

Table S1. Updated checklist of valid species of the genus *Paratylenchus* Micoletzky, 1922.

	<i>Paratylenchus</i> species
1.	<i>P. abietis</i> Eroshenko, 1974
2.	<i>P. aciculus</i> Brown, 1959
3.	<i>P. acti</i> Eroshenko, 1978
4.	<i>P. aculentus</i> Brown, 1959
5.	<i>P. alleni</i> Raski, 1975
6.	<i>P. amundseni</i> Bernard, 1982
7.	<i>P. anceps</i> Cobb, 1923
8.	<i>P. anchorus</i> (Mohilal & Dhanachand, 2004) Ghaderi et al., 2014
9.	<i>P. aonli</i> Misra & Edward, 1971
10.	<i>P. aquaticus</i> Merny, 1966
11.	<i>P. arculatus</i> Luc & de Guiran, 1962
12.	<i>P. audriellus</i> Brown, 1959
13.	<i>P. baldaccii</i> Raski, 1975
14.	<i>P. beltsvillensis</i> Kantor et al., 2021
15.	<i>P. bilineatus</i> (Brzeski, 1995) Brzeski, 1998
16.	<i>P. brasiliensis</i> (Huang & Raski, 1986) Brzeski, 1998
17.	<i>P. breviculus</i> Raski, 1975
18.	<i>P. brevihastatus</i> Wu, 1962
19.	<i>P. bukowinensis</i> Micoletzky, 1922
20.	<i>P. canchicus</i> Mohilal & Dhanachand, 2004
21.	<i>P. capitatus</i> (Adams & Eichenmuller, 1962) Siddiqi & Goodey, 1964
22.	<i>P. caravaquenus</i> Clavero-Camacho et al., 2021
23.	<i>P. chongqingensis</i> Li, Wang, Xie & Xu, 2019
24.	<i>P. ciccaronei</i> Raski, 1975
25.	<i>P. colbrani</i> Raski, 1975
26.	<i>P. colinus</i> (Huang & Raski, 1986) Brzeski, 1998
27.	<i>P. concavus</i> Eroshenko, 1978
28.	<i>P. conicephalus</i> Van den Berg, Eskandari, Teidt & Karegar, 2011
29.	<i>P. corbetti</i> (Ganguly & Khan, 1990) Siddiqi, 2000
30.	<i>P. coronatus</i> Colbran, 1965
31.	<i>P. costatus</i> (Raski, 1976) Siddiqi, 1986
32.	<i>P. crenatus</i> Corbett, 1966
33.	<i>P. dianthus</i> Jenkins & Taylor, 1956
34.	<i>P. discocephalus</i> Siddiqi, Khan & Ganguly, 1990
35.	<i>P. elachistus</i> Steiner, 1949
36.	<i>P. elegans</i> (Raski, 1962) Siddiqi & Goodey, 1964
37.	<i>P. elongatus</i> (Abdel-Rahman & Maggenti, 1988) Brzeski, 1998
38.	<i>P. emmoti</i> Dolinski, Souza & Huang, 1996
39.	<i>P. enatus</i> (Raski, 1976) Siddiqi, 1986
40.	<i>P. enigmaticus</i> Munawar et al., 2021
41.	<i>P. epacris</i> (Allen & Jensen, 1950) Goodey, 1963

42. *P. epicotylus* Siddiqi, Khan & Ganguly, 1990
43. *P. flectospiculus* Huang & Raski, 1987
44. *P. fueguensis* Raski & Valenzuela, 1986
45. *P. goldeni* Raski, 1975
46. *P. goodeyi* Oostenbrink, 1953
47. *P. guangzhouensis* Wang, Li, Xie, Yu & Wu, 2016
48. *P. halophilus* Wouts, 1966
49. *P. hamatus* Thorne & Allen, 1950
50. *P. hamicaudatus* (Cid del Prado Vera & Maggenti, 1988) Brzeski, 1998
51. *P. holdemani* Raski, 1975
52. *P. humilis* Raski, 1975
53. *P. idalimus* (Raski, 1962) Siddiqi & Goodey, 1964
54. *P. indalus* Clavero-Camacho et al., 2021
55. *P. intermedius* (Raski, 1962) Siddiqi & Goodey, 1964
56. *P. israelensis* (Raski, 1973) Siddiqi, 1986
57. *P. italiensis* Raski, 1975
58. *P. ivorensis* Luc & de Guiran, 1962
59. *P. janai* (Baqri, 1979) Siddiqi, 1986
60. *P. jasminae* Phani, Somanwashi, Rao & Khan, 2019
61. *P. juglansi* Kaul & Waliullah, 1990
62. *P. labiosus* Anderson & Kimpinski, 1977
63. *P. laocaiensis* Nguyen, Baldwin & Choi, 2004
64. *P. latescens* (Raski, 1976) Siddiqi, 1986
65. *P. leiodermis* Raski, 1975
66. *P. lepidus* Raski, 1975
67. *P. leptos* Raski, 1975
68. *P. longicaudatus* Raski, 1975
69. *P. longilabiatus* (Huang & Raski, 1986) Brzeski, 1998
70. *P. macrodorus* Brzeski, 1963
71. *P. marylandicus* Jenkins, 1960
72. *P. mexicanus* Raski, 1975
73. *P. micoletzkyi* Edward, Misra & Singh, 1967
74. *P. microdorus* Andrásy, 1959
75. *P. mimulus* Raski, 1975
76. *P. minor* Sharma, Sharma & Khan, 1986
77. *P. minusculus* Tarjan, 1960
78. *P. minutus* Linford in Linford, Oliveira & Ishii, 1949
79. *P. mirus* (Raski, 1962) Siddiqi & Goodey, 1964
80. *P. morius* Yokoo, 1970
81. *P. musae* (Shahina & Maqbool, 1993) Brzeski, 1998
82. *P. mutabilis* Colbran, 1969
83. *P. nainianus* Edward & Misra, 1963
84. *P. nanjingensis* Wang, Xie, Li, Wu & Xu, 2016
85. *P. nanus* Cobb, 1923

86. *P. nawadus* Khan, Prasad & Mathur, 1967
87. *P. neoamblycephalus* Geraert, 1965
88. *P. neonanus* Mathur, Khan & Prasad, 1967
89. *P. neoprojectus* Wu & Hawn, 1975
90. *P. obtusicaudatus* Raski, 1975
91. *P. oostenbrinki* Misra & Edward, 1971
92. *P. pandatus* (Raski, 1976) Siddiqi, 1986
93. *P. pandus* Pinochet & Raski, 1977
94. *P. paralatescens* Maria, Cai, Ye & Powers, 2018
95. *P. paramonovi* Bagaturia & Solov'eva, in Solov'eva, 1975
96. *P. paraperaticus* Kashi, Karegar & Kheiri, 2009
97. *P. parastraeleni* Clavero-Camacho et al., 2021
98. *P. parvulus* (Raski, 1976) Siddiqi, 1986
99. *P. pedrami* Clavero-Camacho et al., 2021
100. *P. peperpotti* (Schoemaker, 1963) Siddiqi & Goodey, 1964
101. *P. peraticus* (Raski, 1962) Siddiqi & Goodey, 1964
102. *P. perlatus* Raski, 1975
103. *P. perminimus* Siddiqi, 1996
104. *P. pernoxius* Siddiqi, Baujard & Mounport, 1993
105. *P. pesticus* Thorne & Malek, 1968
106. *P. projectus* Jenkins, 1956
107. *P. prunii* Sharma, Sharma & Khan, 1986
108. *P. pseuduncinatus* Phukan & Sanwal, 1979
109. *P. raskii* (Phukan & Sanwal, 1979) Siddiqi, 1986
110. *P. recisus* Siddiqi, 1996
111. *P. robustus* Wu, 1974
112. *P. rostrocaudatus* Huang & Raski, 1987
113. *P. rotundicephalus* Bajaj, 1988
114. *P. salubris* Raski, 1975
115. *P. sarissus* Tarjan, 1960
116. *P. serricaudatus* Raski, 1975
117. *P. shenzhenensis* Wang, Xie, Li, Xu, Yu & Wang, 2013
118. *P. sheri* (Raski, 1973) Siddiqi, 1986
119. *P. similis* Khan, Prasad & Mathur, 1967
120. *P. sinensis* Maria, Miao, Castillo & Zheng, 2020
121. *P. solivagus* (Raski, 1976) Siddiqi, 1986
122. *P. steineri* Golden, 1961
123. *P. straeleni* (De Coninck, 1931) Oostenbrink, 1960
124. *P. tateae* Wu and Townshend, 1974
125. *P. tenuicaudatus* Wu, 1961
126. *P. teres* (Raski, 1976) Siddiqi, 1986
127. *P. thysanolus* Pramodini & Mohilal, 2009
128. *P. triincisus* Bajaj, 1988
129. *P. tui* Orton Williams, 1985

130. *P. uncinatus* Samibaeva, 1966
 131. *P. vandenbrandei* de Grisse, 1962
 132. *P. variabilis* Raski, 1975
 133. *P. variatus* Jairajpuri, 1982
 134. *P. veruculatus* Wu, 1962
 135. *P. verus* (Brzeski, 1995) Brzeski, 1998
 136. *P. vexans* Thorne & Malek, 1968
 137. *P. vitecus* (Pramodini, Mohalil & Dhanachand, 2006) Ghaderi et al., 2014
 138. *P. wuae* Yu, Ye & Powers, 2016
 139. *P. yokooi* (Toida, Ohshima & Hirata, 1983) Brzeski, 1998
 140. *P. zurgenerus* Clavero-Camacho et al., 2021
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Table S4: Matrix codes for *Paratylenchus aquaticus* close related species, including: *P. aquaticus*, *P. humilis*, *P. pandus*, *P. triincisus*, *P. variatus*.

Paratylenchus species	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
<i>aquaticus_T</i>	1	2	2	1	2	2	2	2	1	2	1	2	4	324	32	4	2	23	1	1	23	1	1	2
<i>humilis_T</i>	1	1	2	1	4	1	1	1	1	2	1	2	1	2	1	1	1	32	1	1	23	1	1	1
<i>pandus_T</i>	21	3	2	1	2	1	2	1	1	1	4	1	3	324	23	3	2	21	1	3	21	1	1	21
<i>triincisus_T</i>	1	3	2	1	2	2	2	1	1	2	1	2	3245	34	23	3	2	2	2	1	12	1	1	12
<i>variatus_T</i>	1	3	2	1	2	2	1	1	1	1	4	1	31245	324	213	3	2	2	1	3	21	1	1	12