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Longhorn beetles (Coleoptera: Cerambycidae) of northeastern India: An Overview

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ABSTRACT

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Key words: Cerambycidae, Long-horned Beetles, biodiversity, northeastern India The northeastern (NE) region of the India is a part of mega biodiversity hotspot and represents one of the highest floral and faunal biodiversity of the Indian subcontinent. The longhorn beetles or cerambycid beetles are important pest of vegetable, fruit and forest trees. In this study, more than 580 beetle (adult) specimens were collected from diverse agricultural, horticultural, and forest ecosystems of eight states of northeastern India during 2013 to 2016. Out of 95 different taxons collected, 62 taxons were identified up to species level and 19 taxons were identified up to genus level. The details on collection, distribution, activity period, host plants or habitat have been mentioned in this report. This study will certainly be helpful to the researchers, students, state government agencies and biodiversity personnel working in this area

1. Introduction

Longhorn beetles (Coleoptera: cerambycidae) are a group of insects belonging to large family of morphologically diverse beetles and most attractive taxa, many of which are phytophagous on woody vegetation during their larval stage. Depending on the classification used, this family to date include as many as 35,000 species worldwide (Lawrence 1982), and there are possibly many more (Sama et al., 2010). One of the characteristic features of many adult cerambycids is their long antennae, which in males some species can be more than twice the body length. Adults are elongate and sub-cylindrical beetles ranging in length from 2mm to more than 160 mm. Beetles in the cerambycidae family have assumed increasing prominence as pests of agricultural, forest and shade trees, shrubs and raw wood products and as vectors of tree diseases. Larval cerambycids typically feed on the phloem tissues and later in the xylem portion and causes economic losses. Northeastern Himalaya (India) is one of the components of mega-biodiversity hot spot and is therefore exceptionally rich in terms of flora and fauna (Azad Thakur et al., 2012).

Bio-diversity of arthropod varies region wise as well as climate wise. Despite, cerambycid beetles from northeastern region (NER) of India have rarely been studied and reported on in detail. However, few reports are available from certain parts of the northeastern India (Kumawat *et al.*, 2015; Mitra *et al.*, 2016a; 2016b, 2016c and 2016d) and they are based on limited surveys during certain parts of the year; which limits the species diversity, host range and geographical information. Therefore, as such limited information is available on these aspects from northeast India. In present study, attempts were made to collect information on species diversity, peak activity period, host plants and geographical distribution of cerambycid beetles of northeastern India.

2. Materials and Methods

Information on species diversity, peak activity period, host plants and geographical distribution were gathered through numerous collecting trips in NER of India. Due to the diversity of habits of cerambycids, many different collecting methods were employed *viz*, fluorescent light traps (black and white), examination of wild flowers, and sweeping

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and beating of foliage and other vegetation. Identification is based almost exclusively on adult specimens. Cerambycid beetles were collected from randomly selected locations of northeastern India during 2013 to 2016. The study areas were both farmland and forest with different soil types and cropping patterns. The insect samples were randomly collected by using various techniques viz. manual methods, sweep net and light traps of different light sources. The beetles collected were exposed to a cotton swab soaked with ethyl acetate that killed the beetles. Then the beetle species were counted and preserved in a vial containing 95% alcohol. Beetle specimens were morphologically identified and confirmed with the expert taxonomists available at National Pusa Collection, I.A.R.I, New Delhi, India and Modern college (affiliated to Pune University), Pune. Few specimens were also identified from the insect identification facility available at NIAE building, Department of Entomology, University of Agricultural Sciences, Bengaluru (India). The scientific names were updated using reliable sources (http://cerambycidae.org).

Table 1. List of cerambycid beetles and their details

3. Results and Discussion

More than 580 beetle specimens of 95 different taxons were collected from northeastern India. Details on species diversity, geographical information and peak activity period are mentioned in table 1. Overall results indicated that, more than 95 different species of cerambycid were commonly found in different agricultural, horticultural and forest ecosystems of northeastern India (Plate 1 to 95). Amongst, 62 taxons were identified up to species level and 19 taxons were identified up to genus level. A total number of 14 species collected were taxonomically difficult and were not identified even up to genus. Previous study by Agarwala and Bhattacharjee (2015) has reported that, 163 species of longicorn beetles are known to harbor in northeastern region of India which is indeed a part of Indo-Myanmar mega-diversity hotspot. However, our study has collected 95 species within the limited survey period of three years (2013-2016). Therefore, further study should be carried out to explore the complete diversity of cerambycid beetles in northeastern region of India.

SN	Scientific name	Host/Light	Location	Peak period	Figure
		Trap			
1	Batocera lineolata Chevrolat	Mango	Meghalaya (Ribhoi: Umiam)	July	1
2	Sthenias grisator (Fabricius)	Grape	Meghalaya (Ribhoi: Umiam)	September	2
3	Batocera numitor Newman	Mango	Meghalaya (Ribhoi: Umiam)	May	3
4	Aeolesthes sarta (Solsky)	Light trap	Meghalaya (Ribhoi: Umiam)	April	4
5	Imantocera penicilleta (Hope)	Light trap	Meghalaya (Ribhoi: Umiam)	May	5
6	Epepeotes uncinatus Gahan	Mulberry	Meghalaya (Ribhoi: Umiam)	August	6
7	Blepephaeus succinctor (Chevrolat)	Forest tree	Meghalaya (Ribhoi: Umiam)	May	7
8	Thylactus simulans Gahan	Forest tree	Meghalaya (Ribhoi: Umiam)	June	8
9	Ancyloprotus biggibosus	Light trap	Meghalaya (Jaintia hills	July	9
	(now Prionomma bigibbosum White)		district: Ummulong)		
10	Morimus inaequalis Waterhouse	Light trap	Meghalaya (Ribhoi: Nongsder)	September	10
11	Stratioceros princeps Lacordaire	Light trap	Meghalaya (Ribhoi: Umiam)	November	11
12	Stromatium barbatum (Fabricius)	Mercury	Meghalaya (Ribhoi: Umiam)	July	12
		light			
13	Pharsalia subgemmata (Thomson)	Mercury	Meghalaya (Ribhoi: Umiam)	July	13
		light			
14	Pseudonemophas versteegi (Ritsema)	Citrus	Meghalaya (Ribhoi: Umiam)	August	14
15	Glenea pulchra Aurivillius	Light trap	Meghalaya (Ribhoi: Umiam)	September	15
16	Macrochenus isabellinus Aurivillius	Light trap	Meghalaya (Ribhoi: Umiam)	September	16
17	Diastocera wallichi (Hope)	Light trap	Meghalaya (Ribhoi: Umiam)	March	17
18	Xystrocera globosa (Olivier)	Bamboo	Meghalaya (Ribhoi: Umiam)	April	18
19	Chlorophorus annularis (Fabricius)	Hand	Meghalaya (Ribhoi: Umiam)	May	19
		picking		-	
20	Xystrocera festiva Thomson	Hand	Meghalaya (Ribhoi: Umiam)	May	20
		picking			
21	Macrotoma plagiata (Waterhouse)	Hand	Meghalaya (Ribhoi: Umiam)	July	21
		picking			

22	Xylorhiza adusta (Wiedemann)	Hand	Meghalaya (East Khasi Hills:	August	22
		picking Shillong)			
23	Aristobia reticulator (Voet)	Guava	Guava Meghalaya (Ribhoi: Umiam)		23
24	Apomecyna saltator (Fabricius)	Light trap, Meghalaya (East Khasi Hills:		September	24
		Pest of Shillong)			
		cucurbits etc.			
25	Arhopalus ferus (Mulsant)	Hand	Meghalaya (Ribhoi: Umiam)	September	25
		picking			
26	Nupserha dubia Gahan	Hand	Meghalaya (Ribhoi: Umiam)	June	26
		picking			
27	Neocerambyx paris (Wiedemann)	Hand	Meghalaya (Ribhoi: Umiam)	June	27
		picking			
28	Monochamus bimaculatus Gahan	Hand	Meghalaya (Ribhoi: Umiam)	May	28
		picking			
29	Macrochenus guerinii (White)	Forest tree	Meghalaya (Ribhoi: Umiam)	October	29
30	Ceresium leucostictium Gressitt &	Hand	Meghalaya (Ribhoi: Umiam),	May-June	30
	Rondon	picking	Nagaland, Manipur		
31	Niphona hookeri Gahan	Forest tree	Meghalaya (Ribhoi: Umiam)	May-June	31
32	Ceresium zeylanicum White	Hand	Meghalaya (Ribhoi: Umiam),	May-June	32
		picking	Tripura		
33	Apriona germarii germarii (Hope)	Forest tree	Meghalaya (Ribhoi: Umiam),	May-June	33
- 24		T • 1 · · ·	Nagaland, Manipur		24
34	Rhytidodera bowringii White	Light trap	Meghalaya (Ribhoi: Umiam),	May-June	34
25		T • 1 / /	I ripura		25
35	(White)	Light trap	Meghalaya (Ribhoi: Umiam)	May-June	35
36	Tetraglenes hirticornis (Fabricius)	Forest tree	Meghalaya (Ribhoi: Umiam),	May-June	36
			Nagaland, Manipur		
37	Melanauster beryllinus (Hope)	Forest tree	Meghalaya (Ribhoi: Umiam)	May-June	37
38	Apomecyna cretacea (Hope)	Forest tree	Meghalaya (Ribhoi: Umiam), Tripura	September	38
39	Xylotrechus quadripes Chevrolat	Forest tree	Meghalaya (East Khasi Hills:	March-	39
			Mawmaram, Shillong; Ribhoi:	November	
			Umiam; West Garo Hills: Tura)		
40	Xylorhiza spp	Forest tree	Arunachal Pradesh (Lohit:	May-June	40
			TezuNala), Assam		
			(Hailakandi), Meghalaya		
			(Ribhoi: Umiam), Nagaland		
			(Dimapur: Jharnapani)		
41	Sarothrocera lowii White	Forest tree	Manipur, Meghalaya (Ribhoi: Umiam)	May	41
42	Rhytidodera integra Kolbe	Forest tree	Mizoram, Meghalaya (East	April-May	42
			Khasi Hills: Dawki)		
43	Prionomma bigibbosum (White)	Forest tree	Arunachal Pradesh (Lower	May-July	43
			Subansiri: Ziro), Meghalaya		
			(Ribhoi: Umiam)		
44	Plocaederus obesus (now	Forest tree	Meghalaya (Ribhoi: Umiam)	April	44
	Neoplocaederus obesus (Gahan))				
45	Melanaustor beryllinus	Forest tree	Manipur (Ukhrul: Kamjong,	May-June	45
			Khamasom, Ukhrul),		
			Iviegnalaya (Jaintia Hills:		
			Kdiap)		

46	Megopis bowringi (Gahan)	Forest tree	Arunachal Pradesh (Anjaw:	May	46
	(now Nepiodes bowringii (Gahan))		Hayuliang; Changlang)		
47	Hoplocerambyx spinicornis	Hand	Meghalaya (Ribhoi: Umiam)	May- July	47
	(Newman)	picking			
48	Glenea indiana (Thomson)	Forest tree	Assam (Karimganj)	June	48
49	Glenea cantor (Fabricius)	Forest tree	Assam (Nagaon)	July	49
50	Eucomatocera vittata White	Light trap	Meghalaya (Ribhoi: Umiam)	June	50
51	Epepeotes guttatus Beeson	Light trap	Meghalaya (East Khasi Hills:	May -August	51
			Shillong; Ribhoi: Umiam)		
52	Dorysthenes hugelii (Redtenbacher)	Light trap	Meghalaya (Ribhoi: Umiam),	June-October	52
			Arunachal Pradesh (Lower		
			Subansiri: Ziro, Dobi),		
			Mizoram		
53	Chlorophorus annualris (Fabricius)	Light trap	Assam (Dibrugarh), Meghalaya	April-	53
			(Ribhoi: Umiam), Nagaland	October	
			(Dimapur: Jharnapani)		
54	Chloridolum alcmene Thomson	Light trap	Arunachal Pradesh (Lohit:	May- August	54
			Makailang), Meghalaya		
			(Ribhoi: Umiam)		
55	Batocera rufomaculata (Degeer)	Forest tree	Meghalaya (Ribhoi: Umiam)	May	55
56	Batocera parryi (Hope)	Forest tree	Manipur (Ukhrul: Jessami)	April	56
57	Batocera hercules Boisduval	Forest tree	Meghalaya (Ribhoi: Umiam)	May	57
58	Ceresium spp.	Forest tree	Sikkim, Arunachal Pradesh	May- August	58
			(Lohit: Tezu; Anjaw:		
			Hayuliang)		
59	Monochamus spp.	Mercury	Meghalaya (Ribhoi: Umiam)	July	59
		light			
60	Acalolepta spp.	Hand	Meghalaya (Ribhoi: Umiam)	July	60
		picking			
61	Pharsalia spp.	Hand	Meghalaya (Jaintia hill district:	March	61
		picking	Ummulong)		
62	Neoplocaederus spp.	Hand	Meghalaya (Ribhoi: Umiam)	May	62
		picking			
63	Dorysthenes spp.	Hand	Meghalaya (Ribhoi: Umiam)	May	63
		picking			
64	Pterolophia spp.	Hand	Meghalaya (Ribhoi: Umiam)	September	64
		picking			
65	Linda spp.	Hand	Meghalaya (Ribhoi: Umiam)	September	65
		picking			
66	Ceresium spp	Hand	Meghalaya (Ribhoi: Umiam)	September	66
		picking			
67	Exocentrus alboguttatus Fisher	Hand	Meghalaya (Ribhoi: Umiam)	September	67
		picking			
68	Dihammus spp.	Hand	Meghalaya (Ribhoi: Umiam)	September	68
		picking			
69	Pterolophia (Lychrosis) humerosa	Light trap	Meghalaya, Mizoram,	October	69
	var. innotata (CERDBT-6)		Nagaland		
	Pterolophia humerosa (Thomson)				
70	Acatolepta spp. (CERDBT-12)	Light trap	Meghalaya, Arunachal Pradesh	October	70
71	Acalolepta spp. (CERDBT-33)	Light trap	Meghalaya, Sıkkım	October	71
72	Niphona spp. (CERDBT-43)	Light trap	Meghalaya, Sikkim	October	72
73	Rondibilis spp. (CERDBT-51)	Light trap	Meghalaya	October	73

74	Neocerambyx spp. (CERDBT-56)	Light trap	Meghalaya	February	74
75	Acalolepta spp? (CERDBT-77)	Light trap	Meghalaya	May	75
76	Nepiodes costipennis (White)	Light trap	Meghalaya	March	76
	(CERDBT-87)				
77	Unidentified (CERDBT-101)	Light trap	Meghalaya	May-June	77
78	Unidentified (CERDBT-102)	Light trap	Meghalaya	May-June	78
79	Pothyne spp? (CERDBT-103)	Light trap	Meghalaya	May-June	79
80	Unidentified (CERDBT-130)	Light trap	Meghalaya	May-June	80
81	Unidentified (CERDBT-132)	Light trap	Meghalaya	May-June	81
82	Chlorophorus strobilicola Champion	Light trap	Nagaland	May-June	82
	(CERDBT-133)				
83	Unidentified (CERDBT-146)	Light trap	Sikkim	May-June	83
84	Unidentified (CERDBT-147)	Light trap	Tripura	March-April	84
85	Unidentified (CERDBT-148)	Light trap	Meghalaya	March-April	85
86	Unidentified (CERDBT-159)	Light trap	Meghalaya	March-April	86
87	Unidentified (CERDBT-162)	Light trap	Meghalaya	May-June	87
88	Eunidia lateralis Gahan (CERDBT-	Light trap	Meghalaya, Nagaland	May-June	88
	165)				
89	Unidentified (CERDBT-167)	Light trap	Meghalaya	May-June	89
90	Unidentified (CERDBT-169)	Light trap	Meghalaya	May-June	90
91	Unidentified (CERDBT-173)	Light trap	Meghalaya	May-June	91
92	Unidentified (CERDBT-180)	Light trap	Meghalaya, Nagaland	May-June	92
93	Unidentified (CERDBT-181)	Light trap	Meghalaya	March-April	93
94	Niphona sp. (CERDBT-41)	Light trap	Meghalaya, Tripura	March-April	94
95	Moechotypa delicatula	Hand	Meghalaya	August	95
		collection			









Figure 46	Figure 47	Figure 48
Figure 49	Figure 50	Figure 51
Figure 52	Figure 53	Figure 54





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