



Nematode-induced demasculinisation of *Dolichopus* males (Diptera: Dolichopodidae)

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Abstract

Species-level identification of male dolichopodid flies (Diptera: Dolichopodidae) is based on the structure of genitalia and secondary sexual characters. The effect of parasitic nematodes on the diagnostic features was studied in a sample of over 6000 *Dolichopus* adults collected mostly from Finland. Large nematodes were found in the abdominal cavity of 45 *Dolichopus* males. Parasitised males of the small to mid-sized species *D. fraterculus* Zetterstedt, *D. lepidus* Staeger, *D. longitarsis* Stannius and *D. picipes* Meigen were clearly demasculinised. Secondary sexual characters like a narrowed face, long ciliae on hind femora and modified tarsal segments were weakly developed or absent. Changes in the size, shape and position of male genitalia were also found. Larger species like *D. discifer* Stannius and *D. popularis* Wiedemann were less affected by the parasites. Some of the nematode-infected males have been described as new species and they are here synonymised as follows: *Dolichopus brachyurus* Zetterstedt 1859=*D. fraterculus* Zetterstedt, 1843; *D. consimilis* Wahlberg, 1850=*D. picipes* Meigen, 1824; *D. cruralis* Wahlberg, 1850=*D. lepidus* Staeger, 1842; *D. kowarzianus* Stackelberg, 1928=*D. longitarsis* Stannius, 1831; *D. lapponicus* Becker, 1917=*D. lepidus* Staeger, 1842; *D. micropygus* Wahlberg, 1850=*D. fraterculus* Zetterstedt, 1843; *D. parvicaudatus* Zetterstedt, 1843=*D. plumipes* (Scopoli, 1763); *D. pectinitarsis* Stenhammar, 1851=*D. plumipes* (Scopoli, 1763) **syn. nov.**

Key words: Dolichopodidae, *Dolichopus*, Nematoda, taxonomy, parasite/host interaction, new synonyms

Introduction

Dolichopodidae, also known as the long-legged flies, is a large insect family with over 7000 described species worldwide (Yang *et al.* 2006). *Dolichopus* Latreille is the most diverse genus of the family with some 600 species known to date (Brooks 2005). The genus is essentially Holarctic with only a few species known from neighboring regions. Identification of species in this genus has traditionally been based on primary and secondary sexual characters of males (Negrobov *et al.* 2005). The high abundance of many *Dolichopus* species and the often prominent secondary sexual characters of males made these flies popular among 19th century dipterists. By the turn of the 20th century most North European species had been described.

Some of the boreal or boreomontane *Dolichopus* species are characterised by unusually small male genitalia and absent, or poorly developed secondary sexual characters of males. Ringdahl (1928, 1949) classified these species as gynandromorphs or aberrative forms, but many authors have subsequently treated them as valid species (Stackelberg 1930, Parent 1938, Negrobov 1991, Negrobov *et al.* 2005, Yang *et al.* 2006). Grichanov (2002) has voiced his concern of the status of *Dolichopus brachyurus* Zetterstedt, *D. micropygus* Wahlberg, *D. pectinitarsis* Stenhammar and *D. parvicaudatus* Zetterstedt after examination of type material, but no synonymies have been formally proposed.

Seven of the species considered to be aberrant by Ringdahl (1928, 1949) have recently been found in Finland: *D. aemulus* Loew, *D. cruralis*, *D. consimilis* Wahlberg, *D. kowarzianus* Stackelberg, *D. micropygus*, *D.*