

Preliminary checklist of the genus *Taraxacum* (Asteraceae) in North-West European Russia, with five species new for Russia (*Taraxacum* Notulae Rossiae Boreali Europeae I)

Предварительный чек-лист рода *Taraxacum* (Asteraceae) северо-запада европейской части России с указанием 5 новых для России видов (*Taraxacum* Notulae Rossiae Boreali Europeae I)

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Abstract. According to currently available data, 159 species of genus *Taraxacum* F. H. Wigg. were reported for North-West Russia (i. e. within the city of Saint-Petersburg, Leningrad Region, Pskov Region, and Novgorod Region), but among them the specimens of only 126 species were identified with reliability. Five *Taraxacum* species are reported in this article as new for North-West Russia, and for Russia as a whole: *T. acervatum* Rail., *T. hepaticum* Rail., *T. macranthoides* G. E. Haglund, *T. sertatum* Kirschner, H. Øllg. et Štěpánek, *T. subxanthostigma* M. P. Christ. ex H. Øllg. All of them belong to the section *Taraxacum*. Newly recorded species are illustrated and the list of their herbarium specimens is provided. A brief summary of the taraxacological studies undertaken earlier in North-West Russia is presented as well.

Keywords: *Taraxacum*, apomictic vascular plants, biodiversity, flora of Russia, floristic novelties, Leningrad Region, Pskov Region, Novgorod Region.

Аннотация. На настоящий момент для северо-запада европейской части России (понимаемого в границах Санкт-Петербурга, Ленинградской, Псковской и Новгородской областей) приводятся 159 видов рода *Taraxacum* F. H. Wigg., но только 126 из них подтверждены достоверными определениями специалистов. Пять видов в настоящей статье указаны для Северо-Запада впервые (они являются новыми и для России в целом): *T. acervatum* Rail., *T. hepaticum* Rail., *T. macranthoides* G. E. Haglund, *T. sertatum* Kirschner, H. Øllg. et Štěpánek, *T. subxanthostigma* M. P. Christ. ex H. Øllg. Все эти виды относятся к секции *Taraxacum*. Для всех впервые обнаруженных видов приводятся изображения и перечни известных гербарных сборов. Также в статье дан краткий обзор истории изучения рода *Taraxacum* на северо-западе европейской части России.

Ключевые слова: *Taraxacum*, апомиктические виды сосудистых растений, биологическое разнообразие, флора России, флористические находки, Ленинградская область, Псковская область, Новгородская область.

Introduction

The genus *Taraxacum* F. H. Wigg. represents a part of vascular plant flora very poorly studied within Russia, with its alpha-taxonomic diversity remaining largely unknown. *Taraxacum* diversity is often neglected in local floristic studies due to the paucity of experts. The determination of *Taraxacum* species is also complicated because of the lack of reliable keys for their

identification. Therefore, determinations by experts, as well as comparison with authentic and reliably determined collections becomes the only way for plant naming in this group. Nowadays, on the one hand, this process is facilitated by web-based presentation of some important collections, but on the other, it is obstructed by the decrease in the number of experts who can identify material correctly, and by high proportion

of incorrect data in important databases and publications (Kirschner et al., 2016).

To the date, pinpointed studies of *Taraxacum* in European Russia were almost completely lacking, resulting in far from complete treatments of this group (Tzvelev, 1989, 2000). Outside European Russia, the situation may be different, although this group suffers from insufficient amount of studies everywhere across the country; the most important contribution in last decades were in-depth studies of some Asiatic sections by Czech authors and their collaborators, who already provided a revision of section *Leucantha* Soest (Kirschner et al., 2006), a “nomenclator” of section *Arctica* Dahlst. (Kirschner et al., 2022) and currently deal with section *Borealia* Hand.-Mazz. (in prep.). However, those revisions only marginally cover the *Taraxacum* diversity of European Russia, and do not touch the most diverse type section of genus, which is a main subject of the current contribution.

We hope, that in the forecoming years the situation in North-West European Russia will step-by-step change, and this article will contribute into this process.

Material and methods

This article covers *Taraxacum* diversity of the North-West European Russia (further abbreviated as NWR).

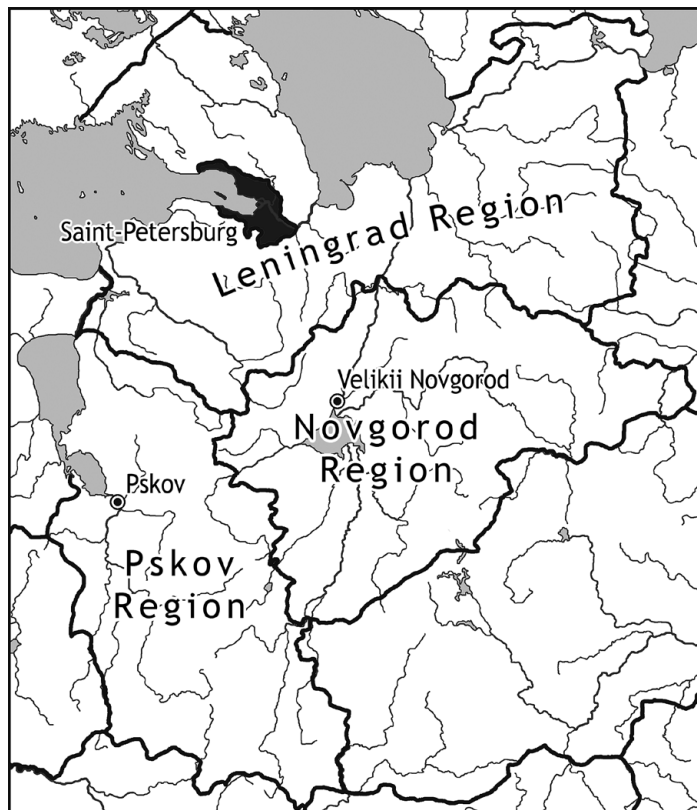


Fig. 1. Administrative map of North-West European Russia.

This territory is an area consisting of four administrative regions of the Russian Federation (Fig. 1): the Leningrad Region, the city of Saint-Petersburg, the Pskov Region, and the Novgorod Region. It occupies an area approximately 195 000 km², and was originally covered with boreal and hemiboreal primary vegetation types. North part of the Leningrad Region belongs to Fennoscandian phytogeographical region (Sennikov, 2005).

The overview of previous taraxacological studies was based on literature sources and earlier herbarium collections deposited in the Herbarium of the Komarov Botanical Institute, Saint-Petersburg (LE). In connection with the launch of our own taxonomic studies of the group, since 2017 we started accumulation of new herbarium gatherings, which are currently kept in the Komarov Botanical Institute in a separate collection within the European section of the Herbarium. By the beginning of 2022, this collection comprised ca. 2500 specimens. Pre-existing *Taraxacum* collections from NWR are estimated at only ca. 1200 herbarium sheets, and even they are mostly of limited use for taxonomical study due to either substantial damage by herbarium pests (pest attack took place in the early 2000s), or to their low quality (unrepresentative specimens, late season gatherings, very low quality of drying, no flowers, etc.).

The determinations were based after comparisons with the original material and protologues. Determination traditions were taken into account according to the important revisions of *Taraxacum* for Finland, Czech Republic and Germany (Kääntönen, 1998; Reinikka, 1998; Uhlemann, 2003; Trávníček et al., 2010), some herbarium collections from other institutions were studied via GBIF portal (GBIF, 2022) and via the website of Stockholm Natural History Museum (Naturhistoriska..., 2022). Digital images of some authentic specimens were acquired from the Herbarium of the University of Helsinki. Annoyingly, personal visit of the first author of this article to study herbarium collections housed in the Helsinki and Stockholm in the last years was hampered by various obstacles, but it is urgently needed.

A brief outline of the current taraxacological knowledge in North-West Russia

The knowledge about the *Taraxacum* diversity of NWR originates from the herbarium determined by experts from Finland (mainly for the territories which belonged to Finland or Estonia before 1940), and by Russian botanists who dealt with this genus. The herbarium specimens determined by the specialists from Finland were collected within the modern Pechora District of the Pskov Region

(summarized by Marklund, 1938) and within the Karelian Isthmus of the Leningrad Region (summarized by Sennikov, 2007). However the lists of the taxa presented by Marklund and Sennikov are incomplete because of insufficient amount of studies, only marginally touching NWR, rapid changes in *Taraxacum* biodiversity (Räsänen, 2013), and because of possible redeterminations of old herbarium materials.

As for the studies by Russian botanists who dealt with *Taraxacum*, the main problem is the correctness of determinations. There are only few Russian students who focused on this group. First of all one should mention an outstanding Russian taxonomist Sergei Vasilievich Juzepczuk (1893–1959; also Juzepchuk), who interested in the systematics of *Taraxacum* and was taught by Harald Lindberg during the visit to Helsinki in 1916–1917, and later likely consulted with him as well, as evidenced from some herbarium labels. There are about 250 *Taraxacum* specimens in Juzepczuk's herbarium collection at LE, partly determined (either by him, or by Lindberg) using 26 binomials, 4 of which were never published (*T. actinolobum* Juz. ined., *T. curtisquameum* Juz. ined., *T. ingricum* Juz. ined., *T. meinshausenii* Juz. ined.). However, later Juzepczuk did not paid much attention to the studies of this genus, because he concentrated on the taxonomy of another complicated genus, *Alchemilla* L.

Nikolai Nikolaievich Tzvelev (1925–2015; also Tsvelev or Čvelev) was yet the only Russian botanist who published the revisions of the type section of genus *Taraxacum*. His contribution was done in connection with the revisions of this group for the “Flora of Eastern Europe” (Tzvelev, 1989) and his “Manual of the vascular plants of North-West Russia” (Tzvelev, 2000). Tzvelev experienced a joint excursion with European specialists held in Finland during *Taraxacum* meeting in 1998, and he left a collection of herbarium specimens from NWR (ca. 700 herbarium sheets are extant), but in general he had not enough time for the detailed studies of this particular genus. Even himself, he characterized this attempt only as a preliminary one. From his revisions, we may see that many widely recognized taxa were formally lumped by him under one name, and the correctness of his herbarium determinations often may be questioned as well. It seems that only few species from type section were correctly determined by him, such as *T. pectinatifforme* H. Lindb., *T. tenebricans* (Dahlst.) Raunk., *T. sublaeticolor* Dahlst. and maybe a few others. Therefore, the main Tzvelev's achievement in respect to *Taraxacum* was his being first who directly addressed to this group in European Russia. Notably, the list of species in his “Manual...” (Tzvelev, 2000), being largely based on incorrect understanding

of individual species, is quite a logical selection of taxa which are most likely to occur in this area based on the existing literature.

The most recent contribution in *Taraxacum* from NWR was presented by contemporary researcher, Alexander Sennikov (born 1972). Based on thorough study of herbarium collections from the Herbarium of the University of Helsinki, though without critical revision of individual herbarium specimens, he prepared the most complete and detailed list of the taxa ever reported from the Russian part of East Fennoscandia, within the Leningrad Region, Republic of Karelia and the Murmansk Region (Sennikov, 2007) and supplemented it by the citations of corresponding herbarium specimens.

It can be concluded that due to the efforts of earlier contributors, everything that can be done without assembling new herbarium collections and their critical study has been already summarized in the literature, demonstrating the need for the further step in the study of this group. As this step, we understand the accumulation of new collections on *Taraxacum* from NWR and their critical analysis based on the experience that is gained first of all by Nordic authors and other students who determine taxa in so-called “nordic spirit” (Lundevall, Øllgaard, 1999).

A list of *Taraxacum* species reported from North-West Russia

The complete list of the *Taraxacum* species which were reported from NWR is presented in the Table. As stated above, this list is only preliminary. Only the taxa determined by Finnish taraxacologists are regarded as reliably reported for NWR, as well as three taxa confirmed by the determinations of J. Kirschner and J. Štěpánek (*T. gentile* G. E. Haglund ex Rail., *T. hollandicum* Soest, *T. pulchrifolium* Markl.). The names which were introduced for the flora of NWR by Juzepczuk and especially by Tzvelev only, need confirmation in the future. Supposingly, some of them are already confirmed by new gatherings of 2017–2022.

Sectional attribution and authors of plant names are given according to Lundevall and Øllgaard (1999), whenever possible. *Taraxacum* from NWR belong to nine sections: *Borea* Sahlin ex A. J. Richards, *Boreigena* G. E. Haglund, *Ceratoidea* Kirschner et Štěpánek, *Erythrosperma* (H. Lindb.) Dahlst., *Hamata* H. Øllg., *Leucantha*, *Macrodonata* M. P. Christ., *Palustria* (H. Lindb.) Dahlst. and *Taraxacum*, but the presence of sections *Ceratoidea*, *Leucantha* and *Macrodonata* (each group represented by one species only) is unconfirmed. Section *Palustria* is also represented by a single species, *T. hollandicum* Soest, which may be unintentionally introduced.

Table. Summary of the existing data on the distribution of *Taraxacum* species in the administrative regions of North-West Russia. Abbreviations of sectional names: C — *Ceratoidea*, Bo — *Borea*, Bg — *Boreigena*, E — *Erythrosperma*, H — *Hamata*, L — *Leucantha*, M — *Macrodonta*, P — *Palustria*, T — *Taraxacum*. Abbreviations of administrative regions: Len — Leningrad Region, SPb — Saint Petersburg, Psk — Pskov Region, Nov — Novgorod Region.

Species	Section	Confirmed determinations by Finnish botanists. Data for Psk originate from Marklund (1938), for Len — from Sennikov (2007)	Tzvelev, 2000 (in this publication, SPb is formally treated within Len)	Juzepczuk's herbarium specimens (LE)	Other data
1	2	3	4	5	6
<i>T. acervatum</i> Rail.	T	—	—		Reported for the first time in the current revision from Len, SPb and Psk
<i>T. acutangulum</i> Markl.	T	Psk	In synonymy of <i>T. aequilobum</i>		
<i>T. aequilobum</i> Dahlst.	T	—	Len, Psk, Nov		
<i>T. alatum</i> H. Lindb.	T	Len	Len, Psk, Nov	SPb	
<i>T. altissimum</i> H. Lindb.	T	Len	In synonymy of <i>T. kjellmanii</i>		
<i>T. amplum</i> Markl.	T	Len	In synonymy of <i>T. gibbiferum</i>		
<i>T. ancistrolobum</i> Dahlst.	T	Len	—		
<i>T. angustisectum</i> H. Lindb.	E	Len	Psk		Lectotypified by a specimen from Len
<i>T. angustisquameum</i> Dahlst. ex H. Lindb.	T	Len	Len, Psk, Nov	SPb	
<i>T. apicatum</i> Brenner (<i>T. jaervikylense</i> H. Lindb.)	Bo	Len, Psk	Len, Psk		
<i>T. assurgens</i> Markl.	T	Len	Len, Psk		
<i>T. atrimarginatum</i> H. Lindb.	Bo?	Len	—		Sectional attribution in Lundevall and Øllgaard (1999) is uncertain
<i>T. atrovioleaceum</i> H. Lindb. ined.	?	—	Len		Undescribed species absent from Lundevall and Øllgaard (1999), but accepted by Tzvelev (2000)
<i>T. aurosulum</i> H. Lindb.	T	—	Len		
<i>T. biformatum</i> H. Lindb. (<i>T. albicollum</i> Dahlst.)	Bo	Len, Psk	Len, Psk, Nov		
<i>T. biforme</i> Dahlst.	T	Len, SPb	—		
<i>T. borgvallii</i> Dahlst. ex G. E. Haglund	T	Len, Psk	In synonymy of <i>T. mimulum</i>		
<i>T. cacuminatum</i> G. E. Haglund	T	—	Len		
<i>T. caespitans</i> Dahlst.	Bo	Len, Psk	In synonymy of <i>T. distantilobum</i>		
<i>T. caloschistum</i> Dahlst.	T	Len	In synonymy of <i>T. pectinatifforme</i>		
<i>T. canaliculatum</i> H. Lindb.	Bo	Len, SPb, Psk	Len, Psk, Nov		
<i>T. canoviride</i> H. Lindb. ex Puol.	T	Len	Len, Psk, Nov		
<i>T. caudatum</i> Markl.	T	Len	In synonymy of <i>T. gibbiferum</i>	SPb	
<i>T. commixtum</i> G. E. Haglund	E	—	Len		

Continuation of the Table

1	2	3	4	5	6
<i>T. concolor</i> H. Lindb.	Bo	Psk	In synonymy of <i>T. ostensfeldii</i>		
<i>T. copidophyllum</i> Dahlst.	T	Len	—		
<i>T. cordatum</i> Palmgr.	T	Len	Len, Psk		
<i>T. crassipes</i> H. Lindb.	Bg	Len	Len		The only species of sect. <i>Boreigena</i> recorded in NWR so far
<i>T. crebridens</i> H. Lindb.	T	Psk	In synonymy of <i>T. pectinatiforme</i>		In earlier revision, Tzvelev (1989) accepted <i>T. crebridens</i> as a separate species and reported it for NWR in general
<i>T. crispifolium</i> H. Lindb.	T	Len, Psk	Len, Psk, Nov		
<i>T. croceiflorum</i> Dahlst.	T	Len	Len, Psk		
<i>T. curvilobatum</i> Sahlb. (<i>T. curvilobum</i> Markl.)	T	—	Len, Psk, Nov		
<i>T. cyanolepis</i> Dahlst.	T	Len, Psk	—		
<i>T. dilatatum</i> H. Lindb.	T	Len	Len		
<i>T. dissimile</i> Dahlst.	E	Psk	Psk		
<i>T. distantilobum</i> H. Lindb.	Bo	Len, Psk	Len, Psk, Nov		
<i>T. distinctum</i> H. Lindb.	T	—	Len		
<i>T. ekmanii</i> Dahlst.	T	Len	Len, Psk, Nov		
<i>T. estonicum</i> Markl.	Bo	Psk	In synonymy of <i>T. mucronatum</i>		
<i>T. euoplocarpum</i> Markl.	T	Len	Len, Psk		
<i>T. exacutum</i> Markl. (<i>T. acuminatum</i> Markl.)	T	—	Len, Psk		
<i>T. expallidiforme</i> Dahlst.	T	Len, Psk	In synonymy of <i>T. alatum</i>		
<i>T. expansum</i> Florstr.	T	Len	—		
<i>T. explicatum</i> G. E. Haglund (<i>T. angustissimum</i> H. Lindb.)	T	Len, Psk	Len, Psk, Nov		
<i>T. falcatum</i> Brenner	E	Len, SPb	Len, Psk, Nov		
<i>T. fasciatum</i> Dahlst.	T	Len, Psk	Len, Psk, Nov		
<i>T. florstroemii</i> Markl.	T	Len	In synonymy of <i>T. distantilobum</i>		
<i>T. fulvum</i> Raunk.	E	Len, SPb	Len, Psk		
<i>T. geminatum</i> G. E. Haglund (<i>T. trigonophorum</i> Markl.)	T	—	Len, Psk		
<i>T. gentile</i> G. E. Haglund ex Rail.	T	—	—		Reported by Trávníček et al. (2010) for NWR in general, after the specimen from Len with the determination confirmed by J. Kirschner
<i>T. gibbiferum</i> (Brenner) Brenner (<i>T. reflexilobum</i> H. Lindb.)	T	Len, SPb, Psk	Len, Psk, Nov	SPb	
<i>T. guttulatum</i> H. Lindb. ex Puol.	T	Len	Len, Psk, Nov		
<i>T. haareanum</i> Tzvelev	T?	—	Len		Absent from Lundevall and Øllgaard (1999), described from Len; supposed as a member of sect. <i>Taraxacum</i> or a hybrid between sections <i>Taraxacum</i> and <i>Palustria</i> (Tzvelev, 1998)

Continuation of the Table

1	2	3	4	5	6
<i>T. haematicum</i> G. E. Haglund ex H. Øllg. et Wittzell	T	Psk	Len, Psk, Nov		
<i>T. haematopus</i> H. Lindb.	T	Psk	Len, Psk		
<i>T. hamatiforme</i> Dahlst.	H	Len	—	SPb	
<i>T. hamatibulum</i> Dahlst.	T	—	Len, Psk		
<i>T. hamatum</i> Raunk.	H	—	Len, Psk, Nov		
<i>T. hemicyclum</i> G. E. Haglund	T	Len	—		
<i>T. hepaticum</i> Rail.	T	—	—		Reported for the first time in the current revision from Len, SPb and Psk
<i>T. hollandicum</i> Soest	P	—	Len		Absent from Lundevall and Øllgaard (1999), but reported by Trávníček et al., (2010) and Kirschner and Štěpánek (1998) for Len after determinations confirmed by Kirschner. Locality in Len is isolated from the main species range, plants considered as possibly introduced (Tzvelev, 1989, 2000)
<i>T. homoschistum</i> H. Øllg.	T	Len	—		
<i>T. huelphersianum</i> Dahlst. ex G. E. Haglund	T	Len	—		
<i>T. humile</i> Brenner (<i>T. remotijugum</i> H. Lindb.)	T	Len	In synonymy of <i>T. distantilobum</i>	SPb	
<i>T. ingens</i> Palmgr.	T	Len	In synonymy of <i>T. alatum</i>		
<i>T. insigne</i> Ekman ex Wiinst. et M. P. Christ.	T	—	Len, Psk, Nov		
<i>T. isophyllum</i> G. E. Haglund	E	—	Len, Psk		
<i>T. isthmicola</i> H. Lindb.	E	Len, SPb, Psk	Len, Psk		Lectotypified by a specimen from Len
<i>T. karelicum</i> H. Lindb. et Markl.	Bo	Len	Len		
<i>T. kjellmanii</i> Dahlst.	T	Len, Psk	Len, Psk, Nov		
<i>T. kok-saghyz</i> Rodin	C	—	Len		Treated as alien by Tzvelev (1989, 2000). Sectional attribution according to Kirschner et al. (2015)
<i>T. laceratum</i> (Brenner) Brenner (<i>T. parvuliceps</i> H. Lindb.)	T	Len, Psk	Len, Psk, Nov	SPb	
<i>T. lacinosifrons</i> Wiinst. ex M. P. Christ. et Wiinst.	T	Len	—		
<i>T. lacinosum</i> Dahlst.	T	Len, Psk	Len, Psk, Nov		
<i>T. laeticolor</i> Dahlst.	T	Len, SPb	Len, Psk, Nov	SPb	
<i>T. laticordatum</i> Markl.	T	—	Len, Psk, Nov		
<i>T. latisectum</i> H. Lindb.	T	Len, SPb, Psk	Len, Psk, Nov	SPb	
<i>T. latissimum</i> Palmgr.	T	Len	Len, Psk		
<i>T. leptophyllum</i> H. Lindb. ex Sältin	T	Len	—		
<i>T. limbatum</i> Dahlst. (<i>T. obscurans</i> (Dahlst.) G. E. Haglund)	E	—	Len, Psk		
<i>T. linguicuspis</i> H. Lindb.	T	—	Len, Psk, Nov	SPb	

Continuation of the Table

1	2	3	4	5	6
<i>T. lingulatum</i> Markl.	T	Len	In synonymy of <i>T. ekmanii</i>	SPb	
<i>T. litorale</i> Raunk.	Bo	Psk	Len, Psk		
<i>T. livonicum</i> Markl.	Bo	Len, Psk	Len, Psk, Nov		Lectotypified by a specimen from Psk
<i>T. longisquameum</i> H. Lindb.	T	Len, Psk	Len, Psk, Nov	SPb	
<i>T. lucescens</i> Dahlst.	T	Len	—		
<i>T. macranthoides</i> G. E. Haglund	T	—	—		Reported for the first time in the current revision from Len, SPb
<i>T. maculatum</i> Jord.	T	—	Len, Psk		
<i>T. marginatum</i> (Dahlst.) Raunk.	E	Len	Len, Psk		
<i>T. marklundii</i> Palmgr.	H	—	Len, Psk, Nov		
<i>T. maurostigma</i> Markl.	Bo?	Psk	Len, Psk		Lectotypified by a specimen from Psk. Sectional attribution in Lundevall and Øllgaard (1999) is uncertain
<i>T. microcranium</i> Markl.	?	Psk	Len, Psk		Lectotypified by a specimen from Psk. Sectional attribution in Lundevall and Øllgaard (1999) is considered unclear
<i>T. mimulum</i> Dahlst. ex H. Lindb.	T	Len	Len, Psk		
<i>T. mucronatum</i> H. Lindb.	Bo	Len	Len, Psk, Nov		
<i>T. mutabile</i> Saarsoo (<i>T. hastigerum</i> Markl. ex Bäck)	T	Len	—		<i>T. hastigerum</i> is lectotypified by a specimen from Len
<i>T. obliquilobum</i> Dahlst.	T	Len, SPb	Len, Psk, Nov	SPb	
<i>T. obtusulum</i> H. Lindb.	T	Len	Len, Psk		
<i>T. oistophorum</i> Markl.	T	Psk	—		Lectotypified by a specimen from Psk
<i>T. olitorium</i> G. E. Haglund	T	Len	—		
<i>T. omissum</i> G. E. Haglund	T	—	In synonymy of <i>T. latissimum</i>		In earlier revision, Tzvelev (1989) accepted <i>T. omissum</i> as a separate species and reported it for NWR in general
<i>T. ostensfeldii</i> Raunk. (<i>T. duplidens</i> H. Lindb.)	Bo	Len, Psk	Len, Psk, Nov	SPb	
<i>T. pachylobum</i> Dahlst.	T	Psk	In synonymy of <i>T. crispifolium</i>		
<i>T. pallescens</i> Dahlst.	T	Len	—		
<i>T. pallidulum</i> H. Lindb.	Bo	—	Len, Psk		
<i>T. pannucium</i> Dahlst.	T	Len			
<i>T. pannulatum</i> Dahlst.	T	—	Len, Psk		
<i>T. paucijugum</i> Markl.	T	Psk	Len, Psk		Lectotypified by a specimen from Psk
<i>T. pectinatifforme</i> H. Lindb.	T	Len, SPb	Len, Psk, Nov	SPb	
<i>T. penicilliforme</i> H. Lindb.	Bo	Len	Len, Psk, Nov	SPb	
<i>T. picatidens</i> Markl.	T	Len, Psk	In synonymy of <i>T. distantilobum</i>		
<i>T. piceatum</i> Dahlst.	T	—	Len, Psk		
<i>T. planum</i> Raunk.	T	Len	Len, Psk, Nov		
<i>T. polyodon</i> Dahlst.	T	Len	In synonymy of <i>T. dahlstedtii</i>		

Continuation of the Table

1	2	3	4	5	6
<i>T. praecox</i> Dahlst. ex Puol.	Bo	Len, Psk	In synonymy of <i>T. dahlstedtii</i>		
<i>T. praeradians</i> Dahlst.	T	Len	In synonymy of <i>T. alatum</i>		
<i>T. privum</i> Dahlst.	T	Len, Psk	—		
<i>T. proximum</i> (Dahlst.) Raunk.	E	Len, Psk	Len, Psk, Nov		
<i>T. pseudofulvum</i> H. Lindb. ex Puol.	E	Len, Psk	Len, Psk		Sennikov (2007) for unknown reason reported <i>T. pseudofulvum</i> in synonymy of <i>T. ungulatum</i> . Currently (Lundevall, Øllgaard, 1999) <i>T. ungulatum</i> is placed in another section, in synonymy of <i>T. triangulare</i>
<i>T. pulcherrimum</i> H. Lindb.	T	Len	—		
<i>T. pulchrifolium</i> Markl.	T	—	Len, Psk		The determination of a specimen from Len was confirmed by Kirschner
<i>T. purpureum</i> Raunk.	T	Len	—		
<i>T. pycnolobum</i> Dahlst.	T	Len, Psk	Len, Psk		
<i>T. recurvum</i> Dahlst. (<i>T. intricatum</i> H. Lindb.)	T	Len, SPb, Psk	Len, Psk, Nov		
<i>T. reinthalii</i> Markl.	T	—	Len, Psk, Nov		
<i>T. remotilobum</i> Dahlst.	Bo	Psk	—		
<i>T. retroflexum</i> H. Lindb.	T	Len	In synonymy of <i>T. dahlstedtii</i>		
<i>T. revalense</i> H. Lindb.	Bo	Len	—		
<i>T. rhodopodum</i> Dahlst. ex M. P. Christ. et Wiinst.	T	Psk	—		
<i>T. rotundatum</i> Markl.	T	Psk	In synonymy of <i>T. canoviride</i>		Lectotypified by a specimen from Psk
<i>T. scalare</i> H. Øllg. et J. Räsänen	Bo	Len	—		
<i>T. scanicum</i> Dahlst.	E	—	Len, Psk		
<i>T. semiglobosum</i> H. Lindb.	T	Len, SPb	Len, Psk, Nov		
<i>T. sertatum</i> Kirschner, H. Øllg. et Štěpánek	T	—	—		Reported for the first time in the current revision from Len and Nov
<i>T. sinicum</i> Kitag.	L	—	Len		Treated as alien by Tzvelev (1989, 2000). Sectional attribution according to Kirschner et al. (2006)
<i>T. steenhoffianum</i> Dahlst.	Bo?	Len, Psk	In synonymy of <i>T. pallidulum</i>		Sectional attribution in Lundevall and Øllgaard (1999) is uncertain
<i>T. stellare</i> Markl.	E	Psk	Psk		Lectotypified by a specimen from Psk
<i>T. stenoglossum</i> Brenner (<i>T. dahlstedtii</i> H. Lindb.)	T	Len, SPb, Psk	Len, Psk, Nov	SPb	
<i>T. stenochistum</i> Dahlst.	T	Len	—		
<i>T. subcanescens</i> Markl. ex Puol.	T	Len	—		
<i>T. subglauescens</i> Markl.	T	Psk	Len, Psk		Lectotypified by a specimen from Psk
<i>T. subhuelphersianum</i> M. P. Christ.	T	Len	—		
<i>T. sublacinosum</i> Dahlst. et H. Lindb.	T	—	Len, Psk		

Continuation of the Table

1	2	3	4	5	6
<i>T. sublaeticolor</i> Dahlst.	T	Len, Psk	Len, Psk, Nov	SPb	
<i>T. submaculosum</i> Markl.	T	Len	In synonymy of <i>T. dahlstedtii</i>		
<i>T. subpenicilliforme</i> H. Lindb. ex Dahlst.	Bo	Len	Len, Psk, Nov		
<i>T. subxanthostigma</i> M. P. Christ. ex H. Øllg.	T	—	—		Reported for the first time in the current revision from Len
<i>T. sundbergii</i> Dahlst.	T	Len	—		
<i>T. tenebricans</i> (Dahlst.) Raunk.	M?	Len, SPb, Psk	Len, Psk, Nov	SPb	Sectional attribution in Lundevall and Øllgaard (1999) is uncertain
<i>T. tenellisquameum</i> Markl.	E	—	Len, Psk		
<i>T. tenuilobum</i> (Dahlst.) Dahlst.	E	—	Len, Psk		
<i>T. tinctum</i> Markl.	T	—	Len, Psk		
<i>T. triangulare</i> H. Lindb. (<i>T. unguatum</i> (Brenner) Brenner)	Bo	Len, Psk	Len, Psk		
<i>T. trilobatum</i> Palmgr.	T	Len	—		
<i>T. tumentilobum</i> Markl. ex Puol.	T	Len, Psk	Len, Psk	SPb	
<i>T. valens</i> Markl.	T	Len	Len, Psk		
<i>T. vastisectum</i> Markl. ex Puol.	T	—	Len, Psk		
<i>T. verecundum</i> G. E. Haglund (<i>T. gracilentum</i> H. Lindb.)	T	Len, Psk	In synonymy of <i>T. distantilobum</i>		
<i>T. vereinense</i> Soest	T	—	Len		Absent from Lundevall and Øll- gaard (1999), never reported from Fennoscandia, considered a syno- nym of Central European <i>T. perfis- sum</i> Soest (e. g. GBIF, 2022)
<i>T. xanthostigma</i> H. Lindb.	T	Len	Len, Psk		

Account of the newly recorded species

***Taraxacum acervatulum* Rail. — Fig. 2.**

Saint-Petersburg. Frunzenskiy District: near the intersection of Sofiyskaya and Slavy Prospect streets, a courtyard, 59°52' N, 30°25' E, 22 V 2018, *P. G. Efimov* (LE 01086865); *near the old houses near the intersection of Yuzhnoye Shosse and Sofiyskaya street, near the Internatsionalistov Park, fertile ground near the houses under the trees (maybe the former garden), 59°52' N, 30°25' E, 20 IV 2021, idem, № 2021/012* (LE 01149145); *ibidem, 22 IV 2021, idem, № 2021/019* (LE 01149153); *ibidem, 22 IV 2021, idem, № 2021/020* (LE 01149154).

Leningrad Region. Lomonosov District: along Volkhonskoye Shosse highway near the bridge across Ligovskiy Channel, ruderal place near the highway, 59°47' N, 30°11' E, 25 V 2021, *P. G. Efimov, № 2021/427* (LE 01149585).

Pskov Region. Opochka District: ca. 4 km S from the border with Pushkinskiye Gory District, near the Kiyevskoye highway, roadside of the rural road throw the felled pine-tree forest, dry sandy ground, 56°51' N, 28°41' E, 16 V 2021, *P. G. Efimov, № 2021/245* (LE 01149391); **Palkino District:** Kharlapkovo village, on the edge of the ditch along the road (a disturbed place on the opposite side of the

ditch), 57°35' N, 28°04' E, 10 V 2021, *idem, № 2021/127* (LE 01149265); **Pechory District:** Staryi Izborsk, inside the medieval fortress, 57°42' N, 27°52' E, 9 V 2021, *idem, № 2021/093* (LE 01149230); **Plyussa District:** along Kiyevskoye Highway ca. 2 km SW from Zapol'ye, disturbed ground very rich with clay along the renewed ditch along the highway, 58°21' N, 29°39' E, 8 V 2021, *idem, № 2021/082* (LE 01149218); **Pskov District:** between Vybuty and Babayevo villages, near the old Ilya Prorok Church, limestone outcrops, plants collected mostly on the coastal slope of the Velikaya River on the soil rich with lime, 57°43' N, 28°17' E, 10 V 2021, *idem, № 2021/113* (LE 01149250); **Sebezh District:** Kuz'mino village, slope to the lake Ostrovno, disturbed ground on the slope, 56°13' N, 28°31' E, rather open place without bushes and trees, 15 V 2021, *idem, № 2021/198* (LE 01149342); *ibidem, rather shady place under the bushes and trees, 15 V 2021, idem, № 2021/197* (plant 1) (LE 01149340); *ibidem, 15 V 2021, idem, № 2021/197* (plant 2) (LE 01149341).

Taraxacum acervatulum seems to be widely distributed in NWR, at least in Saint-Petersburg and in Pskov Region. However, it is notable that it is absent from northern and eastern areas, such as the Novgorod



Fig. 2. Representative specimen of *Taraxacum acervatulum* (LE 01149153; <http://rr.herbariumle.ru/01149153>).

Region and the Karelian Isthmus of the Leningrad Region. Although the collections across NWR are far from being representative, existing trend may illustrate true pattern in its distribution, which also corresponds to the data from literature: it is considered rare and probably introduced in Finland, but common and widely distributed in Central Europe (Trávníček et al., 2010).

***Taraxacum hepaticum* Rail. — Fig. 3.**

Saint-Petersburg. Frunzenskiy District: along Bukharetskaya street, near the house no. 114, more or less abandoned lawn, 59°51' N, 30°24' E, 13 V 2021, P. G. Efimov, № 2021/137 (LE 01149277).

Leningrad Region. Gatchina District: *Vyritsa*, along Vinnitskiy Prospect street, near the house no. 42, a lawn, 59°24' N, 30°18' E, 10 VI 2017, P. G. Efimov, K. N. Efimova, № 3-1 (LE 01086843); *ibidem*, 10 VI 2017, *idem*, № 3-2 (LE 01086847); *Vyritsa*, near the intersection of Podol'skaya street and Siverskoye highway, roadside, 59°24' N, 30°18' E, 1 VI 2017, *idem*, № 5 (LE 01086842); *ibidem*, along Vinnitskiy Prospect street, near the house no. 38, a lawn, 59°24' N, 30°18' E, 25 V 2020, P. G. Efimov, № 2020/049 (LE 01086853); *ibidem*, near the intersection of Ushakovskiy Prospect street and Komarova street, roadside, 59°24' N, 30°18' E, 26 V 2020, *idem*, № 2020/061 (LE 01086854); *ibidem*, 26 V 2020, *idem*, № 2020/056 (LE 01086860); *Vyritsa*, near the intersection between Bratslavskiy Prospect and Komarova Street, meadow, 59°24' N, 30°18' E, 23 V 2020, *idem*, № 2020/030 (LE 01086861); W edge of Vyritsa, near the cemetery, along Siverskoye Highway, roadside, 59°24' N, 30°17' E, 23 V 2017, P. G. Efimov, K. N. Efimova (LE 01086856); **Slantsy District:** Bol'shiye Polya village opposite from the Slantsy city (left bank of Pljussa river), Zelenaya Roshcha street, weedy in Yuri Kalugin's private garden, 59°05' N, 28°04' E, 28 V 2021, P. G. Efimov, № 2021/480 (LE 01149643); **Volosovo District** at its boundary with Gatchina District, ca. 1 km SW of Dylitsy village, disturbed ground on an electric transmission line in the forest, 59°28' N, 29°44' E, 26 V 2017, P. G. Efimov, K. N. Efimova, № 3 (LE 01086846).

Pskov Region. Opozhka District: Barabany village, roadside of the Kiyevskoye Highway, 56°47' N, 28°41' E, 16 V 2021, P. G. Efimov, № 2021/239 (LE 01149385); **Pskov District:** near Pskov city, Kresty, along Kiyevskoye Highway near "Pyatyorochka" shop, lawn near the highway, in the tall grass, 57°48' N, 28°25' E, 14 V 2021, *idem*, № 2021/161 (LE 01149302); **Sebezh District:** Kuz'mino village, under the bushes near the shore of the lake Ostrovno, 56°13' N, 28°31' E, 15 V 2021, *idem*, № 2021/193 (LE 01149336).

According to our data, *Taraxacum hepaticum* is a common species in NWR.

***Taraxacum macranthoides* G. E. Haglund. — Fig. 4.**

Saint-Petersburg. Petrogradskiy District: Botanical Garden of the Komarov Botanical Institute (Professora Popova street 2), weedy in the crevice near the building, 59°58' N, 30°19' E, 27 IV 2021, P. G. Efimov, № 2021/035 (LE 01149169).

Leningrad Region. Gatchina District: *Vyritsa*, central part of the village close to the main railway station, ruderal place, 59°25' N, 30°21' E, 24 V 2020, P. G. Efimov, № 2020/034 (LE 01149956); *ibidem*, 27 V 2020, *idem*, № 2020/067 (LE 01149957); **Luga District:** ca. 6 km S of Luga town, near the highway crossing, roadside, 58°38' N, 29°51' E, 8 VI 2020, P. G. Efimov, G. Yu. Konechnaya, № 2020/231 (LE 01086993); **Vsevolozhsk District:** Gruzino, "Zemledelts" settlement, roadside in the village, 60°19' N, 30°26' E, 29 V 2016, P. G. Efimov (LE 01086964).

This is possibly a rather common species in NWR.

***Taraxacum sertatum* Kirschner, H. Øllg. et Štěpánek. — Fig. 5.**

Leningrad Region. Gatchina District: *Vyritsa*, private garden near the intersection of Podol'skaya and Bratslavskiy Prospect streets, a lawn, 59°24' N, 30°18' E, 7 VI 2017, P. G. Efimov, K. N. Efimova, № 2 (LE 01107825); *ibidem*, near the intersection between Ostrovskogo street and Podol'skaya street, meadow on the roadside, 59°24' N, 30°18' E, 27 V 2020, P. G. Efimov, № 2020/069 (1) (LE 01086821); *ibidem*, 27 V 2020, *idem*, № 2020/069 (2) (LE 01086827).

Novgorod Region. Okulovka District: Pervomayskiy village, near the private botanical garden of Vladislav V. Kuropatkin, meadow in the village, 58°11' N, 33°34' E, 29 V 2021, P. G. Efimov, V. V. Kuropatkin, № 2021/530 (LE 01149693).

Taraxacum sertatum is not common in NWR, but the existing specimens show a perfect match with the original material.

***Taraxacum subxanthostigma* M. P. Christ. ex H. Øllg. — Fig. 6.**

Leningrad Region. Gatchina District: *Vyritsa*, along Podol'skaya street, near house no. 24, a lawn, 59°24' N, 30°18' E, 1 VI 2017, P. G. Efimov, K. N. Efimova, № 3 (LE 01086820).

Conclusions

To date, 159 species of the genus *Taraxacum* were reported from North-West European Russia, but only 126 of them were confirmed by reliable determinations. 108 species were reliably reported from the Leningrad Region and only 54 — from the Pskov Region. *Taraxacum* biodiversity of the city of Saint-Petersburg and the Novgorod Region is least explored, accounting for 16 and 1 species, respectively. The *Taraxacum* flora of the whole North-West European Russia remains unsatisfactorily studied.

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Fig. 3. Representative specimen of *Taraxacum hepaticum* (LE 01149277; <http://rr.herbariumle.ru/01149277>).

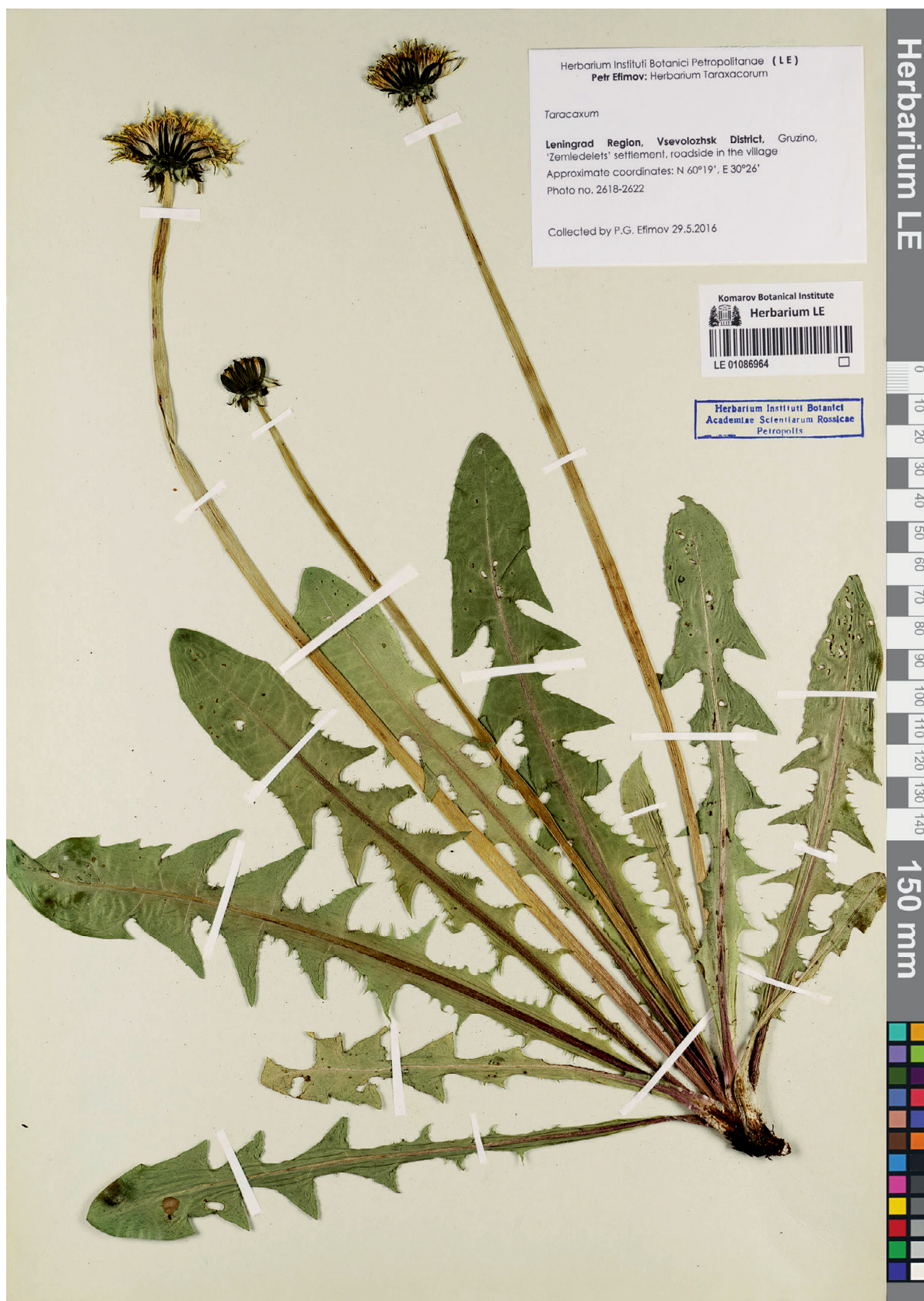


Fig. 4. Representative specimen of *Taraxacum macranthoides* (LE 01086964; <http://rr.herbariumle.ru/01086964>).



Fig. 5. Representative specimen of *Taraxacum sertatum* (LE 01149693; <http://rr.herbariumle.ru/01149693>).



Fig. 6. Representative specimen of *Taraxacum subxanthostigma* (LE 01086820; <http://rr.herbariumle.ru/01086820>).

images of some herbarium specimens kept in the Herbarium of the University of Helsinki. Thanks are also due to Juhani Räsänen for a field course in Finland in the year 2019, and to Jan Kirschner for the inspiration of the study.

References

- GBIF: The Global Biodiversity Information Facility. 2022. <https://www.gbif.org/> (Accessed 19.09.2022).
- Kääntönen M. 1998. *Taraxacum* sect. *Ruderalia* // Retkeilykasvio. 4th ed. / L. Hämet-Ahti, J. Suominen, T. Ulvinen, P. Uotila (eds.). Helsinki: Botanical Museum, Finnish Museum of Natural History. P. 456–464.
- Kirschner J., Drábková L. Z., Štěpánek J., Uhlemann I. 2015. Towards a better understanding of the *Taraxacum* evolution (*Compositae* — *Cichorieae*) on the basis of nrDNA of sexually reproducing species // Pl. Syst. Evol. Vol. 301. P. 1135–1156. <https://doi.org/10.1007/s00606-014-1139-0>
- Kirschner J., Štěpánek J. 1998. A monograph of *Taraxacum* sect. *Palustria*. Průhonice: Institute of Botany, Academy of Sciences of the Czech Republic. 281 p.
- Kirschner J., Štěpánek J., Buryy V. V., Chernyagina O., Efimov P. 2022. A new species of *Taraxacum* sect. *Arctica* (*Asteraceae*, *Crepidinae*) from northern Kamchatka, Russia, with a synoptic survey and a nomenclator of the section in Russia // Phytotaxa. Vol. 550, № 2. P. 171–185. <https://doi.org/10.11646/phytotaxa.550.2.6>
- Kirschner J., Oplaat C., Verhoeven K. J. F., Zeisek V., Uhlemann I., Trávníček B., Räsänen J., Wilschut R. A., Štěpánek J. 2016. Identification of oligoclonal agamosperous microspecies: taxonomic specialists versus microsattellites // Preslia. Vol. 88, iss. 1. P. 1–17.
- Kirschner J., Štěpánek J., Klimeš L. 2006. Dandelions in Central Asia: A taxonomic revision of *Taraxacum* section *Leucantha* // Preslia. Vol. 78, iss. 1. P. 27–65.
- Lundevall C. F., Øllgaard H. 1999. The genus *Taraxacum* in the Nordic and Baltic countries: types of all specific, subspecific and varietal taxa, including type locations and sectional belonging // Preslia. Vol. 71, iss. 1–2. P. 43–171.
- Marklund G. 1938. Die *Taraxacum*-Flora Estlands // Acta Bot. Fenn. Vol. 23. P. 1–136.
- Naturhistoriska riksmuseet. 2022. Herbarium catalogue (S). <https://herbarium.nrm.se/> (Accessed 19.09.2022).
- Räsänen J. 2013. A review of *Taraxacum* (*Asteraceae*) in eastern Finland (Ladoga Karelia and North Karelia) // Memoranda Soc. Fauna Fl. Fenn. Vol. 89. P. 139–182.
- Reinikka E. 1998. *Taraxacum* (except sect. *Ruderalia*) // Retkeilykasvio. 4th ed. / L. Hämet-Ahti, J. Suominen, T. Ulvinen, P. Uotila (eds.). Helsinki: Botanical Museum, Finnish Museum of Natural History. P. 451–456.
- Sennikov A. N. 2005. Phytogeography of Northwest Russia (Saint-Petersburg, Pskov and Novgorod regions) // Biogeography of Karelia. P. 206–243 (Proc. Karel. Sci. Centre RAS. Ser. Biol. Iss. 7). [In Russian with English abstract] (Сенников А. Н. 2005. Фитогеографическое районирование северо-запада европейской части России (Ленинградская, Псковская и Новгородская области) // Биогеография Карелии. С. 206–243 (Труды Карельск. научн. центра РАН. Сер. биол. Вып. 7)).
- Sennikov A. N. 2007. The genus *Taraxacum* (*Asteraceae*) in the Russian part of East Fennoscandia: distribution, new records and comparison of taxonomic concepts // Memoranda Soc. Fauna Fl. Fenn. Vol. 83. P. 59–81.
- Trávníček B., Kirschner J., Štěpánek J., Vašut R. J. 2010. *Taraxacum* Wiggers — pampeliška (smetánka) // Květena České republiky. Vol. 8 / J. Štěpánková, J. Chrtěk, Z. Kaplan (eds.). Prague: Academia. P. 23–269.
- Tzvelev N. N. 1989. *Taraxacum* Wigg. // Flora partis europaeae USSR. T. 8 / N. N. Tzvelev (ed.). Leningrad: Nauka. P. 61–114. [In Russian] (Цвелёв Н. Н. 1989. *Taraxacum* Wigg. // Флора европейской части СССР. Т. 8 / Н. Н. Цвелёв (ред.). Л.: Наука. С. 61–114).
- Tzvelev N. N. 1998. De plantarum vascularium speciebus nonnullis criticis et adventivis Rossiae Boreali-Occidentalis // Novosti Sist. Vyssh. Rast. T. 31. P. 257–269. [In Russian] (Цвелёв Н. Н. 1998. О некоторых критических и заносных видах сосудистых растений северо-западной России // Новости сист. высш. раст. Т. 31. С. 257–269).
- Tzvelev N. N. 2000. Manual of the vascular plants of North-West Russia (Leningrad, Pskov and Novgorod provinces). St. Petersburg: Chem.-Pharm. Acad. Press. 781 p. [In Russian] (Цвелёв Н. Н. 2000. Определитель сосудистых растений Северо-Западной России (Ленинградская, Псковская и Новгородская области). СПб.: Изд-во СПХФА. 781 с.).
- Uhlemann I. 2003. Die Gattung *Taraxacum* (*Asteraceae*) im östlichen Deutschland // Mitt. Florist. Kart. Sachsen-Anhalt. Sonderheft. P. 1–136.