



## Collection of damselflies and dragonflies (Odonata : Insecta) in National Pusa collection, division of entomology, Indian Agricultural Research Institute, New Delhi, India

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### INTRODUCTION

The Division of Entomology was established in 1905 as one of the five major Divisions of the Imperial Agricultural Research Institute located at Pusa, Bihar, it moved to New Delhi in 1936. Faunistic surveys led to the establishment of the National Pusa Collection (NPC), one of the largest collections of its kind in the world. This collection houses more than half a million specimens of which 0.1 million comprising about 17,500 species are authentically identified. In that, 273 species of Zygoptera/damselflies (125 species: 10 families), Anisozygoptera (1 species: 1 family) and Anisoptera/dragonflies (147 species: 5 families) belongs to 16 families of order Odonata were studied during 2006-07. All the insects collection and specimens are well preserved and maintained in the National Pusa Collection. This vast collection of odonates species in one place, will provide grand opportunity and help to professional odonatologists/researchers in their studies/reference.

Approximately 6,000 species and subspecies belonging to 630 genera in 28 families are known from all over the world (Tsuda, 1991), out of which 499 species and subspecies of Odonata under 139 genera in 17 families, are represented in India (Prasad and Varshney, 1995). They are among the dominant invertebrate predators in any ecosystem. Being predators both at larval and adult stages, they play a significant role in the food chain of forest ecosystem. In addition, their value as indicators of quality of the biotope is being increasingly recognized.

### RESULTS

273 species of Zygoptera/damselflies (125 species: 10 families), Anisozygoptera (1 species: 1 family) and Anisoptera/dragonflies (147 species: 5 families) belongs to 16 families of order Odonata were studied and arranged systematically family wise in National Pusa Collection, Division of Entomology, Indian Agricultural Research Institute, New Delhi are as :

### ORDER-ODONATA

#### (A) SUBORDER- ZYGOPTERA

##### (1) Family-Chlorolestidae

1. *Megalestes major* Selys

##### (2) Family-Lestidae

2. *Lestes praemorsa praemorsa* Selys
3. *Lestes dorothea* Fraser
4. *Lestes elata* Hagen
5. *Lestes viridula* Rambur
6. *Lestes nodalis* Selys
7. *Lestes umbrina* Selys
8. *Lestes nigriceps* Fraser
9. *Ceylonolestes pulcherrima* (Fraser)
10. *Indolestes indica* Fraser
11. *Sympycna peadisca annulata* Selys

##### (3) Family-Platystictidae

12. *Protosticta gravelyi* Laidlaw
13. *Protosticta sanguinostigma* Fraser
14. *Protosticta mortoni* Fraser
15. *Protosticta hearseyi* Fraser
16. *Platysticta deccanensis* Laidlaw
17. *Drepanosticta carmichaeli* Laidlaw

##### (4) Family-Platycnemididae

18. *Coeliccia bimaculata* Laidlaw
19. *Coeliccia renifera* (Selys)
20. *Coeliccia didyma* (Selys)
21. *Coeliccia loogali* Laidlaw
22. *Calicnemis eximis* Selys
23. *Calicnemis pulverulans* Selys
24. *Calicnemis miniata* Selys
25. *Calicnemis miles* Laidlaw
26. *Copera marginipes* Rambur
27. *Copera vittata* Selys

- (5) Family-Protoneuridae
28. *Caconeura verticalis verticalis* Selys
  29. *Caconeura verticalis annandalei* Fraser
  30. *Caconeura botti* Fraser
  31. *Caconeura theebawi* Fraser
  32. *Caconeura sita* Kirby
  33. *Caconeura autumnalis* Fraser
  34. *Disparoneura atkinsoni* Selys
  35. *Disparoneura tetrica* Laidlaw
  36. *Disparoneura nigerrima* Laidlaw
  37. *Chloroneura quadrimaculata* (Rambur)
  38. *Chloroneura apicalis* Fraser
  39. *Indoneura gomphoides* (Rambur)
  40. *Indoneura ramburi* Fraser
  41. *Melanoneura bilineata* Fraser
  42. *Esme cyaneovittata* Fraser
  43. *Phylloneura westermanni* (Selys)
- (6) Family-Coenagrionidae
44. *Pseudagrion microcephalum* (Rambur)
  45. *Pseudagrion bengalense* Laidlaw
  46. *Pseudagrion malabaricum* Fraser
  47. *Pseudagrion decorum* (Rambur)
  48. *Pseudagrion hypermelas* Selys
  49. *Pseudagrion spencei* Fraser
  50. *Pseudagrion laidlawi* Fraser
  51. *Pseudagrion rubriceps* Selys
  52. *Pseudagrion williamsoni* Fraser
  53. *Pseudagrion indicum* Fraser
  54. *Pseudagrion pruinosum* Burmeister
  55. *Ceriagrion coromandelianum* (Fabricius)
  56. *Ceriagrion erubescens* Selys
  57. *Ceriagrion rubiae* Laidlaw
  58. *Ceriagrion olivaceum* Laidlaw
  59. *Ceriagrion cerinorubellum* (Brauer)
  60. *Aciagrion occidentale* Laidlaw
  61. *Aciagrion olympicum* Laidlaw
  62. *Aciagrion azureum* Fraser
  63. *Aciagrion hysopa* Selys
  64. *Aciagrion pallidum* Selys
  65. *Ischnura senegalensis* (Rambur)
  66. *Ischnura elegans* (Vander Linden)
  67. *Ischnura forcipata* Morton
  68. *Ischnura inarmata* Calvert
  69. *Ischnura delicata* Hagen
  70. *Ischnura rufostigma* Selys
  71. *Ischnura annandalei* Laidlaw
  72. *Rhodischnura nursei* (Morton)
  73. *Enallagma cyathigerum* Charpentier
  74. *Enallagma parvum* Selys
  75. *Agriocnemis pieris* Laidlaw
  76. *Agriocnemis clauseni* Fraser
  77. *Agriocnemis splendidissima* Laidlaw
  78. *Agriocnemis d'abreuvi* Fraser
  79. *Agriocnemis pygmaea* Rambur
  80. *Coenagrion dyeri* Fraser
  81. *Onychargia atrocyana* Selys
- (7) Family-Chlorocyphidae
82. *Rhinocypha cuneata* Selys
  83. *Rhinocypha spuria* Selys
  84. *Rhinocypha quadrimaculata* Selys
  85. *Rhinocypha fenestrella* Rambur
  86. *Rhinocypha iridea* Selys
  87. *Rhinocypha ignipennis* Selys
  88. *Rhinocypha trimaculata* Selys
  89. *Rhinocypha unimaculata* Selys
  90. *Rhinocypha bifasciata* Selys
  91. *Rhinocypha trifasciata* Selys
  92. *Rhinocypha bifenestrata* Fraser
  93. *Rhinocypha immaculata* Selys
  94. *Rhinocypha whiteheadi* Kirby
  95. *Rhinocypha perforata limbata* Selys
  96. *Rhinocypha biforata delimbata* Selys
  97. *Rhinocypha biforata beesoni* Fraser
  98. *Rhinocypha bisignata* Selys
  99. *Calocypha laidlawi* (Fraser)
  100. *Libellago lineata indica* Fraser
  101. *Libellago lineata lineata* (Burmeister)
  102. *Libellago aurantiaca* (Selys)
- (8) Family-Euphaeidae
103. *Bayadera indica* Selys
  104. *Bayadera hyalina* Selys
  105. *Anisopleura lestoides* Selys
  106. *Anisopleura comes* Selys
  107. *Dysphaea walli* Fraser
  108. *Dysphaea ethela* Fraser
  109. *Allophaea ochracea* (Selys)
  110. *Psendophaea splendens* (Selys)
  111. *Psendophaea masoni* (Selys)
  112. *Indophaea dispar* (Rambur)
  113. *Indophaea cardinalis* Fraser
  114. *Indophaea fraseri* (Laidlaw)
- (9) Family-Amphipterygidae
115. *Philoganga montana* (Selys)
- (10) Family-Calopterygidae
116. *Neurbasis chinensis chinensis* (Linnaeus)
  117. *Vestalis gracilis gracilis* Rambur

118. *Vestalis apicalis apicalis* Selys
119. *Vestalis amoena* Selys
120. *Vestalis smaragdina* Selys
121. *Echo margarita margarita* Selys
122. *Climacobasis modesta* Laidlaw
123. *Matrona basilaris basilaris* Selys
124. *Matrona basilaris nigripectus* Selys
125. *Caliphaea confusa* Selys

**(B) SUBORDER- ANISOZYGOPTERA**

## (11) Family-Epiophlebitidae

126. *Epiophlebia superstes* Selys

**(C) SUBORDER- ANISOPTERA**

## (12) Family-Gomphidae

127. *Davidius aberrans aberrans* Selys
128. *Davidius davidi assamensis* Laidlaw
129. *Anormogomphus kiritschenkoi* Barteneff
130. *Anisogomphus occipitalis* Selys
131. *Anisogomphus orites* Laidlaw
132. *Gomphus personatus* Selys
133. *Platygomphus dolobratus* Selys
134. *Burmogomphus laidlawi* Fraser
135. *Mesogomphus lineatus* (Selys)
136. *Mesogomphus lindgreni* Fraser
137. *Onychogomphus bistrigatus* (Selys)
138. *Onychogomphus m-flavum* Selys
139. *Onychogomphus grammicus* (Rambur)
140. *Onychogomphus echinoccipitalis* Fraser
141. *Lamelligomphus biforceps* (Selys)
142. *Lamelligomphus nilgiriensis* (Fraser)
143. *Lamelligomphus malabarensis* Fraser
144. *Lamelligomphus acinaces* (Laidlaw)
145. *Stylogomphus inglisi* Fraser
146. *Megalogomphus hanningtoni* (Fraser)
147. *Ophiogomphus reductus* Calvert
148. *Merogomphus longistigma* (Fraser)
149. *Merogomphus martini* (Fraser)
150. *Perissogomphus stevensi* Laidlaw
151. *Heliogomphus promelas* (Selys)
152. *Macrogomphus annulatus* (Selys)
153. *Macrogomphus montanus* Selys
154. *Microgomphus torquatus* (Selys)
155. *Microgomphus verticalis* (Selys)
156. *Microgomphus minusculus* (Selys)
157. *Ictinogomphus rapax* (Rambur)
158. *Ictinogomphus atrox* (Selys)
159. *Gomphidia t-nigrum* Selys
160. *Gomphidia abbotti* Williamson
161. *Gomphidia fletcheri* Fraser

162. *Gomphidia kodaguensis* Fraser

## (13) Family-Cordulegasteridae

163. *Cordulegaster brevistigma brevistigma* (Selys)
164. *Anotogaster nipalensis* Selys

## (14) Family-Aeshnidae

165. *Austroaeschna intercedens* Martin
166. *Cephalaeschna orbifrons* Selys
167. *Cephalaeschna acutifrons* (Martin)
168. *Gynacanthaeschna sikkima* (Karsch)
169. *Petaliaeschna fletcheri* Fraser
170. *Gynacantha hyalina* Selys
171. *Gynacantha bayadera* Selys
172. *Gynacantha millardi* Fraser
173. *Gynacantha bainbriggei* Fraser
174. *Gynacantha biharica* Fraser
175. *Gynacantha albistyla* Fraser
176. *Aeshna mixta* (Latreille)
177. *Aeshna juncea* (Linnaeus)
178. *Anax guttatus* (Burmeister)
179. *Anax parthenope* (Selys)
180. *Anax immaculifrons* Rambur
181. *Hemianax ephippiger* (Burmeister)
182. *Anaciaeschna jaspidea* (Burmeister)
183. *Anaciaeschna martini* (Selys)

## (15) Family-Cordulidae

184. *Macromia moorei* Selys
185. *Macromia cingulata* Rambur
186. *Macromia cupricincta* Fraser
187. *Macromia flavocolorata* Fraser
188. *Macromia ida* Fraser
189. *Macromia irata* Fraser
190. *Epophthalmia vittata vittata* Burmeister
191. *Hemicordulia asiatica* Selys
192. *Idionyx saffronata* Fraser
193. *Idionyx galeata* Fraser
194. *Idionyx burliyarensis* (Fraser)
195. *Idionyx corona* Fraser
196. *Idionyx imbricata* Fraser
197. *Idionyx optata* Selys
198. *Idionyx stevensi* Fraser
199. *Idionyx nadganiensis* Fraser

## (16) Family-Libellulidae

200. *Palaeothemis tillyardi* Fraser
201. *Tetrathemis platyptera* Selys
202. *Tetrathemis yerburyi* Kirby
203. *Amphithemis curvistyla* Selys
204. *Amphithemis vacillans* Selys
205. *Hylaeothemis fruhstorferi* (Karsch)

206. *Lyriothemis acigastra* (Selys)  
 207. *Lyriothemis bivittata* (Rambur)  
 208. *Agrionoptera insignis insignis* (Rambur)  
 209. *Lathrecista asiatica asiatica* (Fabricius)  
 210. *Cratilla lineata* (Brauer)  
 211. *Potamarcha obscura* (Rambur)  
 212. *Orthetrum brunneum brunneum* (Fonscolombe)  
 213. *Orthetrum taeniolatum* (Schneider)  
 214. *Orthetrum chrysostigma luzonicum* (Brauer)  
 215. *Orthetrum sabina* (Drury)  
 216. *Orthetrum japonicum internum* Maclachlan  
 217. *Orthetrum triangulare triangulare* (Selys)  
 218. *Orthetrum glaucum* (Brauer)  
 219. *Orthetrum chrysis* (Selys)  
 220. *Orthetrum pruiunosum neglectum* (Rambur)  
 221. *Libellula quadrimaculata* (Linnaeus)  
 222. *Palpopleura sexmaculata sexmaculata* (Fabricius)  
 223. *Nannophya pygmaea* Rambur  
 224. *Brachydiplax sobrina* (Rambur)  
 225. *Brachydiplax farinose* Kruger  
 226. *Brachydiplax chalybea* Brauer  
 227. *Acisoma panorpoides panorpoides* Rambur  
 228. *Diplacodes lefebvrei* (Rambur)  
 229. *Diplacodes nebulosa* (Fabricius)  
 230. *Diplacodes trivialis* (Rambur)  
 231. *Indothemis caesia* (Rambur)  
 232. *Indothemis limbata limbata* (Selys)  
 233. *Crocothemis servilia servilia* (Drury)  
 234. *Crocothemis servilia erythraea* (Brulle)  
 235. *Bradinopyga geminata* (Rambur)  
 236. *Neurothemis fulvia* (Drury)  
 237. *Neurothemis fluctuans* (Fabricius)  
 238. *Neurothemis intermedia intermedia* (Rambur)  
 239. *Neurothemis tullia tullia* (Drury)  
 240. *Neurothemis tullia feralis* (Burmeister)  
 241. *Brachythemis contaminata* (Fabricius)  
 242. *Rhodothemis rufa* (Rambur)  
 243. *Sympetrum commixtum* (Selys)  
 244. *Sympetrum hypomelas* (Selys)  
 245. *Sympetrum orientale* (Selys)  
 246. *Sympetrum meridionale* (Selys)  
 247. *Sympetrum fonscolombi* (Selys)  
 248. *Sympetrum haematoneura* Fraser  
 249. *Sympetrum decoloratum* (Selys)  
 250. *Trithemis aurora* (Burmeister)  
 251. *Trithemis kirbyi kirbyi* Selys  
 252. *Trithemis festiva* (Rambur)  
 253. *Trithemis pallidinervis* (Kirby)  
 254. *Zygonyx iris iris* Selys  
 255. *Onychothemis testacea ceylanica* (Ris)  
 256. *Zyxomma petiolatum* Rambur  
 257. *Tholymis tillarga* (Fabricius)  
 258. *Pantala flavescens* (Fabricius)  
 259. *Camacinia gigantea* (Brauer)  
 260. *Rhyothemis phyllis phyllis* (Sulzer)  
 261. *Rhyothemis variegata variegata* (Linnaeus)  
 262. *Rhyothemis obsolescens* Kirby  
 263. *Rhyothemis plutonia* Selys  
 264. *Rhyothemis triangularis* Kirby  
 265. *Hydrobasileus croceus* (Brauer)  
 266. *Tramea basilaris burmeisteri* (Kirby)  
 267. *Tramea virginia* (De Geer)  
 268. *Tramea limbata* (Desjardins)  
 269. *Pseudotrimea prateri* Fraser  
 270. *Urothemis signata signata* (Rambur)  
 271. *Aethriamanta brevipennis brevipennis* (Rambur)  
 272. *Macrodiplax cora* (Brauer)  
 273. *Selysiotthemis nigra* (Vander Linden)

## REFERENCES

- Emiliyamma, K.G., Radhakrishnan, C., and Muhamed, J.P. (2005). Pictorial Handbook on - *Common Dragonflies and Damselflies of Kerala*. Published Director, Zool. Surv. India, Kolkatta. 67pp.
- Fraser, F.C. (1933). *The Fauna of British India including Ceylon and Burma, Odonata, Vol. I*. Taylor and Francis Ltd., London. 423pp.
- Fraser, F.C. (1934). *The Fauna of British India including Ceylon and Burma, Odonata, Vol. II*. Taylor and Francis Ltd., London. 398pp.
- Fraser, F.C. (1936). *The Fauna of British India including Ceylon and Burma, Odonata, Vol. III*. Taylor and Francis Ltd., London. 461pp.
- Kumar, A. and Mitra, A. (1998). Odonata diversity at Sahastredhara (Sulphur springs), Dehra Dun, India, with notes on their habitat ecology. *Fraseria*. 5(1/2): 37-45.
- Prasad, M. (2002). Odonata diversity in Western Himalaya, India, pp. 221-254. In Kumar, A. (editor). *Current Trends in Odonatology*. Daya Publishing House, Delhi (India). 377pp.
- Prasad, M. and Varshney, R.K. (1995). A checklist of the Odonata of India including data on larval studies. *Oriental Insects*. 29: 385-428.
- Tsuda, S. (1991). A distributional list of world Odonata. Osaka. 362pp.