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NEMATODE FAUNA OF LIVESTOCK AND POULTRY OF MEGHALAYA

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INTRODUCTION

An examination of literature on the helminth fauna of India shows that no major work so far has been done on the systematics of nematodes of livestock and poultry in Meghalaya. The region pertaining to present studies being of its own kind in India, i.e., super-humid climatic type, has an added importance in context of the kind and nature of parasitic infections among various hosts under these climatic conditions. Hence a survey was undertaken to establish the nematode parasite spectrum of livestock and poultry of the region. The present paper embodies the results of a two-years' survey work and incorporates the systematics of nematode parasites of livestock and poultry collected from various hosts of three districts of Meghalaya State.

A total of 26 species belonging to 19 genera and 13 families are recorded in the present communication. Barring a few, all other species are new records from the State; the species marked with an asterisk (*) refer to those that have been just mentioned in the various Annual Reports of Indian Council of Agricultural Research, NEH Region, Shillong to occur in the State. Three species, namely ***Capillaria annuata, C. contorta*** and ***Setaria bernardi*** are being recorded here for the first time from India.

Standard methods were followed in fixing and processing the parasites for examination. Identifications of specimens were accomplished following Yamaguti (1961). Baylis (1936, 1939) and CIH keys to the Nematode parasites of Vertebrates No. 1-10 (1974-1983). The number of specimens examined of a species, unless otherwise indicated, is more than ten. All measurements are in millimeters.

LIST OF COLLECTING STATIONS

The materials described herein was collected mainly from eastern and central parts of Meghalaya, represented by East and West Khasi Hills and Jaintia Hills Districts. This region lies at an altitude range of 400-1900 mASL. Detailed informations about collecting stations is given in Table 1 (also see text-fig.1).

Table 1. List of collecting stations for Nematodes of livestock and poultry of Meghalaya.

Locality	District	Approx. Latitude and Longitude	
		Lat. N	Long. E
1. Shillong	East Khasi Hills	25°34'	91°45'
2. Sohiong	East Khasi Hills	25°38'	91°40'
3. Mairang	West Khasi Hills	25°46'	91°32'
4. Markasa	West Khasi Hills	25°33'	91°20'
5. Nongstoin	West Khasi Hills	25°32'	90°15'
6. Riangdo	West Khasi Hills	25°43'	90°10'
7. Jowai	Jaintia Hills	25°25'	92°10'

LIST OF NEMATODES RECOVRED FROM LIVESTOCK AND POULTRY OF MEGHALAYA

The following is the list of nematodes recovered from live-stock and poultry of Meghalaya and discussed in this paper; all of them are based on the present study; species marked with an asterisk (*) are also mentioned in the Annual Reports of Indian Council of Agricultural Research, NEH Region, Shillong.

Family I. ASCARIDIDAE Baird, 1853
Subfamily Ascaridiae Baird, 1853: Hartwich, 1974
Genus *Ascaris* Linnaeus, 1758

1. *A. suum** Goeze, 1782
Host : Pig

Family II. ASCARIDIDAE Travassos, 1919
Genus *Ascaridia* Dujardin, 1845

2. *A. galli** (Schrank, 1788) Freeborn, 1923
Host : Fowl

Family III HETERAKIDAE Railliet et Henry, 1912
Subfamily Heterakinae Railliet et Henrry, 1912
Genus *Heterakis* Dujardin, 1945

3. *H. gallinae** (Gmelin, 1790) Freeborn, 1923
Host : Fowl

Family IV. KATHLANIDAE Lane, 1914: Travassos, 1918 Subfamily Cruziinae Travassos, 1917: Ortlepp, 1924
Genus *Pseudocruzia* Wolfgang, 1953

4. *P. orientalis* (Maplestone, 1930) Wolfgang, 1953
Host : Pig

Family V. STRONGYLOIDIDAE Chaitwood et McIntosh, 1934
Genus *Strongyloides* Grassi, 1879

5. *S. papillosus* (Wedl, 1856) Ransom, 1911
Host : Goat

Family VI. CHABERTIIDAE Popova, 1952: Lichtenfels, 1980
Subfamily Oesophagostominae Railliet, 1916
Genus *Bourgelatia* Railliet, Henry et Bauche, 1919

6. *B. diducta* Railliet, Henry et Bauche, 1919
Host : Pig

Genus *Oesophagostomum* Molin, 1861
Subgenus *Bosicola* Sandground, 1929

7. *O. (B.) radiatum* (Rudolphi, 1803) Travassos et Vogelsang, 1932
Host : Cow

Subgenus *Oesophagostomum* Molin, 1861

8. *O. (O) dentatum* (Rudolphi, 1803) Molin, 1861
Host : Pig

Subgenus *Proteracaecum* Railliet et Henry, 1913

9. *O. (P) columbianum* (Curtice, 1890) Railliet et Henry, 1913
Host : Goat

Subgenus *Hysteracrum* Railliet et Henry, 1913

10. *O. (H) aspersum R*ailliet et Henry, 1913
Host : Goat

Family VII. SYNGAMIDAE Leiper, 1912
Subfamily Stephanuriae Railliet, Henry et Bauche, 1919
Genus *Stephanurus* Diesing, 1839

11. *S. dentatus** Diesing, 1839
Host : Pig

Family VIII. ANCYLOSTOMATIDAE Looss, 1905
Subfamily Ancylostomatinae Looss, 1905
Genus *Globocephalus* Molin, 1861

12. *G. connorfilli* Lane, 1922
Host : Pig

Subfamily Bunostominae Railliet et Henry, 1909: Looss, 1911
Genus *Bunostomum* Railliet, 1902

13. *B. trigonocephalum* (Rudolphi, 1808) Railliet, 1902
Host : Goat

Family IX. TRICHOSTRONGYLIDAE Leiper, 1908: Leiper, 1912
Subfamily Haemonchinae Skrjabin et Schulz, 1937

Genus *Haemonchus* Cobb, 1898

14. *H. contortus* (Rudolphi, 1803) Cobb, 1898
Host : Goat

Genus *Mecistocirrus* Railliet et Henry, 1912

15. *M. digitatus* (Linstow, 1906) Railliet et Henry, 1912
Host : Cow

Family X. ONCHOCERCIDAE Leiper, 1911: Anderson et Bain, 1976
Subfamily Setariinae Yorke et Maplestone, 1926
Genus *Setaria* Viborg, 1795

16. *S. cervi* (Rudolphi, 1819) Baylis, 1936

17. *S. digitata* (Linstow, 1906) Railliet et Henry, 1911
Host : Cow

18. *S. bernardi* Railliet et Henry, 1911
Host : Pig

Family XI. SPIROCERCIDAE Chitwood et Wehr, 1932: Chabaud, 1975
Subfamily Ascaropsinae Alicata et McIntosh, 1933

19. *A. strongylina* (Rud., 1809)
Host - Pig

20. *A.dentata* (Linstow, 1904)
Host - Pig
Physocephalus

21. *P. sexalatus** ((Molin, 1860) Diesing, 1861
Host : Pig

Family XII. GNATHOSTOMATIDAE Railliet, 1895
Subfamily Gnathostomatinae (Railliet, 1895) Baylis et Lane, 1920

Genus *Gnathostoma* Owen, 1836

22. *G. doloresi* Tubangui, 1925
Host : Pig

Family XIII. TRICHURIDAE (Ransom,1911): Railliet, 1915
Subfamily Trichurinae Ransom, 1911

Genus *Trichuris* Roederer, 1761

23. *T. gldobulosa* (Linstow, 1901) Ransom, 1911

24. *T. ovis* (Abildgard, 1795) Smith, 1908
Host : Goat

Subfamily Capillariinae Railliet, 1915
Genus *Capillaria* Zeder, 1800

25. *C. annulata* (Molin, 1858) Cram, 1926

26. *C. contorta* (Creplin, 1839) Travassos, 1915

SYSTEMATIC ACCOUNT OF NEMATODES OF LIVESTOCK AND POULTRY OF MEGHALAYA

Following is the detailed account of various nematode species recorded in this study from their respective host (s):

Host : Pig *(Sus scrofa domestica L.)*

1. *Ascaris suum* Goeze, 1782

Material - Several♂♂, ♀♀ ; NEHU/Z-NM/1;
Location - small intestine; coll. A.K. Yadav.

Distribution. - Meghalaya : all the three districts.
Elsewhere : cosmopolitan.

Remarks - The species is of very common occurrence in this region and is one of the most widely occurring nematode parasites of the pig.

2. *Pseudocruzia orientalis* (Maplestone, 1930) Wolfgang, 1953
(Text-fig.2)

Material. - 2 ♂ & 4 ♀ ; NEHU/Z-NM/4; location - small intestine; coll. A.K. Yadav.
Distribution - Meghalaya : Shillong. Elsewhere : India
(Calcutta).

Remarks. - Originally described as *Cruzia orientalis* by Maplestone (1930) from pigs in Calcutta, the species was placed in a new genus *Pseudocruzia* erected by Wolfgang (1953) for its reception. Following Maplestone's record (1930) there has been hitherto no report of the occurrence of *P. orientalis* in suids elsewhere in India or abroad.

The original description given by Maplestone (1930) has been supplemented herein.

The position of vulva, not recorded earlier, was found to be at a distance of 6.48 - 7.92 from the anterior end. The male measures 0.70-0.72 and female, 0.73-0.76 in maximum thickness.

This species seems to be of very rare occurrence in pigs of India.

3. *Bourgelatia diducta* Railliet, Henry et Bauche, 1919

Material - Several ♂♂ &♀♀; NEHU/Z-NM/11;
location - small intestine; coll. A.K. Yadav.
Distribution - Meghalaya : all the three districts
Elsewhere : India (Bengal), Annam, Indonesia, and Japan.

Remarks - Of the various localities surveyed, Nongstoin showed a higher prevalence of infection probably because it lies at a relatively low altitude.

4. *Oesophagostomum (Oesophagostomum) dentatum*
(Rudolphi, 1803) Molin, 1861

Material - Several ♂♂ &♀♀; NEHU/Z-NM/10; location - small intestine; coll. A.K. Yadav.

Distribution - Meghalaya : all the three districts.
Elsewhere : India (Chandigarh, Calcutta); cosmopolitan.

Remarks. - The species closely resembles in general appearance O. *quadrispinulatum* (Marcone, 1901) Alicata, 1935 also parasitizing the same host only the shape of the oesophagus (oval) and the tail length (comparatively short) enable us to differentiate the present species from the latter species, in which oesophagus has a small but distinct swelling at its anterior end.

The infection is very common in the hosts and the species is quite widely distributed.

5. ***Stephanurus dentatus*** Diesing, 1839

Material. - Several ♂♂ & ♀♀; NEHU/Z-NM/5; location - renal and perirenal tissue; coll. A.K. Yadav.

Distribution. - Meghalaya : Shillong, Nongstoin, Mairang and Jowai. Elsewhere : India (Calcutta), Annam, Sumatra, Java and West Indies.

Remarks. - According to Baylis (1936) the Indian origin of the specimens recorded as *S. dentatus* in the collection of the Zoological survey of India by Baylis and Daubney (1935) is doubtful as this material was supposed to have come from the West Indies. The species occurs rather less commonly in domestic pigs of the State.

6. ***Globocephalus connorfilli*** Lane, 1922

Material. - Several ♂♂ & ♀♀; NEHU/Z-NM/9; location - small intestine; coll. A.K. Yadav.

Distribution. - Meghalaya : Shillong, Nongstoin; Riangdo and Sohiong. Elsewhere : India (Calcutta), Europe, Samoa, Canton, Luzon, Porto Rico and U.S.A.

Remarks. - Yamaguti (1961) considered this species a synonym of *G. urosubulatus* (Allessandrini, 1909). However, Maplestone (1930) and Popova (1955) recognized the two as distinct species. The present authors are of the opinion that due to the character, i.e., bases of teeth in the buccal capsule not reaching its posterior end, it is worth regarding *G. connorfilli* as a valid species.

The species occurs commonly in the pigs of the State. The specimens are of very small size (4-5 long) and hence may be overlooked in a visual examination of the alimentary canal. The species has been rather rarely reported.

7. ***Setaria bernardi*** Railliet et Henry, 1911
(Text - fig. 3)

Material. - 1♂ & 5♀♀; NEHU/Z-NM/3; location - peritoneal cavity; coll. A.K. Yadav.

Distribution. - Meghalaya : Shillong and Nongstoin.
Elsewhere : Japan and Burma.

Male. - Body 95 long, 0.63 wide; oesophagus 10.89 long, anterior portion 0.77 long and 0.09 wide, posterior portion 10.12 long 0.21 wide; tail 0.18 long; lateral appendages and postdeirid and lie at a distance of 50μ and 0.78, respectively from posterior end; spicules unequal and dissimilar, smaller 0.18 and longer 0.34 long.

Female.-105-220 long, 0.67-0.99 wide, Oesophagus 9.1-10.2 long, anterior portion 0.96-1.16 long and 0.10 wide,posterior portion 8.20-9.04 long and 0.32 wide; tail 0.54-0.79 long; lateral appendages and postdeirid lie at a distance of 29-45m and 1.98-2.40, respectively from posterior end; vulva 0.40-0.64 from anterior end.

Remarks. - Besides *S. bernardi* three more species of the genus have been reported from Suidae of the world viz. *S. congolensis* Railliet et Henrey, 1911; *S. thomasi* Sandosham, 1954 and *S. castroi* Ortlepp, 1964. The present form can be distinguished from these in possessing an oblong peribuccal crown and also in the general appearance of the tail end. The morphometric measurements of the present specimens also tally with those described by Shoho and Machida, 1979 from Japan except for minor variations in the length of the body, i.e., male 95 and female 105-220.

The species is being reported for the first time from pigs of India and seems to be of very rare occurrence in these hosts.

8. *Ascarops strongylina* (Rudolphi, 1809) Alicata et McIntosh, 1933

Material. - Several ♂♂ & ♀♀ ; NEHU/Z-NM/17; location-stomach; coll. A.K. Yadav.

Distribution. - Meghalaya : Shillong, Nongstoin and Jowai. Elsewhere : India (Chandigarh), Europe, Africa, Australia, Formosa, Ceylon, U.S.A. and China.

Remarks. - This genus comprises only two known species so far represented in the suids of the world, and the body length alone, i.e., 12-21.2, enables us to differentiate *A. strongylina* from *A. dentata;* in the latter the body is 20-46 long. Of the various localities surveyed, Nongstoin showed a higher prevalence of infection.

9. *Ascarops dentata* (Linstow, 1904) Alicata et McIntosh, 1933

Material. - Several ♂♂ & ♀♀ ; NEHU/Z-NM/8; location - small intestine; coll A.K. Yadav.

Distribution. - Meghalaya : Shillong, Nongstoin, Markasa and Sohiong. Elsewhere : India (Chandigarh), China, Indonesia, Malaya, Chailaw, Ceylon and Borneo.

Remarks. - For this species also, the prevalence was found to be more in the hosts from Nongstoin, for the probable reason already stated.

10. ***Physocephalus sexalatus*** (Molin, 1860) Diesing, 1861

Material.-1♂ & 5♀♀; NEHU/Z-NM/6; location - stomach and small intestine; coll. A.K. Yadav.

Distribution. - Meghalaya : Shillong and Nongstoin; Elsewhere : India (Chandigarh), South America, Colombia, Europe, Africa and Ceylon.

Remarks. - The presence of a small sharp papilla on each side in front of the tip of the tail as mentioned by Maplestone (1930) could not be traced out in the specimens studied. The species is of very rare occurrence and the intensity of infection is also very low.

11. ***Gnathostoma doloresi*** Tubangui, 1925

Material. - 1♂ & 4♀♀ ; NEHU/Z-NM/2; location - gastric wall; coll. A.K. Yadav.

Distribution. - Meghalaya: Shillong and Nongstoin; Elsewhere : India (Calcutta), Phillippines, Malaya and Japan.

Remarks. - Maplestone (1930) described this species from pigs in Calcutta. Except for the number of rows of hooks on the head, which was observed as 8 in the present specimens, the other observations tally with the earlier description. The species has been rather rarely reported. Host : Goat *(Capra hircus L.)*

1. ***Strongyloides papillosus*** (Wedl, 1856) Ransom, 1911

Material. - 1 ♀ ; NEHU/Z-NM/22; location - duodenum; coll. A.K. Yadav.

Distribution.- Meghalaya : Shillong. Elsewhere : cosmopolitan.

Remarks. - The species occurs rarely in the hosts of the State as only a single specimen was recovered during present exploration.

2. ***Oesophagostomum (Proteracaecum) Columbianum*** (Curtice, 1890) Railliet et Henry, 1913

Material. - Several ♂♂ &♀♀ ; NEHU/Z-NM/19; location - large intestine; coll. A.K. Yadav.

Distribution. - Meghalaya; Shillong, Nongstoin, Markasa and Sohiong. Elsewhere : cosmopolitan.

Remarks. - Except for the gubernaculum which could not be traced out in the present specimens, all other observations tally with the description of Baylis (1936).

The species occurs commonly in the goats of the State. As a general observation female specimens outnumbered the male in the majority of the samples.

3. ***Oesophagostomum (Hysteracrum) aspersum*** Railliet et Henry, 1913

Material. - Several ♂♂ & ♀♀ ; NEHU/Z-NM/20; location - large intestine; coll. A.K. Yadav.

Distribution. - Meghalaya : all the three districts; Elsewhere : cosmopolitan.

Remarks. - In a few specimens cervical papillae could not be seen, while in some others the gubernaculum was absent.

The incidence of infection tends to be very high in the hosts.

4. ***Bunostomum trigonocephalum*** (Rudolphi, 1808) Railliet, 1902

Material. - Several ♂♂ & ♀♀ ; NEHU/Z-NM/21; location - small intestine; coll. A.K. Yadav.

Distribution. - Meghalaya ; all the three districts; Elsewhere : India (Bengal, Punjab), cosmopolitan.

Remarks. - The species is quite widely distributed.

5. ***Haemonchus contortus*** (Rudoldphi, 1808) Cobb. 1898

Material. - Several ♂♂ & ♀♀ ; NEHU/Z-NM/18; location - stomach; coll. A.K. Yadav.

Distribution. - Meghalaya : all the three districts.
Elsewhere : cosmopolitan.

Remarks. - Variation in the form of vulvar flaps were noted in a few specimens. They were bilobed in some and in others not as conspicuous as noted in the majority of the cases.

This species seems to be highly prevalent in the goats.

6. ***Trichuris qlobulosa*** (Linstow, 1901) Ransom, 1911
Material. - Several ♂♂ & ♀♀; NEHU/Z-NM/16; location - caecum; coll. A.K. Yadav.

Distribution. - Meghalaya : Shillong, Nongstoin and Jowai. Elsewhere : India (Calcutta, Punjab), Europe, Africa, China, Australia and Argentina.

Remarks. - The cuticle near the head end is slightly inflated - a feature not mentioned by Baylis (1936). The species is common in the goats and the infection was observed to occur all the year round.

7. ***Trichuris ovis*** (Ablidgard, 1795) Smitth, 1908
Material : 8 ♂♂ & 2 ♀♀ ; NEHU/Z-NM/17; location - caecum; coll. A.K. Yadav.

Distribution. - Meghalaya : Shillong, Nongstoin, Jowai and Shillong. Elsewhere : India (Chandigarh, Punjab, Bombay, Madras), Europe, Africa, Cyprus, Australia, New Zealand, Mongolia, China and Indonesia.

Remarks. - The number of females was invariably more than the males. Here also the infection was observed to occur all the year round.

Host : Cow ***(Bos Indicus L.)***

1. ***Oesophagostomum (Bosicola) radiatum***
(Rusolphi 1803) Travassos et Vogelsang, 1932.

Material. - Several ♂♂ & ♀♀ ; NEHU/Z-NM/25; location - small intestine; coll. A.K. Yadav.

Distribution. - Meghalaya : Shillong, Nongstoin and Markasa. Elsewhere : cosmopolitan.

Remarks. - Agreeing with the subgeneric divisions of the genus by Railliet et Henry (1913) Travassos and Vogelsang (1932) added ***Bosicola*** Sandground, 1929 as another subgenus under ***Oesophagostomum.*** However, Baylis (1936) described this species as ***Bosicola radiatus*** (Rudolphi, 1803).

The present observations tally with those of Baylis (1936) in all major aspects excepting the cervical grove which was found to be more prominent herein.

2. ***Mecistocirrus digitatus*** (Linstow 1906)
Railliet et Henry, 1912

Material. - Several ♂♂ & ♀♀ : NEHU/Z-NM/26;
Location - small intestine; coll. A.K. Yadav.
Distribution. - Meghalaya : Shillong, Nongstoin and Riangdo. Elsewhere : India (Calcutta, Punjab), China, Taiwan, Indonesia, Philippines, Japan and USSR.

Remark. - The infection is not very common in the hosts.

3. *Setaria cervi* (Rudolphi, 1809) Baylis, 1936

Material. - Several ♂♂ &♀♀ ; NEHU/Z-NM/23; location - peritoneal cavity; coll. A.K. Yadav.

Distribution. - Meghalaya: all the three districts.
Elsewhere : India (U.P., Punjab), Ceylon and Burma.

Remarks. - The circlet of spikes at the posterior extremity of the body was not found to be so prominent in few female specimens as observed by Gupta and Kalia (1978). The species is very coommon in the hosts.

4. *Setaria digitata* (Lingtow, 1906) Railliet et Henry, 1911

Material. - Several ♂♂ &♀♀ ; NEHU/Z-NM/24; location - peritoneal cavity coll. A.K. Yadav.

Distribution.- Meghalaya: Shillong and Nongstoin. Elsewhere: India (Madras, Punjab), Ceylon, Burma, East Asia and Dahomey.

Remarks.- Bhalerao (1933) regarded *S. digitata* as a synonym of *S. labiato-papillosa* (Alessandrini, 1838). Baylis (1936) considered it a synonym of *S. cervi.* In agreement with Yamaguti (1961) the present authors consider *S. digitata* a valid species because of the number of pre-and post-anal papillae and the presence of prominent cephalic papillae.

The species occurs very commonly in the hosts.
Host : Fowl *(Gallus qallus domesticus L.)*

1. *Ascaridia galli* (Schrank, 1788) Freeborn, 1923

Material. - Several ♂♂ &♀♀ ; NEHU/Z-NB/12; location - small intestine; coll. A.K. Yadav.

Distribution. - Meghalaya : all the three districts. Elsewhere : India (Behrampore, Calcutta, Madras), Europe and Japan and Collombo.

Remarks. - Of the three pairs of subterminal papillae, the last pair is the smallest and not the first pair as reported by Deo (1964).

The species is very common in the poultry of the State. The infection was observed to occur throughout the year.

2. ***Heterakis gallinae*** (Gmelin, 1790) Freeborn, 1923

Material. - Several ♂♂ &♀♀ ; NEHU/Z-NB/13; location - caecum; coll. A.K. Yadav.

Distribution. - Meghalaya : all the three districts. Elsewhere : India (Chandigarh, Punjab, Himachal Pradesh, Calcutta and Europe.

Remarks. - In a few specimens, instead of twelve pairs of caudal papillae as reported by Deo (1964), 13 pairs were observed with one additional pair of papillae just at the base of the first pair of caudal papillae.

The species occurs commonly in the poultry of the State.

3. ***Capillaria annulata*** (Molin, 1858)
Cram, 1926
Material. - Several ♂♂ &♀♀ ; NEHU/Z-NB/14; location - caecum; coll. A.K. Yadav.

Distribution. - Meghalaya : Shillong and nongstoin. Elsewhere : Europe, Asia, South and North America.

Remarks. - This is the first record of the occurrence of ***C. annuata*** from India. The specimens are very thin and may be overlooked in a visual examination of the organ.

The specimens in the present study lacked the anterior cuticular swelling aand the folds, probably due to shrinkage during preservation (Deo, 1964).

4. ***Capillaria contorta*** (Creplin, 1939)
Travassos, 1915
Material. - Several ♂♂ &♀♀ ; NEHU/Z-NB/15; location - caecum; coll. A.K. Yadav.

Distribution. - Meghalaya : Shillong, Nongstoin and Riangdo Elsewhere : South and North-America, Europe and Asia.

Remarks. - The species is being reported for the first time from India and seems to be of very rare occurrence in these hosts. The worms are filiform, thread-like and hence may be overlooked in a visual examination of the organ.

The hair-like processes on the spicule sheath were not found to be prominent, all other observations tally with the description provided by Deo (1954).

SUMMARY

1. This paper presents the spectrum of nematodes of live-stock and poultry of Meghalaya. Twenty six species of nematodes belonging to 19 genera and 13 families are reported herein.

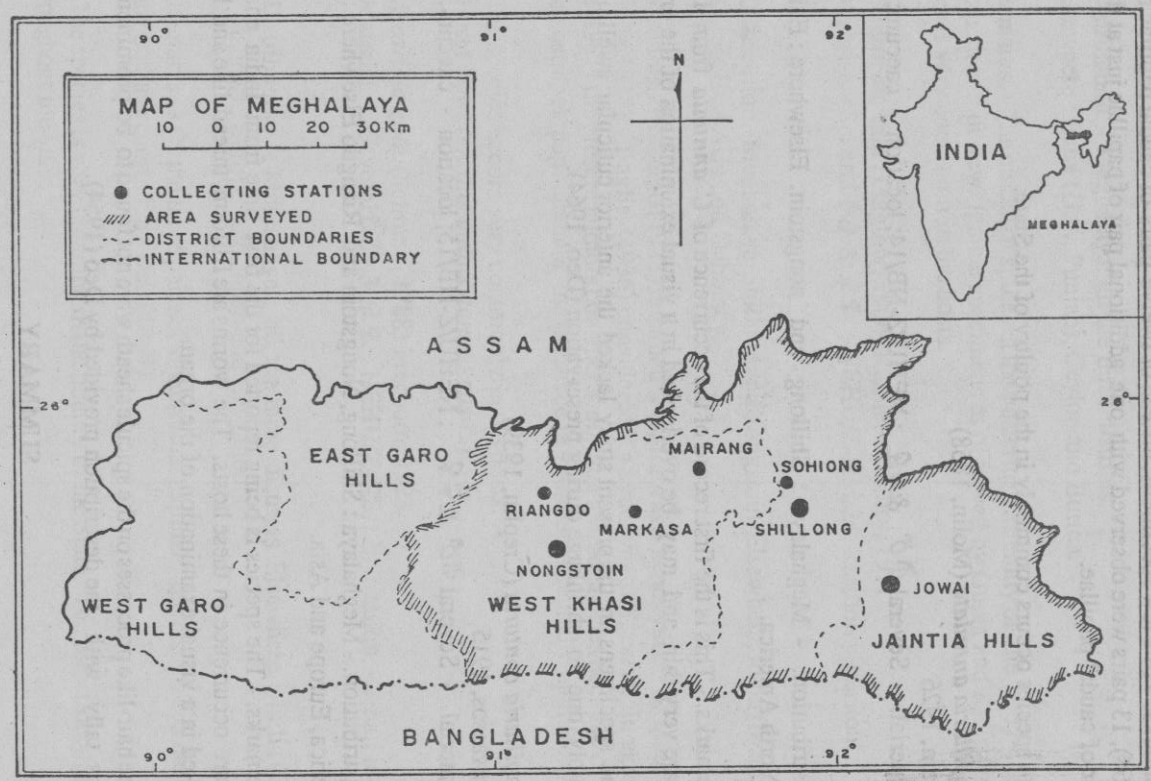

Fig. 1 - Map of Meghalaya, showing the collecting Stations for Nematodes.

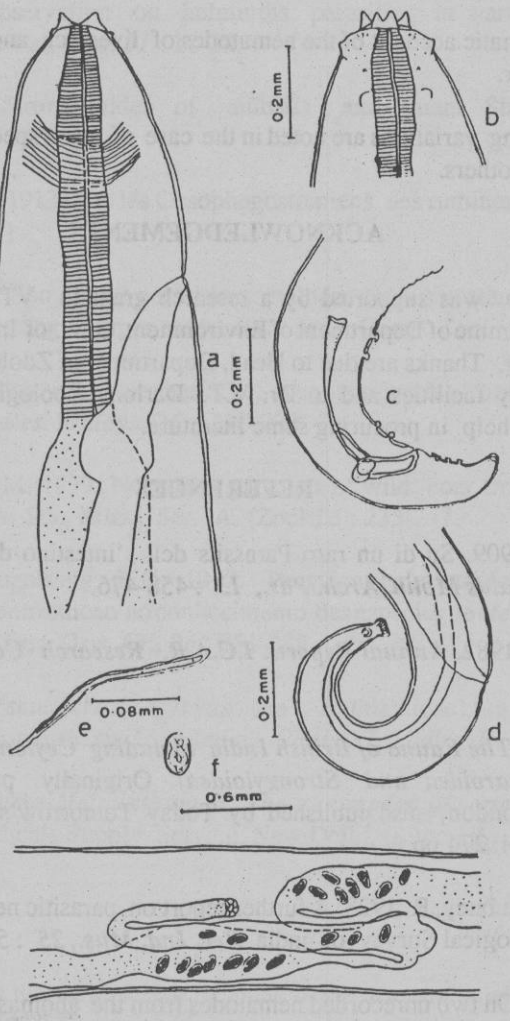

Fig. 2. - *Pseudocruzia orientalis* (Maplestone) Wolfgang - Vulvar region.

Fig.3. - *Setaria bernardi* Railliet et Henry (a) ♀ anterior end (dorsal view), b.♂ anterior en (lateral view), C. posterior end showing caudal papillae, d.♀ posterior end, e. egg, f. larvae.

2. Except a few, most species are first records from Meghalaya. Three species namely, *Setaria bernardi, Capillaria annuata* and *C. contorta* constitute new records from India.

3. A systematic account of the nematodes of livestock and poultry of Meghalaya is included in the paper.

4. Interesting variations are noted in the case of some species, while the description is supplemented for others.

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REFERENCES

Alessandrini, G. 1909. Su di un raro Parassits dell 'intestino del maiale e sul Genere *Globocephalus Molin. Arch. Par., 13* : 458-476.

Anonymous 1980-1982. *Annual Reports. I.C.A.R. Research Complex for NEH Region, Shillong.*

Baylis, H.A. 1936. *The Fauna of British India including Ceylon and Burma. Nematoda Vol.I (Ascaroidea and Strongyloidea).* Originally published by Taylor and Francis, London, also published by Today Tomorrow's Printers and Publishers, New Deelhi, 274 pp.

Baylis, H.A. and Daubney, R. 1923. A further report on parasitic nematodes in the collection of the Zoological Survey of india. *Rec. Ind. Mus., 25* : 551-578.

Bhalerao, G. 1933. On two unrecorded nematodes from the abomasum of cattle in India. *Ind. J. Vet. Sc. & Anim. Husb., 3* : 166-173.

CIH Keys to the Nematode Parasites of Vertebrates. Nos. 1-10. 1974-1983. Commonwealth Agricultural Bureaux, Farnham, Royal, Bucks, England.

Deo, P.G. 1964. Roundworms of Poultry. *Science Monograph. I.C.A.R. Animal Husbandry Series No.3*, New Delhi, 146pp.

Gupta, N.K. and Kalia, D.C. 1978. Nematodes of some livestock animals in India. Part I. *Rev. Iber. Parasitol., 38* : 35-61.

Maplestone, P.A. 1930. Nematode parasites of pigs in Bengal. *Rec. Ind. Mus., 32* : 77-105.

Ortlepp, R.J. 1964. Observation on helminths parasitic in warthogs and bughpigs. *Onderstepoort J. Vet. Res., 31* : 11-38.

Popova, T.I. 1955. Strongyloidea of animals and man. Strongylidae. *Osnovy nematodologii, 5 :* 223 pp.

Railliet, A. and Henry, A. 1913. Sus les Oesophagostomiens des ruminants. *Bull. Soo. Path. Exot., 6 :* 506-511.

Sandgraound, J.H. 1929. Some new parasitic nematodes from Yucatan (Mexico), including a new genus of Strongyle from cattle. *Bull. Mus. Comp. Zool., 69* : 515-524.

Sandosham. A.A. 1954. Malaysian parasites XV. Seven new worms from miscellaneous hosts *Stud. Inst. Med. Res. Malaya, 26* : 210-226.

Shoho, C. and Machida, M. 1979. Nematode parasites of wild boar from Iriomate Island, Japan, *Bull. Nath. Sci. Mus.,* Ser. A. (Zool.) *5* : 235-247.

Travassos, L.P. and Vogelsang, E.G. 1932. Pesquizas helminthologicas realizadas em Hamburgo. X. contribuicao ao conhecimento des especies de *Oesophagostomum* dos primatas. *Mem. Inst. Osw. Cr., 26* : 251-238.

Wolfgang, R.W. 1953. *Pseudocruzia* (Oxyuroidea : Kathlaniidae), a new genus of the nematode from domestic swine in India. *Canad. J. Zool., 31* : 16-19.

Yamaguti, S. 1961. *Systema Helminthum 3. The nematodes of vertebrates.* International Books and Periodicals Supply Service, New Delhi, (Repr. ed.), Pts. I & II, 1261pp.

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* References to authors of the various taxa included in the text are cited in bibliographies in Yamaguti (1961) and CIH Keys.

** Not seen in original.