Rec. zool. Surv. India : **108**(Part–1) : 25-31, 2008

A NEW SPECIES *MYLONCHULUS WASIMI* (MONONCHIDA : NEMATODA) FROM SOUTH 24-PARGANAS, W.B., INDIA

TIASI JANA[1]*, AMALENDU CHATTERJEE[1] AND BUDDHADEB MANNA[2]

[1]*Nemathelminthes Section, Zoological Survey of India, 'M'- Block, New Alipore, Kolkata-700 053, West Bengal, India*

[2]*Department of Zoology, Parasitology Laboratory, University of Calcutta, Kolkata-700 019, West Bengal, India*

INTRODUCTION

A new species *Mylonchulus wasimi* n. sp. under the genus *Mylonchulus* Cobb (1916) from South 24-Parganas, West Bengal, India, has been described and illustrated. No male, but eight female representatives are found under this proposed new species. The genus *Mylonchulus* is under the family Mylonchulidae Jairajpuri (1969) and subfamily Mylonchulinae Jairajpuri (1969). The present species was collected during July, 2004. Jairajpuri and Khan (1981) mentioned 34 species under the genus *Mylonchulus* and Andrassy (1992) provided the key of 56 species under this genus.

MATERIALS AND METHODS

Nematodes were extracted from soil samples using 'Baermann's Funnel Method' (Christie and Perry, 1951), fixed in hot, diluted 4% FA (formalin-acetic acid mixture) (Seinhorst, 1966), mounted in anhydrous glycerin and sealed properly. Preserved specimens were observed under different magnifications with an Olympus BX-51 trinocular light microscope (Olympus Inc., Japan). Figures were drawn with the aid of a Camera Lucida attached to the microscope. Images were captured with a CCD digital camera system (CoolSnapPro) integrated with the microscope.

**Corresponding author : e-mail : tiasi@rediffmail.com*

DESCRIPTION OF SPECIES

Mylonchulus wasimi n. sp.
(Fig. 1, 2; Table 1)

Measurements : See Table 1.

Female : Body length medium, cuticle thin. Dorsal tooth large, opposed by nine regular transverse rows of denticles and a clear sub-ventral tooth (length of which is 1/3rd of the dorsal tooth length); amphid aperture cup-shaped and its opening 13.8% of the adjacent body width, buccal capsule mylonchuloid type. Nerve ring situated at about 22% of oesophageal length from anterior end. Oesophagus long, slender; oesophago-intestinal junction non-tuberculate. Gonad didelphic-amphidelphic, anterior gonad shorter than the posterior gonad mostly; ovary reflexed at both the side, *pars proximalis*, *pars refringes* and *pars distalis* vagina are prominent. A distinct lip-like protuberance at the opening of vulval region; one pre- and one post-advulval papillae present, though variations in their number (pre-advulval papillae: 0-2 and post-advulval papillae: 0-2) were found. Tail one anal diameter long. Shape of the tail is digit-like and dorsally bent. Caudal glands three in number, large and much developed; clear spinneret with sub-terminal opening.

Male : Not found.

Juveniles : Ten juveniles were collected. General morphology is similar to that of female specimens. Amphid, nerve ring and caudal glands indistinct but spinneret conspicuous.

Type Locality and Type habitat : Soil samples associated with guava (*Psidium guajava* L.) tree were collected during July, 2004 from district South 24-Parganas (22°22.64' N, 88°25.7' E), West Bengal, India.

Type specimens : Slides containing holotype and paratypes of *M. wasimi* n. sp. have been deposited at National Zoological Collection of Zoological Survey of India with following registration numbers: WN950 (Holotype with two female paratypes), WN951 (three female paratypes), WN952 (one female paratype) and WN953 (one female paratype).

Differential Diagnosis and Relationships : The proposed new species is close to *M. vulvapapillatus* Altherr in Altherr and Delamare Deboutteville (1972). It is also comparable to *M. neocontractus* Patil and Khan (1982), *M. parabrachyurus* (Thorne, 1924), Schneider, 1939, *M. dentatus* Jairajpuri (1970) and *M. sigmaturus* Cobb (1917).

M. wasimi n. sp. is larger than *M. neocontractus* (L = 1.5-1.85 mm vs 0.8-1.0mm), and has nine regular transverse rows of denticles (vs four), other measurements are also different, 'c' higher (35.61-46.07 vs 25-30), 'c′' lower (0.72-1.55 vs 2) and 'V' higher (60.95-74.4% vs 52-57%).

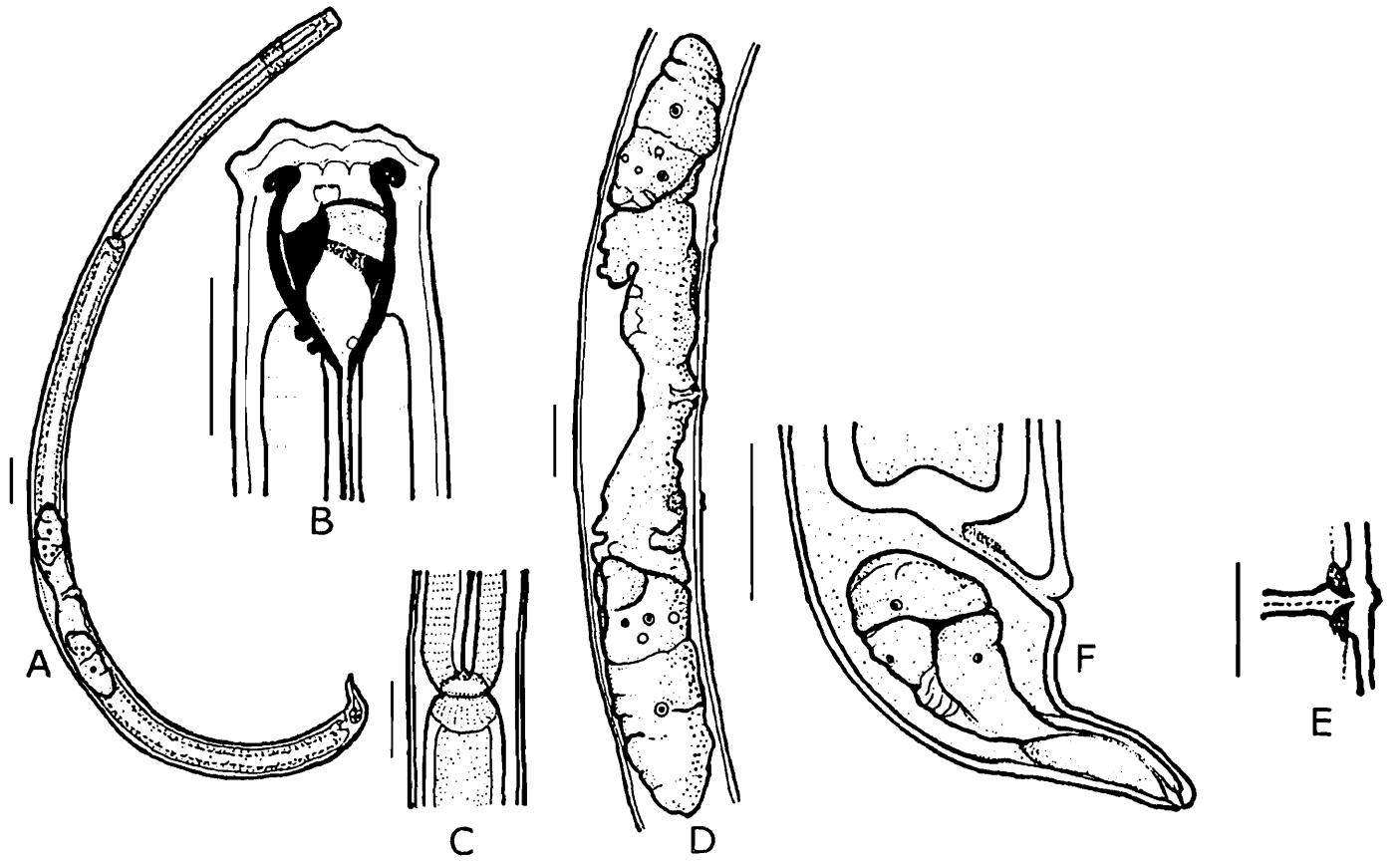

Fig. 1 : *Mylonchulus wasimi* n. sp. (Camera Lucida drawings)

A. Entire body of female, B. Head region, C. Nontuberculate oesophago-intestinal junction, D. Gonad (didelphic-amphidelphic), E. Vulval region, F. Tail region. (Scale bars : A= 50 µm; B, F = 12.5 µm; C, D = 25 µm; E = 6.25 µm)

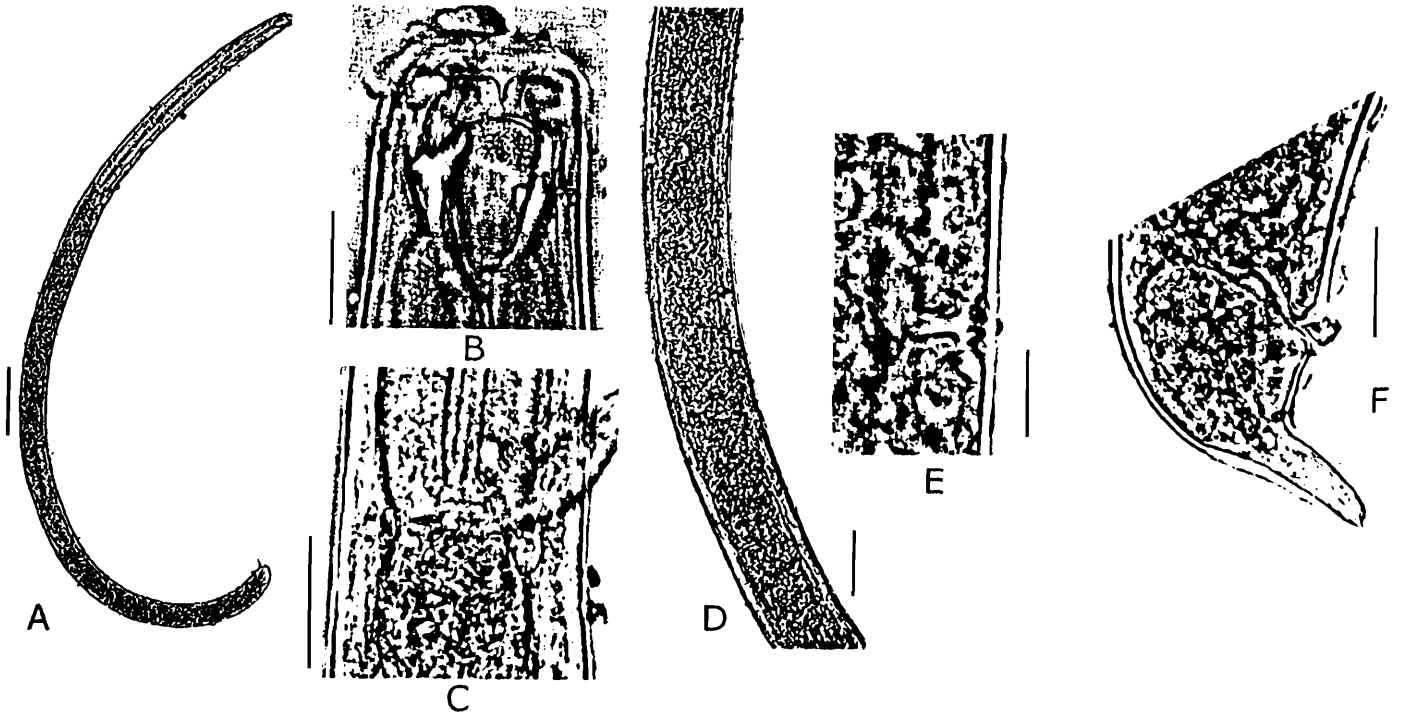

Fig. 2 : *Mylonchulus wasimi* n. sp. (Photomicrographs)

A. Entire body of female, B. Head region, C. Oesophago-intestinal junction, D. Gonad (didelphic-amphidelphic), E. Vulval region, F. Tail region. (Scale bars : A= 100 µm; B = 12.5 µm; C, D, E, F = 25 µm.

Table 1. : Measurements of *Mylonchulus wasimi* n. sp. (n = numbers, all measurements are in µm, only 'L is in mm).

	Holotype ♀	Paratype ♀♀ ranges (7)	Mean ± SD
L	1.75	1.50–1.85	1.66 ± 0.13
a	32.88	26.94–36.50	31.83 ± 3.34
b	3.53	3.53–3.79	3.63 ± 0.10
c	40.46	35.23–46.07	40.10 ± 3.76
c'	1	0.72–1.38	1.12 ± 0.21
V	62.74	60.95–67.32	64.20 ± 1.99
G1	12.12	11.93–17.41	14.44 ± 2.21
G2	15.1	13.51–19.33	15.78 ± 2.03
Cuticle thickness at head region	16.45	15.11–16.65	16.11 ± 0.60
Cuticle thickness at mid-body	16.25	15.13–16.25	15.63 ± 0.43
Cuticle thickness at tail region	16.4	15.89–16.72	16.34 ± 0.27
Lip hight	7.89	7.84–8.32	8.03 ± 0.18
Lip diameter	29.97	28.20–33.30	29.95 ± 1.57
Mid-body diameter	53.28	42.30–60.00	52.67 ± 6.30
Anal diameter	40.48	40.21–44.41	42.05 ± 1.58
Length of buccal cavity	29.97	28.20–33.30	30.36 ± 1.97
Diameter of buccal cavity	19.98	16.45–20.00	18.68 ± 1.80
Position of dorsal tooth from the base of buccal cavity	21.15	21.14–21.15	21.15 ± 0.00
% of dorsal tooth of total buccal cavity length	70.57	63.51–75.00	69.90 ± 4.40
Position of sub-ventral tooth from the base of buccal cavity	13.81	13.81–14.21	13.93 ± 0.13
Position of amphid from the anterior end	9.21	8.88–9.22	9.11 ± 0.12
Diameter of amphidial aperture	3.95	3.68–3.95	3.75 ± 0.09
Position of excretory pore from anterior end	115.36	101.32–178.66	124.7 ± 22.93
Length of oesophagus	496.17	415.95–506.16	458.04 ± 36.43
Length of cardia	12.5	11.88–13.33	12.62 ± 0.42
Diameter of cardia	25	25.00–26.98	26.07 ± 0.68
Position of nerve ring from anterior end	109.89	70.00–117.50	105.51 ± 14.67

Table 1. : *(Cont'd.)*

	Holotype ♀	Paratype ♀♀ ranges (7)	Mean ± SD
D	41.24	35.37–44.34	39.33 ± 3.90
AS1	30.98	25.64–34.80	30.49 ± 3.48
AS2	32.62	25.98–35.65	31.49 ± 3.74
PS1	65.41	42.35–65.41	58.98 ± 10.29
PS2	66.24	43.01–66.24	60.27 ± 10.66
Glandularium	291.55	236.56–297.36	272.31 ± 25.43
Anterior gonad	212.83	208.84–264.65	237.67 ± 23.35
Uterus	68.92	64.89–97.55	81.96 ± 12.60
Oviduct	70.93	70.64–102.25	88.15 ± 13.90
Ovary	72.98	54.36–73.85	67.56 ± 6.22
Posterior gonad	264.33	240.81–289.98	259.90 ± 17.53
Uterus	72.28	68.21–111.13	84.76 ± 14.65
Oviduct	88.8	74.98–102.62	92.08 ± 9.06
Ovary	103.25	66.44–103.25	83.04 ± 12.39
Position of vulva from anterior end	1098.9	972.90–1215.45	1066.73 ± 87.47
Total length of vagina	12.82	11.96–12.82	12.34 ± 0.31
Pars proximalis vagina	7.89	6.66–7.89	7.27 ± 0.45
Pars refringes vagina	2.96	2.88–3.54	3.12 ± 0.22
Pars distalis vagina	1.97	1.79–2.16	1.95 ± 0.14
cw	14.47	14.46–15.30	14.94 ± 0.34
Rectum length	27.38	25.52–28.00	27.18 ± 0.80
Tail length	43.29	32.90–45.00	41.67 ± 3.81
% of tail of total body length	2.47	2.16–2.89	2.52 ± 0.25

The proposed new species is also different from *M. parabrachyurus*. Though body size resembles, the overall measurements are different, 'c' higher (*vs* 24-25), 'c′' lower (*vs* 2) and transverse rows of denticles more in number (*vs* 6), shape of the tail is also different.

M. dentatus has 10-15 rows of transverse denticles, short body size. In this species spinneret opening is sub-terminal (*vs* terminal) and the other measurements are also different from the newly described species.

Transverse rows of denticles more in number (*vs* 7-8) in *M. wasimi* n. sp. than *M. sigmaturus*, shape of the tail is also different.

The proposed new species seems close to *M. vulvapapillatus* but differs in longer body (*vs* 1.4 mm), shorter tail length, thus a higher 'c' value (*vs* 30). The value of 'a' also higher (26.94-36.5 *vs* 23).

Taken together, the proposed new species has some unique features: (i) Nine regular transverse rows of denticles and a sub-ventral tooth (length of which is 1/3rd of the length of dorsal tooth), (ii) didelphic-amphidelphic gonad, (iii) vulva with vulval papillae and a small protuberance at the vulval opening, and (iv) three caudal glands highly developed with a sub-terminal spinneret opening.

Etymology : The name *Mylonchulus wasimi* n. sp. has been chosen after the name of eminent nematologist, Wasim Ahmad, Aligarh Muslim University, UP, India.

SUMMARY

The new species *Mylonchulus wasimi* n. sp. from South 24-Parganas, West Bengal, India, is described and illustrated along with affinities with closely related species under the genus *Mylonchulus*. Body medium sized (1.5-1.85 mm) with thin cuticle. Buccal cavity mylonchuloid type, consisting nine regular transeverse rows of denticles and a sub-ventral tooth. Gonad didelphic-amphidelphic, vulval papillae present, a distinct lip-like protuberance at the opening of vulval region; vagina with three distinct parts : *pars proximalis, pars refringes* and *pars distalis*. Tail about one anal diameter long, dorsally bent, digitate with three developed glands and sub-terminal spinneret opening.

ACKNOWLEDGEMENTS

We are thankful to the Director, Zoological Survey of India for providing laboratory facilities for this work.

REFERENCES

Altherr, E. and Delamare Deboutteville, C. 1972. Nematodes interstitiels des eaux douces des Etats-Unis d'Amérique (états de Washington, du Colorado et du Massachusetts) récoltés par C1. Delamare Deboutteville.- *Ann. Spéléol.*, **27**: 683-760.

Andrassy, I. 1992. A taxonomic survey of the family Mylonchulidae (Nematoda). *Opuscula Zoologica Budapest*, **XXI** : 11-35.

Christie, J.R. and Perry, V.G. 1951. Removing nematodes from soil. *Proceedings of Helminthological Society of Washington*, **17** : 106-108.

Cobb, N.A. 1916. Subdivisions of Mononchs. *Journal of Parasitology*, **2** : 195-196.

Cobb, N.A. 1917. The mononch (*Mononchus* Bastian, 1866), a genus of predatory nematodes. Contributions to a science of Nematology, VI. *Soil Science*, **3** : 431-486.

Jairajpuri, M.S. 1969. Studies on Mononchida of India. I. The genera *Hadronchus, Iotonchus* and *Miconchus* and a revised classification of Mononchida, new order. *Nematologica*, **15** : 557-581.

Jairajpuri, M.S. 1970. Studies on Mononchida of India. III. The genus *Mylonchulus* (family Mylonchulidae Jairajpuri, 1969). *Nematologica*, **16** : 434-456.

Jairajpuri, M.S. and Khan, W.U. 1981. *Predatory nematodes* (Mononchida) *with special reference to India.* Associated Publishing Company, New Delhi, 1-131pp.

Patil, K.J. and Khan, E. 1982. Taxonomic studies on nematodes of Vidarbha region of Maharashtra, India. III. One new and two known species of *Mylonchulus* (Nematoda: Mononchoidea). *Indian Journal of Nematology*, **12** : 158-160.

Schneider, W. 1939. Würmer oder Vermes. II. Fadenwürmer oder Nematoden. 1.Freilebende und pflanzenparasitische Nematoden. *Die Tierwelt Deutschlands*, **36** : 1-260.

Seinhorst, J.W. 1966. Killing nematodes for taxonomic study with hot f.a.4:1. *Nematologica*, **1** : 178.