kozlov		*Ceratobaeus* Ashmead		3	
	Baeini Ashmead	10	*Baeus* Haliday	17	2	185
Teleasinae	Teleasini Ashmead		*Trimorus* Foerster		3	
	Xenomerini Kozlov	2	*Xenomerus* Walker	2	10	13
Telenominae	Telenomini Thomson	1	*Trissolcus* Ashmead		7	
			Aporophlebus Kozlov		3	
			Psix Kozlov		50	
			Telenomus Haliday	4	3,270	3,330
Total		**13**		**23**		**3,528**

premises, Chidambaram in Tamil Nadu using triangular nets specially made for the purpose as described by Noyes (1982). The specimens were mounted on cards made by point punch (BioQuip™, USA, Catalogue No: 1150A) and pinned using Newey Patent Entomological pins No.12 (Made in UK). The observations were made using stereozoom (model STZ.B) microscope.

Discussion

The number of parasitoids collected and identified as scelionids was 3,528. All the three subfamilies which are already reported *viz*., Scelioninae, Teleasinae and Telenominae are represented in the present study also. The number of parasitoids collected under the subfamily Scelioninae was 185. Though the number of parasitoids collected was less under this subfamily, the number of tribes (10) and genera (17) identified were more than the other two subfamilies. The parasitoids collected under the subfamily Teleasinae were 13. Though the number of parasitoids collected under this subfamily was less, this represents all the two recorded tribes *viz.*, Teleasini and Xenomerini. Although the subfamily, Telenominae constitutes the maximum number of collected parasitoids (3,330), Telenomini is the only tribe recorded so far globally and here too it is represented by four genera (Table 1).

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