



A PRELIMINARY CHECKLIST OF HYMENOPTERAN LARVAL AND PUPAL PARASITOIDS OF MOTHS (LEPIDOPTERA: HETEROCERA) FROM INDIA

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AUTHORS' CONTRIBUTIONS

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

The present paper, based on the study of published literatures, provides an updated checklist of 54 species of pupal and 197 species of larval hymenopteran parasitoids associated with the larva and pupa of moths from India. Though the literatures pertaining to the above research work are available in various published journals and books, a compiled list is not so far published from India. The present paper also included the systematic status of both host (moth) and its natural enemies (hymenopteran parasitoids), which would be helpful for biological control workers in future.

Keywords: Larval; pupal parasitoids; moths; heterocera; India.

1. INTRODUCTION

Lepidoptera, one of the largest insect orders after beetles, comprises more than 160,000 described species globally. According to van Nieukerken et al. [1], there are 15,578 described genera and 157,424 species worldwide. They are treated as sister group of butterflies and have an unwelcome impact on crops and other economically important flora. Many moth species are polyphagous and are major pests of

agroecosystems. The conventional way of controlling these pests is by the use of insecticides or other chemicals which could bring about a non reversible damage to the genetic machinery of other fauna [2-20].

To reduce crop production losses and to diminish insecticide use, entomologists provided an eco-friendly method namely, biocontrol agents in which the natural enemies of the pests are used to control its

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Table 1. Checklist of hymenopteran pupal parasitoids of moths

Sl. No.	Parasitoid species	Parasitoid Family	Moth Family	Moth species	Life stage of moth attacked
1	<i>Anastatoidea brachartoneae</i> (Gahan, 1927)	Eupelmidae	Oecophoridae	<i>Opisina arenosella</i> (Walker, 1864)	Pupa [2]
2	<i>Antrocephalus cariniceps</i> (Cameron, 1911)	Chalcididae		<i>Opisina arenosella</i> (Walker, 1864)	Pupa [2]
3	<i>Antrocephalus hakonensis</i> (Ashmead, 1904)			<i>Opisina arenosella</i> (Walker, 1864)	Pupa [2]
4	<i>Aprostocetus</i> sp.	Eulophidae	Crambidae	<i>Chilo infuscatellus</i> (Snellen, 1890))	Pupa [3]
				<i>Chilo partellus</i> (Swinhoe, 1885)	Pupa [3]
				<i>Scirpophaga nivella</i> (Fabricius, 1794)	Pupa [3]
5	<i>Auberteterus alternecoloratus</i> (Cushman, 1929)	Ichneumonidae		<i>Chilo auricilius</i> (Dudgeon, 1905))	Pupa [4]
6	<i>Brachycoryphus nersei</i> Cameron			<i>Chilo infuscatellus</i> (Snellen, 1890))	Pupa [3]
7	<i>Brachymeria albicrus</i> (Klug, 1834)	Chalcididae	Noctuidae	<i>Helicoverpa armigera</i> (Hübner, 1808)	Pupa [4]
8	<i>Brachymeria atteviae</i> (Joseph, Narendran and Joy, 1972)		Oecophoridae	<i>Opisina arenosella</i> (Walker, 1864)	Pupa [2]
9	<i>Brachymeria euploae</i> (Westwood, 1837)	Chalcididae	Noctuidae	<i>Plecoptera reflexa</i> (Guenée, 1852)	Pupa [23]
10	<i>Brachymeria excarinata</i> (Gahan, 1925)		Oecophoridae	<i>Opisina arenosella</i> (Walker, 1864)	Pupa [2]
11	<i>Brachymeria lasus</i> (Walker, 1841)			<i>Opisina arenosella</i> (Walker, 1864)	Pupa [2]
			Noctuidae	<i>Anadevidia peponis</i> (Fabricius, 1775)	Pupa [24]
			Erebidae	<i>Lymantria obfuscata</i> (Walker, 1865))	Pupa [25]
12	<i>Brachymeria megaspila</i> (Cameron, 1907))		Oecophoridae	<i>Opisina arenosella</i> (Walker, 1864)	Pupa [2]
13	<i>Brachymeria nephantidis</i> (Gahan, 1930)			<i>Opisina arenosella</i> (Walker, 1864)	Pupa [2]
	<i>Brachymeria nephantidis</i> (Gahan, 1930)		Nolidae	<i>Earias</i> sp.	Pupa [26]
	<i>Brachymeria nephantidis</i> (Gahan, 1930)		Pyalidae	<i>Tirathaba mundella</i> (Walker, 1864)	Pupa [27]
14	<i>Brachymeria nosatoi</i> (Habu, 1966)		Oecophoridae	<i>Opisina arenosella</i> (Walker, 1864)	Pupa [2]
15	<i>Brachymeria podagrica</i> (Fabricius, 1787)			<i>Opisina arenosella</i> (Walker, 1864)	Pupa [2]
16	<i>Brachymeria</i> sp.		Noctuidae	<i>Sesamia inferens</i> (Walker, 1856)	Pupa [3]
			Erebidae	<i>Lymantria obfuscata</i> (Walker, 1865)	Pupa [25]
	<i>Brachymeria</i> sp.	Chalcididae	Noctuidae	<i>Spodoptera litura</i> (Fabricius, 1775)	Pupa [6]
17	<i>Brachymeria tibialis</i> (Walker, 1834)		Erebidae	<i>Lymantria obfuscata</i> (Walker, 1865)	Pupa [25]
18	<i>Centeterus alternecoloratus</i> (Cushman, 1929)	Ichneumonidae	Crambidae	<i>Chilo infuscatellus</i> (Snellen, 1890)	Pupa [3]
				<i>Chilo auricilius</i> (Dudgeon, 1905)	Pupa [3]
				<i>Scirpophaga nivella</i> (Fabricius, 1794)	Pupa [3]
				<i>Chilo partellus</i> (Swinhoe, 1885)	Pupa [3]
19	<i>Coccygomimus</i> sp.nr. <i>turionellae</i>		Erebidae	<i>Lymantria obfuscata</i> (Walker, 1865)	Pupa [25]
20	<i>Dioborus indica</i> (Rao, 1953) (= <i>Agrypon nox</i> Morley, 1913b)		Noctuidae	<i>Helicoverpa armigera</i> (Hübner, 1808)	Pupa [5]
21	<i>Elasmus nephantidis</i> (Rohwer, 1921)	Eulophidae	Oecophoridae	<i>Opisina arenosella</i> (Walker, 1864)	Pupa [24]
22	<i>Enicospilus shinkanus</i> (Uchida, 1928)	Ichneumonidae	Noctuidae	<i>Helicoverpa armigera</i> (Hübner, 1808)	Pupa [16]
23	<i>Enicospilus</i> sp.		Bombycidae	<i>Trilocho varians</i> (Walker, 1855)	Pupa [34]
24	<i>Eurytoma albotibialis</i> (Ashmead, 1905)		Oecophoridae	<i>Opisina arenosella</i> (Walker, 1864)	Pupa [2]
25	<i>Eurytoma monemae</i> (Ruschka, 1918)		Limacodidae	<i>Parasa lepida</i> (Cramer, 1799)	Pupa [24]

Sl. No.	Parasitoid species	Parasitoid Family	Moth Family	Moth species	Life stage of moth attacked
26	<i>Goniozus</i> sp.	Bethylidae	Bombycidae	<i>Trilocho varians</i> (Walker, 1855)	Pupa [34]
27	<i>Goryphus nursei</i> (Cameron, 1907)	Ichneumonidae	Oecophoridae	<i>Opisina arenosella</i> (Walker, 1864)	Pupa [2]
			Crambidae	<i>Scirpophaga nivella</i> (Fabricius, 1794)	Pupa [33]
28	<i>Goryphus ornatipennis</i> (Cameron, 1907)			<i>Chilo sacchariphagus</i> (Bojer, 1856)	Pupa [3]
				<i>Scirpophaga nivella</i> (Fabricius, 1794)	Pupa [33]
29	<i>Goryphus</i> sp.		Bombycidae	<i>Trilocho varians</i> (Walker, 1855)	Pupa [34]
30	Indeterminate Ichneumonidae		Noctuidae	<i>Spodoptera frugiperda</i> (Smith, 1797)	Pupa [20]
31	<i>Inveria opisina</i> Narendran	Chalcididae	Oecophoridae	<i>Opisina arenosella</i> (Walker, 1864)	Pupa [2]
32	<i>Ischnojoppa luteator</i> (Fabricius, 1798)	Ichneumonidae	Crambidae	<i>Scirpophaga nivella</i> (Fabricius, 1794)	Pupa [33]
33	<i>Isotima javensis</i> Rohwer			<i>Scirpophaga nivella</i> (Fabricius, 1794)	Pupa [3]
				<i>Bissetia steniellus</i> (Hampson, 1899)	Pupa [33]
34	<i>Isotima dammermani</i> Rohwer			<i>Scirpophaga nivella</i> (Fabricius, 1794)	Pupa [3]
35	<i>Kriegeria</i> sp.			<i>Scirpophaga nivella</i> (Fabricius, 1794)	Pupa [3]
36	<i>Listrognathus spinifrons</i> (Cameron, 1905)	Ichneumonidae	Bombycidae	<i>Trilocho varians</i> (Walker, 1855)	Pupa [35]
37	<i>Melcha ornatipennis</i> Cameron		Crambidae	<i>Chilo infuscatellus</i> (Snellen, 1890)	Pupa [3]
38	<i>Metopius sesamiae</i> (Rao, 1953)		Noctuidae	<i>Sesamia inferens</i> (Walker, 1856)	Pupa [3]
39	<i>Monodontomerus aereus</i> (Walker, 1834)	Torymidae	Erebidae	<i>Lymantria obfuscata</i> (Walker, 1865)	Pupa [25]
40	<i>Pimpla laothoe</i> (Cameron, 1897)	Ichneumonidae	Noctuidae	<i>Sesamia inferens</i> (Walker, 1856)	Pupa [4]
			Erebidae	<i>Lymantria obfuscata</i> (Walker, 1865)	Pupa [25]
				<i>Lymantria obfuscata</i> (Walker, 1865)	Pupa [25]
41	<i>Pimpla turionellae</i> (Linnaeus, 1758)		Noctuidae	<i>Thysanoplusia orichalcea</i> (Fabricius, 1775)	Pupa [9]
42	<i>Scambus</i> sp.		Noctuidae	<i>Thysanoplusia orichalcea</i> (Fabricius, 1775)	Pupa [9]
43	<i>Telenomus</i> sp.	Scelionidae	Bombycidae	<i>Trilocho varians</i> (Walker, 1855)	Pupa [35]
44	<i>Temelucha pestifer</i> (Morley, 1913)	Ichneumonidae	Crambidae	<i>Scirpophaga incertulas</i> (Walker, 1863)	Pupa [4]
45	<i>Temelucha</i> sp.			<i>Scirpophaga incertulas</i> (Walker, 1863)	Pupa [4]
46	<i>Tetrastichus howardi</i> (Olliff, 1893)	Eulophidae		<i>Chilo sacchariphagus</i> (Bojer, 1856)	Pupa [3]
			Noctuidae	<i>Sesamia inferens</i> (Walker, 1856)	Pupa [3]
			Crambidae	<i>Scirpophaga incertulas</i> (Walker, 1863)	Pupa [4]
				<i>Scirpophaga nivella</i> (Fabricius, 1794)	Pupa [3]
			Noctuidae	<i>Helicoverpa armigera</i> (Hübner, 1808)	Pupa [5]
			Crambidae	<i>Chilo auricilius</i> (Dudgeon, 1905)	Pupa [3]
			Oecophoridae	<i>Opisina arenosella</i> (Walker, 1864)	Pupa [2]
			Crambidae	<i>Chilo infuscatellus</i> (Snellen, 1890)	Pupa [3]
				<i>Chilo partellus</i> (Swinhoe, 1885)	Pupa [7]
47	<i>Trichogramma raoi</i> (Nagaraja, 1973)	Trichogrammatidae		<i>Paliga machoeris</i> (Walker, 1859)	Pupa [1]
48	<i>Trichospilus diatraeae</i> (Cherian & Margabandhu, 1942)	Eulophidae		<i>Chilo sacchariphagus</i> (Bojer, 1856)	Pupa [3]
			Noctuidae	<i>Sesamia inferens</i> (Walker, 1856)	Pupa [3]

Sl. No.	Parasitoid species	Parasitoid Family	Moth Family	Moth species	Life stage of moth attacked
49	<i>Trichospilus pupivora</i> (Ferrière 1930)	Ichneumonidae	Oecophoridae	<i>Opisina arenosella</i> (Walker, 1864)	Pupa [2]
50	Unidentified ichneumonid		Noctuidae	<i>Thysanoplusia orichalcea</i> (Fabricius, 1775)	Pupa [44]
51	<i>Xanthopimpla nana nana</i> (Schulz, 1906)		Oecophoridae	<i>Opisina arenosella</i> (Walker, 1864)	Pupa [31]
52	<i>Xanthopimpla pedator</i> (Fabricius, 1775)	Ichneumonidae	Crambidae	<i>Scirpophaga nivella</i> (Fabricius, 1794)	Pupa [3]
				<i>Scirpophaga excerptalis</i> (Walker)	Pupa [3]
				<i>Chilo partellus</i> (Swinhoe, 1885)	Pupa [3]
53	<i>Xanthopimpla punctata</i> (Fabricius, 1781)	Ichneumonidae	Saturniidae	<i>Antheraea paphia</i> (Linnaeus)	Pupa [32]
			Crambidae	<i>Chilo infuscatellus</i> (Snellen, 1890)	Pupa [3]
			Oecophoridae	<i>Opisina arenosella</i> (Walker, 1864)	Pupa [2]
54	<i>Xanthopimpla stemmator</i> (Thunberg, 1822)	Ichneumonidae	Crambidae	<i>Chilo infuscatellus</i> (Snellen, 1890)	Pupa [3]
				<i>Scirpophaga nivella</i> (Fabricius, 1794)	Pupa [3]
				<i>Chilo sacchariphagus</i> (Bojer, 1856)	Pupa [3]
				<i>Chilo partellus</i> (Swinhoe, 1885)	Pupa [3]
			Noctuidae	<i>Helicoverpa armigera</i> (Hübner, 1808)	Pupa [5]
			Crambidae	<i>Chilo auricilius</i> (Dudgeon, 1905)	Pupa [33]
			Noctuidae	<i>Sesamia inferens</i> (Walker, 1856)	Pupa [33]

Table 2. Checklist of hymenopteran larval parasitoids of moths

Sl. No.	Parasitoid Species	Parasitoid Family	Moth Family	Moth Species	Life stage of moth attacked	
1	<i>Agathis fabiae</i> (Nixon, 1941)	Braconidae	Noctuidae	<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [16]	
2	<i>Aleiodes indiscretus</i> (Reardon, 1970)		Erebidae	<i>Lymantria obfuscata</i> Walker, 1865	Larva [25]	
3	<i>Allorhogas pyralophagus</i> (Marsh, 1984)		Crambidae	<i>Bissetia steniellus</i> (Hampson, 1899)	Larva [3]	
				<i>Chilo auricilius</i> (Dudgeon, 1905)	Larva [3]	
				<i>Chilo partellus</i> (Swinhoe, 1885)	Larva [3]	
				<i>Chilo infuscatellus</i> (Snellen, 1890)	Larva [3]	
4	<i>Amauromorpha accepta</i> (Tosquinet, 1903)	Ichneumonidae		<i>Scirpophaga nivella</i> (Fabricius, 1794)	Larva [33]	
					<i>Chilo auricilius</i> (Dudgeon, 1905)	Larva [3]
					<i>Scirpophaga incertulas</i> (Walker, 1863)	Larva [4]
5	<i>Amyosoma chinense</i> (Szépligeti, 1902)	Braconidae	Crambidae	<i>Diatraea saccharalis</i> (Fabricius, 1794)	Larva [3]	
					<i>Chilo infuscatellus</i> (Snellen, 1890)	Larva [3]
				Noctuidae	<i>Sesamia inferens</i> (Walker, 1856)	Larva [3]
			Crambidae	<i>Scirpophaga nivella</i> (Fabricius, 1794)	Larva [3]	

Sl. No.	Parasitoid Species	Parasitoid Family	Moth Family	Moth Species	Life stage of moth attacked
6	<i>Anomalon</i> sp.	Ichneumonidae	Noctuidae	<i>Sesamia uniformis</i> (Dudgeon, 1905)	Larva [3]
7	<i>Antrocephalus decipiens</i> (Masi, 1929)	Chalcididae	Crambidae	<i>Scirpophaga nivella</i> (Fabricius, 1794)	Larva [3]
8	<i>Apanteles baoris</i> (Wilkinson, 1930)	Braconidae		<i>Conogethes punctiferalis</i> (Guenée, 1854)	Larva [22]
9	<i>Apanteles diparopsidis</i> (Lyle, 1927)			<i>Chilo auricilius</i> (Dudgeon, 1905)	Larva [3]
10	<i>Apanteles galleriae</i> (Wilkinson, 1932)		Pyrilidae	<i>Syllepte derogata</i> (Fabricius, 1775)	Larva [11]
11	<i>Apanteles machaeralis</i> (Wilkinson, 1928))	Braconidae	Crambidae	<i>Galleria mellonella</i> (Linnaeus, 1758)	Larva [11]
				<i>Paliga machoeralis</i> (Walker, 1859)	Larva [11]
				<i>Diaphania indica</i> (Saunders, 1851)	Larva [17]
12	<i>Apanteles mamitus</i> (Nixon, 1965)			<i>Spoladea recurvalis</i> (Fabricius, 1775)	Larva [11]
				<i>Maruca vitrata</i> (Fabricius, 1787)	Larva [11]
13	<i>Apanteles mohandasi</i> (Sumodan & Narendran, 1990)		Tortricidae	<i>Pammene critica</i> (Meyrick, 1905)	Larva [11]
14	<i>Apanteles</i> nr. <i>agilis</i>		Crambidae	<i>Glyphodes pulverulentalis</i> (Hampson, 1896)	Larva [11]
15	<i>Apanteles</i> nr. <i>bambusae</i>			<i>Patania balteata</i> (Fabricius, 1798)	Larva [11]
16	<i>Apanteles</i> nr. <i>bisulcatus</i>		Depressariidae	<i>Acria</i> sp.	Larva [11]
17	<i>Apanteles</i> sp. nr. <i>glomeratus</i>		Noctuidae	<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [5]
18	<i>Apanteles obliquae</i> (Wilkinson, 1928)		Erebidae	<i>Spilosoma obliqua</i> (Walker, 1855))	Larva [18]
19	<i>Apanteles phycodis</i> (Viereck, 1913)	Braconidae	Brachodidae	<i>Phycodes radiata</i> (Ochsenheimer, 1808)	Larva [11]
			Erebidae	<i>Mangina syringa</i> (Cramer, 1775)	Larva [11]
20	<i>Apanteles prodeniae</i> (Viereck, 1912)		Noctuidae	<i>Spodoptera litura</i> (Fabricius, 1775)	Larva [6]
21	<i>Apanteles schoenobii</i> (Wilkinson, 1932)		Crambidae	<i>Chilo partellus</i> (Swinhoe, 1885)	Larva [3]
22	<i>Apanteles scirpophagae</i> Ashmead			<i>Scirpophaga nivella</i> (Fabricius, 1794)	Larva [3]
23	<i>Apanteles</i> sp. (octonarius group)		Noctuidae	<i>Spodoptera litura</i> (Fabricius, 1775)	Larva [6]
24	<i>Apanteles</i> sp.		Plutellidae	<i>Plutella xylostella</i> (Linnaeus, 1758)	Larva [9]
			Crambidae	<i>Chilo suppressalis</i> (Walker, 1863)	Larva [4]
			Noctuidae	<i>Acontia marmoralis</i> (Fabricius, 1794)	Larva [11]
25	<i>Apanteles</i> sp.	Braconidae	Noctuidae	<i>Heliothis peltigera</i> (Denis & Schiffermüller, 1775)	Larva [5]
26	<i>Apanteles tachardiae</i> (Cameron, 1913)		Blastobasidae	<i>Holcocera pulvereae</i> (Meyrick, 1907)	Larva [11]
27	<i>Apanteles taragamae</i> (Viereck, 1912)		Oecophoridae	<i>Opisina arenosella</i> (Walker, 1864)	Larva [2]
			Crambidae	<i>Diaphania indica</i> (Saunders, 1851)	Larva [11]
28	<i>Aphanogmus</i> sp.	Ceraphronidae	Geometridae	<i>Biston suppressaria</i> (Guenée, 1858)	Larva [10]
29	<i>Apophua</i> sp.	Ichneumonidae	Tortricidae	<i>Homona coffearia</i> (Nietner, 1861)	Larva [10]
30	<i>Apsilops</i> sp.		Crambidae	<i>Scirpophaga incertulas</i> (Walker, 1863)	Larva [4]
31	<i>Ascogaster</i> sp.	Braconidae	Pyrilidae	<i>Polyocha depressella</i> (Swinhoe, 1885)	Larva [3]
32	<i>Astomaspis fuscipennis</i> (Cameron, 1911)	Ichneumonidae	Crambidae	<i>Scirpophaga nivella</i> (Fabricius, 1794)	Larva [33]
33	<i>Attractodes</i> sp.		Noctuidae	<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [5]
34	<i>Banchopsis ruficornis</i> (Cameron, 1905)	Ichneumonidae	Noctuidae	<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [5]

Sl. No.	Parasitoid Species	Parasitoid Family	Moth Family	Moth Species	Life stage of moth attacked
35	<i>Barichneumon</i> sp.	Chalcididae	Crambidae	<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [5]
36	<i>Brachycoryphus nersei</i> Cameron			<i>Chilo infuscatellus</i> (Snellen, 1890)	Larva [3]
37	<i>Brachymeria atteviae</i> (Joseph, Narendran and Joy, 1972)			<i>Conogethes punctiferalis</i> (Guenée, 1854)	Larva [22]
38	<i>Brachymeria lasus</i> (Walker, 1841)			<i>Spodoptera litura</i> (Fabricius, 1775)	Larva [6]
39	<i>Bracon famulus</i> Bingham	Braconidae	Crambidae	<i>Homona coffearia</i> (Nietner, 1861)	Larva [10]
40	<i>Bracon greeni</i> (Ashmead, 1896)			<i>Scirpophaga nivella</i> (Fabricius, 1794)	Larva [3]
				<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [5]
				<i>Eublemma amabilis</i> (Saalmüller, 1891)	Larva [36]
		Braconidae	Gelechiidae	<i>Earias insulana</i> (Boisduval, 1833)	Larva [26]
41	<i>Bracon lefroyi</i> (Dudgeon & Gough, 1914)			<i>Pectinophora gossypiella</i> (Saunders, 1844)	Larva [37]
				<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [16]
42	<i>Bracon</i> sp.			<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [5]
		Ichneumonidae	Noctuidae	<i>Helicoverpa assulta</i> (Guenée, 1852)	Larva [5]
43	<i>Buluka</i> nr. <i>Noyesi</i>			<i>Psimada quadripennis</i> Walker, 1858	Larva [11]
44	<i>Campoletis chlorideae</i> (Uchida, 1957)			<i>Spodoptera frugiperda</i> (Smith, 1797)	Larva [20]
				<i>Thysanoplusia orichalcea</i> (Fabricius, 1775)	Larva [9]
				<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [9]
				<i>Helicoverpa assulta</i> (Guenée, 1852)	Larva [5]
				<i>Heliothis peltigera</i> (Denis & Schiffermüller, 1775)	Larva [5]
				<i>Spodoptera litura</i> (Fabricius, 1775)	Larva [6]
45	<i>Campoletis viennensis</i> (Gravenhorst, 1829)			<i>Heliothis peltigera</i> (Denis & Schiffermüller, 1775)	Larva [5]
46	<i>Campoletis</i> sp.			<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [5]
				<i>Trichoplusia ni</i> (Hübner, 1803)	Larva [9]
				<i>Spodoptera litura</i> (Fabricius, 1775)	Larva [6]
		Braconidae	Crambidae	<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [16]
47	<i>Campoplex collinus</i> (Morley, 1913))			<i>Sesamia inferens</i> (Walker, 1856)	Larva [4]
48	<i>Campyloneurus mutator</i> (Fabricius)			<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [16]
				<i>Chilo auricilius</i> (Dudgeon, 1905)	Larva [3]
				<i>Chilo infuscatellus</i> (Snellen, 1890)	Larva [3]
				<i>Chilo tumidicostalis</i> (Hampson, 1919)	Larva [3]
				<i>Scirpophaga nivella</i> (Fabricius, 1794)	Larva [3]
				<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [16]
49	<i>Charops aditya</i> (Gupta & Maheshwary, 1971)	Ichneumonidae	Noctuidae	<i>Spodoptera litura</i> (Fabricius, 1775)	Larva [6]
50	<i>Charops obtusus</i> (Morley, 1913)			<i>Conogethes punctiferalis</i> (Guenée, 1854)	Larva [22]
51	<i>Chelonus blackburni</i> (Cameron, 1886)	Braconidae	Crambidae	<i>Spodoptera frugiperda</i> (Smith, 1797)	Larva [28]
52	<i>Chelonus</i> nr. <i>Blackburni</i>			<i>Spodoptera litura</i> (Fabricius, 1775)	Larva [6]
53	<i>Chelonus carbonator</i> (Marshall, 1885)			<i>Spodoptera litura</i> (Fabricius, 1775)	Larva [6]

Sl. No.	Parasitoid Species	Parasitoid Family	Moth Family	Moth Species	Life stage of moth attacked
54	<i>Chelonus curvimaculatus</i> (Cameron 1906)	Braconidae	Noctuidae	<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [5]
				<i>Heliothis peltigera</i> (Denis & Schiffermüller, 1775)	Larva [5]
				<i>Helicoverpa assulta</i> (Guenée, 1852)	Larva [5]
55	<i>Chelonus formosanus</i> (Sonan, 1932)			<i>Spodoptera litura</i> (Fabricius, 1775)	Larva [6]
				<i>Spodoptera frugiperda</i> (Smith, 1797)	Larva [29]
				<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [16]
56	<i>Chelonus narayani</i> Subba Rao, 1955			<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [5]
57	<i>Chelonus</i> sp.		Crambidae	<i>Noorda blitealis</i> Walker, 1859	Larva [30]
			Noctuidae	<i>Scirpophaga incertulas</i> (Walker, 1863)	Larva [4]
				<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [5]
58	<i>Coccygidium</i> sp.	Braconidae	Crambidae	<i>Spodoptera frugiperda</i> (Smith, 1797)	Larva [28]
59	<i>Cotesia chilonis</i> (Munakata, 1912)			<i>Chilo partellus</i> (Swinhoe, 1885)	Larva [3]
60	<i>Cotesia flavipes</i> (Cameron, 1891)		Crambidae	<i>Chilo infuscatellus</i> (Snellen, 1890)	Larva [3]
	<i>Cotesia flavipes</i> (Cameron, 1891)			<i>Chilo partellus</i> (Swinhoe, 1885)	Larva [3]
				<i>Sesamia inferens</i> (Walker, 1856)	Larva [3]
				<i>Chilo auricilius</i> (Dudgeon, 1905)	Larva [3]
				<i>Sesamia uniformis</i> (Dudgeon, 1905))	Larva [3]
				<i>Bissetia steniellus</i> (Hampson, 1899)	Larva [3]
				<i>Scirpophaga nivella</i> (Fabricius, 1794)	Larva [3]
				<i>Chilo polychrysus</i> (Meyrick, 1932)	Larva [4]
				<i>Syllepte derogata</i> (Fabricius, 1775)	Larva [11]
				<i>Chilo tumidicostalis</i> (Hampson, 1919)	Larva [11]
61	<i>Cotesia marginiventris</i> (Cresson, 1865)	Braconidae	Erebidae	<i>Spilosoma obliqua</i> (Walker, 1855))	Larva [11]
62	<i>Cotesia plutellae</i> (Kurdjumov, 1912)		Noctuidae	<i>Spodoptera litura</i> (Fabricius, 1775)	Larva [6]
63	<i>Cotesia ruficrus</i> (Haliday, 1834)		Plutellidae	<i>Plutella xylostella</i> (Linnaeus, 1758)	Larva [9]
			Crambidae	<i>Chilo auricilius</i> (Dudgeon, 1905)	Larva [3]
			Noctuidae	<i>Thysanoplusia orichalcea</i> (Fabricius, 1775)	Larva [9]
			Erebidae	<i>Spilosoma obliqua</i> (Walker, 1855))	Larva [12]
			Noctuidae	<i>Spodoptera litura</i> (Fabricius, 1775)	Larva [6]
				<i>Spodoptera</i> sp.	Larva [11]
				<i>Spodoptera frugiperda</i> (Smith, 1797)	Larva [13]
				<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [5]
				<i>Naranga aenescens</i> Moore, 1881	Larva [14]
64	<i>Cotesia</i> nr. <i>ruidus</i>		Erebidae	<i>Olepa ricini</i> (Fabricius, 1775)	Larva [11]
65	<i>Cotesia ruidus</i> (Wilkinson, 1928)	Braconidae	Crambidae	<i>Paliga machoeralis</i> (Walker, 1859)	Larva [11]
			Hyblaeidae	<i>Hyblaea puera</i> (Cramer, 1777)	Larva [15]

Sl. No.	Parasitoid Species	Parasitoid Family	Moth Family	Moth Species	Life stage of moth attacked
66	<i>Cotesia ruidus</i> comb. nov.		Crambidae	<i>Paliga machoeralis</i> (Walker, 1859)	Larva [11]
67	<i>Cotesia</i> sp.		Noctuidae	<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [9]
			Zygaenidae	<i>Eterusia aedea</i> (Clerck, 1759)	Larva [10]
			Geometridae	<i>Biston suppressaria</i> (Guenée, 1858)	Larva [10]
				<i>Hyposidra talaca</i> (Walker, 1860)	Larva [10]
				<i>Hyposidra infixaria</i> (Walker, 1860)	Larva [10]
68	<i>Cotesia vestalis</i> (Haliday, 1834)		Plutellidae	<i>Plutella xylostella</i> (Linnaeus, 1758)	Larva [11]
69	<i>Cremastus</i> sp.	Ichneumonidae	Crambidae	<i>Scirpophaga nivella</i> (Fabricius, 1794)	Larva [3]
	<i>Cremastus</i> sp.	Ichneumonidae	Crambidae	<i>Bissetia steniellus</i> (Hampson, 1899)	Larva [3]
70	<i>Devorgilla</i> sp.		Noctuidae	<i>Sesamia inferens</i> (Walker, 1856)	Larva [4]
71	<i>Diadegma semiclausum</i> (Hellén, 1949)			<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [44]
			Plutellidae	<i>Plutella xylostella</i> (Linnaeus, 1758)	Larva [44]
72	<i>Diadromus collaris</i> (Gravenhorst, 1829)			<i>Plutella xylostella</i> (Linnaeus, 1758)	Larva [43]
73	<i>Dicopulus</i> sp.	Mymaridae	Crambidae	<i>Scirpophaga incertulas</i> (Walker, 1863)	Larva [4]
74	<i>Dioborus indica</i> (Rao, 1953) (= <i>Agyrpon nox</i> (Morley, 1913)b)	Ichneumonidae	Noctuidae	<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [5]
75	<i>Disophrys</i> sp.	Braconidae		<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [5]
76	<i>Dolichogenidea</i> sp.		Erebidae	<i>Artaxa guttata</i> (Walker, 1855)	Larva [11]
				<i>Perina nuda</i> (Fabricius, 1787)	Larva [11]
	<i>Dolichogenidea</i> sp.	Braconidae	Tortricidae	<i>Cydia leucostoma</i> (Meyrick, 1912)	Larva [10]
77	<i>Dolichogenidea stantoni</i> (Ashmead, 1904)		Crambidae	<i>Parotis marginata</i> (Hampson, 1893)	Larva [11]
			Erebidae	<i>Olene ?mendoza</i> Hübner, 1823	Larva [11]
78	<i>Elasmus albopictus</i> (Crawford, 1910)	Eulophidae	Crambidae	<i>Scirpophaga incertulas</i> (Walker, 1863)	Larva [23]
79	<i>Elasmus hyblaeae</i> (Ferrière, 1929)			<i>Noorda blitealis</i> Walker, 1859	Larva [30]
80	<i>Elasmus indicus</i> (Rhowar, 1921)		Erebidae	<i>Eublemma</i> sp.	Larva [23]
81	<i>Elasmus</i> sp.		Crambidae	<i>Scirpophaga excerptalis</i> (Walker, 1863)	Larva [3]
			Tortricidae	<i>Cydia leucostoma</i> (Meyrick, 1912)	Larva [10]
			Gracillariidae	<i>Caloptilia theivora</i> (Walsingham, 1891)	Larva [10]
82	<i>Elasmus viridiscutellatus</i> Verma & Hayat, 2002		Crambidae	<i>Cnaphalocrocis medinalis</i> (Guenée, 1854)	Larva [23]
83	<i>Elasmus zehntneri</i> (Ferrière, 1929)			<i>Scirpophaga excerptalis</i> (Walker, 1863)	Larva [39]
84	<i>Enicospilus capensis</i> (Thunberg, 1822)	Ichneumonidae	Noctuidae	<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [16]
85	<i>Enicospilus heliothidis</i> (Viereck, 1913)			<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [16]
86	<i>Enicospilus melanocarpus</i> Cameron, 1905			<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [16]
87	<i>Enicospilus shinkanus</i> (Uchida, 1928)			<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [16]
88	<i>Enicospilus signativentris</i> (Tosquinet, 1903)			<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [16]
89	<i>Enicospilus</i> sp. nr. <i>shinkanus</i>			<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [5]
90	<i>Enicospilus</i> sp.			<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [5]

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91	<i>Epitranus erythrogaster</i> Cameron, 1888	Chalcididae	Bombycidae	<i>Spodoptera litura</i> (Fabricius, 1775)	Larva [6]
92	<i>Eriborus argenteopilosus</i> (Cameron, 1907)	Ichneumonidae	Crambidae	<i>Trilocho varians</i> (Walker, 1855)	Larva [34]
			Noctuidae	<i>Conogethes punctiferalis</i> Guenée, 1854	Larva [22]
93	<i>Eriborus pilosellus</i> (Cameron, 1906)			<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [5]
94	<i>Eriborus</i> sp.			<i>Heliothis peltigera</i> (Denis & Schiffermüller, 1775)	Larva [5]
95	<i>Eriborus trochanteratus</i> (Morley, 1913)			<i>Spodoptera litura</i> (Fabricius, 1775)	Larva [6]
				<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [5]
96	<i>Euplectrus ceylonensis</i> (Howard, 1896)	Eulophidae	Oecophoridae	<i>Spodoptera litura</i> (Fabricius, 1775)	Larva [6]
			Noctuidae	<i>Opisina arenosella</i> Walker, 1864	Larva [2]
97	<i>Euplectrus euplexiae</i> (Rohwer, 1921)		Erebidae	<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [5]
98	<i>Euplectrus gopimohani</i> Mani, 1941	Eulophidae	Noctuidae	<i>Thysanoplusia orichalcea</i> (Fabricius, 1775)	Larva [9]
				<i>Euproctis fraterna</i> Moore, 1883	Larva [8]
99	<i>Euplectrus</i> sp.		Noctuidae	<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [9]
100	<i>Euplectrus utetheisae</i> Mani & Kurian, 1953			<i>Spodoptera exigua</i> (Hübner, 1808)	Larva [8]
101	<i>Fornicia ceylonica</i> (Wilkinson, 1928)	Braconidae		<i>Spodoptera litura</i> (Fabricius, 1775)	Larva [6]
102	<i>Gelis</i> sp.	Ichneumonidae		<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [5]
103	<i>Glyptapanteles</i> cf. <i>colemanni</i> (Viereck)	Braconidae	Erebidae	<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [5]
104	<i>Glyptapanteles</i> cf. <i>creatonoti</i> (Viereck)			<i>Utetheisa pulchella</i> (Linnaeus, 1758)	Larva [8]
105	<i>Glyptapanteles clanisae</i> Gupta, 2013			<i>Spatulifimbria castaneiceps</i> Hampson, 1892	Larva [11]
106	<i>Glyptapanteles creatonoti</i> (Viereck, 1912)			<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [16]
				<i>Orgyia postica</i> (Walker, 1855)	Larva [19]
107	<i>Glyptapanteles obliquae</i> (Wilkinson, 1928)			<i>Argina astrea</i> (Drury, 1773)	Larva [19]
108	<i>Glyptapanteles</i> sp.			<i>Clanis phalaris</i> (Cramer, 1777)	Larva [19]
				<i>Spodoptera frugiperda</i> (Smith, 1797)	Larva [20]
				<i>Amsacta albistriga</i> (Walker, 1865)	Larva [11]
				<i>Spilosoma obliqua</i> (Walker, 1855)	Larva [19]
				<i>Lymantria</i> sp.	Larva [19]
				<i>Orgyia postica</i> (Walker, 1855)	Larva [11]
				? <i>Melanephia mosara</i> Swinhoe	Larva [11]
				<i>Argina astrea</i> (Drury, 1773)	Larva [11]
				<i>Utetheisa pulchelloides</i> Hampson, 1907	Larva [19]
				<i>Nepita conferta</i> (Walker, 1854)	Larva [19]
109	<i>Glyptapanteles spodopterae</i> (Ahmad, 2009)		Geometridae	<i>Ascotis imparata</i> Walker, 1888	Larva [11]
110	<i>Glyptapanteles trilochoae</i> (Gupta, 2013)		Noctuidae	<i>Spodoptera litura</i> (Fabricius, 1775)	Larva [21]
111	<i>Goniozus indicus</i> (Ashmead, 1903)	Bethylidae	Bombycidae	<i>Trilocho varians</i> (Walker, 1855)	Larva [11]
			Crambidae	<i>Chilo infuscatellus</i> (Snellen, 1890)	Larva [3]
				<i>Chilo partellus</i> (Swinhoe, 1885)	Larva [3]

Sl. No.	Parasitoid Species	Parasitoid Family	Moth Family	Moth Species	Life stage of moth attacked
				<i>Chilo sacchariphagus</i> (Bojer, 1856)	Larva [3]
				<i>Chilo tumidicostalis</i> (Hampson, 1919)	Larva [3]
			Noctuidae	<i>Sesamia inferens</i> (Walker, 1856)	Larva [3]
			Crambidae	<i>Scirpophaga nivella</i> (Fabricius, 1794)	Larva [3]
				<i>Scirpophaga incertulas</i> (Walker, 1863)	Larva [4]
112	<i>Goniozus nephantidis</i> (Muesebeck)		Oecophoridae	<i>Opisina arenosella</i> Walker, 1864	Larva [2]
113	<i>Goniozus</i> sp.		Pyalidae	<i>Polyocha depressella</i> (Swinhoe, 1885)	Larva [3]
			Noctuidae	<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [5]
	<i>Goniozus</i> sp.	Bethylidae	Crambidae	<i>Scirpophaga incertulas</i> (Walker, 1863)	Larva [4]
114	<i>Goryphus</i> sp.	Ichneumonidae	Bombycidae	<i>Trilochoa varians</i> (Walker, 1855))	Larva [34]
115	<i>Habrobracon hebetor</i> (Say, 1836) (= <i>Bracon hebetor</i> Say, 1836)	Braconidae	Noctuidae	<i>Sesamia inferens</i> (Walker, 1856)	Larva [3]
			Oecophoridae	<i>Opisina arenosella</i> Walker, 1864	Larva [2]
			Crambidae	<i>Noorda blitealis</i> Walker, 1859	Larva [30]
			Noctuidae	<i>Spodoptera litura</i> (Fabricius, 1775)	Larva [6]
				<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [5]
116	<i>Habrobracon cushmani</i> (Muesebeck, 1925)			<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [5]
117	<i>Habrobracon gelechiae</i> (Ashmead, 1889)			<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [5]
118	<i>Harmoniae</i> sp.	Chalcididae		<i>Sesamia calamistis</i> Hampson, 1910	Larva [3]
119	<i>Hybothoracini</i> sp.	Chalcididae	Noctuidae	<i>Spodoptera litura</i> (Fabricius, 1775)	Larva [6]
120	<i>Ichneumon</i> sp.	Ichneumonidae		<i>Spodoptera litura</i> (Fabricius, 1775)	Larva [6]
				<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [5]
121	Indeterminate Ichneumonidae			<i>Spodoptera frugiperda</i> (Smith, 1797)	Larva [20]
122	<i>Iphiaulax famulus</i> Bingham	Braconidae		<i>Sesamia inferens</i> (Walker, 1856)	Larva [3]
				<i>Sesamia uniformis</i> (Dudgeon, 1905))	Larva [3]
			Crambidae	<i>Scirpophaga nivella</i> (Fabricius, 1794)	Larva [3]
123	<i>Iphiaulax sikkimensis</i> Cameron			<i>Scirpophaga nivella</i> (Fabricius, 1794)	Larva [3]
124	<i>Iphiaulax xanthopsis</i> Cameron, 1905			<i>Chilo partellus</i> (Swinhoe, 1885)	Larva [3]
125	<i>Isotima javensis</i> Rohwer	Ichneumonidae		<i>Scirpophaga nivella</i> (Fabricius, 1794)	Larva [3]
126	<i>Isotima</i> sp.	Ichneumonidae	Crambidae	<i>Scirpophaga incertulas</i> (Walker, 1863)	Larva [4]
127	<i>Itopectis</i> sp.		Plutellidae	<i>Plutella xylostella</i> (Linnaeus, 1758)	Larva [9]
128	<i>Listrognathus calvinervis</i> Cameron		Crambidae	<i>Scirpophaga nivella</i> (Fabricius, 1794)	Larva [3]
129	<i>Leptobatopsis indica</i> (Cameron, 1897)		Noctuidae	<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva? [16]
130	<i>Macrocentrus nicevillei</i> Ashmead	Braconidae		<i>Sesamia inferens</i> (Walker, 1856)	Larva [3]
131	<i>Macromalon orientale</i> Kerrich, 1968	Ichneumonidae	Plutellidae	<i>Plutella xylostella</i> (Linnaeus, 1758)	Larva [43]
132	<i>Metaplectrus thoseae</i> Ferrière, 1941	Eulophidae	Limacodidae	<i>Thosea cervina</i> Moore, 1877	Larva [8]
133	<i>Meteoridea hutsoni</i> Nixon, 1941	Braconidae	Oecophoridae	<i>Opisina arenosella</i> Walker, 1864	Larva [2]

Sl. No.	Parasitoid Species	Parasitoid Family	Moth Family	Moth Species	Life stage of moth attacked
134	<i>Meteorus spilosomae</i> Narendran & Rema (1996)	Braconidae	Erebidae	<i>Spilosoma obliqua</i> (Walker, 1855))	Larva [41]
135	<i>Meteorus versicolor</i> (Wesmael, 1835)		Crambidae	<i>Scirpophaga incertulas</i> (Walker, 1863)	Larva [4]
136	<i>Meteorus pulchricornis</i> (Wesmael, 1835)		Noctuidae	<i>Spodoptera frugiperda</i> (Smith, 1797)	Larva [42]
137	<i>Metopius rufus</i> Cameron, 1905			<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [5]
138	<i>Microchelonus heliopae</i> Gupta, 1955		Crambidae	<i>Chilo partellus</i> (Swinhoe, 1885)	Larva [3]
		Braconidae	Noctuidae	<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [5]
				<i>Heliothis peltigera</i> (Denis & Schiffermüller, 1775)	Larva [5]
139	<i>Microplitis ajmerensis</i> Rao & Kurian, 1950	Braconidae		<i>Spodoptera exigua</i> (Hübner, 1808)	Larva [40]
140	<i>Microplitis carinicornis</i> (Cameron, 1905)		Erebidae	<i>Psalis pennatula</i> (Fabricius, 1793)	Larva [11]
141	<i>Microplitis demolitor</i> Wilkinson, 1934		Noctuidae	<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [40]
				<i>Helicoverpa zea</i> (Boddie, 1850)	Larva [40]
				<i>Spodoptera frugiperda</i> (Smith, 1797)	Larva [40]
				<i>Spodoptera littoralis</i> (Boisduval, 1833)	Larva [40]
				<i>Spodoptera litura</i> (Fabricius, 1775)	Larva [40]
142	<i>Microplitis indicus</i> Marsh, 1978			<i>Helicoverpa assulta</i> (Guenée, 1852)	Larva [40]
				<i>Helicoverpa</i> sp.	Larva [40]
143	<i>Microplitis maculipennis</i> Szépligeti, 1900			<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [5]
			Erebidae	<i>Achaea janata</i> (Linnaeus, 1758)	Larva [40]
			Noctuidae	<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [40]
				<i>Helicoverpa zea</i> (Boddie, 1850)	Larva [40]
			Erebidae	<i>Dysgonia algira</i> (Linnaeus, 1767)	Larva [40]
				<i>Eudocima materna</i> (Linnaeus, 1767)	Larva [40]
144	<i>Microplitis manilae</i> Ashmead, 1904		Noctuidae	<i>Spodoptera exigua</i> (Hübner, 1808)	Larva [40]
		Braconidae	Noctuidae	<i>Spodoptera frugiperda</i> (Smith, 1797)	Larva [40]
				<i>Spodoptera littoralis</i> (Boisduval, 1833)	Larva [40]
				<i>Spodoptera litura</i> (Fabricius, 1775)	Larva [40]
				<i>Spodoptera exempta</i> (Walker, 1857)	Larva [40]
145	<i>Microplitis prodeniae</i> Rao & Kurian, 1950			<i>Spodoptera litura</i> (Fabricius, 1775)	Larva [40]
146	<i>Microplitis spodopterae</i> Rao & Kurian, 1950			<i>Spodoptera mauritia</i> (Boisduval, 1833)	Larva [40]
147	<i>Microplitis</i> sp. nr. <i>pallidipes</i>			<i>Helicoverpa assulta</i> (Guenée, 1852)	Larva [5]
148	<i>Microplitis</i> sp.		Crambidae	<i>Chilo partellus</i> (Swinhoe, 1885)	Larva [3]
			Noctuidae	<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [9]
			Noctuidae	<i>Spodoptera litura</i> (Fabricius, 1775)	Larva [6]
149	<i>Nesolynx</i> sp.		Tortricidae	<i>Cydia leucostoma</i> (Meyrick, 1912)	Larva [10]
150	<i>Netelia latro</i> (Holmgren, 1868)		Noctuidae	<i>Spodoptera litura</i> (Fabricius, 1775)	Larva [6]
151	<i>Netelia</i> sp.			<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [5]

Sl. No.	Parasitoid Species	Parasitoid Family	Moth Family	Moth Species	Life stage of moth attacked
152	<i>Odontepyrus</i> sp.	Braconidae	Crambidae	<i>Helicoverpa assulta</i> (Guenée, 1852)	Larva [5]
153	<i>Orgilus</i> sp.			<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [5]
154	<i>Parapanteles sireeshaae</i> Ahmad & Akhtar, 2010			<i>Scirpophaga incertulas</i> (Walker, 1863)	Larva [4]
155	<i>Parapanteles</i> sp.			<i>Hyposidra talaca</i> (Walker, 1860)	Larva [11]
	<i>Parapanteles</i> sp.	Braconidae	Erebidae	<i>Asota caricae</i> (Fabricius, 1775)	Larva [11]
	<i>Parapanteles</i> sp.		Erebidae	<i>Orgyia</i> sp.	Larva [11]
156	<i>Paraphylax</i> sp.	Ichneumonidae	Noctuidae	<i>Helicoverpa armigera</i> (Hübner, 1808)	Larva [5]
157	<i>Pediobius</i> sp.	Eulophidae	Tortricidae	<i>Cydia leucostoma</i> (Meyrick, 1912)	Larva [10]
158	<i>Perilampus</i> sp.	Perilampidae	Crambidae	<i>Noorda blitealis</i> Walker, 1859	Larva [30]
159	<i>Pimplinae</i> sp.	Ichneumonidae		<i>Scirpophaga incertulas</i> (Walker, 1863)	Larva [4]
				<i>Chilo auricilius</i> (Dudgeon, 1905)	Larva [4]
				<i>Noorda blitealis</i> Walker, 1859	Larva [30]
				<i>Chilo auricilius</i> (Dudgeon, 1905)	Larva [4]
160	<i>Pristomerus</i> sp.	Braconidae	Noctuidae	<i>Heliothis peltigera</i> (Denis & Schiffermüller, 1775)	Larva [5]
161	<i>Protopanteles africanus</i> (Cameron, 1911)		Erebidae	? <i>Gessonia gemma</i> Swinhoe, 1885	Larva [11]
162	<i>Protopanteles</i> nr. <i>beneficus</i>			<i>Utetheisa pulchella</i> (Linnaeus, 1758)	Larva [11]
163	<i>Protopanteles colemani</i> (Viereck, 1912)		Noctuidae	<i>Spodoptera litura</i> (Fabricius, 1775)	Larva [6]
164	<i>Protopanteles pallipes</i> (Reinhard 1880)	Braconidae	Erebidae	<i>Sesamia inferens</i> (Walker, 1856)	Larva [3]
165	<i>Protopanteles</i> sp.			<i>Anomis sabulifera</i> Guenée, 1852	Larva [11]
166	<i>Pseudoshirakia</i> sp.		Noctuidae	<i>Sesamia calamistis</i> Hampson, 1910	Larva [3]
167	<i>Rhaconotus roslinesis</i> Lal		Crambidae	<i>Scirpophaga nivella</i> (Fabricius, 1794)	Larva [3]
		Braconidae		<i>Chilo sacchariphagus</i> (Bojer, 1856)	Larva [3]
				<i>Bissetia steniellus</i> (Hampson, 1899)	Larva [3]
168	<i>Rhaconotus schoenobivorus</i> (Rohwer, 1919)			<i>Scirpophaga incertulas</i> (Walker, 1863)	Larva [4]
				<i>Chilo suppressalis</i> (Walker, 1863)	Larva [4]
169	<i>Rhaconotus scirpophagae</i> Wilkinson, 1927			<i>Bissetia steniellus</i> (Hampson, 1899)	Larva [3]
				<i>Polyocha depressella</i> (Swinhoe, 1885)	Larva [3]
				<i>Scirpophaga nivella</i> (Fabricius, 1794)	Larva [3]
				<i>Chilo partellus</i> (Swinhoe, 1885)	Larva [3]
				<i>Scirpophaga excerptalis</i> (Walker, 1863)	Larva [3]
				<i>Bissetia steniellus</i> (Hampson, 1899)	Larva [3]
				<i>Chilo sacchariphagus</i> (Bojer, 1856)	Larva [3]
				<i>Scirpophaga nivella</i> (Fabricius, 1794)	Larva [3]
170	<i>Rhaconotus signipennis</i> (Walker, 1860)	Figitidae		<i>Scirpophaga incertulas</i> (Walker, 1863)	Larva [4]
				<i>Chilo auricilius</i> (Dudgeon, 1905)	Larva [4]
				<i>Scirpophaga excerptalis</i> (Walker, 1863)	Larva [3]
171	<i>Rhoptromeris</i> sp.				

Sl. No.	Parasitoid Species	Parasitoid Family	Moth Family	Moth Species	Life stage of moth attacked
172	<i>Rogas</i> sp.	Braconidae	Nolidae Noctuidae	<i>Earias vittella</i> (Fabricius, 1794) <i>Spodoptera litura</i> (Fabricius, 1775) <i>Helicoverpa armigera</i> (Hübner, 1808) <i>Helicoverpa assulta</i> (Guenée, 1852) <i>Thysanoplusia orichalcea</i> (Fabricius, 1775)	Larva [26] Larva [6] Larva [5] Larva [5] Larva [9]
173	<i>Scambus</i> sp.	Ichneumonidae		<i>Bissetia steniellus</i> (Hampson, 1899)	Larva [3]
174	<i>Spathius elaboratus</i> Wilkinson, 1931	Braconidae	Crambidae	<i>Scirpophaga excerptalis</i> (Walker, 1863)	Larva [3]
175	<i>Spathius</i> sp.	Braconidae	Crambidae	<i>Bissetia steniellus</i> (Hampson, 1899)	Larva [3]
176	<i>Stenobracon deesae</i> (Cameron, 1902)	Braconidae	Crambidae	<i>Chilo auricilius</i> (Dudgeon, 1905) <i>Chilo infuscatellus</i> (Snellen, 1890) <i>Chilo partellus</i> (Swinhoe, 1885) <i>Chilo sacchariphagus</i> (Bojer, 1856) <i>Polyocha depressella</i> (Swinhoe, 1885) <i>Scirpophaga excerptalis</i> (Walker, 1863) <i>Scirpophaga nivella</i> (Fabricius, 1794) <i>Scirpophaga nivella</i> (Fabricius, 1794)	Larva [3] Larva [3] Larva [3] Larva [3] Larva [3] Larva [3] Larva [3] Larva [3]
177	<i>Stenobracon karnalensis</i> Lal, 1939		Pyalidae	<i>Bissetia steniellus</i> (Hampson, 1899)	Larva [3]
178	<i>Stenobracon nicevilli</i> (Bingham, 1901)		Crambidae	<i>Chilo infuscatellus</i> (Snellen, 1890) <i>Chilo partellus</i> (Swinhoe, 1885) <i>Scirpophaga nivella</i> (Fabricius, 1794) <i>Helicoverpa armigera</i> (Hübner, 1808) <i>Hyblaea puera</i> (Cramer, 1777) <i>Scirpophaga nivella</i> (Fabricius, 1794) <i>Scirpophaga nivella</i> (Fabricius, 1794)	Larva [3] Larva [3] Larva [3] Larva [16] Larva [38] Larva [33] Larva [3]
179	<i>Stenomesius japonicus</i> Ashmead, 1904	Braconidae	Crambidae	<i>Spodoptera litura</i> (Fabricius, 1775)	Larva [6]
180	<i>Sympiesis hyblaeae</i> Surekha	Eulophidae	Noctuidae	<i>Homona coffearia</i> (Nietner, 1861)	Larva [10]
181	<i>Syzeuctus apicipennis</i> (Cameron, 1902)		Hyblaeidae	<i>Scirpophaga nivella</i> (Fabricius, 1794)	Larva [3]
182	<i>Syzeuctus</i> sp.	Ichneumonidae	Crambidae	<i>Scirpophaga nivella</i> (Fabricius, 1794)	Larva [3]
183	<i>Telenomus remus</i> (Nixon, 1937)	Scelionidae	Noctuidae	<i>Scirpophaga incertulas</i> (Walker, 1863)	Larva [4]
184	<i>Telenomus</i> sp.		Tortricidae	<i>Sesamia inferens</i> (Walker, 1856)	Larva [3]
185	<i>Temelucha nigromaculata</i> (Cameron, 1907)	Ichneumonidae	Crambidae	<i>Scirpophaga nivella</i> (Fabricius, 1794) <i>Chilo auricilius</i> (Dudgeon, 1905)	Larva [4] Larva [4]
186	<i>Temelucha</i> sp. nr. <i>basimacula</i>			<i>Scirpophaga incertulas</i> (Walker, 1863)	Larva [4]
187	<i>Temelucha</i> sp. nr. <i>pestifer</i>			<i>Scirpophaga incertulas</i> (Walker, 1863)	Larva [4]
188	<i>Temelucha</i> sp.	Ichneumonidae	Noctuidae Crambidae	<i>Helicoverpa armigera</i> (Hübner, 1808) <i>Spodoptera frugiperda</i> (Smith, 1797) <i>Spodoptera litura</i> (Fabricius, 1775)	Larva [5] Larva [28] Larva [6]
189	<i>Tetrastichus howardi</i> (Olliff, 1893)	Eulophidae			

Sl. No.	Parasitoid Species	Parasitoid Family	Moth Family	Moth Species	Life stage of moth attacked
190	<i>Tetrastichus sokolowskii</i> Kurdjumov, 1912	Braconidae Ichneumonidae	Plutellidae	<i>Plecoptera reflexa</i> Guenée, 1852	Larva [8]
191	<i>Tetrastichus</i> sp.		Tortricidae	<i>Plutella xylostella</i> (Linnaeus, 1758)	Larva [9]
192	<i>Therophilus festivus</i> (Muesebeck, 1953)		Ethmiidae	<i>Cydia leucostoma</i> (Meyrick, 1912)	Larva [10]
193	<i>Trathala flavoorbitalis</i> (Cameron, 1907)		Crambidae	<i>Ethmia nigroapicella</i> (Saalmüller, 1880)	Larva [45]
				<i>Conogethes punctiferalis</i> (Guenée, 1854)	Larva [22]
				<i>Chilo auricilius</i> (Dudgeon, 1905)	Larva [3]
				<i>Chilo partellus</i> (Swinhoe, 1885)	Larva [3]
194	<i>Trichospilus pupivorus</i> Ferrière 1930	Eulophidae	Noctuidae	<i>Spodoptera litura</i> (Fabricius, 1775)	Larva [6]
195	<i>Tropobracon luteus</i> Cameron, 1905	Braconidae	Crambidae	<i>Chilo auricilius</i> (Dudgeon, 1905)	Larva [3]
			Noctuidae	<i>Sesamia inferens</i> (Walker, 1856)	Larva [3]
			Crambidae	<i>Scirpophaga incertulas</i> (Walker, 1863)	Larva [4]
				<i>Chilo suppressalis</i> (Walker, 1863)	Larva [4]
				<i>Chilo polychrysus</i> (Meyrick, 1932)	Larva [4]
196	<i>Vipio</i> sp.	Braconidae	Crambidae	<i>Sesamia inferens</i> (Walker, 1856)	Larva [3]
197	<i>Zelet chlorophthalmus</i> (Spinola, 1808)		Noctuidae	<i>Spodoptera litura</i> (Fabricius, 1775)	Larva [6]

population. Hymenopteran parasitoids are used as the natural enemies of the pests in the biological control programmes worldwide to suppress pest population in crop cultivated areas [21-30].

Even though, scattered datas on the hymenopteran parasitoids and their lepidopteran host are available in old and published research works, a compiled list on the same is absent. This revised checklist will provide necessary information about the Hymenopteran parasitoids and moth pests that can be used in the biological control programmes [31-40].

2. MATERIALS AND METHODS

The present checklist was prepared by researching published literatures for the last 40 years. Informations available from online resources were also included. Only complete articles published in scientific journals and expanded abstracts presented at national and international scientific events were considered. Data on moths and associated parasitoids are presented in a table. Life stages of moths attacked with literature reference is given in parenthesis.

3. RESULTS AND DISCUSSION

This checklist is a base line data of 54 species of pupal and 197 species of larval hymenopteran parasitoids of moths from India. Families of both moths and its natural enemy, parasitoids are provided in the Table 1 and Table 2 respectively. From Tables 1 & 2, it is obvious that 8 parasitoid families attack pupal stages of 9 moth families and 10 parasitoid families attack larval stages of 20 moth families respectively. Among the 8 parasitoid families that attack pupal stages, family Ichneumonidae dominates. Family Braconidae dominates among the 10 parasitoid families in terms of its larval host (moth) preference. It is also clear from the tables that a total of 13 parasitoid families are known to attack larval and pupal stages of moths. Of these 13 parasitoid families, 10 are unique in infecting both larval and pupal stages of heteroceran pests. The table also shows that species of the genus *Brachymeria* Westwood and *Apanteles* Forster outnumber other genera of parasitoids in terms of their heteroceran host preference.

4. CONCLUSION

This compiled work will help the layman and other biological control workers to get a quick search of scientific names of both heteroceran pest and its natural enemies respectively.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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