

SPREAD OF *CAREX PILOSA* SCOP. IN LATVIA AND LITHUANIA**Zigmantas Gudžinskas¹, Ilmārs Krampis², Māris Laiviņš²**¹ Institute of Botany, Žaliuju Ežeru Str. 49, Vilnius, Lithuania, LT-08406, zigmantas.g@botanika.lt² Institute of Biology, Miera Str. 3, Salaspils, Latvia, LV-2169, ilmars.krampis@inbox.lv; m.laivins@inbox.lv

Over the last decades, *Carex pilosa*, a suboceanic-subcontinental colline and montane character species of the East European deciduous forest communities, is spreading northward in eastern regions of Lithuania and Latvia. In our opinion, the spread of the species in East Baltic region is favoured by increase of climate continentality.

Key words: *Carex pilosa*, distribution, migration, Latvia, Lithuania

INTRODUCTION

Carex pilosa is a character species of the East European deciduous forest communities (Schultze-Motel 1980; Горчаковский 1968; Смирнова 1980). *C. pilosa* is a mesophytic (mesic) species which grows in variable light conditions, though prefers warmth.

The northern limit of the range of *C. pilosa* occurs in south Lithuania (Meusel et al. 1965; Hulten, Fries 1986; Baroniņa et al. 2003). In Belarus, this species is most commonly found in the southern regions, occasionally also in the north of the country (Проскоряков 1949), but it also occurs in the southeast part of the Pskov region in the Russian Federation bordering with Latvia (Еропова 1976). In Lithuania, *C. pilosa* is rare and have been found mainly in the eastern and southeastern parts of the country. In Latvia, it occurs only in southeastern part. In southeast Latvia, over the last decades of 20th century and beginning of the 21st century several new localities were found. Thus, we hypothesize that the spread of *C. pilosa* was favoured by the increasing degree of continentality in this region, facilitating the extension of the range of this species toward the north.

INVENTORY AND MAPPING OF LOCALITIES

In order to analyze the distribution pattern of *C. pilosa* in Lithuania and Latvia, literature sources (Villerts 1940; Stancevičius 1963; Suško 2008; Iliško, Soms 2009) and herbaria (in Lithuania - Herbarium of the Institute of Botany (BILAS) and Vilnius University (WI); in Latvia – the Herbarium of the Latvia, University Institute of Biology (H LATV)) were analyzed and summarized. Maps

illustrating the occurrence of this species in Latvia and the Baltics are presented on a 5×5 and 10×10 km grid using the TM projection (Krampis 2007).

In Latvia, *C. pilosa* was for the first time detected by A. Villerts in southeast Latvia in Naujene in a ravine in grey alder forest (Villerts 1940). Forty years later, the species was repeatedly found in Naujene too in a ravine forest by Ģ. Gavrilova (Kļaviņa). In 2002, the species was found on the Isle Lakstīgalu of Lake Zvirgzdene in the Latgale Upland – it is known as the northernmost locality of this species in the Baltics (M. Laiviņš), and in a forest in the Ilūkste river valley in Rauda in Augšzeme Upland (V. Baroniņa). New locality of *C. pilosa* was found in 2005 by U. Suško in the Pilskalne subglacial tunnel in the Augšzeme Upland, and in 2009 by P. Evarts-Bunders, E. Iliško etc. in several ravines in the Daugavas loki nature park and river valley of Lazdukalns brook (Figure 1).

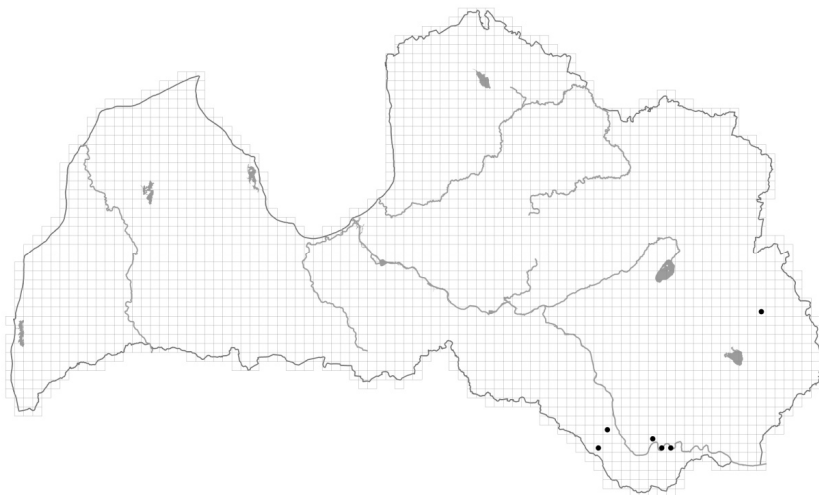


Figure 1. Distribution of *Carex pilosa* in Latvia (grid 5×5 km)

Up to 1962, there were only two known localities of *C. pilosa* in Lithuania: in south of the country by Ilguvas (Šakiai district) and in southeast in Puščios forest (Moletai district), in both cases the localities occurred in river valleys (Stancevičius 1963). In Lithuania, majority of habitats of *C. pilosa* are concentrated in broad-leaved (usually in *Tilio-Carpinetum betulii* communities) and mixed forests on fertile soils. Presently several new localities of *C. pilosa* in Lithuania are known.

DISCUSSION

In our opinion, the increase in the number of *C. pilosa* localities over the recent years in Lithuania and Latvia is related to active migration and expansion of the distribution range toward the north. Majority of the localities occur in the eastern parts of Lithuania and Latvia, and the distribution pattern coincides with the Baltic Ridge, an upland which is 80 to 90 km wide and up to 300 m high above sea level high that, in our opinion, serves as a migration corridor for this species (Figure 2). The terrain, and the southeast-northwest and the south–north orientation of the watercourses in the macro-relief favour its migration.

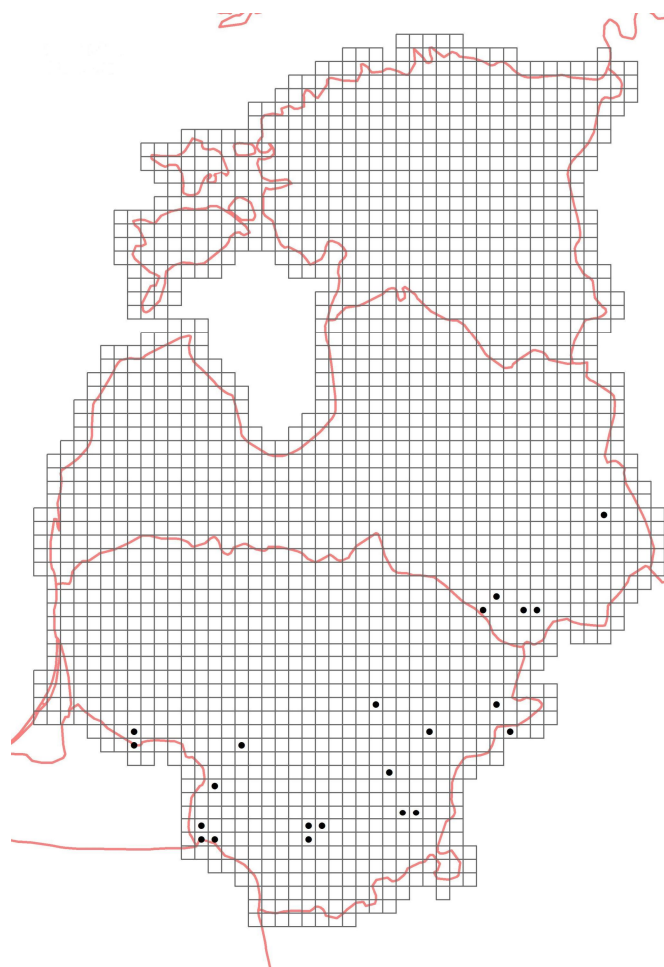


Figure 2. Distribution of *Carex pilosa* in the Baltic countries (grid 10 × 10 km)

The largest rivers, e.g. Daugava, Nemuna, Neris, have a particular role in the migration of the species, however, smaller linear topographic forms and streams are significant as well. For instance, in the relatively small Augšzeme Upland there are six 7 to 15 km long and up to 50 m deep subglacial tunnels and spillway valleys (Soms 2001), where *C. pilosa* was found. *C. pilosa* was found in similar locations also in Slovakia (Šmarda 1962; Kuklova et al. 2005).

C. pilosa is a suboceanic-subcontinental (oz₂₋₃) colline and montane species, and its contemporary migration toward the north in the East European Plain coincides the articulated terrain forms: river valleys, ridges and uplands in locations with moderate continental climate. According to Anita Draveniece, in southeast Latvia, where *C. pilosa* is currently spreading, the highest values of Conrad continentality index are found (Figure 3), thus in this region the largest seasonal temperature amplitudes, the largest heat resources and the lowest precipitation in Latvia is found (Draveniece 2007; Laiviņš, Melecis 2003).

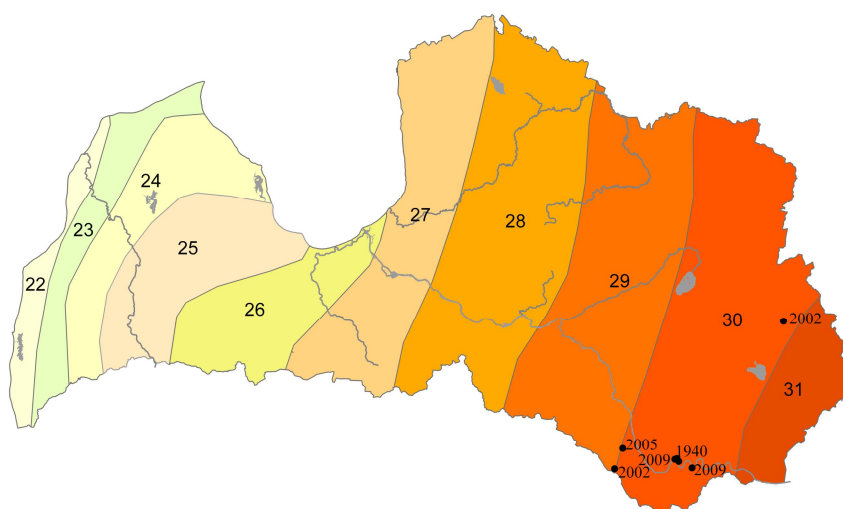


Figure 3. Distribution pattern of *C. pilosa* within the sectors of Conrad continentality index in Latvia (by the localities the year of first record is added).

Contemporary climate change – the increasing temperatures and extended drought periods within the vegetation season favour the spread of *C. pilosa* as well as promotes spread of East European deciduous forest communities such as

Quercus-Tilion and *Carpinion* (*C. pilosa* is a character species of these communities) in eastern regions of Lithuania and Latvia.

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***Carex pilosa* Scop. izplatīšanās Latvijā un Lietuvā**

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Kopsavilkums

Raksturvārdi: *Carex pilosa*, izplatība, migrācija, Latvija, Lietuva

Pēdējos gadu desmitos Lietuvas un Latvijas austrumu reģionos pa Baltijas grēdu un upju ielejām uz ziemeļiem izplatās subokeāniska-subkontinentāla kollīna un montāna Austrumeiropas platlapju mežu sabiedrību rakstursuga *Carex pilosa*. Iespējams, ka *Carex pilosa* izplatīšanos Austrumbaltijā sekmē klimata kontinentalitātes palielināšanās.