SURVEY OF SHORT-HORNED GRASSHOPPERS (ACRIDIDAE) FROM DAKSHINA KANNADA DISTRICT, KARNATAKA

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ABSTRACT

Twenty-eight species of short-horned grasshoppers (Acrididae) were recorded from 250km^2 area of Dakshina Kannada district, Karnataka, from September 2000 to June 2002. The surveys in 12 localities indicated differences in diversity and density of grasshoppers pointing to areas with anthropogenic influence, pollution and agriculture to be less diverse compared to less disturbed and polluted areas.

KEYWORDS

Acrididae, catalogue, Dakshina Kannada, diversity, Karnataka, Mangalore, Short-horned grasshopper, survey,

Dakshina Kannada a coastal district of Karnataka in southern India experiences an average annual rainfall of 4400mm. The temperature ranges from 26.1^{0}C to 36^{0}C and humidity ranges from 70-85%. The important agricultural and horticultural plants include paddy, coconut, arecanut, cashew and mango among others. The district also hosts many species of grasshoppers (Hegde, 1981; Mayya, 1995; Nishith & Rai, 1999). Several industries like Manglaore Refinery and Petrochemicals Limited (MRPL), Mangalore Chemical and Fertilizers Limited (MCF) and other small industries discharge their effluents, polluting air and water. This is likely to have drastic effects on the grasshopper populations. Many bird species like parakeets, kingfishers, herons, mynas etc. are becoming rare in this region. To understand the impacts of such developmental activities on grasshoppers, which form an essential aspect of the food chain for birds, a preliminary survey was conducted between September 2000 and June 2002.

METHODOLOGY

The survey was conducted in places like Mangalore University Campus, Someshwara, Mangalore Refinery and Petroleum Limited area, Mangalore Chemicals and Fertilizers area, Ermal, Maravanthe, Bantwal, Sullia, Kudremukh, and St. Mary's Island covering a total distance of 250km^2 to know the distribution of these insect pests. Specimens were collected using hand nets, and were properly spread and mounted in insect storage boxes, labeled with scientific names, place and date of collection and deposited in the SVS College museum for future reference.

RESULTS AND DISCUSSION

A total of 28 species of short-horned grasshoppers (Acrididae) collected from 12 localities are listed in Tables 1 and 3. The number and distribution of different species in different localities with their relative abundance and period of distribution during different months are shown in Tables 2 and 3.

From the present survey it appears that *Acrida exaltata*, *Dociostaurus* sp. and *Stauroderus bicolor* are relatively abundant than other species among subfamily Acridinae. Among the species from subfamily Oedipodinae, *Morphacris fasciata*, *Dittopternis venusta*, *Oedaleus abruptus* and *Acrotylus humbertianus* were very much abundant than the other species. As reflected in Table 2 with regard to the period of distribution, it has been found that Acridinae were abundant during January and February, whereas Oedipodinae were abundant during February and March while Catantopinae and Pyrgomorphinae were present in large numbers during December and January. Thus among different species, *Spathosternum prassiniferum* was the most abundant followed by *Catantops pinguis innotabilis*, both from subfamily Catantopinae. The fluctuations in climatic factors like humidity, temperature, light and edaphic factors could influence reproduction patterns, breeding behaviours and physiology of grasshoppers, which is reflected in the fluctuation in the relative abundance and species richness in terms of their occurrence and distribution. In the current study it appears that short horned grasshoppers are found to be most common during post monsoon season (Dec.-Feb.). Further, taxa belonging to the subfamily Catantopinae such as *Catantops pinguis innotabilis*, *Spathosternum prassiniferum*, *Eyprepocnemis alacris alacris* and *Tylotropidius varicornis* were found widely distributed while (*Gelastorrhinus sempipictus* and two species of *Oxya* in the same subfamily and *Gastrimorgus africanus* of the subfamily Oedipodinae were restricted in their distribution. It is also evident from the survey that more species diversity in Mangalagangotri Campus and Ermal region may be due to less anthropogenic activities. Further, it could be surmised that less species diversity in other localities are mainly due to pollution and agricultural practices.

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ACKNOWLEDGEMENTS

We thank the UGC for the financial assistance and Prof. Virakthamutt, G.K.V.K. Bangalore and Prof. T.C. Narendran, Calicut University, for their help in identifying the specimens.

Manuscript 1068; Received 04 August 2003; Revised received 09 June 2005; Finally accepted 01 July 2005; Date of publication 21 August 2005

Table 1. List of species of Acrididae collected between September 2000 and June 2002

Species Name	Place of Collection	Months of	Host Collection	Size	Abundance
Family: Acrididae					
Subfamily: Acridinae					
Acrida turrita (Linn.)	M.C.F.Ermal	January, February	Green grass	Big 50mm	Very common
Acrida exaltata (Walk.)	M.C.F.Ermal	February, April	Green or dry grass	Big 53mm	Very common
Dociostaurus sp.	Mangala-gangothri	January, May, June	Dry grass or leaves	Average 23mm	Common
Dociostaurus apicalis (Walk.)	St. Mary's Island	February, March	Dry grass	Small 13mm	Common
Stauroderus bicolor (Charp.)	Mangala-gangothri, Ermal, Kudremukh	March, November	Green or dry grass	Average 15-24mm	Very common
Aiolopus thalassinus tamulus (Fabr.)	Mangala-gangothri	January, March	Dry grass	Small 18mm	Uncommon
Aulacobothrus luteipes (Walk.)	Mangala-gangothri	February, December	Dry grass	Average 20mm	Uncommon
Sub family Oedipodinae					
Morphacris fasciata (Kirby)	Someshwara Gangothri	January, November	Sandy shore or Dry leaves	Average or Big 30mm/40mm	Very common
Dittopternis zebrata (Walk.)	Mangala- gangothri, Ermal	February, March, April	Dry grass	Average 25mm	Common
Dittopternis venusta (Stal)	Ermal, Sullia	February, March	Rocky area (laterite)	Average 25-30mm	Common
Heteroptermis respondens (Sauss.)	MRPL, Swarga	March, April	Brown soil (rocky)	Average 19-22mm	Uncommon
Oedaleus abruptus (Thunb.)	Ermal, Mangala-gangothri	February, April	Dry grass, Rocky	Average 18-20mm	Common
Acrotylus humbertianus (Sauss.)	Someshwara, Maravanthe, Calicut	January, March	Sandy beach with black soil & dry vegetation	Average 18-20mm	Common
Gastrimargus africanus (Sauss.)	Kudremukh	January	Green or dry grass	Big 30-45mm	Uncommon
Leva indica (I.Bol.)	Mangala-gangothri	January, May, June	Green grass or dry leaves	Small 15mm	Common
Catantopinae					
***Oxya fuscovittata* (Serv.)**	**Bantwal**	**December**	**Green Grass**	**Average 18-35mm**	**Common**
Oxya hyla hyla (Serv.)	Mangala-gangothri	December	Green grass	Average 25mm	Common
Oxya velox (Marschal)	Mangala-gangothri, Bantwal	November, December	Green grass or dry grass	Slightly big 16-32mm	Common
Catantops pinguis innotabilis (Stal)	Mangala-gangothri, Ermal, Swarga	February, March, December	Dry leaves	Slightly big or big 27-34mm	Very common
Xenocatantops humilis humilis (Serv.)	Mangala-gangothri	January, November, December,	Hibiscus leaves	Average (nymph coloured) 30mm	Uncommon
Spathosternum prasiiferum (Walker)	Mangala-gangothri, Ermal, MRPL, Bantwal	March, September, October, November,	Green or dry grass	Small 13-20mm	Very common
Gelastorrhinus semipictus (Walker)	Ermal	November	Tall green grass	Big 20-46mm	Uncommon
Eyprepocnemis alacris alacris (Serv.)	Ermal, MRPL, Swarga, Mangala-gangothri	January, February	Dry grass	Big 35-38mm	Common
Tylotropidius varicornis (Walker)	Mangala-gangothri, Ermal, Swarga	January	Dry grass	Quite big 28-48mm	Common
Epistaurus praemorsa (Stal)	Kudremukh	January	Dry grass	Average 15-18mm	Uncommon
Pyrgomorphinae					
Chrotogonus oxypterus (Blanch)	Mangala-gangothri, Swarga	January, December	Black/Red rocky area	Small 13-19mm	Common
Attractomorpha crenulata (Fabr.)	Bantwal, Mangala-gangothri, MRPL	January, December	Green grass	Small 16-26mm	Common
Neorthacris acuticeps acuticeps (I.Bol.)	Mangala-gangothri	January, October	Black soil with green grass	Average 20-24mm	Uncommon

Table 2. Relative abundance* of short-horned grasshopper species collected between September 2000 and June 2002.

	Sep.	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
Acridinae										
Acrida turrita	-	-	-	-	++	+	-	-	-	-
Acrida exaltata	-	-	-	-	++	+++	+	+	-	-
Dociostaurus sp.	-	-	-	-	+++	++	+	-	-	-
Dociostaurus apicalis	-	-	-	-	-	+++	++	-	-	-
Stauroderus bicolor	-	-	+	+	+	++	+++	+	-	-
Aiolopus thalassinus tamulus	-	-	-	-	++	++	++	-	-	-
Aulacobothrus luteipes	-	-	-	++	++	++	-	-	-	-
Oedipodinae										
Morphacris fasciata	-	-	+	+++	++	-	-	-	-	-
Dittopternis venusta	-	-	-	-	+	+++	++	+++	-	-
Dittopternis zebrata	-	-	-	-	-	+++	+++	+	-	-
Heteropternis respondens	-	-	-	-	-	-	+++	++	-	-
Oedalus abruptus	-	-	-	-	+	+++	+++	++	-	-
Acrotylus humbertianus	-	-	-	+	++++	+++	+++	+	-	-
Gastrimargus africanus	-	-	-	-	+	-	-	-	-	-
Leva indica	-	-	-	-	+++	+	-	-	+	+
Catantopinae										
Oxya fuscovittata	-	-	-	++	-	-	-	-	-	-
Oxya hyla hyla	-	-	-	++	-	-	-	-	-	-
Oxya velox	-	-	++	++	-	-	-	-	-	-
Catantops pinguis innotabilis	-	-	-	++	++	++++	++	-	-	-
Xenocatantops humilis humilis	-	-	++	+++	++	-	-	-	-	-
Spathosternum prasiniferum	+	++	+++	+++++	+	+	-	-	-	-
Gelastorrhinus semipictus	-	+	-	-	-	-	-	-	-	-
Eyprepocnemis alacris alacris	-	-	-	-	++	+++	+	-	-	-
Tylotropidius varicornis	-	-	-	-	++	+	-	-	-	-
Epistaurus praemorsa	-	-	-	-	++	+	-	-	-	-
Pyrgomorphpinae										
Chrotogonus oxypterus	-	-	-	++	+++	+	-	-	-	-
Attractomorpha crenulata	-	-	-	++	++	-	-	-	-	-
Neorthacris acuticeps acuticeps	-	++	-	+	++	-	-	-	-	-

* In one collection + = <10; ++ = <30; +++ = <50; ++++ = <70

Table 3. Species of short-horned grasshoppers recorded from different localities.

Species	Place of Collection										
	Mangala gangothri	Somes hwara	MRPL	MCF	Ermal	Bantwal	Swarga	Marva nthe	Kudre mukh	Sullia	Calicut	St Mary Island
Acrida turrita	-	-	-	+	+	-	-	-	-	-	-	-
Acrida exaltata	-	-	-	+	-	+	-	-	-	-	-	-
Dociostaurus sp.	+	-	-	-	-	-	-	-	-	-	-	-
Dociostaurus apicalis	-	-	-	-	-	-	-	-	-	-	-	+
Stauroderus bicolor	+	-	-	-	+	-	-	-	+	-	-	-
Aiolopus thalassinus tamulus	+	-	-	-	-	-	-	-	-	-	-	-
Aulacobothrus luteipes	+	-	-	-	-	-	-	-	-	-	-	-
Morphacris fasciata	+	+	+	-	-	-	-	-	-	-	-	-
Dittopternis venusta	+	-	-	-	+	-	-	-	-	-	-	-
Dittopternis zebrata	-	-	-	-	+	-	-	-	-	+	-	-
Heteropternis respondens	-	-	+	-	-	-	+	-	-	-	-	-
Oedalus abruptus	+	-	-	-	+	-	-	-	-	-	-	-
Acrotylus humbertianus	-	+	-	-	-	-	-	+	-	-	+	-
Gastrimargus africanus	-	-	-	-	-	-	-	-	+	-	-	-
Leva indica	+	-	-	-	-	-	-	-	-	-	-	-
Oxya fuscovittata	-	-	-	-	-	+	-	-	-	-	-	-
Oxya hyla hyla	+	-	-	-	-	-	-	-	-	-	-	-
Oxya velox	+	-	-	-	-	+	-	-	-	-	-	-
Catantops pinguis innotabilis	+	-	-	-	+	-	+	-	-	-	-	+
Xenocatantops humilis humilis	+	-	-	-	-	-	-	-	-	-	-	-
Spathosternum prasiniferum	+	-	+	-	+	+	-	-	-	-	-	-
Gelastorrhinus semipictus	-	-	-	-	+	-	-	-	-	-	-	-
Eyprepocnemis alacris alacris	+	-	+	-	+	-	+	-	-	-	-	-
Tylotropidius varicornis	+	-	-	-	+	-	+	-	-	-	-	-
Epistaurus praemorsa	—	-	-	-	-	-	-	-	+	-	-	-
Chrotogonus oxypterus	+	-	-	-	-	-	+	-	-	-	-	-
Attractomorpha crenulata	+	-	+	-	-	+	-	-	-	-	-	-
Neorthacris acuticeps acuticeps	+	-	-	-	-	-	+	-	-	-	-	-