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Compendium of the genus *Tylenchorhynchus* Cobb, 1913 *sensu lato* (Nematoda: Belonolaimidae)

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Summary. A compendium of diagnostic characters of 177 species of the genus *Tylenchorhynchus sensu lato* is presented. These data assist with the selection of species descriptions which should be consulted to enable identification to be made of *Tylenchorhynchus* nematodes. The genera *Bitylenchus, Dolichorhynchus, Neodolichorhynchus, Quinisulcius, Trilinellus* and *Macrorhynchus* are considered synonyms of *Tylenchorhynchus.*

Key words: compendium, species, synonyms, systematics, taxonomy, *Tylenchorhynchus.*

The genus *Tylenchorhynchus* Cobb, 1913 was revised by Allen (1955), and subsequently various generic divisions were proposed. Currently, taxonomic opinions vary, with Siddiqi (1986) recognising as valid the genera *Bitylenchus* Filipjev, 1934, *Dolichorhynchus* Mulk & Jairajpuri, 1974, *Quinisulcius* Siddiqi, 1971 and *Trilinellus* Lewis & Golden, 1981, whereas Fortuner & Luc (1987) presented arguments to treat the genus as a larger unit and synonymised these genera. *Macrorhynchus* Sultan, Singh & Sakhuja, 1989 should be included in this larger generic unit, as its diagnosis agrees closely with that of *Tylenchorhynchus sensu lato*, and the two genera are here considered synonymous.

Fortuner & Luc (1987) recognised the close similarity of *Tylenchorhynchus* and *Merlinius* Siddiqi, 1970, and while considering face view reported "*Merlinius* generally has ancestral six sectors still visible or it has a characteristic lemon shape with disc and lateral sectors fused. This derived shape is unknown in *Tylenchorhynchus*. The number of lateral field lines (2 to 5 *vs* 6) permits an easy identification of these genera". However, the face view is unknown for the majority of species concerned and, for example, *T. velatus* Sauer & Annels, 1981, has six labial sectors corresponding to *Geocenamus* Thorne & Malek, 1968 but has only four lateral lines (Sauer & Annels, 1981). We concur with the arguments proposed by Fortuner & Luc (1987) for rejecting the genera and support their synonymisation with *Tylenchorhynchus*. Difficulties associated with these generic divisions appear to be observed also by the followers of Siddiqi's system. For example, the shape of the gubernaculum was found to be a more consistant character for separating *Bitylenchus* from the other genera (Gomez-Barcina *et al.*, 1992). Brzeski (1991a) synonymised *Merlinius* with *Geocenamus*, and this has been generally accepted. Scanning electron microscopy studies of face views showed three groups of species within *Geocenamus* (Choi & Geraert, 1993) and four or five groups of species within *Tylenchorhynchus* (Baujard *et al.*, 1994). The wide treatment of the genus is probably not justified, but it is inevitable and practical for the time being, especially as most descriptions of the species do not allow for unequivocal generic revision. Baujard *et al.* (1995) proposed that six species presently recognised within *Tylenchorhynchus* probably should be placed within *Triversus* Sher, 1974.

The number of new species being described is steadily increasing but frequently these descriptions are published in agricultural journals which have only local distribution, or in proceedings of conferences. Comparison of unknown collections with data becomes difficult and several authors appear to have described new species without consulting published descriptions of species. The last conspectus of the genus was published by Mahajan (1988), and at that time 89 species were included in *Tylenchorhynchus sensu stricto*. Therefore, it was considered pertinent to compile published data in a single paper and to provide tabular information of the main diagnostic characters of known species. Probably, the present list of species contains numerous synonyms that are not yet recognized, but any taxonomic action should be deferred until studies can be based on numerous

populations. Abbreviated citations are provided for each species and are available in full in Ebsary (1991) and in *Nematological Abstracts*. Table 1 does not provide a means for species identification but does help the user to decide which species descriptions should be consulted before finally deciding the identification of specimens. Data absent in the text of published descriptions were derived from the published drawings and are given in brackets.

Checklist of *Tylenchorhynchus sensu lato* species

T. acutoides Thorne & Malek, 1968 [*South Dakota Agric. Exp. Stn. Tech. Bull.*, 31: 1-111].

T. acutus Allen, 1955 [*Univ. Calif. Publs. Zool.*, 61: 129-166].

T. aduncus de Guiran, 1967 [*Nematologica*, 13: 217-230].

T. aerolatus (Baqri & Jairajpuri, 1969) Fortuner & Luc, 1987 [*Ann. Zool. Ecol. Anim.*, 1: 327-337].

T. agri Ferris, 1963 [*Proc. Helm. Soc. Wash.*, 28: 109-111].

T. alami Shaw & Khan, 1996 [*J. Res. Bisra Agric. Univ.*, 8: 1-8].

T. allii Khurma & Mahajan, 1987 [*Indian J. Nematol.*, 17: 202-207].

T. amgi Kumar, 1981 [*J. Coffee Res.*, 11: 88-99].

T. annulatus (Cassidy, 1930) Golden, 1971 [*Hawaiian Planters' Rec.*, 34: 379-387].
= *T. martini* Fielding, 1956 [*Proc. Helm. Soc. Wash.*, 23: 47-48].
= *T. sacchari* Sivakumar & Muthukrishnan, 1983 [*Indian J. Nematol.*, 12: 118-123].

T. antarcticus Wouts & Sher, 1981 [*Nematologica*, 27: 253-257].

T. asperticus Knobloch, 1975 [*Nematologica*, 21: 287-295].

T. avaricus (Kleynhans, 1975) Fortuner & Luc, 1987 [*Phytophylactica*, 7: 97-104].

T. badliensis Saha & Khan, 1982 [*Indian J. Nematol.*, 11: 205-211].

T. bicaudatus Khakimov, 1973 [In: *Voprosy Fitogel'mintologii v Uzbekistane*, Tashkent, Fan, pp: 161-214].

T. bicostatus (Talavera & Tobar, 1997) comb. n.
= *Neodolichorhynchus bicostatus* Talavera & Tobar, 1997 [*Intern. J. Nematol.*, 7: 35-40].

T. bohrrensis Gupta & Uma, 1980 [*Revta. Iber. Parasit.*, 40: 423-427].

T. botrys Siddiqi, 1985 [*Fitopatol. Columbiana*, 11: 29-31].

T. brassicae Siddiqi, 1961 [*Z. ParasitKde.*, 21: 46-64].

T. brevilineatus Williams, 1960 [*Mauritius Sugar Ind. Res. Inst. Occ. Paper*, 4: 1-30].
= *T. indicus* Siddiqi, 1961 [*Z. ParasitKde.*, 21: 46-64].

T. brevistyletus (Kulinich, 1985) Ebsary, 1991 [*Zool. Zh.*, 64: 1579-1584].

T. bryobius Sturhan, 1966 [*Mitt. biol. BundAnst. Ld-u. Forstw.*, 118: 82-99].

T. cacti Chawla, Bhamburkar, Khan & Prasad, 1968 [*Labdev J. Sci. Technol.*, 6B: 86-100].

T. canalis Thorne & Malek, 1968 [*South Dakota Agric. Exp. Stn. Tech. Bull.*, 31: 1-111].

T. capitatus Allen, 1955 [*Univ. Calif. Publs. Zool.*, 61: 129-166].
= *T. acti* Hopper, 1959 [*Nematologica*, 4: 23-30].
= *T. nilgiriensis* Seshadri, Muthuskrisnan & Shunmugan, 1967 [*Curr. Sci.*, 36: 551-553].
= *Q. himalayae* Mahajan, 1974 [*Proc. Helm. Soc. Wash.*, 41: 13-16].
= *Q. solani* Maqbool, 1982 [*Pakistan J. Nematol.*, 14: 221-225 (considered valid and renamed *T. maqbooli* Mizukubo, Toida & Keereewan, 1993, *Japanese J. Nematol.*, 23: 19-27].

T. chirchikensis Mavlyanov, 1978 [*Parazitologiya*, 12: 138-142].

T. chonai Sethi & Swarup, 1968 [*Nematologica*, 14: 77-88].

T. cicerus Kakar, Khan & Siddiqi, 1995 [*Ann. Pl. Prot. Sci.*, 3: 149-154].

T. clarus Allen, 1955 [*Univ. Calif. Publs. Zool.*, 61: 129-166].
= *T. tener* Erzhanova, 1964 [*Trudy Karakalpakskogo Gos. Ped. Inst.*, 2: 175-185].

T. clathrocutis (Lewis & Golden, 1971) Fortuner & Luc, 1987 [*J. Nematol.*, 13: 135-141].

T. clavicaudatus Seinhorst, 1963 [*Nematologica*, 9: 173-180].
= *T. clavicauda* Seinhorst, 1968 [*Nematologica*, 14: 596].

T. clavus Khan, 1991 [*Pakistan J. Nematol.*, 8: 73-78].

T. claytoni Steiner, 1937 [*Proc. Helm. Soc. Wash.*, 4: 33-38].

T. coffeae Siddiqi & Basir, 1959 [*Proc. 46th Meet. Indian Sci. Congr., Pt IV (Abstr.)*: 35].

T. colombianus Siddiqi, 1985 [*Fitopatol. Columbiana*, 11: 29-31].

T. contractus Loof, 1964 [*Nematologica*, 10: 201-300].

T. crassicaudatus Williams, 1960 [*Mauritius Sugar Ind. Res. Inst. Occ. Paper*, 4: 1-30].
synonym of *T. annulatus* according to Sultan *et al.* (1989), but considered valid by Zeidan & Geraert (1990)

T. crenatus (Kakar, Khan & Siddiqi, 1995) comb. n.
= *Telotylenchus crenatus* Kakar, Khan & Siddiqi, 1995 [*Ann. Pl. Prot. Sci.*, 3: 149-154].

T. cristatus Ivanova, 1983 [*Izv. Akad. Nauk Tadzhik-*

skoj SSR, Biol., 1: 40-45].

T. curvus Williams, 1960 [*Mauritius Sugar Ind. Res. Inst. Occ. Paper*, 4: 1-30].

T. cuticaudatus Ray & Das, 1983 [*Indian J. Nematol.*, 13: 16-25].

T. cylindricus Cobb, 1913 [*Bull. Hawaiian Planters' Ass. Exp. Stn., Div. Path. Physiol.*, 6: 51-73].

T. cynodoni Kumar, 1981 [*J. Coffee Res.*, 11: 88-99].

T. dactylurus Das, 1980 [*Z. ParasitKde.*, 9: 553-605]. synonym of *T. mashhoodi* according to Baqri & Jairajpuri (1970) and Mahajan (1988), but considered valid by Siddiqi (1986), Fortuner & Luc (1987) and Ebsary (1991)

T. delhiensis Chawla, Bhamburkar Khan & Prasad, 1968 [*Labdev J. Sci. Technol.*, 6B: 86-100].

T. depressus Jairajpuri, 1982 [*Med. Fac. Landbouww. Rijksuniv. Gent*, 47: 765-770].

T. dewaelei Kleynhans, 1992 [*Phytophylactica*, 24: 235-251].

T. digitatus Das, 1960 [*Z. ParasitKde.*, 9: 553-605]. synonym of *T. mashhoodi* according to Baqri & Jairajpuri (1970) and Mahajan (1988), but considered valid by Siddiqi (1986), Fortuner & Luc (1987) and Ebsary (1991).

T. dispersus Siddiqi & Sharma, 1995 [*Afro-Asian J. Nematol.*, 5: 48-52].

T. divittatus Siddiqi, 1961 [*Z. ParasitKde.*, 21: 46-64].

T. domesticus (Sultan, Singh & Sakhuja, 1995) comb. n.
= *Quinisulcius domesticus* Sultan, Singh & Sakhuja, 1995 [*Pakistan J. Nematol.*, 13: 69-76].

T. dubius (Bütschli, 1873) Filipjev, 1936 [*Nova Acta Acad. Nat. Curios.*, 36: 1-124].

T. ebriensis Seinhorst, 1963 [*Nematologica*, 9: 173-180].

T. elegans Siddiqi, 1961 [*Z. ParasitKde.*, 21: 46-64]. synonym of *T. mashhoodi* according to Baqri & Jairajpuri (1970) and Mahajan (1988), but considered valid by Siddiqi (1986), Fortuner & Luc (1987) and Ebsary (1991).
= *T. goldeni* Rashid & Singh, 1982 [*Indian J. Nematol.*, 12: 193-195].

T. elongatus (Sultan, Singh & Sakhuja, 1988) Ebsary, 1991 [*Indian J. Nematol.*, 18: 44-48].

T. equatorialis (Talavera & Siddiqi, 1995) comb. n.
= *Bitylenchus equatorialis* Talavera & Siddiqi, 1995 [*Afro-Asian J. Nematol.*, 5: 181-185].

T. eremicolus Allen, 1955 [*Univ. Calif. Publs. Zool.*, 61: 129-166].

T. erevanicus Karapetjan, 1979 [*Doklady Akad. Nauk Armyanskoj SSR*, 68: 124-128].

T. eroshenkoi Siddiqi, 1986 [*Tylenchida, Parasites of Plants and Insects,* Farnham Royal, Comm. Inst. Parasitol., 645 pp].
= *T. varicaudatus* Eroshenko, 1984 [*Parazitologiya*, 18: 74-77], *nec T. varicaudatus* Singh, 1971 = *T. helanus* Eroshenko, 1984 [*Parazitologiya*, 18: 74-77].

T. estherae Kleynhans, 1992 [*Phytophylactica*, 24: 235-251].

T. ewingi Hopper, 1959 [*Nematologica*, 4: 23-30].

T. flaccidus (Baidulova, 1984) Fortuner & Luc, 1987 [*Izv. Akad. Nauk Kazakhskoi SSR, Ser. Biol.*, 5: 34-36].

T. georgiensis Eliashvili, 1971 [*Soobshch. Akad. Nauk Gruzinskoi SSR*, 61: 213-216].

T. germanii Fortuner & Luc, 1987 [*Revue Nematol.*, 10: 163-176].
= *Dolichorhynchus elegans* Germani & Luc, 1984 [*Revue Nematol.*, 7: 81-86], *nec T. elegans* Siddiqi, 1961.

T. gladiolatus Fortuner & Amougou, 1974 [*Cah. ORSTOM, Ser. Biol.*, 21: 21-24].

T. goffarti Sturhan, 1966 [*Mitt. biol. BundAnst. Land Forstw.*, 118: 82-99].

T. gossypii Nasira & Maqbool, 1996 [*Pakistan J. Nematol.*, 14: 33-40].

T. graciliformis Siddiqi & Siddiqui, 1983 [*Proc. Helm. Soc. Wash.*, 50: 301-304].

T. haki Fotedar & Mahajan, 1971 [*Kashmir Sci.*, 8: 120-122].

T. hastulatus (Colbran, 1960) Fortuner & Luc, 1987 [*Queensland J. Agric. Sci.*, 17: 175-181].

T. himalayae Mahajan, 1974 [*Proc. Helm. Soc. Wash.*, 41: 13-16] synonym of *T. capitatus* according to Ebsary (1991), but here considered valid because of its longer stylet

T. hordei Khan, 1972 [*Proc. 59th Indian Sci. Congr.* (1971) Pt. III: 594].

T. huesingi Paetzold, 1958 [*Z. Martin-Luther-Univ. Halle-Wittenb.*, 8: 17-48].

T. ibericus Mahajan & Nombela, 1987 [*Phytophylactica*, 19: 47-48].

T. impar (Khan & Darekar, 1979) Fortuner & Luc, 1987 [*Indian J. Nematol.*, 8: 13-18].

T. indicatus Ebsary, 1991 [*Catalog of the order Tylenchida (Nematoda).* Ottawa, Agriculture Canada Publication 1869/B. 196 pp].
= *Q. indicus* Luqman & Khan, 1986 [*Indian J. Nematol.*, 15: 202-208], *nec T. indicus* (Siddiqi, 1960), *nec T. indicus* Siddiqi, 1961.

T. indicus (Siddiqi, 1960) Fortuner & Luc, 1987 [*Nematologica*, 5: 73-77].

T. intervallatus Fortuner & Luc, 1987 [*Revue Nematol.*, 10: 163-176].
= *T. aerolatus* Tobar-Jimenez, 1970 [*Revta. Iber. Parasit.*, 30: 215-228], *nec T. aerolatus* Baqri & Jairajpuri, 1969.

T. iphilus (Minagawa, 1995) comb. n.
= *Bitylenchus iphilus* Minagawa, 1995 [*Afro-Asian J. Nematol.*, 5: 151-160].

T. irregularis Wu, 1969 [*Can. J. Zool.*, 47: 563-567].
T. judithae Andrássy, 1962 [*Acta Zool. Acad. Sci. Hung.*, 8: 1-23].
T. kamlae Shaw & Khan, 1996 [*J. Res. Bisra Agric. Univ.*, 8: 1-8].
T. kashmirensis Mahajan, 1974 [*Proc. Helm. Soc. Wash.*, 41: 13-16].
T. kegasawai Minagawa, 1995 [*Acta Zool. Acad. Sci. Hung.*, 8: 1-23].
T. kegenicus Litvinova, 1946 [*Proc. Zool. Soc. London*, 116: 120-128].
T. kirjanovae Karapetjan, 1979 [*Doklady Akad. Nauk Armyanskoj SSR*, 68: 124-128].
T. knoblochae Fortuner & Luc, 1987 [*Revue Nematol.*, 10: 183-202].
= *Q. tarjani* Knobloch, 1975 [*Proc. Helm. Soc. Wash.*, 42: 52-56], *nec T. tarjani* Andrássy, 1969
T. labiatus (Jairajpuri, 1984) Siddiqi, 1986 [*Syst. Parasitol.*, 6: 107-112].
T. lamelliferus (de Man, 1880) Filipjev, 1936 [*Tijdschr. Nederl. Dierk. Vereen.*, 5: 1-104].
T. lanceatus (Budurova, 1988) Ebsary, 1991 [*Acta Zool. Bulgarica*, 36: 43-48].
T. latus Allen, 1955 [*Univ. Calif. Publs. Zool.*, 61: 129-166].
T. leucaenus Azmi, 1991 [*Curr. Nematol.*, 2: 81-82].
T. leviterminalis Siddiqi, Mukherjee & Dasgupta, 1982 [*Syst. Parasitol.*, 4: 257-262].
T. lineatus (Karapetjan, 1979) Fortuner & Luc, 1987 [*Doklady Akad. Nauk Armyanskoj SSR*, 68: 124-128].
T. madrasensis Gupta & Uma, 1981 [*Helmintholo-gia*, 18: 53-59].
T. malinus Maosong, 1992 [*J. Nanjing Agric. Univ.*, 15: 41-44].
T. mangiferae Luqman & Khan, 1986 [*Indian J. Nematol.*, 15: 202-208].
T. manubriatus Litvinova, 1946 [*Proc. Zool. Soc. London*, 116: 120-128].
T. maqbooli Mizukubo, Toida & Keereewan, 1993 [*Japanese J. Nematol.*, 23: 19-27].
= *Quinisulcius solani* Maqbool, 1982 [*Pakistan J. Nematol.*, 14: 221-225], *nec T. solani* Gupta & Uma, 1981
T. marudharensis Lal, Mathur & Rajan, 1989 [*Indian J. Nematol.*, 19: 51-54].
T. mashhoodi Siddiqi & Basir, 1959 [*Proc. 46th Meet. Indian Sci. Congr., Pt IV (Abstr.)*: 35].
T. maximus Allen, 1955 [*Univ. Calif. Publs. Zool.*, 61: 129-166].
= *T. wilskii* Kornobis, 1980 [*Bull. Acad. Polon. Sci., Ser. Sci. Biol.*, 28: 173-175], syn. n. (see remark 1).
T. mediocris (Talavera & Siddiqi, 1995) comb. n.
= *Bitylenchus mediocris* Talavera & Siddiqi, 1995 [*Afro-Asian J. Nematol.*, 5: 181-185].
T. mexicanus Knobloch & Laughlin, 1973 [*Nematologica*, 19: 205-217].
= *T. ancorastyletus* Ivanova, 1983 [*Izv. Akad. Nauk Tadzikskoi SSR, Biol.*, 1: 40-45], syn. n. (see remark 2)
T. microcephalus Siddiqi & Patel, 1990 [*Curr. Nematol.*, 1: 7-10].
T. microconus Siddiqi, Mukherjee & Dasgupta, 1982 [*Syst. Parasitol.*, 4: 257-262].
T. microphasmis Loof, 1960 [*Nematologica*, 4: 294-306].
= *T. pini* Kulinich, 1985 [*Zool. Zh.*, 64: 1579-1584].
T. minutus Karapetjan, 1979 [*Doklady Akad. Nauk Armyanskoj SSR*, 68: 124-128].
T. mulki Fortuner & Luc, 1987 [*Revue Nematol.*, 10: 183-202].
= *Dolichorhynchus parvus* Mulk & Sidiqi, 1982 [*Indian J. Nematol.*, 12: 124-131], *nec T. parvus* Allen, 1955
T. musae Kumar, 1981 [*J. Coffee Res.*, 11: 88-99].
T. natalensis Kleynhans, 1984 [*Phytophylactica*, 16: 71-72].
T. neoclavicaudatus Mathur, Sanwal & Lal, 1979 [*Indian J. Nematol.*, 8: 148-150].
T. nigericus (Mulk & Jairajpuri, 1974) Fortuner & Luc, 1987 [*Indian J. Zool.*, 2: 15-18].
T. nordiensis Khan & Nanjappa, 1974 [*Indian J. Nematol.*, 2: 216].
= *T. aerolatus* Khan & Nanjappa, 1972 [*Bull. Ent. Loyola Coll.*, 11: 143-149], *nec* Baqri & Jairajpuri, 1968.
T. novenus Nobbs, 1990 [*Nematologica*, 35: 399-412].
T. nudus Allen, 1955 [*Univ. Calif. Publs. Zool.*, 61: 129-166].
T. obregonus (Knobloch & Laughlin, 1973) Fortuner & Luc, 1987 [*Nematologica*, 19: 205-217].
T. obscurisulcatus Andrássy, 1959 [*Ann. Univ. Scient. Budapest Rolando Eötvös nom. Sect. Biol.*, 2: 3-27].
T. obtusus (Siddiqi, 1978) Fortuner & Luc, 1987 [*Nematol. medit.*, 5: 281-289].
T. oleraceae Gupta & Uma, 1981 [*Riv. Parassitol.*, 42: 289-292].
T. oryzae Kaul & Walliullah, 1995 [*Ann. Pl. Protec. Sci.*, 3: 155-157].
T. paaloofi (Tikyani & Khera, 1970) Fortuner & Luc, 1970 [*Labdev J. Sci. Tech.*, 8B: 27-29].
T. pachys Thorne & Malek, 1968 [*South Dakota Agric. Exp. Stn. Tech. Bull.*, 31: 1-111].
T. pakistanensis nom. n.
= *Quinisulcius quaidi* Zarina & Maqbool, 1992 [*Pakistan J. Nematol.*, 10: 7-13], *nec T. quaidi* Golden, Maqbool & Handoo, 1987.

T. pamiricus Ivanova, 1989 [*Dokl. Akad. Nauk Tadzhikskoi SSR*, 32: 785-788].
T. paracti (Ray & Das, 1983) Fortuner & Luc, 1987 [*Indian J. Nematol.*, 13: 16-25].
T. paracanalis Khan, 1991 [*Pakistan J. Nematol.*, 9: 87-90].
T. paratriversus Brzeski, 1991 [*Nematol. medit.*, 19: 213-220].
T. parvus Allen, 1955 [*Univ. Calif. Publs. Zool.*, 61: 129-166].
T. penniseti Gupta & Uma, 1980 [*Indian J. Parasitol.*, 4: 157-159].
T. persicus Sultan, Singh & Sakhuja, 1989 [*Indian J. Nematol.*, 19: 215-222].
T. phaseoli Sethi & Swarup, 1968 [*Nematologica*, 14: 77-88].
T. pratensis (Gomez-Barcina, Siddiqi & Castillo, 1992) Baujard, Mounport & Martiny, 1994 [*J. Helminthol. Soc. Wash.*, 59: 96-110].
T. projectus Khan, 1991 [*Pakistan J. Nematol.*, 8: 73-78].
T. prophasmis (Jairajpuri & Hunt, 1984) Fortuner & Luc, 1987 [*Syst. Pasitol.*, 6: 261-268].
T. pruni Gupta & Uma, 1981 [*Helminthologia*, 18: 53-59].
T. punensis Khan & Darekar, 1979 [*Indian J. Nematol.*, 8: 43-48].
T. punici (Gupta & Uma, 1980) Fortuner & Luc, 1987 [*Proc. Indian Acad. Sci., Anim. Sci.*, 89: 415-418].
T. quaidi Golden, Maqbool & Handoo, 1987 [*J. Nematol.*, 19: 58-68], *nec Quinisulcius quaidi* Zarina & Maqbool, 1992
= *T. pakistanensis* nom. n.
T. queirozi Monteiro & Lordello, 1976 [*Revta. Brasil. Biol.*, 36: 697-699].
T. rayi Fortuner & Luc, 1987 [*Revue Nematol.*, 10: 183-202].
= *T. impar* Ray & Das, 1983 [*Indian J. Nematol.*, 13: 16-25], *nec T. impar* Khan & Darekar, 1979.
T. robustus Thorne & Malek, 1968 [*South Dakota Agric. Exp. Stn. Tech. Bull.*, 31: 1-111].
T. rosei Zarina & Maqbool, 1991 [*Pakistan J. Nematol.*, 9: 79-86].
T. sanwali Kumar, 1980 [*Kan. Univ. Res. J.*, 1: 185-192].
T. sculptus Seinhorst, 1963 [*Nematologica*, 9: 173-180].
T. serranus (Gomez-Barcina, Siddiqi & Castillo, 1992) Baujard, Mounport & Martiny, 1994, [*J. Helminthol. Soc. Wash.*, 59: 96-110].
T. siccus Nobbs, 1990 [*Nematologica*, 35: 399-412].
T. silvaticus Ferris, 1963 [*Proc. Helm. Soc. Wash.*, 28: 109-111].
T. singularis (Siddiqi & Sharma, 1994) comb. n. [*Afro-Asian J. Nematol.*, 4: 35-39].
T. solani Gupta & Uma, 1981 [*Indian J. Parasitol.*, 5: 37-38].
T. spinaceai Singh, 1976 [*Indian J. Zootomy*, 15 (1974): 187-192].
T. striatus Allen, 1955 [*Univ. Calif. Publs. Zool.*, 61: 129-166].
T. sudanensis (Decker, Yassin, El-Amin & El-Amin, 1975) Castillo, Siddiqi & Gomez-Barcina, 1989 [In: *Voortragstag. Aktuellen Probl. Phytonematologie, Rostock, 29 May 1975*, 89-102].
T. sulcatus de Guiran, 1967 [*Nematologica*, 13: 217-230].
T. swarupi Singh & Kherra, 1978 [*Bull. Zool. Surv. India*, 1: 25-28].
T. swatiensis Nasira, Shahina & Maqbool, 1991 [*Pakistan J. Nematol.*, 9: 1-5].
T. tarjani Andrássy, 1969 [*Opusc. Zool. Budapest*, 9: 15-29].
T. teeni Hashim, 1984 [*Syst. Parasitol.*, 6: 33-38].
T. tenuicaudatus Wouts & Sher, 1981 [*Nematologica*, 27: 253-257].
T. teres (Khan & Darekar, 1979) Siddiqi, 1986 [*Indian J. Nematol.*, 8: 13-18].
T. termophilus Golden, Baldwin & Mundo-Ocampo, 1995 [*J. Nematol.*, 27: 312-319].
T. tobari Sauer & Annells, 1981 [*Nematologica*, 27: 422-431].
T. tonkiensis (Mulk & Jairajpuri, 1975) Fortuner & Luc, 1987 [*Indian J. Nematol.*, 4: 167-170].
T. triglyphus Seinhorst, 1963 [*Nematologica*, 9: 173-180].
T. trilineatus Timm, 1963 [*Nematologica*, 9: 262-266].
T. tritici Golden, Maqbool & Handoo, 1987 [*J. Nematol.*, 19: 58-68].
T. tuberosus (Maqbool, Ghazala & Fatima, 1984) Fortuner & Luc, 1987 [*Pakistan J. Nematol.*, 2: 61-67].
T. usmanensis Khurma & Mahajan, 1987 [*Indian J. Nematol.*, 17: 202-207].
T. variannus Mavljanov, 1978 [*Parazitologiya*, 12: 138-142].
T. varicaudatus Singh, 1971 [*J. Helminthol.*, 45: 353-369].
T. velatus Sauer & Annells, 1981 [*Nematologica*, 27: 422-431].
T. ventralis (Loof, 1963) Fortuner & Luc, 1987 [*Nematologica*, 9: 76-80].
T. ventrosignatus Tobar-Jimenez, 1969 [*Revta. Iber. Parasit.*, 29: 399-403].
T. verutus (Kleynhans, 1975) Fortuner & Luc, 1979 [*Phytophylactica*, 7: 97-104].
T. vulgaris Upadhyay, Swarup & Sethi, 1972 [*Indian J. Nematol.*, 2: 129-138].
T. zeae Sethi & Swarup, 1968 [*Nematologica*, 14:

Table 1. Diagnostic characters of *Tylenchorhynchus sensu lato* species.

Species	Long. striae	Lat. lines	Stylet length	Tail shape	Tail tip	Tail annules	c'	c	Cephalic region	Lip annuli	Body length	Fasciculi
T. acutoides	0	5	18	conical	smooth	(18)	(2.8)	20	depression	4-5 (8)	0.8	?absent
T. acutus	0	4	15-17	conical	smooth	15-20	(2.5)	17-23	depression	5-6	0.63-0.75	absent
T. aduncus	0	4	18-20	conical	smooth	19-27	2.5-3.0	14-17	narrower	4-5	0.68-0.75	?absent
T. aerolatus	0	4	16-18	conical	smooth	31-37	2.9-3.7	14-19	depression	8-9	0.71-0.84	?absent
T. agri	0	4	20-23	cylindric	smooth	18-26	2.1-2.6	15-21	narrower	4	0.66-0.95	? present
T. alami	0	4	19-21	conical	smooth	(25)	2.9-4.0	12.5-16	continuous	3	0.61-0.70	?absent
T. allii	0	4	15.5-17	con-cyl	smooth	34-47	(3.0)	11-16	offset	6-7	0.54-0.71	absent
T. amgi	0	4	19-20	cylindric	smooth	16-20	3.4-(3.8)	16-17	continuous	0	0.67-0.75	n a
T. annulatus	0	4	17-21	cylindric	smooth	17-33	2.5-4.0	12.5-17	continuous	2-3	0.57-0.86	?absent
T. antarcticus	0	4	23-25	conical	ann-point	(38-45)	2.5-2.7	16-19	depression	5-7	0.69-0.82	present
T. aspericutis	0	4	15-16	conical	smooth	(10-18)	2.0-3.0	14-17	offset	3	0.51-0.58	?absent
T. avaricus	0	4	16-19	con-cyl	annulated	30-46	2.6	14-20	offset	8	0.63-0.74	?absent
T. badliensis	0	4	17-20	cyl-con	smooth	10-22	2.1-2.3	15-19	continuous	3	0.62-0.76	absent
T. bicaudatus	0	n a	23	cylindric	indented	26-27	(4.2)	17	depression	n a	0.69	?absent
T. bicostatus	14*	4	17-18.5	conical	smooth	40-60	1.8-3.4	14-18	depression	6-7	0.60-0.75	present
T. bohrrensis	0	4	15.5-17	cylindric	smooth	17-21	2.1-3.2	14-18	continuous	2-3	0.61-0.75	?absent
T. botrys	0	4	24-28	cyl-cla	annulated	35-50	3.6-5.4	9-13	depression	3-4	0.54-0.80	present
T. brassicae	0	4	15-17	conical	smooth	(18-29)	2.5-3	14-17	depression	3-(4)	0.58-0.72	?absent
T. brevilineatus	irr. ant.	4	12-18	con-cyl	smooth	23-49	2.7-4.1	12-17	depression	5-7	0.50-0.79	present/absent
T. brevistyletus	0	5	12-13	conical	annulated	63-74	3.2-3.6	10-11	narrower	5	0.53-0.60	n a
T. bryobius	0	4	21-23	con-cyl	annulated	35-45	2.5-3.5	14-20	continuous	5-6	0.76-1.16	present
T. cacti	0	5	15-19	clavate	smooth	23-38	3	14-19	depression	6	0.6-0.7	?absent
T. canalis	0	4	20	cylindric	annulated	(64)	(2.8)	13	narrower	(6)	1.0	present
T. capitatus	0	5	15-19	conical	smooth	23-55	2.2-3.1	12-17	depression	8	0.52-0.85	absent
T. chirchikensis	0	4	18-19	conical	smooth	16-23	1.7-2.3	17-21	narrower	4	0.62-0.70	n a
T. chonai	0	4	25-28	con-cyl	smooth	14	2.3-2.9	15-17	continuous	3	0.50-0.68	?absent
T. cicerus	0	3	13-16	conical	annulated	24	(3.1)	12.5-16	narrower	3	0.5-0.6	n a
T. clarus	0	4	14.5-18	conical	smooth	10-20	2.0-3.8	13-22	continuous	4-6	0.49-0.69	absent
T. clathrocutis	18*	3	19-21	cylindric	smooth	13-14	2.7	12-15	narrower	3	0.55-0.65	n a
T. clavicaudatus	0	4	18-19	cyl-cla	annulated	31	(3.7)	12-18	continuous	3	0.54-0.72	?absent
T. clavus	0	4	24-27	cla-cyl	smooth	12-19	2.8-4.0	12-15	continuous	4	0.74-0.79	?absent
T. claytoni	22-29*	4	18-21	conical	smooth	9-20	2.0-2.5	12-23	nar-dep	3-5	0.52-0.75	absent
T. coffeae	0	4	17-20	cyl-cla	smooth	16-24	3.0-3.3	15-17	continuous	2	0.57-0.63	present
T. colombianus	0	4	18-22	cylindric	annulated	(30)	2.2-3.4	12-16	continuous	3-4	0.48-0.65	present

Table 1 (continued). Diagnostic characters of *Tylenchorhynchus sensu lato* species.

Species	Long. striae	Lat. lines	Stylet length	Tail shape	Tail tip annulat.	Tail annules	c'	c	Cephalic region	Lip annuli	Body length	Fasciculi
T. contractus	0	4	16-18	conical	smooth	20-23	(2.6-2.8)	13-15	cont-dep	5-6	0.42-0.63	?absent
T. crassicaudatus	0	4	20-23	cyl-cla	smooth	13-24	3.0-4.8	12-18	cont-dep	0-3	0.58-0.81	present
T. crenatus	0	4	17-19	conical	smooth	27	3.6-4.8	11.5-13	cont-nar	3-4	0.52-0.62	n a
T. cristatus	20*	4	18-19	conical	smooth	23-25	2.8-3.3	12-14	depression	5	0.69-0.75	?absent
T. curvus	0	5	13.5-17	conical	smooth	15-(22)	2.3-2.6	15-19	depression	4-6	0.44-0.63	?absent
T. cuticaudatus	0	4	14-15	cylindric	smooth	33-45	2.3-3.4	12-15	depression	5-6	0.50-0.63	?absent
T. cylindricus	0	4	25-29.5	cyl-con	smooth	15-22	1.6-2.4	15-27	depression	5	0.65-1.18	?absent
T. cynodoni	0	4	13-15	clavate	smooth	20-26	(4.3)-4.8	13-15	continuous	0	0.63-0.68	n a
T. dactylurus	0	4	20-21	clavate	smooth	(24)	about 3	15-16	continuous	4	0.65-0.71	?absent
T. delhiensis	0	4	14-16	conical	smooth	29	4	13-18	continuous	2	0.6-0.7	?absent
T. depressus	0	4	10-11	cylindric	ann-smo	30-50	2.2-3.2	14-18	depression	5-7	0.55-0.63	present
T. dewaeli	0	4	17-21	con-cyl	annulated	41-65	2.5-3.4	13-17.5	depression	7	1.07-1.54	?absent
T. digitatus	0	4	17-20	cylindric	smooth	20-31	2.7-3.3	15-16.5	continuous	4	0.60-0.73	?absent
T. dispersus	0	3	18-20	conical	smooth	32-37	(3.5)	13-18	depression	6-7	0.72-0.86	?absent
T. divittatus	0	3	16-17.5	con-cyl	smooth	19-34	2.8-3.0	14-19	depression	5-6	0.47-0.72	?absent
T. domesticus	0	5	15.5-17.5	conical	smooth	20-22	2.5-3.1	13-15	depression	5-6	0.60-0.76	?absent
T. dubius	0	4	16.5-20	cylindric	annulated	32-66	2.2-3.7	12-17	dep-narr	6-8	0.54-0.92	present
T. ebriensis	0	4	21-22	conical	smooth	25	(2.6)	14-16	cont-narr	5	0.52-0.59	?absent
T. elegans	0	4	15-17.5	cyl-con	smooth	23	(2.9)	14.5-16	continuous	3-4	0.56-0.70	n a
T. elongatus	0	4	18-20	conical	smooth	28-32	3.2-3.6	15-16	depression	5-6	0.72-0.75	?absent
T. equatorialis	0	4	19-21	cyl-cla	annulated	25-41	2.9-4.3	11-14	continuous	3-4	051-0.61	present
T. eremicolus	0	4	19-20	conical	annulated	(29)	(2.7)	14-16	continuous	4	0.70-0.76	?absent
T. erevanicus	0	4	18	cylindric	annulated	42	2.2	17	narrower	5	0.68	?absent
T. eroshenkoi	0	4	25-26	con-cyl	annulated	9-20	1.1-1.7	23-40	continuous	6-7	0.70-0.89	?absent
T. estherae	16*	2	18.5-21.5	conical	smo-ann	28-66	2.3-3.0	16-20	depression	6-7	0.69-0.96	present
T. ewingi	0	4	17-20	conical	smooth	12-15	2.3-2.4	13-16	dep-narr	3-4	0.55-0.75	?absent
T. flaccidus	0	4	17.5-19	conical	annulated	42-57	2.1-2.8	16-20	depression	8	0.94-1.06	?absent
T. georgiensis	0	4	19-21	cylindric	smooth	8-10	(2.5)	19-23	cont-narr	5-6	0.57-0.69	?absent
T. germanii	8*	2	17-21	conical	smooth	(22-26)	2.3-2.8	12-17	depression	6-8	0.50-0.66	?absent
T. gladiolatus	22*	4	12.5-14.5	cyl-con	smooth	23-36	2.2-3.6	11-15	depression	5-6	0.47-0.62	present
T. goffarti	0	4	13-15	cylindric	smooth	23-40	2.5-3.5	13-20	depression	6-7	0.54-0.69	?absent
T. gossypii	0	4	15-17	cylindric	smooth	15-17	2.3-3.3	12-17.5	continuous	2-3	0.47-0.73	?absent
T. graciliformis	0	4	17-18.5	con-cyl	smooth	16-20	2.3-3.7	18-25	depression	5-6	0.67-0.83	?absent
T. haki	0	4	16-18	conical	smooth	14-20	3.0	20-27	con	3	0.55-0.63	n a
T. hastulatus	0	4	30-33	cylindric	annulated	(23)	2.1	n a	depression	6-7	0.92-1.11	?absent

Table 1 (continued). Diagnostic characters of *Tylenchorhynchus sensu lato* species.

Species	Long. striae	Lat. lines	Stylet length	Tail shape	Tail tip annulat.	Tail annules	c'	c	Cephalic region	Lip annuli	Body length	Fasciculi
T. himalayae	0	5	17-24	conical	annulated	44-58	3.0	12-16	depression	8	0.62-0.78	present
T. hordei	0	4	18-19	cyl-con	smooth	42-46	2.8	19-21	depression	5	0.62-0.75	n a
T. huesingi	0	4	16-20	cylindric	annulated	40-54	2.4-3.3	12-16	continuous	5-7	0.58-0.85	present
T. ibericus	0	4	21-26	cylindric	annulated	32-36	2.3-3.3	18-25	narr-dep	6	0.99-1.27	present
T. impar	0	4	15-17	cyl-con	smooth	n a	4-5	15-18	depression	8	0.9-1.0	?absent
T. indicatus	0	5	15-18	conical	smooth	40-46	2.7-3.7	16-18	depression	6	0.71-0.80	?absent
T. indicus	0	4	16-18	conical	smooth	(41)	4.0	14-17	depression	7	0.70-0.88	?absent
T. intervallatus	0	4	15-17	cyl-con	smooth	15-27	2.0-3.0	14.5-18	dep-narr	5	0.54-0.70	?absent
T. iphilus	0	4	17-20	cyl-cla	annulated	24-41	2.7-6.3	14-18	continuous	5-6	0.55-0.80	?absent
T. irregularis	0	4	19-21	conical	annulated	20-26	2.0-2.5	15-19	narr-dep	4	0.69-0.83	?absent
T. judithae	16*	4	21	conical	annulated	(37)	2.2-2.6	17-23	depression	6-7	0.88-0.97	?absent
T. kamlae	0	4	19-21	conical	smooth	21	3.0-4.7	12-16	narrower	4	0.55-0.63	?absent
T. kashmirensis	0	4	17-21	cyl-con	annulated	13-17	1.6	24-37	depression	3	0.60-0.74	?absent
T. kegasawai	0	4	19-22	cyl-cla	smooth	15-21	3.0-4.0	11-13	continuous	2-3	0.52-0.63	?absent
T. kegenicus	0	4	28-31	cylindric	smooth	(52)	(3.2)	10-14	continuous	6-9	0.78-1.16	?absent
T. kirjanovae	0	4	16	con-cyl	annulated	30	1.6	21	narrower	6	0.66	?absent
T. knoblochae	0	5	18-19	conical	annulated	44-60	2.7-3.7	11-15	depression	8	0.63-0.78	?absent
T. labiatus	0	3	14-16	cylindric	smooth	20-30	2.5-3.2	14-18	continuous	4-6	0.52-0.65	present
T. lamelliferus	14-18*	4	24-28	conical	annulated	37-56	2.2-3.0	14-23.5	continuous	6	0.82-1.06	?absent
T. lanceatus	0	4	19-20	con-cyl	smooth	15-17	2.1-2.8	15.5-20	depression	4	0.61-0.78	?absent
T. latus	0	4	16-17	conical	smooth	(16)	(2.2)	18-22	depression	6	0.58-0.70	?absent
T. leucaenus	0	4	17-18	cyl-con	annulated	18-21	3-4	16	depression	4-5	0.55-0.56	?absent
T. leviterminalis	0	4	17-21	clavate	smooth	14-25	2.5-4.5	12-16	continuous	0	0.54-0.78	?absent
T. lineatus	16-18	5	16	conical	smooth	42	3.1	18	continuous	5	0.81	?absent
T. madrasensis	0	3	18-22	cylindric	smooth	10-13	2-3	14-19	continuous	1-2	0.53-0.66	?absent
T. malinus	0	4	19.5-21	cyl-cla	annulated	26-34	2.4-3.2	15.5-20	continuous	(6)	0.60-0.77	present
T. mangiferae	0	4	12-15	cylindric	annulated	35-38	2.2-2.5	14-16	depression	5-6	0.54-0.67	?absent
T. manubriatus	0	4	18	cylindric	smooth	(36)	(4.1)	15	continuous	6	0.74	?absent
T. maqbooli	0	5	18-20	conical	smooth	28-38	2.2-3.2	13.5	depression	6	0.61-0.73	?absent
T. marudharensis	0	4	14.5-16	conical	smooth	35-42	3.0-3.7	14-18.5	depression	7-8	0.64-0.81	absent
T. mashhoodi	0	4	16-19	cylindric	smooth	14-29	2.5-4.0	13-22	cont-narr	3-4	0.49-0.72	?absent
T. maximus	0	4	20-24.5	cylindric	annulated	25-45	1.9-4.1	14-27	cont-narr	6-8	0.94-1.62	present
T. mediocris	0	4	14-15	cyl-con	smooth	41-48	1.9-3.2	12-13	continuous	5-6	0.48-0.65	present
T. mexicanus	0	4	19-23	conical	smooth	12-22	1.8-2.4	19-23	depression	3-4	0.55-0.79	absent
T. microcephalus	0	4	18-21	clavate	smooth	25-35	3.8-5.7	13-16	continuous	1-2	0.36-0.81	?absent
T. microconus	0	4	15-18	conical	smooth	10-15	1.7-2.8	17-24	depression	3-4	0.46-0.65	present

Table 1 (continued). Diagnostic characters of *Tylenchorhynchus sensu lato* species.

Species	Long. striae	Lat. lines	Stylet length	Tail shape	Tail tip annulat.	Tail annules	c'	c	Cephalic region	Lip annuli	Body length	Fasciculi
T. microphasmis	16-20*	4	21-28	conical	smo-ann	38-61	2.2-3.7	12.5-23	depression	6-9	0.72-1.11	present
T. minutus	0	4	14	conical	smooth	36	2.9	13.5	narrower	4	0.48	?absent
T. mulki	12*	2	17.5	conical	annulated	25	1.8	11.5-18	depression	6-7	0.44	?absent
T. musae	0	4	18-19	cylindric	smooth	16-28	2.8	15-16	continuous	1-2	0.58-0.65	n a
T. natalensis	0	4	19-21	cyl-cla	annulated	52-66	3.0-4.1	13-17	depression	6-7	0.79-0.96	present
T. neoclavicaudatus	0	4	20-23	clavate	smooth	32-50	2.7-3.6	12-15	continuous	2-3	0.59-0.72	?absent
T. nigericus	present	4	15-17	con-cla	annulated	33-42	2.6-3.5	13-19	depression	6-7	0.64-0.76	?absent
T. nordiensis	0	4	11-13	conical	smooth	14-19	2.4-2.7	14-17	continuous	4	0.55-0.68	?absent
T. novenus	18	4	17-23	conical	smooth	39-51	2.1-3.7	10-19	depression	7-8	0.67-0.92	?absent
T. nudus	0	4	17-23	con-cyl-cla	smooth	15-23	n a	12-15	continuous	2	0.56-0.80	?absent
T. obregonus	0	5	12-14	conical	smooth	15-25	2.0-2.9	14-19	depression	4-6	0.47-0.67	absent
T. obscurisulcatus	0	4	22	cylindric	smooth	(27)	4.0	17	depression	6	0.79	?absent
T. obtusus	0	4	16-18	cyl-con	smooth	28-36	2.4-3.4	18-22	narrower	5-7	0.63-0.80	present
T. oleraceae	24*	4	12-15	conical	smooth	(41)	2.2-3.2	12-16	narr-cont	(4-6)	0.49-0.69	?absent
T. oryzae	0	4	20-23	con-cyl	smooth	(27)	2.9-3.5	13-19	depression	(ann)	0.43-0.62	?absent
T. paaloofi	0	4	19-21	conical	annulated	n a	3-4	13-22	depression	7	0.77-1.44	?absent
T. pachys	8	4	13-15	conical	smooth	(13)	(1.5)	16	continuous	1-2	0.63	?absent
T. pakistanensis	0	5	11-13	conical	smooth	13-21	2.1	2.7	narrower	6-7	0.46-0.60	present
T. pamiricus	0	4	24-26	cylindric	annulated	31-45	2.8-3.3	17-22	narrower	7	1.17-1.41	present
T. paracacti	0	5	15-17	conical	smooth	16-21	2.3-2.8	15-19	depression	7-8	0.53-0.68	?absent
T. paracanalis	0	4	15-17	conical	smooth	49(41-48)	3.2	10.5-12	depression	4	0.5-0.6	present
T. paratriversus	0	4	20.5-23	conical	pointed	27-38	2.2-2.9	14-21	depression	3-4	0.70-0.82	absent
T. parvus	0	4	17-18	cylindric	annulated	(35)	(2.9)	13-16	continuous	7	0.65-0.72	?absent
T. penniseti	0	4	15-17	cylindric	smooth	13-17	2.0-3.2	n a	continuous	3	0.53-0.67	n a
T. persicus	0	4	14-16.5	con-cyl	n a	n a	n a	13-17	depression	6-7	0.71-0.73	?absent
T. phaseoli	12*	4	17-26	conical	smooth	22-50	2.7-4.0	14-20	depression	6	0.61-0.77	?absent
T. pratensis	0	4	20-22	conical	annulated	24-33	2.6-3.4	15-23	narr-dep	5-6	0.83-1.30	present
T. projectus	0	4	20-22	conical	smooth	13	2.5	22-23	continuous	5	0.70-0.78	?absent
T. prophasmis	12*	4	20-22	conical	pointed	35-55	1.8-2.7	17-26	depression	7-9	0.85-1.03	?absent
T. pruni	0	3	14-17	conical	smooth	(18)	1.7-2.6	16-22	depression	4-5	0.58-0.68	present
T. punensis	0	4	16-18	cylindric	smooth	28-31	3.7-4.8	12-15	continuous	2-3	0.60-0.75	?absent
T. punici	0	5	16-17	conical	smooth	38-42	2.1-3.2	15-18	narrower	6-7	0.65-0.76	?absent
T. quaidi	0	4	14-15.5	cylindric	smooth	31-41	2.3-3.3	12-15	sunken	5-6	0.45-0.66	?absent
T. queirozi	0	4	15-18	cyl-con	annulated	21-33	2.5-3.8	13-19	narr-dep	4-5	0.43-0.76	?absent
T. rayi	0	3	22-24	cyl-con	smooth	11-14	1.9-2.2	16-20	narrower	3	0.57-0.69	?absent
T. robustus	0	4	23	cylindric	smooth	40-45	(3.6)	15	continuous	1	1.0	?absent
T. rosei	0	4	17-18	conical	smooth	14-17	2.1-2.6	16-21	continuous	2	0.52-0.58	present

Table 1 (continued). Diagnostic characters of *Tylenchorhynchus sensu lato* species.

Species	Long. striae	Lat. lines	Stylet length	Tail shape	Tail tip annulat.	Tail annules	c'	c	Cephalic region	Lip annuli	Body length	Fasciculi
T. sanwali	0	4	19.5	cylindric	annulated	30-31	2	16-19	narrower	2	0.45-0.71	?absent
T. sculptus	0	3	22	cylindric	smooth	(9)	(1.5)	19	continuous	2-3	0.54-0.59	?absent
T. serranus	0	4	19-22	con-cyl	annulated	31-46	2.0-3.0	14-20	narrower	6-8	0.73-0.92	present
T. siccus	0	4	24-30	con-cyl	annulated	16-30	1.6-3.6	10-24	depression	8	0.68-0.94	?absent
T. silvaticus	0	4	22-25.5	cylindric	smooth	17-23	(2.6)	18-23	continuous	3	0.8-1.0	?absent
T. singularis	0	4	13-14	cyl-con	smooth	34-46	2.0-2.6	13-17	constriction	7-9	0.48-0.68	present
T. solani	0	4	16-17	conical	smooth	34	2.4-3.1	n a	narr-dep	5-6	0.60-0.70	n a
T. spinaceae	0	4	14-18	cylindric	smooth	12-18	2.5-2.8	n a	narr-dep	4	0.60-0.81	n a
T. striatus	0	4	16-17	con-cyl	smooth	20-27	(2.9)	13-16	continuous	5-(6)	0.58-0.72	?absent
T. sudanensis	0	4	17	n a	smooth	46	3.2	13	continuous	0	0.83	?absent
T. sulcatus	16*	4	18.5-22	conical	smooth	30-50	2.3-3.3	14-17	depression	6-7	0.54-0.71	?absent
T. swarupi	0	4	13-15	conical	ann-point	n a	(2,9)	14-15	depression	5-6	0.42-0.54	?absent
T. swatiensis	0	3	15-16	cyl-con	smooth	19-21	1.6-2.9	18-20	depression	5-6	0.47-0.58	?absent
T. tarjani	0	4	24-25	cyl-con	smooth	14-15	2.7-2.8	16-18	narr-dep	4-5	0.50-0.62	?absent
T. teeni	0	4	16-19.5	cylindric	annulated	40-57	2.6-4.4	12-19	dep-cont	6-10	0.61-0.95	present
T. tenuicaudatus	0	4	23-26	conical	pointed	(38-65)	3.3-4.2	9-14	depression	8	0.62-0.80	present
T. teres	0	4	17-19	cylindric	smooth	(? 55)	3.4-5.0	14-21	depression	7	0.88-1.00	?absent
T. thermophilus	0	4	19-20	conical	smooth	21-34	(3.2)	13-16	continuous	3-4	0.70-0.85	?absent
T. tobari	irr. ant.	4	17-19	cylindric	smooth	50	3.1-4.4	11-14	narr-dep	8-10	0.61-0.77	present
T. tonkiensis	0	4	15-17	conical	annulated	38	3.5-4.5	n a	depression	7-8	0.72-0.85	?absent
T. triglyphus	0	3	20-23	conical	smooth	13-15	(1.7)	16-19	narrower	4	0.58-0.68	?absent
T. trilineatus	0	3	21-22	cyl-con	smooth	10-15	(2.9)	19-25	depression	4	0.67-0.75	?absent
T. tritici	0	4	12.5-14.5	conical	smooth	15-23	2.2-3.3	13-18	narrower	2-3	0.52-0.66	?absent
T. tuberosus	(26*)	4	19-20	conical	smooth	30-32	(3.2)	15-16	depression	6-7	0.65-0.75	?absent
T. usmanensis	0	4	14-16	conical	smooth	34-40	2.3-3.0	12-14	depression	5-6	0.55-0.65	present
T. variannus	0	4	18	cyl-con	smooth	5-11	3.2-3.5	17-19	narr-cont	4	0.56-0.69	?absent
T. varicaudatus	0	4	17-18	conical	smooth	14-15	2.3-2.8	17-19	continuous	2	0.50-0.56	?absent
T. velatus	0	4	22-25	conical	annulated	25	1.9-2.8	18-24	narrower	5-6	0.66-0.80	present
T. ventralis	0	4	17-19	conical	smooth	48-52	n a	16-20	depression	8	0.82-1.25	absent
T. ventrosignatus	0	4	11-14	conical	smooth	24-35	2.6-3.2	13-16	depression	4	0.45-0.62	present
T. verutus	0	4	24-26	conical	smooth	30-42	(2.6)	18-21	depression	7-8	0.81-0.93	?absent
T. vulgaris	0	4	14-16	cylindric	smooth	26-42	2.0-2.8	14-20	depression	7	0.50-0.67	?absent
T. zeae	0	4	17-20	conical	smooth	16	2.6	14-20	cont-narr	4	0.53-0.64	?absent
T. zambiensis	0	4	13-15	cyl-con	smooth	21-32	2.2-3.1	12-15	depression	4-5	0.51-0.65	n a
T. zarinai	0	4	20-22.5	cylindric	smooth	12-19	2.5-3.9	14-19.5	continuous	0	0.62-0.72	n a

* including lateral lines; n a - data not available

77-88].

T. zambiensis Venditti & Noel, 1995 [*Nematropica*, 25: 1-6].

T. zarinai nom. n.
= *T. tuberosus* Zarina & Maqbool, 1994 [*Pakistan J. Nematol.*, 12: 51-57], *nec T. tuberosus* (Maqbool, Ghazala & Fatima, 1984).

Remark 1

Holotype and paratypes of *T. wilskii* were compared with several populations of *T. maximus* and no differences were found. *Tylenchorhynchus wilskii* was differentiated mainly because of the presence of males, but this is not recognized as a specific character and these males agree with males of *T. maximus* from other populations. The type locality was resampled but only females of *T. maximus* were found.

Remark 2

Descriptions of *T. mexicanus* and *T. ancorastyletus* do not differ, and after examination of the specimens described by Brzeski (1991b) it is concluded that the two species are conspecific.

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Резюме. Дается обзор диагностических признаков 117 видов рода *Tylenchorhynchus* Cobb, 1913 *sensu lato*. Приведенные данные могут быть использованы для идентификации видов рода. *Bitylenchus, Dolichorhynchus, Neodolichorhynchus, Quinisulcius, Trilinellus* и *Macrorhynchus* рассматриваются как синонимы *Tylenchorhynchus*.