
Contents

Foreword	ix
Preface.....	x
Acknowledgement	xi
List of Abbreviations.....	xii

SECTION I General Section

Chapter 1 Introduction	3
Chapter 2 Methods of Collection and Identification.....	6
2.1 Aerial Netting/Sweep Netting (Figure 2.1A–D)	6
2.2 Light Traps (Figure 2.1A).....	6
2.3 Pan Trap (Figure 2.1C).....	8
2.4 Preservation	8
2.5 Identification.....	8
Chapter 3 General Morphology	10
Chapter 4 An Updated Checklist of Lepidostomatidae (Trichoptera: Insecta) from India	12

SECTION II Systematic Section

Chapter 5 Genus <i>Lepidostoma</i> Rambur	19
5.1 <i>Lepidostoma armatum</i> (Ulmer, 1905)	20
5.2 <i>Lepidostoma bettini</i> (Martynov, 1936).....	22
5.3 <i>Lepidostoma sika</i> (Mosely, 1949a).....	24
5.4 <i>Lepidostoma assamense</i> (Mosely, 1949b).....	24
5.5 <i>Lepidostoma destructum</i> (Ulmer, 1905)	27
5.6 <i>Lepidostoma kashmiricum</i> Saini & Parey, 2011.....	27
5.7 <i>Lepidostoma himachalicum</i> Saini & Parey, 2011	29
5.8 <i>Lepidostoma dirangense</i> Saini & Parey, 2011.....	30
5.9 <i>Lepidostoma ahlae</i> Parey & Saini, 2012	32
5.10 <i>Lepidostoma sonmargae</i> Parey & Saini, 2012.....	32
5.11 <i>Lepidostoma garhwalense</i> Parey & Saini, 2012.....	33
5.12 <i>Lepidostoma truncatum</i> Parey & Saini, 2012.....	35

5.13	<i>Lepidostoma curvatum</i> Parey & Saini, 2013	37
5.14	<i>Lepidostoma kjeri</i> Parey & Pandher, 2019	37
5.15	<i>Lepidostoma nuburagangai</i> Dinakaran et al., 2013.....	40
5.16	<i>Lepidostoma mechukaense</i> Parey & Saini, 2013	40
5.17	<i>Lepidostoma trilobatum</i> Parey, Morse & Pandher, 2016.....	43
5.18	<i>Lepidostoma lidderwatense</i> Parey, Morse & Pandher, 2016	43
5.19	<i>Lepidostoma sainii</i> Parey, Morse & Pandher, 2016, 4136 (1): 86	46
5.20	<i>Lepidostoma divaricatum</i> (Weaver, 1989).....	47
5.21	<i>Lepidostoma doligung</i> (Malicky, 1979).....	47
5.22	<i>Lepidostoma dubitans</i> (Mosely, 1949)	49
5.23	<i>Lepidostoma ferox</i> (McLachlan, 1871).....	51
5.24	<i>Lepidostoma heterolepidium</i> (Martynov, 1936)	51
5.25	<i>Lepidostoma inequale</i> (Martynov, 1936).....	51
5.26	<i>Lepidostoma inerme</i> (McLachlan, 1878)	55
5.27	<i>Lepidostoma khasianum</i> (Mosely, 1949c).....	55
5.28	<i>Lepidostoma kimsa</i> (Mosely, 1941).....	55
5.29	<i>Lepidostoma kurseum</i> (Mosely, 1949).....	59
5.30	<i>Lepidostoma lanca</i> (Mosely, 1949)	59
5.31	<i>Lepidostoma latum</i> (Martynov, 1936)	61
5.32	<i>Lepidostoma digitatum</i> (Mosely, 1949b).....	63
5.33	<i>Lepidostoma libitana</i> (Malicky, 2003)	63
5.34	<i>Lepidostoma margula</i> (Mosely, 1949a).....	63
5.35	<i>Lepidostoma brueckmanni</i> (Malicky & Chantaramongkol, 1994)	66
5.36	<i>Lepidostoma moulmina</i> (Mosely, 1949a)	68
5.37	<i>Lepidostoma nagana</i> (Mosely, 1939)	69
5.38	<i>Lepidostoma parvulum</i> (McLachlan, 1871)	69
5.39	<i>Lepidostoma punjabicum</i> (Martynov, 1936)	70
5.40	<i>Lepidostoma serratum</i> (Mosely, 1949c).....	71
5.41	<i>Lepidostoma sonomax</i> (Mosely, 1939).....	74
5.42	<i>Lepidostoma steelae</i> (Mosely, 1941).....	74
5.43	<i>Lepidostoma tesarum</i> (Mosely, 1949b)	75
5.44	<i>Lepidostoma ylesomi</i> (Weaver, 2002).....	78
5.45	<i>Lepidostoma palnia</i> (Mosely, 1949c)	78
5.46	<i>Lepidostoma liber</i> (Malicky, 2007)	78
5.47	<i>Lepidostoma simplex</i> (Kimmins, 1964).....	82
5.48	<i>Lepidostoma palmipes</i> (Ito, 1986)	82
5.49	<i>Lepidostoma diespiter</i> (Malicky et al., 2001).....	84
5.50	<i>Lepidostoma kamba</i> (Mosely, 1939)	86
5.51	<i>Lepidostoma fuscatum</i> (Navás, 1932).....	87

Chapter 6	Genus <i>Paraphlegopteryx</i> Ulmer	89
6.1	<i>Paraphlegopteryx composita</i> Martynov, 1936	90
6.2	<i>Paraphlegopteryx moselyi</i> Weaver, 1999	91
6.3	<i>Paraphlegopteryx orestes</i> Weaver, 1999	91
6.4	<i>Paraphlegopteryx normalis</i> Mosely, 1949	92
6.5	<i>Paraphlegopteryx weaveri</i> Parey & Saini, 2012	94
6.6	<i>Paraphlegopteryx kamengensis</i> Weaver, 1999	96
6.7	<i>Paraphlegopteryx squamalata</i> Weaver, 1999	96
6.8	<i>Paraphlegopteryx ivanovi</i> Weaver, 1999	97
6.9	<i>Paraphlegopteryx aykroydi</i> Weaver, 1999	98
6.10	<i>Paraphlegopteryx bulbosa</i> Weaver, 1999	99
6.11	<i>Paraphlegopteryx schmidi</i> Weaver, 1999	100
6.12	<i>Paraphlegopteryx martynovi</i> Weaver, 1999	102
6.13	<i>Paraphlegopteryx porntipae</i> Weaver, 1999	103
6.14	<i>Paraphlegopteryx pippin</i> Weaver, 1999	103
6.15	<i>Paraphlegopteryx ulmeri</i> Weaver, 1999	104
6.16	<i>paraphlegopteryx weaveri</i> Parey & Saini, 2012a	105
Chapter 7	<i>Zephyropsyche</i> Weaver, 1993	107
7.1	Type Species: <i>schmidi</i>	107
7.2	<i>Zephyropsyche schmidii</i> Weaver, 1993	107

SECTION III Ecological Section

Chapter 8	Physiological Adaptation	111
8.1	Respiration	111
8.2	Osmoregulation	111
8.3	Diapause and Aestivation	111
8.4	Life Cycle of Trichoptera	112
8.4.1	Emergence of Larvae	112
8.4.2	Copulation	112
8.4.3	Habitats and Aquatic Adaptations	112
Chapter 9	Ecological Services	114
9.1	As a Bioindicator of Water Quality Assessment	114
9.2	In a Forensic Entomology	114
9.3	Economic Importance of Trichoptera	115
9.4	Negative Impacts	116
9.5	Caddisfly Larvae as Jewellery	116

Chapter 10	Threats and Conservation	118
10.1	Habitat Degradation.....	118
10.2	Water Pollution	121
10.3	Climate Change	122
10.4	Invasive Species Affect.....	122
10.5	Status of Lepidostomatidae Documented in India from 2008 to 2023	122
Chapter 11	Future Directions for Research on Lepidostomatidae.....	124
11.1	DNA Barcoding	125
11.2	Phylogenetic Analysis	125
Bibliography	127
Index	137