Two new species of the genus *Scutylenchus* Jairajpuri, 1971 (Tylenchoidea : Nematoda) from Poland with a key to the species

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Summary

Two new species of the genus *Scutylenchus* Jairajpuri, 1971 are described. *S. thomasi* sp. n. and *S. tumensis* sp. n. differ from *S. tessellatus* (Goodey, 1952) Siddiqi, 1979 in the longer stylet, number of longitudinal striae and position of the excretory pore. *S. thomasi* sp. n. differs from *S. tumensis* sp. n. in body and tail shape, number of longitudinal striae, excretory pore position and width of annules at mid-body. *S. siddiqii* (Mulk, 1978) comb. n. and *S. longus* (Wu, 1969) comb. n. are proposed. A key to the species of genus *Scutylenchus* is presented.

Résumé

Deux nouvelles espèces polonaises du genre Scutylenchus *Jairajpuri, 1971 (Tylenchoidea : Nematoda) et clé des espèces*

Deux nouvelles espèces du genre *Scutylenchus* Jairajpuri, 1971 sont décrites. *S. thomasi* sp. n. et *S. tumensis* sp. n. diffèrent de *S. tessellatus* (Goodey, 1952) Siddiqi, 1979 par un stylet plus long, le nombre de stries longitudinales et la position du pore excréteur. *S. thomasi* sp. n. diffère de *S. tumensis* sp. n. par la longueur et la forme de la queue, le nombre de stries longitudinales, la position du pore excréteur et la largeur des anneaux à mi-corps. *S. siddiqii* (Mullk, 1978) comb. n. et *S. longus* (Wu, 1959) comb. n. sont proposés. Une clé des espèces du genre *Scutylenchus* a été établie.

Samples of organic, especially peat, soils were collected in various ecological zones of northern Poland. Nematodes were extracted by a centrifugation method, killed by hot 5% formaldehyde and processed to glycerine by Seinhorst's rapid method.

Scutylenchus thomasi sp. n.

(Fig. 1)

Dimensions

Population from Zarnowiec

Hololype female : L = 0.85 mm ; a = 25 ; b = 5.0 ; c = 13.0 ; c′ = 2.7 ; V = 55 ; MB = 50% ; stylet = 25 µm ; m = 56% ; tail = 65 µm.

Paralype females (n = 6) : L = 0.80-0.97 (0.88) mm; a = 23-27 (25) ; b = 5.0-6.2 (5.2) ; c = 10-14 (12) ; c′ = 2.3-3.4 (2.7) ; V = 52-56 (54) ; MB = 50% ; stylet = 25-27 (26) µm ; m = 54-58 (56) ; tail = 65-85 (70) µm.

Paralype males (n = 2) : L = 0.78-0.82 mm ; a = 26-27 ; b = 4.9-5.1 ; c = 6.5-7.7 ; c′ = 3.5-5.4 ; MB = 50-51% ; stylet = 25 µm ; m = 56% ; spicules = 30-34 µm ; gubernaculum = 7-8 µm.

Population from Glewice

Females (n = 4) : L = 0.84-0.87 mm ; a = 22-24 ; b = 5.2-6.7 ; c = 12-14 ; c′ = 2.4-2.7 ; V = 53 ; MB = 48-50% ; stylet = 24-27 µm ; m = 56-58,7% ; tail = 60-70 µm.

Males (n = 2) : L = 0.78-0.97 mm ; a = 24-27 ; b = 4.8-5.3 ; c = 7-10 ; c′ = 3.5-3.8 ; MB = 44-48% ; stylet = 25 µm ; m = 55% ; spicules = 33 µm ; gubernaculum = 8-10 µm.

Population from Wolin Island

Females (n = 4) : L = 0.77-0.93 mm ; a = 24-26 ; b = 4.8-6.0 ; c = 12-13 ; c′ = 2.6-3.1 ; V = 52-57 ; MB = 52-53% ; stylet = 26-28 µm ; m = 56-58% ; tail = 60-70 µm.

Description

Female : When heat relaxed, body slightly arcuate. At level of oesophageal-intestinal valve cuticle bears 50 longitudinal striae, near mid-body : 82-86, near anus : 68-72. Lip region hemispherical, bearing five to seven annules. Body annules averaging 1.2-1.7 (1.4) µm at mid-body. Cuticle 1.0-1.5 µm thick. Cuticle on tail terminus 7-10 (8) µm thick, h = 1.0-1.4 (1.2). Tail conoid to subcylindrical, with 40-

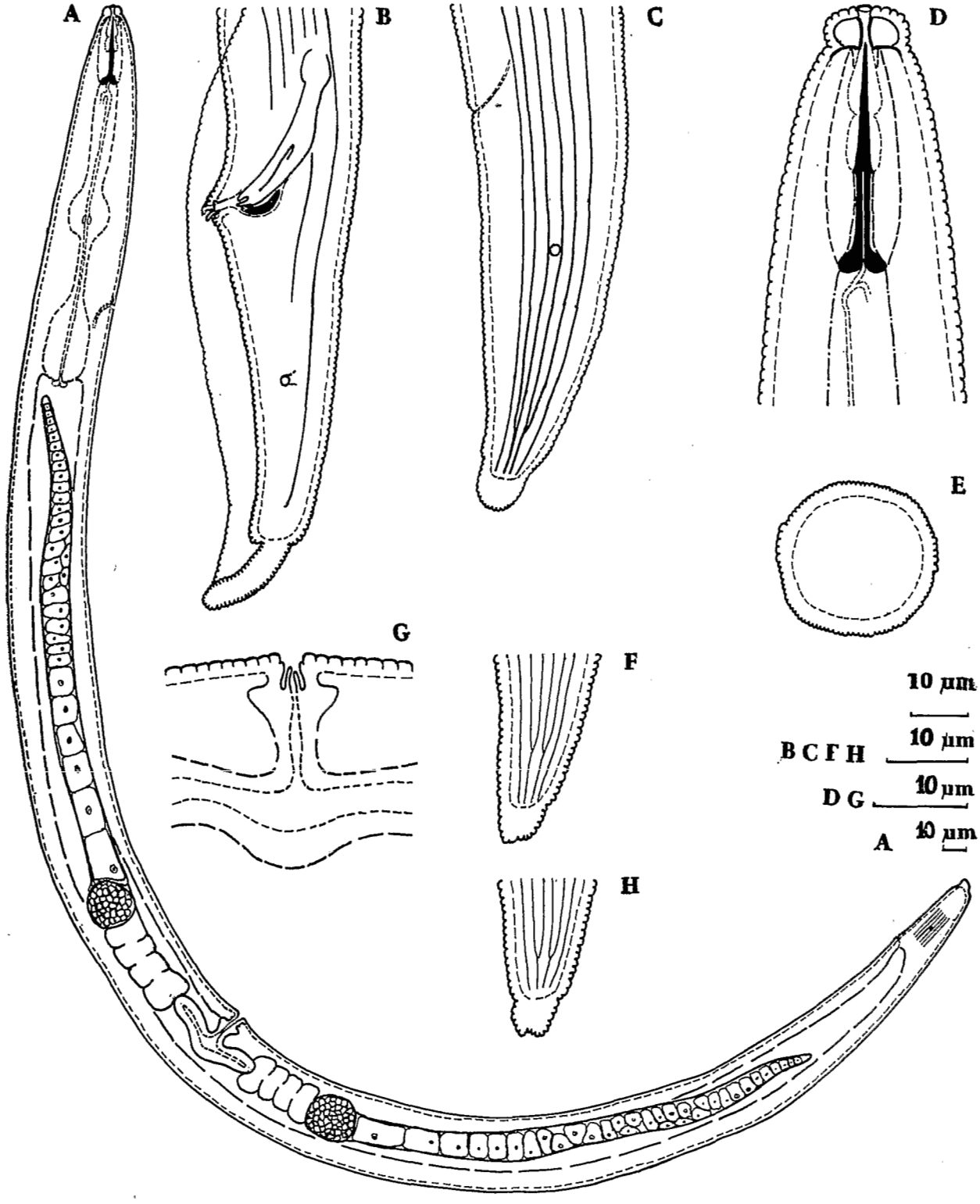

Fig. 1. *Scutylenchus thomasi* sp. n. Female. A : Entire female ; C : Tail ; D : Anterior end of body ; E : Transverse section at the middle of body ; F, H : Variations in tail terminus shape ; G : Vulval region. Male. B : Posterior end of body.

66 (51) annules counted on ventral side up to the tail tip. Tail terminus subhemispherical or bluntly pointed, irregularly annulated. Phasmids near the middle of tail length, 17-26 annules posterior to anus and 2.4-3.4 (2.8) µm in diameter. Cephalic framework slightly sclerotized. Hemizonid distinct, 3-5 µm long. Excretory pore 110-140 (125) µm from anterior body end or 78-84 annules from head base. Stylet's shaft 1.0-1.2 µm thick. Knobs oval 3-4 µm across, sloping backward. Orifice of dorsal oesophageal gland located 2-4 µm behind stylet knobs. Oesophagus 125-175 (160) µm long. Median bulb oval, basal oesophageal bulb slightly elongate. Cardia well developed, rounded. Ovary outstretched with oocytes in one row in a short zone. Spermatheca oval, with sperm. Vulval lips protruding. Vulval cavity small. Epiptygma double 2.5-3.5 (3.0) µm long. Vagina walls strongly thickened. Length of vagina equals 28-50 (36) percent of body width.

Male : Lip region, stylet and oesophagus as in female. Excretory pore 110-125 (114) µm from anterior end, located at 78th annule from head base. Oesophagus 155-160 µm long. Hemizonid distinct 4 µm long. Annule width averaging 1.3 µm near mid-body. Anterior edge of bursa 35-55 (47) µm from cloaca. Hypoptygma double. Tail tip with process, bearing 22-28 (24) annules. Phasmids 2.6-3.2 (2.8) µm in diameter. Tail with 18-26 (22) annules.

Type locality and habitat

Zarnowiec (CF 07 in UTM grid) in the province of Gdansk in peat soil of pH 6.8 around the roots of undentified grass. Specimens of the same species were found also in Glewice (VV 84) and Wolin Island (VV 78) in the province of Szczecin, again in peat soils around the roots of grasses.

Type specimens

Deposited as follows : holotype female with two paratype females and two paratype males in : Instytut Zoologii PAN, Wilcza 64, Warszawa,

Table 1

Comparison of the dimensions of some related species of the genus *Scutylenchus* Jairajpuri, 1971

Dimensions	S. longus *(Wu, 1969) comb. n.*	S. siddiqii *(Mulk, 1978) comb. n.*	S. koreanus *(Choi & Geraert, 1971) Siddiqi, 1979*	S. tessellatus *(Goodey, 1952) Siddiqi, 1979*	S. hexincisus *(Jairajpuri & Baqri 1968) Siddiqi, 1979*	S. thomasi *sp. n.*	S. tumensis *sp. n.*
n	20	20	?	8	5	15	15
L	1.1-1.4	0.8-1.2	0.7-0.9	0.7-0.9	0.8-1.1	0.8-1.0	1.0-1.2
a	32-39	23-34	30-44	28-32	32-39	22-27	29-37
b	5.2-7.1	4.8-6.4	5.1-6.1	4.8-6.4	6.0-8.2	4.8-6.7	5.8-7.4
c	15-20	18-25	12-16	12-16	18-23	10-14	14-18
c′	2.4-4.0	2.0-2.2	3.4-3.8	2.2-3.0	3.0-4.0	2.3-3.4	2.2-3.3
V	53-59	52-60	53-60	52-55	52-55	52-57	50-60
stylet (µm)	65-68	20-23	23-25	20	17-19	24-28	26-29
phasmids (% tail length)	30-50	30	13-35	40-45	50	45-50	30-50
tail annules	31-57	19-22	43-46	38-41	58-60	40-66	27-40
long. striae at mid-body	56-68	36-40	15-17	48-50	16	82-86	52-56
excretory pore from ant. end. (µm)	135-170	112-137	?	110-130	?	110-140	130-155
width of annules at mid-body (µm)	2.4-3.0	3.0-4.0	?	2.8-3.1	1.0	1.2-1.7	2.4-2.8

Poland. One paratype female in each of the following : Laboratorium voor Nematologie, Landbouwhogeschool, Wageningen, Netherlands ; Canadian National Nematode Collection, Biosystematics Research Institute, Ottawa, Ont. Canada K1A OC6 ; Nematology Department, Rothamsted Experimental Station, Harpenden, Herts AL5 2JQ England ; Department of Nematology. University of California, Riverside, Ca 92 521, USA ; I. A. R. I. Nematology Division, New Delhi, India. Two females and two males in Instytut Warzywnictwa, 96-100 Skierniewice, Poland. Two females in collection of author.

Diagnosis and relationships

S. thomasi sp. n. is similar to *S. tessellatus* (Goodey, 1952) Siddiqi, 1979, to *S. koreanus* (Choi & Geraert, 1971) Siddiqi, 1979 and to *S. siddiqii* (Mulk, 1978) comb. n. : they are compared in table 1. *S. thomasi* differs from *S. tessellatus* in the longer stylet, width of body annules, number of tail annules, and conoid shape of tail. Anterior edge of bursa in *S. thomasi* is located 35-55 µm from cloaca, while in *S. tessellatus :* 20-33 µm. It differs from *S. koreanus* in number of longitudinal striae and in number of incisures on lateral fields : *S. koreanus* has eight incisures. The species differs from *S. siddiqii* in the longer stylet, width of body annules, annulated tail terminus and stronger head sclerotization. It differs from *S. hexincisus* (Jairajpuri & Baqri, 1968) Siddiqi, 1979 n longer stylet and number of longitudinal striae.

Scutylenchus tumensis sp. n.

(Fig. 2)

Dimensions

Population from Tum

Holotype female : L = 1.1 mm ; a = 34 ; b = 6.4 ; c = 14 ; c′ = 3.2 ; V = 52 ; MB = 50% ; stylet = 29 µm ; m = 54% ; tail = 75 µm.

Paratype females (n = 3) : L = 0.96-1.2 mm ; a = 31-34 ; b = 6.0-6.8 ; c = 15-18 ; c′ = 2.5-3.3 ; V = 52-56 ; MB = 43-50% ; stylet = 27-29 µm ; m = 54-58% ; tail = 60-85 µm.

Paratype males : L = 0.9-1.05 mm ; a = 27-37 ; b = 5.8-6.7 ; c = 15-16.5 ; c′ = 2.4-2.9 ; MB = 48-50% ; stylet = 24-28 µm ; spicules = 26-30 µm ; gubernaculum = 10 µm ; tail = 55-70 µm.

Population from Wizna

Females (n = 8) : L = 1.0-1.25 (1.1) mm ; a = 31-34 (32) ; b = 5.9-7.5 (6.5) ; c = 15-18 (17) ; c′ = 2.5-3.1 (2.7) ; V = 50-60 (54) ; MB = 46-52 (49)% ; stylet = 26-29 (28) µm ; m = 57-61 (58)% ; tail = 60-70 (65) µm.

Population from Ziemiary

Females (n = 2) : L = 1.12-1.16 mm ; a = 32 ; b = 6.9-7.8 ; c = 16-18 ; c′ = 2.5-2.7 ; V = 54 ; MB = 50-54% ; stylet = 28 µm ; m = 58-62% ; tail = 70 µm.

Males (n = 3) : L = 0.94-1.06 mm ; a = 31 ; b = 6.0-7.1 ; c = 14.7-15.8 ; c′ = 2.6-2.7 ; MB = 47-50% ; stylet = 25-26 µm ; m = 58-61% ; spicules = 26-32 µm ; gubernaculum = 8-10 µm ; tail = 60-65 µm.

Population from Bukowno

Females (n = 3) : L = 1.03-1.1 mm ; a = 29-33 ; b = 5.8-6.8 ; c = 14-15.5 ; c′ = 2.5-2.9 ; V = 49-57 ; MB = 47-50% ; stylet = 26-28 µm ; m = 58-60% ; tail = 65-75 µm.

Population from Łeczyca

Female (n = 1) : L = 1.01 mm ; a = 30 ; b = 6.3 ; c = 17.5 ; c′ = 2.5 ; V = 53 ; MB = 45% ; stylet = 26 µm ; m = 54% ; tail = 60 µm.

Population from Kamien Pomorski

Female (n = 1) : L = 1.24 mm ; a = 37 ; b = 7.4 ; c = 15 ; c′ = 3.2 ; V = 53 ; MB = 52% ; stylet = 30 µm ; m = 56% ; tail = 85 µm.

Description

Female : Body arcuate or C-shaped when heat relaxed. At the level of oesophageal-intestinal valve 42-46 longitudinal striae ; near mid-body, 52-56 ; near anus, 48-52. Lip region hemispherical bearing five to eight annules. Width of body annules averaging 2.0-2.8 (2.4) µm at mid-body. Cuticle 1.5-2.0 µm thick. Cuticle on tail terminus 6-10 (8) µm thick, h = 1.4-2.1 (1.7). Tail cylindrical or subcylindrical, with 27-40 (34) annules counted on ventral side up to the tail tip. Tail terminus hemispherical or subhemispherical, irregularly annulated. Phasmids near middle of tail length, 8-14 annules posterior to anus and 2-3 µm in diameter. Cephalic framework slightly sclerotized. Hemizonid distinct, 4-6 µm long. Excretory pore 130-155 (142) µm from anterior body end or 55-68 annules from head base. Stylet's shaft 1-1.5 µm thick. Knobs oval, 3-3,5 µm across, sloping backward. Orifice of dorsal oesophageal gland located 2-3 µm behind stylet knobs. Oesophagus 140-185 (162) µm long. Median bulb oval, basal oesophageal bulb elongate. Cardia rounded. Ovary outstretched with oocytes in one row in a short zone. Spermatheca oval with sperm. Vulval lips protruding, vulval cavity small. Epiptygma double. Vagina wall thickened. Length of vagina equals 32-41 (38) percent of body width.

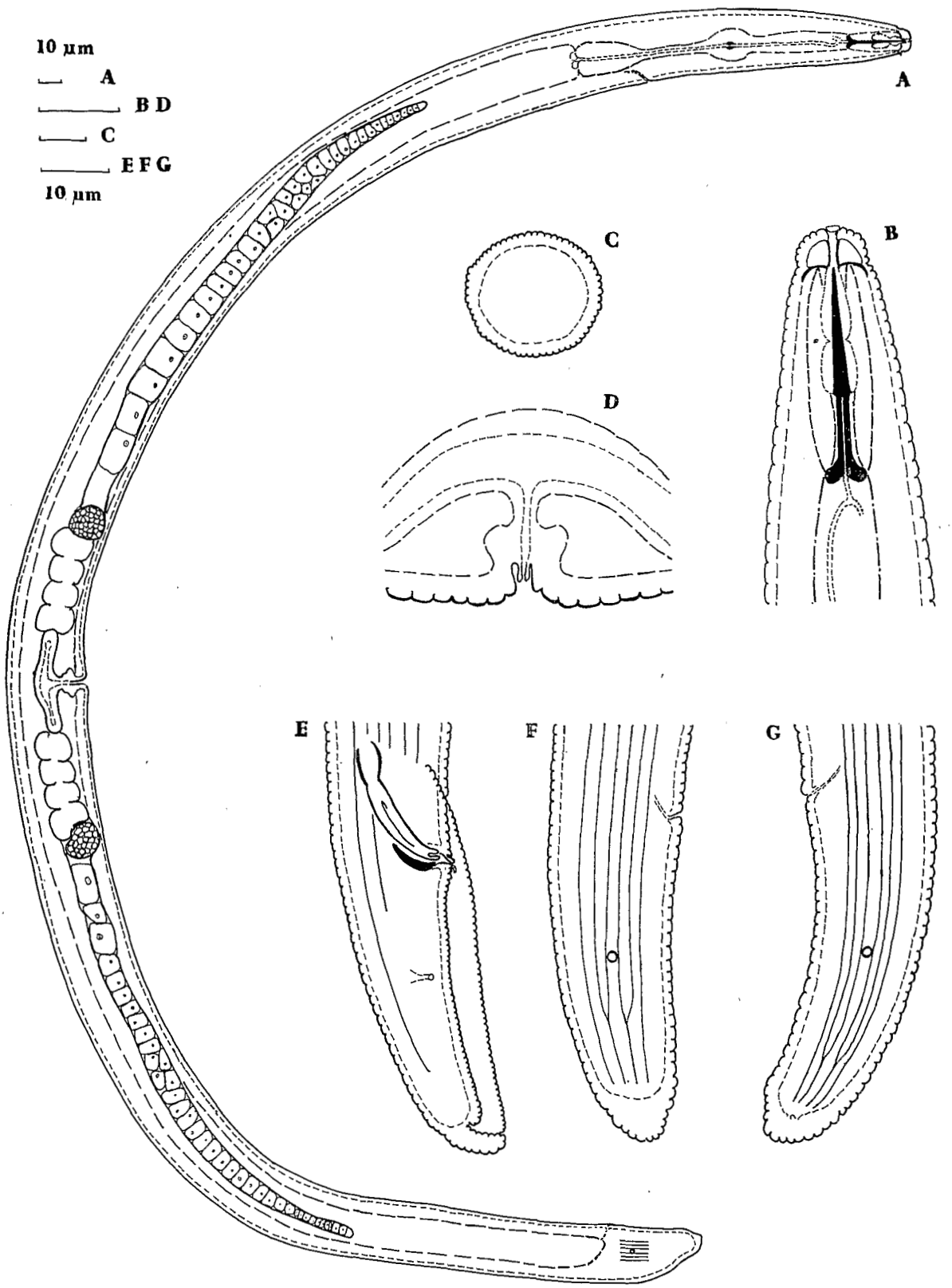

Fig. 2. *Scutylenchus tumensis* sp. n. Female. A : Entire female; B : Anterior and of body; C : Transwerse section at the middle of body; D : Vulval region; F, G : Variations in tail shape. Male. E: Posterior and of body.

Male : Body shape, lip region, stylet and oesophagus as in female. Excretory pore at 120-140 µm from anterior body end, located 52-66 (60) annules from the head base. Oesophagus 135-180 (155) µm long. Hemizonid distinct, 4-5 µm long. Annule width averaging 2.0-2.8 µm near mid-body. Anterior edge of bursa 10-20 µm from cloaca. Hypoptygma double. Tail tip with process bearing six to ten annules. Phasmids 2.0-2.6 (2.4) µm in diameter. Tail with 16-21 (18) annules.

TYPE LOCALITY AND HABITAT

Tum (CC 87 in UTM grid) in the province of Płock in the peat soil pH 6.4 around the roots of cauliflower. Specimens of the same species were found also in : Łeczyca (CC 87) in the province of Płock, Ziemiary (DC 46) in the province of Skierniewice, Bukowno (CA 87) in the province of Katowice, Wizna (EE 90) in the province of Łomza, Kamien Pomorski (VV 78) in the province of Szczecin, all in moist peat soils, pH 3.9-6.3, around the roots of bushes and sweet rush.

TYPE SPECIMENS

Deposited as follows : holotype female with three paratype females and three paratype males in Polish Nematode Collection, Instytut Zoologii PAN, Wilcza 64, Warszawa, Poland. One female in each of the following : Laboratorium voor Nematologie, Landbouwhogeschool, Wageningen, Netherlands ; Nematology Department, Rothamsted Experimental Station, Harpenden, Herts AL5 2JQ England ; Department of Nematology, University of California, Riverside, Ca 92521, USA ; I. A. R. I., Nematology Division, New Delhi, India ; Canadian National Nematode Collection, Biosystematics Research Institute, Ottawa, Ont., Canada K1A OC6. Two females and two males in Instytut Warzywnictwa, 96-100 Skierniewice, Poland. Two females in collection of author.

DIAGNOSIS AND RELATIONSHIPS

S. tumensis sp. n. is similar to *S. tessellatus*, to *S. hexincisus*, to *S. siddiqii* and to *S. thomasi :* they are compared in table 1. The species differs from the closest ones in the longer stylet and the number of longitudinal striae. It differs from *S. thomasi* in tail and body shape ; *S. tumensis* has ratio h = 1.4-2.1, while in *S. thomasi* h = 1.0-1.4. The anterior edge of the bursa of *S. tumensis* is located 10-20 µm from cloaca, while the corresponding measurements are, in *S. thomasi:* 35-55 µm, in *S. tessellatus :* 20-33 µm and in *S. hexincisus:* 20-35 µm. Tail process of *S. tumensis* males bears six to ten annules, in *S. thomasi:* 22-28 annules and in *S. hexincisus :* four to seven annules. The species differs also from *S. siddiqii* in number of tail annules and width of body annules.

Taxonomic position of *Merlinius siddiqii* Mulk, 1978 and *Geocenamus longus* (Wu, 1969) Tarjan, 1973

Merlinius siddiqii is characterised by scutellum-like phasmids : all other features characteristic of the genus *Scutylenchus* are present in the species. Because of these characters it is transfered to the latter genus as *S. siddiqii* (Mulk, 1969) comb. n.

Geocenamus longus was described from Canada and redescribed by Knobloch (1971) and Sturhan (1981). The specimens of *G. longus* were found in Poland in Goleniów and Mieckowo (VV 78 in UTM grid) in the province of Szczecin and in Wola Krzysztoporska (DB 08) in the province of Piotrków Trybunalski near the roots of unknown grasses and bushes in peat soils. The dimensions of females of four Polish populations are given in table 1. I agree, that the perioral disc of *G. longus* is no more prominent than in certain species of the *Merlinius tessellatus* group (Sturhan, 1981). *G. longus* is also characterised by scutellum-like phasmids, longitudinal striae, areolated lateral fields, open vulva with double epiptygma and crescent-shaped gubernaculum. Because of these characters it is transfered to the genus *Scutylenchus* as *S. longus* (Wu, 1969) comb. n.

Key to the species of genus *Scutylenchus*

1. Stylet 50 µm or longer ..... *longus* (Wu, 1969) comb. n.
— Stylet 30 µm or shorter 2
2. Female tail terminus smooth 3
— Female tail terminus annulated 11
3. Labial region continous 4
— Labial region offset 5
4. Tail tip flattened ..... *cylindricaudatus* (Ivanova, 1968) Siddiqi, 1979 *
— Tail tip rounded ..... *apricus* Andrássy, 1980 *
5. Stylet knobs with lateral inclination 6
— Stylet knobs posteriorly inclined 7
6. Female tail with 38-40 annules ..... *sobolevi* (Mukhina, 1970) Siddiqi, 1979
— Female tail with 21-22 annules ..... *stegus* (Thorne & Malek, 1968) Siddiqi, 1979

* *S. cylindricaudatus* and *S. apicus* cannot be satisfactoryly separated on the basis of published descriptions (Ivanova, 1968, 1978 ; Andrássy, 1980).

7. Female tail cylindrical ..... *quadrifer* (Andrássy, 1954) Siddiqi, 1979
— Female tail conoid 8
8. Tail with 25-32 annules ..... *mamillatus* (Tobar-Jimenez, 1966) Jairajpuri, 1971
— Tail with 19-24 annules 9
9. Transverse striae 3-4 µm wide ..... *siddiqii* (Mulk, 1978) comb. n.
— Transverse striae 1.5-2.5 µm wide ..... *rugosus* (Siddiqi, 1963) Siddiqi, 1979
10. Stylet 24 µm ..... *tarluensis* (Krall, 1959) Siddiqi, 1979
— Stylet 18-20 µm ..... *lenorus* (Brown, 1956) Siddiqi, 1979
11. Stylet knobs anteriorly inclined ..... *koreanus* (Choi & Geraert, 1971) Siddiqi, 1979
— Stylet knobs posteriorly inclined 12
12. Stylet 20 µm or shorter 13
— Stylet 24 µm or longer 14
13. Tail with 36-40 annules ..... *tessellatus* (Goodey, 1952) Siddiqi, 1979
— Tail with 58-60 annules ..... *hexincisus* (Jairajpuri & Baqri, 1968) Siddiqi, 1979
14. Tail with 40-66 annules ..... *thomasi* sp. n.
— Tail with 27-40 annules ..... *tumensis* sp. n.

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