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ON SOME EARTHWORMS PRESENT IN UNNAMED COLLECTIONS OF ZOOLOGICAL SURVEY OF INDIA

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INTRODUCTION

Aristotle described some terrestrial elongated worms as 'the intestine of earth'. These are the earthworms the megadrile oligochaetes of the phylum Annelida. They are bilaterally symmetrical coelomate invertebrates having external and internal segmentations throughout the body with setae as locomotary organs present on all segments excepting the first and last ones. Their respiration takes place by the gaseous exchanges through the moist skin. They are hermaphrodite and the fertilisation of their ova is external in the cocoons formed by the material secreted from the clitellum.

Earthworms are found in various types of soils where there is sufficient food and moisture. They occur in vegetable gardens, plant nurseries, cultivated fields, orchards, grasslands, forests, *etc.* They are also found under logs and stones, and even in the axils of leaves of some plants. Some are hydrophilous and occur near waterbodies.

Earthworms are popularly known as 'friends of farmers' because of their beneficial effects in increasing the fertility of soil, recycling various kinds of organic wastes, producing vermicompost and providing animal protein as poultry and fish feed. Out of about 3300 global species some 380 species of earthworms are so far known to occur in India. *Moniligaster perrieri*, the first new species of earthworms of the Indian mainland was described by Perrier in 1872 from Kerala. Subsequently our knowledge on the taxonomy of Indian earthworms was enriched by the contributions of Michaelsen (1907 and 1909), Stephenson (1914, 1921, 1923, 1924a & b, 1925, 1926 and 1931), Gates (1934, 1937a & b, 1938a & b, 1939a & b, 1940a & b, 1945a, b & c, 1947, 1951, 1956, 1962 and 1972), Halder (1989, 1999 and 2000), Halder & Julka (19670), Julka (1975, 1976a & b, 1977, 1978, 1981, 1983, 1988a & b), Julka & Halder (1975a & b, 1977), Julka & Rao (1982), Soota (1970), Soota & Halder (1977a & b, 1980a & b and 1981), Soota & Julka (1970 & 1972).

The present report is based on the study made during April, 1999 to May, 2003 on the unnamed National Zoological Collections of earthworms from different states of India, such as, Uttar Pradesh, Arunachal Pradesh, Meghalaya, Mizoram, Maharashtra, Gujarat, Bihar, West Bengal, Orissa, Kerala, Tamil Nadu and Lakshadweep. The paper deals with 27 species belonging to 18 genera and eight families out of which 10 species are recorded for the first time from six different states of India (one species from Meghalaya, two from Arunachal Pradesh, one from Mizoram, three from Bihar, one from Gujarat and two from West Bengal).

SYSTEMATIC ACCOUNT

Phylum ANNELIDA

Class OLIGOCHAETA

A. Order MONILIGASTRIDA

I. Family MONILIGASTRIDAE

1. Genus *Drawida* Michaelsen, 1900

1. *Drawida nepalensis* Michaelsen, 1907

B. Order HAPLOTAXIDA

II. Family ACANTHODRILIDAE

2. Genus *Pontodrilus* Beddard, 1874

2. *Pontodrilus bermudensis* Beddard, 1891

III. Family LUMBRICIDAE

3. Genus *Eisenia* Malm, 1877

3. *Eisenia foetida* (Savigny, 1826)

IV. Family GLOSSOSCOLECIDAE

4. Genus *Pontoscolex* Schmarda, 1861

4. *Pontoscolex corethrurus* (Muller, 1856)

V. Family MEGASCOLECIDAE

5. Genus *Amyntas* Kinberg, 1867

5. *Amyntas diffringenes* (Baird, 1869)

6. *Amyntas morrisi* (Beddard, 1892)

*7. *Amyntas robustus* (Perrier, 1872)

6. Genus *Lampito* Kinberg, 1866

8. *Lampito mauritii* Kinberg, 1866

7. Genus *Metaphire* Sims & Easton, 1972

9. *Metaphire pegnana* (Rosa, 1890)

10. *Metaphire posthuma* (Vaillant, 1868)

8. Genus *Perionyx* Perrier, 1872

- *11. *Perionyx excavatus* Perrier, 1872
- 12. *Perionyx kempfi* Stephensen, 1914
- 13. *Perionyx sansibaricus* Michaelsen, 1891
- *14. *Perionyx turaensis* Stephensen, 1920
- *15. *Perionyx vanagatus* (Michaelsen, 1907)

9. Genus *Polypheretima* Michaelsen, 1934

- *16. *Polypheretima elongata* (Perrier, 1872)

10. Genus *Tonoscolex* Gates, 1933

- 17. *Tonoscolex rnichaelseni* Julka, 1976
- *18. *Tonoscolex striatus* (Stephenson, 1914)

VI Family OCTOCHAETIDAE

11. Genus *Harogaster* Gates, 1939

- 19. *Barogaster barodensis* (Stephenson, 1914)

12. Genus *Dichogaster* Beddard, 1888

- *20. *Dichogaster affinis* (Michaelsen, 1890)
- 21. *Dichogaster bolau* (Michaelsen, 1891)

13. Genus *Eutyphoeus* Michaelsen, 1900

- *22. *Eutyphoeus gammiei* (Beddard, 1888)
- *23. *Eutyphoeus incomodus* (Beddard, 1901)
- 24. *Eutyphoeus orientalis* (Beddard, 1883)

14. Genus *Lennogaster* Gates, 1939

- *25. *Lennogaster chittagongensis* (Stephenson, 1917)

15. Genus *Octochaetona* Gates, 1962

- 26. *Octochaetona beatrix* (Beddard, 1902)

VII. Family ALMIDAE

16. Genus *Glyphidrilus* Horst, 1889

- *27. *Glyphidrilus tuberosus* Stephenson, 1916

VIII. Family OCNERODRILIDAE

17. Genus *Gordiodrilus* Beddard, 1892

- 28. *Gordiodrilus elegans morphaski* Stephenson, 1928

18. Genus *Ocnerodrilus* Eisen, 1878

- *29. *Ocnerodrilus occidentalis* Eisen, 1878

I. Family MONELIGASTRIDAE

1. Genus *Drawida* Michaelsen, 19001. *Drcnvida nepalensis* Michaelsen, 19071907. *Drawida nepalensis* Michaelsen, *Mitt. naturh. Mus. Hamb.*, **24** : 146.

Material examined : 3 exs., Reg. No. An 3140/1, 124 km on Miao Vijaynagar Road, Tirat District, Arunachal Pradesh, 11.i.1985; coll. S. Biswas.

Distribution : INDIA : Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Meghalaya, Sikkim, Tripura, Uttar Pradesh and West Bengal.

Elsewhere : Pakistan; Nepal; Bangladesh; Burma and Indonesia.

II. Family ACANTHODRILIDAE

2. Genus *Pontodrilus* Beddard, 18742. *Pontodrilus burmudensis* Beddard, 18911891. *Pontodrilus burmudensis* Beddard, *Ann. Mag. nat. Hist.*, (ser. 6), **7** : 96.

Material examined : 2 exs., Reg. No. An 3239/1, River Kistna, Wai, satara District, Maharashtra; 23.iii.1931; coll. H.S. Rao. 7 exs., Reg. No. An 3245/1; Kavaratti Island, Lakshadweep; 31.iii.1984; coll. B.P. Halder & D.R.K. Sastry.

Distribution : INDIA : Andaman & Nicobar Island, Andhra Pradesh, Goa, Kerala, Lakshadweep Islands, Maharashtra, Orissa, Tamil Nadu and West Bengal.

Elsewhere : Africa; Madagascar; Sri Lanka; Maldives; Burma; Vietnam; Indonesia; Australia; Some Islands in the Pacific Ocean; USA; West Indies and South America.

Remarks : This is a peregrine species inhabiting in mud with organic matter and salt on sea shore and margins of estuaries and brackish water lakes.

III. Family LUMBRICIDAE

3. Genus *Eisenia* Malm, 18773. *Eisenia foetida* (Savigny, 1826)1826. *Enterion foetidum* Savigny, *Mem. Acad. Sci. Inst. Fr.*, **5** : 182.

Material examined : 1 ex., Reg. No. An 3163/1; around Darjeeling town, Darjeeling District, West Bengal; 7.vi.1958; coll. H. Khajuna.

Distribution : INDIA : Delhi, Himachal Pradesh, Kerala, Nicobar Islands, Sikkim, Tamil Nadu and West Bengal.

Elsewhere : Europe; Lebanon; Turkey; Afganistan; Korea; Japan; Australia; New Zealand; North America; West Indies; South America; Some Islands in the Atlantic Ocean.

IV. Family GLOSSOSCOLECIDAE

4. Genus *Pontoscolex* Schmarda, 18614. *Pontoscolex corethrurus* (Muller, 1856)

1856. *Lumbricus corethrurus* Muller, *Abhandl. Naturgesch. Ges. Halle*, 4 : 26.

Material examined : 1 ex., Reg. No. An 3224/1; Rabindra Sadan Compound, Kolkata, West Bengal; 21.viii.1999; coll. A. Aich. 7 exs., Reg. No. An 3246/1; Suranganar Reserve Forest, Alt, ca. 2500 ft. Tamil Nadu; 23.v.1969. coll. O.B. Chhotani.

Distribution : INDIA : Andaman & Nicobar Islands, Andhra Pradesh, Gujarat, Karnataka, Kerala, Maharashtra, Meghalaya, Tamil Nadu, Tripura and West Bengal.

Elsewhere : Africa; Madagascar; Mauritius; Komoro Islands; Iran; Pakistan; Sri Lanka; Burma; Thailand; Cambodia; Malay Peninsula; Indonesia; Philippines; Borneo; USA; Mexico; Central America and South America.

V. Family MEGASCOLECIDAE

5. Genus *Amynthas* Kinberg, 18675. *Amynthas diffrigenes* (Baird, 1869)

1869. *Megascolex diffrigenes* Baird, *Proc. zool. Soc. Lond.*, 1869 : 40.

Material examined : Near the Zoo Staff Quarters, Itanagar Zoo, Itanagar, 1 ex., 15.ix.1999, coll. P.T. Bhutia & party; Road to Doimukh from Yupia, Itanagar; 1 ex., 25.viii.2000, coll. D. Dam & party. Papu Nallah, Itanagar; 1 ex., 13.xii.2000, coll. D. Dam & party. Ganga Lake and around; 1 ex., 16.xii.2002, coll. D. Dam & party; 1 ex., Reg. No. An 3127/1; 77 miles base camp, Tirap District, Arunachal Pradesh; 31.i.1987; 2 exs., Reg. No. An 3128/1; Gandhigram, Namdapha, Arunachal Pradesh; 11.ii.1987; 5 exs., Reg. No. an 3129/1, Vijaynagar, Tirap District, Arunachal Pradesh; 14.i.1987; 1 ex., Reg. No. an 3131/1; Lower Jheel Camp, Namdapha, Arunachal Pradesh; 3.ii.1987; 9 exs., Reg. No. An 3135/1; on Miao Vijaynagar Road, Tirap District, Arunachal Pradesh; 5.i.1985; 15 exs., Reg. No. An 3135/1; 77 miles camp on Miao Vijaynagar Road, Tirap District, Arunachal Pradesh, 14.i.1985; 3 exs., Reg. No. An 3137/1; 124 km on Miao Vijaynagar Road, Titap District, Arunachal Pradesh; 14.i.1985; 2 exs., Reg. No. An 3144/1, Deban, 27 km east of Miao, Tirap District, Arunachal Pradesh, 5.xii.1983; 13 exs., Reg. No. An 3146/1. Hornbill, 27 km from Miao. Tirap District, Arunachal District; 2.xii.1983; coll. S. Biswas; 7 exs., Reg. No. 3161/1, around Darjeeling town, Darjeeling district, West Bengal; 7.vi.1958; coll. H. Khajuna.

Distribution : INDIA : Arunachal Pradesh, Assam, Himachal Pradesh, Jammu & Kashmir, Karnataka, Manipur, Meghalaya, Sikkim, Tamil Nadu, Uttar Pradesh and West Bengal.

Elsewhere : Africa; Madagascar & its adjacent Islands; Europe; China; Korea; Japan; Sri Lanka; Nepal; Bhutan; Bangla Desh; Burma; Indonesia; Philippines; Australia; New Zealand; Some Island in the Pacific Ocean; USA; Central America; West Indies and South America.

6. *Amyntas morrisi* (Beddard, 1892)

1892. *Perichaeta morrisi* Beddard, *Proc. zool. Soc. Lond.*, **1892** : 166.

Material examined : 9 exs., Reg. No. An 3075/1; Govt. Agricultural Garden, Mohaddipur, Gorakhpur District, Uttar Pradesh; 12.vi.1989; coll. H.C. Ghosh.

Distribution : INDIA : Delhi, Maharashtra, Meghalaya, Rajasthan, Uttar Pradesh and West Bengal.

Elsewhere : Europe; Pakistan; China; Burma; Thailand; Malay Peninsula; Indonesia; Hong Kong; Taiwan; Hawaii; USA; Mexico and South America.

7. *Amyntas robustus* (Perrier, 1872)

1872. *Perichaeta robusta* Perrier, *Nouv. Arch. Mus. Hist. nat. Paris*, **8** : 112.

Material examined : 1 ex., Reg. No. An 3242/1; Shillong, Meghalaya; 10.i.1961; coll. S. N. Prasad.

Distribution : INDIA : Meghalaya (present record) and West Bengal.

Elsewhere : China; Korea; Japan; Burma; Hong Kong and Taiwan.

Remarks : This is a peregrine species so far known to occur in India from West Bengal only. It is now recorded here for the first time from Meghalaya also.

6. Genus *Lampito* Kinberg, 1866

8. *Lampito mauritii* Kinberg, 1866

1866. *Lampito mauritii* Kinberg, *Ofvers. K. Vetens. Akad. Forhandl. Stockholm*, **23** : 103.

Material examined : 1 ex., Reg. No. An 3078/1, Horticulture Garden, Bhujouli, Deoria District, Uttar Pradesh, 29.vi.1989; 12 exs., Reg. No. An 3079/1, P.W.D. Bungalow compound, Gorakhpur, Gorakhpur district, Uttar Pradesh, 10.vi.1989; 2 exs., Reg. No. An 3085/1, Gobrai village, Deoria district, Uttar Pradesh, 25.vi.1989; 2 exs., Reg. No. An 3089/1, Govt Agriculture Garden, Basti, Basti district, Uttar Pradesh, 16.vi.1989; 4 exs., Reg. No. An 3092/1, Sonauli, Gorakhpur district, Uttar Pradesh, 13.vi.1989; 47 exs., Reg. No. An 3096/1, Kurnala, 2 km north of Deoria Rly. Stn., Deoria district, Uttar Pradesh, 29.vi.1989; 1 ex., Reg. No. An 3097/1, Dakhin Darwaza, Basti district, Uttar Pradesh, 22.vi.1989; 32 exs., Reg. No. An 3101/1, Rudrapur, Deoria district, Uttar Pradesh, 3.vii.1989; 6 exs., Reg. No. An 3114/1, Deoria town, Deoria district. Uttar Pradesh, 27.vi.1989; coll. H.C. Ghosh; 10 exs., Reg. No. An 3149/1, Kasubari village, 11 km from Junagarh on Rajkot Road, Gujarat, 24.viii.1982; 5 exs., Reg. No. An 3151/1, Chhatral village, on Mahasana-Ahmedabad Road, Gujarat, 18.viii.1982; 8 exs., Reg. No. An 3153/1, Apnalate, ca. 25 km from Baroda, Gujarat, 21.viii.1982; 2 exs., Reg. No. An 3154/1, Demrul village on Ahmedabad-Baroda Road, Gujarat, 20.viii.1982; 3 exs., Reg. No. An 3157/1, Surendra nagar, ca. 65 km from

Ahmedabad, Gujarat, 24.viii.1982, coll. T.D. Soota. 1 ex., 3164/1, Chandipur, Orissa, 8.iii.1939, coll. Unknown. 71 exs., Reg. No. An 3167/1, Varanasi Cantt., Uttar Pradesh, 21.x.1956, coll. U.P. Survey Party (1956). 1 ex., Reg. No. An 3225/1, Indian Museum compound, West Bengal, 2.viii.1999; coll. G.C. Ray. 4 exs., Reg. No. An 3238/1, Buldana, Berar, Maharashtra, 17.iii.1931, coll. M.N. Datta.

Distribution : INDIA : Widely distributed in India. Andaman & Nicobar Island, Andhra Pradesh, Bihar, Delhi, Gujarat, Karnataka, Kerala, Lakshadweep & Minocoy Island, Madhya Pradesh, Maharashtra, Orissa, Rajasthan, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal.

Elsewhere : Zanzibar; Comoro Island; Madagascar; Seychellis Isl.; Mauritius; Pakistan; China; Maldives; Sri Lanka; Bangla Desh; Burma; Thailand; Malay Panninsula; Indonesia; Philippines; Hong Kong and New Caledonia.

7. Genus *Metaphire* Sims & Easton, 1972

9. *Metaphire peguana* (Rosa, 1890)

1890. *Perichaeta peguana* Rosa, *Ann. Mus. Civ. Nat. Genova*, **30** : 113.

Material examined : 7 exs., Reg. No. An 3230/1, Rabindra Sadan Compound, Kolkata, West Bengal, 21 & 28.vii.1999; 1 ex., Reg. No. An 3231/1, Eden Gardens, Kolkata, West Bengal, 4.viii.1999; coll. A. Aich.

Distribution : INDIA : Andaman Islands and West Bengal.

Elsewhere : Burma; Thailand; Vietnam; Malay Peninsula and Indonesia.

10. *Metaphire posthuma* (Vaillant, 1868)

1868. *Perichaeta posthuma* Vaillant, *Annl. Sci. Nat. (ser. 5)*, **10** : 228.

Material examined : 11 exs., Reg. No. An 3074/1, Govt. Agriculture Garden, Mohaddipur, Gorakhpur district, Uttar Pradesh, 12.vi.1989; 8 exs., Reg. No. An 3076/1, Rajghat, Gorakhpur district, Uttar Pradesh, 9.vi.1989; 1 ex., Reg. No. An 3077/1, Basti Town, Bast district, Uttar Pradesh, 18.vi.1989; 17 exs., Reg. No. An 3080/1, P.W.D. Bungalow compound, Gorakhpur district, Uttar Pradesh, 10.vi.1989; 3 exs., Reg. No. An 3081/1, P.W.D. Bungalow compound, Deoria, Deoria district, Uttar Pradesh, 4.vii.1989; 4 exs., Reg. No. An 3082/1, Govt. Horticulture Garden, Bhujouli, Deoria, Deoria district, Uttar Pradesh, 29.vii.1989; 11 exs., Reg. No. An 3090/1, Govt. Agriculture Garden, Basti, Basti district, Uttar Pradesh, 16.vi.1989; 1 ex., Reg. No. An 3098/1, Bokhira village, Basti district, Uttar Pradesh, 21.vi.1989; 17 exs., Reg. No. An 3112/1, Dakshin Darwaza, Basti district, Uttar Pradesh, 22.vi.1989; coll. H.C. Ghosh. 24. exs., Reg. No. An 3117/1, Barabanki, district, Uttar Pradesh, 10.v.1990, coll. L.K. Ghosh. 2 exs., Reg. No. An 3150/1, Gandhinagar, Ahmedabad, Gujarat, 19.viii.1982, coll. T.D. Soota. 1 ex., Reg. No. An 3227/1, Indian Museum compound, Kolkata West Bengal, 2.viii.1999, coll. A. Aich & G.C. Ray. 1 ex., Reg. No. An 3228/1, Eden Gardens, Kolkata, West Bengal; 2.viii.1999, coll. A. Aich & P.K. Ray.

1 ex., Reg. No. An 3229/1, Rabindra Sadan compound, Kolkata, West Bengal, 21.vii.1999, coll. A. Aich. 6 exs., Reg. No. An 3253/1, Noorabad, Gwalior, Gwalior district, Madhya Pradesh, 27.vii.1987; 3 exs., Reg. No. An 3254/1, Jaderuma Dam area near Gwalior town, Gwalior district, Madhya Pradesh, 27.vii.1987; coll. A.K. Sarkar.

Distribution : INDIA : Andaman Island, Bihar, Delhi, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Madhya Pradesh, Maharashtra, Meghalaya, Orissa, Punjab, Rajasthan, Uttar Pradesh and West Bengal.

Elsewhere : Pakistan; Bangla Desh; Burma; Thailand; Vietnam; Malay Peninsula; Indonesia; Philippines and USA.

8. Genus *Perionyx* Perrier, 1872

11. *Perionyx excavatus* Perrier, 1872

1872. *Perionyx excavatus* Perrier, *Notiv. Arch. Mus. Hist. nat. Paris*, **8** : 126.

Material examined : 60 exs., Reg. No. An 3099/1, Bokhira village, Basti district, Uttar Pradesh, 21.vi.1999; 6 exs., Reg. No. An 3113/1, Ramgarh Tal, Gorakhpur, Gorakhpur district, Uttar Pradesh, 11.vi.1989; coll. R.C. Ghosh. 1 ex., Reg. No. An 3132/1, Miao, Tirap district, Arunachal Pradesh, 4.xii.1982; 2 exs., Reg. No. 3133/1, Darlak, Arunachal Pradesh, 1.iii.1984; coll. S. Biswas. 1. ex., Reg. No. An 3160/1, around Darjeeling town, Darjeeling district, West Bengal, 17.vi.1958, coll. H. Khajuria. 11 exs., Reg. No. An 3240/1, Shillong, Meghalaya, 5.xii.1962, coll. A.K. Datta. 8 exs. Reg. No. An 3243/1, Madanpur, West Champaran district, Valmiki Tiger Project, Bihar, 10.vi.1993, coll. S. Chakraborty. 6 exs., Reg. No. An 3250/1, Santanatalapadu, Ongole, Andhra Pradesh, 9.iv.1998, coll. S.K. Mukhopadhyay.

Distribution : INDIA : Andaman Islands, Arunachal Pradesh, Assam, Bihar (present record), Himachal Pradesh, Maharashtra, Manipur, Meghalaya, Orissa, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal.

Elsewhere : Madagascar and its adjacent Islands; Sri Lanka; Burma; Thailand; Vietnam; Malay Peninsula; Indonesia; Philippines; Taiwan and West Indies.

Remarks : This is a endemic species originated from the Himalays and is widely distributed throughout India. It is now recorded here for the first time from Bihar also.

12. *Peroinyx kempfi* Stephensen, 1914

1914. *Peroinyx kempt* Stephensen, *Rec. Indian Mus.*, **8** : 389.

Material examined : 4 exs., Reg. No. An 3145/1, Zero Camp, Narndapha, Tirup district, Arunachal Pradesh, 24.xii.1983, coll. S. Biswas.

Distribution : INDIA : Arunachal Pradesh.

Remarks : This is a very rare endemic species so far known to occur from Arunachal Pradesh only.

13. *Perionyx sansibaricus* Michaelsen, 1891

1891. *Perionyx sansibaricus* Michaelsen, *Mitt, naturh. Mus. Hamb.*, **9** : 4.

Material examined : 12 exs., Reg. No. An 3118/1, Panhala Port ca. 12 miles west of Kolhapur, Maharashtra, 9.ix.1964; 7 exs., Reg. No. An 3119/1, Satara, Maharashtra, 1.ix.1964; 20 exs., Reg. No. An 3120/1, Panchgani, Maharashtra, 20.viii.1964; 2 exs., Reg. No. An 3122/1, Khopoli, Maharashtra, 25.ix.1964; 20 exs., Reg. No. An 3123/1, Mahabaleswar, Maharashtra, 24.viii.1964; 76 exs., Reg. No. An 3237/1, Buldana Berar, Maharashtra, 17.iii.1931; coll. M.N. Datta. 6 exs., Reg. No. An 3252/1, Panchgoni-Mahabaleswar Road, Maharashtra, 21.viii.1964, coll. K.K. Tiwari. 43 exs., Reg. No. An 3155/1, Zaderuma Dam area, near Gowalior Town, Gowalior district, Madhya Pradesh, 27.vii.1987, coll. A.K. Sarkar.

Distribution : INDIA : Delhi, Gujarat, Kerala, Madhya Pradesh, Maharashtra, Orissa, Tamil Nadu and Uttar Pradesh.

Elsewhere : Zanzibar.

Remarks : This is a peregrine species successfully settled in the northern, central, western and southern part of India.

*14. *Perionyx turaensis* Stephensen, 1920

1920. *Perionyx turaensis* Stephensen, *Mew. Indian Mus.*, **7** : 216.

Material examined : 2 exs., Reg. No. An 3138/1, 79th mile Camp on Miao Vijoy Nagar Road, Tirup district, Arunachal Pradesh, 4.i.1985, coll. S. Biswas.

Distribution : INDIA : Arunachal Pradesh (present record) and Meghalaya.

Remarks : This is a rare endemic species so far known to occur from Meghalaya. It is now recorded here for the first time from Arunachal Pradesh.

*15. *Perionyx variegates* (Michaelsen, 1907)

1907. *Perionychella variegates* Michaelsen, *Mitt, naturh. Mus. Hamb.*, **24** : 158.

Material examined : Sinkie River, near police colony, Itanagar, 1 ex., 8.xi.2002, coll. P.T. Bhutia & party

Distribution : INDIA : Arunachal Pradesh, Sikkim and West Bengal.

Remarks : This rare endemic species is recorded here for the first time from Arunachal Pradesh.

9. Genus *Polypheretima* Michaelsen, 1934*16. *Polypheretima elongata* (Perrier, 1872)

1872. *Perichaeta elongata* Perrier, *Nouv. Arch. Mus. Hist. nat. Paris*, **8** : 124.

Material examined : 1 ex., Reg. No. An 3156/1, Ajwa Lake ca. 2 km from Baroda, Gujarat, 21.viii.1982. coll. T.D. Soota.

Distribution : INDIA : Andaman Nicobar Islands, Andhra Pradesh, Gujarat (present record), Karnataka, Madhya Pradesh, Maharashtra, Tamil Nadu, Tripura and West Bengal.

Elsewhere : Africa; Madagascar; Comoro Island; Pakistan; Sri Lanka; Bangla Desh; Burma; Thailand; Malay Peninsula; Indonesia; Philippines; Taiwan; Australia; Papua New Guinea; New Britain; New Caledonia; Hawaii; Carolines Island; Ryuku Island; Tahiti; West Indies and South America.

Remarks : This is a peregrine species successfully settled in some parts of India, and is abundant in Sundarban areas of West Bengal. Now it is recorded from Gujarat also.

10. Genus *Tonoscolex* Gates, 1933

17. *Tonoscolex michaelsoni* Julka, 1976

1976. *Tonoscolex michaelsoni* Julka, *Rec. zool. Surv. India*, **69** : 233.

Material examined : 1 ex., Reg. No. An 3139/1, Hornbill, 27 km east of Miao, Tirup district, Arunachal Pradesh, 2.xii.1983; 2 exs., Reg. No. An 3147/1, Zero Camp, 28 km north-east of Miao, Tirap district, Arunachal Pradesh, 23 & 26.xii.1983; coll. S. Biswas.

Distribution : INDIA : Arunachal Pradesh.

Remarks : This is a very rare endemic species so far known to occur from Arunachal Pradesh only.

*18. *Tonoscolex striatus* (Stephenson, 1914)

1914. *Notoscolex striatus* Stephenson *Rec. India Mus.*, **8** : 380.

Material examined : Near the Zoostaff Quarters, Itanagar Zoo, Itanagar, 1 ex., 15.ix.1999, coll. P.T. Bhutia 7 party.

Distribution : INDIA : Arunachal Pradesh.

VI. Family OCTOCHAETIDAE

16. Genus *Barogaster* Gates, 1939

19. *Barogasler barodensis* (Stephenson, 1914)

1914. *Endichogaster barodensis* Stephenson, *Rec. Indian Mus.*, **10** : 358.

Material examined : 6 exs., Z.S.I. Reg. No. An 315z/1; Vithlapug nr. Viramgram, Gujarat; 25.viii.1982; 8 exs., Z.S.I. Reg. No. An 3155/1; Barwala village about 65 km from Virsdamgram on Ahmedabad Road, 22.viii.1982; coll. T.D. Soota.

Distribution : INDIA : Gujarat and Madhya Pradesh.

Remarks : This is rare endemic species so far known to occur from only two states of India.

17. Genus *Dichogaster* Beddard, 188820. *Dichogasterter affinis* (Michaelson, 1890)

1890. *Benhamia affinis* Michaelson, *Jb. hamb. wiss. Anst.*, **7** : 29.

Material examined : ex., Z.S.I. Reg. No. An 3226/1; Rabindra Sadan compound, Kolkata, West Bengal; 21.viii.1999; coll. A. Aick

Distribution : INDIA : Arunachal Pradesh, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Meghalaya and West Bengal (pre-sect record).

Elsewhere : South west Africa; Madagascar; Zanzibar; Comoro Island; Sri Lanka; Burma; Thailand; Pacific Ocean Islands; Mexico; Central America; West Indies and Brazil.

Remarks : This is a peregrine species and is recorded for first time from West Bengal also.

21. *Dichogaster bolau* (Michaelson, 1891)

1891. *Benhamia bolau*, *Jb. hamb. wiss. Anst.*, **8** : 9.

Material examined : 2 exs., Z.S.I. Reg. No. An 3102/1, Darwaza, Basti, Basti Dist, Uttar Pradesh, 22.vi.1989, coll. K.C. Ghosh.

Distribution : INDIA : Andaman & Nicobar Islands, Andhra Pradesh, Arunachal Pradesh, Gujarat, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Orissa, Rajasthan, Sikkim, Tamil Nadu, Uttar Pradesh and West Bengal.

Elsewhere : Africa; Madagascar and adjacent islands; Germany; Pakistan; Sri Lanka; Bangladesh; Burma; Malay Peninsula; Vietnam; China; Hainan Island; Indonesia; Philippines; Japan; Pacific Islands; Australia; North and central America; West Indies; South America.

Genus 18. *Eutyphoeus* Michaelson, 190022. *Eutyphoeus gammiei* (Beddard, 1888)

1888. *Typhoeus gammii* Beddard, *Q. Jl. microsc. Sci.*, **29** : 111.

Material examined : 1 ex., Z.S.I., Reg. No. An 1430/1; Kolanaga, Manipur; 16.iii.1926; coll. ? 2 exs., Z.S.I., Reg. No. An 3126/1; Hornbill, 27 km E of Miao, Tirap Dist; Arunachal Pradesh. 2.xii.1983 : 1 ex., Z.S.I. Reg. No. An 3141/1; Bulbulia; 32 Km NE of Miao, Tirap Dist; Arunachal Pradesh; 14.xii.1983; 1 ex., Z.S.I. Reg. No. An 3143/1; ZXero camp, Namdapha, Tirap Dist; Arunachal Pradesh; 24.xii.1983; coll. S. Biswas. 1 ex., Z.S.I. Reg. No. An 3248/1, Saipum, alt. 400 m, Aizol Dist; Mizoram, 2.i.1994; coll. S.S. Saha.

Distribution : INDIA : Mizoram (Present record), Arunachal Pradesh, Assam, Meghalaya, Tripura and West Bengal.

Elsewhere : Bangladesh.

Remarks : This is an endemic species recorded here for the first time from Mizoram also.

23. *Eutyphoeus incomodus* (Beddard)

1901. *Typhoeus incommodus* Beddard, *Proc. Zool. Soc. Lond.*, **1901** : 200.

Material examined : 1 ex., Z.S.I. Reg. No. An 1431/1; Near Tundi, Dhanbad, Bihar; 14.ix.1969; 1 ex., Z.S.I. Reg. No. An 1432/1; Jungle nr. Dholkota nalla at Topchanchi Lake, Dhanbad, Bihar; 19.ix.1969; Raj Tilak. 1 ex., Z.S.I. Reg. No. An 1433/1; Patna Bihar; 27.viii.1973; coll. T.D. Soota. 19 exs., Z.S.I. Reg. No. An 1434/1; Lahaardaga, Bihar; Daste of colln. ?; coll. ? 1 ex., Z.S.I. Reg. No. An 3083/1; P.W.D. compound, Gorakhpur, Gorakhpur Dist., Uttar Pradesh; 10.vi.1989; 5 exs., Z.S.I. Reg. No. An 3084/1; Gobrai village, Deoria Dist., Uttar Pradesh; 25.vi.1989; 8 exs., Z.S.I. Reg. No. An 3088/1; Govt. Agriculture Garden, Basti, Basti Dist; Uttar Pradesh; 16.vi.1989; 2 exs., Z.S.I. Reg. No. An 3091/1; Sonauli, Gorakhpur Dist., Uttar Pradesh; 13.vi.1989; 9 exs., Z.S.I. Reg. No. An 3095/1; Irrigation Bungalow compound, Deoria, Deoria, Deoria Dist., Uttar Pradesh; 4.vii.1989; 6 exs., Z.S.I. Reg. No. An 3115/1; Deona, Deoria Dist., Uttar Pradesh; 27.vi.1989; coll. H.C. Ghosh. 2 exs., Z.S.I. Reg. No. An 3142/1; zero camp, Namdapha, Zirap Dist., Arunachal Pradesh; 24.xii.1983; coll. S. Biswas.

Distribution : INDIA : Arunachal Pradesh (present record), Bihar, Haryana, Himaachal Pradesh, Orissa, Punjab, Rajasthan, Uttar Pradesh and West Bengal.

Elsewhere : Pakistan.

Remarks : This is an endemic species recorded here for the first time from Arunachal Pradesh also.

24. *Eutyphoeus orientalis* (Beddard, 1883)

1883. *Typhoeus orientalis* Beddard, *Ann. Mag. nat. Hist.*, (ser 5), **12** : 219.

Material examined : 1 ex., Z.S.I. Reg. No. An 1437/1; Hazaribagh, Bihar; 30.ix.1938; coll. ? 7 exs., Z.S.I. Reg. No. An 3093/1; P.W.D. Bungalow compound, Gorakhpur, Gorakhpur Dist., Uttar Pradesh; 10.vi.1989; 4 exs., An 3094/1, Irrigation Bungalow compound, Basti, Basti Dist., Uttar Pradesh; 18.vi.1989; 1 ex., Z.S.I. Reg. No. An 3116/1; Deona, Deoria Dist., Uttar Pradesh; 27.vi.1989; coll. H.C. Ghosh. 3 exs., Z.S.I. Reg. No. An 3233/1. Eden Gardens, Kolkata; 4.viii.1999; coll. A. Aich.

Distribution : INDIA : Bihar, Tripura, Uttar Pradesh and West Bengal.

25. *Lenogaster chittagongensis* (Stephenson)

1917. *Eudichogaster chittagongensis* Stephenson, *Rec. Indian Mus.*, **13** : 411.

Material examined : 5 exs., Z.S.I. Reg. No. An 3234/1; Eden Gardens, Kolkata, West Bengal; 4.viii.1999; 2 exs., Z.S.I. Reg. No. An 3236/1; Rabindra Sadan compound, Kolkata, West Bengal; 21d.vii.1999; coll. A. Aich. 2 exs., Z.S.I. Reg. No. An 3235/1; Z.S.I., F.P.S. Building lawn, Kolkata, West Bengal; 27.vi.1999; coll. A. Aich & G.C. Roy.

Distribution : INDIA : West Bengal : Kolkata (present record), Himachal Pradesh, Jammu & Kashmir.

Elsewhere : Bangla Desh and Burma.

Remarks : This species is recorded here for the first time from West Bengal also.

26. *Octochaetona beatrix* (Beddard, 1902)

1902. *Octochaetus beatrix* Beddard, *Ann. Mag. nat. Hist.* (ser. 7), **9** : 456.

Material examined : 1 ex., Z.S.I. Reg. No. An 1439/1; Jungle nr. canary Hill, Hazaribagh, Bihar; 2 25.ix.1938; coll. ? 7 exs., Z.S.I. Reg. No. An 1440/1; Rajgir, Bihar; 8.ix.1973; coll. T.D. Soota. 3 exs., Z.S.I. Reg. No. An 1441/1; Lohardaga, Bihar; Date of colln. ?; coll. ? 1 ex., Z.S.I. Reg. No. An 1567/1; Kaatra, Udhaupur Dist., Jammu & Kashmir; 12.vii.1965; coll. T.D. Soota. 2 exs., Z.S.I. Reg. No. An 1609/1; Banjaar village, Balaghat Dist., Madhya Pradesh; 6.ix.1957; coll. B. Biswas. 1 ex., Z.S.I. Reg. No. An 3086/1; P.W.D. Bungalow compound Gorakhpur, Gorakhpur Dist., Uttar Pradesh; j1d0.vi.1989; coll. H.C. Ghosh. 1 ex., Z.S.I. Reg. No. An 3232/1; Rabindra Sadan compound, Kolkata, West Bengal, 21.vii.1999; coll. A. Aick.

Distribution : INDIA : Assam, Gujarsat, Himachal Pradesh, Karnataka, Kashmir, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Uttar Pradesh and West Bengal.

Elsewhere : Pakistan; Nepal; Burma; Malay Peninsula; Philippines.

27. *Glyphidrilus tuberosus* Stephenson, 1916

1916. *Glyphidrilus tuberosus* Stephenson, *Rec. Indian Mus.*, **12** : 349.

Material examined : 56 exs., Z.S.I. Reg. No. An 3163/1; Chandipur, Orissa; 8.iii.1939; coll. ? 121 exs., Z.S.I. Reg. No. An 3166/1; Ramgarh, Hazaribagh Dist., Bihar; 26.xi.1968; coll. Raj Tilak.

Distribution : INDIA : Bihar : Ramgarh, Hazaribagh Dist; Orissa, Tamil Nadu, Tripura, West Bengal

Remarks : This is an endemic species and is recorded here for the first time from Bihar also.

28. *Gordiodrilus elegans morph paski* Stephenson 1928

1928. *Gordiodrilus paski* Stephenson, *Ann. Mag. nat. Hist.*, (ser, 10) : 1.

Material examined : 26 exs., Z.S.I. Reg. No. An 3165/1, Khirgam near Hazaribag Town, Hazaribag District, Bihar; 26.xi.1968; coll. Raj Tilak.

Distribution : INDIA : Andaman islands, Bihar-Khirgam, hazaribag District; Kamatak, West Bengal.

Elsewhere : Burma; West Indies.

18. genus *Ocnerodrilus* Eisen, 1878

29. *Ocnerodrilus occidentalis* 1878

1878. *Ocnerodrilus occidentalis* Eisen, *Nova Acta R Soc. Sci. Upsaliensis*, 3, **10**(4) : 218.

Material examined : 4 exs., Z.S.I. Reg. No. An 3244/1; Madanpur, West Champaran District, Valmiki Tigre project, Bihar; 10.vi.1993; coll. S. Chakraborty.

Distribution : INDIA : Andaman Islands, Kerala, Maharashtra, Orissa, Rajasthan, Uttar Pradesh.

Elsewhere : Rhodesia; South-west Africa; Palestine; Lebanon; Central Asia; Denmark; Pakistan; Italy; Greece; Sri Lanka; Burma; Singapur; China; Japan; Phillipines; USA and Mexico.

Remarks : This is a peregrine species originated from Central America. It has settled in some states of India and is now recorded here for the first time Bihar also.

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