

AQUATIC BEETLES OF NORTH BENGAL, INDIA (COLEOPTERA: NOTERIDAE, DYTISCIDAE AND HYDROPHILIDAE)

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ABSTRACT

The present study comprises of 19 species (Noteridae-03, Dytiscidae-11 & Hydrophilidae-05) of aquatic beetles belonging to 13 genera (Noteridae-02 & Dytiscidae-06 & Hydrophilidae-05) and 3 families collected from Darjeeling, Jalpaiguri and Alipurduar districts of North Bengal. Two species among the 19 species are first time recorded from West Bengal.

INTRODUCTION

The Hills and Terai-Dooars Regions of North Bengal comprising of mainly three districts, Darjeeling, Jalpaiguri and Alipurduar lies between 26°16' - 27°13' N latitude and 87°59' - 89°53' E longitude. These districts are fall under the broad physiographic division, the Himalayan and sub-Himalayan West Bengal. The rivers in the majestic Himalayan ranges run down the dooars region forming marshy swamps along the valleys and the terai plains. Literature shows that not much work on aquatic beetle has been done from this region except hill areas. Therefore, an attempt has been made to study the aquatic beetle diversity in the water bodies of the Hills and Terai-Dooars regions of North Bengal. Present communication reports 19 Species belonging to 13 genera under 3 families and among 19 species, two species are recorded first time from West Bengal.

STUDY AREA

Darjeeling district, lies on the Himalayan hill (40-3800 mt.) excluding a major portion of Siliguri subdivision, Jalpaiguri and Alipurduar districts mostly represents the plains with a belt of dense

forest which is full of swamps. Tropical evergreen and deciduous forest covers 31% of total area. The portion lying west of Teesta River is known as the Terai and the portion lying east of the river is known as Dooars. The main rivers are Teesta, Mahananda, Rydak, Jaldhaka, Torsa, Kaljani, Dhawls etc. are flowing through these areas.

The mean maximum and minimum temperature during winter are 12.2°C and 1.6°C and the same during the summer are 39°C and 18.9°C respectively. In some areas of the Darjeeling district temperature drops to below 0°C during winter with spectacular snow fall. The average annual rain fall of hill and dooars areas are 3212 mm. and 4136 mm. respectively. Humidity is 70-90%.

A total of 12 freshwater wetlands (ponds, beels, lakes, fishery etc.), 3 from Darjeeling (Shruberry Park, Jorepokhri and Senchal Lake), 2 from Jalpaiguri (Chhakamari and Kathambari Beel,) and 7 from Alipurduar (Buxa Tiger Resrve, Nalarthali Lake, Old Hasimara, Parmalong Basti, Falakata, Satpukuria and Matharihat) districts were surveyed during the years 1996 and 1997 (Fig. 1).

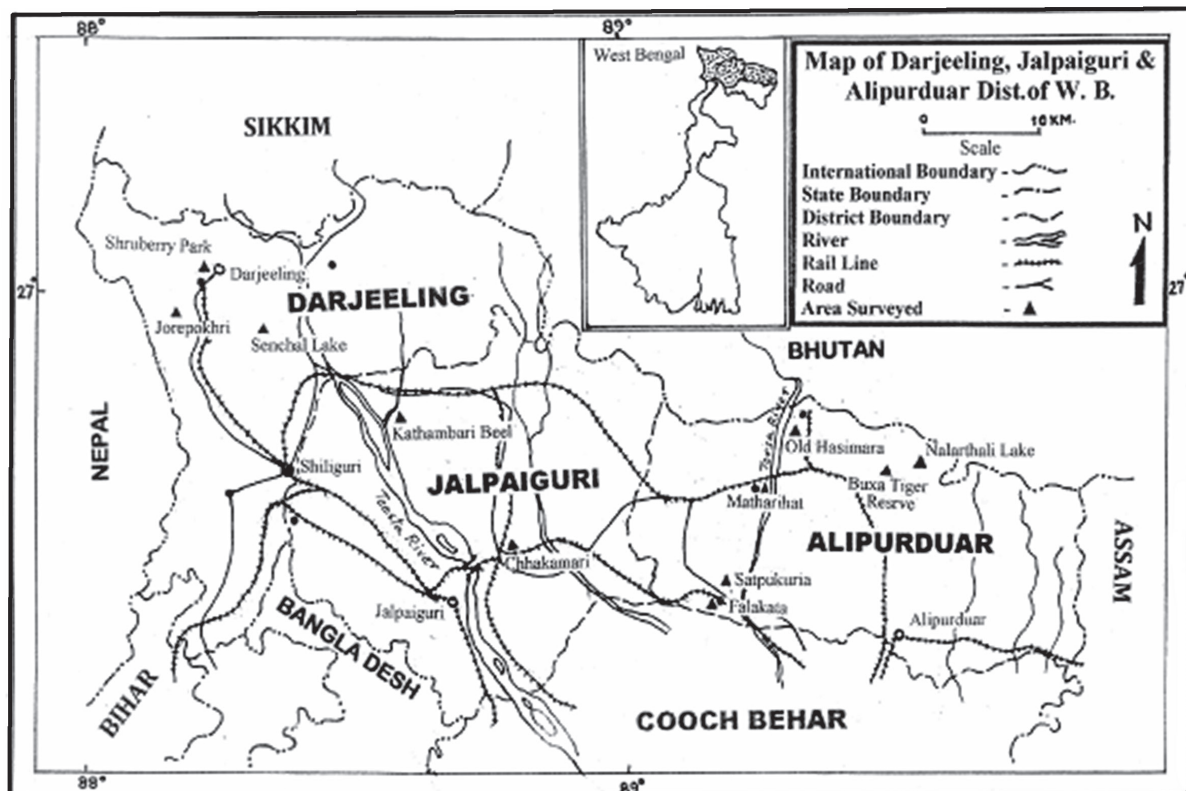


Fig. 1. Map of Darjeeling, Jalpaiguri & Alipurduar Dist. of W. B. showing the wetlands surveyed

MATERIAL AND METHOD

Aquatic Coleopteran samples were collected using drag net (1m²) 'D' shaped aquatic net etc. and materials preserved in 70% alcohol.

SYSTEMATIC LIST

Family NOTERIDAE Thomson, 1860

Subfamily NOTERINAE

Tribe **Neohydrocoptini**

1. *Neohydrocoptus bivittis* (Motschulsky, 1859)
2. *Neohydrocoptus subvittulus* (Motschulsky, 1859)

Tribe **Noterini**

3. *Canthydrus laetabilis* (Walker, 1858)

Family DYTISCIDAE Leach, 1815

Subfamily AGABINAE

Tribe **Agabini**

4. *Agabus amoenus sinuaticollis* Regimbart, 1899

5. *Platynectes kashmiranus kashmiranus* Balfour-Browne, 1944

Subfamily COLYMBETINAE

Tribe **Colymbetini**

6. *Rhantus sikkimensis* Regimbart, 1899

Subfamily COPELATINAE

Tribe **Copelatini**

7. *Copelatus* sp.

Subfamily DYTISCINAE

Tribe **Hydaticini**

8. *Hydaticus satoi satoi* Wewalka, 1975

Subfamily HYDROPORINAE

Tribe **Bidessini**

9. *Hydroglyphus flammulatus* (Sharp, 1882)
10. *Hydroglyphus geminus* (Fabricius, 1792)
11. *Hydroglyphus pendjabensis* (Guignot, 1954)
12. *Hydroglyphus regimbarti* (Gschwendtner, 1936)

Tribe **Hydrovatini**13. *Hydrovatus castaneus* Motschulsky, 1855

Subfamily LACCOPHILINAE

Tribe **Laccophilini**14. *Laccophilus parvulus parvulus* Aube, 1938

Family HYDROPHILIDAE

Subfamily HYDROPHILINAE

Tribe **Hydrobiini**15. *Enochrus rubrocinctus* (Regimbart, 1903)Tribe **Hydrophilini**16. *Sternolophus rufipes* (Fabricius, 1792)Tribe **Amphipini**17. *Amphiops pedestris* Sharp, 1890Tribe **Berosini**18. *Berosus indicus* Motschulsky, 186119. *Regimbartia attenuate* Fabricius, 1801Family **NOTERIDAE** Thomson, 18601. *Neohydrocoptus bivittis*
(Motschulsky, 1859)1859. *Hydrocoptus bivittis* Motschulsky, *Etud. Ent.* 8: 44.1993. *Neohydrocoptus bivittis*, Mori & Kitayama, *Osaka: Kankyo-Kagaku Ltd.* 45.2011. *Neohydrocoptus bivittis*, Nilsson, *World Catalogue, Noteridae*, p. 4.

Material examined: West Bengal, Dist. Alipurduar, Nalarthali Lake, 10.X.1996, coll. N.C. Nandy & party, 01ex. (Reg. No. 21662/H4A).

Distribution: India: Assam, Karnataka, Tripura and Uttar Pradesh. *Elsewhere:* Bangla Desh, China, Indonesia, Japan, Malaysia, Myanmar, Singapore, Sri Lanka, Taiwan Thailand and Vietnam.

Remarks: This species is first time recorded from West Bengal.

2. *Neohydrocoptus subvittulus*
(Motschulsky, 1859)1860. *Hydrocoptus subvittulus* Motschulsky, *Etud. Ent.* 8: 53.1993. *Neohydrocoptus subvittulus*, Mori & Kitayama, *Osaka: Kankyo-Kagaku Ltd.* 45.2011. *Neohydrocoptus subvittulus*, Nilsson, *World Catalogue, Noteridae*, p. 8.

Material examined: West Bengal, Dist. Alipurduar, Falakata, Satpukuria, 08.X.1996, coll. N.C. Nandy & party, 02ex. (Reg. No. 21801-02/H4A); Dist. Darjeeling, Shruberry Park, 23.IX.1997, coll. N.C. Nandy & party, 01ex. (Reg. No. 21803/H4A).

Distribution: India: Andaman Islands, Andhra Pradesh, Assam, Bihar, Delhi, Gujarat, Maharashtra, Odisha, Tamil Nadu, Tripura and West Bengal. *Elsewhere:* Bangla Desh, China, Indonesia, Iraq, Japan, Malaysia, Myanmar, Nepal, Pakistan, Sri Lanka and Vietnam.

3. *Canthydrus laetabilis* (Walker, 1858)1858. *Hydroporus laetabilis* Walker, *Ann. Mag. Nat. Hist.* 3(2): 205.1882. *Canthydrus laetabilis*, Sharp, *Sci. Trans. Royal Dublin Soc. (2)* 2: 277.2011. *Canthydrus laetabilis*, Nilsson, *World Catalogue, Noteridae*, p. 13.

Material examined: West Bengal, Dist. Jalpaiguri, Chhakamari, 06.X.1996, coll. N.C. Nandy & party, 06ex. (Reg. No. 21813-18/H4A); Kathambari Beel, 26.IX.1997, coll. N.C. Nandy & party, 02ex. (Reg. No. 21807-08/H4A); Dist. Alipurduar, Falakata, Satpukuria, 08.X.1996, coll. N.C. Nandy & party, 03ex. (Reg. No. 21804-06/H4A); Buxa Tiger Resrve, Nalarthali Lake, 10.X.1996, coll. N.C. Nandy & party, 08ex. (Reg. No. 21663-70/H4A); 01.X.1997, coll. N.C. Nandy & party, 04ex. (Reg. No. 21809-12/H4A); Dist. Darjeeling, Shruberry Park, 23.IX.1997, coll. N.C. Nandy & party, 01ex. (Reg. No. 21819/H4A).

Distribution: India: Andhra Pradesh, Assam, Bihar, Chhatishgarh, Gujarat, Himachal Pradesh, Jammu & Kashmir, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Odisha, Punjab, Rajasthan, Sikkim, Tripura, Uttarakhand, Uttar Pradesh and West Bengal. *Elsewhere:* Bangladesh, Myanmar, Nepal, Pakistan and Sri Lanka.

Family **DYTISCIDAE** Leach, 18154. *Agabus amoenus sinuaticollis*
Regimbart, 18991899. *Agabus sinuaticollis* Regimbart, *Ann. Soc. Ent. Fr.* 68: 278.2001. *Agabus amoenus sinuaticollis*, Nilsson, *World cat. Insects, Apollo Books*, 3: 19.

2012. *Agabus amoenus sinuaticollis*, Ghosh & Nilsson, *Skorvnopparn Umel supplement*, 3: 4.

Material examined: West Bengal, Dist. Darjeeling, Jorepokhri, 30.IX.1996, coll. N.C. Nandy & party, 01ex. (Reg. No. 21799/H4A); 23.IX.1997, coll. N.C. Nandy & party, 02ex. (Reg. No. 21672 & 21800/H4A).

Distribution: India: Arunachal Pradesh, Himachal Pradesh, Manipur, Meghalaya, Sikkim, Uttarakhand and West Bengal. *Elsewhere*: China and Nepal.

5. *Platynectes kashmiranus kashmiranus*

Balfour-Browne, 1944

1944. *Platynectes kashmiranus* Balfour-Browne, *Ann. Mag. Nat. Hist.*, (11)11: 352.

2012. *Platynectes k. kashmiranus*, Nilsson, *Cat. Palt. Dytscd, Int. Vers*, P. 11.

2012. *Platynectes k. kashmiranus*, Ghosh & Nilsson, *Skorvnopparn Umel supplement*, 3: 10.

Material examined: West Bengal, Dist. Darjeeling, Senchal Lake, 01.X.1996, coll. N.C. Nandy & party, 01ex. (Reg. No. 21824/H4A);

Distribution: India: Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Punjab, Sikkim, Uttarakhand and West Bengal.

Elsewhere: Afghanistan, Bhutan, China, Nepal and Pakistan.

6. *Rhantus sikkimensis* Regimbart, 1899

1899. *Rhantus sikkimensis* Regimbart, *Ann. Soc. Ent. Fr.*, 68: 306.

2012. *Rhantus sikkimensis*, Ghosh & Nilsson, *Skorvnopparn Umel supplement*, 3: 11.

Material examined: West Bengal, Dist. Darjeeling, Jorepokhri, 30.IX.1996, coll. N.C. Nandy & party, 20ex. (Reg. No. 21750-69/H4A); 23.IX.1997, coll. N.C. Nandy & party, 17ex. (Reg. No. 21736-49 & 21820-22/H4A); Senchal Lake, 01.X.1996, coll. N.C. Nandy & party, 01ex. (Reg. No. 21823/H4A); 24.IX.1997, coll. N.C. Nandy & party, 01ex. (Reg. No. 21770/H4A); 01.X.1997, coll. N.C. Nandy & party, 02ex. (Reg. No. 21771-72/H4A); Shruberry Park, 23.IX.1997, coll. N.C. Nandy & party, 02ex. (Reg. No. 21773-74/H4A).

Distribution: India: Himachal Pradesh, Meghalaya, Punjab, Sikkim, Uttarakhand, Uttar

Pradesh and West Bengal. *Elsewhere*: Bhutan, China, Myanmar, Nepal and Pakistan.

7. *Copelatus* sp.

(*Irinus*-group)

Material: Dist. West Bengal, Dist. Alipurduar, Satpukuria, 28.IX.1997, coll. N.C. Nandy & party, 02ex. ♀ (Reg. No. 21784-85/H4A).

8. *Hydaticus satoi satoi* Wewalka, 1975

1975. *Hydaticus satoi* Wewalka, *Koleopterologische Rundschau*, 52: 91.

2012. *Hydaticus satoi satoi*, Nilsson, *Cat. Palt. Dytscd, Int. Vers*, p. 23.

2012. *Hydaticus satoi satoi*, Ghosh & Nilsson, *Skorvnopparn Umel supplement*, 3: 27.

Material examined: West Bengal, Dist. Darjeeling, Jorepokhri, 30.IX.1996, coll. N.C. Nandy & party, 01ex. (Reg. No. 21840/H4A).

Distribution: India: Himachal Pradesh, Kerala, Sikkim, Tamil Nadu and West Bengal. *Elsewhere*: Bhutan, China, Indonesia, Japan, Myanmar, Nepal, Philippines, Saudi Arabia, Sri Lanka, Taiwan and Thailand.

9. *Hydroglyphus flammulatus* (Sharp, 1882)

1882. *Bidessus flammulatus* Sharp, *Sci. Trans. R. Dublin Soc.*, 2: 359.

1988. *Hydroglyphus flammulatus*, Bistrom, *Acta Zool. Fenn.*, 184: 12.

2012. *Hydroglyphus flammulatus*, Ghosh & Nilsson, *Skorvnopparn Umel supplement*, 3: 29.

Material examined: West Bengal, Dist. Darjeeling, Senchal Lake, 01.X.1997, coll. N.C. Nandy & party, 01ex. (Reg. No. 21825/H4A); Dist. Alipurduar, Buxa Tiger Resrve, Nalarthali Lake, 01.X.1997, coll. N.C. Nandy & party, 01ex. (Reg. No. 21826/H4A);

Distribution: India: Andhra Pradesh, Assam, Bihar, Gujarat, Himachal Pradesh (Ghosh, 2011), Jammu & Kashmir, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Odisha, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal. *Elsewhere*: China and Pakistan.

10. *Hydroglyphus geminus* (Fabricius, 1792)

1792. *Dytiscus geminus* Fabricius, *Entom. Syst. Emen. Auct.*, 1(1): 199

1945. *Guignotus pusillus* Guignot, *Mem. Mus. Natn. Hist. nat.*, **19**: 241.

2001. *Hydroglyphus geminus*, Nilsson, *World cat. Insects, Apollo Books*, **3**: 123.

2012. *Hydroglyphus geminus*, Ghosh & Nilsson, *Skorvopparn Umel supplement*, **3**: 30.

Material examined: West Bengal, Dist. Darjeeling, Shruberry Park, 23.IX.1997, coll. N.C. Nandy & party, 01ex. (Reg. No. 21827/H4A).

Distribution: India: Himachal Pradesh, Jammu & Kashmir, Madhya Pradesh, Rajasthan, Sikkim and Uttarakhand. *Elsewhere*: Afghanistan, Bhutan, Nepal, Pakistan, China, Cyprus, Iran, Iraq, Israel, Kazakhstan, Kyrgyzstan, Lebanon, Mongolia, North Korea, Russia, Saudi Arabia, Syria, Tajikistan, Turkey, Turkmenistan, Uzbekistan, Vietnam, Europe and North Africa.

Remarks: This species is first time recorded from West Bengal.

11. *Hydroglyphus pendjabensis* (Guignot, 1954)

1954. *Guignotus pendjabensis* Guignot, *Opusc. Ent. Lund*, **19**: 221.

1988. *Hydroglyphus pendjabensis*, Bistrom: *Acta Zool. Fenn*, **184**: 14.

Material examined: West Bengal, Dist. Alipurduar, Old Hasimara, Parmalong Basti, 07.X.1996, coll. N.C. Nandy & party, 11ex. (Reg. No. 21828-38/H4A).

Distribution: India: Andhra Pradesh, Delhi, Goa, Gujarat, Jharkhand, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal. *Elsewhere*: Bangladesh, Myanmar, Nepal and Pakistan.

12. *Hydroglyphus regimbarti* (Gschwendtner, 1936)

1936. *Bidessus regimbarti* Gschwendtner, *Rec. Indian Mus*, **37**: 367.

1988. *Hydroglyphus regimbarti*, Bistrom, *Acta Zool. Fenn*, **184**: 14.

2012. *Hydroglyphus regimbarti*, Ghosh & Nilsson, *Skorvopparn Umel supplement*, **3**: 31.

Material examined: West Bengal, Dist. Darjeeling, Senchal Lake, 24.IX.1997, coll. N.C. Nandy & party, 01ex. (Reg. No. 21839/H4A).

Distribution: India: Himachal Pradesh, Odisha and West Bengal. *Elsewhere*: China.

13. *Hydrovatus castaneus* Motschulsky, 1855

1855. *Hydrovatus castaneus* Motschulsky, *Etud. Ent.*, **5**: 82.

2012. *Hydrovatus castaneus*, Ghosh & Nilsson, *Skorvopparn Umel supplement*, **3**: 38.

Material examined: West Bengal, Dist. Alipurduar, Falakata, Satpukuria, 08.X.1996, coll. N.C. Nandy & party, 09ex. (Reg. No. 21775-83/H4A).

Distribution: India: Assam, Bihar, Jharkhand, Kerala, Maharashtra, Odisha, Punjab, Tripura and West Bengal. *Elsewhere*: Bangladesh, Myanmar, Sri Lanka, Indonesia and Vietnam.

14. *Laccophilus parvulus parvulus* Aube, 1938

1938. *Laccophilus parvulus* Aube, in *Dejean's, Species Coleopteres*, **6**: 429.

1983. *Laccophilus parvulus parvulus*, Bancucci, *Ent. Arb. Mus. Frey*, 31/32: 355.

2012. *Laccophilus parvulus parvulus*, Ghosh & Nilsson, *Skorvopparn Umel supplement*, **3**: 50.

Material examined: West Bengal, Dist. Alipurduar, Buxa Tiger Reserve, Nalarthali Lake, 10.X.1996, coll. N.C. Nandy & party, 01ex. (Reg. No. 21671/H4A); 01.X.1997, coll. N.C. Nandy & party, 01ex. (Reg. No. 21841/H4A).

Distribution: India: Andaman & Nicobar Islands, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Delhi, Goa, Gujarat, Himachal Pradesh, Jammu & Kashmir (Ghosh, 2014), Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Odisha, Pondichery, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh, and West Bengal. *Elsewhere*: Bangladesh, Bhutan, Myanmar, Nepal, Pakistan, Sri Lanka, China, Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam.

Family HYDROPHILIDAE

15. *Enochrus rubrocinctus* (Regimbart, 1903)

1903. *Phihydus rubrocinctus* Regimbart, *An. Soc. Ent. France*, **72**: 56.

1924. *Enochrus rubrocinctus*, Knisch, *Col. Cat.*, **14**(79): 214.

Material examined: West Bengal, West Bengal, Dist. Darjeeling, Jorepokhri, 23.IX.1997, coll. N.C. Nandy & party, 01ex. (Reg. No. 21925/H4A).

Distribution: India: West Bengal. *Elsewhere*: South Asia, Sumatra.

16. *Sternolophus rufipes* (Fabricius, 1792)

1792. *Hydrophilus rufipes* Fabricius, *Entom. Syst.* 1: 183.
1840. *Sternolophus rufipes*, Laporte, *Castelanu, Hist. Nat. Ins.* 2: 54.

Material examined: West Bengal, Dist. Alipurduar, Buxa Tiger Reserve, Nalarthali Lake, 01.X.1996, coll. N.C. Nandy & party, 01ex. (Reg. No. 21842/H4A).

Distribution: India: Andhra Pradesh, Bihar, Chhattisgarh, Himachal Pradesh, Jammu & Kashmir, Maharashtra, Meghalaya, Manipur, Punjab, Sikkim, Tripura, Uttar Pradesh and West Bengal. *Elsewhere:* Sunda Is., Myanmar, Philippines, Japan, Formosa, Indonesia, Indochina, China, Sri Lanka.

17. *Amphiops pedestris* Sharp, 1890

1890. *Amphiops pedestris* Sharp, *Trans. Ent. Soc. Lond.* p. 354.

Material examined: West Bengal, Dist. Alipurduar, Buxa Tiger Reserve, Nalarthali Lake, 01.X.1996, coll. N.C. Nandy & party, 01ex. (Reg. No. 21924/H4A).

Distribution: India: Pondicherry, Tamil Nadu, Tripura and West Bengal. *Elsewhere:* Indo-China, Sri Lanka, Sumatra and Saigon.

18. *Berosus indicus* Motschulsky, 1861

1861. *Berosus indicus* Motschulsky, *Bull. Soc. Imp. Nat. Moscou*, 34: 110.

Material examined: West Bengal, Dist.

Alipurduar, Buxa Tiger Reserve, Nalarthali Lake, 10.X.1996, coll. N.C. Nandy & party, 1ex. (Reg. No. 21843/H4A).

Distribution: India: Andhra Pradesh, Himachal Pradesh, Madhya Pradesh, Maharashtra, Uttar Pradesh and West Bengal. *Elsewhere:* South Asia, Sri Lanka and Sunda Island.

19. *Regimbartia attenuate* Fabricius, 1801

1801. *Regimbartia attenuate* Fabricius, *Syst. Eleuth.* 1: 235.

Material examined: West Bengal, Dist. Alipurduar, Buxa Tiger Reserve, Nalarthali Lake, 01.X.1996, coll. N.C. Nandy & party, 01ex. (Reg. No. 21844/H4A).

Distribution: India: : Andhra Pradesh, Bihar, Himachal Pradesh, Jammu & Kashmir, Madhya Pradesh, Maharashtra, Uttar Pradesh and West Bengal. *Elsewhere:* Indo-China, Cambodia, Formosa, Japan, Philippine, Sri Lanka, Sumatra and Australia.

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