



New host record for *Goniagnathus (Tropicognathus) punctifer* (Walker), a leafy vegetable *Alternanthera sessilis* (L.) R.Br. ex DC. From Jaffna with the distribution of the genus (Cicadellidae: Deltocephalinae) in Sri Lanka

R Gnaneswaran

Department of Zoology, University of Jaffna, Jaffna, Sri Lanka

Abstract

The leafy vegetable *Alternanthera sessilis* (L.) R.Br. ex DC. Is reported as a host plant of a deltocephaline leafhopper *Goniagnathus (Tropicognathus) punctifer* (Walker) from Jaffna and the distributional records of all five species of *Goniagnathus (Tropicognathus)* in Sri Lanka is described.

Keywords: cicadellidae, *Goniagnathus*, *Alternanthera sessilis*

1. Introduction

Tribe Goniagnathini of Subfamily Deltocephalinae contains two genera *Goniagnathus* Fieber and *Megalopsius* Emeljanov. Species of these two genera are generally found in arid and grassland region of the old world. In Sri Lanka this tribe is represented by only one genera *Goniagnathus (Tropicognathus) Viraktamath & Gnaneswaran*, with five species. They are *Goniagnathus (T.) nervosus* Distant; *Goniagnathus (T.) fumosus* Distant; *Goniagnathus (T.) punctifer* (Walker); *Goniagnathus (T.) appallans* Baker and *Goniagnathus (T.) zeylanicus* Viraktamath & Gnaneswaran (Viraktamath & Gnaneswaran, 2009) [3, 5]. All species were collected from grasses in different ecosystem. *Alternanthera sessilis* (L.) R.Br. ex DC. Is one of the widely grown leafy vegetable in all districts of Sri Lanka. In Jaffna, this crop is cultivated in more than 100 ha along with *Centrella asiatica* and *Amaranthus* sp. throughout the year. *A. sessilis* cultivation is threatened by several insect pests such as Green leafhoppers, white fly, thrips, aphids, leaf roller flea beetle and one plant hopper *Harmalia heitensis otho* which affect leaf quality and yield (Gnaneswaran, 2009) [1]. In order to know the distribution of the leafhopper species a field study was conducted in 2018 in various ecosystems in Jaffna Districts in Sri Lanka.

Materials and Methods

Samples of leafhoppers from vegetations in various ecosystems in Jaffna were collected monthly during 2018 by sweeping method. Collected samples were sorted out and the leafhoppers were separated and identified based on their morphological characteristics.

Results

A total of 73 species of leafhoppers collected and identified. Among them Adults and nymphs of *Goniagnathus (Tropicognathus) punctifer* were collected in large number from farmer fields cultivated with *A. sessilis* after a month of planting, during October – November 2018. This is first report as the *A. sessilis* is the host plant of *G (T) punctifer*. The distribution and ecology of other

species of this genus recorded through the study from 2008 is also described in this paper (Table 1, Fig 1-5)

***Goniagnathus (Tropicognathus) punctifer* (Walker) Fig: 1)**

Bythoscopus punctifer Walker, 1858:104
Goniagnathus elongates Lethierry, 1892:209
Goniagnathus spurcatus Melichar, 1903:181
Goniagnathus punctifer, Distant, 1908; Zhang, 1990; Dash & Viraktamath, 2001
Goniagnathus (T.) punctifer (Walker), Viraktamath & Gnaneswaran, 2009

Measurements: male 5.96 mm long, 2.31 mm wide across eyes; female 6.00 mm long, 2.5 mm wide across eyes.

Materials examined: Sri Lanka

MCWZ: 1 female, Peradeniya, 12. viii.2006; 1 male, Nalanda, 4.xi.2006.

LCDZ: 2 males, 1 female, Maha Illuppalama, 12.iii.2008; 2 males, Weligama 10.ix.2009 on grass; 2 males, 2 female, Thirunelveli 07. x. 2011 on grass; 2 males, 2 female, Manipay, 20.x.2018 on *Altenanthara sessilis*

LCWZ: 3 males, 2 females, Embilipitiya, 12.iii.2009 on grass.

Collectors: R. Gnaneswaran

Distribution: Sri Lanka (Figure. 1), India (Dash & Viraktamath, 2001) [1] and China (Duan *et al.*, 2009) [2]

***Goniagnathus (Tropicognathus) nervosus* Melichar (Fig):**

Goniagnathus nervosus Melichar, 1903; Kuoh, 1966
 Dash & Viraktamath, 2001: 71,
Goniagnathus (T.) nervosus, Viraktamath & Gnaneswaran, 2009: 52.

Measurements: male 6.3 mm long, 2.3 mm wide across eyes; Female 6.5 mm long, 2.5 mm wide across eyes.

Materials examined: Sri Lanka

MCWZ: Peradeniya, 4 males, 2 females, 5.v. 2008; 12 males, 8 female, 7.vii.2008; 8 males, 6 females, 12.viii.2008; 20 males, 12 females, 26.viii. 2008.

LCDZ: 2 males, 1 female, Galagedara, 30.i.2008.

Goniagnathus (Tropicognathus) zeylanicus Viraktamath and Gnaneswaran, 2009

Pale brown with scattered reddish-brown markings (Fig: 3).

Measurements: male 6.00 mm long, 2.5-2.6 mm wide across eyes; female 6.6 mm long, 2.6 mm wide across eye.

Materials examined: Holotype male, SRI LANKA: Galagedara, 30.i.2007, R. Gnaneswaran. Paratype 1 male, 1 female, data as for holotype.

Distribution: Sri Lanka

Goniagnathus (Tropicognathus) fumosus Distant (Fig: 4)

Goniagnathus fumosus Distant, 1918:43

Goniagnathus bicolor Distant, 1918; synonymized Viraktamath & Gnaneswaran, 2009:

Goniagnathus (T.) fumosus Distant, Viraktamath & Gnaneswaran, 2009:

Measurements: male 6.6 mm long, mm 2.4 wide across eyes.

Material examined: Sri Lanka

LCDZ: 1 male, Pullalam, 4.i.2009.

Collector: R. Gnaneswaran

Distribution: Sri Lanka (figure.1), India (Dash and Viraktamath, 2001) [1] and China Duan *et al.*, 2009) [2].

Distribution: Sri Lanka (figure. 1), India (Dash & Viraktamath, 2001) [1] and China (Duan *et al.*, 2009) [2].

Goniagnathus (Tropicognathus) appellans Baker (Fig: 5)

Goniagnathus obesus Distant, 1918:43 *Goniagnathus appellans* Baker 1924:367 new name for *G. obesus* Distant, 1918 not Jacobi, 1910, Dash and Viraktamath, 2001:66 *Goniagnathus (T.) appellans* Baker, Viraktamath and Gnaneswaran, 2009:52

Measurements: Male 5.3 mm long, 2.4 mm wide across eyes.

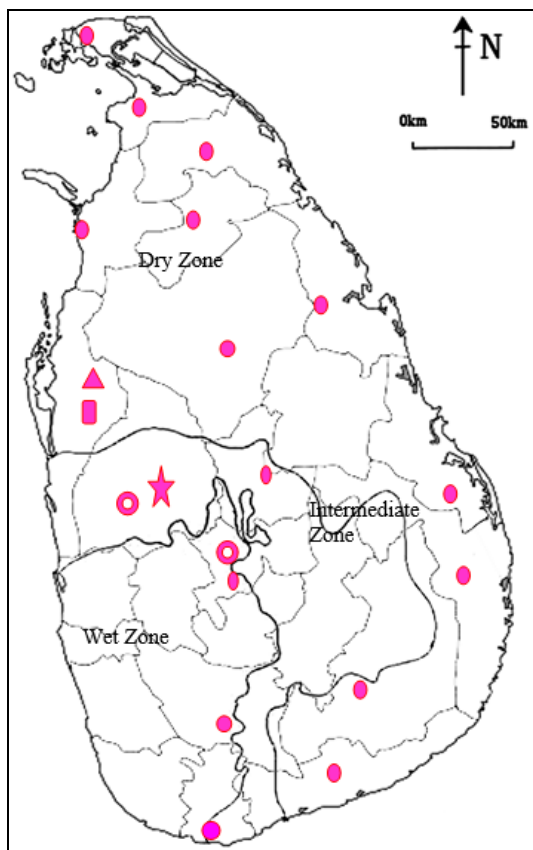
Material examined: SRI LANKA

LCDZ: 1 male, Puttalam, 4.i.2009.

Distribution: Sri Lanka (figure1), India (Dash & Viraktamath, 2001) [1].

Table 1: Ecology of *Goniagnathus (Tropicognathus)* species of Sri Lanka

| <i>Goniagnathus (Tropicognathus)</i> Species | Habitat | Host plants /at light |
|--|---|--------------------------------------|
| <i>Goniagnathus (T.) zeylanicus</i> | Grass land | grass |
| <i>Goniagnathus (T.) nervosus</i> Distant | Forest, Grass land, | grass |
| <i>Goniagnathus (T.) puntifer</i> (Walker) | Coconut estate, Grass land, vegetable field | grass, <i>Alternanthera sessilis</i> |
| <i>Goniagnathus (T.) fumosus</i> Distant | Grass land | grass |
| <i>Goniagnathus (T.) appellans</i> Baker | Grass land | grass |



Species of the tribe Goniagnathini

- ▲ *Goniagnathus (T.) appellans* Baker
- *G. (T.) nervosus* Distant
- *G. (T.) puntifer* (Walker)
- *G. (T.) fumosus* Distant
- ★ *G. (T.) zeylanicus* sp.nov. Viraktamath & Gnaneswaran



Goniagnathus (T.) puntifer (Walker),

Goniagnathus (T.) nervosus Distant

Fig 1: Distribution of species of the tribe Goniagnathini (Deltocephalinae) recorded in Sri Lanka (2006-2018).



Goniagnathus (T.) zeylanicus
Viraktamath & Gnaneswaran,

Goniagnathus (T.) fumosus Distant



Goniagnathus (T.) appallans Baker

Fig 1-5: Subfamily: Deltocephalinae (tribe: Goniagnathini)

References

1. Dash PC, Viraktamath CA. Deltocephalinae leafhopper genus *Goniagnathus* (Hemiptera: Cicadellidae) in the Indian Subcontinent with descriptions of four new species *Journal of Bombay Nat. His. Soc.* 2001; 98(1):62-79.
2. Duan Y, Zhang Y, Eebb MD. Review of the leafhopper tribe Goniagnathini (Hemiptera: Cicadellidae: Deltocephalinae) from China *Zootaxa*, 2009, 2314:50-62.
3. Gnaneswaran R, Viraktamath CA. *Harmalia heitensis otho* Fennah, 1975-2009.
4. (Hemiptera: Delphacidae)- A new pest of *Alternanthera sessilis* (L.) (Amaranthaceae) in Sri Lanka. Presented at the 4th National symposium on Invasive Alian species, Negombo, Sri Lanka, 2009, 41.
5. Viraktamath CV, Gnaneswaran R. Three new species of *Goniagnathus* (Hemiptera: Cicadellidae) from the Indian Subcontinent with description of a new subgenus. *Zootaxa*. 2009; 2224:51-59.