

Exploring the Biodiversity of Moth (Lepidoptera) of Buner Valley, Pakistan

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Abstract

The current preliminary survey of Moth (Lepidoptera) was conducted from September 2018 to September 2019 in different localities of District Buner Khyber Pakhtunkhwa, Pakistan. It was the first attempt to explore and catalogue the Moth fauna of this area. In current exploration study a total of 563 specimens of Moth were collected. During entomological survey a total of 28 species belonging to 25 genera under 8 families were recorded. Species counting on family basis as Family Erebididae 8 species (*Cyana hemata* (Walker, 1854), *Aloa lactinea* (Cramer, 1777), *Cretonotos transiens* (Walker, 1855), *Olene mendosa* (Hubner, 1823), *Cyana puella* (Drury, 1773), *Syntomoides imoan* (Cramer, 1779), *Spilosoma obliqua* (Walker, 1855) and *Stigmatophora palmata* (Moore, 1878)). Family Sphingidae 6 species (*Marumba sperchius* (Menetries, 1857), *Psilogramma increta* (Walker 1865), *Leucophlebia lineata* (Westwood, 1847), *Polyptychus dentatus* (Cramer, 1777), *Theretra alecto* (Linnaeus, 1758) and *Theretra oldenlandiae* (Fabricius, 1775)). Family Geometridae 2 species (*Biston suppressaria* (Guenee, 1858), *Declana atronivea* (Walker, 1865)). Family Noctuidae 6 species (*Dysgonia torrida* (Guenee, 1852), *Polytela gloriosae* (Fabricius, 1781), *Chasmina candida* (Walker, 1865), *Anua tirhaca* (Cramer, 1777), *Aegocera venulia* (Cramer, 1777), *Anua coronata* (Fabricius, 1976)). Family Crambidae 2 species (*Bradina diagonalis* (Guenee, 1852), *Archernis capitalis* (Fabricius, 1794)). Family Notodontidae 2 species (*Dinara combusta* (Walker, 1855), *Phalera raya* (Moore, 1849)) and Family Lasiocampidae 1 species

(*Euthrix potatoria* (Linnaeus, 1758)) while Family Bombycidae 1 species (*Ocinara varians* (Walker, 1855)).

Key words: Biodiversity, Moth, Lepidoptera, Biogeography, Buner, Khyber Pakhtunkhwa

Introduction

Moths and butterflies share single order known as Lepidoptera (Gadhikar *et al.*, 2015). Current data show that to consist of 1, 74, 250 species of Moth (Kathirvelu *et al.*, 2019). Which comprise globally of 126 families under 46 super families (Bharamal, 2015). The biggest superfamily, Noctuoidea, in the Order from 42, 000 to 70, 000 reported species (Zahiri *et al.*, 2011). The prime family of Moth, Noctuidae, contains 45,000 species (Zaspel, 2008). Reported about 29 subfamilies with 4,000 genera of family Noctuidae (Naz, 2011). The subsequent very abundant superfamily is Geometroidea which comprise of approximately 21, 500 species, monitored via Pyraloidea, Papilionoidea plus Gelechioidea individually with between 15, 000 and 16, 000 species (Zahiri *et al.*, 2011). In Pakistan Families Noctuidae, Pyralidae, Arctiidae, Geometridae, Sphingidae and Lymantriidae were reported (Aslam, 2009). The body of Moth is thick and covering with fine light hairs. Moth wings are held flat against body when resting. The pupal phase of Moth is called cocoon. The color of Moth is frequently dull. (Dardona *et al.*, 2015). Most of the species of Moths are nocturnal. Maximum species of Moth are Appeal to lights (Pickering *et al.*, 2016). But there are also daytime species as well as crepuscular (Gadhikar *et al.*, 2015). Moths take place in all types of habitats comprising crop plantations, agro horticulture fields grasslands and natural forests. The Moths are very familiar to mankind on account of their beautiful appearance, dark coloration, size and plant relationship (Kathirvelu *et al.*, 2019). Moths are cosmopolitan in distribution and have authoritative place in worldwide ecology (Gadhikar *et al.*, 2015). The species feed predominantly on plants and primarily action as of pollinators in the environment, and their caterpillar phase insects turn as quarry for other marauders. They have greatly contingent upon the nutrition necessity, the indigenous flora form (Elanchezhian *et al.*, 2014). Moths perform imperative title role in numerous environments act as pollinations, phytophagous and used as a quarry for a wide-ranging variety of species such as bats and many types of aves. In contrast to several other invertebrates, the ecosystem and scattering of Moths are well-known. The central building block of Moth is nutrition level in their environment. The higher ratio of (bird's bats,) has great effect on decays of Moths. (Jonason *et al.*, 2014). Macromoth are species-rich group and an environmentally diversified,

which is habitually occurring richly in cultivated lands and found a vital nutrition source for invertebrates and small mammals. Partially as of their environmental diverseness and species abundance. They are measured a sensible pointer class for the diversity of plants and animals in planetary environments (Merckx *et al.*, 2009).

The study area is mountainous and some region are also plain. Cultivation in this area is mostly focused on wheat, maize, tobacco and to some extent persimmon, conifer forests, Peach orchards and citrus plants. The Moth fauna of District Buner Khyber Pakhtunkhwa, Pakistan are very important from biogeographical point of view. The current study was designed to explore and catalogue the Moth fauna from the selected localities of District Buner and to study the taxonomic identification of the collected specimens of Moth species.

MATERIALS AND METHODS

Buner is the District of Malakand Division (Khyber Pakhtunkhwa) which is mostly hilly areas. It is surrounded by Swat in north, Malakand agency in west, Shangla in east and Swabi and Mardan in south. Buner lies between 34-09 and 34-43° N latitude and 72-10 and 72-47° E longitude (Akhtar *et al.*, 2018). Buner comprises of Tehsil Daggar, Gagra, Totalai, Chagharzi, Chamla and Gadeze. The Daggar is the head quarter of the district (Saeed *et al.*, 2013).

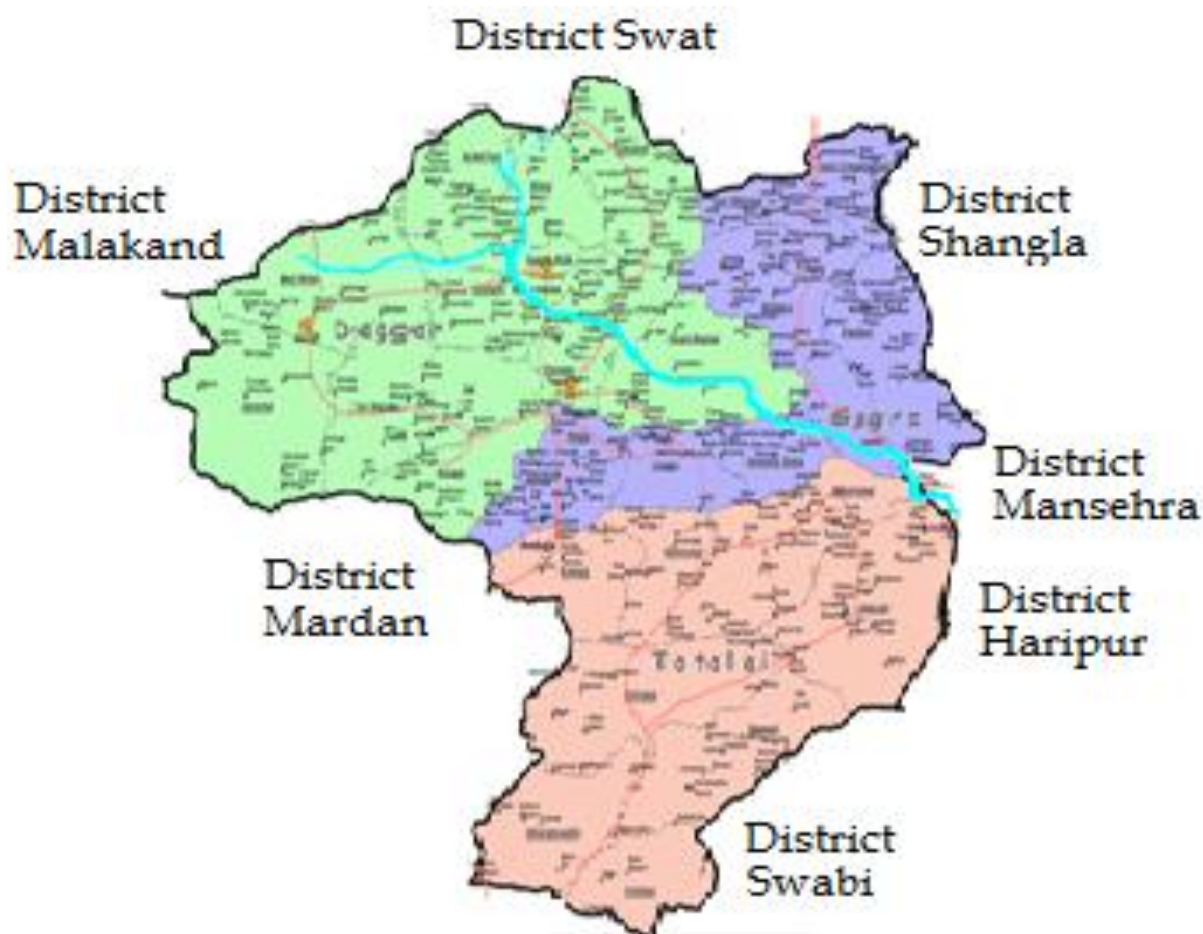


Figure 1.1: Map of District Buner (Zahidullah *et al.*, 2016).

The Current preliminary research study was conducted to explore the biodiversity of Moth of District Buner Khyber Pakhtunkhwa, Pakistan. The specimens of Moths were collected from Nineteen different localities of District Buner during 2018-19. To explore systematically the Moth fauna of District Buner KP, Pakistan. Sampled study was accompanied in the following table (1).

Table 1: List of sampled localities along with longitude and latitude of District Buner.

S. NO	Name of Locality	Longitude	Latitude
1	Kalail	34.675005° N	72.493134° E
2	Gokand	34.3455° N	72.3056° E
3	Nanser	34.4926° N	72.2527° E
4	Hisar	34.548842° N	72.503028° E

5	Daggar	34.511044° N	72.48396° E
6	Amnawar	34.509029° N	72.482739° E
7	Chagharzo	34.4680° N	72.7454° E
8	Ambela	34.399187° N	72.479478° E
9	Chinglai	34.3227° N	72.5116° E
10	Kawga	34.391255° N	72.511578° E
11	Malka	34.19188° N	72.41483° E
12	Jowar	34.554282° N	72.301465° E
13	Kingergali	34.5118° N	72.2374° E
14	Pir Baba	34. 50406° N	72.460983° E
15	KhodoKhail	34.2776° N	72.6181° E
16	Shaheede Sar	34.3746° N	72.3926° E
17	Bar Kaly	34.2831° N	72.2915° E
18	Nawagay	34.403437° N	72.562905° E
19	Budal	34.4929° N	34.4929° E

Sampling Methodology

The Moth specimens were collected by aerial netting, hand picking and by using light trap by using white screen (40 W - UV Lamp). The samples were collected 2 to 3 days per week, in evening 6 PM to morning 6 AM and the light trap was set as stable automatic mode that is on and off in the time interval system and the samples were collected from morning time. Some Moths were collected with a white sheet hanging up with a bright torch shining on it. While some Moths were also collected when settle on window panes if curtains are left open, or were come in to light through an open window. Moths were killed in a killing bottle containing ethyl acetate with 1 cm thick filter paper at the bottom. The killing agent was pasted on a piece of cotton.

Sample preservation

After half an hour, the dead specimens were placed in wet butter paper in petri dish for soften the body parts especially the wings then these specimens stretched and pinned properly. Entomological pins were used for pinning the specimens. After pinning, specimens were spread on setting board for stretching the appendages. After proper drying of the moth specimens were then kept in wooden insect boxes. Coopex powder and mounted naphthalene balls were used to protect the specimens from ants and other predators. Specimens were deposited in museum of University of Buner, KP, Pakistan and National Insect Museum (NIM), National Agriculture Research Centre (NARC), Islamabad Pakistan.

Identification of the samples

All specimens of Moth were examined and identified up to species level with the help of old and latest available literature which are (Hampson, 1892), (Hampson, 1894), (Hampson, 1895), (Hampson, 1896), (Bell and Scott, 1937), (Van Nieukerken *et al.*, 2011), (Zahiri *et al.*, 2011), (Zahiri *et al.*, 2012) and (Kitching and Cadiou, 2000). Furthermore, identified moth species were also confirmed with the help of identified moth species already housed at NIM, NARC Islamabad, Pakistan.

RESULTS

The current preliminary survey of Moth fauna was carried out in the period of September 2018 to September 2019 from Nineteen different localities of District Buner Khyber Pakhtunkhwa, Pakistan. In current study 563 specimens of Moth were collected. Entomological survey revealed that a total of 28 species belonging to 25 genera under 8 families i.e. Family Erebidae, Family Sphingidae, Family Geometridae, Family Noctuidae, family Crambidae, Family Notodontidae, Family Lasiocampidae and Family Bombycidae were recorded. The rank list of Moth species sampled from different localities of District Buner are shown in Table 2.

Table 2: Rank list of Moth species from different localities of District Buner.

S. No	Specie Name	Kal	Gok	Nan	His	Dag	Amn	Cha	Amb	Chi	Kaw	Mal	Jow	Kin
1	<i>Cyana hemata</i>	2	1	2	-	1	-	-	1	-	1	2	2	3
2	<i>Aloa lactinea</i>	4	3	4	5	3	5	-	5	1	3	-	6	3

3	<i>Cretonotos transiens</i>	2	2	2	-	3	1	-	2	2	-	1	1	1
4	<i>Olene mendosa</i>	1	-	-	-	-	1	-	-	-	1	-	-	-
5	<i>Cyana Puella</i>	2	1	1	-	2	-	1	1	-	-	1	-	2
6	<i>Syntomoides imaon</i>	-	3	2	-	2	3	2	-	2	1	3	2	-
7	<i>Spilosoma obliqua</i>	2	1	1	3	-	1	-	2	1	2	-	1	1
8	<i>Stigmatophora palmata</i>	2	1	-	2	1	2	1	-	4	2	1	1	2
9	<i>Marumba sperchius</i>	2	-	2	2	1	1	-	-	-	2	-	2	1
10	<i>Psilogramma increta</i>	1	1	2	-	1	1	-	2	-	2	-	1	-
11	<i>Leucophlebia lineata</i>	2	2	-	-	2	-	2	-	2	-	1	-	-
12	<i>Polyptychus dentatus</i>	-	1	1	-	-	-	-	1	-	1	-	-	2
13	<i>Theretra alecto</i>	-	1	2	-	2	-	1	-	1	-	1	-	1
14	<i>Theretra oldenlandiae</i>	2	2	-	-	2	-	-	1	-	-	2	1	-
15	<i>Biston suppressaria</i>	1	2	1	3	-	2	-	-	2	-	3	1	-
16	<i>Declana atronivea</i>	3	1	-	1	3	-	2	-	1	2	-	2	1
17	<i>Dysgonia torrida</i>	2	1	1	2	1	1	-	1	-	2	1	-	-
18	<i>Polytela gloriosae</i>	3	-	-	1	-	3	1	-	1	1	-	1	2
19	<i>Chasmina candida</i>	1	2	1	3	2	1	-	2	1	2	1	-	1
20	<i>Anua tirhaca</i>	-	1	2	1	1	2	1	1	-	-	1	1	3
21	<i>Aegocera venulia</i>	2	1	-	2	1	-	-	1	-	3	-	-	1
22	<i>Anua coronata</i>	1	1	1	3	-	1	-	3	1	1	-	3	-
23	<i>Bradina diagonalis</i>	3	1	-	1	1	1	-	1	-	2	-	1	2
24	<i>Archernis capitalis</i>	1	1	3	2	1	1	1	1	-	2	1	-	2
25	<i>Dinara combusta</i>	1	3	1	1	-	1	1	-	1	2	-	2	1
26	<i>Phalera raya</i>	1	2	-	3	1	2	2	2	-	1	-	3	1
27	<i>Euthrix potatoria</i>	1	-	1	2	-	-	1	2	1	1	1	-	-

28	<i>Ocinara varians</i>	-	1	-	2	-	1	1	-	-	1	-	1	-
	Sub-total	42	36	30	39	31	31	17	29	21	35	20	32	30
	Total	563												
	Percentage %	7.4	6.3	5.3	6.9	5.5	5.5	3.0	5.1	3.7	6.2	3.5	5.6	5.3

Key: Kalail: Kal; Gokand: Gok; Nanser: Nan; Hisar: His; Daggar: Dag; Amnawar: Amn; Chagharzo: Cha; Ambela: Amb; Chinglai: Chi; Kawga: Kaw; Malka: Mal; Jowar: Jow; Kingergali: Kin; Pir Baba: Pir; Khodokhail: Kho; Shaheede Sar: Sha; Bar Kaly: Bar; Nawagy: Naw; Budal: Bud

Description of Moth species collected from District Buner.

1. *Cyana hemata* (Walker, 1854) (Plate 1, 1)

Material examined: Buner: Kalail, 25.iv.19, 2♀, leg. Zarin; Buner: Gokand, 10.xi.18, 1♀, leg. Zarin; Buner: Nanser, 17. xi.19, 2♀, leg. Zarin; Buner: Daggar, 5.vi.19, 1♀, leg. Zarin; Buner: Ambela, 12.vii.19, 1♀, leg. Zarin; Buner: Kawga, 12.x.18, 1♀, leg. Zarin; Buner: Malka, 5.v.19, 2♀, leg. Zarin; Buner: Jowar, 5.x.19, 2♀, leg. Zarin; Buner: Kingergali, 8.xi.18, 3♀, leg. Zarin; Buner: Khodokhail, 11.xi.19, 1 ♂, leg. Zarin; Buner: Nawagy, 17.x.19, 1♀, leg. Zarin; Buner: Budal, 19.ix.19, 3♀, leg. Zarin;

Seasonal occurrence: This species was collected from May to September.

Present record: The present status of this species in Buner District are common.

Distribution: It is found in China, Africa, India Madagascar, Borneo, Myanmar, Sumatra, Java and Sri Lanka (De Prins and De Prins, 2018)

2. *Aloa lactinea* (Cramer, 1777) (Plate 1, 2)

Material examined: Buner: Kalail, 4.v.19, 4♀, leg. Zarin; Buner: Gokand, 14.v.19, 3♀, leg. Zarin; Buner: Bagra, 11. vi.19, 4♀, leg. Zarin; Buner: Hisar, 5.vii.19, 5♀, leg. Zarin; Buner: Daggar, 8.vi.19, 3♀, leg. Zarin; Buner: Amnawar, 20.ix.18, 5♀, leg. Zarin; Buner: Ambela, 25.viii.19, 5♀, leg. Zarin; Buner: Elai, 29.vi.19, 1♂, leg. Zarin; Buner: Kawga, 30.vi.18, 3♀, leg. Zarin; Buner: Jowar, 13.vi.19, 6♀, leg. Zarin; Buner: Torwarsak, 8.x.18, 3♀, leg. Zarin; Buner: Pir Baba, 10.x.18, 4♀, leg. Zarin; Buner: Khodokhail, 7.x.18, 3♀, leg. Zarin; Buner: Bajkata, 3.vi.19, 5♀, leg. Zarin; Buner: Bar Kaly, 27.iv.19, 3♀, leg. Zarin; Buner: Nawagy, 21.vi.19, 5♀, leg. Zarin; Buner: Budal, 19.ix.19, 6♀, leg. Zarin;

Seasonal occurrence: This species was collected approximately April to September.

Present record: The present status of this species in Buner District are very abundant.

Distribution: This Species are well distributed in Sumatra, Taiwan, Myanmar Sri Lanka Java (Savela, 2015). Japan, India, , southern and western China, and Philippines (Gurule, 2013).

3. *Cretonotos transiens* (Walker, 1855) (Plate 1, 3)

Material examined: Buner: Kalail, 3.vi.19, 2♀, leg. Zarin; Buner: Gokand, 8.vi.19, 2♂, leg. Zarin; Buner: Nanser, 16. vi.19, 2♀, leg. Zarin; Buner: Daggar, 18.vi.19, 3♀, leg. Zarin; Buner: Amnawar, 20.vi.19, 1♂, leg. Zarin; Buner: Ambela, 27.vi.19, 2♀, leg. Zarin; Buner: Chinglai, 2.vi.19, 2♀, leg. Zarin; Buner: Malka, 5.viii.19, 1♀, leg. Zarin; Buner: Jowar, 13.viii.19, 1♀, leg. Zarin; Buner: Kingergali, 8.vii.19, 1♀, leg. Zarin; Buner: Pir Baba, 8.vii.19, 2♀, leg. Zarin; Buner: Shaheede Sar, 22.vii.19, 1♀, leg. Zarin; Buner: Bar Kaly, 21.viii.19, 1♀, leg. Zarin; Buner: Budal, 13.vii.19, 2♀, leg. Zarin;

Seasonal occurrence: This species was collected from June to September.

Present record: The present status of this species in Buner District are common.

Distribution: It is found in Sulawesi, Japan, Philippines, Burma, China, Pakistan, Bhutan, Malaysia, Nepal, Indonesia, Afghanistan, Sunderland, Hong Kong, Borneo and India (Gurule, 2013).

4. *Olene mendosa* (Hubner, 1823) (Plate 1, 4)

Material examined: Buner: Kalail, 16.xi.18, 1♀, leg. Zarin; Amnawar, 11.x.18, 1♀, leg. Zarin; Buner: Kawga, 23. xii.18, 2♀, leg

Seasonal occurrence: This species was collected from August to September.

Present record: The present status of this species in Buner District are very rare.

Distribution: It is distributed in Java, Sri Lanka, India and Burma (Gurule, 2013).

5. *Cyana puella* (Drury, 1773) (Plate 1, 5)

Material examined: Buner: Kalail, 4.vi.19, 2♀, leg. Zarin; Buner: Gokand, 9.vii.19, 1♂, leg. Zarin; Buner: Nanser, 15. v.19, 1♂, leg. Zarin; Buner: Daggar, 4.viii.19, 2♀, leg. Zarin; Buner: Chagharzo, 12.vi.19, 1♀, leg. Zarin; Buner: Ambela, 27.ix.18, 1♀, leg. Zarin; Buner: Malka, 7.viii.19, 1♀, leg. Zarin; Buner: Kingergali, 8.ix.18, 2♀, leg. Zarin; Buner: Pir Baba, 29.viii.19, 1♀, leg. Zarin; Buner: Khodokhail, 13.vi.19, 2♀, leg. Zarin; Buner: Nawagy, 20.viii.19, 2♀, leg. Zarin; Buner: Budal, 4.viii.19, 2♀, leg. Zarin;

Seasonal occurrence: This species was collected from May to September.

Present record: The present status of this species in Buner District are common.

Distribution: It is found in the Sri Lanka, Kenya, India (Maharashtra, Bombay, Nilgiris), Nepal, Eritrea, Madagascar and north-western Himalayas (De Prins and De Prins, 2018).

6. *Syntomoides imaon* (Cramer, 1779) (Plate 1, 6)

Material examined: Buner: Gokand, 13.x.18, 3♀, leg. Zarin; Buner: Nanser, 18. x.18, 2♀, leg. Zarin; Buner: Daggar, 22.xi.18, 2♀, leg. Zarin; Buner: Amnawar, 16.ix.18, 3♀, leg. Zarin; Buner: Chagharzo, 25.viii.19, 2leg. Zarin; Buner: Chinglai, 28.vii.19, 2♀, leg. Zarin; Buner: Kawga, 23.vii.19, 1♂, leg. Zarin; Buner: Malka, 13.x.18, 3♀, leg. Zarin; Buner: Jowar, 16.x.18, 2♀, leg. Zarin; Buner: Pir Baba, 22.x.18, 1♀, leg. Zarin; Buner: Khodokhail, 27.x.18, 2♀, leg. Zarin; Buner: Shaheede Sar, 13.viii.19, 2♀, leg. Zarin; Buner: Bar Kaly, 28.viii.19, 1♀, leg. Zarin; Buner: Budal, 22.ix.18, 2♀, leg. Zarin;

Seasonal occurrence: This species was collected from July to November.

Present record: The present status of this species in Buner District are abundant.

Distribution: It is found in Sri Lanka, Hong Kong, Khasi hills and throughout India Kerala, , Myanmar, and Sikkim (Vattakaven *et al.*, 2016).

7. *Spilosoma obliqua* (Walker, 1855) (Plate 1, 7)

Material examined: Buner: Kalail, 14.ix.18, 2♀, leg. Zarin; Buner: Gokand, 17.ix.18, 1♂, leg. Zarin; Buner: Nanser, 20.ix.18, 1♀, leg. Zarin; Buner: Hisar, 2.x.18, 3♀, leg. Zarin; Buner: Amnawar, 5.x.18, 1♀, leg. Zarin; Buner: Ambela 27.viii.19, 2♀, leg. Zarin; Buner: Chinglai, 22.viii.19, 1♀, leg. Zarin; Buner: Kawga, 15.ix.18, 2♀, leg. Zarin; Buner: Malka, 10.viii.19, 1♀, leg. Zarin; Buner: Jowar, 16.viii.19, 1♀, leg. Zarin; Buner: Kingergali, 20.viii.19, 1♀, leg. Zarin; Buner: Khodokhail, 17.vii.19, 1♂, leg. Zarin; Buner: Shaheede Sar, 14.viii.19, 3♀, leg. Zarin; Buner: Nawagy 23.viii.19, 3♀, leg. Zarin; Buner: Budal, 20.vii.19, 2♀, leg. Zarin;

Seasonal occurrence: This species was collected from July to November.

Present record: The present status of this species in Buner District are less abundant.

Distribution: It is distributed in India, Burma, Bangladesh, Bhutan, south eastern Afghanistan, northern and Pakistan (Savela, 2015).

8. *Stigmatophora palmata* (Moore, 1878) (Plate 1, 8)

Material examined: Buner: Kalail, 13.viii.19, 2♀, leg. Zarin; Buner: Gokand, 23.viii.19, 1♂, leg. Zarin; Buner: Hisar, 12.vii.19, 2♀, leg. Zarin; Buner: Daggar, 17.vii.19, 1♀, leg. Zarin; Buner: Amnawar, 15.vii.19, 2♀, leg. Zarin; Buner: Chagharzo, 24.vii.19, 1♀, leg. Zarin;

Buner: Chinglai, 20.vii.19, 4♀, leg. Zarin; Buner: Kawga, 25.vii.19, 2♀, leg. Zarin; Buner: Malka, 2.viii.19, 1♀, leg. Zarin; Buner: Jowar, 5.viii.19, 1♀, leg. Zarin; Buner: Kingergali, 7.viii.19, 2♀, leg. Zarin; Buner: Khodokhail, 9.viii.19, 1♀, leg. Zarin; Buner: Shaheede Sar, 12.viii.19, 3♀, leg. Zarin; Buner: Nawagy 16.viii.19, 1♀, leg. Zarin; Buner: Budal, 22.viii.19, 2♀, leg. Zarin;

Seasonal occurrence: This species was collected in July to August.

Present record: The present status of this species in Buner District are less abundant.

Distribution: This moth occur in the north-western Assam and Himalayas (Savela, 2015).

9. *Marumba sperchius* (Menetries, 1857) (Plate 1, 9)

Material examined: Buner: Kalail, 8.vii.19, 2♀, leg. Zarin; Buner: Nanser, 15. vi.19, 2♀, leg. Zarin; Buner: Hisar, 3. vii.19, 2♀, leg. Zarin; Buner: Daggar, 11.vii.19, 1♀, leg. Zarin; Buner: Amnawar, 19.viii.19, 1♀, leg. Zarin; Buner: Kawga, 21.vii.19, 2♀, leg. Zarin; Buner: Jowar, 24.ix.18, 2♀, leg. Zarin; Buner: Kingergali, 5.ix.18, 1♀, leg. Zarin; Buner: Bar Kaly 2.ix.18, 1♀, leg. Zarin; Buner: Budal, 20.v.19, 1♂, leg. Zarin;

Seasonal occurrence: This species was collected from May to September.

Present record: The present status of this species in Buner District are common.

Distribution: This species occurs south to continental Thailand Laos, northern Vietnam, northeastern India and China to Korea and Japan and east through Nepal (Rafi *et al.*, 2014).

10. *Psilogramma increta* (Walker, 1865) (Plate 2, 10)

Material examined: Buner: Kalail, 3.x.18, 1♀, leg. Zarin; Buner: Gokand, 8.ix.18, 1♀, leg. Zarin; Buner: Nanser, 25. vii.19, 2♀, leg. Zarin; Buner: Daggar, 18.vi.19, 1♀, leg. Zarin; Buner: Amnawar, 4.vii.19, 1♀, leg. Zarin; Buner: Ambela, 17.viii.19, 2♀, leg. Zarin; Buner: Kawga, 16.vi.19, 2♀, leg. Zarin; Buner: Jowar, 13.viii.19, 1♀, leg. Zarin; Buner: Khodokhail, 10.viii.19, 1♀, leg. Zarin; Buner: Nawagy, 23.xi.18, 1♀, leg. Zarin;

Seasonal occurrence: This species was collected from June to October.

Present record: The present status of this species in Buner District are common.

Distribution: This moth is distributed in Laos and Vietnam, Myanmar to Thailand, northwestern India eastwards across Nepal, then north through Taiwan, and eastern China to Korea and Japan and Kashmir (Rafi *et al.*, 2014).

11. *Leucophlebia lineata* (Westwood, 1847) (Plate 2, 11)

Material examined: Buner: Kalail, 24.vii.19, 2♀, leg. Zarin; Buner: Gokand, 28.v.19, 2♀, leg. Zarin; Buner: Daggar, 15.vii.19, 2♀, leg. Zarin; Buner: Chagharzo, 20.xi.18, 2♀, leg.

Zarin; Buner: Chinglai, 19.vii.19, 2♀, leg. Zarin; Buner: Malka, 30.vi.18, 2♀, leg. Zarin; Buner: Pir Baba, 3.viii.19, 1♂, leg. Zarin; Buner: Shaheede Sar, 11.viii.19, 1♀, leg. Zarin; Buner: Nawagy 21.vi.19, 1♀, leg. Zarin;

Seasonal occurrence: This species was collected from May to October.

Present record: The present status of this species in Buner District are very common.

Distribution: This species is found in Thailand, Taiwan, Malaysia, Vietnam eastern and southern China Pakistan, Philippine, Cambodia, Indonesia (Sumatra, Java, Kalimantan, Flores, Sulawesi) Nepal, Sri Lanka and India (Rafi *et al.*, 2014).

12. *Polyptychus dentatus* (Cramer, 1777) (Plate 2, 12)

Material examined: Buner: Gokand, 12.viii.19, 1♀, leg. Zarin; Buner: Nanser, 4. vii.19, 1♂, leg. Zarin; Buner: Ambela, 23.viii.19, 1♀, leg. Zarin; Buner: Kawga, 2.vii.19, 1♀, leg. Zarin; Buner: Kingergali, 27.vii.19, 2♀, leg. Zarin; Buner: Bar Kaly, 26.viii.19, 1♀, leg. Zarin; Buner: Budal, 13.vii.19, 2♀, leg. Zarin;

Seasonal occurrence: This species was collected from July to September.

Present record: The present status of this species in Buner District are rare.

Distribution: This species has been recorded from tropical Pakistan, tropical India and Sri Lanka (Rafi *et al.*, 2014).

13. *Theretra alecto* (Linnaeus, 1758) (Plate 2, 13)

Material examined: Buner: Gokand, 24.vii.19, 1♀, leg. Zarin; Buner: Nanser, 15.ix.18, 2♀, leg. Zarin; Buner: Daggar, 13.viii.19, 2♀, leg. Zarin; Buner: Chagharzo, 18.ix.18, 1♀, leg. Zarin; Buner: Chinglai, 7.viii.19, 1♀, leg. Zarin; Buner: Malka, 10.vii.19, 1♀, leg. Zarin; Buner: Kingergali, 28.vi.19, 1♀, leg. Zarin; Buner: Pir Baba, 22.ix.18, 2♀, leg. Zarin; Buner: Khodokhail, 17.viii.19, 1♂, leg. Zarin; Buner: Bar Kaly, 11.vi.19, 2♀, leg. Zarin; Buner: Nawagy, 9.ix.18, 2♀, leg. Zarin;

Seasonal occurrence: This species was collected from June to September.

Present records: The present status of this species in Buner District are common.

Distribution: This moth species is distributed in Sri Lanka, southern China, South East Asia, Taiwan, southern Japan, Balkans, Philippines, east across the Middle East, Palearctic Eco zone, Pakistan south of the Himalaya, Indomalaya, Indonesian Central Asia, South-eastern Europe and India (Rafi *et al.*, 2014).

14. *Theretra oldenlandiae* (Fabricius, 1775) (Plate 2, 14)

Material examined: Buner: Kalail, 20.vii.19, 2♀, leg. Zarin; Buner: Gokand, 9.vi.19, 2♀, leg. Zarin; Buner: Daggar, 22.ix.18, 2♀, leg. Zarin; Buner: Ambela, 29.ix.18, 1♀, leg. Zarin; Buner: Malka, 12.viii.19, 2♀, leg. Zarin; Buner: Jowar, 21.viii.19, 1♀, leg. Zarin; Buner: Pir Baba, 4.viii.19, 2♀, leg. Zarin; Buner: Shaheede Sar, 27.ix.18, 1♀, leg. Zarin; Buner: Nawagy, 11.vii.19, 1♀, leg. Zarin; Buner: Budal, 18.ix.18, 1♀, leg. Zarin;

Seasonal occurrence: This species was collected from June to September.

Present record: The present status of this species in Buner District are common.

Distribution: It has a widespread occurrence, Japan, China, Sri Lanka, Indonesian archipelagos to New Guinea, South East Asia, South Korea, Russia, India, Philippine and from northern Pakistan (Rafi *et al.*, 2014).

15. *Biston suppressaria* (Guenee, 1858)

(Plate 2, 15)

Material examined: Buner: Kalail, 12.v.19, 1♀, leg. Zarin; Buner: Gokand, 27.vi.19, 2♀, leg. Zarin; Buner: Nanser, 3.viii.19, 1♀, leg. Zarin; Buner: Hisar, 11.v.19, 3♀, leg. Zarin; Buner: Amnawar, 8.vi.19, 2♀, leg. Zarin; Buner: Chinglai, 15.viii.19, 2♀, leg. Zarin; Buner: Malka, 7.vi.19, 3♀, leg. Zarin; Buner: Jowar, 25.vii.19, 1♀, leg. Zarin; Buner: Pir Baba, 19.v.19, 4♀, leg. Zarin; Buner: Khodokhail, 10.viii.19, 2♀, leg. Zarin; Buner: Bar Kaly, 20.vii.19, 2♀, leg. Zarin; Buner: Nawagy 14.vii.19, 1♂, leg. Zarin; Buner: Budal, 28.viii.19, 2♀, leg. Zarin;

Seasonal occurrence: This species was collected from May to August.

Present record: The present status of this species in Buner District are common.

Distribution: It is known from Sri Lanka, Myanmar, Nepal, India and China (Jiang *et al.*, 2011).

16. *Declana atronivea* (Walker, 1865)

(Plate 2, 16)

Material examined: Buner: Kalail, 4.v.19, 3♀, leg. Zarin; Buner: Gokand, 8.ix.18, 1♀, leg. Zarin; Buner: Hisar, 9.viii.19, 1♀, leg. Zarin; Buner: Daggar, 18.viii.19, 3♀, leg. Zarin; Buner: Chagharzo, 18.vi.19, 2♀, leg. Zarin; Buner: Chinglai, 23.vii.19, 1♂, leg. Zarin; Buner: Kawga, 16.viii.19, 2♀, leg. Zarin; Buner: Jowar, 12.vi.19, 2♀, leg. Zarin; Buner: Kingergali, 20.ix.18, 1♀, leg. Zarin; Buner: Shaheede Sar, 11.viii.19, 2♀, leg. Zarin; Buner: Budal, 9.ix.18, 3♀, leg. Zarin;

Seasonal occurrence: This species was collected from May to September.

Present record: The present status of this species in Buner District are rare.

Distribution: This moth distributed in Napier Otaki and Wellington (Hudson, 1898).

17. *Dysgonia torrida* (Guenée, 1852) (Plate 2, 17)

Material examined: Buner: Kalail, 11.vi.19, 2♀, leg. Zarin; Buner: Gokand, 23.viii.19, 1♀, leg. Zarin; Buner: Nanser, 7.ix.18, 1♀, leg. Zarin; Buner: Hisar, 25.vii.19, 2♀, leg. Zarin; Buner: Daggar, 29.vii.19, 1♀, leg. Zarin; Buner: Amnawar, 9.ix.18, 1♂, leg. Zarin; Buner: Ambela, 4.viii.19, 1♀, leg. Zarin; Buner: Kawga, 28.vi.18, 2♀, leg. Zarin; Buner: Malka, 18.ix.18, 1♀, leg. Zarin; Buner: Pir Baba, 10.v.19, 1♀, leg. Zarin; Buner: Khodokhail, 15.v.19, 1♀, leg. Zarin; Buner: Shaheede Sar, 14.viii.19, 1♀, leg. Zarin; Buner: Bar Kaly, 6.viii.19, 2♀, leg. Zarin; Buner: Budal, 20.ix.18, 1♂, leg. Zarin;

Seasonal occurrence: This species was collected from May- September.

Present record: The present status of this species in Buner District are common.

Distribution: This moth species is occurring in Portugal, Malta, Spain, Italy, Greece, Albania, Bulgaria, Yugoslavia and Sicily (Karsholt and Razowski, 1996).

18. *Polytela gloriosae* (Fabricius, 1781) (Plate 2, 18)

Material examined: Buner: Kalail, 12.vi.19, 3♀, leg. Zarin; Buner: Hisar, 29.vii.19, 1♀, leg. Zarin; Buner: Amnawar, 18.viii.19, 3♀, leg. Zarin; Buner: Chagharzo, 9.vii.19, 1♀, leg. Zarin; Buner: Chinglai, 28.vii.19, 1♀, leg. Zarin; Buner: Kawga, 30.vii.19, 1♀, leg. Zarin; Buner: Jowar, 14.viii.19, 1♂, leg. Zarin; Buner: Kingergali, 13.viii.19, 2♀, leg. Zarin; Buner: Khodokhail, 9.viii.19, 3♀, leg. Zarin; Buner: Bar Kaly, 25.viii.19, 1♀, leg. Zarin; Buner: Nawagy 10.viii.19, 2♀, leg. Zarin; Buner: Budal, 19.ix.19, 2♀, leg. Zarin;

Seasonal occurrence: This species was collected from June to August.

Present record: The present status of this species in Buner District are rare.

Distribution: This species is known probably in Indonesia, India and Sri Lanka (Gurule, 2013).

19. *Chasmina candida* (Walker, 1865) (Plate 3, 19)

Material examined: Buner: Kalail, 10.viii.19, 1♀, leg. Zarin; Buner: Gokand, 18.viii.19, 2♀, leg. Zarin; Buner: Nanser, 13.17.18, 1♀, leg. Zarin; Buner: Hisar, 8.vii.19, 3♀, leg. Zarin; Buner: Daggar, 20.vii.19, 2♀, leg. Zarin; Buner: Amnawar, 16.ix.18, 1♀, leg. Zarin; Buner: Ambela, 29.viii.19, 2♀, leg. Zarin; Buner: Chinglai, 4.viii.19, 1♀, leg. Zarin; Buner: Kawga, 12.viii.19, 2♀, leg. Zarin; Buner: Malka, 15.viii.19, 1♀, leg. Zarin; Buner: Kingergali, 10.vii.19, 1♀, leg. Zarin; Buner: Pir Baba, 17.vii.19 3♀, leg. Zarin; Buner: Khodokhail, 19.vii.19, 1♀, leg. Zarin; Nawagy 24.ix.18, 1♂, leg. Zarin;

Seasonal occurrence: This species was collected from July to September.

Present record: The present status of this species in Buner District are common.

Distribution: This species is distributed as Sri Lanka, Australia, China, Fiji, Hong Kong, India and Africa (Gurule, 2013).

20. *Anua tirhaca* (Cramer, 1777) (Plate 3, 20)

Material examined: Buner: Gokand, 17.ix.18, 1♀, leg. Zarin; Buner: Nanser, 12. viii.19, 2♀, leg. Zarin; Buner: Hisar, 7.viii.19, 1♀, leg. Zarin; Buner: Daggar, 20.ix.18, 1♀, leg. Zarin; Buner: Amnawar, 24.ix.18, 2♀, leg. Zarin; Buner: Chagharzo, 27.ix.18, 1♂, leg. Zarin; Buner: Ambela, 26.viii.19, 1♀, leg. Zarin; Buner: Malka, 21.viii.19, 1♀, leg. Zarin; Buner: Jowar, 22.viii.19, 1♀, leg. Zarin; Buner: Kingergali 21.ix.18, 3♂, leg. Zarin; Buner: Shaheede Sar, 10.viii.19, 1♀, leg. Zarin; Buner: Budal, 15.viii.19, 2♀, leg. Zarin;

Seasonal occurrence: This species was collected from August to September.

Present record: The present status of this species in Buner district are common.

Distribution: China, Australia, Madagascar India, Europe, Philippines, Japan Africa and Hong Kong (Gurule, 2013).

21. *Aegocera venulia* (Cramer, 1777) (Plate 3, 21)

Material examined: Buner: Kalail, 14.ix.18, 2♀, leg. Zarin; Buner: Gokand, 116.ix.18, 1♀, leg. Zarin; Buner: Hisar, 17.ix.18, 2♀, leg. Zarin; Buner: Daggar, 18.ix.18, 1♀, leg. Zarin; Buner: Ambela, 26.viii.19, 1♀, leg. Zarin; Buner: Kawga, 27.viii.19, 3♀, leg. Zarin; Buner: Jowar, 13.viii.19, 6♀, leg. Zarin; Buner: Kingergali, 18.viii.19, 1♀, leg. Zarin; Buner: Khodokhail, 20.viii.19, 2♀, leg. Zarin; Bar Kaly, 22.viii.19, 1♂, leg. Zarin; Buner: Nawagy 16.ix.18, 1♀, leg. Zarin;

Seasonal occurrence: This species was collected from August to September.

Present record: The present status of this species in Buner District are common.

Distribution: This moth is found in Sri Lanka and India (Savela, 2015).

22. *Anua coronata* (Fabricius, 1776) (Plate 3, 22)

Material examined: Buner: Kalail, 14.viii.19, 1♀, leg. Zarin; Buner: Gokand, 14.viii.19, 1♀, leg. Zarin; Buner: Nanser, 16. viii.19, 1♀, leg. Zarin; Buner: Hisar, 18.viii.19, 3♀, leg. Zarin; Buner: Amnawar, 20.viii.19, 1♀, leg. Zarin; Buner: Ambila, 22.viii.19, 3♀, leg. Zarin; Buner: Chinglai, 26.ix.18, 1♀, leg. Zarin; Buner: Kawga, 17.ix.18, 1♀, leg. Zarin; Buner: Jowar, 18.ix.18, 3♀, leg. Zarin; Buner: Pir Baba, 12.x.18, 1♀, leg. Zarin Buner: Bar Kaly, 25.ix.18, 1♀, leg. Zarin; Buner: Budal, 19.ix.19, 2♀, leg. Zarin;

Seasonal occurrence: This species was collected from August to September.

Present record: The present status of this species in Buner District are common.

Distribution: Occurrence of this species is Australia, New Caledonia, India, Bangladesh Philippines, Sri Lanka, Christmas Myanmar China, Indonesia and Thailand (Shubhalaxmi *et al.*, 2011).

23. *Bradina diagonalis* (Guenée, 1852) (Plate 3, 23)

Material examined: Buner: Kalail, 13.vii.19, 3♀, leg. Zarin; Buner: Gokand, 14.vii.19, 1♀, leg. Zarin; Buner: Hisar, 3.vii.19, 1♀, leg. Zarin; Buner: Daggar, 9.vii.19, 1♀, leg. Zarin; Buner: Amnawar, 20.vii.20, 1♂, leg. Zarin; Buner: Ambela, 22.viii.19, 1♂, leg. Zarin; Buner: Kawga, 27.viii.19, 2♀, leg. Zarin; Buner: Jowar, 15.viii.19, 1♀, leg. Zarin; Buner: Kingergali, 26.viii.19, 2♀, leg. Zarin; Buner: Khodokhail, 17.vii.19, 1♀, leg. Zarin; Buner: Shaheede Sar, 8.ix.18, 1♀, leg. Zarin; Buner: Bar Kaly, 10.ix.18, 1♀, leg. Zarin; Buner: Nawagy 22.ix.18, 2♀, leg. Zarin; Buner: Budal, 28.vii.19, 1♀, leg. Zarin;

Seasonal occurrence: This species was collected from July to September.

Present record: The present status of this species in Buner District are rare.

Distribution: It is found in Taiwan and Java (Shao *et al.*, 2011).

24. *Archernis capitalis* (Fabricius, 1794) (Plate 3, 24)

Material examined: Buner: Kalail, 4.ix.18, 1♀, leg. Zarin; Buner: Gokand, 6.ix.18, 1♀, leg. Zarin; Buner: Nanser, 8.ix.18, 3♀, leg. Zarin; Buner: Hisar, 10.ix.19, 2♀, leg. Zarin; Buner: Daggar, 14.ix.18, 1♀, leg. Zarin; Buner: Amnawar, 19.ix.18, 1♀, leg. Zarin; Buner: Chagharzo, 21.ix.18, 1♀, leg. Zarin; Ambela, 25.ix.18, 1♀, leg. Zarin; Buner: Kawga, 28.ix.18, 2♀, leg. Zarin; Buner: Malka, 20.viii.19, 1♂, leg. Zarin; Buner: Kingergali, 15.viii.19, 2♀, leg. Zarin; Buner: Shaheede Sar, 18.viii.19, 2♀, leg. Zarin; Nawagy 21.viii.19, 2♀, leg. Zarin;

Seasonal occurrence: This species was collected from August to September.

Present record: The present status of this species in Buner District are less abundant.

Distribution: It is found in Sri Lanka and India (Nuss *et al.*, 2003).

25. *Dinara combusta* (Walker, 1855) (Plate 3, 25)

Material examined: Buner: Kalail, 6.vii.19, 1♀, leg. Zarin; Buner: Gokand, 8.vii.19, 3♀, leg. Zarin; Buner: Nanser, 13.vii.19, 1♀, leg. Zarin; Buner: Hisar, 15.vii.19, 1♀, leg. Zarin; Buner: Amnawar, 18.vii.19, 1♀, leg. Zarin; Buner: Chagharzo, 20.viii.19, 1♀, leg. Zarin; Buner: Chinglai, 25.vii.19, 1♀, leg. Zarin; Buner: Kawga, 15.viii.19, 2♀, leg. Zarin; Buner: Jowar, 17.viii.19, 2♀, leg. Zarin; Buner: Kingergali, 23.viii.19, 1♂, leg. Zarin; Buner: Pir

Baba, 27.viii.19, 1♀, leg. Zarin; Buner: Shaheede Sar, 3.ix.18, 2♀, leg. Zarin; Buner: Bar Kaly, 4.ix.18, 1♀, leg. Zarin; Buner: Budal, 26.viii.19, 3♀, leg. Zarin;

Seasonal occurrence: This species was collected in July to November.

Present record: The present status of this species in Buner District are less abundant.

Distribution: Java, Philippines, Sri Lanka, India, Thailand and Pakistan (Gurule, 2013).

26. *Phalera raya* (Moore, 1849) (Plate 3, 26)

Material examined: Buner: Kalail, 11.vi.19, 1♀, leg. Zarin; Buner: Gokand, 20.vi.19, 2♀, leg. Zarin; Buner: Hisar, 23.vi.19, 3♀, leg. Zarin; Buner: Daggar, 26.vii.19, 1♂, leg. Zarin; Buner: Amnawar, 24.vii.18, 2♀, leg. Zarin; Buner: Chagharzo, 27.vi.19, 2♀, leg. Zarin; Buner: Ambela, 28.viii.19, 2♀, leg. Zarin; Buner: Jowar, 15.vii.19, 3♀, leg. Zarin; Buner: Kingergali, 19.ix.18, 1♀, leg. Zarin; Buner: Pir Baba, 18.vii.19, 1♀, leg. Zarin; Buner: Khodokhail, 20.viii.18, 2♀, leg. Zarin; Buner: Shaheede Sar, 20.viii.19, 1♀, leg. Zarin; Buner: Bar Kaly, 16.vii.19, 2♀, leg. Zarin; Buner: Nawagy 13.vii.19, 1♀, leg. Zarin;

Seasonal occurrence: This species was collected in June and August.

Present record: The present status of this species in Buner District are less abundant.

Distribution: This species of moth is found in Laos, Vietnam, Nepal, N. Thailand, Pakistan and NW. India (Schintlmeister and Pinratana, 2007).

27. *Euthrix potatoria* (Linnaeus, 1758) (Plate 3, 27)

Material examined: Buner: Kalail, 16.vi.19, 1♀, leg. Zarin; Buner: Nanser, 18.vi.19, 1♀, leg. Zarin; Buner: Hisar, 19.vi.19, 2♀, leg. Zarin; Buner: Chagharzo, 2.vii.19, 1♀, leg. Zarin; Buner: Ambela, 5.vii.19, 2♀, leg. Zarin; Buner: Chinglai, 7.vii.19, 1♀, leg. Zarin; Buner: Kawga, 12.viii.19, 1♀, leg. Zarin; Buner: Malka, 10.vii.19, 1♀, leg. Zarin; Buner: Pir Baba, 18.vii.19, 2♀, leg. Zarin; Buner: Shaheede Sar, 12.viii.19, 1♀, leg. Zarin; Buner: Bar Kaly, 24.vi.19, 1♀, leg. Zarin; Buner: Budal, 17.vii.19, 1♀, leg. Zarin;

Seasonal occurrence: This species was collected from June to August.

Present record: The present status of this species in Buner District are less abundant.

Distribution: This species are distributed in Europe (Europaea, 2011).

28. *Ocinara varians* (Walker, 1855) (Plate 3, 28)

Material examined: Buner: Gokand, 11.x.18, 1♀, leg. Zarin; Buner: Hisar, 15.ix.18, 2♀, leg. Zarin; Buner: Amnawar, 16.ix.18, 1♀, leg. Zarin; Buner: Chagharzo, 20.ix.19, 1♀, leg. Zarin; Buner: Kawga, 13.x.18, 1♀, leg. Zarin; Buner: Jowar, 18.ix.19, 1♂, leg. Zarin; Buner:

Khodokhail, 28.ix.19, 1♀, leg. Zarin; Buner: Bar Kaly, 4.x.18, 1♀, leg. Zarin; Buner: Budal, 4.ix.19, 2♀, leg. Zarin;

Seasonal occurrence: This species was collected in September and October.

Present record: The present status of this species in Buner District are less abundant.

Distribution: This moth is found in China, Sulawesi, India, Hong Kong, Borneo, Java Philippines and Sri Lanka (Gurule, 2013).

DISCUSSION

The current preliminary survey of Moth (Lepidoptera) was conducted in District Buner Khyber Pakhtunkhwa, Pakistan. The study area was highly neglected up till now. In present initial exploration, 563 specimens of Moth were collected. During entomological survey a total of 28 species belonging to 25 genera name as *Cyana hemata* (Walker, 1854), *Aloa lactinea* (Cramer, 1777), *Cretonotos transiens* (Walker, 1855), *Olene mendosa* (Hubner, 1823), *Cyana puella* (Drury, 1773), *Syntomoides imoan* (Cramer, 1779), *Spilosoma obliqua* (Walker, 1855), *Stigmatophora palmata* (Moore, 1878), *Marumba sperchius* (Menetries, 1857), *Psilogamma increta* (Walker 1865), *Leucophlebia lineata* (Westwood, 1847), *Polyptychus dentatus* (Cramer, 1777), *Theretra alecto* (Linnaeus, 1758), *Theretra oldenlandiae* (Fabricius, 1775), *Biston suppressaria* (Guenée, 1858), *Declana atronivea* (Walker, 1865), *Dysgonia torrida* (Guenée, 1852), *Polytela gloriosae* (Fabricius, 1781), *Chasmina candida* (Walker, 1865), *Anua tirhaca* (Cramer, 1777), *Aegocera venulia* (Cramer, 1777), *Anua coronata* (Fabricius, 1976), *Bradina diagonalis* (Guenée, 1852), *Archernis capitalis* (Fabricius, 1794), *Dinara combusta* (Walker, 1855), *Phalera raya* (Moore, 1849), *Euthrix potatoria* (Linnaeus, 1758) and *Ocinara varians* (Walker, 1855) under 8 families. i.e., Family Erebididae, Family Sphingidae, Family Geometridae, Family Noctuidae, family Crambidae, Family Notodontidae, Family Lasiocampidae and Family Bombycidae were recorded.

According to Rafi *et al.* (2014) 60 species and subspecies belong to family Sphingidae were reported from Pakistan. Result shows 14 new species named as *Dolbina inexacta*, *Macroglossum stellatarum*, *Agnosia orneus*, *Langia zenzeroides* subsp. *zenzeroides*, *Macroglossum belis*, *Polyptychus trilineatus* subsp. *trilineatus*, *Ambulyx sericeipennis* subsp. *sericeipennis*, *Thamnoecha uni-formis*, *Cechetra scotti*, *Hippotion boerhaviae*, *Theretra latreillii* subsp. *euphorbiae*, *Rhagastis olivacea*, *Rethera brandti* subsp. *euteles* and *Hyles euphorbiae* subsp. *lucasii*. *Anambulyx elwesi* subsp. *kitchingi* and *Clanis deucalion* subsp. Moreover, the annotated list of 30 taxa which may yet be found in Pakistan as they are

present in neighbouring countries close to the border. Of the species/subspecies found, 27 are part of the Oriental fauna, 24 are part of the Palaearctic fauna, and nine are Palaetropical /Palaeo-Oriental.

Similarly, our survey revealed from District Buner, Khyber Pakhtunkhwa, Pakistan. Result show that a total of 8 families were reported which consist of 28 species with 25 genera. Among them 6 species included of family Sphingidae were described for the first time in District Buner. These species are *Marumba sperchius* (Menetries 1857), *Psilogramma increta* (Walker 1865), *Leucophlebia lineata* (Westwood, 1847), *Polyptychus dentatus* (Cramer 1777), *Theretra alecto* (Linnaeus, 1758) *Theretra oldenlandiae* (Fabricius, 1775).

Moths were collected by Aslam (2009) in various portions of Peshawar. Study considered that to conclude their evenness, species richness and diversity. A total of 774 Moth samples were collected. The specimens of Moths were identified up to level of family. Families Pyralidae, Arctiidae, Geometridae, Lymantriidae Noctuidae and Sphingidae were denoted in sample collection.

In our recent study, 563 samples of Moth were collected and 28 species belonging to 25 genera and 8 families were recorded. These species belonging to different families Family Sphingidae, Family Geometridae and Family Noctuidae were denoted in collection sampled. In addition, Family Crambidae, Family Erebiidae, Family Notodontidae, Family Lasiocampidae and Family Bombycidae are firstly reported in Buner district.

Study assessed of Ferro and Romanowski (2012) that the diversity and composition of (Lepidoptera: Arctiidae) tiger moths from two floristic creations of the southern Atlantic Forest (grassland and Araucaria forest) and in a transition zone (forest edge). Totally 3,574 tiger Moths were sampled which comprising 121 species.

Recent survey was conducted from nineteen localities of Buner district, KP. 563 specimens of Moth were sampled which consist of 28 species with 25 genera under 8 families.

During a study conducted by Sanyal *et al.* (2017) recorded Moth species from different Protected Areas (PAs) of Uttarakhand. During the study 168 species of Family Geometridae Moths which are belonging to 99 genera under 5 subfamilies were reported.

In Similar way out result show that 28 species with 25 genera of 8 families were represented in collection sampling for the first time in District Buner. Family Geometridae comprise with 2 species only.

Karam and Chong (2019) reported the diversity of Moth from Bukit Timah Nature Reserve (BTNR) Singapore, was documented. Pictures and Samples were prescribed into

morphospecies which are comprising in macro and micro moths. A total of 399 species of Moth has been scattered. Among them approximately 200 species were recorded. The area of nature reserve may be also negligible to crop numerically significant alterations in the diversity of Moth between jungle and vegetation zone.

In a similar way the macromoths fauna of District Buner, KP, Pakistan was studied. A total of 563 specimens of Moth were collected, which consist of 28 species with 25 genera of 8 families. Geographical distribution, seasonal occurrence and present record from this area were also given.

Kocak and Kemal (2018) study in Turkey about the taxonomy checklist of Lepidoptera. During the study a total of 5577 of Moth belonging to 76 families (67 Moth and 9 butterfly families). With respect to chronology the same terms were prescribed. Localities and Provinces of the Turkey, in addition the world range of each species are assumed as a codes. Furthermore, alphabetically arrangement of 1841 genus group names, denoted in Turkey. Some comments are added to definite taxa. Correlated 3253 bibliographic articles on the Turkey Lepidoptera of were also recorded with some remarks in chronological and alphabetic order.

During our recent research study, a total of 563 specimens of Moth were sampled. Result show that a checklist of 28 species with 25 genera of 8 families were identified from District Buner. Globally distribution, present record and seasonal occurrence of these species were also given. In remarks these all Moth fauna is reported for the first time in District Buner.

Kathirvelu *et al.* (2019) used three kinds of technique for collection of Moth specimens. In these ways 2,679 specimens of Moth were noted. Among these methods a total of 2,253 Moths was collected by light trap which were the supreme collection of Moth. Monitored by manual collection method 369 Moth were collected, followed by host rearing method 57 of Moth were collected. This study was designed in four several localities. Among the Localities in Orchard locality, the method of light trapping was experimented extreme specimens of Moth which is 656. Monitored by investigational farm with 629 figures of Moth were collected. The assortment of Moths which comprising of 70 genera and 56 species was reported in the study region of Annamalai Nagar. These species and genera belonging to nine superfamilies of Clades i.e. Macroheterocera (Noctuoidea, Bombycoidea, Geometroidea, Lasiocampoidea), Apoditrysia (Pterophoroidea and Cossioidea), Ditrysia (Tineoidea) and Obtectomera (Pyraloidea and Thyridoidea). Furthermore, the families viz. Geometridae, Pterophoridae, Crambidae, Erebidae, Cossidae, Psychidae Noctuidae, Eupterotidae,

Lasiocampidae Sphingidae, Thyrididae, Bombycidae and family Uraniidae were examined in the study region. Among them the most supreme and the most abundant family is family Erebididae which comprising of 28 genera and 25 species.

In the current survey we focused on Moth diversity in nineteen different localities of District Buner. Each area was visited for collection. In recent assessment a total of 563 specimens were collected by method of light trapping, aerial netting and hand picking. This entomological survey revealed that a total of 28 species belonging to 25 genera under 8 families. Similarly, the Family Erebididae were most abundant during sampling collection. Moreover, most specimens of Moth were collected by light trapping method. Species counting on family basis as family Erebididae 8 species, Sphingidae 6 species, Noctuidae 6 species, Geometridae 2 species, Family Crambidae 2 species, Family Notodontidae 2 species, Lasiocampidae 1 species and family Bombycidae 1 species. The most abundant species was *Aloa lactinea* while the least abundant species was *Olene mendosa* during collection sampling.

CONCLUSION

It was concluded from the current study that the area of District Buner is more diverse for composition of Moth. Study revealed that 563 specimens of Moth were collected from nineteen different localities of District Buner. The area is more diversified with 28 species belonging to 25 genera under 8 families. The current investigation has been conducted to illuminate a fauna which was unfamiliar and it is a small period towards a comprehensive taxonomic consideration of Moth species of District Buner. There were a number of species which were reported in the current results, but abundant were the Erebididae Moths which were frequent visitor to the light throughout the collections.

CONFLICTS OF INTEREST

The authors declare that there are no conflicts of interest.

REFERENCES

- Aslam, M., 2009. Diversity, species richness and evenness of moth fauna of Peshawar. Pakistan Entomology, 31(2): 99-102.
- Akhtar, N., R. Muhammad, K. Saeed, M.F. Khan, M. Shah, J. Zeb, S. Ahmad, A.J. Afridi and A. Hussain, 2018. Distribution of wild mammalian fauna of Mahaban and malka valley District Buner. Pakistan Journal of Zoology, 50(2).

- Bell, T. and F. Scott, 1937. The Fauna Of British India, Including Ceylon And Burma. Moths, vol. 5, sphingidae. The Fauna of British India, including Ceylon and Burma. Moths, Vol. 5, Sphingidae.
- Bharamal, D., 2015. An inventory of the moth fauna of (Lepidoptera) of Amboli Reserve Forest, Maharashtra, India. Int. J. of Curr. Micro. and Appl. Sci, 4912: 803-806.
- Dardona, Z.W., A.W. Dardona and M.A. Albayoumi, 2015. Diversity and ecology of butterflies and moths in Wadi Gaza, Gaza Strip, Palestine. International Journal of Scientific and Research Publications: 707.
- De Prins, J. and W. De Prins, 2018. Global taxonomic database of Gracillariidae (Lepidoptera), 2018. URL: [http://www. Gracillariidae. net/](http://www.Gracillariidae.net/)(accessed 25 January 2018).
- Europaea, F., 2011. Fauna europaea version 2.4. Web Service available online at [http://www. faunaeur. org](http://www.faunaeur.org).
- Elanchezhian, M., C. Gunasekaran and A. Deepa, 2014. A study on moth diversity in three different habitats of Maruthamalai Hill, Western Ghats, South India. Global Journal for Research Analysis, 3(12): 136-137.
- Ferro, V.G. and H.P. Romanowski, 2012. Diversity and composition of tiger moths (lepidoptera: Arctiidae) in an area of Atlantic Forest in Southern Brazil: Is the fauna more diverse in the grassland or in the forest? Zoologia, 29(1).
- Gadhikar, Y., S. Chirde, N. Raut, U. Deshmukh and S. Sampat, 2015. A preliminary checklist of moths species from Amravati city, Maharashtra (India). Global journal of biology, agriculture and health sciences, 4(1): 48-51.
- Gadhikar, Y., S. Sambath and Y. Yattoo, 2015. A preliminary report on the moths (insecta: Lepidoptera: Heterocera) fauna from Amravati, Maharashtra. International Journal of Science and Research, 4(7): 883-887.
- Gurule, S., 2013. Taxonomic study of moths (Lepidoptera Heterocera) from north Maharashtra (India). Thesis submitted to University of Pune, Pune.
- Hampson, G., 1892. The fauna of British India, including Ceylon and Burma. Moths. Volume 1. The fauna of British India, including Ceylon and Burma. Moths. Volume 1.
- Hampson, G., 1894. The fauna of British India, including Ceylon and Burma. Moths-volume 2, Arctiidae, Agrostidae, Noctuidae. Taylor and Francis, London, 609pp+ 325figs.
- Hampson, G., 1895. The fauna of british india, including ceylon and burma. Moths-volume 3, noctuidae (cont.) to geometridae. Taylor and Francis, London, 546pp+ 226figs.

- Hampson, G., 1896. Moths. The fauna of British India, including Sri Lanka and Burma. Vol. 4. Taylor & Francis, London. 594pp.
- Hudson, G.V., 1898. New Zealand moths and butterflies:(macro-lepidoptera). West, Newman & Company.
- Jiang, N., D. Xue and H. Han, 2011. A review of *Biston leach*, 1815 (Lepidoptera, Geometridae, Ennominae) from China, with description of one new species. ZooKeys(139): 45.
- Jonason, D., M. Franzen and T. Ranius, 2014. Surveying moths using light traps: Effects of weather and time of year. PLoS One, 9(3): e92453.
- Karam, R. and J. Chong, 2019. Moths of Bukit Timah Nature Reserve, Singapore. Gard. Bull. Singapore, 71(Suppl 1): 317-330.
- Karsholt, O. and J. Razowski, 1996. The Lepidoptera of Europe: A distributional checklist. Brill Academic Pub.
- Kathirvelu, C., R. Ayyasamy and M. Karthikeyan, 2019. Preliminary checklist of moths (Lepidoptera: Glossata) of Annamalai Nagar, Tamil Nadu. Journal of Applied and Natural Science, 11(2): 404-409.
- Kitching, I.J. and J.-M. Cadiou, 2000. Hawkmoths of the world: An annotated and illustrated revisionary checklist (Lepidoptera: Sphingidae). Cornell University Press Ithaca.
- Merckx, T., R.E. Feber, R.L. Dulieu, M.C. Townsend, M.S. Parsons, N.A. Bourn, P. Riordan and D.W. Macdonald, 2009. Effect of field margins on moths depends on species mobility: Field-based evidence for landscape-scale conservation. Agriculture, ecosystems & environment, 129(1-3): 302-309.
- Naz, S., 2011. Biodiversity and faunistic studies of the Sub-family Noctuinae (Lepidoptera: Noctuidae) from Pakistan with cladistic analysis. Federal Urdu University of Arts, Sciences and Technology, Gulshan-E-Iqbal
- Nuss, M., B. Landry, R. Mally, F. Vegliante, A. Tränkner, F. Bauer, J. Hayden, A. Segerer, R. Schouten and H. Li, 2003. Global information system on Pyraloidea. URL: www.pyraloidea.org.
- Pickering, J., T. Staples and R. Walcott, 2016. Save all species-moths light a way. Southern Lepidopterist News, 38(4): 331-336.

- Rafi, M.A., A. Sultan, I.J. Kitching, A.R. Pittaway, M. Markhasiov, M.R. Khan and F. Naz, 2014. The hawkmoth fauna of Pakistan (Lepidoptera: Sphingidae). *Zootaxa*, 3794(3): 393-418.
- Saeed, K., S. Khan and F. Haq, 2013. Diversity and population status of fish fauna of river Barandu District Buner Khyber Pakhtunkhwa Province Pakistan. *Journal of Biodiversity and Environmental Sciences*, 83.
- Savelle, M., 2015. Lepidoptera and some other life forms. Retrieved February, 8: 2018.
- Sanyal, A., P. Dey, V. Uniyal, K. Chandra and A. Raha, 2017. Geometridae stephens, 1829 from different altitudes in western himalayan protected areas of uttarakhand, india.(lepidoptera: Geometridae). *SHILAP Revista de Lepidopterología*, 45(177): 143-163.
- Shao, K., H. Lee and Y. Lin, 2011. Taibnet catalogue of life in Taiwan.
- Schintlmeister, A. and A. Pinratana, 2007. Moths of thailand: Notodontidae. Vol. Five. Brothers of Saint Gabriel in Thailand
- Shubhalaxmi, V., R.C. Kendrick, A. Vaidya, N. Kalagi and A. Bhagwat, 2011. Inventory of moth fauna (Lepidoptera: Heterocera) of the Northern western ghats, Maharashtra, India. *Journal of the Bombay Natural History Society*, 108(3): 183.
- Van Nieuwerkerken, E.J., L. Kaila, I.J. Kitching, N.P. Kristensen, D.C. Lees, J. Minet, C. Mitter, M. Mutanen, J.C. Regier and T.J. Simonsen, 2011. Order Lepidoptera Linnaeus, 1758. In: Zhang, z.-q.(ed.) animal biodiversity: An outline of higher-level classification and survey of taxonomic richness. *Zootaxa*, 3148(1): 212-221.
- Zahidullah, W.A., S. Khan, N. Akhtar and K. Saeed, 2016. Analysis of Goral population and its extinction causes in District Buner, Khyber Pukhtunkhwa. *International Journal of Pure and Applied Zoology*, Volume 4, Issue 4, pp: 294-301.
- Zahiri, R., I.J. Kitching, J.D. Lafontaine, M. Mutanen, L. Kaila, J.D. Holloway and N. Wahlberg, 2011. A new molecular phylogeny offers hope for a stable family level classification of the Noctuoidea (Lepidoptera). *Zoologica Scripta*, 40(2): 158-173.
- Zahiri, R., J.D. Holloway, I.J. Kitching, J.D. Lafontaine, M. Mutanen and N. Wahlberg, 2012. Molecular phylogenetics of Erebidae (Lepidoptera, Noctuoidea). *Systematic Entomology*, 37(1): 102-124.
- Zaspel, J.M., 2008. Systematics, biology, and behavior of fruit-piercing and blood-feedingmoths in the subfamily Calpinae (Lepidoptera: Noctuidae). University of Florida.

Color Plates of Moth Species of District Buner



Plate 1: (1) *Cyana hemata* (Walker, 1854) (2) *Aloa lactinea* (Cramer, 1777) (3) *Cretonotos transiens* (Walker, 1855) (4) *Olene mendosa* (Hubner, 1823) (5) *Chionaema puella* (Drury, 1773) (6) *Syntomoides imaon* (Cramer, 1779) (7) *Spilosoma obliqua* (Walker, 1855) (8) *Stigmatophora palmata* (Moore, 1878) (9) *Marumba sperchius* (Menetries, 1857)

(1)

(2)

(3)

Color Plates of Moth Species of District Buner



Plate 2: (10) *Psilogramma increta* (Walker, 1865) (11) *Leucophlebia lineata* (Westwood, 1847) (12) *Polyptychus dentatus* (Cramer, 1777) (13) *Theretra alecto* (Linnaeus, 1758) (14) *Theretra oldenlandiae* (Fabricius, 1775) (15) *Biston suppressaria* (Guenee, 1852) (16) *Declana atronivea* (Walker, 1865) (17) *Dysgonia torrida* (Guenee, 1852) (18) *Polytela gloriosae* (Fabricius, 1781)

(10)

(11)

(12)

Color Plates of Moth Species of District Buner



Plate 3: (19) *Chasmina candida* (Walker, 1865) (20) *Anua tirhaca* (Cramer, 1777) (21) *Aegocera venulia* (Cramer, 1777) (22) *Anua coronata* (Fabricius, 1976) (23) *Bradina diagonalis* (Guenée, 1852) (24) *Archernis capitalis* (Fabricius, 1794) (25) *Dinara combusta* (Walker, 1855) (26) *Phalera raya* (Moore, 1849) (27) *Euthrix potatoria* (Linnaeus, 1758) (28) *Ocinara varians* (Walker, 1855)

(19)

(20)

(21)