Zoosymposia 3: 245–261 (2009)
www.mapress.com/zoosymposia/

ISSN 1178-9905 (print edition)
ZOOSYMPOSIA
ISSN 1178-9913 (online edition)

The subgenus *Tipula (Pterelachisus)* in Finland (Diptera: Tipulidae)—species and biogeographic analysis

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Abstract

A total of 19 Finnish species of the subgenus *Tipula (Pterelachisus)* are presented. The highest species richnesses are observed in the southern, south eastern and eastern parts of the country and the lowest number of species are found in south western, western and northernmost Finland. This pattern is probably caused by the climate and the eastern Palaearctic origin of several species, but also by differences in forestry history between eastern and western Finland. 16 % of the species are red-listed (NT-VU); these species are confined to primeval heath forests or herb-rich forests and have small distribution areas. 42 % of the species are generally poorly known (NE-DD) and 42 % are rather wide-spread and common (LC). Furthermore, 26 % of the species are National Responsibility Species of Finland; these are boreal species, being absent or rare in Central Europe. The distribution of species in Finland and their area of occupancy is positively correlated. There is also a positive relation between the global range of any species and the extent of its regional occurrence in Finland.

Key words: Craneflies, boreal zone, species richness, red-listed species, National Responsibility Species

Introduction

Tipula (Pterelachisus) is a species rich subgenus within the family Tipulidae, consisting of 204 species and subspecies, worldwide. Members of the subgenus are known from the northern hemisphere, the eastern Palaearctic being the most species rich region (97 species and subspecies), followed by western Palaearctic (53), Nearctic (40) and Oriental (38) regions. A relatively small proportion of the species are known from neighbouring regions, since only 19 species are Palaearctic, three species Holarctic and three species are common to eastern Palaearctic and Oriental regions. Only one species is known from the Neotropics (Mexico) (data from Oosterbroek 2009). Species of the subgenus are terrestrial, mainly confined to forests (Alexander 1920; Theowald 1957), although some species dwell in arctic ecosystems (Lantsov 1982; Brodo 1990).

One of the general patterns in biogeography is the decreasing number of species with increasing latitude (Fischer 1960). This pattern has been observed on a global (e.g. Begon et al. 1996) as well as on a regional scale (Väisänen & Heliövaara 1994), although reversed species richness patterns have been reported (e.g. Järvinen et al. 1987; Kouki et al. 1994; Heino 2002). Within Tipuloidea (i.e. families Limoniidae, Pediciidae, Cylindrotomidae and Tipulidae) this general pattern is apparent on global scale, since the Neotropical and Oriental regions are the most species rich (de Jong et al. 2008).

The western Palaearctic Tipulidae can be roughly divided into three groups: (1) Mediterranean, (2) boreal, alpine and montane species and (3) species of European lowlands (Theowald &

Accepted by V. Lantsov: 2 Oct. 2009; published: 22 Dec. 2009