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New distributional records of Mymaridae (Hymenoptera: Chalcidoidea) from Uttarakhand, India

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Abstract

This paper is based on a collection of Mymaridae made during a survey of different locations and habitats of Uttarakhand for three consecutive years from 2011 to 2014. Seventeen species of Mymaridae belonging to two subfamilies (Alaptinae and Mymarinae) were collected and identified from Uttarakhand state. Of these, thirteen species have been reported for the first time from the state.

Keywords: Hymenoptera, Chalcidoidea, Mymaridae, Uttarakhand

Introduction

The family Mymaridae (fairy flies) includes the small sized, delicate, fringe-winged parasitic wasps. All the members of this family are egg parasitoids of other insects except for two that parasitize larvae of a species of Eulophidae^[9]. Mymarids are important in the natural control of Hemiptera, Auchenorrhyncha, Coleoptera, Psocoptera, Diptera and Orthoptera^[8]. Several mymarids are aquatic in nature and are capable of swimming underwater using their wings as paddles^[12, 10].

Mymaridae fauna of India are poorly studied, with 31 genera and 134 species of Mymaridae having been reported so far^[11, 14]. Most of the work in Mymaridae taxonomy from North India was done by Verma^[17], Subba rao & Hayat^[16], Hayat^[2], Zeya & Hayat^[20], Hayat & Anis^[3,4,5], Hayat & Singh^[6], Hayat et al.,^[7], Rehmat et al.,^[15], Zeya^[18], Zeya & Khan^[21], Anwar & Zeya^[1], Zeya & Anwar^[19]. Not much work has been done on this family from Uttarakhand with only six genera and 11 species listed so far^[13]. In the present work, the new distribution range of mymarids has been documented based on continuous survey and extensive collection.

Materials and Methods

The present study on Mymaridae taxonomy was carried out in Doon Valley and Garhwal regions of Uttarakhand state for three consecutive years from 2011 to 2014. The collections were made by sweep net and yellow pan trap methods from the following sites of the state: a) Barkot, b) Kalsi, c) Karwapani, d) Lachiwala, e) Muni ke Reti, f) New Forest, g) Ranichouri University Nursery, h) Sarjula Village, i) Devali Ghansyali, j) Bath Sahithal, k) Sakala Forest. References to species distribution in India recorded here are according to Noyes^[13]. All the materials reported from the present study have been deposited in the National Forest Insect Collection, Forest Research Institute, Dehradun.

Results

Order: Hymenoptera

Family Mymaridae

Sub family: ALAPTINAE

1. *Anagrus optabilis* (Perkins)

Specimens examined: 1f, India: Uttarakhand: Dehradun, Muni ki reti, 3.viii.2014, coll. B. Joshi (collected by sweeping in nursery); 2f, Dehradun, Karvapani, 13.x.2014, coll. B. Joshi (collected by yellow pan in forest area); 1f, Dehradun, New Forest, Chemistry Division, 27.v.2014, coll. B. Joshi (collected by yellow pan).

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Distribution: India: Andhra Pradesh, Orissa and Tamil Nadu, and Uttarakhand (new record).

2. *Litus huberi* Rehmat & Anis

Specimens examined: 2f, India: Uttarakhand: Dehradun, Lachiwala, 21.viii.11, coll. B. Joshi (collected by sweeping in forest); 1f, Dehradun, Botanical Garden, 11.vi.14, coll. B. Joshi (collected by yellow pan); 1f, Dehradun, Botanical Garden, 4.ix.14, coll. B. Joshi (collected by yellow pan); 1f, Dehradun, Botanical Garden, 4.ix.14, coll. B. Joshi (collected by yellow pan); 2f, Dehradun, Botanical Garden, 27.iii.14, coll. B. Joshi (collected by yellow pan); 1f, Dehradun, New Forest, 28.iii.14, coll. B. Joshi (collected by yellow pan); 1f, Dehradun, New Forest, 17.iii.14, coll. B. Joshi (collected by yellow pan); 1f, Pauri Garhwal, Dandapani, 20.vi.012, coll. B. Joshi (collected by yellow pan); 1f, Pauri Garhwal, Dandapani, 19.vi.012, coll. B. Joshi (collected by sweeping in forest).

Distribution: India: Assam and Uttarakhand (new record).

Sub family: MYMARINAE

3. *Acmopolynema bimaculatum* Subba Rao

Specimens examined: 1f, India: Uttarakhand: Dehradun, New Forest, Botanical Garden, 4.ix.2014, coll. B. Joshi (collected by yellow pan); 1f, Dehradun, New Forest, Botanical Garden, 11.vi.2014, coll. B. Joshi (collected by yellow pan); 1f, Dehradun, New Forest, Botanical Garden, 4.ix.2014, coll. B. Joshi (collected by yellow pan); 1f, Tehri Garhwal, Badshahithawl, 21.viii.2011, coll. B. Joshi (collected by sweeping in forest).

Distribution: India: Karnataka, Kerala, Uttar Pradesh and Uttarakhand (new record).

4. *Acmopolynema shrawastianum* Hayat & Anis

Specimens examined: 1f, India: Uttarakhand: Dehradun, New Forest, Botanical Garden, 27.iii.2014, coll. B. Joshi (collected by sweeping); 1f, Dehradun, New Forest, Near Ecology Division, 15.iii.2014, coll. B. Joshi (collected by yellow pan); 1f, Dehradun, New Forest, Near Ecology Division, 15.ix.2014, coll. B. Joshi (collected by yellow pan); 1f, Dehradun, New Forest, Near officer's Rest House, 27.xii.2014, coll. B. Joshi (collected by sweeping); 1f, Dehradun, New Forest, Botanical Garden, 17.ix.2014, coll. B. Joshi (collected by sweeping).

Distribution: India: Uttar Pradesh and Uttarakhand (new record).

5. *Palaoneura bagicha* (Narayanan, Subba Rao & Kaur)

Specimens examined: 2f, India: Uttarakhand: Dehradun, Lachiwala, 21.viii.2011, coll. B. Joshi (collected by sweeping in forest); 1f, Dehradun, New Forest, Botanical Garden, 3.iii.2013, coll. B. Joshi (collected by yellow pan); 2f, Dehradun, New Forest, Botanical Garden, 9.vi.2014, coll. B. Joshi (collected by yellow pan); 1f, Dehradun, New Forest, Botanical Garden, 11.vi.2014, coll. B. Joshi (collected by yellow pan); 1f, Dehradun, New Forest, Botanical Garden, 27.iii.2014, coll. B. Joshi (collected by yellow pan); 1f, Dehradun, New Forest, Near Ecology Division, 15.iii.2014, coll. B. Joshi (collected by yellow pan); 1f, Dehradun, New Forest, Near Ecology Division, 15.ix.2014, coll. B. Joshi (collected by sweeping); 1f, Dehradun, Muni ki reti, Nursery, 1.xi.2014, coll. B. Joshi (collected by sweeping); 1f, Pauri

Garhwal, Dandapani, 20.vi.2009, coll. B. Joshi (collected by yellow pan in forest); 1f, Tehri Garhwal, Sarjula Village near Tehri Dam, 19.iii.2009, coll. B. Joshi (collected by yellow pan in forest); 1f, Chamoli, Kanchula kharak, 17.vi.2011, coll. B. Joshi (collected by sweeping in forest); 1f, Chamoli, Kanchula kharak, 18.vi.2011, coll. B. Joshi (collected by sweeping in forest).

Distribution: India: Andaman and Nicobar Islands, Delhi, Uttar Pradesh, Punjab, Himachal Pradesh, Kerala, Maharashtra and Uttarakhand (new record).

6. *Erythmelus nuinu* Triapitsyn

Specimens examined: 1f, India: Uttarakhand: Dehradun, New Forest, Botanical Garden, 4.ix.2014, coll. B. Joshi (collected by yellow pan).

Distribution: India: Kerala, Pudhucherry, Tamil Nadu and Uttarakhand (new record).

7. *Gonatocerus kodaianus* (Mani & Saraswat)

Specimens examined: 1f, India: Uttarakhand: Dehradun, New Forest, 17.ix.2013, coll. B. Joshi (collected by yellow pan in botanical garden); 2f, Dehradun, Kalsi, 12.x.2014, coll. B. Joshi (collected by sweeping in agricultural field of rice); 1f, Dehradun, Kalsi, 15.x.14, coll. B. Joshi (collected by sweeping in forest); 1f, Dehradun, New Forest, 12.v.14, coll. B. Joshi (collected by yellow pan in forest); 1f, Dehradun, New Forest, 11.vi.14, coll. B. Joshi (collected by yellow pan in botanical garden); 1f, Dehradun, New Forest, 14.viii.14, coll. B. Joshi (collected by sweeping near insectary); 1f, Dehradun, New Forest, 17.xii.14, coll. B. Joshi (collected by sweeping in insectary); 1m, Dehradun, New Forest, 22.v.14, coll. B. Joshi (collected by sweeping); 1f, Dehradun, New Forest, 15.iii.14, coll. B. Joshi (collected by yellow pan); 2f, Dehradun, New Forest, 10.xi.14, coll. B. Joshi (collected by sweeping); 1f, Dehradun, New Forest, 17.ix.14, coll. B. Joshi (collected by sweeping). 12f, Pauri Garhwal, Dandapani, 20.vi.09, coll. B. Joshi (collected by yellow pan in forest); 1f, Pauri Garhwal, Shirobagad, 21.vi.09, coll. B. Joshi (collected by yellow pan in forest); 1f, Tehri Garhwal, Ranichouri, 10.ix.08, coll. B. Joshi (collected by yellow pan in nursery); 1f, Tehri Garhwal, Sarjula, 11.ix.08, coll. B. Joshi (collected by sweeping in forest); 1f, Chamoli, Bairanga, 19.vi.11, coll. B. Joshi (collected by sweeping in forest); 2f, Pauri Garhwal, Dhangar Kotdwara, 21.vii.11, coll. B. Joshi (collected by sweeping in forest).

Distribution: India: Karnataka, Kerala, Tamil Nadu and Uttarakhand (new record).

8. *Gonatocerus monticolus* Zeya

Specimens examined: 2f, India: Tehri Garhwal, Ranichouri, 10.ix.08, coll. B. Joshi (collected by sweeping); 1f, Tehri Garhwal, Sarjula, 11.ix.08, coll. B. Joshi (collected by sweeping); 2f, Tehri Garhwal, Devali Ghansyali, 12.ix.08, coll. B. Joshi (collected by sweeping); 1f, Tehri Garhwal, Badshahithawl Campus, 13.ix.08, coll. B. Joshi (collected by sweeping); 2f, Tehri Garhwal, Sakala Rest House, 18.iii.09, coll. B. Joshi (collected by yellow pan); 2f, Tehri Garhwal, Sarjula, 19.iii.09, coll. B. Joshi (collected by sweeping in forest); 5f, Tehri Garhwal, Sarjula, 19.iii.09, coll. B. Joshi (collected by yellow pan); 1f, Dehradun, New Forest, 3.iii.14, coll. B. Joshi (collected by yellow pan in botanical garden); 1f, Dehradun, New Forest, 15.v.14, coll. B. Joshi (collected

by yellow pan in botanical garden); 1f, Chamoli, Pothibasa Gopeshwar, 21.vi.11, coll. B. Joshi (collected by sweeping in forest).

Distribution: India: Uttar Pradesh and Uttarakhand (new record).

9. *Gonatocerus similis* Gupta & Poorani

Specimens examined: 1f, India: Uttarakhand: Dehradun: New Forest, 17.iii.14, coll. B. Joshi (collected by yellow pan)

Distribution: India: Karnataka and Uttarakhand (new record).

10. *Mymar schwanni* Girault

Specimens examined: 1f, India: Uttarakhand: Dehradun: Lachiwala, 21.viii.11, coll. B. Joshi (collected by sweeping in forest); 1m, Dehradun, New Forest, 25.xi.14, coll. B. Joshi (collected by sweeping in forest); 1f, Dehradun, New Forest, 27.iii.14, coll. B. Joshi (collected by yellow pan in botanical garden); 2f, Dehradun, New Forest, 28.iii.14, coll. B. Joshi (collected by yellow pan near insectary); 1f, Dehradun, New Forest, 15.iii.14, coll. B. Joshi (collected by yellow pan); 1f, Dehradun, New Forest, 9.x.14, coll. B. Joshi (collected by sweeping near insectary); 1m, Dehradun, New Forest, 20.vi.14, coll. B. Joshi (collected by sweeping near insectary); 1m, Dehradun, Barkot, 14.x.10, coll. B. Joshi (collected by sweeping in forest); 1f, Dehradun, Barkot, 14.x.10, coll. B. Joshi (collected by sweeping in horticulture garden).

Distribution: India: Andaman and Nicobar Islands, Andhra Pradesh, Karnataka, Kerala, Odisha, Pudhucherry, Tamil Nadu, Uttar Pradesh and Uttarakhand.

11. *Mymar taprobanicum* Ward

Specimens examined: 1f, India: Uttarakhand: Dehradun: Barkot, 10.x.11, coll. B. Joshi (collected by sweeping in sal forest); 2m, Dehradun, Barkot, 1.xii.14, coll. B. Joshi (collected by yellow pan in forest); 1f, Dehradun, Barkot, 1.xii.14, coll. B. Joshi (collected by yellow pan in forest); 1f, Dehradun, Barkot, 14.x.10, coll. B. Joshi (collected by sweeping in forest); 1m, Dehradun, Barkot, 14.x.10, coll. B. Joshi (collected by sweeping in horticulture garden); 1m, Dehradun, Barkot, 14.x.14, coll. B. Joshi (collected by yellow pan in forest); 1m, Dehradun, Barkot, 10.iii.14, coll. B. Joshi (collected by yellow pan in forest); 1f, Dehradun, New Forest, 3.iii.13, coll. B. Joshi (collected by yellow pan in botanical garden); 1m, Dehradun, Karvapani, 4.viii.14, coll. B. Joshi (collected by sweeping in forest), 3m, Dehradun, Karvapani, 13.x.14, coll. B. Joshi (collected by yellow pan in forest); 6f, Dehradun, Karvapani, 18.xi.14, coll. B. Joshi (collected by sweeping in forest); 4m, Dehradun, Karvapani, 18.xi.14, coll. B. Joshi (collected by sweeping in forest); 3m, Dehradun, Karvapani, 19.vii.14, coll. B. Joshi (collected by yellow pan in forest); 1f, Dehradun, New Forest, 25.xi.14, coll. B. Joshi (collected by sweeping in botanical garden); 1f, Dehradun, Kalsi, 12.x.14, coll. B. Joshi (collected by sweeping in rice field); 1m, Dehradun, Kalsi, 15.x.14, coll. B. Joshi (collected by sweeping in forest); 1m, Dehradun, Kalsi, 12.ii.14, coll. B. Joshi (collected by sweeping in forest); 1f, Dehradun, Kalsi, 9.iii.14, coll. B. Joshi (collected by sweeping in forest); 1m, Dehradun, New Forest, 3.iii.14, coll. B. Joshi (collected by yellow pan in botanical garden); 1f, Dehradun, Lachiwala, 13.iii.14, coll. B. Joshi (collected by sweeping in forest); 1m, Dehradun, Lachiwala, 21.iii.14, coll. B. Joshi (collected by

yellow pan in forest); 1f, Dehradun, New Forest, 10.iv.14, coll. B. Joshi (collected by sweeping in botanical garden); 1m, Dehradun, New Forest, 11.iv.14, coll. B. Joshi (collected by yellow pan in insectary); 1m, Dehradun, New Forest, 12.v.14, coll. B. Joshi (collected by yellow pan in forest); 2f, Dehradun, New Forest, 19.v.14, coll. B. Joshi (collected by yellow pan in insectary); 1f, Dehradun, New Forest, 27.v.14, coll. B. Joshi (collected by yellow pan in forest); 3m, Dehradun, New Forest, 9.vi.14, coll. B. Joshi (collected by yellow pan in botanical garden); 1m, Dehradun, New Forest, 9.vii.14, coll. B. Joshi (collected by yellow pan in insectary); 1f, Dehradun, New Forest, 9.vii.14, coll. B. Joshi (collected by yellow pan on insectary); 1f, Dehradun, New Forest, 10.ix.14, coll. B. Joshi (collected by sweeping in insectary); 1m, Dehradun, New Forest, 10.ix.14, coll. B. Joshi (collected by sweeping in insectary); 1m, Dehradun, New Forest, 10.x.14, coll. B. Joshi (collected by sweeping in forest); 1f, Dehradun, New Forest, 27.iii.14, coll. B. Joshi (collected by yellow pan in botanical garden); 1f, Dehradun, New Forest, 17.iii.14, coll. B. Joshi (collected by yellow pan in forest); 1m, Dehradun, New Forest, 17.iii.14, coll. B. Joshi (collected by yellow pan in forest); 1f, Dehradun, New Forest, 21.ix.14, coll. B. Joshi (collected by sweeping in botanical garden); 1f, Tehri Garhwal, Ranichouri, 10.ix.08, coll. B. Joshi (collected by sweeping in apple orchard).

Distribution: India: Andaman and Nicobar Islands, Delhi, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Odisha, Pudhucherry, Rajasthan, Tamil Nadu, Uttar Pradesh and Uttarakhand.

12. *Ooctonus himalayus* Subba Rao

Specimens examined: 1f, India: Uttarakhand: Chamoli, 17.vi.11, coll. B. Joshi (collected by sweeping in forest); 1m, Chamoli, 17.vi.11, coll. B. Joshi (collected by sweeping in forest); 1f, Chamoli, 18.vi.11, coll. B. Joshi (collected by sweeping in forest); 1m, Chamoli, 18.vi.11, coll. B. Joshi (collected by sweeping in forest); 3f, Dehradun, Karvapani, 19.vii.14, coll. B. Joshi (collected by yellow pan in forest).

Distribution: India: Himachal Pradesh and Uttarakhand (new record).

13. *Polynema dunense* Hayat & Anis

Specimens examined: 1f, India: Uttarakhand: Dehradun, Lachiwala, 21.viii.11, coll. B. Joshi (collected by sweeping in forest); 1m, Dehradun, Kalsi, 16.viii.14, coll. B. Joshi (collected by sweeping in agricultural field); 4f, Dehradun, New Forest, 25.xi.14, coll. B. Joshi (collected by sweeping in botanical garden); 1f, Dehradun, Barkot, 14.x.14, coll. B. Joshi (collected by yellow pan in forest); 1m, Dehradun, New Forest, 27.v.14, coll. B. Joshi (collected by yellow pan in forest); 3m, Dehradun, New Forest, 9.vii.14, coll. B. Joshi (collected by yellow pan in insectary); 1f, Dehradun, New Forest, 15.iii.14, coll. B. Joshi (collected by yellow pan in forest); 1f, Dehradun, New Forest, 21.ix.14, coll. B. Joshi (collected by sweeping in botanical garden). 4f, Pauri Garhwal, Adapani, 20.vi.09, coll. B. Joshi (collected by yellow pan in forest); 1f, Dehradun, Lachiwala, 15.xi.14, coll. B. Joshi (collected by yellow pan in forest); 1f, Tehri Garhwal, Sarjula, 19.iii.09, coll. B. Joshi (collected by yellow pan in forest); 1f, Chamoli, Kanchula kharak, 17.vi.11, coll. B. Joshi (collected by sweeping in forest); 1f, Chamoli, 18.vi.11, coll. B. Joshi (collected by sweeping in forest); 2f, Chamoli, 20.ii.11, coll. B. Joshi (collected by sweeping in forest); 1m,

Chamoli, 20.ii.11, coll. B. Joshi (collected by sweeping in forest); 1f, Chamoli, 21.vi.11, coll. B. Joshi (collected by sweeping in forest); 1f, Pauri Garhwal, Kotdwara, 21.vii.11, coll. B. Joshi (collected by sweeping in forest).

Distribution: India: Uttarakhand.

14. *Polynema huberi* Manickavasagam and Rameshkumar

Specimens examined: 1f, India: Uttarakhand: Dehradun: Barkot, 14.x.14, coll. B. Joshi (collected by yellow pan in forest).

Distribution: India: Andhra Pradesh, Tamil Nadu, and Uttarakhand (new record).

15. *Narayanella pilipes* (Subba Rao)

Specimens examined: 1f, India: Uttarakhand: Pauri Garhwal, Dandapani, 19.vi.09, coll. B. Joshi (collected by sweeping in forest); 1f, Dehradun, New Forest, 6.x.14, coll. B. Joshi (collected by sweeping in botanical garden); 2f, Dehradun, New Forest, 27.iii.14, coll. B. Joshi (collected by yellow pan in botanical garden); 1f, Dehradun, New Forest, 28.iii.14, coll. B. Joshi (collected by yellow pan in insectary); 1f, Dehradun, New Forest, 7.iii.14, coll. B. Joshi (collected by sweeping in insectary).

Distribution: India: Andaman and Nicobar Islands, Andhra Pradesh, Kerala, Tamil Nadu, West Bengal and Uttarakhand (new record).

16. *Gonatocerus delhiensis* (Narayanan & Subba Rao)

Specimens examined: 2f, India: Uttarakhand: Dehradun, Barkot, 11.x.2011, coll. B. Joshi (Collected by sweeping in Sal forest); 3f, Dehradun, Kalsi, 20.ii.2012, coll. B. Joshi (collected by sweeping in nursery on mango trees); 1m, Dehradun, Kalsi, 26.vi.2012, coll. B. Joshi (collected by sweeping in forest); 2f, Dehradun, Barkot, 25.viii.2012, coll. B. Joshi (collected by sweeping in forest); 11m, Dehradun, Barkot, 25.viii.2012, coll. B. Joshi (collected by sweeping in forest); 1m, Dehradun, Kalsi, 27.viii.2012, coll. B. Joshi (collected by sweeping in forest); 2m, Dehradun, Barkot, 20.vii.2013, coll. B. Joshi (collected by sweeping in forest); 2m, Dehradun, Karvapani, 19.vi.2014, coll. B. Joshi (collected by sweeping in mango orchard); 2f, Dehradun, Barkot, 21.viii.2014, coll. B. Joshi (Collected by sweeping in agriculture area); 1f, Dehradun, Barkot, 21.viii.2014, coll. B. Joshi (Collected by sweeping in forest area); 1f, Dehradun, Muni ki reti, 3.viii.2014, coll. B. Joshi (Collected by sweeping in nursery); 2f, Dehradun, Karvapani, 4.viii.2014, coll. B. Joshi (collected by sweeping in forest); 1f, Dehradun, Karvapani, 4.viii.2014, coll. B. Joshi (collected by sweeping in horticulture on mango trees); 1m, Dehradun, Kalsi, 5.viii.2014, coll. B. Joshi (collected by yellow pan in forest); 1m, Dehradun, Kalsi, 6.viii.2014, coll. B. Joshi (collected by sweeping in forest); 1f, Dehradun, Kalsi, 6.viii.2014, coll. B. Joshi (collected by sweeping in forest); 2f, Dehradun, Kalsi, 16.viii.2014, coll. B. Joshi (collected by yellow pan in forest); 1m, Dehradun, Kalsi, 16.viii.2014, coll. B. Joshi (collected by sweeping in agriculture area); 1f, Dehradun, Kalsi, 16.viii.2014, coll. B. Joshi (collected by sweeping in agriculture area); 1m, Dehradun, Karvapani, 13.x.2014, coll. B. Joshi (collected by yellow pan in forest); 7f, Dehradun, Karvapani, 18.xi.2014, coll. B. Joshi (collected by sweeping in forest); 4m, Dehradun, Karvapani, 18.xi.2014, coll. B. Joshi (collected by sweeping in forest); 7m,

Dehradun, Barkot, 14.x.2010, coll. B. Joshi (collected by sweeping in forest); 6f, Dehradun, Barkot, 14.x.2010, coll. B. Joshi (collected by sweeping in forest); 1f, Dehradun, Barkot, 14.x.2010, coll. B. Joshi (collected by sweeping in horticulture on mango trees); 2f, Dehradun, Kalsi, 12.x.2014, coll. B. Joshi (collected by sweeping in agriculture rice field); 2f, Dehradun, Karvapani, 12.x.2014, coll. B. Joshi (collected by sweeping in horticulture on mango trees); 2m, Dehradun, Karvapani, 12.x.2014, coll. B. Joshi (collected by sweeping in horticulture on mango trees); 3f, Dehradun, Barkot, 14.x.2014, coll. B. Joshi (collected by yellow pan in horticulture in mango orchard); 4m, Dehradun, Barkot, 14.x.2014, coll. B. Joshi (collected by yellow pan in horticulture in mango orchard); 1f, Dehradun, Muni ki reti, 1.xi.2014, coll. B. Joshi (collected by sweeping in nursery); 3m, Dehradun, Muni ki reti, 1.xi.2014, coll. B. Joshi (collected by sweeping in nursery); 6f, Dehradun, Kalsi, 30.xi.2010, coll. B. Joshi (collected by sweeping in mango orchard); 1f, Dehradun, New Forest, 9.xiii.2014, coll. B. Joshi (collected by yellow pan in arboretum); 2f, Dehradun, Muni ki reti, 1.xi.2014, coll. B. Joshi (collected by sweeping in nursery); 1f, Dehradun, Karvapani, 19.vii.2014, coll. B. Joshi (collected by yellow pan in forest); 1f, Dehradun, New Forest, Botanical Garden, 3.iii.2014, coll. B. Joshi (collected by yellow pan); 1f, Dehradun, Kalsi, 9.iii.2014, coll. B. Joshi (collected by sweeping in forest); 2f, Dehradun, Barkot, 10.iii.2014, coll. B. Joshi (collected by yellow pan in forest); 1f, Dehradun, Lachiwala, 13.iii.2014, coll. B. Joshi (collected by sweeping in forest); 1f, Dehradun, Lachiwala, 22.iii.2014, coll. B. Joshi (collected by yellow pan in forest); 1m, Dehradun, Lachiwala, 22.iii.2014, coll. B. Joshi (collected by yellow pan in forest); 1f, Dehradun, Kalsi, 20.vi.2012, coll. B. Joshi (collected by sweeping in forest); 2f, Pauri Garhwal, Adapani, 20.vi.2009, coll. B. Joshi (collected by yellow pan in forest); 6f, Pauri Garhwal, Srinagar, Shirobagad, 21.vi.2009, coll. B. Joshi (collected by yellow pan in forest); 3f, Tehri Garhwal, Ranichoury University, 10.ix.2008, coll. B. Joshi (collected by yellow pan in nursery); 1f, Tehri Garhwal, Sarjula Village, Tehri Dam, 11.ix.2008, coll. B. Joshi (collected by sweeping in forest); 1f, Tehri Garhwal, Badshahithawl Campus, 13.ix.2008, coll. B. Joshi (collected by sweeping in oak plantation); 1f Chamoli, Mandal, Gopeshwar, 20.ii.2011, coll. B. Joshi (collected by sweeping in forest); 1m, Chamoli, Mandal, Gopeshwar, 20.ii.2011, coll. B. Joshi (collected by sweeping in forest); 1m, Chamoli, Pothibasa, Gopeshwar, 21.vi.2011, coll. B. Joshi (collected by sweeping in forest); 2f, Tehri Garhwal, Badshahithawl, 29.ix.2011, coll. B. Joshi (collected by sweeping in forest); 1f, Dehradun, New Forest, Insectary, 19.v.2014, coll. B. Joshi (collected by yellow pan); 3f, Dehradun, New Forest, Insectary, 9.vii.2014, coll. B. Joshi (collected by yellow pan); 1f, Dehradun, New Forest, Botanical Garden, 6.x.2014, coll. B. Joshi (collected by sweeping); 1f, Dehradun, New Forest, Insectary, 9.x.2014, coll. B. Joshi (collected by sweeping); 1f, Dehradun, New Forest, Chemistry Division, 10.x.2014, coll. B. Joshi (collected by sweeping); 1f, Dehradun, New Forest, Insectary, 28.iii.2014, coll. B. Joshi (collected by yellow pan); 1f, Dehradun, New Forest, Near Ecology Division, 15.iii.2014, coll. B. Joshi (collected by yellow pan); 1f, Dehradun, New Forest, Chemistry Division, 17.iii.2014, coll. B. Joshi (collected by yellow pan).

Distribution: India: Andhra Pradesh, Delhi, Bihar, Himachal Pradesh, Karnataka, Kerala, Pudhucherry, Tamil Nadu, Uttar Pradesh and Uttarakhand (new record).

17. *Gonatocerus kashipurensis* Zeya and Khan

Specimens examined: 1f, India: Uttarakhand: Dehradun, Lachiwala, 21.viii.2011, coll. B. Joshi (collected by sweeping in forest); 1f, Dehradun, Kalsi, 18.x.2011, coll. B. Joshi (collected by yellow pan in nursery); 1f, Dehradun, Kalsi, 18.x.2011, coll. B. Joshi (collected by sweeping in nursery); 1f, Dehradun, Karvapani, 25.vi.2012, coll. B. Joshi (collected by sweeping in forest); 1f, Dehradun, New Forest, Botanical Garden, 3.iii.2013, coll. B. Joshi (collected by yellow pan); 2f, Dehradun, New Forest, Botanical Garden, 15.v.2014, coll. B. Joshi (collected by yellow pan); 1f, Dehradun, New Forest, Insectary, 17.xii.2014, coll. B. Joshi (collected by yellow pan); 1f, Dehradun, New Forest, Chemistry Division, 24.xii.2014, coll. B. Joshi (collected by sweeping); 2f, Dehradun, New Forest, Botanical Garden, 27.iii.2014, coll. B. Joshi (collected by yellow pan); 1f, Dehradun, New Forest, Insectary, 28.iii.2014, coll. B. Joshi (collected by yellow pan); 1f, Dehradun, New Forest, Near Ecology Division, 15.iii.2014, coll. B. Joshi (collected by yellow pan); 1f, Dehradun, New Forest, Chemistry Division, 17.iii.2014, coll. B. Joshi (collected by yellow pan); 2f, Dehradun, New Forest, Insectary, 7.iii.2014, coll. B. Joshi (collected by sweeping); 1f, Dehradun, New Forest, Near Officers Rest House, 27.xii.2014, coll. B. Joshi (Collected by sweeping); 2f, Pauri Garhwal, Ranichouri University, Nursery, 10.ix.2008, coll. B. Joshi (collected by sweeping in apple orchard); 6f, Tehri Garhwal, Sakala Rest House, 18.iii.2009, coll. B. Joshi (collected by yellow pan in forest);

Distribution: India: Uttarakhand.

Discussion and Conclusion

Not much work has been done on taxonomy of Mymaridae in the high altitude regions of Uttarakhand. Among the Mymarids collected and documented during the survey, eight genera have been recorded for the first time from the state, namely: *Anagrus*, *Litus*, *Acmopolynema*, *Palaoneura*, *Erythmelus*, *Gonatocerus*, *Ooconus* and *Narayanella*. Seventeen species were recorded for the first time from the above studied areas. Therefore, the present study has further enriched the knowledge of diversity of Mymaridae family from the state.

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