

**EPHEMEROPTERA TYPE-SPECIMENS IN THE ZOOLOGICAL
SURVEY OF INDIA, CALCUTTA**

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ABSTRACT. The Ephemeroptera type-specimens in the collection of the Zoological Survey of India are listed and discussed. Twelve species are represented in the collection. In addition, twenty-four species whose types have been reported to be in the Zoological Survey but were not located are also discussed.

In their catalogue of the Ephemeroptera of the Indian Subregion, Hubbard and Peters (1978) listed 88 Indian species of which there are 35 whose type-specimens have been reported to have been deposited in the collections of the Zoological Survey of India in Calcutta. Types of one more species from India, viz., Ephemera nathani Hubbard (1982) have also been added. Some of these type-specimens were originally deposited in the Indian Museum whose entomological holdings were incorporated into the Zoological Survey of India collections in 1916.

Subsequent to the publication of Hubbard and Peters, we have had the opportunity to examine the Ephemeroptera type-specimens in the Zoological Survey of India and compare the list of reported types with those actually present. Because of the great number of discrepancies which manifested themselves during this examination, we felt that in the interest of clarity we should make available a correct accounting of the Ephemeroptera type-specimen holdings of the Zoological Survey. Type-specimens of 12 species were examined and the details are reported below. Type-specimens of 24 species could not be located and are not present in the records of the type depository.

LIST OF TYPE-SPECIMENS OF EPHEMEROPTERA
PRESENT IN THE ZOOLOGICAL SURVEY OF INDIA

Species of Ephemeroptera of which type-specimens are present in the depository of the Central Entomological Laboratory of the Zoological Survey of India, Calcutta, are listed below. With each of the 12 species is listed the genus in which it was originally described, the genus in which it is now placed if different, a reference to the original description, and information about the type-specimen or specimens which are actually present.

annandalei Chopra, 1937 (Ephemera); in Hafiz, Rec. Indian Mus., 39:
360. Male type, ZSI no. 967/H8 (on 4 slides); Shillong, B. Chopra
(good condition).

- annandalei Chopra, 1927 (Polymitarcys); Rec. Indian Mus., 29: 130 (now in Ephoron). 2 female cotypes, ZSI no. 9223/H2 (in spirit); Sanjai River, Chakradharpur, Chota Nagpur, 8-10/11-1918 (fair condition).
- diffusa Chopra, 1937 (Ephemera); in Hafiz, Rec. Indian Mus., 39: 355. 2 male types, ZSI no. 964/H8 (on 9 slides); Bhavani R., sitting on the wall on bank of river, H. S. Rao (good condition).
- lontona Hafiz, 1937 (Anagenesia); Rec. Indian Mus., 39: 352. Female type, ZSI no. 683/H8 (pinned, hind wing on slide); Lonton, a small village on western shore of Indawgyi Lake, B. Chopra, 18-31. xi. 1926 (wings, especially right, damaged).
- minor Eaton, 1892 (Palingenia); J. Roy. Asiatic Soc. Bengal, 60: 408 (now in Anagenesia). Male type, ZSI no. 9690/5 (pinned); Karachi Mus. (damaged). Male type, ZSI no. 9689/5 (pinned); same locality (damaged).
- nathani Hubbard, 1982 (Ephemera); Pacific Ins., 24: 194. Male paratype, ZSI no. 3668/H13 (in spirit); S. India, Anamalai Hills, Cinchona, 1070 m, iv. 1968, P. S. Nathan (good condition). Female paratype, ZSI no. 3669/H13 (in spirit); same locality (good condition).
- orientalis Chopra, 1927 (Palingenia); Rec. Indian Mus., 29: 104. Male type, ZSI no. 9417/H14 (mounted on card); Seistan (damaged, right wing apical portion missing).
- [The following five specimens, labelled as cotypes, are not mentioned in Chopra's original description.]
- cotype, ZSI no. 9418/H14; same locality (damaged, left wing only basal part present, right wing basal 2/3 present, cerci lacking).
- cotype, ZSI no. 9419/H14; same locality (fair condition).
- cotype, ZSI no. 9420/H14; same locality (damaged).
- cotype, ZSI no. 7439/H14; same locality (damaged, head & right wing lacking, abdomen in separate packet).
- cotype, ZSI no. 7440/H14; same locality (damaged, wing & abdominal segments 5-10 lacking).
- picea Kimmins, 1947 (Caenis); Proc. Roy. Ent. Soc. London, (B) 16: 99. 12 female paratypes, ZSI no. 1137/H8 (in spirit); Bengal, Baranagar WW reservoir, 29-xii-1945, D. E. Kimmins (good condition).
- picta Gravely, 1920 (Palingenia); Rec. Indian Mus., 18: 140. Male type, ZSI no. 9221/H2 (pinned); Sarawak, Kapit, 24-vii-1910, Bube col. (damaged, only basal half of left wing present). Male cotype, ZSI no. 9227/H2 (pinned); same locality (damaged, abdomen separately pinned in butter paper triangle).
- piscina Kimmins, 1947 (Caenis); Proc. Roy. Ent. Soc. London, (B) 16: 99. 2 male paratypes, ZSI no. 1132/H8 (mounted on card); Calcutta, Oct. 1945, D. E. Kimmins (destroyed, only remnants left).
- robusta Eaton, 1892 (Palingenia); J. Roy. Asiatic Soc. Bengal, 60: 407 (now in Anagenesia). Male type, ZSI no. 5941/14 (pinned); Cachar (damaged, abdomen missing).
- sauteri Ulmer, 1912 (Ephemera); Ent. Mitteil., 1: 369. Male type, ZSI no. 65/H8 (pinned); Formosa [Taiwan], Kosempo, H. Sauter (good condition). Female type, ZSI no. 66/H8 (pinned); same locality (good condition).

TYPE-SPECIMENS OF EPHEMEROPTERA
NOT PRESENT IN THE ZOOLOGICAL SURVEY OF INDIA

We were unable to locate type-specimens of the following 24 species of Ephemeroptera in the collection of the Zoological Survey of India, although their deposition there has been reported in the literature. The missing types of Chopra, Dubey, Kapur & Kriplani, and Kimmins are not in the records of type collections of insects in the Zoological Survey and may not actually have been sent for incorporation in the collections. ZSI type numbers listed were assigned before publication and do not necessarily indicate receipt of the specimens by the Zoological Survey.

- acuticostalis Dubey, 1971 (Baetis). Male holotype, allotype, paratypes.
bengalense Kimmins; 1947 (Cloeon). Paratype(s).
bicolor Kimmins, 1947 (Cloeon). Paratype(s).
bifurcatus Kapur & Kriplani, 1963 (Baetis). Male holotype (ZSI no. 2478/H8), paratypes.
chandra Kapur & Kriplani, 1963 (Baetis). Male holotype (ZSI no. 2457/H8), allotype, paratypes.
chialhnia Dubey, 1971 (Atalophlebia). Female holotype.
curtus Dubey, 1971 (Afronurus). Female holotype.
consors Eaton, 1892 (Ephemerella). 2 male, 2 female types (ZSI nos. 5852/5, 5853/5, 5854/5, 5855/5).
dodecus Dubey, 1971 (Icthybotus). Male holotype, allotype, paratypes.
festivus Kapur & Kriplani, 1963 (Baetis). Female holotype (ZSI no. 2480/H8).
harveyi Kimmins, 1947 (Procloeon). Paratype(s).
himalayana Kapur & Kriplani, 1963 (Baetis). Male holotype (ZSI no. 2474/H8), paratypes.
indica Chopra, 1924 (Hexagenia; now in Eatonigenia). Female type (ZSI 7528/H8).
indica Kapur & Kriplani, 1963 (Ephemerella). Female holotype (ZSI no. 2456/H8).
lahaulensis Kapur & Kriplani, 1963 (Epeorus). Male holotype (ZSI no. 2507/H8).
pramodi Dubey, 1971 (Ephemerella). Male holotype, allotype, paratypes.
punjabensis Kapur & Kriplani, 1963 (Baetis). Male holotype (ZSI no. 2473/H8).
remensa Eaton, 1892 (Ephemerella). 5 male types (ZSI nos. 6942/1, 6943/1, 6944/1, 6946/1, 6948/1).
septemmenes Dubey, 1971 (Baetis). Male holotype, paratypes.
simplex Kapur & Kriplani, 1963 (Baetis). Female holotype (ZSI no. 2471/H8), paratypes.
solangensis Dubey, 1971 (Afronurus). Female holotype.
solangensis Dubey, 1971 (Baetis). Male holotype, paratypes.
solangensis Dubey, 1971 (Heptagenia). Male holotype, allotype, paratype.
variegatum Chopra, 1924 (Cloeon). Type-specimens (ZSI no. 7523/H2).

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