



FIRST REPORT OF MITES (ACARI) OCCURRING ON ORCHIDS AND LICHENS IN WEST BENGAL, INDIA

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INTRODUCTION

The Orchids are important plants not only because they have export potentiality and thus help in earning foreign exchange but also because of the fact that some of those have high medicinal values. On the other hand, lichens are also having economic value as well as are sources of medicines and pollution indicators. Many insects and mites are known to be associated with these plants and some are injurious especially to the orchids causing damage and thus become unthrifty. Unfortunately, association of mites with these plants have not been explored from India and whatever little is known is with regard to mites of lichens Kocheril and Mohanasundaram (1995, 1995a, 1995b) who reported some mites from South India. So far as orchid mites from India is concerned, it appears to be totally unexplored and available information from abroad are also very few. Some such works are Andre (1975, 1985) on orchid mite *Aoki* (1977), Colloff (1983), Hughes & Tillbrok (1966), MacNeill (1966) – all on lichen mites.

Due to this paucity of knowledge, a preliminary programme was taken up to explore the mites associated with orchids and lichens available in the campus of Ramakrishna Mission Ashrama, Narendrapur and the present paper is based on that collection.

MATERIAL AND METHODS

The campus of Ramakrishna Mission Ashrama, Narendrapur (10 km south of Kolkata in the

district of South 24 Parganas, West Bengal) is quite big and spreads over 150 acres of land and rich with various types of trees, shrubs, under shrubs, creepers, and herbs and have all types of field crops, vegetables, fruit trees, medicinal plants, etc. In many of the trees there are good growths of lichens. Recently, some orchids having medicinal values were introduced into the medicinal plants garden. The collection of mites was done from those lichens and orchids during March to September, 2013. The lichens were scrapped out from the tree trunk, brought to the laboratory in a polythene bag and examined under stereo binocular microscope and mites were collected from there by a fine brush, moistened with alcohol. The orchid mites were collected directly in the field by examining those with a hand lens (20x) and mites were picked up by a alcohol-moistened brush. The mite specimens were preserved in 70% ethyl alcohol and mounted in modified Hoyer's medium.

RESULTS AND DISCUSSIONS

The study of the collected material revealed the occurrence of a total of 15 species of mites under 10 families and 14 genera, of those, 7 species under 5 families and 6 genera were from orchids and 8 species under 5 families and 8 genera were from lichens. All these form new reports from orchids and lichens from West Bengal. The occurrence of the family Cryptognathidae in India is being done for the first time. The details about the collected species are as below:

A. Mite species collected on orchids

Order PROSTIGMATA

Family I. CUNAXIDAE

1. *Cunaxa* sp. nr. *cynodonae* Gupta & Ghosh

Collection records: 2 specimens were collected on an orchid, *Dendrobium crepedetum* from Narendrapur Campus of R. K. Mission on August, 2013. This species differs from *cynodonae* in setal characters of palp and in dorsal chaetotaxy. In all probability, this may turn out to be a new as it does not conform with any of the known species of this genus. The occurrence of this mite on orchid was earlier unknown.

Family II. TARSONEMIDAE

2. *Tarsonemus* sp.

Collection records: 3 female specimens were collected in September, 2013 on an orchid, *Dendrobium farneri*, from Narendrapur Campus. Since only female specimens were collected and no male was found, the correct identity could not be determined. The search is on for collecting male specimens for confirming the identity. The mites of this genus have varied food habits and in the present case it was seen in association with mould. No report of this genus on orchid was earlier known from India.

Family III. ERYTHRAEIDAE

3. *Erythraeus* sp.

Collection records: Only one larval specimen in association with a beetle was collected on an orchid, *Lupsia aphyllum* on July, 2013. Normally, the larvae of this family are associated with insects as predator. Earlier record of this mite on orchid was unknown.

Family IV. TYDEIDAE

4. *Pronematus fleschneri* Baker

Collection records: Two specimens were collected in August, 2013 on orchid, - *Dendrobium nobili* at Narendrapur campus. This is a predatory mite and was earlier collected on a number of plants from different parts of India, mostly as predators of spider mites (Gupta, 2003).

Family V. TENUIPALPIDAE

5. *Brevipalpus phoenicis* (Geijks.)

Collection records: Several specimens were collected in August, 2013 on orchid, - *Lupsia brchystachya* at Narendrapur campus. This is a widely distributed phytophagus species and has been reported earlier from over 50 plants in India. This produced brownish spots on the host. This is the first report of occurrence of this mite on orchid in India.

6. *Brevipalpus obovatus* Donnadieu

Collection records: Two specimens were collected in July, 2013 on an orchid, - *Dendrobium transparens* at Narendrapur campus. This is an important phytophagus mite having wide distribution and its occurrence on orchid was earlier unknown. No damage symptom was seen on the host as the population was very poor.

7. *Tenuipalpus* sp.

Collection records: Only one specimen of this uncommon genus was collected in September, 2013 on an orchid, *Arundina graminifolia* at Narendrapur campus.

B. Mite species collected on Lichens

Family VI. CRYPTOGNATHIDAE

8. *Cryptognathus* sp.

Collection records: Only one specimen of this previously unreported family from India was collected in April, 2013 on lichen thallus at Narendrapur campus.

The lack of literature made the authors unable to reach up to species level. This is a predatory mite. It was not reported earlier on lichens.

Family VII. CUNAXIDAE

9. *Neocunaxoides andrei* (Baker & Hoffmann)

Collection records: One specimen, from lichen thallus was collected in April, 2013 from Narendrapur campus. This species was earlier recorded from India on citrus. This is a predatory species but such behavior was not seen in field. It was not reported earlier on lichens.

10. *Cunaxoides* species nr. *croceus* (Koch)

Collection records: Collection of this mite on thallus of a lichen at Narendrapur campus in March, 2013. It was not earlier reported on lichens.

Family VIII. CHEYLETIDAE

11. *Cheletogenes ornatus* (C. & F.)

Collection records: Only one specimen was found associated with lichens at Narendrapur campus in March, 2013. Earlier record of this predatory mite was from mango inflorescens in India. However, it has been recorded on a number of plants from various parts of the world but this is the first record on lichens.

Order MESOSTIGMATA

Family IX. ASCIDAE

12. *Lasioseius terrestris* (Menon & Ghai)

Collection records: One specimen was associated with lichen thallus was collected at Narendrapur campus in April, 2013. Earlier, it was described from Delhi collected on mango inflorescence. This is a first record on lichen.

Order ASTIGMATA

Family X. ACARIDAE

13. *Tyrophagus putrescentiae* (Schrank)

Collection records: Several specimens of this mite were collected on lichen thallus during August, 2013. Normally this is a fungus associated mite but has been collected from varied habitats like stored products, bird nests, house dust, plants, etc. and is

widely distributed throughout the globe. Kocheril & Mohanasundaram (1995a) also collected this mite on lichens from South India.

14. *Calloglyphus oudemansi* (Zachvatkin)

Collection records: A specimen of this mite was collected from lichen thallus at Narendrapur campus in April, 2013. Kocheril & Mohanasundaram (1995a) also collected it on lichen from South India.

15. *Rhizoglyphus* sp.

Collection records: Two undetermined specimens of this genus were collected on lichen thallus at Narendrapur campus in August, 2013. Kocheril & Mohanasundaram (1995a) reported *R. oudemansi* on lichen from South India. The present specimen could not be placed in any known species and looking for further material for specific identification.

SUMMARY

The present paper reports the occurrence of 15 species of mites under 10 families and 14 genera, all being new reports on the respective hosts from India. This included 7 species under 5 families on orchids and 8 species under 5 families from lichens. The collection data and importance, if any, are also provided.

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