ON THE ECOLOGY OF LEAFHOPPERS (*Homoptera: Cicadellidae*) OF KANYAKUMARI DISTRICT AND THEIR STATUS

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Introduction

Leafhoppers are small insects of economic importance and are easily distinguished from others by the presence of one or more rows of spines on their hind tibiae. They feed and propagate on a wide range of vegetation and their distribution is governed by that of their hosts. In this paper 24 species contained in 11 subfamilies are reported along with notes on their systematic position, economic importance, insular affinities and discontinuous distribution as evidenced by some of the species.

Systematic Position

Leafhoppers are numerous and exhibit a rich diversity of forms which is unparalled in the world. There are about 16,000 species of them from the world as per the estimates of Metcalf (1962-68) and Oman *et al* (1990). Our knowledge of leafhoppers is mainly based on the works of Distant (1908, 1916, 1918), Sing-Pruthi (1930, 1934, 1936) and others. Rao (1990) made detailed studies of nine subfamilies of Cicadellidae and estimated 361 species from India, 112 species from South India, and 67 species from Western Ghats. Details of distributional records from various regions are shown in Appendix 1. In this paper 24 species of 11 subfamilies are reported as shown below. No earlier reports of Cicadellidae are available from Kanyakumari District.

Leafhoppers Recorded from Kanyakumari Distirct

Family Cicadellidae

Subfamily Ulopinae

1. *Moonia albimaculata* Distant

Subfamily Ledrinae

2. *Petalocephala umbrosa* Distant

Subfamily Cicadellinae

3. *Cofana spectra* (Distant)

Subfamily Nirvaninae

4. *Nirvana pallida* Melichar

Subfamily Idiocerinae

5. *Amritodus brevistylus* Viraktamath
6. *Idioscopus clypealis* (Lethierry)
7. *Idioscopus niveosparsus* (Lethierry)

Subfamily Iassinae

8. *Batracomorphus angustus* Osborn

Subfamily Penthimiinae

9. *Neodartus acocephaloides* Melichar

Subfamily Krisninae

10. *Krisna strigicollis* (Spinola)

Subfamily Hecalinae

11. *Hecalus arcuatus* (de Motschulsky)
12. *Hecalus porrectus* (Walker)

Subfamily Deltocephalinae

13. *Nephotettix nigropictus* (Stoal)
14. *Nephotettix virescens* (Distant)
15. *Exitianus indicus* (Distant)
16. *Doratulina laetus* (Melichar)
17. *Doratulina jacosa* (Melichar)
18. *Doratulina indra* (Distant)
19. *Doratulina solitaris* (Melichar)
20. *Goniagnathus punctifer* (Walker)
21. *Balclutha saltuella* (Kirschbaum)
22. *Recilia intermedia* (Melichar)
23. *Scaphoideus* sp.

Subfamily Typhlocybinae

24. *Amrasca biguttula biguttula* (Isjida)

The above leafhoppers were collected by the author from Nagercoil, Lower Kodayar, Keerikarai, Veerapuli, Ottari, Kadur Kulakesai and other areas. This of course does not represent all the fauna of Kanyakumari district as much more has to be surveyed and studied.

Economic Importance

Leafhopperss attack a number of plants and damage them by sucking away the sap and cause hopperburn in them. They are known to feed on agricultural crops, fruit trees, vegetable plants and many wild and cultivated plants. Some leafhoppers like Cicadellinae exclusively feed on xylem content of leaves while Typhlocybinae feed on mesophyll. Tribes of Balcluthini and Deltocephalini feed on Graminae where as Idiocerinae hoppers attack mango and willows. Many Ulpinae are found feeding on roots of plants while Eurymelinae leafhoppers are found to be associated with ants. Leafhoppers also cause damage by depositing myraids of eggs on leaves as in Mango and also secreate a sticky dark substance which together hamper the process of photosynthesis and thereby reduce the yield of the plants to a considerable extent. Cotton leafhoppers besides being serious pests of cotton attack a number of cultivated and vegetable plants like egg plant, Cucurbita, Clover, Beans, Radish, Guava, Garden pea, Beet, Indian Hemp and others. In cotton bolls and seeds, besides affecting the quality. Both cotton and Mango leafhoppers are reported from this district. Besides the green leafhoppers, others known to affect paddy are reported in this paper and these are species of *Cofana, Hecalus, Exitianus, Goniagnathus, Balclutha, Recilia* etc. Mango leafhoppers in the genera *Idioscopus* and *Amritodus* are represented here.

Vector-Virus relationships

Some leafhoppers, besides causing direct damage by sucking the sap, also tramsmit virus diseases resulting in heavy yield losses in the crops. Species of *Nephotettix* are known to cause virus diseases all over the world and India is no exception. *Nephotettix nigropictus* (Stoal) and *N. virescens* (Distant) are notorious vectors in India causing Rice Tungro Virus (RTV) in paddy. RTV is a viral disease. Yellow Dwarf is another disease of paddy caused by the above two species but the causative agent is Mycoplasma like Organism(MLO). RTV was recorded in an epidemic form in Tamil Nadu in 1977 for the first time. RTV causes yellowing of leaves and stunting of paddy growth resulting in poor development of roots and panicles become sterile or fall off. MLO causes chlorosis and

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the growth and yield of the plant is considerably reduced. *Moonia albimaculata* is suspected to be the vector of Sandal Spike disease where as *Nephotettix virescens* is reported to transmit the same in the laboratory. Nielson (1985) reported 151 vector species in 65 genera of Cicadellidae from the World. Rao (1990) listed 11 important vectors and 24 pest species from India. Leafhoppers thus play a vital role as vectors in transmitting phytopathogenic agents into various plants.

Insular Affinities

It has been observed from these studies that species of *Doratullna* and *Neodartus* show affinities with those of Sri Lanka. The species listed here from Kanyakumari were originally described from Sri Lanka and have a restricted distribution in South India. *Neodartus acocephaloides*, a species known from Sri Lanka, is reported here and it has been observed by the author to attack many garden and wild plants in Kanyakumari district showing it's phytophagous nature. It's distribution in other areas of Tamil Nadu has been reported for the first time by Rao (in press). Further studies are required to understand more about the insular affinities with Sri Lanka.

Discontinuous Distribution

It is well known that discontinuous distribution between Southern India including Sri Lanka and Eastern Himalaya, Burma and Malaya, is exhibited by several groups of fauna especially by fishes Reptiles and Amphibia. In leafhoppers too, species of *Doratulina* namely *D. jacosa, D. indra* and *D. solitaris* are reported to show the same phenomenon. The species are reported from Sri Lanka, Kanyakumari and other areas of S. India at one end and Khasi Hills and Bengal at the other end leaving a wide gap in between, *D. laetus* is however known from Kanyakumari and Silent valley only, besides Sri Lanka. Rao (1990) gave an account of other species of leafhoppers besides those of *Doratulina* showing this phenomenon of discontinuous distribution.

Summary

23 species of 10 subfamilies of Cicadellidae are reported here from Kanyakumari district for the first time showing approximately one percent of Indian Cicadellidae along with notes on their economic importance.

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Appendix - Distribution of Leaf hoppers from various regions

Sub Family	India	S. India	Western Ghats	Kanya - Kumari ***	NE India	Kashi hills **	World *
Aphrodinae	22	9	2	-	2	2	119
Evacanthinae	13	2	2	-	4	4	57
Nirvaninae	27	8	1	1	4	3	75
Coelidiinae	53	8	6	-	1	1	432
Penthimiinae	38	16	8	1	3	1	109
Acostemminae	1	1	1	-	1	1	19
Drabescinae	16	2	2	-	2	1	34
Hecalinae	26	4	4	2	2	3	-
Deltocephalinae	165	62	41	10	37	27	3104
Total	361	112	67	14	56	43	3949

* After knight (1987)

** After Rao (1990)

*** 9 more species from other subfamilies (not shown in the table) are reported.